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STATE OF HAWAII

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LT. GOVERNOR
STATE OF HAWAII

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MAY 23 2020

WILLIAM J. AILA, JR
CHAIRMAN
HAWAIIAN HOMES COMMISSION

TYLER I. GOMES
DEPUTY TO THE CHAIRMAN

STATE OF HAWAII
DEPARTMENT OF HAWAIIAN HOME LANDS

P O BOX 1879
HONOLULU, HAWAII 96805

Keith Kawaoka, Acting Director
State of Hawaii
Department of Health
Office of Environmental Quality Control
235 South Beretania Street, Room 702
Honolulu, Hawaii 96813

Subject: Proposed Puunani Homestead Subdivision; Waikapu, Maui, Hawaii
Publication of the Draft Environmental Assessment and Anticipated Finding of No Significant Impact

The State of Hawaii, Department of Hawaiian Home Lands (DHHL) hereby submits the Draft Environmental Assessment and Anticipated Finding of No Significant Impact (DEA-AFONSI) for the Proposed Puunani Homestead Subdivision project for publication in the next available edition of The Environmental Notice. The proposed project involves Tax Map Keys (2)3-5-002:002(por.) and (2)3-5-001:064(por.) in Waikapu, Wailuku District, on the Island of Maui.

In addition to this letter, we have also submitted the electronic version of the Office of Environmental Quality Control Publication Form and a searchable PDF-formatted copy of the DEA-AFONSI through the online submission platform.

Should you have any questions, please call Stewart Matsunaga, Acting Land Development Division Administrator at (808) 620-9283 or via email at stewart.t.matsunaga@hawaii.gov.

Aloha,

William J. Aila, Jr., Chairman
Hawaiian Homes Commission

CC: Darren Okimoto, DDC LLC.
Bryan Esmeralda, Munekiyo Hiraga

20-270

From: webmaster@hawaii.gov
To: HI Office of Environmental Quality Control
Subject: New online submission for The Environmental Notice
Date: Thursday, May 14, 2020 2:33:53 PM

Action Name

Proposed Puʻunani Homestead Subdivision

Type of Document/Determination

Draft environmental assessment and anticipated finding of no significant impact (DEA-AFNSI)

HRS §343-5(a) Trigger(s)

- (1) Propose the use of state or county lands or the use of state or county funds

Judicial district

Wailuku, Maui

Tax Map Key(s) (TMK(s))

(2)3-5-002:002(por.) and (2)3-5-001:064(por.)

Action type

Agency

Other required permits and approvals

National Pollutant Discharge Elimination System Permit; Community Noise Permit (as applicable); Subdivision; Work on State Highway Permit; Construction Permits

Proposing/determining agency

State of Hawaii, Department of Hawaiian Home Lands

Agency contact name

Stewart Matsunaga

Agency contact email (for info about the action)

stewart.t.matsunaga@hawaii.gov

Agency contact phone

(808) 620-9500

Agency address

91-5420 Kapolei Parkway
Kapolei, Hawaiʻi 96707
United States
Map It

Was this submittal prepared by a consultant?

Yes

Consultant

Munekiyo Hiraga

Consultant contact name

Bryan Esmeralda

Consultant contact email

planning@munekiyohiraga.com

Consultant contact phone

(808) 983-1233

Consultant address

305 High Street, Suite 104
Wailuku, Hawai‘i 96793
United States
Map It

Action summary

The Department of Hawaiian Home Lands intends to develop a new residential subdivision for its beneficiaries on a 47.4-acre portion of land owned by the DHHL, identified by TMK (2)3-5-002:002, in Waikapu, Maui, mauka of Honoapiilani Highway. A new sewerline to serve the subdivision will also be constructed, which will cross the highway from Parcel 2 and run along a portion of TMK (2)3-5-001:064. The project will feature a max of 161 single-family lots (137 turn-key homes and 24 vacant lots). Each of the lots will be approximately 7500 square feet in area. Each of the lots will be improved with graded pads and stubbed utility connections. Related improvements to also be developed include internal roadways and sidewalks, a drainage detention basin, utility connections, and roadway frontage improvements along the highway including a road widening lot for turning lanes, a median refuge lane, a bike lane, as well as for site distance requirements.

Reasons supporting determination

See Chapter VIII of the Draft Environmental Assessment.

Attached documents (signed agency letter & EA/EIS)

- Pu‘unani_Homestead_Subdivision__Draft-EA-Volume-II-of-II-May-2020.pdf
- Pu‘unani_Homestead_Subdivision__Draft-EA-Volume-I-of-II-May-2020.pdf
- Pu‘unani_Homestead_Subdivision_FONSI-Letter-from-DHH.pdf

Action location map

- Pu‘unani_Homestead_Subdivision__TMKs.shape.zip

Authorized individual

Bryan Esmeralda

Authorization

- The above named authorized individual hereby certifies that he/she has the authority to make this submission.

VOLUME I OF II

Draft Environmental Assessment

PU‘UNANI HOMESTEAD SUBDIVISION

(TMK NOs. (2)3-5-002:002(por.) and (2)3-5-001:064 (por.))

Prepared for:
State of Hawai‘i,
Department of Hawaiian Home Lands

Approving Agency:
Hawaiian Homes Commission

May 2020

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Planning. Project Management. Sustainable Solutions.

VOLUME I OF II

Draft Environmental Assessment

PU‘UNANI HOMESTEAD SUBDIVISION

(TMK NOs. (2)3-5-002:002(por.) and (2)3-5-001:064 (por.))

Prepared for:

State of Hawai‘i,
Department of Hawaiian Home Lands

Approving Agency:

Hawaiian Homes Commission

May 2020

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Executive Summary

Project Name:	Puʻunani Homestead Subdivision
Type of Document:	Draft Environmental Assessment
Legal Authority:	Chapter 343, Hawaiʻi Revised Statutes Title 11, Chapter 200.1, Hawaiʻi Administrative Rules
Anticipated Determination:	Anticipated Finding of No Significant Impact (AFONSI)
Applicable Environmental Assessment review "Trigger":	Use of State Lands; Use of State Funds
Location:	Maui Island Wailuku TMK Nos. (2)3-5-002:002(por.) and (2)3-5-001:064(por.)
Landowner:	State of Hawaiʻi, Department of Hawaiian Home Lands Kehalani Agricultural Investors LLC
Applicant:	State of Hawaiʻi Department of Hawaiian Home Lands Contact: Stewart Matsunaga, Acting Administrator, Land Development Division 91-5420 Kapolei Parkway Kapolei, Hawaiʻi 96707 Phone No.: (808)620-9500
Approving Agency:	State of Hawaiʻi Department of Hawaiian Home Lands Hawaiian Homes Commission Contact: William Ailā, Jr., Chairman 91-5420 Kapolei Parkway Kapolei, Hawaiʻi 96707 Phone No.: (808)620-9500
Consultant:	Munekiyo Hiraga 305 High Street, Suite 104 Wailuku, Hawaiʻi 96793 Contact: Bryan K. Esmeralda, AICP, Senior Associate Phone No.: (808)983-1233

Project Summary:

The State of Hawaiʻi, Department of Hawaiian Home Lands (DHHL) is proposing to develop a new residential subdivision for its beneficiaries on an approximately 47.4-acre portion of land identified by Tax Map Key (TMK) No. (2)3-5-002:002 (Parcel 2) and owned by the DHHL in Waikapū, Maui, Hawaiʻi. The project site is located mauka of Honoapiʻilani Highway, to the north and adjacent to the existing Waiolani Mauka subdivision. In addition, the work within the portion of TMK No. (2)3-5-001:064 (Parcel 64) will be limited to only sewerline improvements. The sewerline will cross Honoapiʻilani Highway from Parcel 2 and run along a portion of Parcel 64 to a connection point on Waiʻale Road.

The proposed subdivision will be comprised of a maximum of 161 residential lots (137 turn-key single-family homes and 24 vacant improved single-family lots). Each of the 161 lots will be approximately 7,500 square feet in area. The turn-key homes component of the project will feature six (6) different model types, while the vacant lots will be lessee-built. As part of the project, the vacant lots will be improved with graded pads and utility connections stubbed to each lot. Related improvements to be developed with the project include internal roadways and sidewalks, a drainage detention basin, utility connections, as well as roadway frontage improvements along Honoapiʻilani Highway. Roadway improvements along Honoapiʻilani Highway include a road widening lot up to 25 feet wide for the provision of turning lanes, a median refuge lane, and a bike lane, as well as for site distance requirements. In addition, a landscaped lot between the Honoapiʻilani Highway right-of-way and the houselots will be provided along the sloped frontage of the subdivision. Further, existing monkeypod trees within the Honoapiʻilani Highway right-of-way will need to be removed and replaced with new healthy trees within the shoulder of the proposed road widening lot for sight distance requirements to provide safe access to the DHHL residential subdivision.

The proposed subdivision will be accessed via two (2) entrances from Honoapiʻilani Highway. One (1) full-movement “T” intersection will be in line with the existing Kokololio Street right-of-way, which forms the northern boundary of the existing Waikapū Gardens subdivision located makai of Honoapiʻilani Highway, while the other will be a right-turn in and right-turn out only entrance located approximately 1,500 feet to the north.

The 47.4-acre subdivision site has been designated for “Agricultural” use by the State Land Use Commission, Maui County Zoning, and the Wailuku-Kahului Community Plan,

with a portion of the site also being designated “SF, Single-Family” within the Wailuku-Kahului Community Plan. The Hawaiian Homes Commission Act (HHCA), codified within the constitution of the State of Hawaiʻi, vests onto the DHHL the authority to use its lands at its discretion. Specifically, HHCA Section 204 states, *“all available lands shall immediately assume the status of Hawaiian home lands and be under the control of the department to be used and disposed of in accordance with the provisions of this Act*”. As the DHHL owns the project site, the above-noted provision grants the DHHL the authority to proceed with the project without the lands being fully entitled for residential use. In addition, through the provisions of the above-noted Act, DHHL intends to exempt the project from certain County code and rule requirements in order to develop the project. The area of the proposed sewerline installation is designated for “Urban” use by the State Land Use Commission, “Agriculture” by the Wailuku-Kahului Community Plan, and “Agriculture” by Maui County Zoning.

As previously mentioned, the proposed subdivision is being developed by the DHHL on lands owned by the State while the sewerline will be developed within an existing sewer easement on privately owned lands. In addition, improvements are proposed to Honoapiʻilani Highway, a State-owned right-of-way. The proposed project will also utilize State as well as private funds. The use of State lands and State funds trigger compliance with the environmental review requirements of Hawaiʻi Revised Statutes (HRS), Chapter 343 and Hawaiʻi Administrative Rules (HAR), Chapter 11-200.1. Accordingly, this Draft Environmental Assessment (EA) has been prepared to evaluate the technical characteristics and potential environmental impacts of the proposed project, as well as to advance findings and mitigative measures relative to the project. The Hawaiian Homes Commission will serve as the approving agency for the EA.

List of Acronyms

AFONSI	Anticipated Finding of No Significant Impact
AIS	Archaeological Inventory Survey
ALISH	Agricultural Lands of Importance to the State of Hawai‘i
ASTM	American Society for Testing and Materials
BMPs	Best Management Practices
cfs	Cubic feet per second
CIA	Cultural Impact Assessment
CO_2 EQ	carbon dioxide equivalent
DEM	Department of Environmental Management
DHHL	Department of Hawaiian Home Lands
DOE	Department of Education
DOH	Department of Health
DOT	Department of Transportation
DPR	Department of Parks and Recreation
DSA	Development Services Administration
DWS	Department of Water Supply
EA	Environmental Assessment
EPA	Environmental Protection Agency
ESA	Environmental Site Assessment
FDH	fiber distribution hub
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FONSI	Finding of No Significant Impact
GHG	Greenhouse Gases
GIS	Geographic Information System
GPD	Gallons per Day
HAR	Hawai‘i Administrative Rules
HHC	Hawaiian Homes Commission
HHCA	Hawaiian Homes Commission Act
HRS	Hawai‘i Revised Statutes
IaA	Iao Silty Clay
IcB	Iao Clay
IbB	Iao Silty Clay
kWh	Kilowatt hour
KWWRF	Kahului Wastewater Reclamation Facility
LUC	Land Use Commission
LCAs	Land Commission Awards
LOS	Level of Service
LSB	Land Study Bureau
MG	Million Gallon
MGD	million gallons per day
MIP	Maui Island Plan
mph	Miles per Hour
msl	Mean Sea Level
NPDES	National Pollutant Discharge Elimination System
PER	Preliminary Engineering Report
SCS	Scientific Consultant Services, Inc.

SHPD	State Historic Preservation Division
SIC	Sandwich Isles Communications
sq. ft.	Square Feet
TIAR	Traffic Impact Analysis Report
TMK	Tax Map Key
US	United States
WWRD	Wastewater Reclamation Division

PROJECT OVERVIEW

I

I. PROJECT OVERVIEW

A. PROPERTY BACKGROUND, EXISTING USE AND LAND OWNERSHIP

The State of Hawaiʻi, Department of Hawaiian Home Lands (DHHL) is proposing to develop a new residential subdivision ("proposed subdivision") on an approximately 47.4-acre portion of land identified by Tax Map Key (TMK) No. (2)3-5-002:002 (Parcel 2), and owned by the DHHL, in Waikapū, Maui, Hawaiʻi. In addition, there will be limited sewerline installation work within an existing sewer easement on a portion of TMK No. (2)3-5-001:064 (Parcel 64), owned by Kehalani Agricultural Investors LLC, that will be undertaken as part of the proposed project. These two (2) actions will be referred to herein as the "project", and collectively, the affected portions of Parcel 2 and Parcel 64 will be referred to as the "project site". See **Figure 1**.

A portion of Parcel 2 is currently used for cattle grazing and is otherwise vacant and undeveloped. Parcel 2 is located mauka of Honoapiʻilani Highway to the east and adjacent to the existing Waiolani Mauka subdivision to the south. Parcel 64 is also currently vacant and undeveloped and is located makai of Honoapiʻilani Highway. See **Figure 2**.

The 47.4-acre portion of Parcel 2 to be developed as the proposed subdivision is Lot 1 of the "Puʻunani Ag Subdivision" application which is currently being processed by the County of Maui, Department of Public Works as Development Services Administration (DSA) Subdivision No. 3.2405. The remainder of Parcel 2 will not be developed as part of the proposed project.

The 47.4-acre project site has been designated for "Agricultural" use by the State Land Use Commission (LUC), Maui County Zoning, and the Wailuku-Kahului Community Plan, with a portion of the site also being designated "SF, Single-Family" within the Wailuku-Kahului Community Plan. The site of the proposed sewerline installation is designated for "Urban" use by the State Land Use Commission, "Agriculture" by the Wailuku-Kahului Community Plan, and "Agriculture" by Maui County Zoning. It is further noted that Parcel 64 is entitled for the proposed Wailuku Apartment Rental Housing Project, by others. The Hawaiian Homes Commision Act (HHCA), codified within the constitution of the State of Hawaiʻi, vests onto the DHHL the authority to use its lands at its discretion. As the DHHL owns the proposed subdivision site, the HHCA grants the DHHL the authority to proceed with the development of the proposed subdivision without the lands being fully entitled for residential use. In addition, through the provisions of the above-noted Act, DHHL intends to exempt the project from certain County code and rule requirements in order to develop the project.

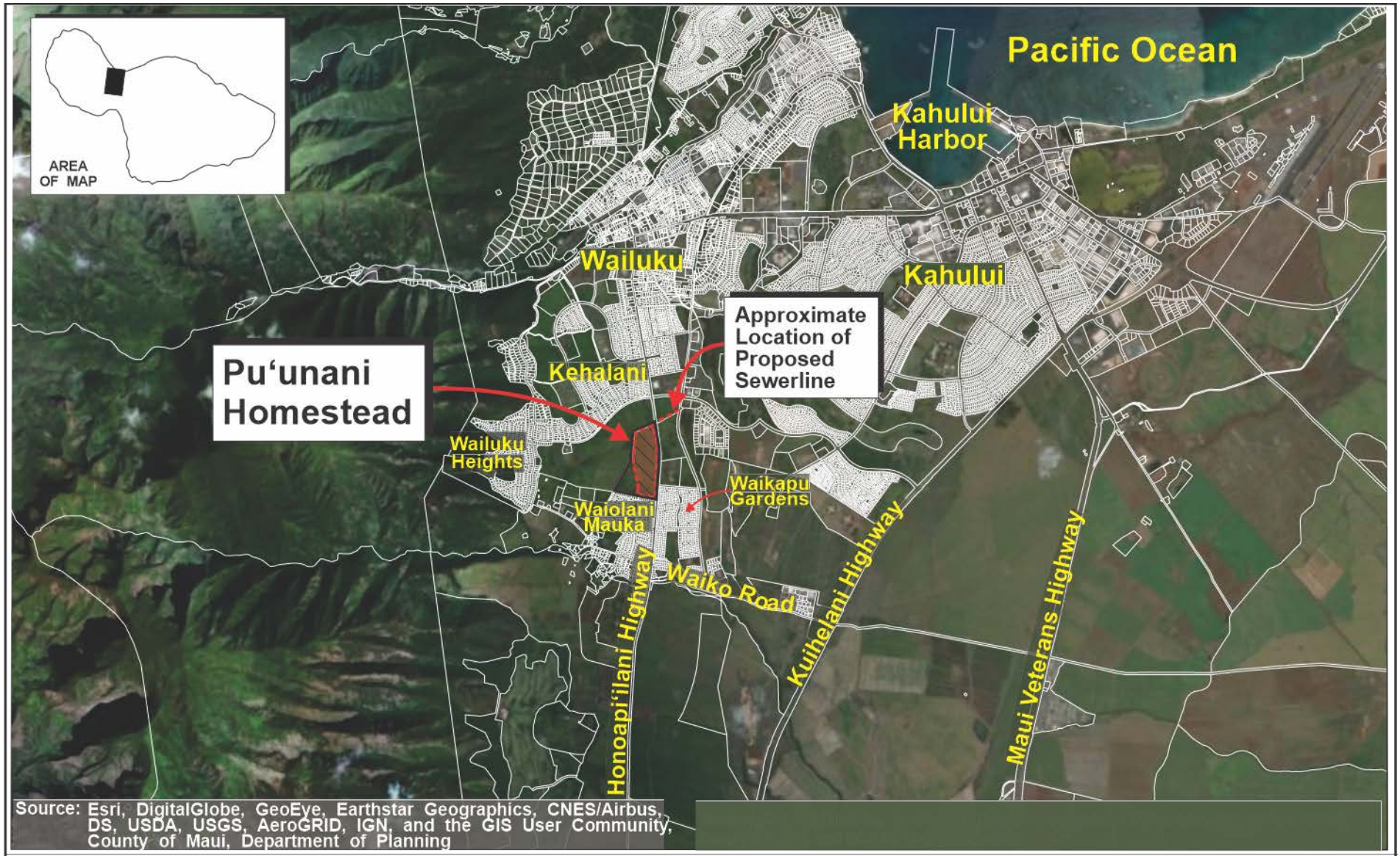

Figure 1

Pu'unani Homestead Subdivision

Regional Location Map

0 1250 2500 5000 Feet

Prepared for: State of Hawai'i, Department of Hawaiian Home Lands

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DDC\PuunaniHomestead\Applications\Figures\Regional.DEA

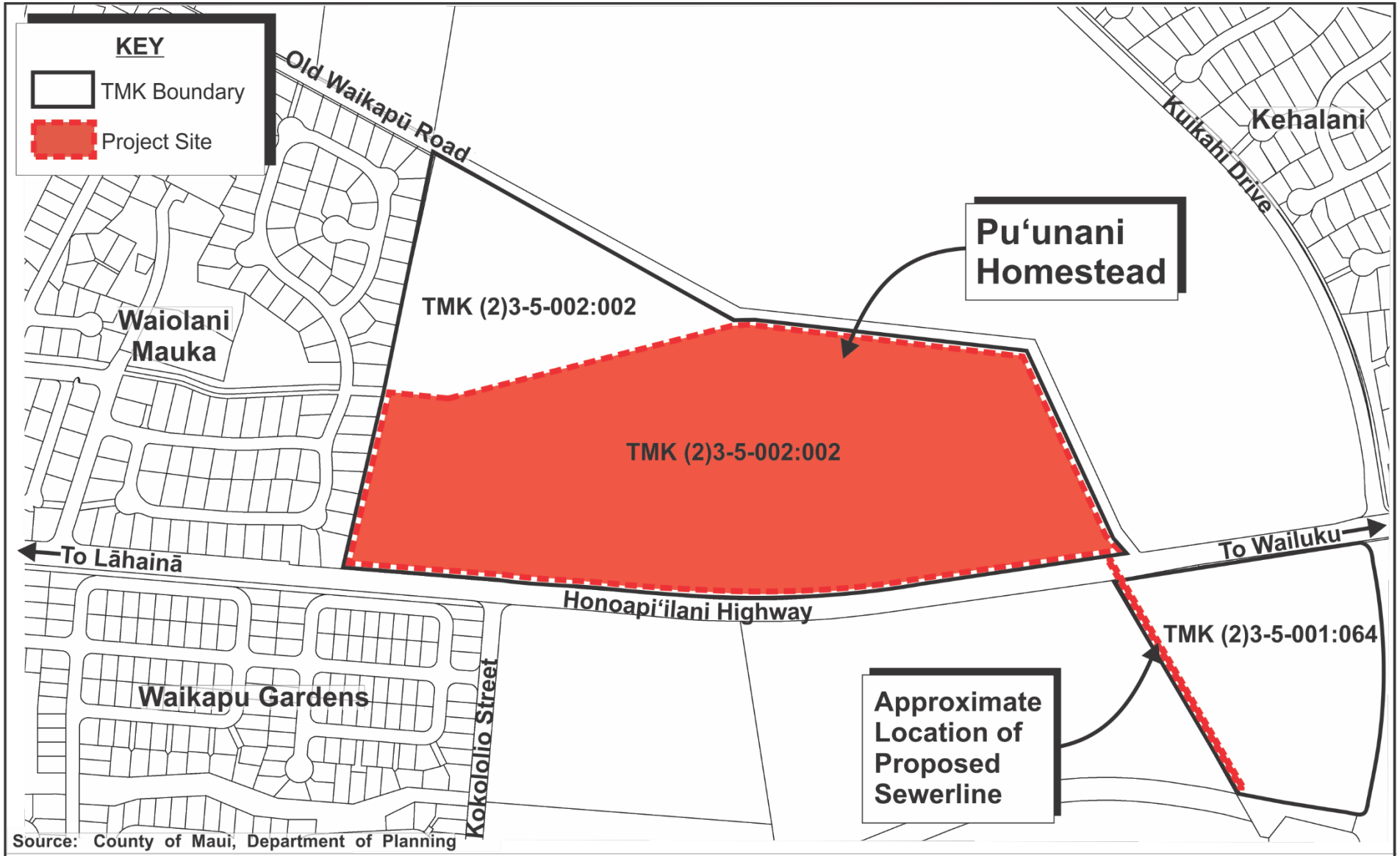


Figure 2

Pu'unani Homestead Subdivision

Property Location Map

0 125 250 500 Feet

Prepared for: State of Hawai'i, Department of Hawaiian Home Lands

MUNEKIYO HIRAGA

DDC\PuunaniHomestead\Applications\Figures\Property Location.DEA

As background[1], under previous ownership, the proposed subdivision site was included as part of a Petition for District Boundary Amendment filed with the State LUC (Docket No. A06-766) for the reclassification of approximately 210 acres from the State "Agricultural" District to the State "Rural" and "Urban" Districts for a previously proposed and separate residential development.[2] However, in January 2017, the LUC acknowledged the Petitioners' request to withdraw the Petition as the previously proposed project would not be pursued. The Environmental Impact Statement Preparation Notice for the previously proposed project was also withdrawn from the Hawaiʻi Revised Statutes (HRS) Chapter 343 environmental review process. It is noted that the currently proposed DHHL project is a distinct and separate project from the above-noted former development proposal by others.

B. PROJECT NEED

The mission of the DHHL is to effectively manage the Hawaiian Home Lands trust and to develop and deliver land to Native Hawaiians. The HHCA, codified within the constitution of the State of Hawaiʻi, states as its purpose:

> *(a) The Congress of the United States and the State of Hawaii declare that the policy of this Act is to enable native Hawaiians to return to their lands in order to fully support self-sufficiency for native Hawaiians and the self-determination of native Hawaiians in the administration of this Act, and the preservation of the values, traditions, and culture of native Hawaiians.*
>
> *(b) The principal purposes of this Act include but are not limited to:*
>
> > *(1) Establishing a permanent land base for the benefit and use of native Hawaiians, upon which they may live, farm, ranch, and otherwise engage in commercial or industrial or any other activities as authorized in this Act;*
> >
> > *(2) Placing native Hawaiians on the lands set aside under this Act in a prompt and efficient manner and assuring long-term tenancy to beneficiaries of this Act and their successors;*
> >
> > *(3) Preventing alienation of the fee title to the lands set aside under this Act so that these lands will always be held in trust for continued use by native Hawaiians in perpetuity;*

---

[1] In its early consultation comment letter dated August 28, 2019, the State LUC requested that the following history of the site of the proposed subdivision be disclosed in the Puʻunani Homestead Subdivision Draft Environmental Assessment.

[2] The separate and former residential development by others initially proposed 214 half-acre rural lots, 6 one-acre rural lots, approximately 90 single-family residential lots of 4,000 square feet each, approximately 240 multi-family units, and a 14.6-acre park that would serve as a retention basin.

Similarly, the DHHL General Plan, adopted in 2002, lists as goals under the Residential Uses objective:

- *Substantially increase the number of residential homesteads awarded each year.*
- *Provide a mix of housing opportunities that reflect the needs and desires of native Hawaiian beneficiaries.*
- *Provide residential homesteads, financing, and other housing opportunities, especially to those most in need.*

DHHL beneficiary demand for homesteading opportunities is very high; DHHL maintains a waitlist comprised of several thousand beneficiary applicants awaiting an opportunity to be awarded a homestead lease. The current waitlist stands at approximately 3,835 beneficiaries awaiting a residential homestead on Maui. The proposed project aims to award leases and provide homesteading opportunities to beneficiaries, thereby, fulfilling the above stated purposes of the HHCA and DHHL General Plan.

Further, based on a 2003 survey and 2014 "Central Maui" study conducted for DHHL by SMS Research & Marketing Services, Inc., Central Maui was identified as the preferred residential homestead area. More than two-thirds (68%) of the residential applicants identified a turn-key house as their first choice in property type preference and nine percent (9%) of the applicants identified a vacant improved lot, which were the two (2) highest housing preferences. Eighty-four percent (84%) of the applicants desired three (3) or more bedrooms. The proposed project responds to this demand.

C. PROPOSED ACTION

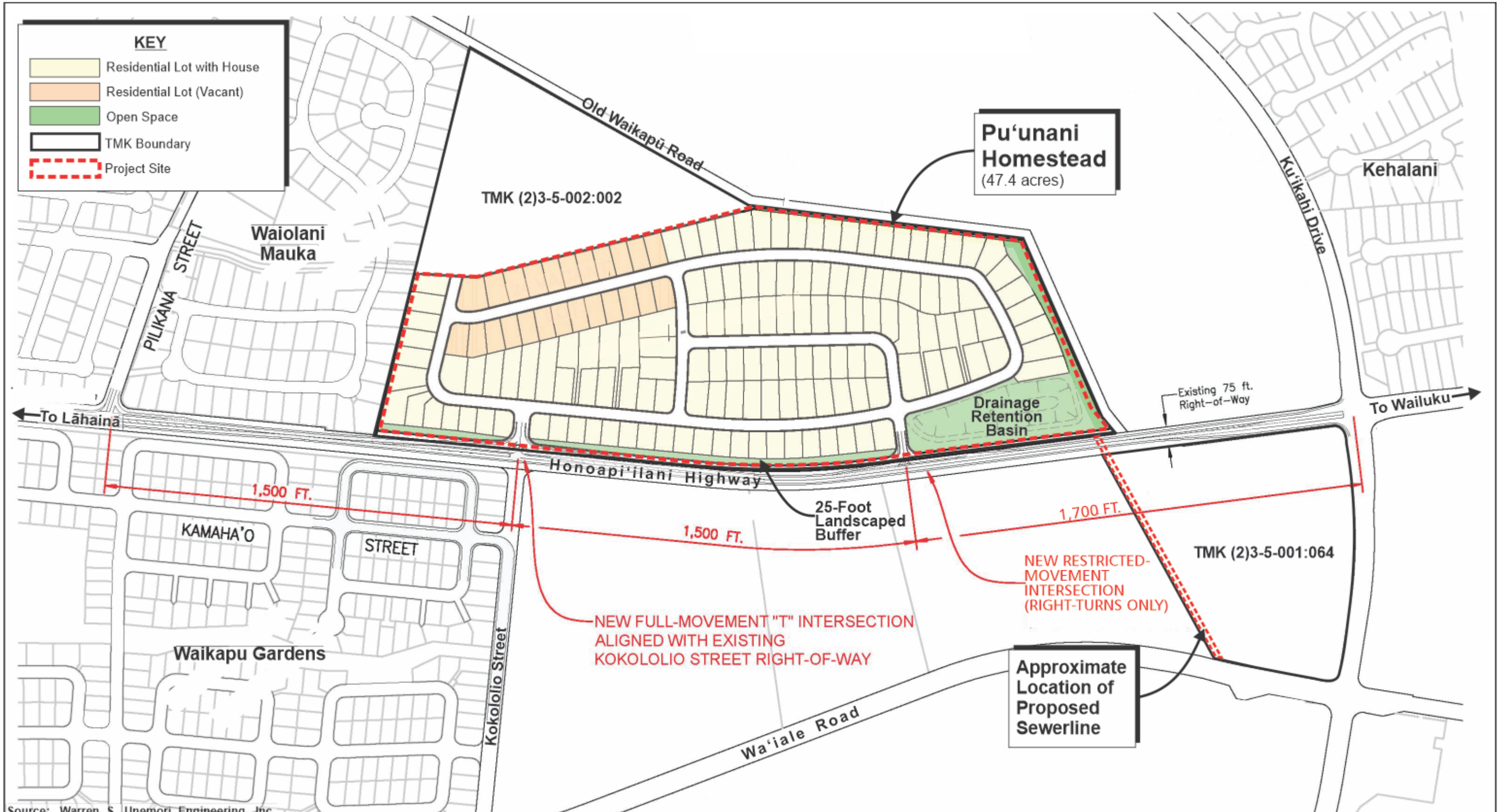
The proposed subdivision will be comprised of a maximum of 161 residential lots for DHHL beneficiaries (137 turn-key single-family homes and 24 vacant improved single-family lots). Each of the 161 lots will be approximately 7,500 square feet in area. The turn-key homes component of the project will feature six (6) different model types, that will provide 3 or 4 bedrooms and 2 to 3 baths and will range in living area from approximately 1,088 square feet (sq. ft.) to 1,674 sq. ft., while the vacant lots will be lessee-built. See **Appendix "A"**. The provision of vacant lots allows beneficiaries the flexibility to build a home not offered as part of the house-lot packages and within a beneficiary's budget. As part of the project, the vacant lots will be improved with graded pads and utility connections stubbed to each lot. No ohana or accessory dwelling units will be permitted on the 161 lots.

Related improvements to be developed with the project include internal roadways, curb, gutter and sidewalks, a drainage detention basin, grading, water, sewer, drainage, utility connections, walls, fences, landscaping improvements, as well as roadway frontage improvements along Honoapiʻilani Highway. The new internal streets will have 44- or 60-foot wide rights-of-way and are expected to conform to current Maui County subdivision standards in all but two respects: 1) internal sidewalks within the subdivision will be

provided on one side of the street; and 2) electrical power and telephone lines will be installed overhead. See **Figure 3**. Roadway improvements on Honoapiʻilani Highway include a road widening lot up to 25 feet wide for the provision of turning lanes, a median refuge lane, and a bike lane, as well as for site distance requirements. In addition, a landscaped lot between the Honoapiʻilani Highway right-of-way and the houselots will be provided along the sloped frontage of the subdivision. Also, an offsite sewerline will cross Honoapiʻilani Highway and run along a portion of TMK No. (2)3-5-001:064 to a connection point on Waiʻale Road.

The proposed subdivision will be accessed via two (2) entrances from Honoapiʻilani Highway. One (1) will be a full-movement "T" intersection in line with existing Kokololio Street right-of-way, which forms the northern boundary of the existing Waikapū Gardens subdivision located makai of Honoapiʻilani Highway, while the other will be a right-turn in and right-turn out only access point located approximately 1,500 feet to the north. A median refuge lane at the Honoapiʻilani Highway/south project access is proposed to allow eastbound left-turn vehicles to turn onto Honoapiʻilani Highway with a two-stage approach. Refer to **Figure 3**. Improvements to the existing Kokololio Street are not proposed as part of the project.

Further, existing monkeypod trees within the Honoapiʻilani Highway right-of-way will need to be removed and replaced with new trees within the shoulder of the right-of-way. There are a total of 34 monkeypod trees that were designated as "exceptional trees" by the County of Maui in December 2018 and which front the property along Honoapiʻilani Highway. The DHHL proposes the 1:1 replacement of these existing 34 trees with new healthy trees as part of the proposed project. The DHHL and its landscape architect will continue to work with the appropriate agencies, including the County of Maui, Department of Parks and Recreation (DPR) and the State of Hawaiʻi, Department of Transportation (DOT), along with the County of Maui's Arborist Committee, and Maui County Council, to obtain the necessary approvals for DHHL's proposed 1:1 replacement. The trees will be spaced to provide access to the DHHL residential subdivision, as well as comply with applicable federal policies for roadway safety and efficiency. At its meeting on February 12, 2020, the Arborist Committee voted to recommend that the Maui County Council remove the exceptional trees designation for those trees along Honoapiʻilani Highway fronting the proposed subdivision. The matter will be referred to the Council for final action. It is also noted that at this same Arborist Committee meeting, the DHHL proposed a 1:1 replacement of the existing trees to provide project access points that comply with applicable federal policies for roadway safety and efficiency.



Source: Warren S. Unemori Engineering, Inc.

Figure 3

Pu'unani Homestead Subdivision
Preliminary Site Plan

NOT TO SCALE

Prepared for: State of Hawai'i, Department of Hawaiian Home Lands

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D. LAND USE REGULATORY CONSIDERATIONS

The 47.4-acre project site has been designated for "Agricultural" use by the State Land Use Commission, Maui County Zoning, and Wailuku-Kahului Community Plan, with a portion of the site also being designated "SF, Single-Family" by the Wailuku-Kahului Community Plan. The site of the proposed sewerline installation is designated for "Urban" use by the State Land Use Commission, "Agriculture" by the Wailuku-Kahului Community Plan, and "Agriculture" by Maui County Zoning.

As previously stated, Parcel 2 is under the jurisdiction of the DHHL. The mission of the DHHL is to effectively manage the Hawaiian Home Lands trust and to develop and deliver land to native Hawaiians. The HHCA vests onto the DHHL, the authority to use its lands at its discretion. Specifically, HHCA Section 204 states, *"all available lands shall immediately assume the status of Hawaiian home lands and be under the control of the department to be used and disposed of in accordance with the provisions of this Act"*.

As such, the DHHL has implemented its own planning system consisting of a General Plan, Island Plans, community-specific Regional Plans, project-specific Program Plans, and Special Area Plans. The DHHL Maui Island Plan (MIP), adopted in 2004, serves as a comprehensive resource for planning and managing the Maui island lands and establishes land use designations to encourage orderly social, physical, and economic development. Because the lands on which the proposed subdivision will be developed have recently been acquired by the DHHL, they are not yet designated for a specific use within the DHHL MIP. However, because the DHHL has vested authority for the use of their lands, the DHHL is able to proceed with the project without the lands being fully entitled for residential use. Acquiring these lands is consistent with a residential goal of the DHHL MIP to secure additional lands in Central Maui to meet the beneficiary demand for residential homesteads.

E. CHAPTER 343, HAWAIʻI REVISED STATUTES, ENVIRONMENTAL ASSESSMENT

As previously mentioned, Parcel 2 is owned by the DHHL. In addition, improvements are proposed to Honoapiʻilani Highway, a State-owned right-of-way. The proposed project will also utilize State and private funds. The use of State lands and State funds trigger compliance with the environmental review requirements of HRS, Chapter 343. As such, this Draft Environmental Assessment (EA) has been prepared pursuant to Chapter 343, HRS and Chapter 200.1 of Title 11, Hawaiʻi Administrative Rules (HAR). Accordingly, this document addresses the technical characteristics and potential environmental impacts of the proposed project, as well as advances findings and mitigative measures relative to the project.

The HHC will serve as the approving agency for the EA.

F. ESTIMATED CONSTRUCTION SCHEDULE AND COSTS

Based on the DHHL's current design, permitting, and development schedule, site work and home construction is targeted to begin following receipt of all applicable permit approvals. The 24 vacant improved lots will be lessee-built and subject to each lessee's timeline. The estimated direct project construction cost is $72.3 million for lot development, installation of infrastructure, and construction of turn-key homes.

DESCRIPTION OF THE EXISTING CONDITIONS, POTENTIAL IMPACTS AND MITIGATION MEASURES

II

II. DESCRIPTION OF THE EXISTING CONDITIONS, POTENTIAL IMPACTS AND MITIGATION MEASURES

A. PHYSICAL SETTING

1. Surrounding Land Use

a. Existing Conditions

The project site, comprised of the approximately 47.4 acres of the proposed homestead subdivision as well as the area for the proposed sewerline, is located in northern Waikapū. The subdivision site is located mauka of Honoapiʻilani Highway, which borders the site to the east, and makai of the Old Waikapū Road, which borders the site to the northwest. Directly to the south and adjacent to the property is the existing Waiolani Mauka subdivision. Waikapu Gardens is located southeast of the site, across Honoapiʻilani Highway. Vacant agricultural lands are located immediately to the north and west of the property, with the Kehalani Project District located beyond to the north across Kuʻikahi Drive. The site of the proposed sewerline is within a vacant parcel located just makai of Honoapiʻilani Highway to the northeast. Refer to **Figure 2**. Although this site is currently vacant, it is entitled for the development of the Wailuku Apartment Rental Housing Project. Various other residential developments and a handful of small locally owned businesses comprise the general land use fabric of this area of Waikapū. Refer to **Figure 1**.

b. Potential Impacts and Mitigation Measures

The proposed project is located adjacent to existing infrastructure and in an appropriate location adjacent to urbanized areas of Wailuku. The proposed project is compatible with the surrounding existing uses of the area. In the context of surrounding land uses, the proposed project is not anticipated to have a significant adverse effect on the surrounding landscape. The proposed project will provide much needed homesteading opportunities for Department of Hawaiian Home Lands' (DHHL) beneficiaries through the provision of 161 lots available for lease.

2. Climate

a. Existing Conditions

Maui's climate is relatively consistent throughout the year. The island's climate varies as the terrain changes. Characteristic of Maui's climate, the

proposed project site experiences mild and uniform temperatures year-round, moderate humidity and consistent trade winds.

Average temperatures at the general project area (based on temperatures recorded at Kahului Airport) range from the low 60s to high 80s (Fahrenheit). August is historically the warmest month, while February is the coolest. Annual precipitation rainfall average is approximately 20 inches per year (Maui County Data Book, 2018). Winds blow predominantly out of the north-northeasterly direction.

b. Potential Impacts and Mitigation Measures

The proposed action will occur on parcels formerly used for agricultural cultivation which are now mostly vacant aside from cattle grazing on the proposed 47.4-acre subdivision site, and will be located in the midst of other similar residential developments. The proposed project is not anticipated to have an adverse effect on climate.

3. Topography and Soil Conditions

a. Existing Conditions

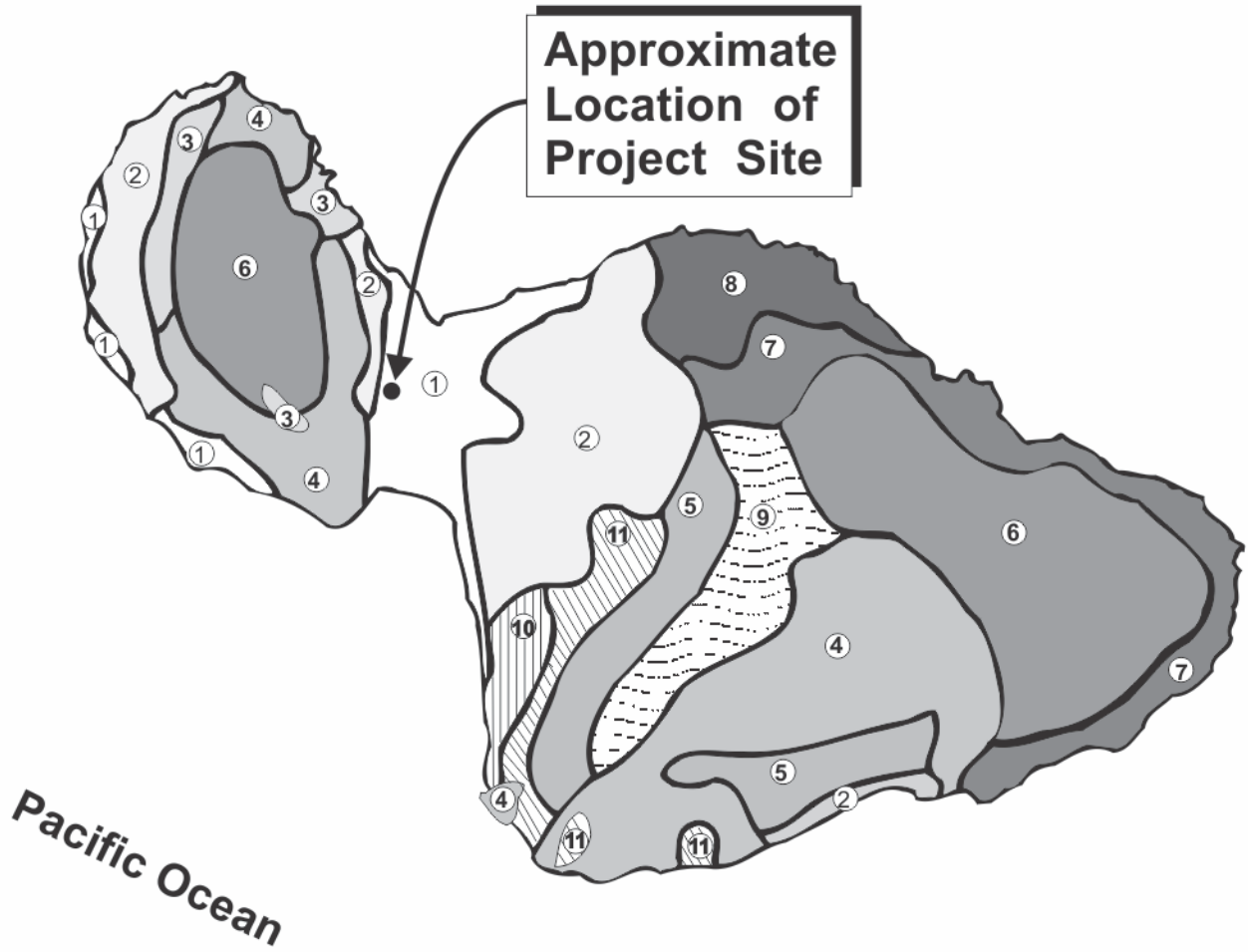
Elevations across the 47.4-acre proposed subdivision site range from approximately 380 feet to 450 feet. The existing terrain slopes steadily downward from west to east across the site at a slope of approximately 7 to 8 percent. See **Appendix "L"**, Preliminary Engineering Report.

Underlying the project site and surrounding area are soils belonging to the Pulehu-Ewa-Jaucus association. According to the Soil Survey of the Islands of Kaua'i, O'ahu, Maui, Moloka'i, and Lāna'i, State of Hawai'i, prepared by the United States Department of Agriculture Soil Conservation Service, these soils are characterized as having a slight to moderate erosion hazard (Foote et al, 1972). See **Figure 4**.

The project area is located on soils identified as Iao Silty Clay (IaA), Iao Clay (IcB) and Iao Cobbly Silty Clay (IbB). These soils are reported to produce a low to medium amount of runoff and represent a slight to moderate erosion hazard. See **Figure 5**.

LEGEND

- ① Pulehu-Ewa-Jaucas association
- ② Waiakoa-Keahua-Molokai association
- ③ Honolua-Olelo association
- ④ Rock land-Rough mountainous land association
- ⑤ Puu Pa-Kula-Pane association
- ⑥ Hydrandepts-Tropaquods association
- ⑦ Hana-Makaalae-Kailua association
- ⑧ Pauwela-Haiku association
- ⑨ Laumaia-Kaipoipoi-Olinda association
- ⑩ Keawakapu-Makena association
- ⑪ Kamaole-Oanapuka association



Map Source: U.S. Department of Agriculture, Soil Conservation Service, 1972

Figure 4 Pu‘unani Homestead Subdivision
Soil Association Map

NOT TO SCALE

Prepared for: State of Hawai‘i, Department of Hawaiian Home Lands

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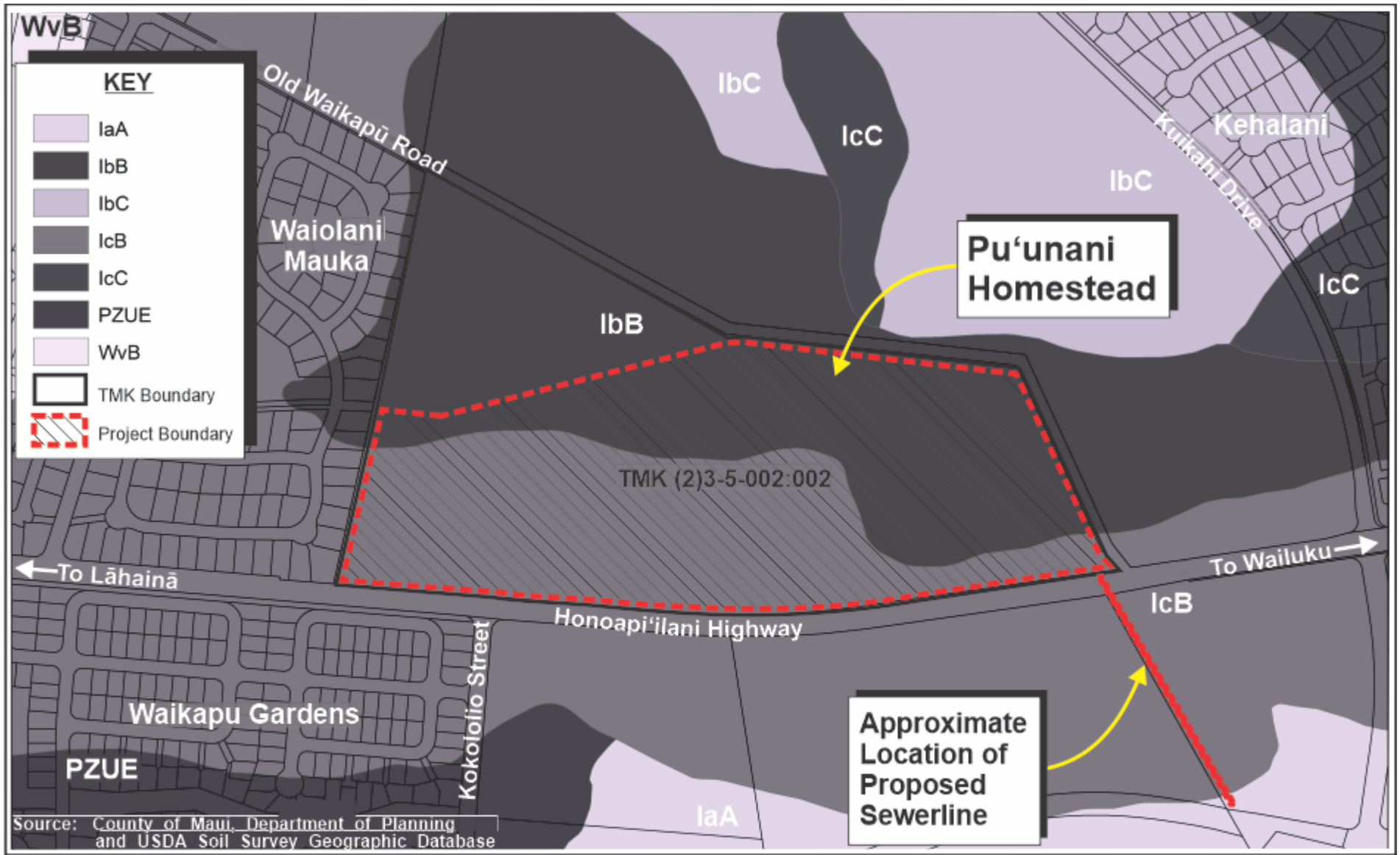

Figure 5

Pu'unani Homestead Subdivision
Soil Classification Map

0 125 250 500 Feet

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b. Potential Impacts and Mitigation Measures

The 47.4-acre subdivision project site was previously used for agriculture, and is currently used for cattle grazing and is otherwise vacant and undeveloped. The project grading concept considers the balancing of cut and fill quantities to reduce the import and/or export of earthwork material and to ensure that the building height standards can be met. Best Management Practices (BMPs) will be implemented during construction to minimize impacts from soil erosion resulting from wind and water (e.g., dust and silt fencing, watering for dust control, etc.). An application for a National Pollutant Discharge Elimination System (NPDES) permit will be submitted to the State Department of Health (DOH) for review and approval prior to the start of construction of the proposed subdivision. Grading permits will also be applied for the proposed subdivision and sewerline. The underlying soils do not pose limitations with respect to project constructability. The proposed project is not anticipated to have an adverse effect on topography and soils. Refer to **Appendix "L"**.

4. Agricultural Productivity Considerations

a. Existing Conditions

In 1977, the State Department of Agriculture developed a classification system to identify Agricultural Lands of Importance to the State of Hawai‘i (ALISH). The classification system is based primarily, but not exclusively, on the soil classification of the land. The three (3) categories are "Prime", "Unique" and "Other Important" agricultural lands, with all remaining lands identified as "Unclassified".

"Prime" agricultural lands have soil quality, growing season, and moisture supply needed to produce sustained high yield crops economically. "Unique" agricultural lands possess a combination of soil quality, growing season, and moisture supply to produce sustained high yields of specific crop. "Other" important agricultural lands are lands that have not been rated "Prime" or "Unique" agricultural lands that are also of statewide or local importance for agricultural use.

As previously stated, the project site is located in an area of Waikapū that was formerly utilized for agricultural purposes for multiple decades. As such, the project site is located within the ALISH's "Prime" land area. See **Figure 6**.

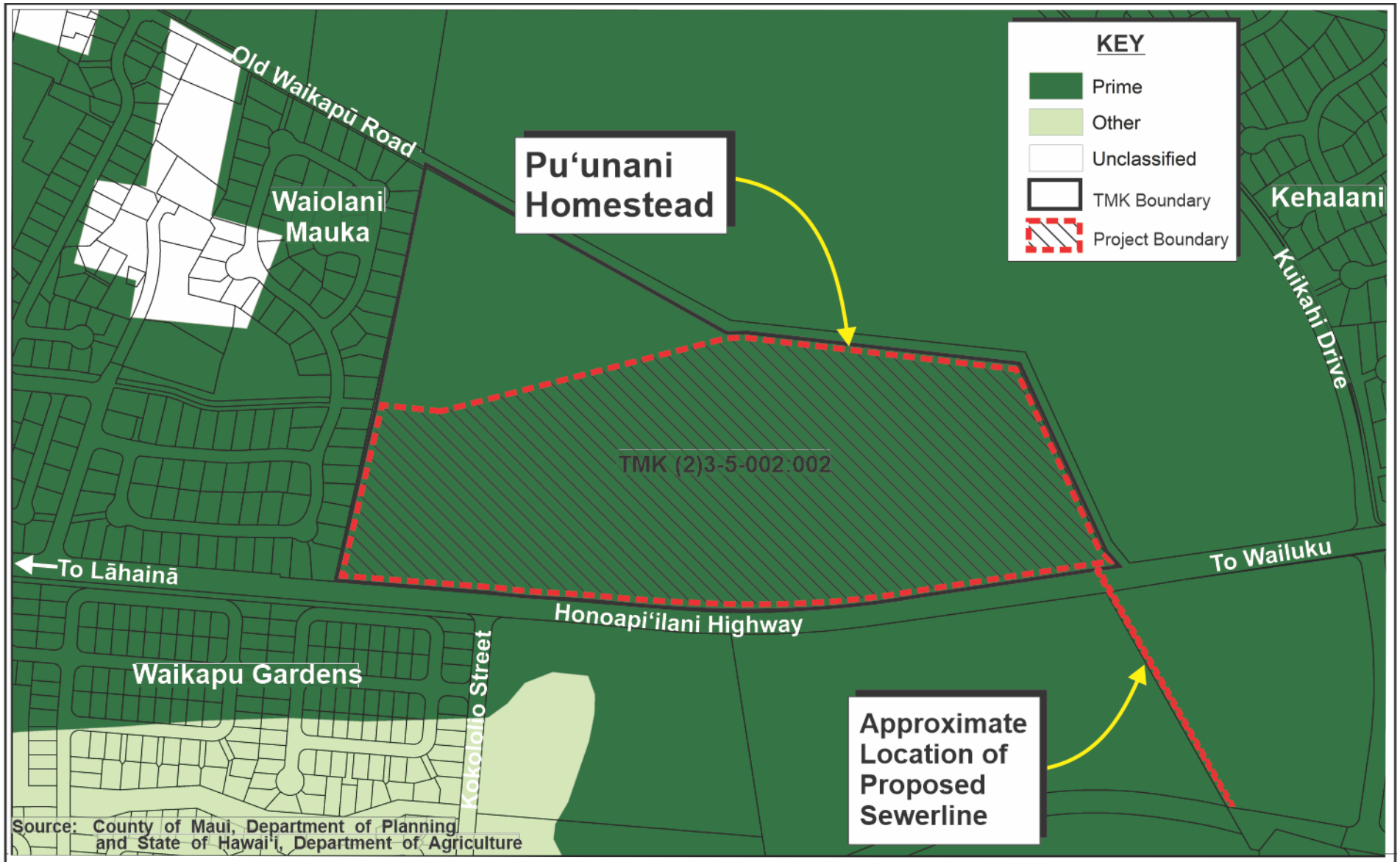

Figure 6

Pu'unani Homestead Subdivision

Agricultural Lands of Importance to the State of Hawai'i

0 250 Feet
125 500

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Separately, the University of Hawaiʻi, Land Study Bureau (LSB) developed the Overall Productivity Rating, which classified soils according to five (5) productivity levels, with "A" representing the class of highest productivity soils and "E" representing the lowest.

The project site has been classified "A" by the LSB. See **Figure 7**.

b. Potential Impacts and Mitigation Measures

The proposed project will utilize the property for needed residential homesteads for DHHL beneficiaries. The proposed subdivision is considered an infill development, as the property is located adjacent to existing urbanized areas with other similar residential subdivisions, while the proposed sewerline will occur on a currently undeveloped parcel. The proposed actions will occur on properties that although are currently agriculturally unproductive, aside from grazing, which has occurred at the site for over 20 years, were once in active agricultural production. As the lands are not currently actively cultivated, there are no adverse impacts to agriculturally productive lands as a result of the proposed action.

5. Flood, Tsunami, and Sea Level Rise

a. Existing Conditions

The Flood Insurance Rate Map (FIRM), Geographic Information System (GIS) layer provided by the United States (U.S.) Federal Emergency Management Agency (FEMA) indicates the project site is situated in Flood Zone X, outside both the floodplain and tsunami zone. Flood Zone X (unshaded) represents areas outside of the 0.2 percent annual chance flood plain and there are no restrictions upon development within this zone.

The project site does not experience any significant local flooding problems due to its location in Waikapū's gently sloping mauka to makai topography.

A 3.2-foot rise in sea level is projected for the Hawaiian Islands by the mid-to-latter half of the 21st century based on the findings of the Hawaiʻi Sea Level Rise Vulnerability and Adaptation Report that was prepared in 2017 by the Hawaiʻi Climate Change Mitigation and Adaptation Commission. (Hawaiʻi Climate Change Mitigation and Adaptation Commission, 2017). It is noted that the project site is located inland and outside of the projected 3.2-foot sea level rise exposure area.

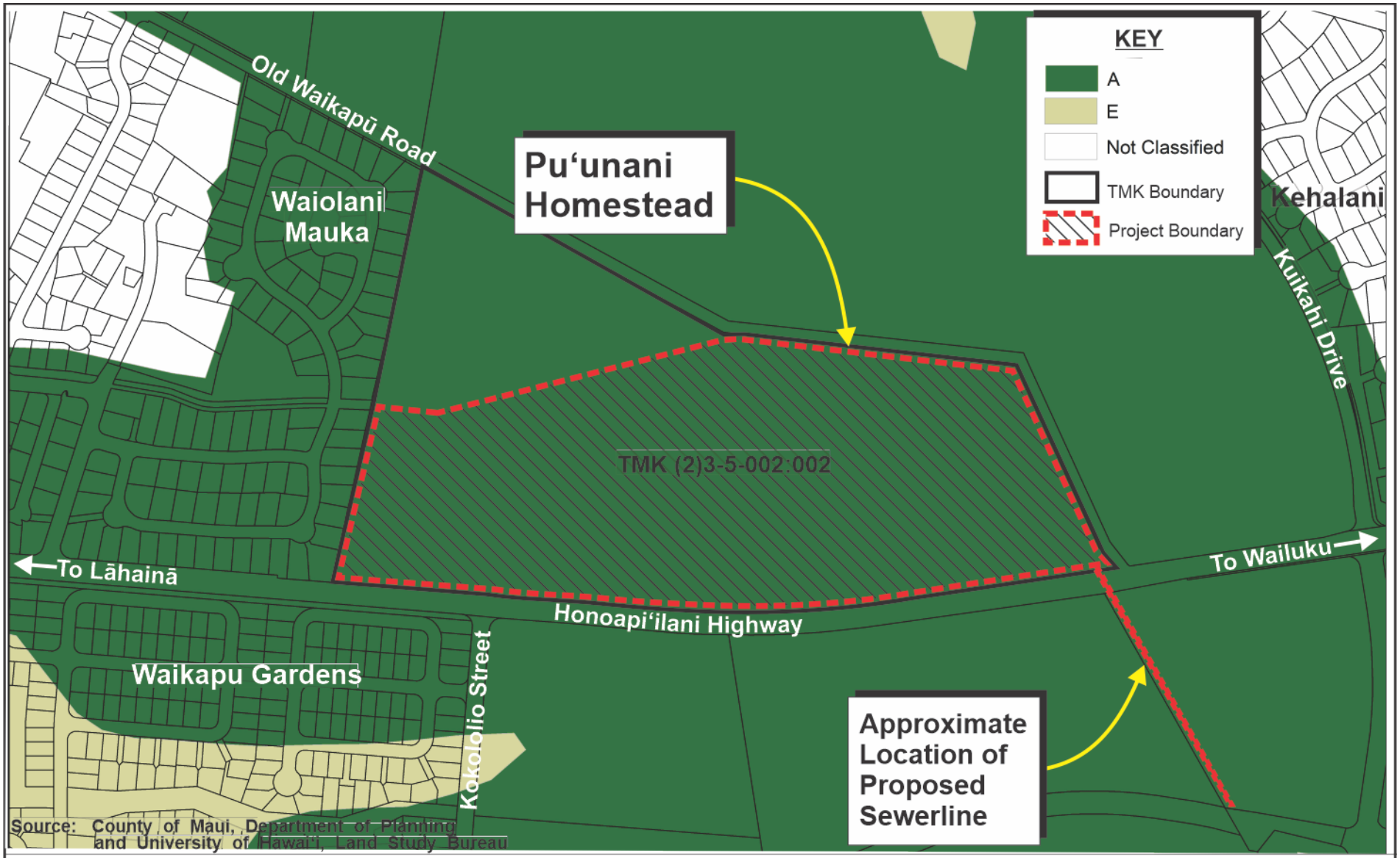

Figure 7

Pu'unani Homestead Subdivision

Land Study Bureau

0 125 250 500 Feet

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b. Potential Impacts and Mitigation Measures

The development of the proposed project will comply with County of Maui's drainage standards and will utilize stormwater runoff BMPs during construction. There are no significant adverse impacts to drainage conditions and flooding anticipated as a result of the proposed project. Accordingly, significant adverse impacts associated with floods, tsunamis, and sea level rise are not anticipated.

6. Streams and Wetlands

a. Existing Conditions

A natural, typically dry drainageway (gully) that originates in the West Maui Mountains traverses through the northernmost portion of Parcel 2, and also through Parcel 64. See **Figure 8**. The drainageway ultimately empties into a dry overflow basin in the Waiʻale Reservoir.

The Waikapū Stream is located approximately 3,000 feet to the south of the project site. Waikapū Stream is a perennial stream which originates in the upper reaches of Waikapū Valley, ultimately discharging into Keālia Pond in the Māʻalaea flats. There are no known wetlands or other water bodies on or in the vicinity of the project site.

b. Potential Impacts and Mitigation Measures

The project site is located in the midst of residential developments in Waikapū. Appropriate BMPs will be used during construction and applicable drainage detention measures provided for the long-term habitation of the site. DHHL will make every effort to ensure that the project, including the proposed sewerline, will not have a direct impact upon the natural drainageway, Waikapū Stream, or any other waterbody in the region.

7. Flora and Fauna

a. Existing Conditions

A flora and fauna survey and assessment of the 47.4-acre project site was conducted in June 2019 by Robert W. Hobdy, Environmental Consultant. The objectives of the survey were to document what plant and animal species occur on the property; document the status and abundance of each species; determine the presence of any native flora and fauna, particularly

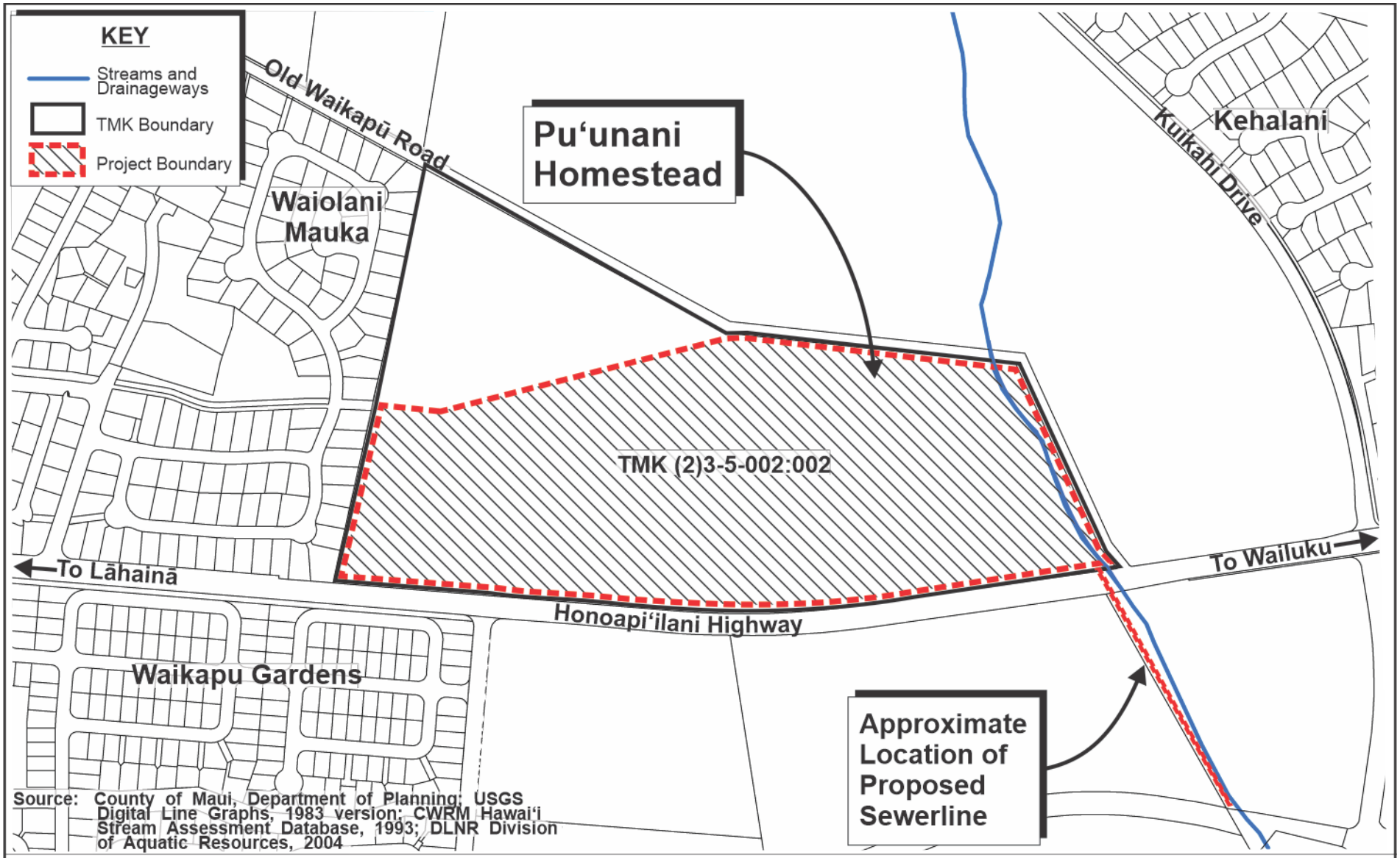

Figure 8

Pu'unani Homestead Subdivision

Streams and Drainageways Map

0 250 Feet
125 500

Prepared for: State of Hawai'i, Department of Hawaiian Home Lands

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any that are federally listed as threatened or endangered, and if such occur, identify what features of the habitat may be essential for these species; and to determine if the project area contains any special habitats, which if lost or altered might result in a significant negative impact on the flora and fauna in the vicinity of the project. See **Appendix "B"**.

In terms of flora, the project site is dominated by one (1) non-native grass species, the hardy Guinea grass (*Megathyrsus maximus*) which was found throughout all parts of the area. Four (4) other species were common, the koa haole (*Leucaena leucocephala*), sourgrass (*Digitaria insularis*), balloon plant (*Asclepias physocarpa*) and glycine (*Neonotonia wightii*). A total of 65 plant species were recorded as part of the survey. Sixty-two (62) of these were not native to Hawai'i and are considered to be pasture grasses or agricultural weeds. Two (2) species were Polynesian plants brought to Hawai'i by the Hawaiians centuries ago. These were the kukui (*Aleurites molucccana*) and the niu or coconut (*Cocos nucifera*), both of which had been recently planted. The only native species recorded was the 'uhaloa (*Waltheria indica*) which is common throughout drier habitats in Hawai'i and is also native to many other Pacific islands as well. No endangered or threatened plant species were found and none of the species observed on the property are candidates for such status. The disturbed environment was not found to include any special habitats of plant species or ecosystems. Refer to **Appendix "B"**.

Six (6) non-native species of mammals were seen during three (3) separate site visits. These species included cattle (*Bos Taurus*), pigs (*Sus scrofa*), dogs (*Canis familiaris*), horses (*Equus caballus*), mongoose (*Herpestes auropunctatus*) and axis deer (*Axis axis*). While not seen as part of the survey, the report noted the possible occurrence of mice (*Mus domesticus*), rats (*Rattus spp.*), and domestic cats (*Felis catus*). A special effort was made to observe the endangered 'ōpe'ape'a or Hawaiian hoary bat by conducting an evening survey with the use of a bat detecting device. No evidence of the 'ōpe'ape'a was observed or heard. The report noted birdlife was modest in both species diversity and in total numbers. A total of ten (10) non-native species were observed during three (3) site visits. Four (4) species were common, the zebra dove (*Geopelia striata*), spotted dove (*Streptopelia chinensis*), common myna (*Acridotheres tristis*) and black francolin (*Francolinus francolinus*). Five (5) other species were uncommon, and one (1) was rare. No native birds were seen. Insects were reported as modest in numbers. A total of twelve (12) species were observed during three (3) site visits. Three (3) species were common throughout the project area, the monarch butterfly (*Danaus plexippus*), the globe skimmer dragonfly (*Pantala flavescens*) and dung fly (*Musca*

sorbens). Another three (3) species were uncommon, the house fly (*Musca domestica*), the sleepy orange butterfly (*Eurema niccipe*) and the pinao or green darner dragonfly (*Anax junius*). Six (6) other insect species were rare. The two (2) dragonfly species, the pinao and the globe skimmer, are indigenous Hawaiian species that are native to Hawaiʻi, but which also occur naturally in other parts of the world. Refer to **Appendix "B"**.

In addition, a Biological Resources Survey was prepared in 2017 for the proposed Wailuku Apartment Rental Housing Project, which is planned to be developed on Tax Map Key (2)3-5-001:064 (Parcel 64), and is the property on which the proposed sewerline for the Puʻunani Homestead Subdivision project will also be constructed. Similar to the 47.4-acre site, Parcel 64 was also noted to be dominated by non-native flora species including Guinea grass and glycine. A total of 65 plant species were recorded, including four (4) common native plants, the ʻuhaloa, kou (*Cordia subcodata*), (*Cyperus polystachyos*) no common name, and koala kua hulu (*Merremia aegyptia*). No endangered or threatened plant species were found and none of the species observed at the site are candidates for such status. Similarly, the wildlife within Parcel 64 was also characterized as nearly all non-native species except for two (2) indigenous dragonflies, the green darner (*Anax junius*), and the globe skimmer, which are commonly found. See **Appendix "C"**.

As noted previously, there are existing monkeypod trees within the Honoapiʻilani Highway right-of-way that are proposed to be removed and replaced with new healthy trees within the shoulder of the proposed road widening lot to provide safe access to the DHHL residential subdivision. The existing trees appear to be in poor condition. There are a total of 34 monkeypod trees that were recently designated as "exceptional trees" by the County of Maui and which front the property along Honoapiʻilani Highway. At its meeting on February 12, 2020, the Maui County Arborist Committee voted to recommend removal of the exceptional trees designation for those trees along Honoapiʻilani Highway fronting the proposed subdivision to allow the project to be able to provide access points that comply with applicable federal policies for roadway safety and efficiency.

b. <u>Potential Impacts and Mitigation Measures</u>

As discussed above, the flora and fauna present at the two (2) properties are largely represented by non-native species. Just one (1) native plant species and two (2) indigenous dragonflies were identified at the site of the proposed subdivision, while four (4) common native plants and the same

two (2) indigenous dragonflies were observed at the property on which the proposed sewerline will be constructed. Both reports noted that these species are common in Hawaiʻi and native in other parts of the world. The flora and fauna report for the proposed Puʻunani Homestead Subdivision project concluded that the development of the project is not expected to result in any significant negative impacts on native plant communities in this area of Maui. The report also noted that no endangered or threatened animal species were found on the property as part of the survey, nor were any animal species candidates for such status. The report further concluded that the development of the project is not expected to result in a significant negative impact on native fauna or habitats in this area of Maui. Refer to **Appendix "B"**. Similarly, flora and fauna on Parcel 64 is also characterized as being mostly non-native, except for four (4) common native plants and two (2) indigenous dragonflies which are also commonly found. As such, the report noted that development of the proposed Wailuku Apartment Rental Housing is also not anticipated to result in significant impacts on native flora or fauna. Refer to **Appendix "C"**. The addition of the proposed sewerline to the property is not anticipated to change this finding.

While the ʻōpeʻapeʻa was not detected at either project site, the flora and fauna reports noted that the bats are highly mobile and appear to migrate around in response to flushes in insect activity, wherever it may occur. As such, there is a likelihood that these bats may utilize the habitat on the subject properties at some time during the year. The reports recommended that should these bats be present, the U.S. Fish and Wildlife Service be consulted on how to proceed so that these bats are not harmed or killed. Refer to **Appendix "B"** and **Appendix "C"**.

Furthermore, while not seen at the site, there are two (2) native seabirds, the endangered Hawaiian petrel (*Pterodroma sanwichensis*) and the threatened Newell's shearwater (*Puffinus newelli*), that fly over lowlands during the evenings on their way to their burrows high in the mountains and then fly out to the ocean early in the morning during the summer and fall months. These seabirds, and especially their young fledglings, are attracted to bright lights and can be disoriented and crash. They are then vulnerable to injury, vehicle strikes or predators. The flora and fauna reports recommended that any significant outdoor lighting be shielded to direct the light downward. Refer to **Appendix "B"** and **Appendix "C"**.

With implementation of the above-noted recommended mitigation measures, the development of the proposed project is not anticipated to

result in a significant negative impact on native fauna or habitats in this part of Maui.

Due to the road widening required of Honoapiʻilani Highway, the DHHL proposes the removal of monkeypod trees currently located within the Honoapiʻilani Highway right-of-way. The trees are proposed to be removed from their existing location and replaced with new healthy trees due to the existing trees' poor condition, as well as for sight distance requirements. The DHHL and its landscape architect will continue to work with the appropriate agencies, including the County of Maui, Department of Parks and Recreation (DPR) and the State of Hawaiʻi, Department of Transportation (DOT), along with the County of Maui's Arborist Committee and Maui County Council, to obtain the necessary approvals for DHHL's proposed 1:1 tree replacement to provide safe access to the DHHL residential subdivision. At its meeting on February 12, 2020, the Arborist Committee voted to recommend that the Maui County Council remove the exceptional trees designation for the trees along Honoapiʻilani Highway fronting the proposed subdivision. The matter will be referred to the Council for final action.

8. Archaeological Resources

a. Existing Conditions

A previous Archaeological Inventory Survey (AIS) was conducted in 2005 for two (2) parcels totaling 215.8 acres (TMK Nos. (2)3-5-002:002 and 003), which included the 47.4-acre project site. The AIS was conducted by Scientific Consultant Services, Inc. (SCS) and was comprosed of historic background settlement pattern research, a complete pedestrian survey of the survey area, and subsurface testing via backhoe and reporting. The State Historic Preservation Division (SHPD) accepted the AIS by letter dated November 18, 2005. See **Appendix "D"** and **Appendix "D-1"**.

The fieldwork involved the execution of a complete pedestrian survey of the subject area, as well as lands beyond for the purpose of site inventory and limited subsurface testing to evaluate the significance of any subsurface deposits. Laboratory work consisted of analysis of any subsurface deposits found and literature research review involved a review of all previous archaeological work conducted in the surrounding area.

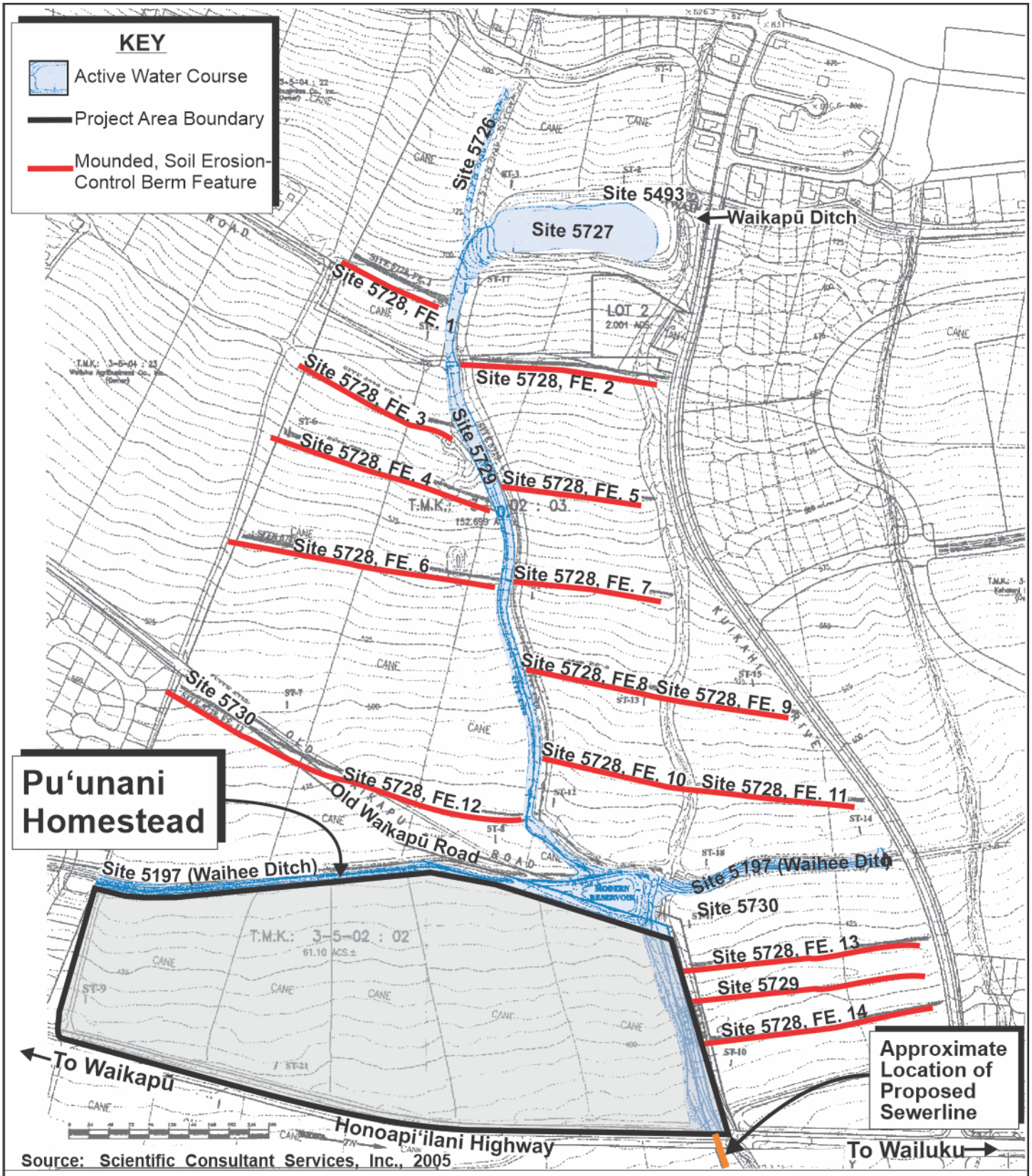
During the field inspection, seven (7) historical sites related to the former use of the area for sugar cane cultivation were identified. The sites were determined significant under Criterion "D" as having the potential to yield information important to understanding the history of the region and were

determined to be adequately documented by SHPD. Refer to **Appendix "D-1"**. The sites included Waihee Ditch (State Site 50-50-04-5197), Waikapū Ditch (State Site 50-50-04-5493), an unnamed lesser ditch (State Site 50-50-04-5729), another unnamed lesser ditch (State Site 50-50-04-5726), a larger unnamed reservoir (State Site 50-50-04-5727), a series of 14 sugar canefield erosion-control soil berms (State Site 50-50-04-5728), and Old Waikapū Road (State Site 50-50-04-5730). All seven (7) sites are located outside of the project area. See **Figure 9**. These sites revealed a network of irrigation systems in the form of ditches and a reservoir, erosion-control berms, and a historic dirt road and are part of the turn-of-the century sugar industry in Hawaiʻi. No burial features or human remains were identified during the pedestrian surveys or subsurface testing.

In addition, an Archaeological Assessment (AA) was prepared for the Wailuku Apartment Rental Housing Project in May 2017 (revised February 2018). See **Appendix "E"**. The investigation was conducted to determine the presence, absence, extent, and significance of surface historic properties (if present) and the potential for buried cultural remains. The assessment was comprised of a 100 percent pedestrian survey with mechanical test excavations. No historic properties were identified during the subsurface investigations. The assessment noted that these negative results may be due to the compounded disturbances across the parcel. The assessment summarized that the overall development plan for the parcel will have no effect on significant historic properties. However, the assessment noted that given that the subject parcel is in close proximity to known, unmarked traditional sand burials (east of the Wailuku Apartment Rental Housing project area), the proposed mitigation would comprise of data recovery in the form of archaeological monitoring. As such, the assessment noted that prior to the commencement of construction activities, an archaeological monitoring plan would be prepared and submitted to SHPD for review and approval. Refer to **Appendix "E"**. Following publication of the Draft EA for the Wailuku Apartment Rental Housing Project, the SHPD accepted the AA and recommended archaeological monitoring. See **Appendix "E-1"**.

b. <u>Potential Impacts and Mitigation Measures</u>

The previous AIS for the 47.4-acre site involved evaluation, documentation, and recordation and when necessary, limited subsurface investigation of recorded sites. Laboratory analysis was also performed, where necessary.



Source: Scientific Consultant Services, Inc., 2005

Figure 9 Pu'unani Homestead

Archaeological Sites Location Map

NOT TO SCALE

Prepared for: State of Hawai'i, Department of Hawaiian Home Lands

MUNEKIYO HIRAGA

DDC\PuunaniHomestead\Applications\Figures\ArchaeologicalSitesLocationMap

As noted previously, the AIS was accepted by SHPD by letter dated November 18, 2005. In their acceptance letter, SHPD concluded that no further archaeological mitigation is necessary. Refer to **Appendix "D-1"**. The project archaeologists, SCS, submitted a Section 6E, HRS form to SHPD on April 5, 2019 to reconfirm SHPD's acceptance of the previous AIS and that no further action is necessary. A copy of the Section 6E, HRS form is attached as **Appendix "F"**.

The AA for Parcel 64 was comprised of a pedestrian survey with mechanical test excavations. It was also noted that the archaeological assessment for Parcel 64 was accepted by SHPD with a recommendation for archaeological monitoring. Refer to **Appendix "E-1"**. The Applicant will coordinate with the developer of the Wailuku Apartment Rental Housing Project to ensure archaeological monitoring of the site for the proposed sewerline construction will be conducted in accordance with the accepted archaeological monitoring plan.

It is further noted that the DHHL, by letter dated March 27, 2020, requested the SHPD's reconfirmation of the previous determinations made on the AIS and AA, and that no further work was required for Parcel 2, and monitoring would be required for the limited work within Parcel 64. The SHPD provided their concurrence via return signature on the March 27, 2020 letter. See **Appendix "G"**.

9. Cultural Resources

a. Existing Conditions

A Cultural Impact Assessment (CIA) report was prepared by Scientific Consultant Services, Inc. (SCS) in order to identify the possibility of ongoing cultural activities and resources within the project area or its vicinity, and then assessing the potential for impacts on these cultural resources. The report contains archival and documentary research involving both published and unpublished sources, including legendary accounts of native and early foreign writers; early historical journals and narratives; historic maps; land records such as Land Commission Awards, Royal Patent Grants, and Boundary Commission records; and previous archaeological reports, as well as information gathered from organizations and individuals having knowledge of the project area, its cultural resources, and its practices and beliefs through written responses to requests for information, as well as through voluntary interviews conducted. See **Appendix "H"**.

According to the CIA report, the project site is located within the Central Maui isthmus, between Wailuku and Māʻalaea. Traditionally, lands within Hawaiʻi were divided into *moku* (districts), which were then subdivided into *ahupuaʻa*, which were land divisions governed by chiefs that customarily ran from the ocean inland into the mountains. Extended household groups living within the *ahupuaʻa* were, therefore, able to harvest from both the land and the sea. *Ahupuaʻa* were further divided into *ʻiliʻāina* and then *moʻo ʻāina*. The project site is located within the *moku* of Wailuku, and *ahupuaʻa* of Waikapū. The *ahupuaʻa* of Waikapū was one (1) of four (4) in Wailuku, which were collectively known as "Nā Wai ʻEhā", or "the four waters", which refers to the valleys and streams in each of these *ahupuaʻa*. The Waikapū *ahupuaʻa* was once rich in taro farming with water being diverted from the stream into loʻi kalo. Refer to **Appendix "H"**.

During the mid-1800s, extreme modification to traditional land tenure occurred throughout all of the Hawaiian islands. The transition from traditional Hawaiian communal land use to private ownership and division was commonly referred to as the *Māhele* (Division). The *Māhele* of 1848 set the stage for vast changes to land holdings within the islands as it introduced the western concept of land ownership to the islands. The *Māhele* divided lands between the king, the chiefs, the government, and began the process of private ownership of lands. The subsequently awarded parcels were called Land Commission Awards (LCAs). Once lands were made available and private ownership was instituted, the *makaʻāinana* (commoners) were able to claim the plots on which they had been cultivating and living. The Wailuku District was declared Crown Land and numerous LCAs were awarded for Waikapū *ahupuaʻa* which reflect continued loʻi cultivation, kula lands, and house sites. Refer to **Appendix "H"**.

As the sugar industry developed in the mid-1800s, sugar cane took over the traditional taro lands. Land use in the Waikapū *ahupuaʻa* in the mid-19th and early 20th century was largely devoted to the sugar industry. During the 1860s, the sugar business grew, with plantations and mills operating at Wailuku, Waiheʻe, Waikapū, and Haʻikū. Refer to **Appendix "H"**.

Wahi pana can be defined as celebrated or noted places or locations. There are several legends associated with the meaning of the name Waikapū. According to several accounts, the name Waikapū (Water of the Conch) refers to an ancient cave in the area where a famous conch shell (pū) was hidden until it was stolen by Puapua-lenalena (a supernatural dog). Other accounts tell of the area known as Nā Wai ʻEhā, which is

renowned for the battles fought there. The name Waikapū (the water where the conch was blown) referred to a conch shell that was blown to announce the commencement of a battle. In another account, Waikapū (Forbidden Water) refers to the time Kamehameha I beached his canoes at Kalepolepo and placed a *kapu* (taboo, restriction) on the nearest stream. In addition, although it has been said that Waikapū Valley contained "many temples and sites", most of their locations were not recorded. Refer to **Appendix "H"**.

The consultation process for preparation of the CIA report was conducted via telephone, email, U.S. Postal Service, and in-person interviews when possible. Initial letters of inquiry were mailed between July 30, 2019 and March 31, 2020 to 25 individuals to obtain information pertaining to cultural resources and traditional cultural practices conducted within the project area or within Waikapū Ahupuaʻa. Follow-up letters of inquiry were also emailed and sent via U.S. Postal Service between August 30, 2019 and December 12, 2019. In addition, a CIA Notice was also published in the September 2019 issue of *Ka Wai Ola*, the newsletter of the Office of Hawaiian Affairs (OHA) requesting information.

To date, no responses were received as a result of the posting in the OHA newsletter. In addition, ten (10) responses to the request for information were received via email, and one (1) telephone interview was conducted. A summary of the interview is included in the CIA prepared for the project. See **Appendix "H"**. The responses received yielded suggestions for additional persons to contact for information. The responses and interview also allow for an assessment of the potential effects on cultural resources in the project area, and recommendations for mitigation of these effects. It is noted that further interviews may be scheduled with identified cultural informants. Should additional interviews be conducted, the CIA will be updated and incorporated into the Final EA for the proposed Puʻunani Homestead Subdivision project, prior to publication.

The report noted that the findings of the current CIA did not identify "valued cultural and natural resources" specifically within the project area for the Puʻunani Homestead Subdivision project. However, the CIA did note that there are ongoing traditional cultural practices, consisting primarily of taro cultivation, within the Waikapū Ahupuaʻa on lands near the site of the proposed subdivision which may be impacted by the proposed development. In addition, the consultation process identified a unique cultural property, the grinding stone known as Pōhākoʻi, which may be in close proximity to the northwestern boundary of the proposed subdivision, however, the CIA noted that the exact location of Pōhākoʻi is unknown and

it is not known if Pōhākoʻi remains in situ or if it has been previously relocated. Refer to **Appendix "H"**.

The CIA also noted that findings of previous archaeological studies conducted in the vicinity and the traditional and historic background research indicate Waikapū Ahupuaʻa was not only an area rich with traditional and customary practices during the pre-Contact and early-Historic Periods, it was renowned for its extensive loʻi fields. One (1) traditional practitioner and lineal descendant is currently living within the Waikapū Ahupuaʻa on land near the proposed subdivision area and actively cultivates wet land taro on their property. The CIA noted that water is integral for any agricultural pursuit and is a necessary resource for the traditional practice of wet land taro. As such, there is the potential for the proposed Puʻunani Homestead Subdivision project to impact the Wailuku/Waikapū aquifer systems and surface water systems known as Nā Wai ʻEhā. Refer to **Appendix "H"**.

Because the proposed sewerline that will service the proposed subdivision will be developed on the property for the Wailuku Apartment Rental Housing Project, the CIA for the proposed Puʻunani Homestead Subdivision project also references the findings from the CIA report prepared for the Wailuku Apartment Rental Housing Project. The CIA did not identify traditional cultural practices currently conducted in or near the Wailuku Affordable Housing project area and no concerns were expressed regarding impacts to traditional cultural practices or the gathering of cultural resources. Refer to **Appendix "H"**.

b. <u>Potential Impacts and Mitigation Measures</u>

The CIA noted that based on historical research and responses received during the consultation process, it is reasonable to conclude that there is evidence of cultural practices related to Hawaiian rights related to agricultural pursuits, access to resources (i.e., water), and possibly other customary activities presently occurring in the vicinity of the proposed project area. As such, ground altering activities associated with the proposed Puʻunani Homestead Subdivision project has the potential to impact currently conducted, traditional native Hawaiian activities. This determination has been substantiated by the cultural-historical background, the summarized results of prior archaeological studies in the project area, and in the neighboring areas, and primarily in the concerns expressed by the cultural informants during the consultation process of the CIA. Refer to **Appendix "H"**.

In light of the above, the CIA provided the following recommendations:

> *As the location of the legendary grinding stone (Pōhākoʻi) is currently unknown, it is recommended that an archaeological field inspection be conducted by a qualified archaeologist prior to the commencement of any construction related ground altering activities in an effort to locate this cultural feature.*

The recommendation will be adhered to by the DHHL. As noted above, should additional interviews be conducted with cultural informants, the CIA will be updated prior to publication of the Final EA for the proposed Puʻunani Homestead Subdivision project. Refer to **Appendix "H"**.

10. Air Quality

a. Existing Conditions

There are no point sources of airborne emissions in the immediate vicinity of the project site. Although minimal, airborne pollutants are largely attributable to vehicular traffic on the surrounding roadways. Windblown dust from surrounding fallow agricultural lands is another source of indirect emissions in the region. These sources, however, are intermittent and prevailing winds quickly disperse the particulates generated by these temporary sources. Overall, the air quality in the region is considered good.

b. Potential Impacts and Mitigation Measures

In the short term, construction-related activities for the proposed project will be the primary source of airborne pollutants affecting the surrounding area. Site work involving clearing, grubbing, and grading operations will generate fugitive dust. Appropriate BMPs, such as periodic watering of exposed surfaces, installation of dust screens, and regular maintenance of construction equipment will be utilized to minimize air quality impacts associated with project construction.

The proposed project is not an action which will generate adverse long-term air quality impacts. In the long term, the proposed project will provide homesteading opportunities for DHHL beneficiaries. The proposed residential lots are not anticipated to have an adverse effect upon air quality.

11. Greenhouse Gas Considerations

a. Existing Conditions

Greenhouse gases (GHG) (carbon dioxide, methane, nitrous oxide and fluorinated gases) trap heat in the earth's atmosphere. In the context of climate and ocean warming, increases in levels of atmospheric GHG have been attributed to human activity (IPCC, 2017). Within the State of Hawai'i, the energy sector (including fossil fuel burning to produce electricity, transportation, waste incineration, and natural gas systems) is identified as the source of 89.7 percent of GHG emissions (Hawai'i Department of Health, 2019). Other sources of GHG emissions include industrial facilities, agriculture and forestry, and waste treatment such as landfills, composting, and wastewater treatment.

The Federal Greenhouse Gas Reporting Program (40 CFR Part 98) requires mandatory reporting of GHG emissions from sources that emit 25,000 metric tons or more of carbon dioxide equivalent (CO_2 EQ) per year in the United States. Categories of use which are generally associated with this level of reporting include power plants, petroleum and natural gas systems, refineries, and other heavy manufacturing processes. On Maui, the facilities operating at or above the 25,000 metric ton level include Hawaiian Electric Company's Kahului Power Plant, Maalaea Power Plant, and the Central Maui Landfill (United States Environmental Protection Agency (U.S. EPA) 2017).

b. Potential Impacts and Mitigation Measures

The proposed action involves the construction of 161 residential lots (137 turn-key single-family homes and 24 vacant improved single-family lots). In the context of the GHG Reporting Program (25,000 metric tons of CO_2 EQ), the relative effects of GHG emissions (CO_2 EQ) from the project are not considered significant.

The average energy use per household in Maui County[3] is 581 kilowatt hours (kWh) per month (Hawai'i Energy, 2017). This corresponds roughly to production of 4.9 metric tons CO_2 EQ per year (U.S. EPA, 2018). As such, the GHG emissions associated with the proposed development of

[3] Honolulu = 561 kWh/month; Hawai'i = 505 kWh/month. These are county-wide averages. If the proposed residences incorporate solar photovoltaic energy generation or other sustainable elements which would reduce energy consumption below average levels, this can be addressed as a mitigating factor.

161 single-family residences is anticipated to be on the order of 788.9 metric tons CO_2 EQ per year.

The proposed action will involve short-term consumption of fuel for construction equipment, vehicles, and machinery during the construction period. This usage is not anticipated to be substantial or excessive within the context of the action's benefits over the lifetime of the project. After the project is completed, use of the proposed facilities may result in increased motor vehicle traffic in the project area. Statewide, vehicle-related fuel consumption for commercial, industrial, and residential sectors is a less significant contributor to total GHG emissions than emissions attributable to electricity consumption (Hawai‘i Department of Health, 2019), and this contribution is anticipated to continue to decrease due to ongoing reduction in vehicle emission standards as well as increased utilization of hybrid and electric vehicles.

The proposed action will employ energy saving measures such as installation of solar water heating systems, which would be considered mitigating factors in reducing GHG emissions. Furthermore, the State of Hawai‘i has set a renewable energy portfolio standard of 100 percent (100%) by the year 2045 (Section 269-92, HRS) to minimize dependence on fossil fuel combustion, and has declared a policy to reduce GHG emissions to 1990 levels by the year 2020 (Act 234, Session Laws of Hawai‘i, 2007). The State is on track to meet these goals (Hawai‘i Department of Health, 2019; Hawai‘i PUC, 2018), which will result in a reduction of GHG impact of the proposed action along with reductions of GHG emissions statewide.

The proposed action is not anticipated to create significant direct and indirect foreseeable GHG emissions. This action does not fall within the threshold of mandatory GHG reporting.

12. Noise Quality

a. Existing Conditions

There are no fixed noise generators in the vicinity of the project site. Noise generated in the area is primarily attributed to vehicular traffic along the surrounding roadways, including Honoapi‘ilani Highway which lies directly to the east of the site of the proposed subdivision. Overall, the noise level in the region is fairly low.

b. Potential Impacts and Mitigation Measures

Ambient noise conditions may be temporarily affected by construction activities. Heavy construction machinery, such as backhoes, dump trucks, front-end loaders, and material-transport vehicles are anticipated to be the dominant noise-generating sources during the construction period of the proposed project.

In order to mitigate noise impacts, construction activities are anticipated to be limited to daylight work hours. Project-related noise will be minimized through use of applicable BMPs, such as regular maintenance of construction equipment and use of properly muffled equipment. In the long term, the proposed project is not anticipated to have adverse noise quality impacts.

13. Hazardous Materials

a. Existing Conditions

The project site is former agricultural lands. Agricultural production has since ceased on the property, and the site is used as intermittent grazing. Due to its former agricultural use, there may be the potential for residual hazardous materials, such as pesticides. As such, a Phase I Environmental Site Assessment (ESA) was conducted for the site of the proposed subdivision by Bureau Veritas North America, Inc. in 2018. The ESA reported that the subject property was developed as agricultural land from at least 1950 until circa 2009, when the property was used as pasture land. The ESA also reported that the adjoining properties were also developed as agricultural land from at least 1950 until sometime prior to 2009. The north and west adjoining properties have been in use as pasture land since 2009. See **Appendix "I"**.

b. Potential Impacts and Proposed Mitigation Measures

The ESA was conducted to determine if the site of the proposed subdivision may have residual hazardous materials resulting from the past site activities, in particular agricultural cultivation. Refer to **Appendix "I"**.

Site reconnaissance and records review for the subject property and the surrounding area was conducted and revealed no evidence of recognized environmental conditions, as defined by American Society for Testing and Materials (ASTM), in connection with the property. The ESA noted that agricultural chemicals were not detected at or above regulatory levels. Refer to **Appendix "I"**.

While fertilizers, herbicides, and pesticides may be used to help establish new plantings, the intent is to limit their use to the extent practicable.

Based on the findings of the ESA, there are no hazardous or regulated substances on the project site and, as such, no adverse impacts are anticipated.

14. Scenic and Open Space Resources

a. Existing Conditions

The West Maui Mountains to the west, Haleakalā to the east and Kahului Bay and the Pacific Ocean to the northeast define the scenic resources in Central Maui.

The project site is surrounded by fallow former agricultural lands and residential developments similar in scale to the proposed project.

b. Potential Impacts and Mitigation Measures

The proposed dwelling designs are consistent with other similar developments in the vicinity of the proposed project and will conform to the Maui County Zoning Code for single-family structures. The subdivision lots will be improved to include graded pads and utilities stubbed to each lot. It is noted that electrical utility lines will be overhead and not placed underground. In addition, a landscaped buffer will be developed at the roadway frontage along Honoapiʻilani Highway, providing an open space setback from the roadway to the house lots. It is not anticipated that the project will have an adverse impact on scenic and open space resources.

B. SOCIO-ECONOMIC ENVIRONMENT

1. Land Use and Community Character

a. Existing Conditions

From a regional perspective the project site is located immediately south of the urbanized area of Wailuku Town and immediately north of Waikapū Town. Wailuku Town serves as the commercial and governmental center of the region. The project site is surrounded by fallow former agricultural lands, and other residential developments of the same nature as the proposed project.

b. Potential Impacts and Proposed Mitigation Measures

The project is compatible with the adjacent residential uses and community character. As such, the proposed project is in consonance with the current land use and community character of the area.

2. Population

a. Existing Conditions

The population of the island of Maui has exhibited relatively strong growth over the past decade. According to the U.S. Census, the resident population of the island in 2010 was 144,444, an increase of 22.8 percent from the 2000 population of 117,644 (2000 and 2010 Census). The population of Maui County is projected to increase to 189,947 by the year 2030 (Maui County Data Book, 2018).

The project area is located in the Central Maui region of the island. Since 2000, the resident population in the Wailuku-Kahului region has increased by 31.2 percent from 41,503 to approximately 54,433 in 2010 (2000 and 2010 Census). The Wailuku-Kahului region is also expected to grow to 64,853 by 2030 (County of Maui, 2012).

b. Potential Impacts and Proposed Mitigation Measures

The proposed project involves developing needed new residences for DHHL beneficiaries. In the context of the County of Maui's population projections through the year 2030, the proposed project is not anticipated to significantly alter population trends. The proposed project is not anticipated to result in adverse impacts on the region's or island's population parameters.

3. Economy

a. Existing Conditions

The economy of Maui is heavily dependent upon the visitor industry. Many of the hotel and resort amenities are in South Maui and West Maui, with non-resort, smaller hotels located in Central Maui.

The economy of the Wailuku region is anchored by government services, with County and State agency offices occupying the civic center portion of town, near the High Street-Main Street intersection. With access to government offices, professional services such as engineering, architectural, and accounting offices are located nearby. Waikapū, while

mainly residential in nature, also features a number of small businesses and the Maui Tropical Plantation.

Hawai‘i’s economy through 2019 was strong, with record-setting visitor arrivals and low unemployment. However, the COVID-19 pandemic will have far reaching impacts on the economy on Maui, in Hawai‘i, and across the nation and world. Stay-at-home regulations and travel quarantines aimed to curb the spread of COVID-19 virus in Hawai‘i have caused many businesses to shut down or drastically reduce operations. Unemployment claims have soared. In March 2020, the unemployment rate in Maui County reached 2.1 percent, compared to 2.6 percent in February 2020 (Department of Labor and Industrial Relations, 2020).

b. Potential Impacts and Mitigation Measures

An Economic and Fiscal Impacts Report was prepared for the project by John Child & Company. See **Appendix “J”**. According to the report, the proposed project will have positive economic and fiscal impacts to the State of Hawai‘i and County of Maui during and after construction.

The following analyses were provided as part of the Economic and Fiscal Impacts Report.

i. Projected Direct, Indirect and Induced Expenditures from Land Development and Building Construction

The proposed project will provide 161 residential lots with 137 turn-key single-family residences. The remainder of the lots will be lessee-built. According to the report, the direct and indirect and induced expenditures total $147,120,000 over the anticipated construction period of five (5) years.

ii. Projected New Jobs and Employment Income

As reported by John Child & Company, 634 jobs, including full-time and part-time wage and salary jobs, would be created during the construction period. These jobs are projected to result in additional employment income of approximately $45.5 million.

iii. Fiscal Impacts to the State of Hawaii

According to John Child & Company’s report, the fiscal impacts to the State of Hawai‘i include revenue from taxes and impact fees

(i.e., Department of Education (DOE) school impact fees) and costs associated with additional services, if any, to be provided.

The report further noted that the proposed project will result in increased general excise and income tax revenues to the State of Hawai‘i. Based on the anticipated land and building construction expenditures, State tax revenues are projected to increase by approximately $8.93 million as a result of the proposed new construction. It was also noted that the State would receive revenue from the DOE school impact fees, which are payable at the time of building permits for the homes. Based on the foregoing, the DOE may receive school impact fees totaling approximately $870,000. In total, the proposed project is anticipated to general an additional $9.8 million in tax revenues and impact fees for the State of Hawai‘i.

iv. <u>Fiscal Impacts to the County of Maui</u>

According to John Child & Company’s report, the fiscal impacts to the County of Maui include revenue from impact fees (i.e. water and wastewater impact fees) and the additional property taxes the property will generate and the cost, if any, to provide any additional services.

The report stated that the County of Maui would receive revenue from wastewater assessment and water system development fees. According to the report, the assessment and development fees are anticipated to total approximately $2.25 million.

The HHCA provides a seven-year property tax exemption to DHHL lessees. As such, the report noted that the project will generate additional property tax revenues in the eighth year after each home is constructed. After construction of all homes, the tax assessed value per property is projected based on the average home sale price of approximately $359,000, less homeowner exemption of $200,000. Without including any other exemptions, the net taxable value would average at approximately $159,000. The report noted that the net taxable value multiplied by the current $1,000 for the 161 homes could result in increased property tax revenues of approximately $74,000 annually.

The report noted that the development is projected to generate an additional $2.33 million in tax revenues and impact fees for the County.

As noted above, the proposed project will generate both short-term and long-term benefits to the economy, including to both the State and County governments. Refer to **Appendix "J"**.

4. Housing

a. Existing Conditions

The mission of the DHHL is to effectively manage the Hawaiian Home Lands trust and to develop and deliver land to Native Hawaiians. The Hawaiian Homes Commission Act (HHCA), codified within the constitution of the State of Hawai'i, states as its purpose:

(a) The Congress of the United States and the State of Hawaii declare that the policy of this Act is to enable native Hawaiians to return to their lands in order to fully support self-sufficiency for native Hawaiians and the self-determination of native Hawaiians in the administration of this Act, and the preservation of the values, traditions, and culture of native Hawaiians.

(b) The principal purposes of this Act include but are not limited to:

(1) Establishing a permanent land base for the benefit and use of native Hawaiians, upon which they may live, farm, ranch, and otherwise engage in commercial or industrial or any other activities as authorized in this Act;

(2) Placing native Hawaiians on the lands set aside under this Act in a prompt and efficient manner and assuring long-term tenancy to beneficiaries of this Act and their successors;

(3) Preventing alienation of the fee title to the lands set aside under this Act so that these lands will always be held in trust for continued use by native Hawaiians in perpetuity;

Similarly, the DHHL General Plan, adopted in 2002, lists as goals under the Residential Uses objective:

- *Substantially increase the number of residential homesteads awarded each year.*
- *Provide a mix of housing opportunities that reflect the needs and desires of native Hawaiian beneficiaries.*

- *Provide residential homesteads, financing, and other housing opportunities, especially to those most in need.*

b. Potential Impacts

The proposed project will provide a maximum of 161 residential lots in Waikapū for DHHL beneficiaries. DHHL currently has a waitlist of approximately 3,835 beneficiaries for a residential homestead on Maui. In this regard, the proposed project is in support of the stated purposes of the HHCA, as well as goals outlined in the DHHL General Plan.

C. PUBLIC SERVICES

1. Solid Waste Collection and Disposal

a. Existing Conditions

Single-family residential solid waste collection service in Waikapū is provided by the County of Maui on a weekly basis. Residential solid waste collected by County crews are disposed of at the County's Central Maui Landfill located 4.0 miles southeast of the Kahului Airport. In addition to County-collected refuse, the Central Maui Landfill accepts commercial waste from private collection companies. A privately operated greenwaste recycling facility, Maui Earth Compost Company, is situated at Pulehu Road and Hansen Road, while Eko Compost is operated at the Central Maui Landfill. According to the County of Maui, the Central Maui Landfill has adequate capacity to accommodate residential and commercial waste needs through the year 2026. The County's Department of Environmental Management is currently planning to implement a processing facilities project adjacent to the landfill, which would further extend the projected capacity by an estimated 16 years. The remaining capacity estimate is based on future disposal volumes that assume significant population growth.

b. Potential Impacts and Mitigation Measures

Construction-related waste will be properly disposed of in accordance with policy and practices established by the Solid Waste Division to ensure that there are no adverse impacts to the County's Central Maui Landfill.

Upon completion, it is anticipated that the subdivision will be served by the County's refuse collection service. As the subdivision will be located in an area currently serviced by the County, there are no adverse impacts

anticipated to the County's collection system or disposal capacities attributed to the proposed project.

2. Police, Fire, and Medical Facilities

a. Existing Conditions

Police protection for the Wailuku-Kahului region is provided by the Maui Police Department located at the Wailuku Station headquartered on Mahalani Street, approximately two (2) miles northeast of the project site. The Maui Police Department provides investigative services, uniform patrol services, technical support, and traffic services as stated in its mission to protect the residents of Maui County.

Fire prevention, protection, rescue, and emergency services for the Wailuku-Kahului region are provided by the Maui County Department of Fire and Public Safety. The department has two (2) stations to service the Wailuku-Kahului region, both in proximity of the project site. The Wailuku station is located in Wailuku town approximately 1.5 miles northeast of the project site and the Kahului station is located on Dairy Road in Kahului approximately three (3) miles southeast of the project site.

Maui Memorial Medical Center is managed by Kaiser Permanente and is the only major medical facility on the island. Acute, general, and emergency care services are provided by the 214-bed Maui Memorial Medical Center facility located on Mahalani Street, Wailuku, about two (2) miles east of the subject property.

In addition, Kaiser, Maui Medical Group, Maui Medical Clinic, and Liberty Dialysis Clinic provide health care for the island of Maui. These facilities are located in Wailuku and Kahului. Dental and other medical offices are also located within the Wailuku-Kahului region to serve its residents and visitors.

b. Potential Impacts and Mitigation Measures

The proposed project involves the proposed development of a new residential subdivision in Waikapū as well as new sewerline to service the proposed subdivision. The proposed project is located within service areas for existing police, fire, and medical facilities and is not anticipated to adversely impact these services.

3. Educational Facilities

a. Existing Conditions

The State Department of Education (DOE) operates several schools in the Wailuku-Kahului region. Public school facilities within the Wailuku-Kahului District area include: two (2) high schools, Henry Perrine Baldwin High and Maui High (grades 9 to 12); two (2) intermediate schools, Iao Intermediate and Maui Waena Intermediate School (grades 6 to 8); and six (6) elementary schools (Grades K to 5), Wailuku Elementary, Waiheʻe Elementary, Pōmaikaʻi Elementary, Kahului Elementary, Lihikai Elementary, and Puʻu Kukui Elementary School.

The area is also served by several privately operated schools providing education for elementary, intermediate, and high school students. Privately operated schools serving the Wailuku-Kahului region include St. Anthony School (grades K to 12), Kaahumanu Hou Christian School (grades K to 12), Emmanuel Lutheran School (K to 6), and Maui Adventist School (grades 1 to 8).

The DOE's 2019 to 2020 school enrollment for their Central Maui schools are presented in **Table 1**.

Table 1. 2018 to 2019 DOE School Enrollment

School	Enrollment
Baldwin High School	1,304
Iao Intermediate School	1,004
Kahului Elementary School	933
Lihikai Elementary School	846
Maui High School	2,082
Maui Waena Intermediate School	1,162
Pōmaikai Elementary School	613
Puʻu Kukui Elementary School	762
Waiheʻe Elementary School	581
Wailuku Elementary School	638
Source: Department of Education, 2019.	

Additionally, the University of Hawaiʻi Maui College is a four-year college located on Kaʻahumanu Avenue in Kahului.

b. Potential Impacts and Mitigation Measures

The proposed project entails the development of a new 161-lot residential subdivision in Waikapū. Ohana, or accessory dwelling, units will not be permitted on the 161 lots. The proposed project is located in the DOE's

Central Maui Impact Fee District. The State law on school impact fees, Chapter 302-A, Hawaiʻi Revised Statutes (HRS), requires the execution of an Education Contribution Agreement with the DOE prior to any approvals of subdivision or building permits. As part of the development of the project, the State of Hawaiʻi, would receive revenue from the DOE school impact fees estimated at approximately $870,000. The project will comply with the requirement for school impact fees and will execute an Education Contribution Agreement with the DOE. Impacts on school facilities will be mitigated with payment of the impact fees.

4. Recreational Facilities

a. Existing Conditions

Within the Wailuku-Kahului Community Plan Region, there are many recreational activities, including shoreline and boating activities at the Kahului Harbor and adjoining beach parks, and organized recreational activities provided/offered at County Parks. Within close proximity of the project site is Waikapū Park and Community Center. In Wailuku town are Wells Park, the Wailuku Elementary School Park, the ʻĪao Valley State Park the Kehalani Mauka Park, the Velma McWayne Santos Community Center, Papohaku Park, War Memorial Athletic complex, Wailuku Little League baseball fields, the 65-acre Maui Regional Park, Maui Lani Parkway Park, Sakamoto Swimming Pool, and Keōpūolani Regional Park.

In addition, there are several golf courses in the Wailuku-Kahului region. These include the Kahili and Kamehameha Golf Courses, The Dunes at Maui Lani Golf Course, and the Maui County-owned Waiehu Golf Course.

b. Potential Impacts and Mitigation Measures

The proposed project entails the development of a new residential subdivision in Waikapū. As previously discussed, most residents are anticipated to relocate from other areas on Maui. As such, adverse impacts to recreational resources are not anticipated.

It is noted that residential subdivisions in the County of Maui are required to dedicate land for park/playground purposes, improvements to a park in the same community plan area, or payment of an in lieu fee to the County. However, as the DHHL has the authority to use its lands at its discretion for providing residences of its beneficiaries, the DHHL will be exempting the project from this requirement.

D. INFRASTRUCTURE

1. Roadways

a. Existing Conditions

A Traffic Impact Analysis Report (TIAR) was prepared by Austin, Tsutsumi & Associates, Inc. for the proposed project in January 2020 to evaluate potential traffic impacts resulting from the proposed project. See **Appendix "K"**. The project area is served by an existing roadway network which includes arterial, collector, and local roads. Access to the project site is provided by Honoapiʻilani Highway.

Major roadways in the vicinity of the project site include:

i. Honoapiʻilani Highway

Honoapiʻilani Highway is a north-south, two-lane, two-way undivided State-owned arterial highway with posted speed limits ranging between 30 miles per hour (mph) and 45 mph. Honoapiʻilani Highway begins as the continuation of South High Street near Kahookele Street and continues southward through Waikapū, Māʻalaea, and wraps around the pali to West Maui. Right-turn channelization is provided at all of its major intersections within the study area. There are paved roadway shoulders but no existing curbs, gutters, or sidewalks along the project frontage area.

ii. Kuʻikahi Drive

Kuʻikahi Drive is an east-west, two-lane, two-way undivided collector roadway with posted speed limits ranging between 25 and 30 mph. Kuʻikahi Drive begins approximately 1.2 miles west of Honoapiʻilani Highway within the Wailuku Heights subdivision and extends eastward past Honoapiʻilani Highway, terminating where it becomes Maui Lani Parkway.

The TIAR included a Level of Service (LOS) analysis for various intersections surrounding the project area. LOS is a qualitative measure used to describe the conditions of traffic flow at intersections, with values ranging from free-flow conditions (LOS A) to congested conditions (LOS F). Based on traffic count data gathered, the TIAR states that the morning peak traffic hour is between 7:00 a.m. and 8:00 a.m., while the evening peak hour is between 4:00 p.m. and 5:00 p.m. **Table 2** below lists the existing LOS for the study intersections,

Table 2. Existing Base Year Level of Service for Study Intersections

Intersection	Existing Conditions	
	AM LOS	PM LOS
1: Wai‘ale Road and Kaohu Sreet/Oluloa Drive		
NB LT/TH	F	E
NB RT	A	A
EB LT	B	B
EB TH/RT	B	B
WB LT/TH/RT	B	B
SB LT/TH/RT	F*	F*
Overall	F	F
2: Wai‘ale Road and Waiinu Rd		
WB LT	F*	F*
WB RT	C	B
SB LT	B	B
Overall	-	-
3: Wai‘ale Road and Olomea Street/Waimaluhia Lane		
NB LT	A	B
EB LT/TH	F*	F*
EB RT	B	C
WB LT/TH/RT	E	E
SB LT	B	A
Overall	-	-
4: Wai‘ale Road and Kaupo Street		
NB LT	A	A
EB LT	F*	F
EB RT	B	C
Overall	-	-
5: Wai‘ale Road and Ku‘ikahi Drive/Maui Lani Parkway		
NB LT	B	C
NB TH/RT	C	C
EB LT	B	B
EB TH/RT	B	B
WB LT	C	B
WB TH	C	C
WB RT	C	B
SB LT	B	C
SB TH/RT	C	C
Overall	C	C
6: Kamehameha Avenue and Maui Lani Parkway		
NB LT	C	C
NB TH/RT	E	D
NB LT/TH/RT	-	-
EB LT/TH/RT	F	F*
WB LT/TH/RT	E	F*
SB LT	C	C
SB TH/RT	F	F*
SB LT/TH/RT	-	-
Overall	E	F
7: Wai‘ale Road and Kokololio Street		
NB LT	A	A
EB LT	B	B
EB RT	A	A
Overall	-	-
8: Wai‘ale Road and Haawi Street		
NB LT	A	A
EB LT/RT	B	B
Overall	-	-

Intersection	Existing Conditions	
	AM LOS	PM LOS
9: Wai‘ale Road and Nokekula Loop		
NB LT	A	A
EB LT/RT	B	B
Overall	-	-
10: Wai‘ale Road and Ohana Hana Loop		
NB LT	A	A
EB LT/RT	B	B
Overall	-	-
11: East Waiko Road and Wai‘ale Road		
EB LT	A	A
SB LT/RT	C	B
Overall	-	-
12: Honoapi‘ilani Highway and West Waiko Road/East Waiko Road		
NB LT	A	A
NB TH/RT	B	B
EB LT/TH	C	C
EB RT	C	C
WB LT/TH/RT	C	C
SB LT	A	A
SB TH	A	A
SB RT	A	A
Overall	B	B
13: Honoapi‘ilani Highway and Pilikana Street		
NB LT	A	A
NB TH	A	A
EB LT	C	B
EB RT	B	B
SB TH	B	B
SB RT	A	A
Overall	B	A
14: Honoapi‘ilani Highway and Ku‘ikahi Drive		
NB LT	B	B
NB TH	C	C
NB RT	A	A
EB LT	C	C
EB TH	C	C
EB RT	C	C
WB LT	C	C
WB TH	C	C
WB RT	B	B
SB LT	B	B
SB TH	C	C
SB RT	B	B
Overall	C	C
15: Honoapi‘ilani Highway and Kehalani Parkway		
NB LT	B	B
NB TH	C	B
NB RT	A	A
EB LT	C	C
EB TH	C	C
EB RT	B	C
WB LT	C	C
WB TH	C	C
WB RT	C	C
SB LT	C	B

Intersection	Existing Conditions	
	AM LOS	PM LOS
SB TH	C	C
SB RT	A	A
Overall	C	C
16: Ku‘ikahi Drive and Kehalani Village Center Drive		
NB LT/TH	-	-
NB RT	-	-
EB LT	A	A
WB LT	-	-
SB LT	D	E
SB LT/TH	-	-
SB RT	B	B
Overall	-	-
17: Honoapi‘ilani Highway/Honoapi‘ilani Highway and South Project Access		
NB LT	-	-
EB LT	-	-
EB RT	-	-
Overall	-	-
18: Honoapi‘ilani Highway/Honoapi‘ilani Highway and North Project Access		
EB RT	-	-
Overall	-	-

* Denotes overcapacity condition, V/C ≥ 1
Source: Austin, Tsutsumi & Associates, Inc., 2020.

The TIAR evaluated traffic conditions at the following intersections:

(1) <u>Wa‘iale Road and Kaohu Street/Oluloa Drive</u>

Between 7:30 a.m. and 7:50 a.m., southbound traffic was observed to queue back to near Wells Street. More critically, northbound traffic was observed to slowly progress through the intersection, spilling back at varying lengths, causing congestion that stretched back toward Ku‘ikahi Drive. Northbound and southbound approaches along Wa‘iale Road operate at over-capacity conditions of LOS F during the morning peak hour, and LOS E and LOS F during the evening peak hour for northbound left-turn/through movements and southbound approach, respectively.

(2) <u>Wa‘iale Road and Waiinu Road</u>

As noted above, northbound congestion from the Wa‘iale Road and Kaohu Street/Oluloa Drive intersection can spill back into this intersection during the morning peak hour. Northbound congestion is further impacted at this intersection due to a heavy northbound right-turn movement as turning vehicles slow in anticipation of the turn. Some northbound vehicles also stop within the through lane to allow southbound left-turn and westbound left-turn vehicles to turn off or onto Wa‘iale Road. During the evening peak hour traffic

along Waʻiale Road generally moves smoothly, but was still observed to queue along the westbound leg of Waiinu Road attributed to the gaps in northbound and southbound traffic along Waʻiale Road and the ability of vehicles to be able to turn onto Waʻiale Road.

(3) Waʻiale Road and Olomea Street

During the morning and evening peak hours, the eastbound left-turn/through movement operates at LOS F and at over-capacity. During the morning peak hour, due to northbound congestion along Waʻiale Road, some northbound vehicles were observed to stop within the through lane to allow eastbound left-turn vehicles to turn onto Waʻiale Road.

(4) Waʻiale Road and Kaupo Street

Eastbound left-turn movements operate at LOS F during the morning peak hour, and LOS F and at over-capacity during the evening peak hour. Similar to the Waʻiale Road and Olomea Street intersection, observations indicated that some northbound vehicles along Waʻiale Road stopped within the through lane to allow east-bound left-turn vehicles to turn onto Waʻiale Road.

(5) Waʻiale Road and Kuikahi Drive/Maui Lani Parkway

All movements at this intersection operate at LOS C or better during the morning and evening peak hours. However, for a 20 to 30 minute period during the morning peak hour, vehicles were observed to queue beyond the length of the eastbound left-turn storage lane to the Kehalani Village Center, or sometimes as far back as Honoapiʻilani Highway due to existing northbound queues that spill back from Waʻiale Road into this intersection.

(6) Kamehameha Avenue and Maui Lani Parkway

The eastbound approach and southbound through/right-turn movements operate at LOS F during the morning peak hour, while the eastbound approach, westbound approach, and southbound through/right-turn movements operate at LOS F and at over-capacity during the evening peak hour due to high volumes of traffic between the Waikapū-Wailuku-Kahului regions.

(7) Wai‘ale Road and Kokololio Street/Haawi Street/Nokekula Loop/Ohana Hana Loop

These are unsignalized intersections serving the Waikapū Gardens Phase I and Phase II developments. All movements at these intersections operate at LOS B or better with no significant delays.

(8) Wai‘ale Road and Waiko Road

This is an unsignalized T-intersection with shared lanes on all approaches and at the southbound approach stop-controlled. All movements at this intersection operate at LOS D or better with no significant delays.

(9) Honoapi‘ilani Highway and Waiko Road

This signalized intersection has exclusive left-turn lanes on the northbound and southbound approaches, and exclusive right-turn lanes on the eastbound an southbound approaches. All movements at this intersection operate at LOS C or better with no significant delays or queuing.

(10) Honoapi‘ilani Highway/Pilikana Street

This signalized intersection has an exclusive left-turn lane on the northbound approach and a channelized right-turn lane on the southbound approach. All movements at this intersection operate at LOS D or better for both peak hours.

(11) Honoapi‘ilani Highway and Ku‘ikahi Drive

This is a signalized intersection with exclusive left-turn and right-turn lanes on all approaches. The channelized northbound right-turn movement also includes an exclusive eastbound acceleration lane. All movements at this intersection operate at LOS D or better for both peak hours.

(12) Honoapi‘ilani Highway/Kehalani Parkway

All movements operate at LOS D or better during the morning and evening peak hours. For a portion of the morning peak hour, the eastbound left-turn movement operates with queues that extend to or beyond the existing left-turn storage lane, which can be attributed to school traffic from Pu‘u Kukui Elementary School. In addition, northbound traffic queues along Honoapi‘ilani Highway back to

Kehalani Parkway were observed to primarily stem from a police officer directing traffic at Aupuni Street to service Wailuku Elementary School.

(13) <u>Ku‘ikahi Drive and Kehalani Village Center Access</u>

This is an unsignalized T-intersection with exclusing left-turn lanes in the eastbound and southbound directions. All movements at this intersection operate at LOS D or better for both peak hours with the exception of the southbound left-turn movement which operates at LOS E during the evening peak hour.

The TIAR utilized year 2024 as the anticipated build-out completion base year for the project. Projections for this year were based upon traffic counts, the Maui Regional Travel Demand Model growth for forecast years of 2024 and 2035, and projected traffic attributed to planned nearby developments. The resulting growth rate was approximately 1.9 percent per year. By year 2024, there are a number of known planned and proposed developments that are anticipated to add trips to the roadway network. The TIAR also took into account planned roadway projects anticipated to be completed by the base year. Although there are a number of known planned projects, only the Maui Lani Parkway and Kamehameha Avenue intersection roundabout project is anticipated to be completed by 2024, and was included in the analysis.

In consideration of the above information for base year 2024, the TIAR stated that LOS for turning movements at various intersections throughout the study area roadway network are anticipated to worsen from existing conditions. Refer to **Appendix “K”**.

b. <u>Potential Impacts and Proposed Mitigation Measures</u>

The proposed subdivision will have two (2) access points off Honoapi‘ilani Highway. The southern main access will be a full-movement “T” intersection and the northern access will be limited to right turn in, right turn out movements only.

Using the <u>Trip Generation Manual, 10th Edition</u> published by the Institute of Transportation Engineers, the TIAR projected vehicular trips anticipated to be generated by the build-out of the proposed project. The project is anticipated to generate 119 total vehicular trips during the morning peak hour and 161 total vehicular trips during the evening peak hour. Refer to **Appendix “K”**.

In terms of trip distribution, these added trips were distributed based on percentages derived from existing turning movement volumes entering and exiting mauka subdivisions at the Honoapiʻilani Highway and Pilikana Street and Honoapiʻilani Highway and Waiko Road intersections. Since these subdivisions are occupied and in close proximity to the proposed project, trips were distributed similar to trip patterns observed from these two (2) subdivisions.

The TIAR noted that upon completion of the project, all study intersections are forecasted to operate at LOS similar to base year 2024 conditions.

In addition, pedestrian and bike connectivity will be maintained along the shoulder of Honoapiʻilani Highway. Highway crossings will continue to be permitted at the existing traffic signals at Pilikana Street and Kuʻikahi Drive intersections, with no crosswalk proposed at either proposed subdivision access intersection.

Table 3 below lists the LOS for the study intersections at base year conditions and following completion of the project.

Table 3. 2024 Level of Service for Study Intersections Following Completion of Project

Intersection	Base Year 2024 Conditions		Future Year 2024 Conditions	
	AM LOS	**PM LOS**	**AM LOS**	**PM LOS**
1: Waiʻale Road and Kaohu Street/Oluloa Drive				
NB LT/TH	F*	F*	F*	F*
NB RT	A	A	A	A
EB LT	B	B	B	B
EB TH/RT	B	C	B	C
WB LT/TH/RT	B	B	B	B
SB LT/TH/RT	F*	F*	F*	F*
Overall	F	F	F	F
2: Waiʻale Road and Waiinu Road				
WB LT	F*	F*	F*	F*
WB RT	C	C	C	C
SB LT	B	B	B	B
Overall	-	-	-	-
3: Waiʻale Road and Olomea Street/Waimaluhia Lane				
NB LT	B	B	B	B
EB LT/TH	F*	F*	F*	F*
EB RT	C	F	C	F
WB LT/TH/RT	F	F	F	F
SB LT	B	B	B	B
Overall	-	-	-	-
4: Waiʻale Road and Kaupo Street				
NB LT	A	B	A	B
EB LT	F*	F*	F*	F*
EB RT	C	C	C	C
Overall	-	-	-	-
5: Waiʻale Road and Kuʻikahi Drive/Maui Lani Parkway				
NB LT	C	D	C	D

Intersection	Base Year 2024 Conditions		Future Year 2024 Conditions	
	AM LOS	PM LOS	AM LOS	PM LOS
NB TH/RT	C	E	D	E
EB LT	D	E	D	F
EB TH/RT	C	D	C	D
WB LT	D	D	D	D
WB TH	D	E	E	F
WB RT	D	D	D	D
SB LT	C	D	C	E
SB TH/RT	D	E	D	E
Overall	D	E	D	E
6: Kamehameha Avenue and Maui Lani Parkway				
NB LT	-	-	-	-
NB TH/RT	-	-	-	-
NB LT/TH/RT	C	B	C	B
EB LT/TH/RT	C	C	C	C
WB LT/TH/RT	B	C	B	C
SB LT	-	-	-	-
SB TH/RT	-	-	-	-
SB LT/TH/RT	C	D	C	E
Overall	C	C	C	C
7: Wai‘ale Road and Kokololio Street				
NB LT	A	A	A	A
EB LT	C	C	C	C
EB RT	B	B	B	B
Overall	-	-	-	-
8: Wai‘ale Road and Haawi Street				
NB LT	A	A	A	A
EB LT/RT	C	C	C	C
Overall	-	-	-	-
9: Wai‘ale Road and Nokekula Loop				
NB LT	A	A	A	A
EB LT/RT	B	B	B	B
Overall	-	-	-	-
10: Wai‘ale Road and Ohana Hana Loop				
NB LT	A	A	A	A
EB LT/RT	B	B	B	B
Overall	-	-	-	-
11: E Waiko Rd & Waiale Rd				
EB LT	A	A	A	A
SB LT/RT	F	E	F	E
Overall	-	-	-	-
12: Honoapi‘ilani Highway and West Waiko Road/East Waiko Road				
NB LT	A	A	A	A
NB TH/RT	B	C	B	C
EB LT/TH	C	D	C	D
EB RT	C	D	C	D
WB LT/TH/RT	D	D	D	D
SB LT	B	C	B	C
SB TH	B	B	B	B
SB RT	A	A	A	A
13: Honoapi‘ilani Highway and Pilikana St				
NB LT	B	A	B	A
NB TH	A	A	A	A
EB LT	D	C	D	C
EB RT	C	C	C	C
SB TH	B	B	B	B
SB RT	A	A	A	A
Overall	B	A	B	B

Intersection	Base Year 2024 Conditions		Future Year 2024 Conditions	
	AM LOS	PM LOS	AM LOS	PM LOS
14: Honoapiʻilani Highway and Kuʻikahi Drive				
NB LT	C	C	C	C
NB TH	D	D	D	D
NB RT	A	A	A	A
EB LT	D	D	D	D
EB TH	D	D	D	D
EB RT	D	D	D	D
WB LT	D	D	D	E
WB TH	C	C	C	C
WB RT	C	C	C	C
SB LT	D	D	D	D
SB TH	C	C	C	C
SB RT	B	B	B	B
Overall	C	D	D	D
15: Honoapiʻilani Highway and Kehalani Parkway				
NB LT	C	B	D	B
NB TH	D	C	D	C
NB RT	A	A	A	A
EB LT	E	C	E	C
EB TH	C	C	C	C
EB RT	C	C	C	C
WB LT	D	C	D	C
WB TH	D	D	D	D
WB RT	D	C	D	C
SB LT	C	B	C	B
SB TH	D	C	D	C
SB RT	A	A	A	A
Overall	D	C	D	C
16: Kuʻikahi Drive and Kehalani Village Center Dr				
NB LT/TH	F	F	F	F
NB RT	C	B	C	B
EB LT	A	B	A	B
WB LT	A	A	A	A
SB LT	-	-	-	-
SB LT/TH	F	F*	F	F*
SB RT	B	C	B	C
Overall	-	-	-	-
17: Honoapiʻilani Highway/Honoapiʻilani Highway and South Project Access				
NB LT	-	-	B	B
EB LT	-	-	E	E
EB RT	-	-	C	C
Overall	-	-	-	-
18: Honoapiʻilani Highway/Honoapiʻilani Highway and North Project Access				
EB RT	-	-	C	C
Overall	-	-	-	-

* Denotes overcapacity condition, V/C ≥ 1
Source: Austin, Tsutsumi & Associates, Inc., 2020.

The new right-turn in, right-turn out northern access for the proposed subdivision is anticipated to operate at LOS C for both the morning and evening peak hours. The south access is anticipated to operate acceptably at LOS D or better for the morning and evening peak hours as well, with the exception of the eastbound left-turn movement, which will operate at LOS E during the morning peak hours. All movements are anticipated to operate adequately below capacity. As such, the TIAR noted that a traffic

signal is not warranted. Based on the findings of the TIAR, a median refuge lane is recommended to help reduce eastbound left-turn vehicle delays by allowing vehicles to turn onto Honoapiʻilani Highway with a two-stage approach; first into the refuge lane, then merging onto Honoapiʻilani Highway. Refer to **Appendix "K"**.

2. Water

a. Existing Conditions

A Preliminary Engineering Report (PER) was prepared by Warren S. Unemori Engineering, Inc. for the proposed project. Refer to **Appendix "L"**. According to the PER, the proposed Puʻunani Homestead Subdivision is located within the Maui County Department of Water Supply's (DWS) Central Maui water system. Water for the proposed subdivision will be supplied from the DWS' existing distribution system in Waikapū, which uses a groundwater well as its source and distributes water from an existing 1.5 million gallon (MG) capacity storage tank located along Kuʻikahi Drive at an elevation of approximately 670 feet above mean sea level (msl).

b. Potential Impacts and Mitigation Measures

Average daily water consumption by the maximum 161 single-family homes that will comprise the proposed subdivision is projected to be approximately 96,600 gallons per day (gpd). Refer to **Appendix "L"**.

According to the PER, no water source improvements are proposed with the project and the subdivision will be processed under the water source provisions for affordable housing projects present in the Department of Water Supply's Water Service Rules (Maui County Administrative Rules, Section 16-201-03(g)(1)) and Maui County Code, Section 14.12.030.F.

An 8-inch water main is proposed to be extended into the subdivision from the DWS' existing 12-inch distribution main along Old Waikapū Road. A network of 8-inch distribution mains will be installed within the subdivision and outfitted with service laterals and fire hydrants for water service and fire protection to each of the individual houselots in accordance with DWS standards. Refer to **Appendix "L"**.

According to the PER, the storage capacity needed for the subdivision pursuant to DWS standards is 144,900 gallons. DHHL is currently working with the DWS to determine the payment of fees or storage capacity improvements that will be needed to address the storage requirements for the project.

The proposed project will be assessed the water system development fee by the DWS. According to the Economic and Fiscal Impacts Report, this fee is anticipated to amount to approximately $1,972,000. Refer to **Appendix "J".**

3. Wastewater

a. Existing Conditions

The parcel on which the proposed subdivision will be developed has no sewer service currently available. The Waikapū area, however, is served by the County of Maui's sewer system, which collects wastewater and conveys it to the Kahului Wastewater Reclamation Facility (KWWRF) for treatment and disposal.

The 12- and 18-inch diameter County-owned gravity sewer main located near Waiʻale Road is the closest existing sewerline to the project site. The sewerline collects wastewater from the Waikapū and Kehalani residential areas and conveys it toward Lower Main Street on its way to the KWWRF. Refer to **Appendix "L"**.

b. Potential Impacts and Mitigation Measures

The subdivision is expected to generate 56,350 gallons of wastewater per day. Refer to **Appendix "L"**.

According to the PER, a branching network of new gravity sewer pipes will be installed within the internal streets of the project to collect wastewater from the houselots and convey it toward the low end of the subdivision near the northeast corner along Honoapiʻilani Highway. A new 8-inch diameter, 1,700 ft. long gravity sewer main will convey the subdivision's wastewater northward along Honoapiʻilani Highway from there, then eastward under the roadway and across TMK (2)3-5-001:064 to a connection point at Waiʻale Road where the County's sewer system has sufficient capacity to accept the wastewater generated by the project. Refer to **Appendix "L"**.

The PER notes that a County of Maui sewerline project by others is currently underway to relieve a known capacity bottleneck on Lower Main Street, downstream of the project site. The sewerline project's November 2021 scheduled completion date is compatible with planned occupancy of the proposed project.

According to the PER, average daily wastewater flows received at the County's KWWRF currently measure approximately 5.6 million gallons per

day (MGD) or roughly 71 percent of the plant's 7.9 MGD capacity. KWWRF's remaining treatment capacity is ample to accommodate the 0.06 MGD of wastewater estimated for the proposed project at build-out. The PER further concludes that a plant capacity upgrade is not necessary to fully occupy the proposed subdivision. Refer to **Appendix "L"**.

The proposed project will be assessed the assessment fee for facility expansion of the KWWRF, as required by Chapter 14.35 of the Maui County Code. According to the Economic and Fiscal Impacts Report prepared for the project, the wastewater assessment fee is estimated at approximately $282,000. Refer to **Appendix "J"**. Coordination with the Department of Environmental Management (DEM), Wastewater Reclamation Division (WWRD) will be carried out during the subdivision and building permit application process to ensure wastewater capacity and that the proposed project will not adversely affect the County of Maui's wastewater collection, transmission, and treatment infrastructure.

4. Drainage System

a. Existing Conditions

The existing terrain at the site of the proposed subdivision slopes steadily downward across the site from west to east at a grade of 7 to 8 percent. Elevation ranges from 380 feet at the site's northeast corner to 450 feet at the southwestern side of the site. An existing drainageway (gully) runs along the site's northern border, and an irrigation ditch with maintenance access road bounds its western side.

Surface runoff generated by the undeveloped 47.4-acre project site sheet flows eastward toward Honoapiʻilani Highway, where it concentrates along the road shoulder and flows northward along the highway into the existing drainageway (gully). The runoff then passes through a drainage culvert under Honoapiʻilani Highway on its way to the Waiʻale irrigation reservoir where it is impounded. The 10-year, 1-hour peak flow rate generated by the project site in its current, undeveloped state is estimated to be 41 cubic feet per second (cfs). Refer to **Appendix "L"**.

b. Potential Impacts and Mitigation Measures

According to the PER, the proposed subdivision is expected to produce a peak runoff volume of 109 cfs from a 10-year, 1-hour storm once it has been fully developed. This represents a net increase of approximately 68 cfs attributable to development of the project. Refer to **Appendix "L"**.

Surface runoff generated by the roads and homes within the subdivision will be directed to drain inlets located along the internal streets. The collected runoff will then be conveyed by underground drainage pipes to a stormwater detention basin located at the northeast corner of the subdivision, which in turn, will discharge into the existing drainageway (gully) on the north side of the project site. This detention basin, whose capacity will be at least 4.2 acre-feet, will fully mitigate the expected increase in peak flow by limiting the downstream release of stormwater to a flow rate which does not exceed pre-development levels in compliance with Maui County storm drainage standards. Refer to **Appendix "L"**.

In addition, Maui County requires the implementation of water quality control measures to reduce water pollution from stormwater runoff. The PER notes that a "detention based" treatment approach will be employed to mitigate stormwater-related water pollution associated with the developed site. This will involve providing additional storage volume in the detention basin to facilitate sediment removal in addition to peak flow mitigation. According to the PER, the proposed stormwater detention basin will fully mitigate the increase in peak flow attributable to development while simultaneously providing water pollution control. According to the PER, once the detention basin is in place, the hydrologic impact on downstream properties resulting from the proposed development of Puʻunani Subdivision will be fully mitigated. Refer to **Appendix "L"**.

5. Electric, Telephone, and Cable

a. Existing Conditions

There are existing overhead electrical, telephone, and cable transmission lines provided by Hawaiian Electric Company, Ltd (Maui Electric), Hawaiian Telcom, and Spectrum Cable, respectively, along Honoapiʻilani Highway which are adjacent to the project site. In addition, Sandwich Isles Communications (SIC), which provides telephone and internet service to other existing DHHL projects, has an underground fiber optic trunk line located along Honoapiʻilani Highway. Refer to **Appendix "L"**.

b. Potential Impacts and Mitigation Measures

Maui Electric, Hawaiian Telcom, and Spectrum Cable (formerly Oceanic Time Warner) will be able to provide electrical, telephone, and cable television services, respectively, for the proposed project. The proposed electrical, telephone, and cable TV distribution systems to the project site will be serviced from the existing facilities along Honoapiʻilani Highway. The lines will be extended from along Honoapiʻilani Highway to provide

services to each houselot. Within the project, overhead utility lines will provide electrical, telephone, and cable television services.

According to the PER, the proposed project is estimated to add approximately 805 kW of load to Maui Electric's infrastructure. Maui Electric will install an overhead power distribution system along the proposed subdivision's streets that will include poles, anchors, lines, pole-mounted transformers, and street lights. Hawaiian Telcom is the closest service provider in the area capable of providing regulated telephone and internet service to the project. However, its existing telephone plant servicing the area is not sufficient to service the project, therefore, a fiber distribution hub (FDH) and fiber optic equipment would need to be installed to provide the needed telecommunication services. The FDH equipment would function as a hub for the distribution of all Hawaiian Telcom telecommunication services within the project. According to the PER, Spectrum, the regulated cable provider on Maui, who is also capable of providing telephone and internet services, will need to extend their overhead facilities across Honoapiʻilani Highway to service the project. Spectrum will install the needed cables and power supply equipment and the DHHL will be responsible for providing any other improvements required for system installation, such as riser ducts, boxes, power supply pad(s), easements and maintenance vehicle access. As SIC has an underground fiber optic trunk line along Honoapiʻilani Highway, they will be offered the opportunity to provide telephone and internet service to the project on a competitive basis with Hawaiian Telcom and Spectrum. SIC would need to design and construct an underground distribution system extending from its trunk line at its expense, and individual customers would be responsible for their monthly service fees. Refer to **Appendix "L"**.

Coordination with the above-mentioned utility service providers will continue to ensure that systems planning and design can be programmed consistent with the project development schedule.

E. CUMULATIVE AND SECONDARY IMPACTS

Pursuant to the Hawaiʻi Administrative Rules, Chapter 200, Section 11-200.1-2, entitled Environmental Impact Statement Rules, a cumulative impact means:

> *…the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions. Cumuative impacts can result from individually minor but collectively significant actions taking place over a period of time.*

"Secondary impacts" or "indirect impacts" are defined as:

> *…effects that are caused by the action or are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density, or growth rate, and related effects on air and water and other natural systems including ecosystems.*

Cumulative and secondary impacts can be viewed as actions of others that are taken because of the presence of the project. Secondary impacts from highway projects, for example, can occur because they can induce development by removing one (1) of the impediments to growth.

The project is proposed to be implemented in an area developed with residential subdivisions of a similar nature. The proposed project is not a phase of a larger action, nor does it represent a committment to such actions. Given the surrounding residential developments, significant environmental impacts are not anticipated as a result of the project. Although the proposed project requires the provision of basic infrastructure such as water and wastewater service, these requirements are not considered significant as the project will be developed within the existing service limits for these services. Further, the TIAR prepared for the project concludes that LOS at nearby intersections will operate at LOS similar to those for the base year analysis, and that the subdivision does not warrant a traffic signal at its proposed intersection with Honoapiʻilani Highway. Roadway improvements will be implemented to handle the ingress and egress for the project. As such, no cumulative impacts are anticipated as a result of the project.

Secondary impacts are those which have the potential to occur late in time or farther in distance, but are still reasonably foreseeable. They can be viewed as actions of others that are taken because of the presence of a project. The proposed project involves the development of a maximum of 161 new residential lots in Waikapū. However, as previously discussed, the lots are being provided for DHHL beneficiaries, who are anticipated to be Maui residents. As such, secondary impacts related to population increase in the region are not anticipated. Further, the proposed project will be located in the midst of other similar residential subdivision developments. It is noted that other planned developments in the region are anticipated to contribute to traffic conditions by the time of expected buildout of the project. However, according to the TIAR, upon completion of the project, all study intersections are forecasted to operate at LOS similar to the Base Year 2024 conditions. In addition, the proposed project itself does not warrant any traffic improvements such as provision of a new traffic signal. Recommendations in the TIAR for roadway improvements with the development of the project included the provision of a median refuge lane to allow eastbound left-turn vehicles to turn onto Honoapiʻilani Highway with a two-stage storage approach. Refer to **Appendix "K"**. As such, given the surrounding development, significant environmental impacts are not

anticipated as a result of the project. Therefore, with the proposed mitigation measures, the project is not anticipated to result in significant adverse secondary impacts.

RELATIONSHIP TO GOVERNMENTAL PLANS, POLICIES, AND CONTROLS

III

III. RELATIONSHIP TO GOVERNMENTAL PLANS, POLICIES, AND CONTROLS

This section discusses the relationship between the proposed action and State and County land use plans, policies, and controls for the Central Maui region.

A. STATE LAND USE DISTRICTS

Pursuant to Chapter 205, Hawaiʻi Revised Statutes (HRS), all lands in the State have been placed into one (1) of four (4) major land use districts by the State Land Use Commission. These land use districts are designated "Urban", "Rural", "Agricultural", and "Conservation". The 47.4-acre project site is located within the "Agricultural" district. See **Figure 10**. However, the lands on which the proposed project will be developed are under the jurisdiction of the Department of Hawaiian Home Lands (DHHL). Section B below, pertaining to the DHHL planning system, discusses DHHL's development authority over their lands as established by the Hawaiian Homes Commission Act (HHCA). The HHCA codified within the constitution of the State of Hawaiʻi, vests onto DHHL the authority to use its lands at its discretion. Specifically, HHCA Section 204, states that *"all available lands shall immediately assume the status of Hawaiian home lands and be under the control of the department to be used and disposed of in accordance with the provisions of this Act"*. The above-noted provision grants DHHL the authority to proceed with the project without the lands being fully entitled for residential use. It is also noted that the site of the proposed sewerline installation is designated for "Urban" use by the State Land Use Commission. Refer to **Figure 10**.

B. DEPARTMENT OF HAWAIIAN HOME LANDS PLANNING SYSTEM

The mission of the DHHL is to effectively manage the Hawaiian home lands trust and to develop and deliver land to Native Hawaiians. The HHCA, codified within the constitution of the State of Hawaiʻi, vests onto the DHHL the authority to use its lands at its discretion. Specifically, HHCA Section 204 states, *"all available lands shall immediately assume the status of hawaiian home lands and be under the control of the department to be used and disposed of in accordance with the provisions of this Act".*

As such, the DHHL has implemented its own planning system consisting of a general plan, island plans, community-specific regional plans, project-specific program plans, and special area plans to guide its development of its lands. Below is a discussion of the project's consistency with the DHHL planning system.

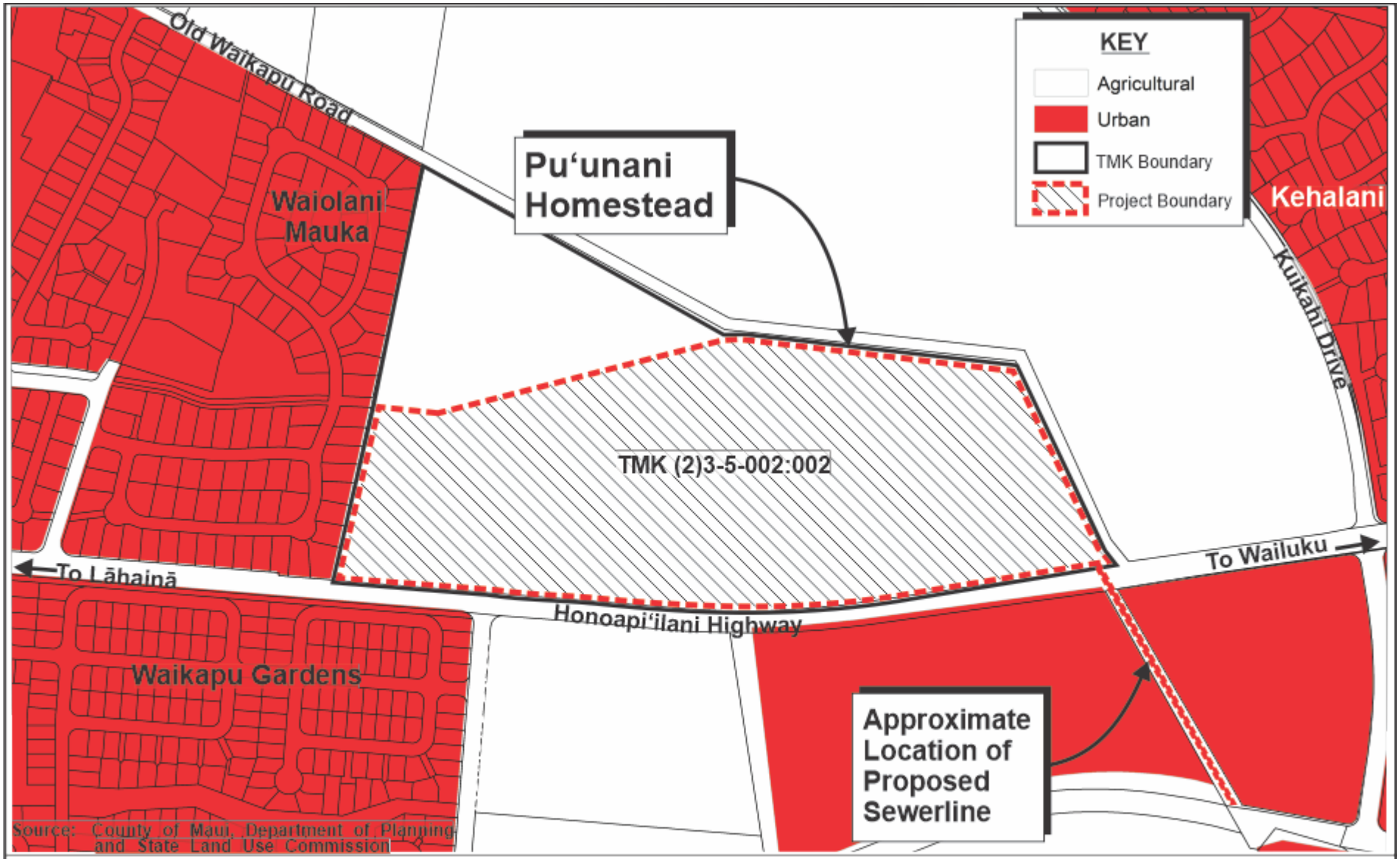


Figure 10

Pu'unani Homestead Subdivision
State Land Use District Map

0 250 Feet
125 500

Prepared for: State of Hawai'i, Department of Hawaiian Home Lands

MUNEKIYO HIRAGA

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1. General Plan

The DHHL General Plan was adopted by the Hawaiian Homes Commission (HHC) in February 2002. It outlines the DHHL's goals and objectives for land use planning, residential uses, agricultural and pastoral uses, water resources, land and resource management, economic development, and building healthy communities. The proposed project is in consonance with the following goals and objectives of the DHHL General Plan.

LAND USE PLANNING

Goals

- *Utilize Hawaiian Home Land for uses moat appropriate to meet the needs and desires of the beneficiary population.*
- *Encourage a balanced pattern of growth into urban and rural growth centers.*
- *Develop livable, sustainable communities that provide space for or access to the amenities that serve the daily needs of its residents.*

Objectives

- *Direct urban growth to priority development areas based on infrastructure availability, feasible site conditions, beneficiary preferences, and job opportunities.*
- *Consider opportunities to acquire or exchange lands best suited for purposes of the Hawaiian Homes Commission Act.*

Discussion and Response: The proposed project involves developing needed additional residences in a developed area of Central Maui for Native Hawaiian beneficiaries.

RESIDENTIAL USES

Goals

- *Substantially increase the number of residential homesteads awarded each year.*
- *Provide a mix of housing opportunities that reflect the needs and desires of native Hawaiian beneficiaries.*
- *Provide residential homesteads, financing, and other housing opportunities, especially to those most in need.*

Objectives

- *Provide a variety of residential types to meet the needs of beneficiaries in terms of construction procedures (owner-builder, turnkey, self-help), types of housing units (single-family, multi-family, kupuna housing, rental etc.) and financing.*
- *Ensure the availability of housing with a range of types and affordability to accommodate persons and families of all income levels and in locations that are convenient to employment and quality public and private facilities.*

Discussion and Response: The proposed project increases the residential unit availability on Maui Island for Native Hawaiian beneficiaries, in an area close to employment centers, medical facilities, and commercial centers.

2. Maui Island Plan

The DHHL Maui Island Plan (MIP) was adopted in 2004 and serves as a comprehensive resource for planning and managing the Maui Island lands and establishes land use designations to encourage orderly social, physical, and economic development. Because the lands on which the proposed subdivision will be developed were recently acquired by the DHHL, they are not yet designated by the MIP for a specific use. Acquiring these lands is consistent with a residential goal of the DHHL MIP to secure additional lands in Central Maui to meet the beneficiary demand for residential homesteads.

The MIP discusses the General Plan's goals of increasing the delivery of residential homesteads to beneficiaries each year. The proposed project is in support of these goals. The MIP also provides data from a beneficiary survey conducted in 2003 to assess the preferences of DHHL beneficiaries on Maui. The results of the survey show that most beneficiaries prefer an award of improved land with a turnkey single-family house on it. In addition, almost 900 beneficiaries indicated a preference of the Wailuku area in terms of award location. The proposed project is in line with beneficiary preferences as discussed in the MIP.

C. 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-term development of the State by identifying goals, objectives, policies, and priorities, as well as implementation mechanisms. The Plan consists of three (3) parts. Part I includes the Overall Theme, Goals, Objectives, and Policies; Part II includes Planning, Coordination, and Implementation; and Part III establishes Priority Guidelines. Inasmuch as Part II of the State Plan covers its administrative structure and implementation process, discussion of

the proposed project's applicability to Part II is not addressed herein. Below is an analysis of the project's applicability to Part I and Part III of the Hawai'i State Plan.

Hawai'i State Plan, Chapter 226, HRS Part I. Overall Themes, Goals, Objectives and Policies **Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable**	**S**	**N/S**	**N/A**
HRS 226-1: Findings and Purpose			
HRS 226-2: Definitions			
HRS 226-3: Overall Theme			
HRS 226-4: State Goals. In order to guarantee, for the present and future generations, those elements of choice and mobility that insure that individuals and groups may approach their desired levels of self-reliance and self determination, it shall be the goal of the State to achieve: A strong, viable economy, characterized by stability, diversity, and growth, that enables the fulfillment of the needs and expectations of Hawaii's present and future generations. (1) 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. (2) Physical, social, and economic well-being, for individuals and families in Hawaii, that nourishes a sense of community responsibility, of caring, and of participation in community life.			
Analysis: **The proposed project provides additional homestead opportunities for DHHL beneficiaries in an area that is close to the government, business, and commercial centers of Wailuku and Kahului.**			
Chapter 226-5 Objective and Policies for Population			
<u>Objective</u>: It shall be the objective in planning for the State's population to guide population growth to be consistent with the achievement of physical, economic and social objectives contained in this chapter.			✓
<u>Policies</u>:			
(1) Manage population growth statewide in a manner that provides increased opportunities for Hawaii's people to pursue their physical, social, and economic aspirations while recognizing the unique needs of each county.			✓
(2) Encourage an increase in economic activities and employment opportunities on the neighbor islands consistent with community needs and desires.	✓		
(3) Promote increased opportunities for Hawaii's people to pursue their socio-economic aspirations throughout the islands.	✓		
(4) Encourage research activities and public awareness programs to foster an understanding of Hawaii's limited capacity to accommodate population needs and to address concerns resulting from an increase in Hawaii's population.			✓
(5) Encourage federal actions and coordination among major governmental agencies to promote a more balanced distribution of immigrants among the states, provided that such actions do not prevent the reunion of immediate family members.			✓
(6) Pursue an increase in federal assistance for states with a greater proportion of foreign immigrants relative to their state's population.			✓
(7) Plan the development and availability of land and water resources in a coordinated manner so as to provide for the desired levels of growth in each geographic area.	✓		

Hawai'i State Plan, Chapter 226, HRS Part I. Overall Themes, Goals, Objectives and Policies Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable	S	N/S	N/A
Analysis: **The proposed project will be implemented in a developed area in Central Maui, in close proximity to existing infrastructure and services.**			
Chapter 226-6 Objectives and policies for the economy – – in general			
<u>Objectives</u>: Planning for the State's economy in general shall be directed toward achievement of the following objectives:			
(1) Increased and diversified employment opportunities to achieve full employment, increased income and job choice, and improved living standards for Hawaii's people, while at the same time stimulating the development and expansion of economic activities capitalizing on defense, dual-use, and science and technology assets, particularly on the neighbor islands where employment opportunities may be limited.	✓		
(2) A steadily growing and diversified economic base that is not overly dependent on a few industries, and includes the development and expansion of industries on the neighbor islands.	✓		
<u>Policies</u>:			
(1) Promote and encourage entrepreneurship within Hawaii by residents and nonresidents of the State.			✓
(2) Expand Hawaii's national and international marketing, communication, and organizational ties, to increase the State's capacity to adjust to and capitalize upon economic changes and opportunities occurring outside the State.			✓
(3) Promote Hawaii as an attractive market for environmentally and socially sound investment activities that benefit Hawaii's people.			✓
(4) Transform and maintain Hawaii as a place that welcomes and facilitates innovative activity that may lead to commercial opportunities.			✓
(5) Promote innovative activity that may pose initial risks, but ultimately contribute to the economy of Hawaii.			✓
(6) Seek broader outlets for new or expanded Hawaii business investments.			✓
(7) Expand existing markets and penetrate new markets for Hawaii's products and services.			✓
(8) Assure that the basic economic needs of Hawaii's people are maintained in the event of disruptions in overseas transportation.			✓
(9) Strive to achieve a level of construction activity responsive to, and consistent with, state growth objectives.	✓		
(10) Encourage the formation of cooperatives and other favorable marketing arrangements at the local or regional level to assist Hawaii's small scale producers, manufacturers, and distributors.			✓
(11) Encourage labor-intensive activities that are economically satisfying and which offer opportunities for upward mobility.	✓		
(12) Encourage innovative activities that may not be labor-intensive, but may otherwise contribute to the economy of Hawaii.			✓
(13) Foster greater cooperation and coordination between the government and private sectors in developing Hawaii's employment and economic growth opportunities.	✓		

Hawai‘i State Plan, Chapter 226, HRS Part I. Overall Themes, Goals, Objectives and Policies Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable	S	N/S	N/A
(14) Stimulate the development and expansion of economic activities which will benefit areas with substantial or expected employment problems.			✓
(15) Maintain acceptable working conditions and standards for Hawaii's workers.			✓
(16) Provide equal employment opportunities for all segments of Hawaii's population through affirmative action and nondiscrimination measures.			✓
(17) Stimulate the development and expansion of economic activities capitalizing on defense, dual-use, and science and technology assets, particularly on the neighbor islands where employment opportunities may be limited.			✓
(18) Encourage businesses that have favorable financial multiplier effects within Hawaii's economy, particularly with respect to emerging industries in science and technology.	✓		
(19) Promote and protect intangible resources in Hawaii, such as scenic beauty and the aloha spirit, which are vital to a healthy economy.	✓		
(20) Increase effective communication between the educational community and the private sector to develop relevant curricula and training programs to meet future employment needs in general, and requirements of new or innovative potential growth industries in particular.			✓
(21) Foster a business climate in Hawaii--including attitudes, tax and regulatory policies, and financial and technical assistance programs--that is conducive to the expansion of existing enterprises and the creation and attraction of new business and industry.			✓
Analysis: **The proposed project will generate short-term construction-related employment opportunities.**			
Chapter 226-7 Objectives and policies for the economy – – agriculture.			
<u>Objectives</u>: Planning for the State's economy with regard to agriculture shall be directed towards achievement of the following objectives:			
(1) Viability of Hawaii's sugar and pineapple industries.			✓
(2) Growth and development of diversified agriculture throughout the State.			✓
(3) An agriculture industry that continues to constitute a dynamic and essential component of Hawaii's strategic, economic, and social well-being.			✓
<u>Policies</u>:			
(1) Establish a clear direction for Hawaii's agriculture through stakeholder commitment and advocacy.			✓
(2) Encourage agriculture by making the best use of natural resources.			✓
(3) Provide the governor and the legislature with information and options needed for prudent decision-making for the development of agriculture.			✓
(4) Establish strong relationships between the agricultural and visitor industries for mutual marketing benefits.			✓
(5) Foster increased public awareness and understanding of the contributions and benefits of agriculture as a major sector of Hawaii's economy.			✓

Hawai‘i State Plan, Chapter 226, HRS Part I. Overall Themes, Goals, Objectives and Policies Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable	S	N/S	N/A
(6) Seek the enactment and retention of federal and state legislation that benefits Hawaii's agricultural industries.			✓
(7) Strengthen diversified agriculture by developing an effective promotion, marketing, and distribution system between Hawaii's food producers and consumers in the State, nation, and world.			✓
(8) Support research and development activities that strengthen economic productivity in agriculture, stimulate greater efficiency, and enhance the development of new products and agricultural by-products.			✓
(9) Enhance agricultural growth by providing public incentives and encouraging private initiatives.			✓
(10) Assure the availability of agriculturally suitable lands with adequate water to accommodate present and future needs.			✓
(11) Increase the attractiveness and opportunities for an agricultural education and livelihood.			✓
(12) In addition to the State's priority on food, expand Hawaii's agricultural base by promoting growth and development of flowers, tropical fruits and plants, livestock, feed grains, forestry, food crops, aquaculture, and other potential enterprises.			✓
(13) Promote economically competitive activities that increase Hawaii's agricultural self-sufficiency, including the increased purchase and use of Hawaii-grown food and food products by residents, businesses, and governmental bodies as defined under section 103D-104.			✓
(14) Promote and assist in the establishment of sound financial programs for diversified agriculture.			✓
(15) Institute and support programs and activities to assist the entry of displaced agricultural workers into alternative agricultural or other employment.			✓
(16) Facilitate the transition of agricultural lands in economically nonfeasible agricultural production to economically viable agricultural uses.			✓
(17) Perpetuate, promote, and increase use of traditional Hawaiian farming systems, such as the use of loko i‘a, māla, and irrigated lo‘i, and growth of traditional Hawaiian crops, such as kalo, ‘uala, and ‘ulu.			✓
(18) Increase and develop small-scale farms.			✓
Analysis: **Not applicable.**			
Chapter 226-8 Objective and policies for the economy – – visitor industry.			
<u>Objective</u>: Planning for the State's economy with regard to the visitor industry shall be directed towards the achievement of the objective of a visitor industry that constitutes a major component of steady growth for Hawaii's economy.			✓
<u>Policies</u>:			
(1) Support and assist in the promotion of Hawaii's visitor attractions and facilities.			✓
(2) Ensure that visitor industry activities are in keeping with the social, economic, and physical needs and aspirations of Hawaii's people.			✓

Hawai‘i State Plan, Chapter 226, HRS Part I. Overall Themes, Goals, Objectives and Policies Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable	S	N/S	N/A
(3) Improve the quality of existing visitor destination areas by utilizing Hawaii's strengths in science and technology.			✓
(4) Encourage cooperation and coordination between the government and private sectors in developing and maintaining well-designed, adequately serviced visitor industry and related developments which are sensitive to neighboring communities and activities.			✓
(5) Develop the industry in a manner that will continue to provide new job opportunities and steady employment for Hawaii's people.			✓
(6) Provide opportunities for Hawaii's people to obtain job training and education that will allow for upward mobility within the visitor industry.			✓
(7) Foster a recognition of the contribution of the visitor industry to Hawaii's economy and the need to perpetuate the aloha spirit.			✓
(8) Foster an understanding by visitors of the aloha spirit and of the unique and sensitive character of Hawaii's cultures and values.			✓
Analysis: **Not applicable.**			
Chapter 226-9 Objective and policies for the economy – – federal expenditures.			
Objective: Planning for the State's economy with regard to federal expenditures shall be directed towards achievement of the objective of a stable federal investment base as an integral component of Hawaii's economy.			✓
Policies:			
(1) Encourage the sustained flow of federal expenditures in Hawaii that generates long-term government civilian employment;			✓
(2) Promote Hawaii's supportive role in national defense, in a manner consistent with Hawaii's social, environmental, and cultural goals by building upon dual-use and defense applications to develop thriving ocean engineering, aerospace research and development, and related dual-use technology sectors in Hawaii's economy;			✓
(3) Promote the development of federally supported activities in Hawaii that respect statewide economic concerns, are sensitive to community needs, and minimize adverse impacts on Hawaii's environment;			✓
(4) Increase opportunities for entry and advancement of Hawaii's people into federal government service;			✓
(5) Promote federal use of local commodities, services, and facilities available in Hawaii;			✓
(6) Strengthen federal-state-county communication and coordination in all federal activities that affect Hawaii; and			✓
(7) Pursue the return of federally controlled lands in Hawaii that are not required for either the defense of the nation or for other purposes of national importance, and promote the mutually beneficial exchanges of land between federal agencies, the State, and the counties.			✓
Analysis: **Not applicable.**			
Chapter 226-10 Objective and policies for the economy – – potential growth and innovative activities.			
Objective: Planning for the State's economy with regard to potential growth and innovative activities shall be directed towards achievement of the objective of development and expansion of potential growth and innovative activities that serve to increase and diversify Hawaii's economic base.			✓

Hawai‘i State Plan, Chapter 226, HRS Part I. Overall Themes, Goals, Objectives and Policies Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable	S	N/S	N/A
Policies:			
(1) Facilitate investment and employment growth in economic activities that have the potential to expand and diversify Hawaii's economy, including but not limited to diversified agriculture, aquaculture, renewable energy development, creative media, health care, and science and technology-based sectors;			✓
(2) Facilitate investment in innovative activity that may pose risks or be less labor-intensive than other traditional business activity, but if successful, will generate revenue in Hawaii through the export of services or products or substitution of imported services or products;			✓
(3) Encourage entrepreneurship in innovative activity by academic researchers and instructors who may not have the background, skill, or initial inclination to commercially exploit their discoveries or achievements;			✓
(4) Recognize that innovative activity is not exclusively dependent upon individuals with advanced formal education, but that many self-taught, motivated individuals are able, willing, sufficiently knowledgeable, and equipped with the attitude necessary to undertake innovative activity;			✓
(5) Increase the opportunities for investors in innovative activity and talent engaged in innovative activity to personally meet and interact at cultural, art, entertainment, culinary, athletic, or visitor-oriented events without a business focus;			✓
(6) Expand Hawaii's capacity to attract and service international programs and activities that generate employment for Hawaii's people;			✓
(7) Enhance and promote Hawaii's role as a center for international relations, trade, finance, services, technology, education, culture, and the arts;			✓
(8) Accelerate research and development of new energy-related industries based on wind, solar, ocean, underground resources, and solid waste;			✓
(9) Promote Hawaii's geographic, environmental, social, and technological advantages to attract new or innovative economic activities into the State;			✓
(10) Provide public incentives and encourage private initiative to attract new or innovative industries that best support Hawaii's social, economic, physical, and environmental objectives;			✓
(11) Increase research and the development of ocean-related economic activities such as mining, food production, and scientific research;			✓
(12) Develop, promote, and support research and educational and training programs that will enhance Hawaii's ability to attract and develop economic activities of benefit to Hawaii;			✓
(13) Foster a broader public recognition and understanding of the potential benefits of new or innovative growth-oriented industry in Hawaii;			✓
(14) Encourage the development and implementation of joint federal and state initiatives to attract federal programs and projects that will support Hawaii's social, economic, physical, and environmental objectives;			✓
(15) Increase research and development of businesses and services in the telecommunications and information industries;			✓

Hawai‘i State Plan, Chapter 226, HRS Part I. Overall Themes, Goals, Objectives and Policies Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable	S	N/S	N/A
(16) Foster the research and development of nonfossil fuel and energy efficient modes of transportation; and			✓
(17) Recognize and promote health care and health care information technology as growth industries.			✓
Analysis: **Not applicable.**			
Chapter 226-10.5 Objectives and policies for the economy – – information industry.			
Objective: Planning for the State's economy with regard to telecommunications and information technology shall be directed toward recognizing that broadband and wireless communication capability and infrastructure are foundations for an innovative economy and positioning Hawaii as a leader in broadband and wireless communications and applications in the Pacific Region.			✓
Policies:			
(1) Promote efforts to attain the highest speeds of electronic and wireless communication within Hawaii and between Hawaii and the world, and make high speed communication available to all residents and businesses in Hawaii;			✓
(2) Encourage the continued development and expansion of the telecommunications infrastructure serving Hawaii to accommodate future growth and innovation in Hawaii's economy;			✓
(3) Facilitate the development of new or innovative business and service ventures in the information industry which will provide employment opportunities for the people of Hawaii;			✓
(4) Encourage mainland- and foreign-based companies of all sizes, whether information technology-focused or not, to allow their principals, employees, or contractors to live in and work from Hawaii, using technology to communicate with their headquarters, offices, or customers located out-of-state;			✓
(5) Encourage greater cooperation between the public and private sectors in developing and maintaining a well-designed information industry;			✓
(6) Ensure that the development of new businesses and services in the industry are in keeping with the social, economic, and physical needs and aspirations of Hawaii's people;			✓
(7) Provide opportunities for Hawaii's people to obtain job training and education that will allow for upward mobility within the information industry;			✓
(8) Foster a recognition of the contribution of the information industry to Hawaii's economy; and			✓
(9) Assist in the promotion of Hawaii as a broker, creator, and processor of information in the Pacific.			✓
Analysis: **Not applicable.**			
Chapter 226-11 Objectives and policies for the physical environment – – land based, shoreline, and marine resources.			
Objectives: Planning for the State's physical environment with regard to land-based, shoreline, and marine resources shall be directed towards achievement of the following objectives:			

Hawai‘i State Plan, Chapter 226, HRS Part I. Overall Themes, Goals, Objectives and Policies Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable	S	N/S	N/A
(1) Prudent use of Hawaii's land-based, shoreline, and marine resources.			✓
(2) Effective protection of Hawaii's unique and fragile environmental resources.			✓
Policies:			
(1) Exercise an overall conservation ethic in the use of Hawaii's natural resources.			✓
(2) Ensure compatibility between land-based and water-based activities and natural resources and ecological systems.			✓
(3) Take into account the physical attributes of areas when planning and designing activities and facilities.			✓
(4) Manage natural resources and environs to encourage their beneficial and multiple use without generating costly or irreparable environmental damage.			✓
(5) Consider multiple uses in watershed areas, provided such uses do not detrimentally affect water quality and recharge functions.			✓
(6) Encourage the protection of rare or endangered plant and animal species and habitats native to Hawaii.			✓
(7) Provide public incentives that encourage private actions to protect significant natural resources from degradation or unnecessary depletion.			✓
(8) Pursue compatible relationships among activities, facilities, and natural resources.			✓
(9) Promote increased accessibility and prudent use of inland and shoreline areas for public recreational, educational, and scientific purposes.			✓
Analysis: **Not applicable.**			
Chapter 226-12 Objective and policies for the physical environment – – scenic, natural beauty, and historic resources.			
Objective: Planning for the State's physical environment shall be directed towards achievement of the objective of enhancement of Hawaii's scenic assets, natural beauty, and multi-cultural/historical resources.			✓
Policies:			
(1) Promote the preservation and restoration of significant natural and historic resources.			✓
(2) Provide incentives to maintain and enhance historic, cultural, and scenic amenities.			✓
(3) Promote the preservation of views and vistas to enhance the visual and aesthetic enjoyment of mountains, ocean, scenic landscapes, and other natural features.			✓
(4) Protect those special areas, structures, and elements that are an integral and functional part of Hawaii's ethnic and cultural heritage.			✓
(5) Encourage the design of developments and activities that complement the natural beauty of the islands.	✓		

Hawai‘i State Plan, Chapter 226, HRS Part I. Overall Themes, Goals, Objectives and Policies Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable	S	N/S	N/A
Analysis: **The project has been carefully designed taking into consideration building profiles and massing so as to not adversely impact scenic views and vistas. The proposed turn-key homes will be similar in scale and size to existing residential developments nearby and will be built in accordance with established subdivision standards. In addition, a landscaped buffer will be developed at the roadway frontage along Honoapi‘ilani Highway, providing a landscaped, open space setback from the roadway to the house lots.**			
Chapter 226-13 Objectives and policies for the physical environment – – land, air, and water quality.			
Objectives: Planning for the State's physical environment with regard to land, air, and water quality shall be directed towards achievement of the following objectives.			
(1) Maintenance and pursuit of improved quality in Hawaii's land, air, and water resources.			✓
(2) Greater public awareness and appreciation of Hawaii's environmental resources.			✓
Policies:			
(1) Foster educational activities that promote a better understanding of Hawaii's limited environmental resources.			✓
(2) Promote the proper management of Hawaii's land and water resources.			✓
(3) Promote effective measures to achieve desired quality in Hawaii's surface, ground, and coastal waters.			✓
(4) Encourage actions to maintain or improve aural and air quality levels to enhance the health and well-being of Hawaii's people.			✓
(5) Reduce the threat to life and property from erosion, flooding, tsunamis, hurricanes, earthquakes, volcanic eruptions, and other natural or man-induced hazards and disasters.			✓
(6) Encourage design and construction practices that enhance the physical qualities of Hawaii's communities.			✓
(7) Encourage urban developments in close proximity to existing services and facilities.	✓		
(8) Foster recognition of the importance and value of the land, air, and water resources to Hawaii's people, their cultures and visitors.			✓
Analysis: The proposed project will be implemented in a developed area in Central Maui, in proximity to existing infrastructure and services.			
Chapter 226-14 Objective and policies for facility systems – – in general.			
Objective: Planning for the State's facility systems in general shall be directed towards achievement of the objective of water, transportation, waste disposal, and energy and telecommunication systems that support statewide social, economic, and physical objectives.			✓
Policies:			
(1) Accommodate the needs of Hawaii's people through coordination of facility systems and capital improvement priorities in consonance with state and county plans.			✓

Hawai'i State Plan, Chapter 226, HRS Part I. Overall Themes, Goals, Objectives and Policies Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable	S	N/S	N/A
(2) Encourage flexibility in the design and development of facility systems to promote prudent use of resources and accommodate changing public demands and priorities.			✓
(3) Ensure that required facility systems can be supported within resource capacities and at reasonable cost to the user.			✓
(4) Pursue alternative methods of financing programs and projects and cost-saving techniques in the planning, construction, and maintenance of facility systems.			✓
Analysis: **Not applicable.**			
Chapter 226-15 Objectives and policies for facility systems – – solid and liquid waste.			
<u>Objectives</u>: Planning for the State's facility systems with regard to solid and liquid wastes shall be directed towards the achievement of the following objectives:			
(1) Maintenance of basic public health and sanitation standards relating to treatment and disposal of solid and liquid wastes.	✓		
(2) Provision of adequate sewerage facilities for physical and economic activities that alleviate problems in housing, employment, mobility, and other areas.	✓		
<u>Policies:</u>			
(1) Encourage the adequate development of sewerage facilities that complement planned growth.	✓		
(2) Promote re-use and recycling to reduce solid and liquid wastes and employ a conservation ethic.	✓		
(3) Promote research to develop more efficient and economical treatment and disposal of solid and liquid wastes.			✓
Analysis: **The proposed project will connect to the County wastewater system. Coordination will be undertaken with the County Department of Environmental Management (DEM) to determine if certain improvements to the County's wastewater system will be required to service the project aside from the new sewerline that is proposed as part of the overall project. Construction waste will be disposed at the County's Central Maui Landfill or appropriate construction recycling centers. In addition, once built and occupied, the project is anticipated to be served by the County's refuse collection service.**			
Chapter 226-16 Objective and policies for facility systems – – water.			
<u>Objective</u>: Planning for the State's facility systems with regard to water shall be directed towards achievement of the objective of the provision of water to adequately accommodate domestic, agricultural, commercial, industrial, recreational, and other needs within resource capacities.	✓		
<u>Policies</u>:			
(1) Coordinate development of land use activities with existing and potential water supply.	✓		
(2) Support research and development of alternative methods to meet future water requirements well in advance of anticipated needs.			✓
(3) Reclaim and encourage the productive use of runoff water and wastewater discharges.			✓

Hawai‘i State Plan, Chapter 226, HRS Part I. Overall Themes, Goals, Objectives and Policies Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable	S	N/S	N/A
(4) Assist in improving the quality, efficiency, service, and storage capabilities of water systems for domestic and agricultural use.			✓
(5) Support water supply services to areas experiencing critical water problems.			✓
(6) Promote water conservation programs and practices in government, private industry, and the general public to help ensure adequate water to meet long-term needs.			✓
Analysis: **The project is located in an area that is serviced by existing County water infrastructure. Coordination will be undertaken with the County Department of Water Supply (DWS) to determine if certain improvements to the County's water system will be required to service the project.**			
Chapter 226-17 Objectives and policies for facility systems – – transportation.			
Objectives: Planning for the State's facility systems with regard to transportation shall be directed towards the achievement of the following objectives:			
(1) An integrated multi-modal transportation system that services statewide needs and promotes the efficient, economical, safe, and convenient movement of people and goods.			✓
(2) A statewide transportation system that is consistent with and will accommodate planned growth objectives throughout the State.			✓
Policies:			
(1) Design, program, and develop a multi-modal system in conformance with desired growth and physical development as stated in this chapter;			✓
(2) Coordinate state, county, federal, and private transportation activities and programs toward the achievement of statewide objectives;			✓
(3) Encourage a reasonable distribution of financial responsibilities for transportation among participating governmental and private parties;			✓
(4) Provide for improved accessibility to shipping, docking, and storage facilities;			✓
(5) Promote a reasonable level and variety of mass transportation services that adequately meet statewide and community needs;			✓
(6) Encourage transportation systems that serve to accommodate present and future development needs of communities;			✓
(7) Encourage a variety of carriers to offer increased opportunities and advantages to interisland movement of people and goods;			✓
(8) Increase the capacities of airport and harbor systems and support facilities to effectively accommodate transshipment and storage needs;			✓
(9) Encourage the development of transportation systems and programs which would assist statewide economic growth and diversification;			✓
(10) Encourage the design and development of transportation systems sensitive to the needs of affected communities and the quality of Hawaii's natural environment;			✓
(11) Encourage safe and convenient use of low-cost, energy-efficient, non-polluting means of transportation;			✓

Hawai‘i State Plan, Chapter 226, HRS Part I. Overall Themes, Goals, Objectives and Policies Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable	S	N/S	N/A
(12) Coordinate intergovernmental land use and transportation planning activities to ensure the timely delivery of supporting transportation infrastructure in order to accommodate planned growth objectives; and			✓
(13) Encourage diversification of transportation modes and infrastructure to promote alternate fuels and energy efficiency.			✓
Analysis: **Not Applicable.**			
Chapter 226-18 Objectives and policies for facility systems – – energy.			
Objectives: Planning for the State's facility systems with regard to energy shall be directed toward the achievement of the following objectives, giving due consideration to all:			
(1) Dependable, efficient, and economical statewide energy systems capable of supporting the needs of the people;			✓
(2) Increased energy security and self-sufficiency through the reduction and ultimate elimination of Hawaii's dependence on imported fuels for electrical generation and ground transportation.			✓
(3) Greater diversification of energy generation in the face of threats to Hawaii's energy supplies and systems;			✓
(4) Reduction, avoidance, or sequestration of greenhouse gas emissions from energy supply and use; and			✓
(5) Utility models that make the social and financial interests of Hawaii's utility customers a priority.			✓
(b) To achieve the energy objectives, it shall be the policy of this State to ensure the short- and long-term provision of adequate, reasonably prices, and dependable energy services to accommodate demand.			✓
Policies:			
(1) Support research and development as well as promote the use of renewable energy sources;			✓
(2) Ensure that the combination of energy supplies and energy-saving systems is sufficient to support the demands of growth;			✓
(3) Base decisions of least-cost supply-side and demand-side energy resource options on a comparison of their total costs and benefits when a least-cost is determined by a reasonably comprehensive, quantitative, and qualitative accounting of their long-term, direct and indirect economic, environmental, social, cultural, and public health costs and benefits;			✓
(4) Promote all cost-effective conservation of power and fuel supplies through measures, including:			
(A) Development of cost-effective demand-side management programs;			✓
(B) Education;			✓
(C) Adoption of energy-efficient practices and technologies; and			✓
(D) Increasing energy efficiency and decreasing energy use in public infrastructure			✓
(5) Ensure, to the extent that new supply-side resources are needed, that the development or expansion of energy systems uses the least-cost energy supply option and maximizes efficient technologies; and			✓

Hawai‘i State Plan, Chapter 226, HRS Part I. Overall Themes, Goals, Objectives and Policies Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable	S	N/S	N/A
(6) Support research, development, demonstration, and use of energy efficiency, load management, and other demand-side management programs, practices, and technologies;			✓
(7) Promote alternate fuels and transportation energy efficiency;			✓
(8) Support actions that reduce, avoid, or sequester greenhouse gases in utility, transportation, and industrial sector applications;			✓
(9) Support actions that reduce, avoid, or sequester Hawaii's greenhouse gas emissions through agriculture and forestry initiatives;			✓
(10) Provide priority handling and processing for all state and county permits required for renewable energy projects;			✓
(11) Ensure that liquefied natural gas is used only as a cost-effective transitional, limited-term replacement of petroleum for electricity generation and does not impede the development and use of other cost-effective renewable energy sources; and			✓
(12) Promote the development of indigenous geothermal energy resources that are located on public trust land as an affordable and reliable source of firm power for Hawaii.			✓
Analysis: **Not Applicable**			
Chapter 226-18.5 Objectives and policies for facility systems – – telecommunications.			
Objectives:			
(a) Planning for the State's telecommunications facility systems shall be directed towards the achievement of dependable, efficient, and economical statewide telecommunications systems capable of supporting the needs of the people.			✓
(b) To achieve the telecommunications objective, it shall be the policy of this State to ensure the provision of adequate, reasonably priced, and dependable telecommunications services to accommodate demand.			✓
Policies:			
(1) Facilitate research and development of telecommunications systems and resources;			✓
(2) Encourage public and private sector efforts to develop means for adequate, ongoing telecommunications planning;			✓
(3) Promote efficient management and use of existing telecommunications systems and services; and			✓
(4) Facilitate the development of education and training of telecommunications personnel.			✓
Analysis: **Not applicable.**			
Chapter 226-19 Objectives and policies for socio-cultural advancement – – housing.			
Objectives: Planning for the State's socio-cultural advancement with regard to housing shall be directed toward the achievement of the following objectives:			

Hawai‘i State Plan, Chapter 226, HRS Part I. Overall Themes, Goals, Objectives and Policies Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable	S	N/S	N/A
(1) Greater opportunities for Hawaii's people to secure reasonably priced, safe, sanitary, and livable homes, located in suitable environments that satisfactorily accommodate the needs and desires of families and individuals, through collaboration and cooperation between government and nonprofit and for-profit developers to ensure that more affordable housing is made available to very low-, low- and moderate-income segments of Hawaii's population.	✓		
(2) The orderly development of residential areas sensitive to community needs and other land uses.	✓		
(3) The development and provision of affordable rental housing by the State to meet the housing needs of Hawaii's people.	✓		
Policies:			
(1) Effectively accommodate the housing needs of Hawaii's people.	✓		
(2) Stimulate and promote feasible approaches that increase housing choices for low-income, moderate-income, and gap-group households.			✓
(3) Increase homeownership and rental opportunities and choices in terms of quality, location, cost, densities, style, and size of housing.	✓		
(4) Promote appropriate improvement, rehabilitation, and maintenance of existing housing units and residential areas.			✓
(5) Promote design and location of housing developments taking into account the physical setting, accessibility to public facilities and services, and other concerns of existing communities and surrounding areas.	✓		
(6) Facilitate the use of available vacant, developable, and underutilized urban lands for housing.			✓
(7) Foster a variety of lifestyles traditional to Hawaii through the design and maintenance of neighborhoods that reflect the culture and values of the community.	✓		
(8) Promote research and development of methods to reduce the cost of housing construction in Hawaii.			✓
Analysis: **The proposed project provides needed additional homestead opportunities for DHHL beneficiaries in an area that is close to the government, business, and commercial centers of Wailuku and Kahului. In addition, the project will be implemented in a developed area in Central Maui, in proximity to existing infrastructure and services.**			
Chapter 226-20 Objectives and policies for socio-cultural advancement – – health.			
Objectives: Planning for the State's socio-cultural advancement with regard to health shall be directed towards achievement of the following objectives:			
(1) Fulfillment of basic individual health needs of the general public.			✓
(2) Maintenance of sanitary and environmentally healthful conditions in Hawaii's communities.			✓
(3) Elimination of health disparities by identifying and addressing social determinants of health.			✓

Hawai‘i State Plan, Chapter 226, HRS Part I. Overall Themes, Goals, Objectives and Policies Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable	S	N/S	N/A
Policies:			
(1) Provide adequate and accessible services and facilities for prevention and treatment of physical and mental health problems, including substance abuse.			✓
(2) Encourage improved cooperation among public and private sectors in the provision of health care to accommodate the total health needs of individuals throughout the State.			✓
(3) Encourage public and private efforts to develop and promote statewide and local strategies to reduce health care and related insurance costs.			✓
(4) Foster an awareness of the need for personal health maintenance and preventive health care through education and other measures.			✓
(5) Provide programs, services, and activities that ensure environmentally healthful and sanitary conditions.			✓
(6) Improve the State’s capabilities in preventing contamination by pesticides and other potentially hazardous substances through increased coordination, education, monitoring, and enforcement.			✓
(7) Prioritize programs, services, interventions, and activities that address identified social determinants of health to improve native Hawaiian health and well-being consistent with the United States Congress' declaration of policy as codified in title 42 United States Code section 11702, and to reduce health disparities of disproportionately affected demographics, including native Hawaiians, other Pacific Islanders, and Filipinos. The prioritization of affected demographic groups other than native Hawaiians may be reviewed every ten years and revised based on the best available epidemiological and public health data.			✓
Analysis: **Not applicable.**			
Chapter 226-21 Objectives and policies for Socio-cultural advancement – – education.			
Objective: Planning for the State’s socio-cultural advancement with regard to education shall be directed towards achievement of the objective of the provision of a variety of educational opportunities to enable individuals to fulfill their needs, responsibilities, and aspirations.			✓
Policies:			
(1) Support educational programs and activities that enhance personal development, physical fitness, recreation, and cultural pursuits of all groups.			✓
(2) Ensure the provision of adequate and accessible educational services and facilities that are designed to meet individual and community needs.			✓
(3) Provide appropriate educational opportunities for groups with special needs.			✓
(4) Promote educational programs which enhance understanding of Hawaii’s cultural heritage.			✓
(5) Provide higher educational opportunities that enable Hawaii’s people to adapt to changing employment demands.			✓
(6) Assist individuals, especially those experiencing critical employment problems or barriers, or undergoing employment transitions, by providing appropriate employment training programs and other related educational opportunities.			✓

Hawai‘i State Plan, Chapter 226, HRS Part I. Overall Themes, Goals, Objectives and Policies Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable	S	N/S	N/A
(7) Promote programs and activities that facilitate the acquisition of basic skills, such as reading, writing, computing, listening, speaking, and reasoning.			✓
(8) Emphasize quality educational programs in Hawaii's institutions to promote academic excellence.			✓
(9) Support research programs and activities that enhance the education programs of the State.			✓
Analysis: **Not applicable.**			
Chapter 226-22 Objective and policies for socio-cultural advancement – – social services.			
Objective: Planning for the State's socio-cultural advancement with regard to social services shall be directed towards the achievement of the objective of improved public and private social services and activities that enable individuals, families, and groups to become more self-reliant and confident to improve their well-being.			✓
Policies:			
(1) Assist individuals, especially those in need of attaining a minimally adequate standard of living and those confronted by social and economic hardship conditions, through social services and activities within the State's fiscal capacities.			✓
(2) Promote coordination and integrative approaches among public and private agencies and programs to jointly address social problems that will enable individuals, families, and groups to deal effectively with social problems and to enhance their participation in society.			✓
(3) Facilitate the adjustment of new residents, especially recently arrived immigrants, into Hawaii's communities.			✓
(4) Promote alternatives to institutional care in the provision of long-term care for elder and disabled populations.			✓
(5) Support public and private efforts to prevent domestic abuse and child molestation, and assist victims of abuse and neglect.			✓
(6) Promote programs which assist people in need of family planning services to enable them to meet their needs.			✓
Analysis: **Not applicable.**			
Chapter 226-23 Objective and policies for socio-cultural advancement – – leisure.			
Objective: Planning for the State's socio-cultural advancement with regard to leisure shall be directed towards the achievement of the objective of the adequate provision of resources to accommodate diverse cultural, artistic, and recreational needs for present and future generations.			✓
Policies:			
(1) Foster and preserve Hawaii's multi-cultural heritage through supportive cultural, artistic, recreational, and humanities-oriented programs and activities.			✓
(2) Provide a wide range of activities and facilities to fulfill the cultural, artistic, and recreational needs of all diverse and special groups effectively and efficiently.			✓

Hawai‘i State Plan, Chapter 226, HRS Part I. Overall Themes, Goals, Objectives and Policies Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable	S	N/S	N/A
(3) Enhance the enjoyment of recreational experiences through safety and security measures, educational opportunities, and improved facility design and maintenance.			✓
(4) 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.			✓
(5) Ensure opportunities for everyone to use and enjoy Hawaii's recreational resources.			✓
(6) Assure the availability of sufficient resources to provide for future cultural, artistic, and recreational needs.			✓
(7) Provide adequate and accessible physical fitness programs to promote the physical and mental well-being of Hawaii's people.			✓
(8) Increase opportunities for appreciation and participation in the creative arts, including the literary, theatrical, visual, musical, folk, and traditional art forms.			✓
(9) Encourage the development of creative expression in the artistic disciplines to enable all segments of Hawaii's population to participate in the creative arts.			✓
(10) Assure adequate access to significant natural and cultural resources in public ownership.			✓
Analysis: **Not applicable.**			
Chapter 226-24 Objective and policies for socio-cultural advancement – – individual rights and personal well-being.			
Objective: Planning for the State's socio-cultural advancement with regard to individual rights and personal well-being shall be directed towards achievement of the objective of increased opportunities and protection of individual rights to enable individuals to fulfill their socio-economic needs and aspirations.			✓
Policies:			
(1) Provide effective services and activities that protect individuals from criminal acts and unfair practices and that alleviate the consequences of criminal acts in order to foster a safe and secure environment.			✓
(2) Uphold and protect the national and state constitutional rights of every individual.			✓
(3) Assure access to, and availability of, legal assistance, consumer protection, and other public services which strive to attain social justice.			✓
(4) Ensure equal opportunities for individual participation in society.			✓
Analysis: **Not applicable.**			
Chapter 226-25 Objective and policies for socio-cultural advancement – – culture.			
Objective: Planning for the State's socio-cultural advancement with regard to culture shall be directed toward the achievement of the objective of enhancement of cultural identities, traditions, values, customs, and arts of Hawaii's people.			✓

Hawai‘i State Plan, Chapter 226, HRS Part I. Overall Themes, Goals, Objectives and Policies Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable	S	N/S	N/A
Policies:			
(1) Foster increased knowledge and understanding of Hawaii's ethnic and cultural heritages and the history of Hawaii.			✓
(2) Support activities and conditions that promote cultural values, customs, and arts that enrich the lifestyles of Hawaii's people and which are sensitive and responsive to family and community needs.			✓
(3) Encourage increased awareness of the effects of proposed public and private actions on the integrity and quality of cultural and community lifestyles in Hawaii.			✓
(4) Encourage the essence of the aloha spirit in people's daily activities to promote harmonious relationships among Hawaii's people and visitors.			✓
Analysis: **Not applicable.**			
Chapter 226-26 Objectives and policies for socio-cultural advancement – – public safety.			
Objective: Planning for the State's socio-cultural advancement with regard to public safety shall be directed towards the achievement of the following objectives:			✓
(1) Assurance of public safety and adequate protection of life and property for all people.			✓
(2) Optimum organizational readiness and capability in all phases of emergency management to maintain the strength, resources, and social and economic well-being of the community in the event of civil disruptions, wars, natural disasters, and other major disturbances.			✓
(3) Promotion of a sense of community responsibility for the welfare and safety of Hawaii's people.			✓
Policies (Public Safety):			
(1) Ensure that public safety programs are effective and responsive to community needs.			✓
(2) Encourage increased community awareness and participation in public safety programs.			✓
Policies (Public Safety-Criminal Justice):			
(1) Support criminal justice programs aimed at preventing and curtailing criminal activities.			✓
(2) Develop a coordinated, systematic approach to criminal justice administration among all criminal justice agencies.			✓
(3) Provide a range of correctional resources which may include facilities and alternatives to traditional incarceration in order to address the varied security needs of the community and successfully reintegrate offenders into the community.			✓
Policies (Public Safety – Emergency Management):			
(1) Ensure that responsible organizations are in a proper state of readiness to respond to major war-related, natural, or technological disasters and civil disturbances at all times.			✓
(2) Enhance the coordination between emergency management programs throughout the State.			✓

Hawai‘i State Plan, Chapter 226, HRS Part I. Overall Themes, Goals, Objectives and Policies Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable	S	N/S	N/A
Analysis: **Not applicable.**			
Chapter 226-27 Objectives and policies for socio-cultural advancement – – government.			
<u>Objectives</u>: Planning the State's socio-cultural advancement with regard to government shall be directed towards the achievement of the following objectives:			✓
(1) Efficient, effective, and responsive government services at all levels in the State.			✓
(2) Fiscal integrity, responsibility, and efficiency in the state government and county governments.			✓
<u>Policies</u>:			
(1) Provide for necessary public goods and services not assumed by the private sector.			✓
(2) Pursue an openness and responsiveness in government that permits the flow of public information, interaction, and response.			✓
(3) Minimize the size of government to that necessary to be effective.			✓
(4) Stimulate the responsibility in citizens to productively participate in government for a better Hawaii.			✓
(5) Assure that government attitudes, actions, and services are sensitive to community needs and concerns.			✓
(6) Provide for a balanced fiscal budget.			✓
(7) Improve the fiscal budgeting and management system of the State.			✓
(8) Promote the consolidation of state and county governmental functions to increase the effective and efficient delivery of government programs and services and to eliminate duplicative services wherever feasible.			✓
Analysis: **Not applicable.**			

HAWAI‘I STATE PLAN, CHAPTER 226, HRS – PART III. PRIORITY GUIDELINES (Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable)	S	N/S	N/A
Chapter 226-101: Purpose. The purpose of this part is to establish overall priority guidelines to address areas of statewide concern.			
Chapter 226-102: Overall direction. The State shall strive to improve the quality of life for Hawaii's present and future population through the pursuit of desirable courses of action in seven major areas of statewide concern which merit priority attention: economic development, population growth and land resource management, affordable housing, crime and criminal justice, quality education, principles of sustainability, and climate change adaptation.			
Chapter 226-103: Economic priority guidelines.			
(a) Priority guidelines to stimulate economic growth and encourage business expansion and development to provide needed jobs for Hawaii's people and achieve a stable and diversified economy:			
(1) Seek a variety of means to increase the availability of investment capital for new and expanding enterprises.			✓

HAWAI'I STATE PLAN, CHAPTER 226, HRS – PART III. PRIORITY GUIDELINES (Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable)	S	N/S	N/A
(A) Encourage investments which:			
(i) Reflect long term commitments to the State;			✓
(ii) Rely on economic linkages within the local economy;			✓
(iii) Diversify the economy;			✓
(iv) Reinvest in the local economy;			✓
(v) Are sensitive to community needs and priorities; and			✓
(vi) Demonstrate a commitment to provide management opportunities to Hawaii residents; and			✓
(B) Encourage investments in innovative activities that have a nexus to the State, such as:			
(i) Present or former residents acting as entrepreneurs or principals;			✓
(ii) Academic support from an institution of higher education in Hawaii;			✓
(iii) Investment interest from Hawaii residents;			✓
(iv) Resources unique to Hawaii that are required for innovative activity; and			✓
(v) Complementary or supportive industries or government programs or projects.			✓
(2) Encourage the expansion of technological research to assist industry development and support the development and commercialization of technological advancements.			✓
(3) Improve the quality, accessibility, and range of services provided by government to business, including data and reference services and assistance in complying with governmental regulations.			✓
(4) Seek to ensure that state business tax and labor laws and administrative policies are equitable, rational, and predictable.			✓
(5) Streamline the processes for building and development permit and review, and telecommunication infrastructure installation approval and eliminate or consolidate other burdensome or duplicative governmental requirements imposed on business, where scientific evidence indicates that public health, safety and welfare would not be adversely affected.			✓
(6) Encourage the formation of cooperatives and other favorable marketing or distribution arrangements at the regional or local level to assist Hawaii's small-scale producers, manufacturers, and distributors.			✓
(7) Continue to seek legislation to protect Hawaii from transportation interruptions between Hawaii and the continental United States.			✓
(8) Provide public incentives and encourage private initiative to develop and attract industries which promise long-term growth potentials and which have the following characteristics:			✓
(A) An industry that can take advantage of Hawaii's unique location and available physical and human resources.			✓
(B) A clean industry that would have minimal adverse effects on Hawaii's environment.			✓
(C) An industry that is willing to hire and train Hawaii's people to meet the industry's labor needs at all levels of employment.			✓
(D) An industry that would provide reasonable income and steady employment.			✓

HAWAI'I STATE PLAN, CHAPTER 226, HRS – PART III. PRIORITY GUIDELINES (Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable)	S	N/S	N/A
(9) Support and encourage, through educational and technical assistance programs and other means, expanded opportunities for employee ownership and participation in Hawaii business.			✓
(10) Enhance the quality of Hawaii's labor force and develop and maintain career opportunities for Hawaii's people through the following actions:			✓
(A) Expand vocational training in diversified agriculture, aquaculture, information industry, and other areas where growth is desired and feasible.			✓
(B) Encourage more effective career counseling and guidance in high schools and post-secondary institutions to inform students of present and future career opportunities.			✓
(C) Allocate educational resources to career areas where high employment is expected and where growth of new industries is desired.			✓
(D) Promote career opportunities in all industries for Hawaii's people by encouraging firms doing business in the State to hire residents.			✓
(E) Promote greater public and private sector cooperation in determining industrial training needs and in developing relevant curricula and on- the-job training opportunities.			✓
(F) Provide retraining programs and other support services to assist entry of displaced workers into alternative employment.			✓
(b) Priority guidelines to promote the economic health and quality of the visitor industry:			
(1) Promote visitor satisfaction by fostering an environment which enhances the Aloha Spirit and minimizes inconveniences to Hawaii's residents and visitors.			✓
(2) Encourage the development and maintenance of well-designed, adequately serviced hotels and resort destination areas which are sensitive to neighboring communities and activities and which provide for adequate shoreline setbacks and beach access.			✓
(3) Support appropriate capital improvements to enhance the quality of existing resort destination areas and provide incentives to encourage investment in upgrading, repair, and maintenance of visitor facilities.			✓
(4) Encourage visitor industry practices and activities which respect, preserve, and enhance Hawaii's significant natural, scenic, historic, and cultural resources.			✓
(5) Develop and maintain career opportunities in the visitor industry for Hawaii's people, with emphasis on managerial positions.			✓
(6) Support and coordinate tourism promotion abroad to enhance Hawaii's share of existing and potential visitor markets.			✓
(7) Maintain and encourage a more favorable resort investment climate consistent with the objectives of this chapter.			✓
(8) Support law enforcement activities that provide a safer environment for both visitors and residents alike.			✓
(9) Coordinate visitor industry activities and promotions to business visitors through the state network of advanced data communication techniques.			✓
(c) Priority guidelines to promote the continued viability of the sugar and pineapple industries:			
(1) Provide adequate agricultural lands to support the economic viability of the sugar and pineapple industries.			✓
(2) Continue efforts to maintain federal support to provide stable sugar prices high enough to allow profitable operations in Hawaii.			✓

HAWAI'I STATE PLAN, CHAPTER 226, HRS – PART III. PRIORITY GUIDELINES (Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable)	S	N/S	N/A
(3) Support research and development, as appropriate, to improve the quality and production of sugar and pineapple crops.			✓
(d) Priority guidelines to promote the growth and development of diversified agriculture and aquaculture:			
(1) Identify, conserve, and protect agricultural and aquacultural lands of importance and initiate affirmative and comprehensive programs to promote economically productive agricultural and aquacultural uses of such lands.			✓
(2) Assist in providing adequate, reasonably priced water for agricultural activities.			✓
(3) Encourage public and private investment to increase water supply and to improve transmission, storage, and irrigation facilities in support of diversified agriculture and aquaculture.			✓
(4) Assist in the formation and operation of production and marketing associations and cooperatives to reduce production and marketing costs.			✓
(5) Encourage and assist with the development of a waterborne and airborne freight and cargo system capable of meeting the needs of Hawaii's agricultural community.			✓
(6) Seek favorable freight rates for Hawaii's agricultural products from interisland and overseas transportation operators.			✓
(7) Encourage the development and expansion of agricultural and aquacultural activities which offer long-term economic growth potential and employment opportunities.			✓
(8) Continue the development of agricultural parks and other programs to assist small independent farmers in securing agricultural lands and loans.			✓
(9) Require agricultural uses in agricultural subdivisions and closely monitor the uses in these subdivisions.			✓
(10) Support the continuation of land currently in use for diversified agriculture.			✓
(11) Encourage residents and visitors to support Hawaii's farmers by purchasing locally grown food and food products.			✓
(e) Priority guidelines for water use and development:			
(1) Maintain and improve water conservation programs to reduce the overall water consumption rate.			✓
(2) Encourage the improvement of irrigation technology and promote the use of nonpotable water for agricultural and landscaping purposes.			✓
(3) Increase the support for research and development of economically feasible alternative water sources.			✓
(4) Explore alternative funding sources and approaches to support future water development programs and water system improvements.			✓
(f) Priority guidelines for energy use and development:			
(1) Encourage the development, demonstration, and commercialization of renewable energy sources.	✓		
(2) Initiate, maintain, and improve energy conservation programs aimed at reducing energy waste and increasing public awareness of the need to conserve energy.			✓
(3) Provide incentives to encourage the use of energy conserving technology in residential, industrial, and other buildings.			✓
(4) Encourage the development and use of energy conserving and cost-efficient transportation systems.			✓

HAWAI'I STATE PLAN, CHAPTER 226, HRS – PART III. PRIORITY GUIDELINES (Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable)	S	N/S	N/A
(g) Priority guidelines to promote the development of the information industry:			
(1) Establish an information network, with an emphasis on broadband and wireless infrastructure and capability, that will serve as the foundation of and catalyst for overall economic growth and diversification in Hawaii.			✓
(2) Encourage the development of services such as financial data processing, a products and services exchange, foreign language translations, telemarketing, teleconferencing, a twenty-four-hour international stock exchange, international banking, and a Pacific Rim management center.			✓
(3) Encourage the development of small businesses in the information field such as software development; the development of new information systems, peripherals, and applications; data conversion and data entry services; and home or cottage services such as computer programming, secretarial, and accounting services.			✓
(4) Encourage the development or expansion of educational and training opportunities for residents in the information and telecommunications fields.			✓
(5) Encourage research activities, including legal research in the information and telecommunications fields.			✓
(6) Support promotional activities to market Hawaii's information industry services.			✓
(7) Encourage the location or co-location of telecommunication or wireless information relay facilities in the community, including public areas, where scientific evidence indicates that the public health, safety, and welfare would not be adversely affected.			✓
Analysis: **Each turn-key home will have a solar water heater system. In addition, individual homeowners may install photovoltaic panels on their homes if they so choose.**			
Chapter 226-104: Population growth and land resources priority guidelines.			
(a) Priority guidelines to effect desired statewide growth and distribution:			
(1) Encourage planning and resource management to insure that population growth rates throughout the State are consistent with available and planned resource capacities and reflect the needs and desires of Hawaii's people.			✓
(2) Manage a growth rate for Hawaii's economy that will parallel future employment needs for Hawaii's people.			✓
(3) Ensure that adequate support services and facilities are provided to accommodate the desired distribution of future growth throughout the State.			✓
(4) Encourage major state and federal investments and services to promote economic development and private investment to the neighbor islands, as appropriate.			✓
(5) Explore the possibility of making available urban land, low-interest loans, and housing subsidies to encourage the provision of housing to support selective economic and population growth on the neighbor islands.			✓
(6) Seek federal funds and other funding sources outside the State for research, program development, and training to provide future employment opportunities on the neighbor islands.			✓
(7) Support the development of high technology parks on the neighbor islands.			✓

HAWAI'I STATE PLAN, CHAPTER 226, HRS – PART III. PRIORITY GUIDELINES (Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable)	S	N/S	N/A
(b) Priority guidelines for regional growth distribution and land resource utilization:			
(1) Encourage urban growth primarily to existing urban areas where adequate public facilities are already available or can be provided with reasonable public expenditures, and away from areas where other important benefits are present, such as protection of important agricultural land or preservation of lifestyles.	✓		
(2) Make available marginal or nonessential agricultural lands for appropriate urban uses while maintaining agricultural lands of importance in the agricultural district.			✓
(3) Restrict development when drafting of water would result in exceeding the sustainable yield or in significantly diminishing the recharge capacity of any groundwater area.			✓
(4) Encourage restriction of new urban development in areas where water is insufficient from any source for both agricultural and domestic use.			✓
(5) In order to preserve green belts, give priority to state capital-improvement funds which encourage location of urban development within existing urban areas except where compelling public interest dictates development of a noncontiguous new urban core.			✓
(6) Seek participation from the private sector for the cost of building infrastructure and utilities, and maintaining open spaces.			✓
(7) Pursue rehabilitation of appropriate urban areas.			✓
(8) Support the redevelopment of Kakaako into a viable residential, industrial, and commercial community.			✓
(9) Direct future urban development away from critical environmental areas or impose mitigating measures so that negative impacts on the environment would be minimized.	✓		
(10) Identify critical environmental areas in Hawaii to include but not be limited to the following: watershed and recharge areas; wildlife habitats (on land and in the ocean); areas with endangered species of plants and wildlife; natural streams and water bodies; scenic and recreational shoreline resources; open space and natural areas; historic and cultural sites; areas particularly sensitive to reduction in water and air quality; and scenic resources.			✓
(11) Identify all areas where priority should be given to preserving rural character and lifestyle.			✓
(12) Utilize Hawaii's limited land resources wisely, providing adequate land to accommodate projected population and economic growth needs while ensuring the protection of the environment and the availability of the shoreline, conservation lands, and other limited resources for future generations.	✓		
(13) Protect and enhance Hawaii's shoreline, open spaces, and scenic resources.			✓
Analysis: **The proposed project repurposes nonessential agricultural land while providing additional homestead opportunities for DHHL beneficiaries in an area that is close to the government, business, and commercial centers of Wailuku and Kahului. In addition, the project will be implemented in a developed area in Central Maui, in proximity to existing infrastructure and services.**			
Chapter 226-105: Crime and criminal justice.			
Priority guidelines in the area of crime and criminal justice:			
(1) Support law enforcement activities and other criminal justice efforts that are directed to provide a safer environment.			✓

HAWAI'I STATE PLAN, CHAPTER 226, HRS – PART III. PRIORITY GUIDELINES (Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable)	S	N/S	N/A
(2) Target state and local resources on efforts to reduce the incidence of violent crime and on programs relating to the apprehension and prosecution of repeat offenders.			✓
(3) Support community and neighborhood program initiatives that enable residents to assist law enforcement agencies in preventing criminal activities.			✓
(4) Reduce overcrowding or substandard conditions in correctional facilities through a comprehensive approach among all criminal justice agencies which may include sentencing law revisions and use of alternative sanctions other than incarceration for persons who pose no danger to their community.			✓
(5) Provide a range of appropriate sanctions for juvenile offenders, including community-based programs and other alternative sanctions.			✓
(6) Increase public and private efforts to assist witnesses and victims of crimes and to minimize the costs of victimization.			✓
Analysis: **Not applicable.**			
Chapter 226-106: Affordable housing.			
Priority guidelines for the provision of affordable housing:			
(1) Seek to use marginal or nonessential agricultural land and public land to meet housing needs of low- and moderate-income and gap-group households.	✓		
(2) Encourage the use of alternative construction and development methods as a means of reducing production costs.			✓
(3) Improve information and analysis relative to land availability and suitability for housing.			✓
(4) Create incentives for development which would increase home ownership and rental opportunities for Hawaii's low- and moderate-income households, gap-group households, and residents with special needs.			✓
(5) Encourage continued support for government or private housing programs that provide low interest mortgages to Hawaii's people for the purchase of initial owner-occupied housing.	✓		
(6) Encourage public and private sector cooperation in the development of rental housing alternatives.			✓
(7) Encourage improved coordination between various agencies and levels of government to deal with housing policies and regulations.			✓
(8) Give higher priority to the provision of quality housing that is affordable for Hawaii's residents and less priority to development of housing intended primarily for individuals outside of Hawaii.			✓
Analysis: **The proposed project repurposes nonessential agricultural land while providing additional homestead opportunities for DHHL beneficiaries in an area that is close to the government, business, and commercial centers of Wailuku and Kahului.**			
Chapter 226-107: Quality education.			
Priority guidelines to promote quality education:			
(1) Pursue effective programs which reflect the varied district, school, and student needs to strengthen basic skills achievement;			✓
(2) Continue emphasis on general education "core" requirements to provide common background to students and essential support to other university programs;			✓
(3) Initiate efforts to improve the quality of education by improving the capabilities of the education work force;			✓

HAWAI'I STATE PLAN, CHAPTER 226, HRS – PART III. PRIORITY GUIDELINES (Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable)	S	N/S	N/A
(4) Promote increased opportunities for greater autonomy and flexibility of educational institutions in their decision making responsibilities;			✓
(5) Increase and improve the use of information technology in education by the availability of telecommunications equipment for:			
(A) The electronic exchange of information;			✓
(B) Statewide electronic mail; and			✓
(C) Access to the Internet.			✓
(6) Encourage programs that increase the public's awareness and understanding of the impact of information technologies on our lives;			✓
(7) Pursue the establishment of Hawaii's public and private universities and colleges as research and training centers of the Pacific;			✓
(8) Develop resources and programs for early childhood education;			✓
(9) Explore alternatives for funding and delivery of educational services to improve the overall quality of education; and			✓
(10) Strengthen and expand educational programs and services for students with special needs.			✓
Analysis: **Not applicable.**			
CHAPTER 226-108: Sustainability			
Priority guidelines and principles to promote sustainability shall include:			
(1) Encouraging balanced economic, social, community, and environmental priorities;			✓
(2) Encouraging planning that respects and promotes living within the natural resources and limits of the State;			✓
(3) Promoting a diversified and dynamic economy;			✓
(4) Encouraging respect for the host culture;			✓
(5) Promoting decisions based on meeting the needs of the present without compromising the needs of future generations;			✓
(6) Considering the principles of the ahupuaa system; and			✓
(7) Emphasizing that everyone, including individuals, families, communities, businesses, and government, has the responsibility for achieving a sustainable Hawaii.			✓
Analysis: **Not applicable.**			
CHAPTER 226-109: Climate change adaptation			
Priority guidelines and principles to promote climate change adaptation shall include:			
(1) Ensure that Hawaii's people are educated, informed, and aware of the impacts climate change may have on their communities;			✓
(2) Encourage community stewardship groups and local stakeholders to participate in planning and implementation of climate change policies;			✓
(3) Invest in continued monitoring and research of Hawaii's climate and the impacts of climate change on the State;			✓
(4) Consider native Hawaiian traditional knowledge and practices in planning for the impacts of climate change;			✓
(5) Encourage the preservation and restoration of natural landscape features, such as coral reefs, beaches and dunes, forests, streams, floodplains, and wetlands, that have the inherent capacity to avoid, minimize, or mitigate the impacts of climate change;			✓

HAWAIʻI STATE PLAN, CHAPTER 226, HRS – PART III. PRIORITY GUIDELINES (Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable)	S	N/S	N/A
(6) Explore adaptation strategies that moderate harm or exploit beneficial opportunities in response to actual or expected climate change impacts to the natural and built environments;			✓
(7) Promote sector resilience in areas such as water, roads, airports, and public health, by encouraging the identification of climate change threats, assessment of potential consequences, and evaluation of adaptation options;			✓
(8) Foster cross-jurisdictional collaboration between county, state, and federal agencies and partnerships between government and private entities and other nongovernmental entities, including nonprofit entities;			✓
(9) Use management and implementation approaches that encourage the continual collection, evaluation, and integration of new information and strategies into new and existing practices, policies, and plans; and			✓
(10) Encourage planning and management of the natural and built environments that effectively integrate climate change policy.	✓		
Analysis: **The project is located inland and outside of the projected 3.2-foot sea level rise exposure area.**			

D. STATE FUNCTIONAL PLANS

A key element of the Statewide Planning System is the Functional Plans which set forth the policies, statewide guidelines, and priorities within a specific field of activity. There are 13 Functional Plans which have been developed by the state agency primarily responsible for a given functional area. Together with the County General Plans, the State Functional Plans establish more specific strategies for implementation. In particular, State Functional Plans provide for the following:

- Identify major Statewide priority concerns
- Define current strategies for each functional area
- Identify major relationships among functional areas
- Provide direction and strategies for departmental policies, programs, and priorities
- Provide a guide for the allocation of resources
- Coordinate State and County roles and responsibilities in the implementation of the Hawaiʻi State Plan

Table 4 provides an assessment of the relationship between the proposed action and each of the 13 Functional Plans.

Table 4. Relation Between the Proposed Pu‘unani Subdivision Project and the State Functional Plans

No.	State Functional Plan	State Coordinating Agency	Purpose	Analysis
1	Agriculture Functional Plan (1991)	Department of Agriculture	Continued viability of agriculture throughout the State	Although the proposed project involves repurposing lands designated for agricultural use, the lands have not been in active agricultural production for some time apart from intermittent grazing. As such, the proposed action is not anticipated to contravene the objectives and policies of this functional plan.
2	Conservation Lands State Functional Plan (1991)	Department of Land and Natural Resources	Addresses issues of population and economic growth and its strain on current natural resources; broadening public use of natural resources while protecting lands and shorelines from overuse; additionally, promotes the aquaculture industry	The proposed project will not utilize any State Conservation lands. Similarly, the project is located inland, and not near the coastline. Best Management Practices (BMPs) will be implemented to minimize adverse impacts to downstream properties and the shoreline. The proposed action is not anticipated to contravene the objectives and policies of this functional plan.
3	Education State Functional Plan (1989)	Department of Education	Improvements to Hawaii’s educational curriculum, quality of educational staff, and access to adequate facilities	The project will comply with the requirement for school impact fees and will execute an Education Contribution Agreement with the Department of Education. As such, the proposed action is not anticipated to contravene the objectives and policies of this functional plan.
4	Employment State Functional Plan (1990)	Department of Labor and Industrial Relations	Improve the qualifications, productivity, and effectiveness of the State’s workforce through better education and training of workers as well as efficient planning of economic development, employment opportunities, and training activities	The proposed action will result in the creation of construction jobs throughout the development period. This will provide local residents with opportunities to successfully compete in the workforce. The proposed action is not anticipated to contravene the objectives and policies of this functional plan.
5	Energy State Functional Plan (1991)	Department of Business, Economic Development and Tourism	Lessen the reliance on petroleum and other fossil fuels in favor of alternative sources of energy so as to keep up with the State’s increasing energy demands while also becoming a more sustainable island state; achieving dependable, efficient, and economical statewide energy systems	Each turn-key home will have a solar water heating system. In addition, individual homeowners may install photovoltaic panels on their homes if they so choose. The proposed action is not anticipated to contravene the objectives and policies of this functional plan

Table 4. Relation Between the Proposed Pu‘unani Subdivision Project and the State Functional Plans
(continued)

No.	State Functional Plan	State Coordinating Agency	Purpose	Analysis
6	Health State Functional Plan (1989)	Department of Health	Improve health care system by providing for those who don’t have access to private health care providers; increasing preventative health measures; addressing ‘quality of care’ elements in private and public sectors to cut increasing costs	The proposed action is not anticipated to contravene the objectives and policies of this functional plan.
7	Higher Education Functional Plan (1984)	University of Hawaii	Prepare Hawaii’s citizens for the demands of an increasingly complex world through providing technical and intellectual tools	The proposed action is not anticipated to contravene the objectives and policies of this functional plan.
8	Historic Preservation State Functional Plan (1991)	Department of Land and Natural Resources	Preservation of historic properties, records, artifacts and oral histories; provide public with information/education on the ethnic and cultural heritages and history of Hawai‘i	An Archaeological Inventory Survey (AIS) has been conducted for the 47.4-acre subdivision site. In its acceptance letter of the AIS, the SHPD concurred that no further mitigation was necessary. In addition, an Archaeological Assessment (AA) was completed for the parcel on which the proposed sewerline will be located in relation to the Wailuku Apartment Rental Housing Project. In its acceptance letter, the SHPD concurred that archaeological monitoring must be undertaken. A Cultural Impact Assessment (CIA) was prepared for the Proposed Pu‘unani Homestead Subdivision project and noted that based on historical research and consultation, there is evidence of cultural practices related to Hawaiian rights related to agricultural pursuits, access to resources, and other customary activities are presently occurring in the vicinity of the proposed project. In addition, a legendary grinding stone (Pōhāko‘i) is believed to be located in the vicinity of the site of the proposed subdivision. As such, the CIA provided a recommendation that an archaeological field inspection be conducted by a qualified archaeologist prior to the commencement of any construction related ground altering activities in an effort to locate Pōhāko‘i. The proposed action is in consonance with this functional plan.

Table 4. Relation Between the Proposed Pu‘unani Subdivision Project and the State Functional Plans
(continued)

No.	State Functional Plan	State Coordinating Agency	Purpose	Analysis
9	Housing State Functional Plan (1989)	Hawaii Housing Finance and Development Corporation	Provide affordable rental and for-sale housing; increase homeownership and amount of rental housing units; acquiring public and privately-owned lands for future residential development; maintain a statewide housing data system	The proposed project provides additional homestead opportunities for DHHL beneficiaries in an area that is close to the government, business, and commercial centers of Wailuku and Kahului. In addition, the project will be implemented in a developed area in Central Maui, in proximity to existing infrastructure and services. The proposed action is in consonance with this functional plan.
10	Human Services State Functional Plan (1989)	Department of Human Services	Refining support systems for families and individuals by improving elderly care, increasing preventative measures to combat child/spousal abuse and neglect; providing means for ‘self-sufficiency’	The proposed action is not anticipated to contravene the objectives and policies of this functional plan.
11	Recreation State Functional Plan (1991)	Department of Land and Natural Resources	Manage the use of recreational resources via addressing issues: (1) ocean and shoreline recreation, (2) mauka, urban, and other recreation opportunities, (3) public access to shoreline and upland recreation areas, (4) resource conservation and management, (5) management of recreation programs/facilities/areas, and (6) wetlands protection and management	The proposed action is not anticipated to contravene the objectives and policies of this functional plan.
12	Tourism State Functional Plan (1991)	Department of Business, Economic Development and Tourism	Balance tourism/economic growth with environmental and community concerns; development that is cognizant of the limited land and water resources of the islands; maintaining friendly relations between tourists and community members; development of a productive workforce and enhancement of career and employment opportunities in the visitor industry	The proposed action is not anticipated to contravene the objectives and policies of this functional plan.

Table 4. Relation Between the Proposed Pu‘unani Subdivision Project and the State Functional Plans
(continued)

No.	State Functional Plan	State Coordinating Agency	Purpose	Analysis
13	Transportation State Functional Plan (1991)	Department of Transportation	Development of a safer, more efficient transportation system that also is consistent with planned physical and economic growth of the state; construction of facility and infrastructure improvements; develop a transportation system balanced with new alternatives; pursue land use initiatives which help reduce travel demand	The proposed project will be implemented in proximity to existing State and County roadway facilities. A Traffic Impact Analysis Report (TIAR) has been prepared to assess the projected increase in traffic on these roadways, and determined that although a traffic signal is not warranted by the project, a median refuge lane along Honoapi‘ilani Highway should be provided to allow eastbound left-turn vehicles to turn onto Honoapi‘ilani Highway in a two-stage approach. The proposed action is in consonance with this functional plan.

E. COUNTYWIDE POLICY PLAN

The Countywide Policy Plan was adopted in March 2010 and is a comprehensive policy document for the islands of Maui County to the year 2030. The plan replaces the *General Plan of the County of Maui 1990 Update* and provides the policy framework for the development of the Maui Island Plan as well as for updating the nine (9) detailed Community Plans.

The Countywide Policy Plan provides broad goals, objectives, policies and implementing actions that portray the desired direction of the County's future. Goals are intended to describe a desirable condition of the County by the year 2030 and are intentionally general in nature. Objectives tend to be more specific and may be regarded as milestones to achieve the larger goals. Policies are not intended as regulations, but instead provide guidelines for County decision makers, departments, and collaborating organizations toward the attainment of goals and objectives. Implementing actions are specific tasks, procedures, programs, or techniques that carry out policy.

Discussion of how the proposed project conforms to the relevant goals, objectives, policies, and implementing actions of the Countywide Policy Plan is provided below.

COUNTYWIDE POLICY PLAN (Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable)	S	N/S	N/A
A. 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.			✓
Policies:			
(a) Perpetuate native Hawaiian biodiversity by preventing the introduction of invasive species, containing or eliminating existing noxious pests, and protecting critical habitat areas.			✓
(b) Preserve and reestablish indigenous and endemic species' habitats and their connectivity.			✓
(c) Restore and protect forests, wetlands, watersheds, and stream flows, and guard against wildfires, flooding, and erosion.			✓
(d) Protect baseline stream flows for perennial streams, and support policies that ensure adequate stream flow to support Native Hawaiian aquatic species, traditional kalo cultivation, and self-sustaining ahupuaʻa.			✓
(e) Protect undeveloped beaches, dunes, and coastal ecosystems, and restore natural shoreline processes.			✓
(f) Protect the natural state and integrity of unique terrain, valued natural environments, and geological features.			✓
(g) Preserve and provide ongoing care for important scenic vistas, view planes, landscapes, and open-space resources.	✓		
(h) Expand coordination with the State and nonprofit agencies and their volunteers to reduce invasive species, replant indigenous species, and identify critical habitat.			✓

COUNTYWIDE POLICY PLAN (Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable)	S	N/S	N/A
Implementing Actions:			
(a) Develop island-wide networks of greenways, watercourses, and habitat corridors.			✓
Analysis: **The project has been carefully designed taking into consideration building profiles and massing so as to not adversely impact scenic views and vistas. The proposed dwellings will be similar in scale and size to existing residential developments nearby and will be built in accordance with established subdivision standards. In addition a landscaped buffer will be developed at the roadway frontage along Honoapiʻilani Highway, providing a landscaped, open space setback from the roadway to the house lots.**			
Objective:			
(2) Improve the quality of environmentally sensitive, locally valued natural resources and native ecology of each island.			✓
Policies:			
(a) Protect and restore nearshore reef environments and water quality.			✓
(b) Protect marine resources and valued wildlife.			✓
(c) Improve the connection between urban environments and the natural landscape, and incorporate natural features of the land into urban design.			✓
(d) Utilize land-conservation tools to ensure the permanence of valued open spaces.			✓
(e) Mitigate the negative effects of upland uses on coastal wetlands, marine life, and coral reefs.			✓
(f) Strengthen coastal-zone management, re-naturalization of shorelines, where possible, and filtration or treatment of urban and agricultural runoff.			✓
(g) Regulate the use and maintenance of stormwater-treatment systems that incorporate the use of native vegetation and mimic natural systems.			✓
(h) Advocate for stronger regulation of fishing, boating, cruise ship, and ecotourism activities.			✓
(i) Restore watersheds and aquifer-recharge areas to healthy and productive status, and increase public knowledge about the importance of watershed stewardship, water conservation, and groundwater protection.			✓
Implementing Actions:			
(a) Develop regulations to minimize runoff of pollutants into nearshore waters and reduce nonpoint and point source pollution.			✓
Analysis: **Not applicable.**			
Objective:			
(3) Improve the stewardship of the natural environment.			✓
Policies:			
(a) Preserve and protect natural resources with significant scenic, economic, cultural, environmental, or recreational value.			✓
(b) Improve communication, coordination, and collaboration among government agencies, nonprofit organizations, communities, individuals, and land owners that work for the protection of the natural environment.			✓
(c) Evaluate development to assess potential short-term and long-term impacts on land, air, aquatic, and marine environments.			✓

COUNTYWIDE POLICY PLAN (Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable)	S	N/S	N/A
(d) Improve efforts to mitigate and plan for the impact of natural disasters, human influenced emergencies, and global warming.			✓
(e) Regulate access to sensitive ecological sites and landscapes.			✓
(f) Reduce air, noise, light, land, and water pollution, and reduce Maui County's contribution to global climate change.			✓
(g) Plan and prepare for and educate visitors and residents about the possible effects of global warming.			✓
(h) Provide public access to beaches and shorelines for recreational and cultural purposes where appropriate.			✓
(i) Educate the construction and landscape industries and property owners about the use of best management practices to prevent erosion and nonpoint source pollution.	✓		
(j) Support the acquisition of resources with scenic, environmental, and recreational value, and encumber their use.			✓
(k) Improve enforcement activities relating to the natural environment.			✓
(l) For each shoreline community, identify and prioritize beach-conservation objectives, and develop action plans for their implementation.			✓
Implementing Actions:			
(a) Document, record, and monitor existing conditions, populations, and locations of flora and fauna communities.			✓
(b) Implement Federal and State policies that require a reduction of greenhouse-gas emissions.			✓
(c) Establish a baseline inventory of available natural resources and their respective carrying capacities.			✓
Analysis: **The project will employ BMPs to prevent impacts from construction, including temporary erosion control, stormwater management and dust control.**			
Objective:			
(4) Educate residents and visitors about responsible stewardship practices and the interconnectedness of the natural environment and people.			✓
Policies:			
(a) Expand education about native flora, fauna, and ecosystems.			✓
(b) Align priorities to recognize that the health of the natural environment and the health of people are inextricably linked.			✓
(c) Promote programs and incentives that decrease greenhouse-gas emissions and improve environmental stewardship.			✓
Analysis: **Not applicable.**			
B. PRESERVE LOCAL CULTURES AND TRADITIONS			
Goal: Maui County will foster a spirit of pono and protect, perpetuate, and reinvigorate its residents" multi-cultural values and traditions to ensure that current and future generations will enjoy the benefits of their rich island heritage.			✓
Objective:			
(1) Perpetuate the Hawaiian culture as a vital force in the lives of residents.			✓
Policies:			
(a) Protect and preserve access to mountain, ocean, and island resources for traditional Hawaiian cultural practices.			✓
(b) Prohibit inappropriate development of cultural lands and sites that are important for traditional Hawaiian cultural practices, and establish mandates for the special protection of these lands in perpetuity.			✓

COUNTYWIDE POLICY PLAN (Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable)	S	N/S	N/A
(c) Promote the use of ahupuaʻa and moku management practices.			✓
(d) Encourage the use of traditional Hawaiian architecture and craftsmanship.			✓
(e) Promote the use of the Hawaiian language.			✓
(f) Recognize and preserve the unique natural and cultural characteristics of each ahupuaʻa or district.			✓
(g) Encourage schools to promote broader incorporation of Hawaiian and other local cultures' history and values lessons into curriculum.			✓
(h) Ensure the protection of Native Hawaiian rights.	✓		
(i) Promote, encourage, and require the correct use of traditional place names, particularly in government documents, signage, and the tourism industry.			✓
Implementing Actions:			
(a) Establish alternative land use and overlay zoning designations that recognize and preserve the unique natural and cultural characteristics of each ahupuaʻa or district.			✓
(b) Develop requirements for all County applicants to perpetuate and use proper traditional place names in all applications submitted.			✓
Analysis: **A CIA prepared for the proposed project, noted that based on historical research and consultation, there is evidence of cultural practices related to Hawaiian rights related to agricultural pursuits, access to resources, and other customary activities presently occurring in the vicinity of the proposed project. In addition, a legendary grinding stone (Pōhākoʻi) is believed to be located in the vicinity of the site of the proposed subdivision. As such, the CIA provided a recommendation that an archaeological field inspection be conducted by a qualified archaeologist prior to the commencement of any construction related ground altering activities in an effort to locate Pōhākoʻi.**			
Objective:			
(2) Emphasize respect for our island lifestyle and our unique local cultures, family, and natural environment.	✓		
Policies:			
(a) Acknowledge the Hawaiian culture as the host culture, and foster respect and humility among residents and visitors toward the Hawaiian people and their practices.			✓
(b) Perpetuate a respect for diversity, and recognize the historic blending of cultures and ethnicities.			✓
(c) Encourage the perpetuation of each culture's unique cuisine, attire, dance, music, and folklore, and other unique island traditions and recreational activities.			✓
(d) Recognize the interconnectedness between the natural environment and the cultural heritage of the islands.	✓		
(e) Protect and prioritize funding for recreational activities that support local cultural practices, such as surfing, fishing, and outrigger-canoe paddling.			✓
Analysis: **The project's CIA acknowledges the relationship between the natural environment and cultural resources found in the project vicinity.**			
Objective:			
(3) Preserve for present and future generations the opportunity to know and experience the arts, culture, and history of Maui County.			✓

COUNTYWIDE POLICY PLAN (Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable)	S	N/S	N/A
Policies:			
(a) Foster teaching opportunities for cultural practitioners to share their knowledge and skills.			✓
(b) Support the development of cultural centers.			✓
(c) Broaden opportunities for public art and the display of local artwork.			
(d) Foster the Aloha Spirit by celebrating the Hawaiian host culture and other Maui County cultures through support of cultural-education programs, festivals, celebrations, and ceremonies.			✓
(e) Support the perpetuation of Hawaiian arts and culture.			✓
(f) Support programs and activities that record the oral and pictorial history of residents.			✓
(g) Support the development of repositories for culture, history, genealogy, oral history, film, and interactive learning.			✓
Implementing Actions:			
(a) Establish incentives for the display of public art.			✓
(b) Establish centers and programs of excellence for the perpetuation of Hawaiian arts and culture.			✓
Analysis: **Not applicable.**			
Objective:			
(4) Preserve and restore significant historic architecture, structures, cultural sites, cultural districts, and cultural landscapes.	✓		
Policies:			
(a) Support the development of island-wide historic, archaeological, and cultural resources inventories.	✓		
(b) Promote the rehabilitation and adaptive reuse of historic sites, buildings, and structures to perpetuate a traditional sense of place.			✓
(c) Identify a sustainable rate of use and set forth specific policies to protect cultural resources.			✓
(d) Protect and preserve lands that are culturally or historically significant.			✓
(e) Support programs that protect, record, restore, maintain, provide education about, and interpret cultural districts, landscapes, sites, and artifacts in both natural and museum settings.			✓
(f) Perpetuate the authentic character and historic integrity of rural communities and small towns.			✓
(g) Seek solutions that honor the traditions and practices of the host culture while recognizing the needs of the community.			✓
(h) Support the development of an Archaeological District Ordinance.			✓
(i) Protect summits, slopes, and ridgelines from inappropriate development.			✓
(j) Support the registering of important historic sites on the State and Federal historic registers.			✓
(k) Provide opportunities for public involvement with restoration and enhancement of all types of cultural resources.			✓
(l) Foster partnerships to identify and preserve or revitalize historic and cultural sites.			✓
Implementing Actions:			
(a) Identify, develop, map, and maintain an inventory of locally significant natural. cultural, and historical resources for protection.	✓		

COUNTYWIDE POLICY PLAN (Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable)	S	N/S	N/A
(b) Prepare, continually update, and implement a cultural-management plan for cultural sites, districts, and landscapes, where appropriate.			✓
(c) Enact an Archaeological District Ordinance.			✓
(d) Nominate important historic sites to the State and Federal historic registers.			✓
Analysis: **An AIS was conducted for the 47.4-acre subdivision site. In its acceptance letter of the AIS, the SHPD concurred that no further mitigation was necessary. In addition, an AA was completed for the parcel on which the proposed sewerline will be located in relation to the Wailuku Apartment Rental Housing Project. In its acceptance letter, the SHPD concurred that archaeological monitoring must be undertaken. Should any archaeological resources be discovered during ground altering activities, work shall cease in the immediate area of the find and mitigation coordination will be undertaken with the SHPD.**			
C. IMPROVE EDUCATION			
Goal: Residents will have access to lifelong formal and informal educational options enabling them to realize their ambitions.			✓
Objective:			
(1) Encourage the State to attract and retain school administrators and educators of the highest quality.			✓
Policies:			
(a) Encourage the State to provide teachers with nationally competitive pay and benefit packages.			✓
(b) Encourage the State to ensure teachers will have the teaching tools and support staff needed to provide students with an excellent education.			✓
(c) Explore Maui County district- and school-based decision making in public education.			✓
Analysis: **Not applicable.**			
Objective:			
(2) Provide nurturing learning environments that build skills for the 21st century.			✓
Policies:			
(a) Expand professional-development opportunities in disciplines that support the economic-development goals of Maui County.			✓
(b) Plan for demographic, social, and technological changes in a timely manner.			✓
(c) Encourage collaborative partnerships to improve conditions of learning environments.			✓
(d) Promote development of neighborhood schools and educational centers.			✓
(e) Integrate schools, community parks, and playgrounds, and expand each community's use of these facilities.			✓
(f) Support coordination between land use and school-facility planning agencies.			✓
(g) Encourage the upgrade and ongoing maintenance of public-school facilities.			✓
(h) Encourage the State Department of Education to seek reliable, innovative, and alternative methods to support a level of per-pupil funding that places Hawai‘i among the top tier of states nationally for its financial support of public schools.			✓
(i) Encourage the State to promote healthier, more productive learning environments, including by providing healthy meals, more physical activity, natural lighting, and passive cooling.			✓

COUNTYWIDE POLICY PLAN (Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable)	S	N/S	N/A
(j) Encourage the State to support the development of benchmarks to measure the success of Hawai‘i’s public-education system and clarify lines of accountability.			✓
(k) Design school and park facilities in proximity to residential areas.			✓
(l) Support technology- and natural-environment-based learning.			✓
(m) Encourage the State to support lower student-teacher ratios in public schools.			✓
(n) Encourage alternative learning and educational opportunities.			✓
Implementing Actions:			
(a) Develop safe walking and bicycling programs for school children.			✓
Analysis: **Not applicable.**			
Objective:			
(3) Provide all residents with educational opportunities that can help them better understand themselves and their surroundings and allow them to realize their ambitions.			✓
Policies:			
(a) Encourage the State to improve Maui Community College as a comprehensive community college that will serve each community.			✓
(b) Broaden the use of technology and telecommunications to improve educational opportunities throughout the County.			✓
(c) Attract graduate-level research programs and institutions.			✓
(d) Promote the teaching of traditional practices, including aquaculture; subsistence agriculture; Pacific Island, Asian, and other forms of alternative health practices; and indigenous Hawaiian architecture.			✓
(e) Integrate cultural and environmental values in education, including self-sufficiency and sustainability.			✓
(f) Foster a partnership and ongoing dialogue between business organizations, formal educational institutions, and vocational training centers to tailor learning and mentoring programs to County needs.			✓
(g) Ensure teaching of the arts to all ages.			✓
(h) Expand and develop vocational learning opportunities by establishing trade schools.			✓
(i) Encourage the State to integrate financial and economic literacy in elementary, secondary, and higher-education levels.			✓
Implementing Actions:			
(a) Encourage the State to establish a four-year university, and support the development of other higher-education institutions to enable residents to obtain bachelor degrees and postgraduate degrees in Maui County.			✓
Analysis: **Not applicable.**			
Objective:			
(4) Maximize community-based educational opportunities.			✓
Policies:			
(a) Encourage the State and others to expand pre-school, after-school, and homebased (parent-child) learning.			✓
(b) Support public-private partnerships to develop youth-internship, -apprenticeship, and -mentoring programs.			✓

COUNTYWIDE POLICY PLAN (Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable)	S	N/S	N/A
(c) Support the development of a wide range of informal educational and cultural programs for all residents.			✓
(d) Improve partnerships that utilize the skills and talents at Hawai‘i’s colleges and universities to benefit the County.			✓
(e) Support career-development and job-recruitment programs and centers.			✓
(f) Attract learning institutions and specialty schools to diversify and enhance educational opportunities.			✓
(g) Expand education of important life skills for the general public.			✓
(h) Support community facilities such as museums, libraries, nature centers, and open spaces that provide interactive-learning opportunities for all ages.			✓
Analysis: **Not applicable.**			
D. STRENGTHEN SOCIAL AND HEALTHCARE SERVICES			
Goal: Health and social services in Maui County will fully and comprehensively serve all segments of the population.			✓
Objective:			
(1) In cooperation with the Federal and State governments and nonprofit agencies, broaden access to social and healthcare services and expand options to improve the overall wellness of the people of Maui County.			✓
Policies:			
(a) Work with other levels of government and the nonprofit sector to expand services to address hunger, homelessness, and poverty.			✓
(b) Support the improvement of opportunities for disadvantaged youth, encourage the tradition of hanai relatives, and support expanded opportunities for foster care.			✓
(c) Support expanded long-term-care options, both in institutions and at home, for patients requiring ongoing assistance and medical attention.			✓
(d) Encourage the expansion and improvement of local hospitals, facilitate the establishment of new healthcare facilities, and facilitate prompt and high-quality emergency- and urgent-care services for all.			✓
(e) Support broadened access to affordable health insurance and health care, and recognize the unique economic challenges posed to families when healthcare services are provided off-island.			✓
(f) Encourage equal access to social and healthcare services through both technological and traditional means.			✓
Analysis: **Not applicable.**			
Objective:			
(2) Encourage the Federal and State governments and the private sector to improve the quality and delivery of social and healthcare services.			✓
Policies:			
(a) Strengthen partnerships with government, nonprofit, and private organizations to provide funding and to improve counseling and other assistance to address substance abuse, domestic violence, and other pressing social challenges.			✓
(b) Encourage the State to improve the quality of medical personnel, facilities, services, and equipment.			✓
(c) Encourage investment to improve the recruitment of medical professionals and the quality of medical facilities and equipment throughout Maui County.			✓

COUNTYWIDE POLICY PLAN (Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable)	S	N/S	N/A
(d) Promote the development of continuum-of-care facilities that provide assisted living, hospice, home-care, and skilled-nursing options allowing the individual to be cared for in a manner congruent with his or her needs and desires.			✓
(e) Support improved social, healthcare, and governmental services for special needs populations.			✓
(f) Plan for the needs of an aging population and the resulting impacts on social services, housing, and healthcare delivery.			✓
(g) Improve coordination among the police, the courts, and the public in the administration of social and healthcare services.			✓
(h) Support programs that address needs of veterans.			✓
(i) Support programs that address the needs of immigrants.			✓
Implementing Actions:			
(a) Invest in programs designed to improve the general welfare and quality of life of Native Hawaiians.			✓
(b) Assist and facilitate the State Department of Public Safety and others in efforts to strengthen programs and facilities that will improve the mental and social health of incarcerated people and assist in prison inmates' successful transition back into Maui County communities.			✓
(c) Develop and maintain a comprehensive index that will measure the health and wellness needs of families.			✓
(d) Provide heliports countywide for emergency health and safety purposes.			✓
Analysis: **Not applicable.**			
Objective:			
(3) Strengthen public-awareness programs related to healthy lifestyles and social and medical services.			✓
Policies:			
(a) Expand public awareness about personal safety and crime prevention.			✓
(b) Encourage residents to pursue education and training for careers in the healthcare, social services, and community-development fields.			✓
(c) Expand public awareness and promote programs to achieve healthy eating habits and drug-free lifestyles.			✓
Analysis: **Not applicable.**			
E. EXPAND HOUSING OPPORTUNITIES FOR RESIDENTS			
Goal: Quality, island-appropriate housing will be available to all residents.	✓		
Objective:			
(1) Reduce the affordable housing deficit for residents.	✓		
Policies:			
(a) Ensure that an adequate and permanent supply of affordable housing, both new and existing units, is made available for purchase or rental to our resident and/or workforce population, with special emphasis on providing housing for low- to moderate-income families, and ensure that all affordable housing remains affordable in perpetuity.	✓		
(b) Seek innovative ways to lower housing costs without compromising the quality of our island lifestyle.			✓

COUNTYWIDE POLICY PLAN (Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable)	S	N/S	N/A
(c) Seek innovative methods to secure land for the development of low- and moderate- income housing.			✓
(d) Provide the homeless population with emergency and transitional shelter and other supportive programs.			✓
(e) Provide for a range of senior-citizen and special needs housing choices on each island that affordably facilitates a continuum of care and services.			✓
(f) Support the Department of Hawaiian Home Lands' development of homestead lands.	✓		
(g) Manage property-tax burdens to protect affordable resident homeownership.			✓
(h) Explore taxation mechanisms to increase and maintain access to affordable housing.			✓
(i) Improve awareness regarding available affordable homeowner's insurance.			✓
(j) Redevelop commercial areas with a mixture of affordable residential and business uses, where appropriate.			✓
(k) Ensure residents are given priority to obtain affordable housing units developed in their communities, consistent with all applicable regulations.	✓		
(l) Establish pricing for affordable housing that is more reflective of Maui County's workforce than the United States Housing and Urban Development's median-income estimates for Maui County.			✓
(m) Develop neighborhoods with a mixture of accessible and integrated community facilities and services.			✓
(n) Provide alternative regulatory frameworks to facilitate the use of Kuleana lands by the descendants of Native Hawaiians who received those lands pursuant to the Kuleana Act of 1850.			✓
(o) Work with lending institutions to expand housing options and safeguard the financial security of homeowners.			✓
(p) Promote the use of the community land trust model and other land-lease and land- financing options.	✓		
(q) Support the opportunity to age in place by providing accessible and appropriately designed residential units.			✓
Analysis: **The proposed project provides additional homestead opportunities for DHHL beneficiaries in an area that is close to the government, business, and commercial centers of Wailuku and Kahului. In addition, the project will be implemented in a developed area in Central Maui, in proximity to existing infrastructure and services.**			
Objective:			
(2) Increase the mix of housing types in towns and neighborhoods to promote sustainable land use planning, expand consumer choice, and protect the County's rural and small town character.			✓
Policies:			
(a) Seek innovative ways to develop 'ohana cottages and accessory-dwelling units as affordable housing.			✓
(b) Design neighborhoods to foster interaction among neighbors.			✓
(c) Encourage a mix of social, economic, and age groups within neighborhoods.			✓
(d) Promote infill housing in urban areas at scales that capitalize on existing infrastructure, lower development costs, and are consistent with existing or desired patterns of development.			✓

COUNTYWIDE POLICY PLAN (Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable)	S	N/S	N/A
(e) Encourage the building industry to use environmentally sustainable materials, technologies, and site planning.			✓
(f) Develop workforce housing in proximity to job centers and transit facilities.	✓		
(g) Provide incentives to developers and owners who incorporate green building practices and energy-efficient technologies into their housing developments.			✓
Implementing Actions:			
(a) Revise laws to support neighborhood designs that incorporate a mix of housing types that are appropriate for island living.			✓
Analysis: **The proposed project provides additional homestead opportunities for DHHL beneficiaries in an area that is close to the government, business, and commercial centers of Wailuku and Kahului. In addition, the project will be implemented in a developed area in Central Maui, in proximity to existing infrastructure and services.**			
Objective:			
(3) Increase and maintain the affordable housing inventory.	✓		
Policies:			
(a) Recognize housing as a basic human need, and work to fulfill that need.	✓		
(b) Prioritize available infrastructure capacity for affordable housing.			✓
(c) Improve communication, collaboration, and coordination among housing providers and social-service organizations.			✓
(d) Study future projected housing needs, monitor economic cycles, and prepare for future conditions on each island.			✓
(e) Develop public-private and nonprofit partnerships that facilitate the construction of quality affordable housing.	✓		
(f) Streamline the review process for high-quality, affordable housing developments that implement the goals, objectives, and policies of the General Plan.			✓
(g) Minimize the intrusion of housing on prime, productive, and potentially productive agricultural lands and regionally valuable agricultural lands.			✓
(h) Encourage long-term residential use of existing and future housing to meet residential needs.	✓		
Implementing Actions:			
(a) Develop policies to even out the peaks and valleys in Maui County's construction-demand cycles.			✓
Analysis: **Although the proposed project repurposes land designated for agricultural use for housing, the land has not been in active agricultural production for some time. The project presents an opportunity to provide affordable homesteads for DHHL beneficiaries in an area that is close to the government, business, and commercial centers of Wailuku and Kahului.**			
Objective:			
(4) Expand access to education related to housing options, homeownership, financing, and residential construction.			✓
Policies:			
(a) Broaden access to information about County, State, and Federal programs that provide financial assistance to renters and home buyers.			✓
(b) Expand access to information about opportunities for homeownership and self-help housing.			✓
(c) Educate residents about making housing choices that support their individual needs, the needs of their communities, and the health of the islands' natural systems.			✓

COUNTYWIDE POLICY PLAN (Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable)	S	N/S	N/A
(d) Improve home buyers' education on all aspects of homeownership.			✓
Analysis: **Not applicable.**			
F. STRENGTHEN THE LOCAL ECONOMY			
Goal: Maui County's economy will be diverse, sustainable, and supportive of community values.			✓
Objective:			
(1) Promote an economic climate that will encourage diversification of the County's economic base and a sustainable rate of economic growth.			✓
Policies:			
(a) Support economic decisions that create long-term benefits.	✓		
(b) Promote lifelong education, career development, and technical training for existing and emerging industries.			✓
(c) Invest in infrastructure, facilities, and programs that foster economic diversification.			✓
(d) Support and promote locally produced products and locally owned operations and businesses that benefit local communities and meet local demand.			✓
(e) Support programs that assist industries to retain and attract more local labor and facilitate the creation of jobs that offer a living wage.			✓
(f) Encourage work environments that are safe, rewarding, and fulfilling to employees.			✓
(g) Support home-based businesses that are appropriate for and in character with the community.			✓
(h) Encourage businesses that promote the health and well-being of the residents, produce value-added products, and support community values.			✓
(i) Foster an understanding of the role of all industries in our economy.			✓
(j) Support efforts to improve conditions that foster economic vitality in our historic small towns.			✓
(k) Support and encourage traditional host-culture businesses and indigenous agricultural practices.			✓
(l) Support public and private entities that assist entrepreneurs in establishing locally operated businesses.			✓
Implementing Actions:			
(a) Develop regulations and programs that support opportunities for local merchants, farmers, and small businesses to sell their goods and services directly to the public.			✓
(b) Monitor the carrying capacity of the islands' social, ecological, and infrastructure systems with respect to the economy.			✓
Analysis: **According to the Economic and Fiscal Impacts Report, the proposed project will have positive economic and fiscal impacts to the County of Maui during and after construction. Refer to Appendix "J".**			
Objective:			
(2) Diversify and expand sustainable forms of agriculture and aquaculture.			✓
Policies:			
(a) Support programs that position Maui County's agricultural products as premium export products.			✓
(b) Prioritize the use of agricultural land to feed the local population, and promote the use of agricultural lands for sustainable and diversified agricultural activities.			✓

COUNTYWIDE POLICY PLAN (Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable)	S	N/S	N/A
(c) Capitalize on Hawai‘i’s economic opportunities in the ecologically sensitive aquaculture industries.			✓
(d) Assist farmers to help make Maui County more self-sufficient in food production.			✓
(e) Support ordinances, programs, and policies that keep agricultural land and water available and affordable to farmers.			✓
(f) Support a tax structure that is conducive to the growth of the agricultural economy.			✓
(g) Enhance County efforts to monitor and regulate important agricultural issues.			✓
(h) Support education, research, and facilities that strengthen the agricultural industry.			✓
(i) Maintain the genetic integrity of existing food crops.			✓
(j) Encourage healthy and organic farm practices that contribute to land health and regeneration.			✓
(k) Support cooperatives and other types of nontraditional communal farming and efforts.			✓
(l) Encourage methods of monitoring and controlling genetically modified crops to prevent adverse effects.			✓
(m) Work with the State to ease the permitting process for the revitalization of traditional fish ponds.			✓
Implementing Actions:			
(a) Redirect efforts in the Office of Economic Development to further facilitate the development of the agricultural section and to monitor agricultural legislation and issues.			✓
(b) Publicly identify, with signage and other means, the field locations of all genetically modified crops.			✓
(c) Create agricultural parks in areas distant from genetically modified crops.			✓
Analysis: **Not applicable.**			
Objective:			
(3) Support a visitor industry that respects the resident culture and the environment.			✓
Policies:			
(a) Promote traditional Hawaiian practices in visitor-related facilities and activities.			✓
(b) Encourage and educate the visitor industry to be sensitive to island lifestyles and cultural values.			✓
(c) Encourage a spirit of welcome for residents at visitor facilities, such as by offering kama‘aina incentives and discount programs.			✓
(d) Support the renovation and enhancement of existing visitor facilities.			✓
(e) Support policies, programs, and a tax structure that redirect the benefits of the visitor industry back into the local community.			✓
(f) Encourage resident ownership of visitor-related businesses and facilities.			✓
(g) Develop partnerships to provide educational and training facilities to residents employed in the visitor industry.			✓
(h) Foster an understanding of local cultures, customs, and etiquette, and emphasize the importance of the Aloha Spirit as a common good for all.			✓
(i) Support the diversification, development, evolution, and integration of the visitor industry in a way that is compatible with the traditional, social, economic, spiritual, and environmental values of island residents			✓

COUNTYWIDE POLICY PLAN (Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable)	S	N/S	N/A
(j) Improve collaboration between the visitor industry and the other sectors of Maui County's economy.			✓
(k) Perpetuate an authentic image of the Hawaiian culture and history and an appropriate recognition of the host culture.			✓
(l) Support the programs and initiatives outlined in the Maui County Tourism Strategic Plan 2006-2015.			✓
(m) Promote water conservation, beach conservation, and open-space conservation in areas providing services for visitors.			✓
(n) Recognize the important contributions that the visitor industry makes to the County's economy, and support a healthy and vibrant visitor industry.			✓
Analysis: **Not applicable.**			
Objective:			
(4) Expand economic sectors that increase living-wage job choices and are compatible with community values.			✓
Policies:			
(a) Support emerging industries, including the following: • Health and wellness industry; • Sports and recreation industry; • Film and entertainment industry; • Arts and culture industry; • Renewable-energy industry; • Research and development industry; • High-technology and knowledge-based industries; • Education and training industry; • Ecotourism industry; and • Agritourism industry.			✓
Analysis: **Not applicable.**			
G. 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) Expand and enhance the network of parks, multi-use paths, and bikeways.			✓
(c) Assist communities in developing recreational facilities that promote physical fitness.			✓
(d) Expand venue options for recreation and performances that enrich the lifestyles of Maui County's people.			✓
(e) Expand affordable recreational and after-school programs for youth.			✓
(f) Encourage and invest in recreational, social, and leisure activities that bring people together and build community pride.			✓
(g) Promote the development and enhancement of community centers, civic spaces, and gathering places throughout our communities.			✓
(h) Expand affordable access to recreational opportunities that support the local lifestyle.			✓
Implementing Actions:			
(a) Identify and reserve lands for cemeteries, and preserve existing cemeteries on all islands, appropriately accommodating varying cultural and, faith-based traditions.			✓

COUNTYWIDE POLICY PLAN (Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable)	S	N/S	N/A
Analysis: **Not applicable.**			
Objective:			
(2) Improve the quality and adequacy of community facilities.			✓
Policies:			
(a) Provide an adequate supply of dedicated shelters and facilities for disaster relief.			✓
(b) Provide and maintain community facilities that are appropriately designed to reflect the traditions and customs of local cultures.			✓
(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.			✓
(e) Redesign or retrofit public facilities to adapt to major shifts in environmental or urban conditions to the extent reasonable.			✓
Analysis: **Not applicable.**			
Objective:			
(3) Enhance the funding, management, and planning of public facilities and park lands.			✓
Policies:			
(a) Identify and encourage the establishment of regulated and environmentally sound campgrounds.			✓
(b) Manage park use and control access to natural resources in order to rest sensitive places and utilize the resources in a sustainable manner.			✓
(c) Provide public-recreational facilities that are clean and well-maintained.			✓
(d) Develop partnerships to ensure proper stewardship of the islands' trails, public lands, and access systems.			✓
(e) Ensure that there is an adequate supply of public restrooms in convenient locations.			✓
Implementing Actions:			
(a) Encourage the State to allow for overnight fishing along the shoreline in accordance with management plans and regulations.			✓
(b) Develop and regularly update functional plans, including those relating to public facilities, parks, and campgrounds.			✓
(c) Develop and adopt local level-of service standards for public facilities and parks.			✓
(d) Identify, acquire, and develop lands for parks, civic spaces, and public uses.			✓
Analysis: **Not applicable.**			
H. DIVERSIFY TRANSPORTATION OPTIONS			
Goal: Maui County will have an efficient, economical, and environmentally sensitive means of moving people and goods.			✓
Objective:			
(1) Provide an effective, affordable, and convenient ground-transportation system that is environmentally sustainable.			✓
Policies:			
(a) Execute planning strategies to reduce traffic congestion.			✓

COUNTYWIDE POLICY PLAN (Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable)	S	N/S	N/A
(b) Plan for the efficient relocation of roadways for the public benefit.			✓
(c) Support the use of alternative roadway designs, such as traffic-calming techniques and modern roundabouts.			✓
(d) Increase route and mode options in the ground-transportation network.			✓
(e) Ensure that roadway systems are safe, efficient, and maintained in good condition.	✓		
(f) Preserve roadway corridors that have historic, scenic, or unique physical attributes that enhance the character and scenic resources of communities.			✓
(g) Design new roads and roadway improvements to retain and enhance the existing character and scenic resources of the communities through which they pass.			✓
(h) Promote a variety of affordable and convenient transportation services that meet countywide and community needs and expand ridership of transit systems.			✓
(i) Collaborate with transit agencies, government agencies, employers, and operators to provide planning strategies that reduce peak-hour traffic.			✓
(j) Develop and expand an attractive, island-appropriate, and efficient public transportation system.			✓
(k) Provide and encourage the development of specialized transportation options for the young, the elderly, and persons with disabilities.			✓
(l) Evaluate all alternatives to preserve quality of life before widening roads.			✓
(m) Encourage businesses in the promotion of alternative transportation options for resident and visitor use.			✓
(n) Support the development of carbon-emission standards and an incentive program aimed at achieving County carbon-emission goals.			✓
Implementing Actions:			
(a) Create incentives and implement strategies to reduce visitor dependence on rental cars.			✓
(b) Establish efficient public-transit routes between employment centers and primary workforce residential areas.			✓
(c) Create attractive, island-appropriate, conveniently located park-and-ride and ride- share facilities.			✓
Analysis: **The proposed project will provide specific roadway improvements as determined by the TIAR and as discussed with the State Department of Transportation. Such improvements will comply with applicable federal policies for roadway safety and efficiency.**			
Objective:			
(2) Reduce the reliance on the automobile and fossil fuels by encouraging walking, bicycling, and other energy-efficient and safe alternative modes of transportation.			✓
Policies:			
(a) Make walking and bicycling transportation safe and easy between and within communities.			✓
(b) Require development to be designed with the pedestrian in mind.			✓
(c) Design new and retrofit existing rights-of-way with adequate sidewalks, bicycle lanes, or separated multi-use transit corridors.			✓

COUNTYWIDE POLICY PLAN (Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable)	S	N/S	N/A
(d) Support the development of a countywide network of bikeways, equestrian trails, and pedestrian paths.			✓
(e) Support the reestablishment of traditional trails between communities, to the ocean, and through the mountains for public use.			✓
(f) Encourage educational programs to increase safety for pedestrians and bicyclists.			✓
Implementing Actions:			
(a) Design, build, and modify existing bikeways to improve safety and separation from automobiles.			✓
(b) Increase enforcement to reduce abuse of bicycle and pedestrian lanes by motorized vehicles.			✓
(c) Identify non-motorized transportation options as a priority for new sources of funding.			✓
Analysis: **Not applicable.**			
Objective:			
(3) Improve opportunities for affordable, efficient, safe, and reliable air transportation.			✓
Policies:			
(a) Discourage private helicopter and fixed-wing landing sites to mitigate environmental and social impacts.			✓
(b) Encourage the use of quieter aircraft and noise-abatement procedures for arrivals and departures.			✓
(c) Encourage the modernization and maintenance of air-transportation facilities for general-aviation activities.			✓
(d) Encourage a viable and competitive atmosphere for air carriers to expand service and ensure sufficient intra-County flights and affordable fares for consumers.			✓
(e) Continue to support secondary airports, and encourage the State to provide them with adequate funding.			✓
(f) During Community Plan updates, explore the use of the smaller airports.			✓
(g) Encourage the State to provide efficient, adequate, and affordable parking and transit connections within and around airports.			✓
Analysis: **Not applicable.**			
Objective:			
(4) Improve opportunities for affordable, efficient, safe, and reliable ocean transportation.			✓
Policies:			
(a) Support programs and regulations that reduce the disposal of maritime waste and prevent spills into the ocean.			✓
(b) Encourage the upgrading of harbors to resist damage from natural hazards and disasters.			✓
(c) Encourage the State to study the use of existing harbors and set priorities for future use.			✓
(d) Explore all options to protect the traditional recreational uses of harbors, and mitigate harbor-upgrade impacts to recreational uses where feasible.			✓
(e) Encourage the upgrading of harbors and the separation of cargo and bulk materials from passenger and recreational uses.			✓
(f) Encourage the State to provide for improved capacity at shipping, docking, and storage facilities.			✓

COUNTYWIDE POLICY PLAN (Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable)	S	N/S	N/A
(g) Encourage the State to provide adequate parking facilities and transit connections within and around harbor areas.			✓
(h) Encourage the redevelopment and revitalization of harbors while preserving historic and cultural assets in harbor districts.			✓
(i) Encourage the State to provide adequate facilities for small-boat operations, including small-boat launch ramps, according to community needs.			✓
(j) Support the maintenance and cleanliness of harbor facilities.			✓
(k) Support the redevelopment of harbors as pedestrian-oriented gathering places.			✓
Analysis: **Not applicable.**			
Objective:			
(5) Improve and expand the planning and management of transportation systems.			✓
Policies:			
(a) Encourage progressive community design and development that will reduce transportation trips.			✓
(b) Require new developments to contribute their pro rata share of local and regional infrastructure costs.			✓
(c) Establish appropriate user fees for private enterprises that utilize public transportation facilities for recreational purposes.			✓
(d) Support the revision of roadway-design criteria and standards so that roads are compatible with surrounding neighborhoods and the character of rural areas.			✓
(e) Plan for multi-modal transportation and utility corridors on each island.			✓
(f) Support designing all transportation facilities, including airport, harbor, and mass- transit stations, to reflect Hawaiian architecture.			✓
(g) Utilize transportation-demand management as an integral part of transportation planning.			✓
(h) Accommodate the planting of street trees and other appropriate landscaping in all public rights-of-way.			✓
Analysis: **Not applicable.**			
I. IMPROVE PHYSICAL INFRASTRUCTURE			
Goal: Maui County's physical infrastructure will be maintained in optimum condition and will provide for and effectively serve the needs of the County through clean and sustainable technologies.	✓		
Objective:			
(1) Improve water systems to assure access to sustainable, clean, reliable, and affordable sources of water.			✓
Policies:			
(a) Ensure that adequate supplies of water are available prior to approval of subdivision or construction documents.	✓		
(b) Develop and fund improved water-delivery systems.			✓
(c) Ensure a reliable and affordable supply of water for productive agricultural uses.			✓
(d) Promote the reclamation of gray water, and enable the use of reclaimed, gray, and brackish water for activities that do not require potable water.			✓
(e) Retain and expand public control and ownership of water resources and delivery systems.			✓

COUNTYWIDE POLICY PLAN (Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable)	S	N/S	N/A
(f) Improve the management of water systems so that surface-water and groundwater resources are not degraded by overuse or pollution.			✓
(g) Explore and promote alternative water-source-development methods.			✓
(h) Seek reliable long-term sources of water to serve developments that achieve consistency with the appropriate Community Plans.			✓
Implementing Actions:			
(a) Develop a process to review all applications for desalination.			✓
Analysis: **The project is located in an area that is serviced by existing County water infrastructure. Coordination will be undertaken with the DWS to determine if certain improvements to the County's water system will be required to service the project.**			
Objective:			
(2) Improve waste-disposal practices and systems to be efficient, safe, and as environmentally sound as possible.	✓		
Policies:			
(a) Provide sustainable waste-disposal systems and comprehensive, convenient recycling programs to reduce the flow of waste into landfills.	✓		
(b) Support innovative and alternative practices in recycling solid waste and wastewater and disposing of hazardous waste.			✓
(c) Encourage vendors and owners of automobile, appliance, and white goods to participate in the safe disposal and recycling of such goods, and ensure greater accountability for large waste producers.			✓
(d) Develop strategies to promote public awareness to reduce pollution and litter, and encourage residents to reduce, reuse, recycle, and compost waste materials.			✓
(e) Pursue improvements and upgrades to existing wastewater and solid-waste systems consistent with current and future plans and the County's Capital Improvement Program.	✓		
Implementing Actions:			
(a) Establish recycling, trash-separation, and materials recovery programs and facilities to reduce the flow of waste into landfills.	✓		
(b) Study the feasibility of developing environmentally safe waste-to-energy facilities.			✓
(c) Utilize taxes and fees as means to encourage conservation and recycling.			✓
(d) Implement and regularly update the Integrated Solid Waste Management Plan.			✓
(e) Phase out the use of injection wells.			✓
Analysis: **The proposed project will connect to the County wastewater system. Coordination will be undertaken with the DEM to determine if certain improvements to the County's wastewater system will be required to service the project aside from the new sewerline that is proposed as part of the overall project. Construction waste will be disposed at the County's Central Maui Landfill or appropriate construction recycling centers. In addition, once built and occupied, the project is anticipate to be served by the County's refuse collection service.**			
Objective:			
(3) Significantly increase the use of renewable and green technologies to promote energy efficienc0079 and energy self-sufficiency.			✓
Policies:			
(a) Promote the use of locally renewable energy sources, and reward energy efficiency.			✓

COUNTYWIDE POLICY PLAN (Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable)	S	N/S	N/A
(b) Consider tax incentives and credits for the development of sustainable- and renewable-energy sources.			✓
(c) Expand education about energy conservation and self-sufficiency.			✓
(d) Encourage small-scale energy generation that utilizes wind, sun, water, biowaste, and other renewable sources of energy.	✓		
(e) Expand renewable-energy production.			✓
(f) Develop public-private partnerships to ensure the use of renewable energy and increase energy efficiency.			✓
(g) Require the incorporation of locally appropriate energy-saving and green building design concepts in all new developments by providing energy efficient urban design guidelines and amendments to the Building Code.			✓
(h) Encourage the use of sustainable energy to power vehicles.			✓
(i) Promote the retrofitting of existing buildings and new development to incorporate energy-saving design concepts and devices.			✓
(j) Encourage green footprint practices.			✓
(k) Reduce Maui County's dependence on fossil fuels and energy imports.			✓
(l) Support green building practices such as the construction of buildings that aim to minimize carbon dioxide production, produce renewable energy, and recycle water.			✓
(m) Promote and support environmentally friendly practices in all energy sectors.			✓
Implementing Actions:			
(a) Adopt an energy-efficiency policy for Maui County government as a model for other jurisdictions.			✓
(b) Adopt a Green Building Code, and support green building practices.			✓
Analysis: **Each home built, whether turn-key or lessee built, will be required to have a solar water heater system pursuant to MCC, Section 16.16B.R403.5.5.**			
Objective:			
(4) Direct growth in a way that makes efficient use of existing infrastructure and to areas where there is available infrastructure capacity.	✓		
Policies:			
(a) Capitalize on existing infrastructure capacity as a priority over infrastructure expansion.	✓		
(b) Planning for new towns should only be considered if a region's growth is too large to be directed into infill and adjacent growth areas.			✓
(c) Utilize appropriate infrastructure technologies in the appropriate locations.			✓
(d) Promote land use patterns that can be provided with infrastructure and public facilities in a cost-effective manner.	✓		
(e) Support catchment systems and on-site wastewater treatment in rural areas and aggregated water and wastewater systems in urban areas if they are appropriately located.			✓
Implementing Actions:			
(a) Develop a streamlining system for urban infill projects.			✓
(b) Identify appropriate areas for urban expansion of existing towns where infrastructure and public facilities can be provided in a cost-effective manner.			✓

COUNTYWIDE POLICY PLAN (Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable)	S	N/S	N/A
Analysis: **The proposed project will be implemented in a developed area in Central Maui, in proximity to existing infrastructure and services.**			
Objective:			
(5) Improve the planning and management of infrastructure systems.	✓		
Policies:			
(a) Provide a reliable and sufficient level of funding to enhance and maintain infrastructure systems.			✓
(b) Require new developments to contribute their pro rata share of local and regional infrastructure costs.			✓
(c) Improve coordination among infrastructure providers and planning agencies to minimize construction impacts.			✓
(d) Maintain inventories of infrastructure capacity, and project future infrastructure needs.			✓
(e) Require social-justice and -equity issues to be considered during the infrastructure-planning process.			✓
(f) Discourage the development of critical infrastructure systems within hazard zones and the tsunami-inundation zone to the extent practical.			✓
(g) Ensure that infrastructure is built concurrent with or prior to development.	✓		
(h) Ensure that basic infrastructure needs can be met during a disaster.			
(i) Locate public facilities and emergency services in appropriate locations that support the health, safety, and welfare of each community and that minimize delivery inefficiencies.			✓
(j) Promote the undergrounding of utility and other distribution lines for health safety, and aesthetic reasons.			✓
Implementing Actions:			
(a) Develop and regularly update functional plans for infrastructure systems.			✓
(b) Develop, adopt, and regularly update local or community-sensitive level-of service standards for infrastructure systems.			✓
Analysis: **The proposed project will be implemented in a developed area in Central Maui, in proximity to existing infrastructure and services.**			
J. PROMOTE SUSTAINABLE LAND USE AND GROWTH MANAGEMENT			
Goal: Community character, lifestyles, economies, and natural assets will be preserved by managing growth and using land in a sustainable manner.			✓
Objective:			
(1) Improve land use management and implement a directed-growth strategy.			✓
Policies:			
(a) Establish, map, and enforce urban- and rural-growth limits.	✓		
(b) Direct urban and rural growth to designated areas.	✓		
(c) Limit the number of visitor-accommodation units and facilities in Community Plan Areas.			✓
(d) Maintain a sustainable balance between the resident, part-time resident, and visitor populations.			✓
(e) Encourage redevelopment and infill in existing communities on lands intended for urban use to protect productive farm land and open-space resources.			✓

COUNTYWIDE POLICY PLAN (Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable)	S	N/S	N/A
(f) Discourage new entitlements for residential, resort, or commercial development along the shoreline.			✓
(g) Restrict development in areas that are prone to natural hazards, disasters, or sea-level rise.			✓
(h) Direct new development in and around communities with existing infrastructure and service capacity, and protect natural, scenic, shoreline, and cultural resources.	✓		
(i) Establish and maintain permanent open space between communities to protect each community's identity.			✓
(j) Support the dedication of land for public uses.			✓
(k) Preserve the public's rights of access to and continuous lateral access along all shorelines.			✓
(l) Enable existing and future communities to be self-sufficient through sustainable land use planning and management practices.			✓
(m) Protect summits, slopes, and ridgelines from inappropriate development.			✓
Implementing Actions:			
(a) Regularly update urban- and rural-growth boundaries and their maps.			✓
(b) Establish transfer and purchase of development rights programs.			✓
(c) Develop and adopt a green infrastructure plan.			✓
(d) Develop studies to help determine a sustainable social, environmental, and economic carrying capacity for each island.			✓
(e) Identify and define resort-destination areas.			✓
Analysis: **Although the proposed project repurposes lands designated for agricultural uses for homes, the project area is located within the Urban and Rural Growth Boundaries as designated by the County of Maui's Maui Island Plan and within an area planned for growth. In addition, the proposed project will be implemented in a developed area in Central Maui, in proximity to existing infrastructure and services.**			
Objective:			
(2) Improve planning for and management of agricultural lands and rural areas.			✓
Policies:			
(a) Protect prime, productive, and potentially productive agricultural lands to maintain the islands' agricultural and rural identities and economies.			✓
(b) Provide opportunities and incentives for self-sufficient and subsistence homesteads and farms.			✓
(c) Discourage developing or subdividing agriculturally designated lands when non- agricultural activities would be primary uses.			✓
(d) Conduct agricultural-development planning to facilitate robust and sustainable agricultural activities.			✓
Implementing Actions:			
(a) Inventory and protect prime, productive, and potentially productive agricultural lands from competing non-agricultural land uses.			✓
Analysis: **Not applicable.**			
Objective:			
(3) Design all developments to be in harmony with the environment and to protect each community's sense of place.			✓

COUNTYWIDE POLICY PLAN (Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable)	S	N/S	N/A
Policies:			
(a) Support and provide incentives for green building practices.			✓
(b) Encourage the incorporation of green building practices and technologies into all government facilities to the extent practicable.			✓
(c) Protect and enhance the unique architectural and landscape characteristics of each Community Plan Area, small town, and neighborhood.			✓
(d) Ensure that adequate recreational areas, open spaces, and public-gathering places are provided and maintained in all urban centers and neighborhoods.			✓
(e) Ensure business districts are distinctive, attractive, and pedestrian-friendly destinations.			✓
(f) Use trees and other forms of landscaping along rights-of-way and within parking lots to provide shade, beauty, urban-heat reduction, and separation of pedestrians from automobile traffic in accordance with community desires.			✓
(g) Where appropriate, integrate public-transit, equestrian, pedestrian, and bicycle facilities, and public rights-of-way as design elements in new and existing communities.			✓
(h) Ensure better connectivity and linkages between land uses.			✓
(i) Adequately buffer and mitigate noise and air pollution in mixed-use areas to maintain residential quality of life.			✓
(j) Protect rural communities and traditional small towns by regulating the footprint, locations, site planning, and design of structures.			✓
(k) Support small-town revitalization and preservation.			✓
(l) Facilitate safe pedestrian access, and create linkages between destinations and within parking areas.			✓
Implementing Actions:			
(a) Establish design guidelines and standards to enhance urban and rural environments.			✓
(b) Provide funding for civic-center and civic-space developments.			✓
(c) Establish and enhance urban forests in neighborhoods and business districts.			✓
Analysis: **Not applicable.**			
Objective:			
(4) Improve and increase efficiency in land use planning and management.			✓
Policies:			
(a) Assess the cumulative impact of developments on natural ecosystems, natural resources, wildlife habitat, and surrounding uses.			✓
(b) Ensure that new development projects requiring discretionary permits demonstrate a community need, show consistency with the General Plan, and provide an analysis of impacts.			✓
(c) Encourage public and private partnerships to preserve lands of importance, develop housing, and meet the needs of residents.			✓
(d) Promote creative subdivision designs that implement best practices in land development, sustainable management of natural and physical resources, increased pedestrian and bicycle functionality and safety, and the principles of livable communities.			✓
(e) Coordinate with Federal, State, and County officials in order to ensure that land use decisions are consistent with County plans and the vision local populations have for their communities.			✓

COUNTYWIDE POLICY PLAN (Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable)	S	N/S	N/A
(f) Enable greater public participation in the review of subdivisions.			✓
(g) Improve land use decision making through the use of land- and geographic information systems.			✓
Implementing Actions:			
(a) Institute a time limit and sunsetting stipulations on development entitlements and their implementation.			✓
Analysis: **Not applicable.**			
K. STRIVE FOR GOOD GOVERNANCE			
Objective:			
(1) Strengthen governmental planning, coordination, consensus building, and decision making.			✓
Policies:			
(a) Plan and prepare for the effects of social, demographic, economic, and environmental shifts.			✓
(b) Plan for and address the possible implications of Hawaiian sovereignty.			✓
(c) Encourage collaboration among government agencies to reduce duplication of efforts and promote information availability and exchange.			✓
(d) Expand opportunities for the County to be involved in and affect State and Federal decision making.			✓
(e) Plan and prepare for large-scale emergencies and contingencies.			✓
(f) Improve public awareness about preparing for natural hazards, disasters, and evacuation plans.			✓
(g) Improve coordination among Federal, State, and County agencies.			✓
Implementing Actions:			
(a) Develop policies, regulations, and programs to protect and enhance the unique character and needs of the County's various communities.			✓
(b) Evaluate and if necessary, recommend modifications to the County Charter that could result in a possible change to the form of governance for Maui County.			✓
(c) Study and evaluate the feasibility and implications of voting in Maui County Council elections.			✓
(d) Study and evaluate the feasibility of authorizing town governments in Maui County.			✓
Analysis: **Not applicable.**			
Objective:			
(2) Promote civic engagement.			✓
Policies:			
(a) Foster consensus building through in-depth, innovative, and accessible public participatory processes.			✓
(b) Promote and ensure public participation and equal access to government among all citizens.			✓
(c) Encourage a broad cross-section of residents to volunteer on boards and commissions.			✓
(d) Encourage the State to improve its community-involvement processes.			✓
(e) Support community-based decision making.			✓

COUNTYWIDE POLICY PLAN (Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable)	S	N/S	N/A
(f) Expand advisory functions at the community level.			✓
(g) Expand opportunities for all members of the public to participate in public meetings and forums.			✓
(h) Facilitate the community's ability to obtain relevant documentation.			✓
(i) Increase voter registration and turnout.			✓
Implementing Actions:			
(a) Implement two-way communication using audio-visual technology that allows residents to participate in the County's planning processes.			✓
(b) Ensure and expand the use of online notification of County business and public meetings, and ensure the posting of all County board and commission meeting minutes.			✓
(c) Explore funding mechanisms to improve participation by volunteers on boards and commissions.			✓
(d) Develop a project-review process that mandates early and ongoing consultation in and with communities affected by planning and land use activities.			✓
Analysis: **Not applicable.**			
Objective:			
(3) Improve the efficiency, reliability, and transparency of County government's internal processes and decision making.			✓
Policies:			
(a) Use advanced technology to improve efficiency.			✓
(b) Simplify and clarify the permitting process to provide uniformity, reliability, efficiency, and transparency.			✓
(c) Improve communication with Lanaʻi and Molokaʻi through the expanded use of information technologies, expanded staffing, and the creation and expansion of government-service centers.			✓
(d) Ensure that laws, policies, and regulations are internally consistent and effectuate the intent of the General Plan.			✓
Implementing Actions:			
(a) Update the County Code to be consistent with the General Plan.			✓
(b) Identify and update County regulations and procedures to increase the productivity and efficiency of County government.			✓
(c) Develop local level-of-service standards for infrastructure, public facilities, and services.			✓
(d) Implement plans through programs, regulations, and capital improvements in a timely manner.			✓
(e) Expand government online services.			✓
Analysis: **Not applicable.**			
Objective:			
(4) Adequately fund in order to effectively administer, implement, and enforce the General Plan.			✓
Policies:			
(a) Adequately fund, staff, and support the timely update and implementation of planning policy, programs, functional plans, and enforcement activities.			✓
(b) Ensure that the County's General Plan process provides for efficient planning at the County, island, town, and neighborhood level.			✓

COUNTYWIDE POLICY PLAN (Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable)	S	N/S	N/A
(c) Encourage ongoing professional development, education, and training of County employees.			✓
(d) Encourage competitive compensation packages for County employees to attract and retain County personnel.			✓
(e) Enable the County government to be more responsive in implementing our General Plan and Community Plans.			✓
(f) Review discretionary permits for compliance with the Countywide Policy Plan.			✓
(g) Strengthen the enforcement of County, State, and Federal land use laws.			✓
Implementing Actions:			
(a) Establish penalties to ensure compliance with County, State, and Federal land use laws.			✓
Analysis: **Not applicable.**			
Objective:			
(5) Strive for County government to be a role model for implementing cultural and environmental policies and practices.			✓
Policies:			
(a) Educate residents on the benefits of sustainable practices.			✓
(b) Encourage the retention and hiring of qualified professionals who can improve cultural and environmental practices.			✓
(c) Incorporate environmentally sound and culturally appropriate practices in government operations and services.			✓
(d) Encourage all vendors with County contracts to incorporate environmentally sound and culturally appropriate practices.			✓
***Analysis*:** **Not applicable.**			

F. MAUI ISLAND PLAN

The County of Maui's Maui Island Plan 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 wastewater systems, visitor destinations, urban design, and other matters related to future growth.

As provided by Chapter 2.80B, the Maui Island Plan shall include the following components:

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

2. *A water element assessing supply, demand and quality parameters*

3. *A nearshore ecosystem element assessing 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 the initial adoption of the Maui Island Plan via Ordinance No. 4004 did 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, 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 Council approved time extensions for approval and adoption of the implementation chapter of the Maui Island Plan. The implementation program component of the Maui Island Plan was adopted as Ordinance No. 4126 on May 29, 2014.

The Maui Island Plan 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 Maui Island Plan 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 the Urban Growth Boundary, small town boundaries and rural growth boundaries. The respective boundaries identify areas appropriate for future growth and their corresponding intent with respect to development character.

The proposed project is located within the Urban and Rural Growth Boundaries of the Maui Island Plan's Central Maui region and within an area designated for planned growth. See **Figure 11**. It is further noted that the project area is "Outside of Protected Areas" in the Maui Island Plan. In this regard, it is consistent with the directed growth strategy defined via growth maps adopted in the Maui Island Plan. However, as previously discussed, the lands on which the proposed subdivision will be developed are under the jurisdiction of the DHHL, which has vested authority to develop its lands at its discretion.

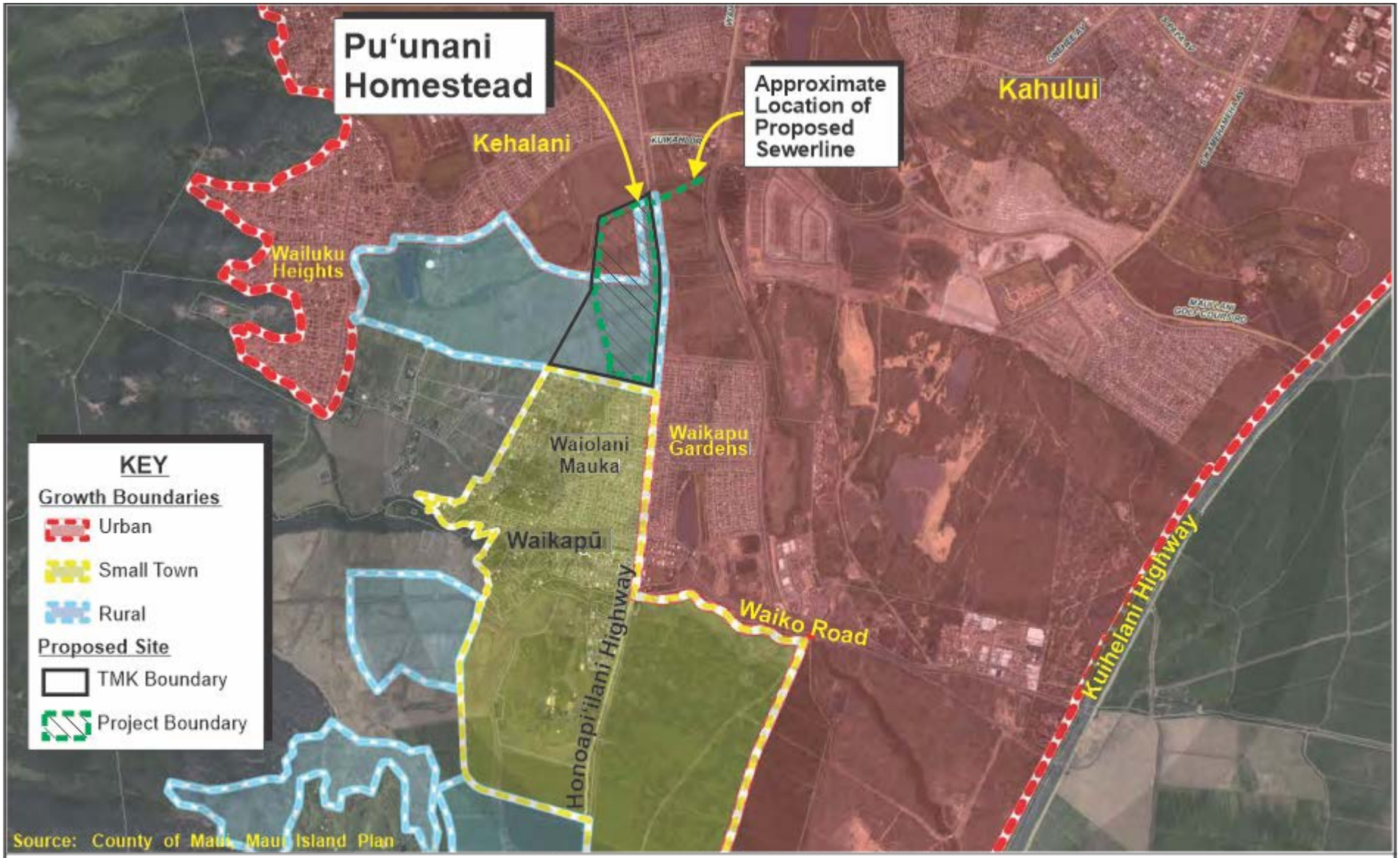

Figure 11

Pu'unani Homestead Subdivision

Maui Island Plan Map

0 1000 2000 4000 Feet

Prepared for: State of Hawai'i, Department of Hawaiian Home Lands

MUNEKIYO HIRAGA

DDC\Puunani\Homestead\Applications\Figures\MIP.DEA

It is also noted that although the proposed subdivision area is within the Pu‘unani Planned Growth Area as defined in the Maui Island Plan, the proposed project is separate and distinct from that which was previously proposed by others. As such, the proposed project does not provide for a greenbelt buffer along Honoapi‘ilani Highway or a preservation greenbelt buffer along the property’s boundary adjacent to Waiolani Mauka as this would result in a loss of developable lots for homes, thus not supporting the goals and mission of the DHHL and HHCA. However, a landscaped buffer will be developed at the roadway frontage along Honoapi‘ilani Highway, providing a landscaped, open space setback from the roadway to the house lots.

In addition, the proposed project has been reviewed with respect to pertinent goals, objectives, policies, and implementing actions of the Maui Island Plan. The analysis is presented in the table below.

Maui Island Plan Goals, Objectives and Policies **Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable**	**S**	**N/S**	**N/A**
CHAPTER 1 – POPULATION			
Goal:			
1.1 Maui’s people, values, and lifestyles thrive through strong, healthy, and vibrant island communities.	✓		
Objective:			
1.1.1 Greater retention and return of island residents by providing viable work, education, and lifestyle options.			✓
Policies:			
1.1.1.a Expand programs that enable the community to meet the education, employment, housing, and social goals of youth and young adults.			✓
1.1.1.b Expand housing, transportation, employment, and social opportunities to ensure residents are able to comfortably age within their communities.	✓		
1.1.1.c Measure and track resident satisfaction through surveys and community indicators.			✓
1.1.1.d Support funding for transportation, housing, health care, recreation, and social service programs that help those with special needs (including the elderly and disabled).			✓
Analysis: **The proposed project provides additional homestead opportunities for DHHL beneficiaries in an area that is close to the government, business, and commercial centers of Wailuku and Kahului.**			
CHAPTER 2 – HERITAGE RESOURCES			
CULTURAL, HISTORICAL, AND ARCHAEOLOGICAL RESOURCES ISSUES			
Goal:			
2.1 Our community respects and protects archaeological and cultural resources while perpetuating diverse cultural identities and traditions.	✓		

Maui Island Plan Goals, Objectives and Policies Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable	S	N/S	N/A
Objective:			
2.1.1 An island culture and lifestyle that is healthy and vibrant as measured by the ability of residents to live on Maui, access and enjoy the natural environment, and practice Hawaiian customs and traditions in accordance with Article XII, Section 7, Hawai‘i State Constitution, and Section 7-1, Hawai`i Revised Statutes (HRS).			✓
Policies:			
2.1.1.a Perpetuate the spirit of aloha and celebrate the host Hawaiian culture and other ethnic cultures.			✓
2.1.1.b Perpetuate a respect for diversity and recognize the broad blending of cultures and ethnicities as vital to the quality of life on Maui.			✓
2.1.1.c Ensure traditional public access routes, including native Hawaiian trails, are maintained for public use.			✓
2.1.1.d Support the education of visitors and new residents about the customs and etiquette of the Hawaiian culture, as well as other cultures.			✓
Objective:			
2.2 A more effective and efficient planning and review process that incorporates the best available cultural resources inventory, protection techniques, and preservation strategies.	✓		
Policies:			
2.1.2.a Ensure that the island has a comprehensive and up-to-date inventory of historic and archaeological resources, and their cultural significance.	✓		
2.1.2.b Require the update of existing planning and regulatory mechanisms to protect the natural, cultural, scenic, and historic resources within designated Heritage Areas (see Cultural Resources Overlay/Scenic Corridor Protection Technical Reference Map).			✓
2.1.2.c Ensure that cultural, historic, and archaeological resources are protected for the benefit of present and future generations.	✓		
Objective:			
2.3 Enhance the island’s historic, archaeological, and cultural resources.	✓		
Policies:			
2.1.3.a Identify and pursue a listing of the properties and sites on the State and National Register of Historic Places.			✓
2.1.3.b Support the use of easements, dedications, and other mechanisms to acquire, maintain, and protect lands with cultural, archaeological, and historic significance.			✓
2.1.3.c Support regulations to require developers, when appropriate, to prepare an Archaeological Inventory Survey, Cultural Impact Assessment, and Ethnographic Inventories that are reviewed and commented upon by the Office of Hawaiian Affairs, Native Hawaiian advisory bodies, the State Historic Preservation Division (SHPD), and the Office of Environmental Quality Control, and systematically comply with the steps listed in SHPD’s administrative rules, including consultation and monitoring during construction phases of projects.	✓		

Maui Island Plan Goals, Objectives and Policies Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable	S	N/S	N/A
2.1.3.d Promote the rehabilitation and adaptive reuse of historic sites, buildings, and structures.			✓
2.1.3.e Encourage property owners to register historic and archaeological sites on the State and National Register.			✓
2.1.3.f Support opportunities for public involvement with the intent to facilitate the protection and restoration of historic and archeological sites, including consultation with stakeholders.			✓
2.1.3.g Encourage the resolution of land title questions relating to Land Commission Awards and Royal patents.			✓
2.1.3.h Ensure compliance with historic preservation laws, and discourage demolition of properties that are determined to be eligible for listing on the National or State Register of Historic Places.	✓		
Analysis: **An AIS was prepared in 2005 for a 215.8-acre area in Waikapū, which included the proposed subdivision site. In its acceptance letter of the AIS, the SHPD concurred that no further mitigation was necessary. In addition, an AA was completed for the parcel on which the proposed sewerline will be located in relation to the Wailuku Apartment Rental Housing Project. In its acceptance letter, the SHPD concurred that archaeological monitoring must be undertaken. Should any archaeological resources be discovered during ground altering activities, work shall cease in the immedicate area of the find and mitigation coordination will be undertaken with the SHPD. In addition, a CIA was prepared for the Proposed Pu'unani Homestead Subdivision project and noted that based on historical research and consultation, there is evidence of cultural practices related to Hawaiian rights related to agricultural pursuits, access to resources, and other customary activities presently occurring in the vicinity of the proposed project. In addition, a legendary grinding stone (Pōhāko'i) is believed to be located in the vicinity of the site of the proposed subdivision. As such, the CIA provided a recommendation that an archaeological field inspection be conducted by a qualified archaeologist prior to the commencement of any construction related ground altering activities in an effort to locate Pōhāko'i.**			
SHORELINE, REEFS, AND NEARSHORE WATERS			
Goal:			
2.2 An intact, ecologically functional system of reef, shoreline, and nearshore waters that are protected in perpetuity.			✓
Objective:			
2.2.1 A more comprehensive and community-based CZM program.			✓
Policies:			
2.2.1.a Encourage a management system that protects and temporarily rests the reef ecosystems from overuse.			✓
2.2.1.b Support the establishment of additional MMAs and reef replenishment areas.			✓
2.2.1.c Work with appropriate agencies and community members to protect any special managed conservation areas from overuse and ensure that surrounding land uses do not contribute to the degradation of the natural resources, such as 'Ahihi-Kina'u Natural Area Reserve, Honolua-Mokulē'ia Bay Marine Life Conservation District, and Mākena State Park.			✓
2.2.1.d Incorporate the following into the MIP, where consistent with the MIP:			

Maui Island Plan Goals, Objectives and Policies Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable	S	N/S	N/A
(1) Beach Management Plan for Maui;			✓
(2) Coastal Nonpoint Pollution Control Program Management Plan;			✓
(3) Implementation Plan for Polluted Runoff Control; and			✓
(4) Ocean Resource Management Plan.			✓
2.2.1.e Support greater coordination among governmental agencies involved with the protection of the island's marine resources.			✓
Objective:			
2.2.2 Improved reef health, coastal water quality, and marine life.			✓
Policies:			
2.2.2.a Create additional mechanisms where needed to contain and control runoff and pollution.			✓
2.2.2.b Allow extraction of high quality, Class A, low silt sands only when they will be used to protect or restore Maui's shorelines and beaches.			✓
2.2.2.c Carefully manage beach nourishment activities to protect the coastal and marine ecosystem.			✓
2.2.2.d Require, where appropriate, a buffer between landscaped areas and the shoreline, gulches, and streams to reduce the runoff of fertilizers, pesticides, herbicides, and other pollutants into coastal waters.			✓
2.2.2.e Strictly regulate shoreline armoring in accordance with adopted Shoreline Rules, with an intent to protect the coastal and marine ecosystem.			✓
2.2.2.f Support greater protection of Keālia Pond National Wildlife Refuge through the following:			
(1) Enhancement of marine ecosystems;			✓
(2) Beach and sand dune restoration; and			✓
(3) Expansion of habitat for Maui's threatened or endangered sea turtles, birds, and other species.			✓
2.2.2.g Support the development of regulations to prevent the excessive depletion of fish stocks due to non-sustainable practices and gear such as SCUBA spear-fishing and lay nets, within the context of nearshore ecosystems.			✓
2.2.2.h Encourage the State to conduct a regular census of fish populations and monitor coral health.			✓
2.2.2.i Encourage the State to significantly increase the number of park rangers, enforcement officers, and marine biologists to protect coastal resources.			✓
2.2.2.j Encourage the State to prohibit the collection and exportation of fish, coral, algae, and other marine species for the ornamental and aquarium trade.			✓

Maui Island Plan Goals, Objectives and Policies Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable	S	N/S	N/A
Objective:			
2.2.3 Water quality that meets or exceeds State Clean Water Act standards.			✓
Policies:			
2.2.3.a Reduce the amount of impervious surface and devise site plan standards that aim to minimize storm runoff and NPS pollution.			✓
2.2.3.b Support the revision of existing regulations to require an Erosion and Sedimentation Control Plan (ESCP) for development activities that may pose a threat to water quality.			✓
2.2.3.c Require an on-site monitoring program, where applicable, when grading may pose a threat to water quality or when recommended in the ESCP.			✓
2.2.3.d Avoid development actions that impair Maui's reef systems and remove identified stressors.			✓
2.2.3.e Phase out cesspools and restrict the use of septic systems in ecologically sensitive coastal areas by converting to environmentally-friendly alternative sewage treatment systems, and connecting to central sewerage systems when and where feasible.			✓
2.2.3.f Prohibit the development of new wastewater injection wells, except when unavoidable for public health and safety purposes.			✓
2.2.3.g Ensure that the County upholds its affirmative duty under the Clean Water Act by monitoring and reducing point and NPS pollution to help safeguard coastal waters.			✓
Objective:			
2.2.4 Acquire additional shoreline lands and shoreline access rights.			✓
Policies:			
2.2.4.a Promote the use of conservation easements, land trusts, transfer and purchase of development rights, and mitigation banking.			✓
2.2.4.b Require the dedication of public beach and rocky shoreline access ways to and along the shoreline where it serves a practical public interest as a condition of development or subdivision approval; future subdivisions and developments shall be consistent with and effectuate, to the extent practicable, the Shoreline Access Inventory Update - Final Report (March 2005), and its updates.			✓
2.2.4.c Incorporate the Shoreline Access Inventory Update - Final Report (March 2005), and its regular updates, into this plan.			✓
2.2.4.d Identify access points while further acquiring key shoreline parcels and easement rights to enhance and protect beach access and shoreline recreation.			✓
Analysis: **Not applicable.**			
WATERSHEDS, STREAMS, AND WETLANDS ISSUES			
Goal:			
2.3 Healthy watersheds, streams, and riparian environments.			✓

Maui Island Plan Goals, Objectives and Policies Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable	S	N/S	N/A
Objective:			
2.3.1 Greater protection and enhancement of watersheds, streams, and riparian environments.			✓
Policies:			
2.3.1.a All present and future watershed management plans shall incorporate concepts of ahupuaʻa management based on the interconnectedness of upland and coastal ecosystems/species.			✓
2.3.1.b Continue to support and be an active member of watershed partnerships.			✓
2.3.1.c Support the establishment of regional water trusts, composed of public and private members, to manage water resources.			✓
2.3.1.d Support regulations to require developments to utilize ahupuaʻa management practices.			✓
2.3.1.e Work with private and non-profit entities to educate the public about the connection between upland activities within the watershed and the impacts on nearshore ecosystems and coral reefs.			✓
2.3.1.f Provide adequate funding and staff to develop and implement watershed protection plans and policies, including acquisition and management of watershed resources and land.			✓
2.3.1.g Encourage the State to mandate instream assessment to provide adequate water for native species.			✓
2.3.1.h Maui will protect all watersheds and streams in a manner that guarantees a healthy, sustainable riparian environment.			✓
Objective:			
2.3.2 Decreased NPS and point source pollution.			✓
Policies:			
2.3.2.a Enforce water pollution related standards and codes.			✓
2.3.2.b Support the use of LID Techniques such as those described in the State of Hawaiʻi LID Practitioner's Guide (June 2006), as amended.	✓		
2.3.2.c Encourage farmers and ranchers to use agricultural BMPs to address NPS pollution.			✓
Objective:			
2.3.3 Preserve existing wetlands and improve and restore degraded wetlands.			✓
Policies:			
2.3.3.a Prohibit the destruction and degradation of existing upland, mid-elevation, and coastal wetlands.			✓
2.3.3.b Support and fund wetland protection and improvement, and restoration of degraded wetlands.			✓
2.3.3.c Where applicable, require developers to provide a wetland protection buffer and/or other protective measures around and between development and wetland resources.			✓

Maui Island Plan Goals, Objectives and Policies Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable	S	N/S	N/A
Objective:			
2.3.4 Greater preservation of native flora and fauna biodiversity to protect native species.			✓
Policies:			
2.3.4.a Work with appropriate agencies to eliminate feral ungulate populations and invasive species.			✓
2.3.4.b Encourage the State to provide adequate funding to preserve biodiversity, protect native species, and contain or eliminate invasive species.			✓
2.3.4.c Support the work of conservation groups and organizations that protect, reestablish, manage, and nurture sensitive ecological areas and threatened indigenous ecosystems.			✓
Objective:			
2.3.5 Limited development in critical watershed areas.			✓
Policies:			
2.3.5.a Discourage development and subdivision of land within critical watersheds and in areas susceptible to high erosion and sediment loss.			✓
2.3.5.b Designate critical watershed areas as conservation lands.			✓
2.3.5.c Strongly encourage new subdivisions and developments that are proximate to environmentally sensitive watershed resources to prepare and implement CSD plans.			✓
Objective:			
2.3.6 Enhance the vitality and functioning of streams, while balancing the multiple needs of the community.			✓
Policies:			
2.3.6.a Protect and enhance natural streambeds and discourage stream alteration.	✓		
2.3.6.b Work with appropriate agencies to establish minimum stream flow levels and ensure adequate stream flow to sustain riparian ecosystems, traditional kalo cultivation, and self-sustaining ahupuaʻa.			✓
2.3.6.c Respect and participate in the resolution of native Hawaiian residual land and water rights issues (kuleana lands, ceded lands, and historic agricultural and gathering rights).			✓
2.3.6.d Ensure that stream flows implement laws and policies found in the State Constitution and Water Code.			✓
2.3.6.e Work with appropriate agencies and stakeholders to establish minimum stream flow levels, promote actions to support riparian habitat and the use of available loʻi, and maintain adequate flows for the production of healthy kalo crops.			✓
Analysis: **Although a typically dry natural drainageway (gully) traverses both project sites, the DHHL will make every effort to ensure that the proposed development has no impact upon this drainageway.**			

Maui Island Plan Goals, Objectives and Policies Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable	S	N/S	N/A
WILDLIFE AND NATURAL AREAS			
Goal:			
2.4 Maui's natural areas and indigenous flora and fauna will be protected.			✓
Objective:			
2.4.1 A comprehensive management strategy that includes further identification, protection, and restoration of indigenous wildlife habitats.			✓
Policies:			
2.4.1.a Identify and inventory the following:			
(1) Natural, recreational, and open space resources;			✓
(2) Flora and fauna with medium, high, and very high concentrations of threatened or endangered species; and			✓
(3) Location and extent of invasive species.			✓
2.4.1.b Require flora and fauna assessment and protection plans for development in areas with concentrations of indigenous flora and fauna; development shall comply with the assessment and protection plan and shall use the avoidance, minimization, and mitigation approach respectively, with an emphasis on avoidance.			✓
2.4.1.c Support the implementation of Hawai`i's Comprehensive Wildlife Conservation Strategy (October 2005).			✓
Objective:			
2.4.2 A decrease in invasive species through programs and partnerships that eradicate undesirable species and protect native habitat.			✓
Policies:			
2.4.2.a Prevent the introduction of invasive species at all of Maui's airports and harbors.			✓
2.4.2.b Encourage the State to increase funding in support of invasive species interception, control, and eradication.			✓
2.4.2.c Encourage the State to develop programs that allow students to participate in invasive species eradication projects.			✓
Objective:			
2.4.3 Greater protection of sensitive lands, indigenous habitat, and native flora and fauna.			✓
Policies:			
2.4.3.a Secure an interconnected network of sensitive lands, greenways, watercourses, and habitats.			✓
2.4.3.b Protect Maui's sensitive lands (see Sensitive Lands on Protected Areas Diagrams).			✓
2.4.3.c Promote innovative environmental-planning methods and site-planning standards that preserve and re-establish indigenous flora and fauna habitat, to preserve and restore connected habitat corridors and open space.			✓

Maui Island Plan Goals, Objectives and Policies Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable	S	N/S	N/A
2.4.3.d Utilize protection tools such as conservation easements, land trusts, land banks, Purchase of Developments Rights (PDRs), Transfer of Development Rights (TDRs), and other stewardship tools to acquire natural areas			✓
2.4.3.e Encourage discussions with communities to designate heritage areas that protect recreational and cultural lifestyles and resources.			✓
2.4.3.f Support the expansion of Haleakalā National Park, and the creation of new national parks, where appropriate and supported by local communities.			✓
2.4.3.g Encourage reforestation efforts that increase native species' habitat.			✓
2.4.3.h Utilize the Natural Area Partnership Program (NAPP) and other programs to protect natural lands.			✓
2.4.3.i Support increased dedicated funding for the acquisition, protection, restoration, or preservation of important natural areas or open space through the following: grants from the Land and Water Conservation Fund; dedicated funding from real property taxes or other appropriate revenues; bond issues; real estate transfer tax; revenues from the Transient Accommodations Tax; development mitigation fees; and other appropriate funding sources.			✓
Analysis: **Not applicable.**			
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.	✓		
Policies:			
2.5.1.a Protect views to include, but not be limited to, Haleakalā, ʻĪao Valley, the Mauna Kahalawai (West Maui Mountains), Puʻu Ōʻlaʻi, Kahoʻolawe, Molokini, Molokaʻi, and Lānaʻi, Mauna Kea, Mauna Loa, sea stacks, the Pacific Ocean, and significant water features, ridgelines, and landforms.	✓		
2.5.1.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.			✓
2.5.1.c Protect "night sky" resources by encouraging the implementation of ambient light ordinances and encouraging conversion of all sources that create excessive light pollution, affecting our ability to view the stars.			✓
2.5.1.d Protect ridgelines from development where practicable to facilitate the protection of public views.			✓
2.5.1.e Protect scenic resources along Maui's scenic roadway corridors.	✓		

Maui Island Plan Goals, Objectives and Policies Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable	S	N/S	N/A
Objective:			
2.5.2. Reduce impacts of development projects and public-utility improvements on scenic resources.			✓
Policies:			
2.5.2.a Enforce the policies and guidelines of the SMA regarding the protection of views.			✓
2.5.2.b Require any new subdivision of land, development, or redevelopment adjacent to a "high" or "exceptional" scenic corridor to submit an impact assessment of the project's scenic impacts; this assessment shall use the avoidance, minimization, and mitigation steps respectively, with an emphasis on avoidance.			✓
2.5.2.c Require appropriate building setbacks and limits on wall heights to protect views along scenic corridors.			✓
2.5.2.d Encourage the State of Hawai`i Board of Land and Natural Resources to deny any development within the State Conservation District that interferes with a scenic landscape or disrupts important open space resources.			✓
2.5.2.e Require Urban Design and Review Board (UDRB) review and approval of utility poles, facilities, and other visible infrastructure improvements along scenic corridors.			✓
2.5.2.f Ensure little or no effect on scenic resources from utility improvements, primarily power poles.			✓
2.5.2.g Protect scenic vistas from intrusion by power poles.			✓
Objective:			
2.5.3 Greater protection of and access to scenic vistas, access points, and scenic lookout points.	✓		
Policy:			
2.5.3.a Protect, enhance, and acquire access to Maui's scenic vistas and resources.			✓
Analysis: **The proposed project will be implemented along Honoapiʻilani Highway, which provides views of Haleakalā and the West Maui Mountains. The project has been carefully designed taking into consideration building profiles and massing so as to not adversely impact scenic views and vistas. The proposed dwellings will be similar in scale and size to existing residential developments nearby and will be built in accordance with established subdivision standards. In addition, a landscaped buffer will be developed at the roadway footage along Honoapiʻilani Highway, providing a landscaped, open space setback from the roadway to the house lots.**			
CHAPTER 3 – NATURAL HAZARDS			
Goal:			
3.1 Maui will be disaster resilient.			✓
Objective:			
3.1.1 Increased inter-agency coordination.			✓

Maui Island Plan Goals, Objectives and Policies Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable	S	N/S	N/A
Policy:			
3.1.1.a Reinforce the island's preparedness capacity by:			
(1) Applying the latest data-gathering techniques/technology;			✓
(2) Pursuing funding opportunities;			✓
(3) Improving monitoring and advance warning systems;			✓
(4) Fostering public awareness; and			✓
(5) Working with external agencies to coordinate disaster mitigation and response.			✓
Objective:			
3.1.2 Greater protection of life and property.			✓
Policies:			
3.1.2.a Identify critical infrastructure, lifelines, roads, and populations that are vulnerable to coastal hazards, and encourage strategic retreat and relocation to safer areas.			✓
3.1.2.b Consider the location of dams, reservoirs, holding ponds, and other water-containing entities that are upstream of inhabited areas to anticipate, avoid, and mitigate inundation risks, and discourage new development in areas where possible inundation hazards may exist.			✓
3.1.2.c Strengthen current development standards to minimize destruction of land and property.			✓
3.1.2.d Encourage the use of construction techniques that reduce the potential for damage from natural hazards.			✓
3.1.2.e Increase the County's resilience to drought.			✓
3.1.2.f Increase food and energy security through local production and storage.			✓
Objective:			
3.1.3 A more coordinated emergency response system that includes clearly defined and mapped evacuation routes.			✓
Policy:			
3.1.3.a Identify and expand shelter facilities and evacuation routes away from areas susceptible to natural hazards.			✓
Objective:			
3.1.4 A more educated and involved public that is aware of and prepared for natural hazards.			✓
Policies:			
3.1.4.a Promote public education and involvement related to natural hazards awareness and preparedness.			✓
3.1.4.b Coordinate a multi-agency effort to establish and promote a comprehensive public education program that will focus on practical approaches to preparedness, damage prevention, and hazard mitigation.			✓

Maui Island Plan Goals, Objectives and Policies Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable	S	N/S	N/A
Analysis: **Not applicable.**			
CHAPTER 4 – ECONOMIC DEVELOPMENT			
ECONOMIC DIVERSIFICATION			
Goal:			
4.1 Maui will have a balanced economy composed of a variety of industries that offer employment opportunities and well-paying jobs and a business environment that is sensitive to resident needs and the island's unique natural and cultural resources.	✓		
Objective:			
4.1.1 A more diversified economy.			✓
Policies:			
4.1.1.a Encourage an economy that is driven by innovation, research and development, and human resource development, including but not limited to, increasing technology- and knowledge-based sectors to be a major component in Maui County's economic base.			✓
4.1.1.b Support the creation of new jobs and industries that provide a living wage.	✓		
4.1.1.c Facilitate and expedite permits and approvals.			✓
4.1.1.d Develop linkages and partnerships among international research and development activities and Maui businesses.			✓
Objective:			
4.1.2 Increase activities that support principles of sustainability.			✓
Policies:			
4.1.2.a Support industries that are sustainable, and culturally and environmentally sensitive.			✓
4.1.2.b Encourage and support local businesses.			✓
4.1.2.c Substitute imports with locally-produced services and products where practicable.			✓
4.1.2.d Support the development of economic development clusters in targeted industry sectors.			✓
4.1.2.e Encourage all businesses to save energy, water, and other resources.			✓
Objective:			
4.1.3 Improve the island's business climate.			✓
Policies:			
4.1.3.a Upgrade, maintain the quality of, and improve access to telecommunications infrastructure.			✓
4.1.3.b Ensure an adequate supply of affordable workforce housing.			✓

Maui Island Plan Goals, Objectives and Policies Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable	S	N/S	N/A
4.1.3.c Develop neighborhoods and communities that are attractive to the workforce of a diversified economy.			✓
4.1.3.d Encourage, nurture, and reward entrepreneurship and innovation.			✓
4.1.3.e Encourage employers to establish incentive programs. Support flexibility in workforce policies compatible with business and quality of life goals.			✓
4.1.3.f Assist community development organizations with revitalization and development of neighborhoods and communities that are attractive to the workforce of a diversified economy.			✓
Analysis: **The proposed project will generate short-term construction-related employment opportunities.**			
TOURISM			
Goal:			
4.2 A healthy visitor industry that provides economic well-being with stable and diverse employment opportunities.			✓
Objective:			
4.2.1 Increase the economic contribution of the visitor industry to the island's environmental well-being for the island's residents' quality of life.			✓
Policies:			
4.2.1.a Engage the visitor industry in the growth of emerging sectors where practicable.			✓
4.2.1.b Support the implementation of the Maui County TSP, when consistent with the MIP.			✓
4.2.1.c Focus economic growth in the visitor industry through enhanced visitor experiences and an emphasis on attracting higher-spending.			✓
4.2.1.d Provide a rich visitor experience, while protecting the island's natural beauty, culture, lifestyles, and aloha spirit.			✓
4.2.1.e Diversify the tourism industry by supporting appropriate niche activities such as ecotourism, cultural tourism, voluntourism, ag-tourism, health and wellness tourism, educational tourism, medical tourism, and other viable tourism-related businesses in appropriate locations.			✓
4.2.1.f Recognize the important economic contributions that the visitor industry makes and support a healthy and vibrant visitor industry.			✓
4.2.1.g Support the increased availability of kamaʻāina discount programs.			✓
Objective:			
4.2.2 Comprehensively manage future visitor-unit expansion.			✓
Policies:			
4.2.2.a Mitigate the impact of tourism on the host culture, natural environment, and resident lifestyles.			✓
4.2.2.b Allow, where permitted by the community plan, the development of business hotels and small, sensitively-designed inns.			✓

Maui Island Plan Goals, Objectives and Policies Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable	S	N/S	N/A
4.2.2.c Manage impacts from transient vacation rentals, hotels, bed and breakfast units, timeshares, and resort condominiums on residential communities, public infrastructure, and community facilities.			✓
4.2.2.d Discourage supplanting of existing island housing to visitor accommodations that may have a negative impact on long-term rental housing, price of housing, and price of land.			✓
4.2.2.e Allow the designation of retreat/mini-conference centers in appropriate locations through the community plan process.			✓
4.2.2.f Community plans should consider establishing standards such as limits on building size, room count, and the number of inns, if any, that will be allowed in small towns.			✓
Objective:			
4.2.3 Maximize residents' benefits from the visitor industry.			✓
Policies:			
4.2.3.a Promote a desirable island population by striving to not exceed an island-wide visitor population of roughly 33 percent of the resident population.			✓
4.2.3.b Use the required General Plan Annual Status Report to monitor trends related to residents and visitors.			✓
Analysis: **Not applicable.**			
AGRICULTURE			
Goal:			
4.3 Maui will have a diversified agricultural industry contributing to greater economic, food, and energy security and prosperity.			✓
Objective:			
4.3.1 Strive for at least 85 percent of locally-consumed fruits and vegetables and 30 percent of all other locally-consumed foods to be grown in-State.			✓
Policies:			
4.3.1.a Strive to substitute food/agricultural product imports with a reliable supply of locally produced food and agricultural products.			✓
4.3.1.b Facilitate and support the direct marketing/sale of the island's agricultural products to local consumers, through farmers markets and similar venues.			✓
4.3.1.c Encourage growing a diverse variety of crops and livestock to ensure the stewardship of our land while safeguarding consumer safety.			✓
4.3.1.d Work with the State to regulate and monitor genetically-modified-organism (GMO) crops to ensure the safety of all crops and label all GMO products.			✓
Objective:			
4.3.2 Maintain or increase agriculture's share of the total island economy.			✓

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Policies:			
4.3.2.a Encourage the export of the island's agricultural products to offshore markets.			✓
4.3.2.b Support infrastructure investments at harbors, such as ferry service, airports, and other facilities for the rapid and cost-effective export of island-grown products.			✓
4.3.2.c Encourage the continued viability of sugar cane production, or other agricultural crops, in central Maui and all of Maui Island.			✓
4.3.2.d Work with the State to reduce excise taxes for commercial agricultural products produced within the State.			✓
4.3.2.e Coordinate with appropriate State and Federal Departments and agencies, private shipping companies, and farmers associations to assist in the rapid and cost-effective export of Maui's agricultural products to off-island markets.			✓
Objective:			
4.3.3 Expand diversified agriculture production at an average annual rate of 4 percent.			✓
Policies:			
4.3.3.a Promote the development of locally-grown and ecologically-sound biofuels, aquaculture, and forest products.			✓
4.3.3.b Support the development of farming associations/cooperatives.			✓
4.3.3.c Work with educational institutions and appropriate agencies to provide education and training for farm owners and entrepreneurs.			✓
Analysis: **Not applicable.**			
EMERGING SECTORS			
Goal:			
4.4 A diverse array of emerging economic sectors.			✓
Objective:			
4.4.1 Support increased investment and expanded activity in emerging industries.			✓
Policies:			
4.4.1.a Support the development of and access to state-of-the-art voice, video, and data telecommunications systems and high-speed Internet.			✓
4.4.1.b Attract and assist industries to compete in high technology activities such as those related to renewable energy, green technologies, diversified agriculture, ocean sciences, health sciences, space technologies, and other knowledge-based industries.			✓
4.4.1.c Support new industries that are environmentally and culturally sensitive such as health and wellness, sports and outdoor activities, cultural activities, the arts, film-making, entertainment, and digital media.			✓
4.4.1.d Support a sustainable, culturally sensitive, astronomy industry.			✓

Maui Island Plan Goals, Objectives and Policies Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable	S	N/S	N/A
4.4.1.e Support the continued development of the Maui Research and Technology Park in Kihei, as a center for research and development, education, and diversified economic development, as provided by the Maui County Code.			✓
4.4.1.f Work with appropriate organizations to support the development of high technology clusters around renewable energy, diversified agriculture, ocean sciences, health sciences, and other knowledge-based industries.			✓
Objective:			
4.4.2 Increase the development of renewable energy technologies that are supported by the local community.			✓
Policies:			
4.4.2.a Support the expansion of the renewable energy sector and the use of solar, wind, wave, and biofuel technologies.			✓
4.4.2.b Provide incentives to encourage renewable energy development, the use of green energy technologies, and energy conservation.			✓
4.4.2.c Ensure an adequate supply of land and facilitate permitting to meet the needs for renewable energy technologies such as solar, wind, wave, biofuel, and other technologies, provided that environmental, view plane, and cultural impacts are addressed.			✓
4.4.2.d Support the Maui County Energy Alliance Plan where consistent with the MIP.			✓
Analysis: **Not applicable.**			
SMALL BUSINESS DEVELOPMENT			
Goal:			
4.5 Small businesses will play a key role in Maui's economy.			✓
Objective:			
4.5.1 Increase the number of and revenue generated by small businesses and decrease the percentage of small business failures.			✓
Policies:			
4.5.1.a Provide incentives and support for small businesses and entrepreneurs that incorporate sustainable technologies and practices into their operations, utilize local materials, or produce and sell locally-made goods or services.			✓
4.5.1.b Assist traditional "mom and pop" business establishments.			✓
4.5.1.c Reduce barriers to small business development.			✓
4.5.1.d Require, where feasible, the government procurement of goods and services from locally-owned, small businesses.			✓
4.5.1.e Support community markets and venues that sell locally-made produce, goods, and services.			✓
Analysis: **Not applicable.**			

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HEALTH CARE SECTOR			
Goal:			
4.6 Maui will have a health care industry and options that broaden career opportunities that are reliable, efficient, and provide social well-being.			✓
Objective:			
4.6.1 Expand the economic benefits of the health care sector.			✓
Policies:			
4.6.1.a Encourage expanded services at MMMC and at other medical facilities.			✓
4.6.1.b Support expansion of federally qualified health centers with the direct involvement of the residents of the communities served.			✓
4.6.1.c Support the use of multimedia as a means to provide healthcare information.			✓
4.6.1.d Encourage digitalization of all diagnostic equipment at all facilities on Maui to enable sharing of data and more efficient use of limited provider workforce, consistent with data protection and patient privacy.			✓
4.6.1.e Support the expansion of telemedicine.			✓
4.6.1.f Encourage expansion and improved access to emergency care in all communities.			✓
Objective:			
4.6.2 Be more efficient in the delivery of health care services and in minimizing health care costs.			✓
Policies:			
4.6.2.a Support expansion of health care providers and facilities to improve access to quality care throughout the island.			✓
4.6.2.b Encourage the expansion of veteran health care services.			
4.6.2.c Allow home-based out-patient medical care that does not interfere with surrounding neighborhoods.			✓
Objective:			
4.6.3. Expand Maui's alternative health care services, including spiritual practices.			✓
Policies:			
4.6.3.a Support efforts to promote alternative medicine.			✓
4.6.3.b Allow small-scale home-alternative medicine businesses such as massage, chiropractic care, traditional Hawaiian healing, and acupuncture that do not interfere with surrounding neighborhoods.			✓
Analysis: **Not applicable.**			

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EDUCATION AND WORKFORCE DEVELOPMENT			
Goal:			
4.7 Maui will have effective education and workforce development programs and initiatives that are aligned with economic development goals.			✓
Objective:			
4.7.1 Improve preschool and K-12 education to allow our youth to develop the skills needed to successfully navigate the 21st century.			✓
Objective:			
4.7.1.a Encourage the State to implement programs such as:			✓
(1) Universally available preschool for children between the ages of one and five;			✓
(2) Mandatory kindergarten;			✓
(3) Mandatory K-5th grade classroom size limits of 1 teacher to 20 students;			✓
(4) Mandatory nutrition programs; and			✓
(5) Mandatory Native Hawaiian programs at all grade levels.			✓
4.7.1.b Encourage the DOE to extend the school day by at least an hour.			✓
4.7.1.c Encourage the State to increase funding for public education so that Hawaiʻi is among the top 10 states nationally as measured by investment per pupil.			✓
4.7.1.d Encourage the State to ensure teacher certifications relate to effective delivery and improved student performances, and develop an industry experience/equivalency certification to assure our DOE students have access to career technical education and training.			✓
4.7.1.e Encourage the UHMC to provide dormitory space for high school students.			✓
4.7.1.f Encourage the development and implementation of curriculum on native Hawaiian history, culture, and practices, in consultation with native Hawaiian groups and associations.			✓
Objective:			
4.7.2 Encourage an increase in the number of certificate recipients and associate, bachelors, and graduate degrees conferred.			✓
Policies:			
4.7.2.a Encourage the State to increase the number of articulation agreements between the UHMC and four-year universities, particularly the University of Hawaiʻi at Manoa.			✓
4.7.2.b Encourage the State to expand accredited 2-year, 4-year, and graduate programs through the UHMC.			✓
4.7.2.c Encourage the education and training of our residents to meet the needs of a diversified economy.			✓

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4.7.2.d Support education and training programs such as student internships, vocational training, and career development opportunities to ensure a highly skilled workforce			✓
4.7.2.e Work with educational institutions to improve and expand access to education and training through multiple modes, including distance learning.			✓
Objective:			
4.7.3 Strive to ensure that more of Maui's jobs are developed in STEM-related sectors by 2030.			✓
Policies:			
4.7.3.a Support the development of STEM-related certificates and degrees at the two- and four year levels.			✓
4.7.3.b Support the education initiatives of the Maui Agricultural Development Plan.			✓
4.7.3.c Expand and seek funding for internships, mentoring, job shadowing, etc. to foster interest in health and green workforce careers.			✓
4.7.3.d Work with MEDB, UHMC, and other similar organizations to expand internship/education programs to support STEM careers.			✓
4.7.3.e Continue to partner with the MEDB and other similar organizations to recruit, assist, and retain emerging industries, research and development activities, and educational/workforce opportunities.			✓
Analysis: **Not applicable.**			
CHAPTER 5 – HOUSING			
Goal:			
5.1 Maui will have safe, decent, appropriate, and affordable housing for all residents developed in a way that contributes to strong neighborhoods and a thriving island community.	✓		
Objective:			
5.1.1 More livable communities that provide for a mix of housing types, land uses, income levels, and age.	✓		
Policies:			
5.1.1.a Promote livable communities (compact/walkable/bikeable, access to transit) that provide for a mix of housing types and land uses, including parks, open space, and recreational areas.	✓		
5.1.1.b Promote planning approaches that provide a mix of multifamily and single-family housing units to expand housing choices.			✓
5.1.1.c Discourage gated communities.	✓		
5.1.1.d Provide incentives for the rehabilitation or adaptive reuse of historic structures to facilitate more housing choices.			✓
5.1.1.e Use planning and regulatory approaches to provide higher housing densities.			✓
Objective:			
5.1.2 Better monitoring, evaluation, and refinement of affordable housing policy in conjunction with the economic cycle.			✓

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Policies:			
5.1.2.a Improve data on resident and nonresident housing.			✓
5.1.2.b Utilize the following approaches to promote resident housing and to minimize offshore market impacts:			
(1) Ensure that the future housing stock is composed of a mix of housing types (multifamily, small lots, ohana units, co-housing, cottage houses, etc.);			✓
(2) Encourage new housing in proximity to jobs and services, in places that are conducive/affordable to island residents; and	✓		
(3) Explore taxation alternatives and building fee structures.			✓
Objective:			
5.1.3 Provide affordable housing, rental or in fee, to the broad spectrum of our island community.	✓		
Policies:			
5.1.3.a Consider regulations that can help keep affordable housing available at affordable rents.			✓
5.1.3.b Seek to have ownership of affordable for-sale and rental housing vested in a non-profit community land trust, or other qualified housing provider, committed to keeping such housing affordable in perpetuity.	✓		
5.1.3.c Facilitate the use of public lands in urban areas that are suitable for affordable housing.			✓
5.1.3.d Develop or support partnerships and initiatives that provide housing-related education/outreach.			✓
5.1.3.e Support the continuing efforts of the County and its community partners to:			
(1) Disseminate information on different housing/financial assistance programs (loans, grants, etc.) including information on housing rehabilitation/restoration/adaptive reuse;			✓
(2) Provide housing-related counseling including budget, credit, and financial planning assistance; and			✓
(3) Create and maintain a comprehensive/master list of available affordable housing to help residents secure a unit that satisfies their need.			✓
Objective:			
5.1.4 Provide infrastructure in a more timely manner to support the development of affordable housing.			✓
Policies:			
5.1.4.a Prioritize the development of infrastructure that supports the development of affordable housing.			✓
5.1.4.b Utilize appropriate financing approaches and assistance tools to encourage the development of infrastructure and public facilities.			✓
5.1.4.c Tailor infrastructure requirements to correspond with appropriate level-of-service standards to help control housing costs and to maintain safety.			✓

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Policies:			
6.3.1.a Ensure that DWS actions reflect its public trust responsibilities toward water.			✓
6.3.1.b Ensure the WUDP implements the State Water Code and MIP's goals, objectives, and policies.			✓
6.3.1.c Regularly update the WUDP, to maintain compliance with the General Plan.			✓
6.3.1.d Ensure that the County's CIP for water-source development is consistent with the WUDP and the MIP.			✓
6.3.1.e Where desirable, retain and expand public ownership and management of watersheds and fresh-water systems.			✓
6.3.1.f Encourage and improve data exchange and coordination among Federal, State, County, and private land use planning and water resource management agencies.			✓
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.			✓
6.3.2.b Encourage increased education about and use of private catchment systems where practicable for nonpotable uses.			✓
6.3.2.c Maximize the efficient use of reclaimed wastewater to serve nonpotable needs.			✓
6.3.2.d Work with appropriate State and County agencies to achieve a balance in resolving the needs of water users in keeping with the water allocation priorities of the MIP.			✓
6.3.2.e Ensure water conservation through education, incentives, and regulations.			✓
6.3.2.f Acquire and develop additional sources of potable water.			✓
Objective:			
6.3 Improve water quality and the monitoring of public and private water systems.			✓
Policy:			
6.3.3.a Protect and maintain water delivery systems.			✓
Analysis: **The project is located in an area that is serviced by existing County water infrastructure. Coordination will be undertaken with the DWS to determine if certain improvements to the County's water system will be required to service the project.**			
TRANSPORTATION			
Goal:			
6.4 An interconnected, efficient, and well-maintained, multimodal transportation system.			✓

Maui Island Plan Goals, Objectives and Policies Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable	S	N/S	N/A
Objective:			
6.1.1 Meet our future solid waste needs with a more comprehensive planning and management strategy.			✓
Policies:			
6.1.1.a Update and publicize the ISWMP every ten years.			✓
6.1.1.b Strengthen inter-agency coordination including Planning and Environmental Management departments.			✓
6.1.1.c Divert waste from the landfills and educate the public about the recommendations of the ISWMP.	✓		
6.1.1.d Minimize future active, unlined landfill cells to the extent feasible.			✓
Objective:			
6.1.2 Divert at least 60 percent of solid waste from the island's landfills.			✓
Policies:			
6.1.2.a Require residents and commercial enterprises that generate waste to pay a fair proportion of disposal costs.			✓
6.1.2.b Encourage environmentally safe waste-to-energy solutions.			✓
6.1.2.c Facilitate the reduction of solid waste generated by packaging, food service products, construction waste, etc.			✓
6.1.2.d Educate residents and visitors about the impacts of and methods to reduce, reuse, and recycle.			✓
6.1.2.e Discourage the disposal of landfill leachate by diversion to wastewater treatment plants, where practicable.			✓
Analysis: **Solid waste generated by the project during construction will be recycled to the extent practicable and disposed at appropriately permitted construction waste disposal sites.**			
WASTEWATER			
Goal:			
6.2 Maui will have wastewater systems that comply with or exceed State and Federal regulations; meet levels-of-service needs; provide adequate capacity to accommodate projected demand; ensure efficient, effective, and environmentally sensitive operation; and maximize wastewater reuse where feasible.	✓		
Objective:			
6.2.1 A wastewater planning program capable of efficiently providing timely and adequate capacity to service projected demand where economically feasible and practicable.	✓		
Policies:			
6.2.1.a Encourage the use of renewable energy in support of wastewater treatment facilities.			✓
6.2.1.b Focus the expansion of wastewater systems to accommodate planned growth consistent with the MIP Directed Growth Strategy.	✓		

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6.2.1.c Establish new wastewater treatment plant(s) outside the tsunami zone.			✓
Objective:			
6.2.2 Adequate levels of wastewater service with minimal environmental impacts.	✓		
Policies:			
6.2.2.a Meet or exceed all State and Federal standards regulating wastewater disposal or reuse.			✓
6.2.2.b Encourage tertiary treatment for all municipal wastewater that is disposed through deep injection wells. Phase out all municipal and private injection wells in coordination with water reuse programs, where feasible, by 2020.			✓
6.2.2.c Improve and upgrade the County's existing wastewater collection, treatment, and reuse facilities consistent with current and future plans and the County's CIP.			✓
6.2.2.d Maintain an ongoing sewer inspection program for public and private multi-user systems to identify potential problems and forecast each system's residual life.			✓
6.2.2.e Require all new developments to fund system improvements in proportion to the development impact and in accordance with the County's wastewater functional plan.			✓
6.2.2.f Require appropriate funding mechanisms, such as a sinking fund, to adequately maintain or replace aging water-system components.			✓
6.2.2.g Strongly encourage the phase out of cesspools.			✓
Objective:			
6.2.3 Increase the reuse of wastewater.			✓
Policies:			
6.2.3.a Strengthen coordination between the Department of Water Supply (DWS) and the WWRD to promote reuse/recycling of wastewater.			✓
6.2.3.b Expand the reuse of wastewater from the Central Maui, Kīhei, Lahaina, and other wastewater systems.			✓
Analysis: **The proposed project will connect to the County wastewater system. Coordination will be undertaken with the DEM to determine if certain improvements to the County's wastewater system will be required to service the project aside from the new sewerline that is proposed as part of the overall project.**			
WATER			
Goal:			
6.3 Maui will have an environmentally sustainable, reliable, safe, and efficient water system.			✓
Objective:			
6.3.1 More comprehensive approach to water resources planning to effectively protect, recharge, and manage water resources including watersheds, groundwater, streams, and aquifers.			✓

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Policies:			
6.3.1.a Ensure that DWS actions reflect its public trust responsibilities toward water.			✓
6.3.1.b Ensure the WUDP implements the State Water Code and MIP's goals, objectives, and policies.			✓
6.3.1.c Regularly update the WUDP, to maintain compliance with the General Plan.			✓
6.3.1.d Ensure that the County's CIP for water-source development is consistent with the WUDP and the MIP.			✓
6.3.1.e Where desirable, retain and expand public ownership and management of watersheds and fresh-water systems.			✓
6.3.1.f Encourage and improve data exchange and coordination among Federal, State, County, and private land use planning and water resource management agencies.			✓
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.			✓
6.3.2.b Encourage increased education about and use of private catchment systems where practicable for nonpotable uses.			✓
6.3.2.c Maximize the efficient use of reclaimed wastewater to serve nonpotable needs.			✓
6.3.2.d Work with appropriate State and County agencies to achieve a balance in resolving the needs of water users in keeping with the water allocation priorities of the MIP.			✓
6.3.2.e Ensure water conservation through education, incentives, and regulations.			✓
6.3.2.f Acquire and develop additional sources of potable water.			✓
Objective:			
6.3 Improve water quality and the monitoring of public and private water systems.			✓
Policy:			
6.3.3.a Protect and maintain water delivery systems.			✓
Analysis: **The project is located in an area that is serviced by existing County water infrastructure. Coordination will be undertaken with the DWS to determine if certain improvements to the County's water system will be required to service the project.**			
TRANSPORTATION			
Goal:			
6.4 An interconnected, efficient, and well-maintained, multimodal transportation system.			✓

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Objective:			
6.4.1 Provide for a more integrated island-wide transportation and land use planning program that reduces congestion and promotes more efficient (transit-friendly) land use patterns.			✓
Policies:			
6.4.1.a Plan for an integrated multi-modal transportation system comprised of public transit, bicycle, pedestrian, automobile, and other transportation modes.			✓
6.4.1.b Refocus transportation investment from the construction of additional roadways only for the automobile to the expansion of a multimodal transportation system.			✓
6.4.1.c Encourage the use of "complete streets" design methods.			✓
6.4.1.d Encourage employers to implement TDM strategies.			✓
Objective:			
6.4.2 Safe, interconnected transit, roadway, bicycle, equestrian, and pedestrian network.			✓
Policies:			
6.4.2.a Ensure transit-, roadway-, and pedestrian-facilities design and level-of-service standards respect the unique character of our communities.			✓
6.4.2.b Prioritize transportation improvements list to cost-effectively meet existing and future needs consistent with the MIP.			✓
6.4.2.c Require new development, where appropriate, to integrate sidewalks, pathways, bikeways, and transit infrastructure into new commercial and residential projects while enhancing community character.	✓		
6.4.2.d Identify and improve hazardous and substandard sections of roadways, drainage infrastructure, and bridges, provided that the historical integrity of the roads and bridges are protected.			✓
6.4.2.e Consider identification, acquisition where appropriate, and utilization of abandoned right of-ways for bikeways, pedestrian pathways, and open-space networks.			✓
6.4.2.f Support the implementation of the *Central Maui Pedestrian & Bicycle Master Plan* (March 2012), when consistent with the MIP.			✓
Objective:			
6.4.3 An island-wide, multimodal transportation system that respects and enhances the natural environment, scenic views, and each community's character.			✓
Policies:			
6.4.3.a Ensure that the roadway and transit alignments respect the natural environment and scenic views.			✓
6.4.3.b Ensure that roadways and transit systems in rural areas and small towns enhance community character.			✓
6.4.3.c Design all transit systems to respect visual corridors and Maui's character.			✓

Maui Island Plan Goals, Objectives and Policies Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable	S	N/S	N/A
Analysis: **The proposed project will provide improvements to safely integrate the project generated traffic to local roadways. DHHL will provide pedestrian sidewalk improvements to create a safer pedestrian condition within the project.**			
TRANSIT			
Goal:			
6.5 An island-wide transit system that addresses the needs of residents and visitors and contributes to healthy and livable communities.			✓
Objective:			
6.5.1 An integrated transit system that better serves all mobility needs of Maui's residents and visitors.			✓
Policies:			
6.5.1.a Maximize access to public transit in town centers, commercial districts, and employment centers.			✓
6.5.1.b Expand regional and inter-regional transit services, where appropriate, in heavily traveled corridors and within communities			✓
6.5.1.c Increase the frequency of current service, add additional bus routes as demand requires, and transition to nonpolluting transit vehicles, as funding permits.			✓
6.5.1.d Provide adequate transit infrastructure (e.g., bus pullouts, waiting benches and shelters, signs) along existing and future transit right-of-ways.			✓
6.5.1.e Require new development where appropriate, to provide right-of-ways (ROWs) to accommodate transit circulation and support facilities.			✓
6.5.1.f Identify, protect, and preserve, or acquire corridors for future inter-community transit use, including but not limited to, rail and also multimodal use corridors.			✓
6.5.1.g Establish transit corridors by planning for and securing right-of-way when appropriate for alternative modes of transportation (such as rail and water ferry service).			✓
6.5.1.h Pursue improvements and upgrades to the existing transit system consistent with updated MDOT planning studies/transit plans (within the framework of comprehensive island-wide multimodal transportation plans).			✓
6.5.1.i Increase inter-agency coordination between the Department of Planning, State Department of Transportation, County Department of Public Works, and other applicable agencies.			✓
Objective:			
6.5.2 Plan for a more diversified and stable funding base to support transportation goals.			✓
Policies:			
6.5.2.a Support alternative methods and sources of funding transportation improvements (including impact fees, higher taxes, fare adjustments, dedicated sources of funding, and assessments).			✓

Maui Island Plan Goals, Objectives and Policies Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable	S	N/S	N/A
6.5.2.b Collaborate with public-private entities or nonprofit organizations to reduce public transit operational expenses.			✓
6.5.2.c Coordinate with appropriate Federal, State, and County agencies to fund transportation projects in areas where growth is anticipated.			✓
Analysis: **Not applicable.**			
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.			✓
Policies:			
6.6.1.a Support, consistent with the MIP, the implementation of open-space and recreational plans, such as the *Pali to Puamana Parkway* Master Plan and the *Upcountry Greenways Master Plan*.			✓
6.6.1.b Utilize the ahupuaʻa approach by integrating mauka-to-makai natural landscapes into an island-wide parks and recreation functional plan.			✓
6.6.1.c Provide a balanced mix of passive and active parks, including neighborhood, community, and regional parks, in each community plan area.			✓
6.6.1.d Support the expansion of Haleakala National Park, where supported by affected communities.			✓
6.6.1.e Support loʻi and dryland taro restoration in County, State, and Federal parks.			✓
6.6.1.f Encourage private landowners to dedicate land to Federal, State, or County governments, or nonprofit land trusts, for parks and open-space protection consistent with the MIP.			✓
6.6.1.g Strengthen inter-agency coordination including State and County departments, such as resolving joint use of facilities and properties.			✓
6.6.1.h Work with the State to prepare and implement a master management plan for ʻĀhihi-Kīnaʻu and La Perouse-Keoneʻōʻio Bay to Kanaloa Point region.			✓
Objective:			
6.6.2 Achieve parks and recreation opportunities to meet the diverse needs of our community.			✓
Policies:			
6.6.2.a Establish appropriate level-of-service standards at the neighborhood, community, and regional levels.			✓
6.6.2.b Identify and acquire parks and recreational facilities that address existing park inadequacies and complement and enhance neighborhoods, communities, and natural land features.			✓

Maui Island Plan Goals, Objectives and Policies Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable	S	N/S	N/A
6.6.2.c Design park facilities to preserve and enhance natural site characteristics, maximize views, protect environmental and cultural sites, and minimize water demands.			✓
6.6.2.d Acquire lands along the shoreline, between coastal roadways and the ocean.			✓
6.6.2.e Encourage the development of regional parks, district parks, and greenways in a manner that helps to contain sprawl, provide separation between distinct communities, or offer open space within urban communities.			✓
6.6.2.f Require large master-planned communities that incorporate a mixture of park facilities pursuant to parks standards and functional plans.			✓
6.6.2.g Support appropriate areas for cultural parks (e.g., Kepaniwai) in each community plan area.			✓
6.6.2.h Incorporate community input to determine the appropriate location, design, and long-term stewardship of parks and recreation facilities.			✓
6.6.2.i Manage commercial activities at public parks to minimize impacts to residents.			✓
6.6.2.j Support public-private partnerships to implement the acquisition and development of parks when consistent with the General Plan.			✓
6.6.2.k Support a coordinated program to improve, operate, and maintain joint-use facilities and grounds.			✓
Objective:			
6.6.3 An expanded network of greenways, trails, pathways, and bikeways.			✓
Policies:			
6.6.3.a Link existing and future park sites, natural areas, the shoreline, and residential areas with a network of bikeways, pedestrian paths, trails, and greenways.			✓
6.6.3.b Support the implementation of plans and programs that facilitate pedestrian mobility and access to active and passive recreation areas and sites.			✓
6.6.3.c Collaborate with the State and private land owners to ensure perpetual access and proper stewardship of traditional trails and access systems.			✓
6.6.3.d Facilitate the development of well-managed noncommercial campgrounds throughout the island.			✓
6.6.3.e Consider requiring commercial bike rental businesses to provide funding that supports a mauka-to-makai Haleakalā bikeway improvement program.			✓
6.6.3.f Ensure ADA compliance and seek opportunities to make all parks and recreational facilities accessible to people with disabilities.			✓
Analysis: **Not applicable.**			

Maui Island Plan Goals, Objectives and Policies Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable		S	N/S	N/A
PUBLIC FACILITIES				
Goal:				
6.7	Maui will have adequate public facilities that meet the diverse needs of residents.			✓
Objective:				
6.7.1	More effective planning for public facilities to meet community needs.			✓
Policies:				
6.7.1.a	Ensure the development and update of island-wide public facilities functional plans that incorporate prioritized facilities, programs, and a financial component.			✓
6.7.1.b	Establish appropriate level-of-service standards for public facilities provided by the County.			✓
6.7.1.c	Pursue improvements and upgrades of County public facilities consistent with the public facilities functional plan.			✓
6.7.1.d	Recognize Wailuku Town as Maui's Civic Center and support the revitalization of the Civic Center District by consolidating government office spaces, enhancing landscape beautification, and providing adequate public parking.			✓
6.7.1.e	Support, with community input, the relocation of the Maui Community Correctional Center from Wailuku to an appropriate location in Puʻunēnē.			✓
6.7.1.f	Adequately plan and fund public safety facilities (fire, police, ambulance, civil defense) to meet community needs.			✓
6.7.1.g	Increase joint facilities utilization and program coordination between State and County agencies such as baseyards, communication centers, recreational facilities, etc., where feasible.			✓
6.7.1.h	Focus future expenditures for additional government office space, parking, and related facilities in Wailuku's Civic Center District.			✓
6.7.1.i	Encourage continuous and safe walkways for children within one mile of each school.			✓
6.7.1.j	Encourage public-private partnerships to identify and resolve public facility plan shortcomings when consistent with the General Plan.			✓
6.7.1.k	Incorporate community/area residents' input to determine the appropriate location and design of public facilities.			✓
Analysis:	**Not applicable.**			
SCHOOLS AND LIBRARIES				
Goal:				
6.8	Maui will have school and library facilities that meet residents' needs and goals.			✓
Objective:				
6.8.1	Assist in providing appropriate school and library facilities in a timely manner and in strategic locations.			✓

Maui Island Plan Goals, Objectives and Policies Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable	S	N/S	N/A
Policies:			
6.8.1.a Work in partnership with all educational institutions to meet current and future needs including appropriate location, timing, and design of future facilities.			✓
6.8.1.b Allow for the expansion and intensification of uses at the UHMC including satellite campuses operating in remote areas.			✓
6.8.1.c Encourage the DOE to build and maintain smaller, community-oriented schools.			✓
6.8.1.d Encourage better cooperation by the State and County for use of State and County facilities.			✓
6.8.1.e Encourage the State to upgrade, modernize, and expand school facilities, including those in remote communities.			✓
6.8.1.f Work with the State to develop a master plan for the expansion of UHMC in accordance with the MIP.			✓
6.8.1.g Support partnerships (public/private/nonprofit) to build and staff new schools and improve existing facilities.			✓
6.8.1.h Work with the BOE HSPLS to provide centralized library services (including telecommunications) to all areas of Maui.			✓
6.8.1.i Work with the State to expedite planning and construction of Kīhei High School, including the integration of the high school with the Maui Research and Technology Park.			✓
6.8.1.j Work with the State to identify intermediate school sites in Central Maui and other areas where needed.			✓
Objective:			
6.8.2 Provide a more expansive network of safe and convenient pedestrian-friendly streets, trails, pathways, and bikeways between neighborhoods and schools where appropriate.			✓
Policies:			
6.8.2.a Encourage the State to build new school facilities in appropriate locations that minimize time and distance for students to travel to and from school.			✓
6.8.2.b Encourage the State to implement the Safe Routes to School initiative with funding commitments to help the County plan and fund projects that ensure safe access routes to school.			✓
Analysis: **Not applicable.**			
HEALTH CARE			
Goal:			
6.9 All of Maui residents will have the best possible health care to include healthy living, disease prevention, as well as acute and long-term care.			✓
Objective:			
6.9.1 Greater autonomy to the Maui region in their efforts to improve medical care on the island.			✓

Maui Island Plan Goals, Objectives and Policies Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable	S	N/S	N/A
Policies:			
6.9.1.a Encourage the State to give greater autonomy to the Maui region in their efforts to improve medical care on the island.			✓
6.9.1.b Support innovative financial solutions, such as capital partnerships, joint ventures, and consolidations for MMMC and other health institutions.			✓
6.9.1.c Support MMMC as a major core medical center that provides a greater range of services.			✓
6.9.1.d Support the immediate development of a critical access hospital in West Maui.			✓
6.9.1.e Support the expansion of regional critical-access facilities, where allowed by Federal regulations.			✓
6.9.1.f Improve medical service to remote and outlying regions.			✓
6.9.1.g Support transportation services for dialysis patients and community dialysis programs.			✓
6.9.1.h Work with the State to determine the feasibility of appropriate medical facilities in South Maui and Hāna, including the possible reestablishment of a small community hospital in Hāna, the establishment of a hospital in South Maui, and assist the State in securing funding to meet Maui's health care needs.			✓
Objective:			
6.9.2 An expansion of long-term care facilities and long-term care alternatives to meet the needs of our aging population.			✓
Policies:			
6.9.2.a Support efforts to increase Maui's long-term care bed capacity to cover current and future needs, close to large population centers.			✓
6.9.2.b Recognize that facilities for low-income elders who need long-term care are a needed form of affordable and subsidized housing.			✓
6.9.2.c Evaluate the needs of the long-term disabled and provide planning support for their care, if there is a need for long-term care facilities.			✓
6.9.2.d Consider long-term care facilities as a major potential employment base and encourage the recruitment and training of potential employees.			✓
Objective:			
6.9.3 More support to home-care and community-based programs so they become alternatives to traditional nursing homes.			✓
Policies:			
6.9.3.a Support the establishment of a program to assist the elderly and people with disabilities to remain in their homes or in a home-like setting.			✓
6.9.3.b Support the establishment of senior and adult-day-care centers and senior housing.			✓
6.9.3.c Continue to support existing senior centers (e.g. Kaunoa), and establish new senior centers that will provide day-care sites and programs for the disabled and elderly.			✓

Maui Island Plan Goals, Objectives and Policies Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable	S	N/S	N/A
6.9.3.d Support funding alternatives for community-based services that assist home-care efforts.			✓
6.9.3.e Encourage the State to adopt the recommendations contained within the Legislative Reference Bureau's report entitled "Gimme a Break: Respite Care Services in Other States," (December 2007) where appropriate, feasible, and consistent with the MIP.			✓
Objective:			
6.9.4 Improved preventative medicine and primary health care.			✓
Policies:			
6.9.4.a Develop and utilize health-status benchmarks to measure prevention and primary health care service delivery.			✓
6.9.4.b Support programs that provide family planning assistance.			✓
Analysis: **Not applicable.**			
ENERGY			
Goal:			
6.10 Maui will meet its energy needs through local sources of clean, renewable energy, and through conservation.			✓
Objective:			
6.10.1 Reduce fossil fuel consumption. Using the 2005 electricity consumption as a baseline, reduce by 15 percent in 2015; 20 percent by 2020; and 30 percent by 2030.			✓
Policies:			
6.10.1.a Support energy efficient systems, processes, and methods in public and private operations, buildings, and facilities.			✓
6.10.1.b Support the Maui Solar Rooftop initiative.			✓
6.10.1.c Support Hawai`i Energy and other Public Utility Commission (PUC) approved energy efficiency programs.			✓
Objective:			
6.10.2 Increase the minimum percentage of electricity obtained from clean, renewable energy sources. By 2015, more than 15 percent of Maui's electricity will be produced from locally-produced, clean, renewable energy sources, 25 percent by 2020, and 40 percent by 2030.			✓
Policies:			
6.10.2.a Evaluate available renewable energy resource sites and applicable technologies.			✓
6.10.2.b Encourage the installation of renewable energy systems, where appropriate.	✓		
6.10.2.c Support the establishment of new renewable energy facilities at appropriate locations provided that environmental, view plane, and cultural impacts are addressed.			✓
6.10.2.d Encourage all new County facilities completed after January 1, 2015, to produce at least 15 percent of their projected electricity needs with onsite renewable energy.			✓

Maui Island Plan Goals, Objectives and Policies Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable	S	N/S	N/A
Objective:			
6.10.3 Increased use of clean, renewable energy.	✓		
Policies:			
6.10.3.a Support efforts in the PUC to upgrade Maui's power grid to integrate renewable energy from multiple sources and wheeling of electricity.			✓
6.10.3.b Encourage the PUC to work with the County to implement and expedite community supported renewable energy projects.			✓
6.10.3.c Encourage efforts to produce more renewable energy using distributed generation.			✓
6.10.3.d Encourage import substitution by MECO and the broader community to become more self-sufficient in energy production.			✓
6.10.3.e Educate the public on the economic and environmental benefits from the increased use of renewable energy.			✓
6.10.3.f Encourage support from the Federal government, State, and the private sector for Maui's renewable energy objectives.			✓
6.10.3.g Encourage incentives to support the development and use of renewable energy.			✓
Objective:			
6.10.4 More efficient distribution of power throughout the island while preserving island beauty.			✓
Analysis: **Each home built, whether turn-key or lessee-built, will be required to have a solar water heater system pursuant to MCC, Section 16.16B.R403.5.5. In addition, individual homeowners may install photovoltaic panels on their homes if they so choose.**			
HARBORS AND AIRPORT			
Goal:			
6.11 Maui will have harbors and airports that will efficiently, dependably, and safely facilitate the movement of passengers and cargo.			✓
Objective:			
6.11.1 Upgraded harbor facilities to handle larger volumes of freight and passengers and additional small boat harbors.			✓
Policies:			
6.11.1.a Support the expansion and upgrade of Kahului Harbor through the following, provided that any expansion is respectful of cultural practices and existing recreational uses and supports improved water quality:			✓
(1) Accommodate increasing volumes of cargo;			✓
(2) Provide deeper pier depths and greater fuel-receiving and storing capacities and			✓
(3) Ensure safe and efficient work areas, including separating passenger operations from fuel and cargo operations.			✓

Maui Island Plan Goals, Objectives and Policies Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable	S	N/S	N/A
6.11.1.b Work with public and private entities to provide adequate pier slips, utilities, repair facilities, and waste-disposal capabilities.			✓
6.11.1.c Encourage the State to safely separate passenger (cruise and ferry) operations from hazardous bulk fuels and heavy cargo transporting operations, while not decreasing harbor's capacity to safely support various recreational uses.			✓
6.11.1.d Encourage the State to develop cargo inspecting sites and facilities for efficient cargo and container processing and transportation and to prevent alien species entry.			✓
6.11.1.e Support a State and County task force to study the feasibility of a second commercial harbor on Maui.			✓
Objective:			
6.11.2 Establish more economically thriving and environmentally sensitive small boat harbors accommodating resident and business activity, including fishing, recreation, and tour boats.			✓
Policy:			
6.11.2.a Provide for needed shore-side facilities and capabilities to support small boat harbor users (e.g. repair facilities, parking, cold storage, and mass-transit connections).			✓
Objective:			
6.11.3 Upgraded airport facilities and navigation aids to serve the needs of passengers, freight movements, and general aviation.			✓
Policies:			
6.11.3.a Protect the island's airports from encroaching urbanization that may negatively impact the airport operations.			✓
6.11.3.b Support State efforts to improve Kahului Airport operations to better serve passenger and cargo needs.			✓
6.11.3.c Support State efforts to identify sites and plan to relocate and accommodate small and rotary wing aircraft.			✓
6.11.3.d Encourage the State to improve airport safety including lighting, fuel transmission, fuel safety, etc.			✓
6.11.3.e Consider expansion of rental car facilities in West and South Maui.			✓
6.11.3.f Consider expansion of mass transit (bus, fixed-rail, shuttle, and taxis, bicycle, and pedestrian facilities) to and from Kahului Airport and not limited to passenger movements (allowing for luggage and cargo).			✓
6.11.3.g Encourage the State to maintain airport capacity and to encourage more responsive air services to Hāna and Kapalua.			✓
Analysis: **Not applicable.**			
CHAPTER 7 – LAND USE			
AGRICULTURAL LANDS			
Goal:			
7.1 Maui will have a prosperous agricultural industry and will protect agricultural lands.			✓

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Objective:			
7.1.1 Significantly reduce the loss of productive agricultural lands.			✓
Policies:			
7.1.1.a Allow, where appropriate, the clustering of development on agricultural lands when approved as a CSD plan or similar approval mechanism.			✓
7.1.1.b Require, where appropriate, the review and approval of CSD plans prior to the subdivision of agricultural land.			✓
7.1.1.c Discourage developing or subdividing productive agricultural lands for residential uses in which the residence would be the primary use and any agricultural activities would be secondary uses.			✓
7.1.1.d Consider requirements for public notification and review of the subdivision of agricultural land into four or more lots.			✓
7.1.1.e Focus urban growth, to the extent practicable, away from productive and important agricultural lands.			✓
7.1.1.f Strongly discourage the conversion of productive and important agricultural lands (such as sugar, pineapple, and other produce lands) to rural or urban use, unless justified during the General Plan update, or when other overriding factors are present.			✓
7.1.1.g Further develop the requirements for agricultural assessments found under Section 19.510, MCC.			✓
7.1.1.h Provide incentives for landowners to preserve and protect agricultural lands from development through the use of TDR/PDR, tax credits, easement programs, or similar means.			✓
7.1.1.i Promote the use of U.S.D.A. Farm and Ranch Lands Protection Program grants to fund the acquisition of conservation easements on eligible agricultural lands.			✓
7.1.1.j Require all major developments adjacent to agricultural lands to provide an appropriate and site-specific agricultural protection buffer as part of a required site plan.			✓
7.1.1.k Support and promote the viability of Maui's agricultural businesses through property tax incentives and other programs and subsidies.			✓
7.1.1.l Encourage future community plan efforts to identify lands within the County Agricultural zoning district that are primarily being used for large-lot residential or rural use and consider such lands for reclassification to an appropriate County Rural zone.			✓
Objective:			
7.1.2 Reduction of the island's dependence on off-island agricultural products and expansion of export capacity.			✓
Policies:			
7.1.2.a Coordinate with the agricultural community, associations/community groups, agricultural landowners, and the State to designate IALs.			✓
7.1.2.b Support an incentive package for productive Agricultural Lands which aims to ensure agricultural viability for small- and commercial-scale agricultural producers.			✓

Maui Island Plan Goals, Objectives and Policies Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable	S	N/S	N/A
7.1.2.c Actively look to acquire land and provide infrastructure to expand the agricultural park and establish new agricultural parks.			✓
7.1.2.d Support the designation of a research and development area within agricultural parks to help farmers stay attuned to new technology and research.			✓
7.1.2.e Support local cooperative extension services to facilitate timely technology transfer opportunities.			✓
7.1.2.f Support plans and programs to develop additional sources of water for irrigation purposes.			✓
7.1.2.g Consider appropriate subdivision requirements (gravel roads, above-ground utilities, etc.) in those subdivisions creating Agricultural Parks where lots are limited to agricultural production with no dwellings.			✓
7.1.2.h Support the recommendations, policies, and actions contained within the Maui Agricultural Development Plan, July 2009, when consistent with the MIP.			✓
7.1.2.i Allow water and tax discounts for legitimate farming operations on rural and agricultural land.			✓
7.1.2.j Give priority in delivery and use of agricultural water and agricultural land within County agricultural parks to cultivation of food crops for local consumption.			✓
7.1.2.k Support programs that control pests and diseases that affect agriculture.			✓
7.1.2.l Support the development of training and apprenticeship programs to encourage an adequate supply of agricultural workers.			✓
Objective:			
7.1.3 Support and facilitate connectivity between communities.			✓
Policies:			
7.1.3.a Evaluate the impact of gated communities on interconnectivity.			✓
7.1.3.b Discourage land use and urban design that impedes interconnectivity between adjacent communities.			✓
Analysis: **Not applicable.**			
RURAL AREAS			
Goal:			
7.2 Maui will have a rural landscape and lifestyle where natural systems, cultural resources and farm lands are protected and development enhances and compliments the viability and character of rural communities.			✓
Objective:			
7.2.1 Reduce the proliferation and impact of residential development outside of urban, small town, and rural growth boundaries.			✓
Policies:			
7.2.1.a Focus development to areas inside urban, small town, and rural growth boundaries to preserve natural, cultural, and agricultural resources.	✓		

Maui Island Plan Goals, Objectives and Policies Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable	S	N/S	N/A
7.2.1.b Encourage cluster development with a mandatory buffer requirement/clear edge at the interface of country towns, agricultural uses, and surrounding rural landscapes.			✓
7.2.1.c Encourage or require, where appropriate, CSDs and the use of green spaces/natural separations to protect the character of rural landscapes.			✓
7.2.1.d Encourage basic goods/services in business country towns.			✓
7.2.1.e Allow for mixed uses, including residential uses, within Business Country Town Districts.			✓
7.2.1.f Encourage the use of alternative stormwater management techniques that minimize land disturbance and preserve natural drainage features.			✓
7.2.1.g Encourage green belts, open space buffers, and riparian zones to minimize conflicts between agriculture and residential uses.			✓
7.2.1.h Evaluate the impact of gated communities on inter-connectivity.			✓
Objective:			
7.2.2 More appropriate service/infrastructure standards to enhance and protect the island's rural character and natural systems.			✓
Policies:			
7.2.2.a Minimize impermeable surfaces within rural areas.			✓
7.2.2.b Protect and support the character, economic viability, and historic integrity of Maui's small towns.			✓
7.2.2.c Use infrastructure, public service, and design standards that are appropriate to rural areas.			✓
7.2.2.d Discourage land use and urban design that impede interconnectivity between adjacent communities.	✓		
Analysis: **The proposed project is located within the Urban and Rural Growth Boundaries as designated by the County of Maui MIP and within an area planned for growth. The proposed project is in consonance with this designation.**			
URBAN AREAS			
Goal:			
7.3 Maui will have livable human-scale urban communities, an efficient and sustainable land use pattern, and sufficient housing and services for Maui residents.	✓		
Objective:			
7.3.1 Facilitate and support a more compact, efficient, human-scale urban development pattern.			✓
Policies:			
7. 3.1.a Ensure higher-density compact urban communities, infill, and redevelopment of underutilized urban lots within Urban Growth Boundaries.			✓

Maui Island Plan Goals, Objectives and Policies Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable	S	N/S	N/A
7.3.1.b Maintain a distinct separation between communities, such as but not limited to, Wailuku and Waikapū; Wailuku and Waiheʻe; Pukalani and Makawao; Pukalani and Kula; Makawao and Hāliʻimaile; Lahaina and Kāʻanapali; Kīhei and Māʻalaea; and Māʻalaea and Waikapū, to protect the character and identity of Maui's communities.			✓
7.3.1.c Strengthen evaluation requirements for new urban expansion, new towns, and major urban infill projects within urban growth areas. Tailor submittal requirements to reflect the impact or scale of different projects.			✓
7.3.1.d Ensure future amendments to urban growth boundaries achieve the following: (1) provide a beneficial extension of the existing community; (2) are in areas where it is cost-effective to provide and operate infrastructure/public service facilities; and (3) do not promote automobile-oriented land use patterns.			✓
7.3.1.e Evaluate the impact of gated communities on inter-connectivity.			✓
7.3.1.f Encourage the development and implementation of neighborhood design standards that are environmentally friendly, such as LEED for Neighborhood Development (LEED – ND) standards.			✓
7.3.1.g Discourage future pyramid zoning within the industrial zoning districts, while allowing accessory commercial uses and grandfathering existing uses.			✓
7.3.1.h Promote agriculture by encouraging community gardening, community-supported agricultural programs, and farmers markets within and adjacent to urban areas.			✓
7.3.1.i Discourage land use and urban design that impedes inter-connectivity between adjacent communities.			✓
Objective:			
7.3.2 Facilitate more self-sufficient and sustainable communities.			✓
Policies:			
7.3.2.a When developing new communities, provide sufficient lands for commercial, appropriate industrial, educational, spiritual, and non-profit uses to serve the daily needs of community residents.			✓
7.3.2.b Site community facilities such as schools, parks, libraries, and community centers within walking and biking distance of residences.			✓
7.3.2.c Facilitate self-sufficient communities and shorten commutes by:			
(1) Directing residential development to job-rich areas;	✓		
(2) Allowing for appropriate commercial development and community services to shorten commutes; and			✓
(3) Allowing home occupations or home-based businesses that are compatible with surrounding neighborhoods and lifestyles.			✓
7.3.2.d Ensure, where appropriate, that affordable employee housing and multi-modal transportation opportunities are located near major employment centers.			✓
7.3.2.e Discourage the establishment of bedroom communities where long commutes are required to employment centers.			✓

Maui Island Plan Goals, Objectives and Policies Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable	S	N/S	N/A
7.3.2.f Facilitate the development of housing by focusing projects in locations where land and infrastructure costs facilitate the development of affordably-priced housing.	✓		
7.3.2.g Provide incentives to facilitate the development of multifamily housing.			✓
7.3.2.h Encourage the placement of rental housing projects in the same areas as for-sale housing to facilitate mixed-income communities.			✓
7.3.2.i Develop communities that provide sufficient parks, schools, libraries, and other essential public facilities and services to serve resident needs.			✓
7.3.2.j Promote agriculture by encouraging community gardening, edible landscaping, community-supported agricultural programs, and farmers markets within and adjacent to urban areas.			✓
Objective:			
7.3.3 Strengthen the island's sense of place.			✓
Policies:			
7.3.3.a Protect and enhance the unique architectural and landscape characteristics of each community.			✓
7.3.3.b Encourage Hawaiian architecture and tropical building designs.			✓
7.3.3.c Support the continued revitalization of historic country towns, Wailuku Town, and Kahului's commercial core and harbor-front without displacing traditional, cultural, recreational and customary uses.			✓
7.3.3.d Strongly encourage the preservation of buildings, structures, and sites of historic significance.			✓
7.3.3.e Require community input through Design Workshops for major new urban expansion, new towns, and major urban infill projects.			✓
7.3.3.f Require design enhancement, landscaping, and integration of park and rides, bicycle parking areas, and mass-transit infrastructure to mitigate the effect of parking lots and structured parking on the urban landscape.			✓
7.3.3.g Ensure that safe and attractive public spaces (e.g., plazas, parks, town/village squares) are provided throughout the island's urban areas.			✓
Objective:			
7.3.4 Strengthen planning and management for the visitor industry to protect resident quality of life and enhance the visitor experience.			✓
Policies:			
7.3.4.a Discourage the conversion of hotel units to timeshares and fractional ownership.			✓
7.3.4.b Monitor and manage the amount of, and impacts from, timeshares and fractional ownership.			✓
7.3.4.c Manage short-term rentals and bed-and-breakfast homes through a permitting and regulatory process in accordance with adopted ordinances and community plan policies.			✓

Maui Island Plan Goals, Objectives and Policies Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable	S	N/S	N/A
7.3.4.d Limit large-scale resort development to the four existing resort destination areas of Wailea, Mākena, Kapalua and Kāʻanapali. "Large Scale Resort" is defined as complexes that include multiple accommodation facilities, activity businesses, retail complexes, and other amenities.			✓
Objective:			
7.3.5 Ensure that Maui's planning and development review process becomes more transparent, efficient, and innovative.			✓
Policies:			
7.3.5.a Encourage greater community involvement in land use planning and decision making.			✓
7.3.5.b Establish a predictable and timely development review process that facilitates the approval of projects that meet planning and regulatory requirements.			✓
7.3.5.c Increase inter-agency coordination between the Department of Planning and all State and County agencies responsible for infrastructure and public facilities provision, particularly as it relates to the mitigation of long-term cumulative impacts resulting from development projects.			✓
7.3.5.d Provide greater certainty and transparency in the development review process.			✓
7.3.5.e Expand and maintain land use and geographic information system databases for improved decisions, and make data and products available to the public.			✓
Analysis: **The proposed project provides additional homestead opportunities for DHHL beneficiaries in an area that is close to the government, business, and commercial centers of Wailuku and Kahului. Furthermore, the proposed project will be implemented in a developed area in Central Maui, in proximity to existing infrastructure and services.**			
CHAPTER 8 – DIRECTED GROWTH PLAN			
URBAN AND SMALL TOWN GROWTH AREA			
Goal:			
8.1 Maui will have well-serviced, complete, and vibrant urban communities and traditional small towns through sound planning and clearly defined development expectations.	✓		
Policies:			
8.1.a The County, with public input, will be responsible for designating new growth areas where infrastructure and public facilities will be provided, consistent with the policies of the MIP and in accordance with State and County infrastructure plans.	✓		
8.1.b Amendments to a UGB or STB shall be reviewed as a MIP amendment. A UGB or STB shall only be expanded if the island-wide inventory (maintained by the Department of Planning) of existing land uses (residential, commercial, industrial) indicates that additional urban density land is necessary to provide for the needs of the projected population growth within ten years of that inventory; or, during the decennial update of the MIP.			✓

Maui Island Plan Goals, Objectives and Policies Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable		S	N/S	N/A
8.1.c	Community plans shall provide for urban density land use designations only within UGBs and Small Towns. The County may only support and approve State Urban Land Use Designations for areas within UGBs, STBs, and Rural Villages.			✓
8.1.d	The unique character and function of existing small towns shall be protected to retain and preserve their sense of place.			✓
8.1.e	New development shall be consistent with the UGBs, STBs, and all other applicable policies of the MIP. New urban-density development shall not be allowed outside of a UGB or STB.	✓		
8.1.f	The County, as a condition of development approval, shall require developers of privately owned infrastructure systems to provide financial insurance (bonding, etc.) for the operation and maintenance of these systems.			✓
8.1.g	The County shall implement a zoning program to comprehensively redistrict and rezone lands within UGBs according to updated community plan policies and map designations.			✓
8.1.h	The County will seek to focus capital improvements (schools, libraries, roads, and other infrastructure and public facilities) within the UGBs and STBs in accordance with the MIP.			✓
8.1.i	The County will promote (through incentives, financial participation, expedited project review, infrastructure/public facilities support, etc.) appropriate urban infill, redevelopment and the efficient use of buildable land within UGBs to avoid the need to expand the UGBs.			✓
8.1.j	The MIP's UGBs and STBs shall not be construed or implemented to prohibit the construction of a single-family dwelling on any existing parcel where otherwise permitted by law.			✓
Analysis: **The proposed project is located within the Urban and Rural Growth Boundaries of the County of Maui's MIP. The project is in consonance with this designation and within an area planned for growth.**				
RURAL GROWTH AREA				
Goal:				
8.2	Maui will maintain opportunities for agriculture and rural communities through sound planning and clearly defined development expectations.			✓
Policies:				
8.2.a	Amendments to a RGB shall be reviewed as an MIP amendment. A RGB shall only be expanded if an island-wide inventory of existing land uses (residential, commercial, industrial) indicates that additional lands are necessary to provide for the needs of the projected population growth within ten years of that inventory; or, during the decennial update of the MIP.			✓
8.2.b	New development shall be consistent with RGB and all other applicable policies and requirements of the MIP. Public, quasi-public, civic, and limited commercial or industrial uses may be allowed in the RGB when the proposed uses demonstrate a public need and are consistent with the Community Plan and zoning.			✓
8.2.c	Environmental protection and compatibility will be a top priority in rural growth areas.			✓

Maui Island Plan Goals, Objectives and Policies Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable		S	N/S	N/A
8.2.d	All development within rural growth areas should avoid encroachment upon prime agricultural land.			✓
8.2.e	Rural growth areas include Rural Residential Areas and Rural Villages. Rural residential areas may be designated when they are located in association with or on the border of urban growth areas or Small Towns; and/or when they provide for complete, self-sufficient rural communities with a range of uses to be developed at densities that do not require urban infrastructure.			✓
8.2.f	Community plans shall provide for rural density land use designations only within RGBs; provided that limited community plan urban designations may be allowed within Rural Villages. New rural growth areas shall not be located where urban expansion may ultimately become necessary or desirable. New rural-density development shall not be allowed outside of a RGB.			✓
8.2.g	New rural growth areas intended to be complete, self-sufficient rural communities must be located a significant distance from existing urban areas, distinctly separated by agricultural or open lands.			✓
8.2.h	Urban-scale infrastructure and public facilities shall not be provided in rural areas except as described in the defined Level-of-Service (LOS) standards. There should be no expectations of urban services in rural areas.			✓
8.2.i	Urban development standards shall not be required within RGBs except in fulfillment of Federal law.			✓
8.2.j	The unique character and function of existing small towns and rural communities shall be protected to retain and preserve their sense of place.			✓
8.2.k	Preserve rural landscapes in which natural systems, cultural resources, and agricultural lands are protected and development compliments rural character and contributes to the viability of communities and small towns.			✓
8.2.l	The MIP's RGBs shall not be construed or implemented to prohibit the construction of a single family dwelling on any existing parcel where otherwise permitted by law.			✓
8.2.m	The County shall implement a zoning program to comprehensively redistrict and rezone lands within RGBs, and to implement community plan policies and map designations.			✓
8.2.n	At the time of zoning from agricultural to rural, Council will consider prohibiting restrictions on agricultural activity.			✓
Analysis:	**Not applicable.**			
PROTECTED AREA POLICY				
8.3.a	The Protected Areas in Diagrams E-1, NW-1, N-1, NE-1, S-1, SE-1, and WC-1 should be concurrently reviewed with Table 8-2 and with any proposed land uses that may result in an adverse impact on a Protected Area. The County Council and the Administration should be notified if a Protected Area may be compromised by a development proposal.			✓
Analysis:	**Not applicable.**			

G. 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. Each region's growth and development is guided by a Community Plan. The County's Community Plan reflects current and anticipated conditions in the Wailuku-Kahului region and advances planning goals, objectives, policies, and implementation considerations to guide decision-making in the region. The primary purpose of the Community Plan is to outline a detailed agenda for carrying out these policies and objectives. The Wailuku-Kahului Community Plan was adopted by the County of Maui through Ordinance Number 3061, and became effective on June 5, 2002. The Community Plan land use map designates the 47.4-acre project site as "Agriculture" with a portion also being designated "SF, Single-Family". See **Figure 12**. However, as previously discussed, the lands on which the proposed project will be developed are under the jurisdiction of the DHHL, which has vested authority to develop its lands at its discretion. It is also noted that the site of the proposed sewerline installation is also designated for "Agriculture" by the Wailuku-Kahului Community Plan. Refer to **Figure 12**. It is noted that Parcel 64 is entitled for the proposed Wailuku Apartment Rental Housing Project, by others.

The proposed project is consistent with the following goals, objectives, and policies of the Wailuku-Kahului Community Plan as outlined below.

CULTURAL RESOURCES

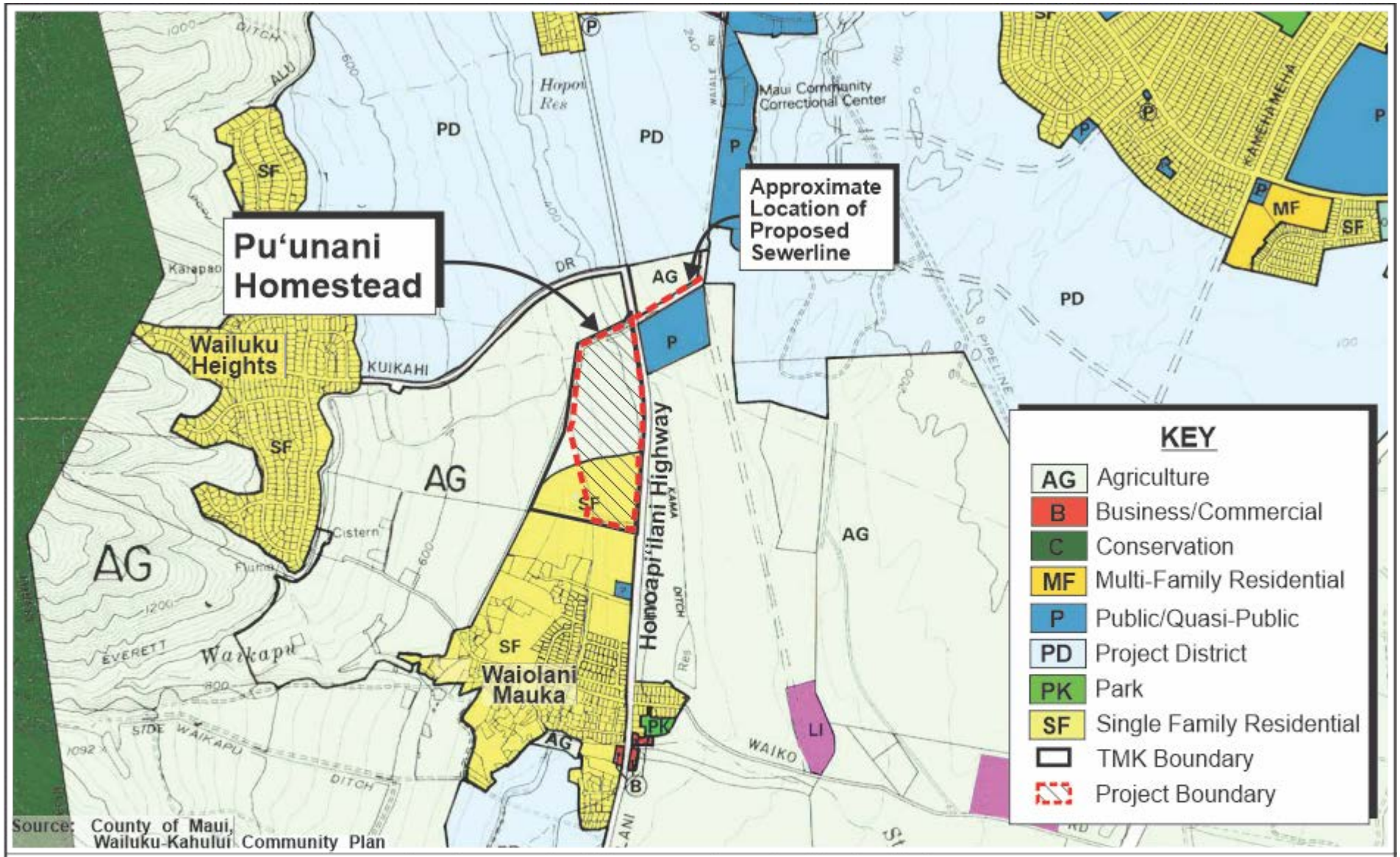
Goal:

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

- *Provide a sense of history and define a sense of place for the Wailuku-Kahului region; and*
- *Preserve and protect native Hawaiian rights and practices customarily and traditionally exercised for subsistence, cultural and religious purposes in accordance with Article XII, Section 7, of the Hawaii State*
- *Constitution, and the Hawaii Supreme Court's PASH opinion, 79 HAW. 425 (1995).*

Objective and Policy:

- *Preserve the character and integrity of historic sites in the Wailuku-Kahului region.*



Source: County of Maui, Wailuku-Kahului Community Plan

Figure 12

Pu'unani Homestead Subdivison

Wailuku-Kahului Community Plan Map

NOT TO SCALE

Prepared for: State of Hawai'i, Department of Hawaiian Home Lands

MUNEKIYO HIRAGA

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Discussion and Response: An AIS was prepared in 2005 for a 215.8-acre area in Waikapū, which included the proposed subdivision. In its acceptance letter of the AIS, the SHPD concurred that no further mitigation was necessary. In addition, an AA was completed for the parcel on which the proposed sewerline will be located in relation to the Wailuku Apartment Rental Housing Project. In its acceptance letter, the SHPD concurred that archaeological monitoring must be undertaken. Should any archaeological resources be discovered during ground altering activities, work shall cease in the immediate area of the find and mitigation coordination will be undertaken with the SHPD. In addition, a CIA was prepared for the Proposed Puʻunani Homestead Subdivision project and noted that based on historical research and consultation, there is evidence of cultural practices related to Hawaiian rights related to agricultural pursuits, access to resources, and other customary activities presently occurring in the vicinity of the proposed project. In addition, a legendary grinding stone (Pōhākoʻi) is believed to be located in the vicinity of the site of the proposed subdivision. As such, the CIA provided a recommendation that an archaeological field inspection be conducted by a qualified archaeologist prior to the commencement of any construction related ground altering activities in an effort to locate Pōhākoʻi.

HOUSING

Goal:

A sufficient supply and choice of attractive, sanitary and affordable housing accommodations for the broad cross section of residents, including the elderly.

Objectives and Policies:

- *Provide sufficient land areas for new residential growth which relax constraints on the housing market and afford variety in type, price, and location of units. Opportunities for the provision of housing are presently constrained by a lack of expansion areas. This condition should be relieved by a choice of housing in a variety of locations, both rural and urban in character.*
- *Seek alternative residential growth areas within the planning region, with high priority given to the Wailuku and Kahului areas. This action should recognize that crucial issues of maintaining important agricultural lands, achieving efficient patterns of growth, and providing adequate housing supply and choice of price and location must be addressed and resolved.*

Discussion and Response: Although the proposed project involves repurposing land currently designated for agricultural uses for housing development, the lands have not been in active agricultural production for some time. The project provides additional housing opportunities for DHHL beneficiaries in an area that is close to

existing residential developments as well as the government, business, and commercial centers of Wailuku and Kahului.

GOVERNMENT

Goal:

Government that demonstrates the highest standards of fairness; responsiveness to the needs of the community; fiscal integrity; effectiveness in planning and implementation of programs and projects; a fair and equitable approach to taxation and regulation; and efficient, results-oriented management.

Objective and Policy:

- *Ensure that adequate infrastructure is or will be available to accommodate planned development.*

Discussion and Response: The proposed housing project will be implemented in a developed area in Central Maui, in proximity to existing infrastructure and services.

H. COUNTY ZONING

The land underlying the proposed project site is zoned "Agriculture" by the Maui County Zoning Ordinance. See **Figure 13**. However, as previously discussed, the lands on which the proposed project will be developed are under the jurisdiction of the DHHL, which has vested authority to develop its lands at its discretion. It is also noted that the site of the proposed sewerline installation is designated "Agriculture" by Maui County Zoning.

I. HAWAIʻI COASTAL ZONE MANAGEMENT PROGRAM

The Hawaiʻi Coastal Zone Management Program (HCZMP), as formalized in Chapter 205A, HRS, establishes objectives and policies for the preservation, protection, and restoration of natural resources of Hawaiʻi's coastal zone. Although the proposed improvements are not within the County of Maui's Special Management Area, the applicability of coastal zone management considerations applies to all lands in the State of Hawaii and, as such, has been reviewed and assessed as follows.

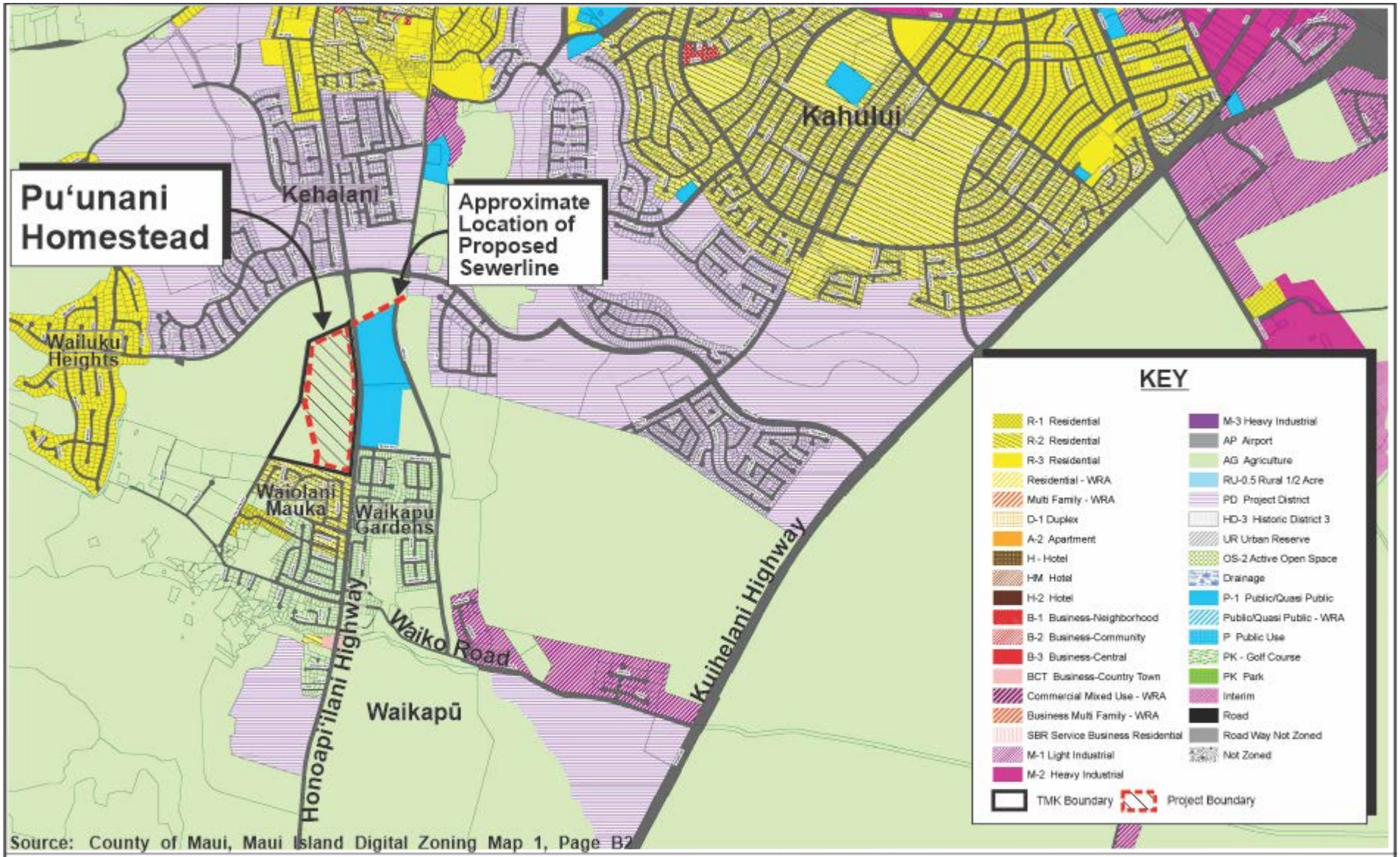
1. Recreational Resources

Objective:

Provide coastal recreational opportunities accessible to the public.

Policies:

a. Improve coordination and funding of coastal recreational planning and management; and



Source: County of Maui, Maui Island Digital Zoning Map 1, Page B2

Figure 13

Pu'unani Homestead Subdivision

Maui County Zoning Map

NOT TO SCALE

Prepared for: State of Hawai'i, Department of Hawaiian Home Lands

MUNEKIYO HIRAGA

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b. 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 uses 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 nonpoint 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, and county authorities; and crediting such dedication against the requirements of section 46-6.

Response: The project site is located inland and away from the coastline. The proposed action is not anticipated to impact coastal recreational opportunities or affect existing public access to and along the shoreline.

2. Historic/Cultural 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 archaeological 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: An AIS was prepared in 2005 for a 215.8-acre area in Waikapū, which included the proposed subdivision site. In its acceptance letter of the AIS, the SHPD concurred that no further mitigation was necessary. In addition, an AA was completed for the parcel on which the proposed sewerline will be located in relation to the Wailuku Apartment Rental Housing Project. In its acceptance letter, the SHPD concurred that archaeological monitoring must be undertaken. Should any archaeological resources be discovered during ground altering activities, work shall cease in the immediate area of the find and mitigation coordination will be undertaken with the SHPD. In addition, a CIA was prepared for the Proposed Pu‘unani Homestead Subdivision project and noted that based on historical research and consultation, there is evidence of cultural practices related to Hawaiian rights for agricultural pursuits, access to resources, and other customary activities presently occurring in the vicinity of the proposed project. In addition, a legendary grinding stone (Pōhāko‘i) is believed to be located in the vicinity of the site of the proposed subdivision. As such, the CIA provided a recommendation that an archaeological field inspection be conducted by a qualified archaeologist prior to the commencement of any construction related ground altering activities in an effort to locate Pōhāko‘i..

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 that are not coastal dependent to locate in inland areas.

Response: As indicated previously, the project is located inland and not on or near the shoreline. The proposed project is not anticipated to adversely impact coastal scenic and open space resources.

4. Coastal Ecosystem

Objective:

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

Policies:

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

b. Improve the technical basis for natural resource management;

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

d. 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

e. Promote water quantity and quality planning and management practices that reflect the tolerance of fresh water and marine ecosystems and maintain and enhance water quality through the development and implementation of point and nonpoint source water pollution control measures.

Response: The proposed project is located inland, away from coastal ecosystems and is, therefore, not anticipated to have adverse impacts on coastal/shoreline resources, including reefs and marine resources. Appropriate BMPs will be utilized to ensure that construction runoff is appropriately detained, minimizing any impact on coastal waters. In addition, an application for a National Pollutant Discharge Elimination System (NPDES) permit for construction will be submitted to the State Department of Health (DOH) for review and approval prior to the start of construction.

5. Economic Use

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 industry 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 project is not a coastal dependent development. The project site is located inland from the shoreline. The proposed project will stimulate the economy through the generation of construction jobs. The project will also generate revenue for the State and County from general excise and income tax, real property tax, and impact fees. The proposed project does not contravene the objective and policies for economic use.

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 source pollution hazards;

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

d. Prevent coastal flooding from inland projects.

Response: According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map for the area, the project site falls within Zone X (shaded), an area of minimal flooding. In addition, the project site is not located within the tsunami evacuation zone or projected 3.2-foot sea level rise exposure area. Drainage improvements will be designed in accordance with the Drainage Standards of the County of Maui to ensure that the project will not adversely affect downstream properties from the effects of flooding and erosion.

Adverse impacts to hazard-sensitive areas are not anticipated.

7. Managing Development

Objective:

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

Policies:

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 or conflicting permit requirements; and*

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

Response: Opportunities for agency and public review of the proposed action are provided pursuant to Chapter 343, HRS. The project was also discussed at the Waikapū Community Association's meeting on December 9, 2019, as well as at the HHC's regular meeting on February 18, 2020. In addition, the DHHL actively engages with its beneficiaries on projects it intends to develop. The DHHL held beneficiary consultation meetings with the community homestead leaders on February 10, 2020. In addition, the public will also have an opportunity to provide comments on the preliminary Final EA during the HHC's review of the document

8. Public Participation

Objective:

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

Policies:

a. Promote public involvement in coastal zone management processes;

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 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 has, and will continue to address public awareness, education, and participation objectives. As noted above, the applicant has undertaken outreach activities with the Waikapū Community Association, HHC, and DHHL community homestead leaders. Opportunities for agency and public review of the proposed action are also provided through the comment processes pursuant to Chapter 343, HRS, as well as during the HHC's review of the preliminary Final 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, minimize interference with natural shoreline processes, and 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;

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

d. Prohibit private property owners from creating a public nuisance by inducing or cultivating the private property owner's vegetation in a beach transit corridor; and

e. Prohibit private property owners from creating a public nuisance by allowing the private property owner's unmaintained vegetation to interfere or encroach upon a beach transit corridor.

Response: The project site is located inland, away from the shoreline and is not anticipated to impact shoreline processes.

10. Marine Resources

Objective:

Promote the protection, use, and development of marine and coastal resources to assure their sustainability.

Policies:

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

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

c. 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;

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

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

Response: The project is located inland, away from the ocean and is, therefore, not anticipated to have an impact on marine or coastal resources.

ALTERNATIVES TO THE PROPOSED ACTION

IV

IV. ALTERNATIVES TO THE PROPOSED ACTION

The following is a discussion of the various development alternatives that have been considered by the Applicant as part of the planning process.

A. PREFERRED ALTERNATIVE

The preferred alternative is the proposed maximum 161-lot single-family residential subdivision and related improvements described in Chapter I of this document. The proposed subdivision represents a use which will serve to advance the Department of Hawaiian Home Lands' (DHHL) efforts to provide needed homestead opportunities for their beneficiaries.

As discussed previously, the mission of the DHHL is to effectively manage the Hawaiian Home Lands trust and to develop and deliver land to Native Hawaiians. The Hawaiian Homes Commission Act (HHCA), codified within the constitution of the State of Hawai'i, states as its purpose:

> *(a) The Congress of the United States and the State of Hawaii declare that the policy of this Act is to enable native Hawaiians to return to their lands in order to fully support self-sufficiency for native Hawaiians and the self-determination of native Hawaiians in the administration of this Act, and the preservation of the values, traditions, and culture of native Hawaiians.*
>
> *(b) The principal purposes of this Act include but are not limited to:*
>
> > *(1) Establishing a permanent land base for the benefit and use of native Hawaiians, upon which they may live, farm, ranch, and otherwise engage in commercial or industrial or any other activities as authorized in this Act;*
> >
> > *(2) Placing native Hawaiians on the lands set aside under this Act in a prompt and efficient manner and assuring long-term tenancy to beneficiaries of this Act and their successors;*
> >
> > *(3) Preventing alienation of the fee title to the lands set aside under this Act so that these lands will always be held in trust for continued use by native Hawaiians in perpetuity;*

Similarly, the DHHL General Plan, adopted in 2002, lists as goals under the Residential Uses objective:

- *Substantially increase the number of residential homesteads awarded each year.*

- *Provide a mix of housing opportunities that reflect the needs and desires of native Hawaiian beneficiaries.*

- *Provide residential homesteads, financing, and other housing opportunities, especially to those most in need.*

The proposed project directly supports these stated purposes.

Also as previously discussed, the DHHL Maui Island Plan (MIP), adopted in 2004 as the comprehensive resource for planning and managing the Maui Island lands and establishes land use designations to encourage orderly social, physical, and economic development on the island, also provides data from a beneficiary survey conducted in 2003 to assess the preferences of DHHL beneficiaries on Maui. The results of the survey show that most beneficiaries prefer an award of improved land with a turnkey single-family house on it. In addition, almost 900 beneficiaries indicated a preference of the Wailuku area in terms of award location. The proposed project is in line with beneficiary preferences as discussed in the MIP.

Furthermore, the location of the proposed project is in an area of Waikapū developed with existing residential developments of a similar nature, with existing infrastructure systems, and a handful of small businesses. Waikapū is a short distance from Wailuku Town, which is the seat of State and County government offices on Maui. Wailuku also features a number of professional services, restaurants, and retail outlets.

For these reasons, the preferred alternative is considered to be the most viable alternative which meets the stated purposes of DHHL and the HHCA, meets stated preferences of DHHL beneficiaries and will be developed in an area with existing infrastructure systems.

B. ALTERNATIVE LOT CONFIGURATIONS

In addition to the proposed action, alternative lot configuration options and different mixes of turn-key and owner-build lots were considered by DHHL. After conducting studies of alternative design concepts and costs of development, the lot configuration and product mix selected as the preferred alternative proved to be the optimal option in meeting the goals of the DHHL.

C. PU‘UNANI GROWTH AREA ALTERNATIVE

The proposed subdivision site is located within the planned Pu‘unani Growth Area as defined in the County of Maui’s Maui Island Plan (MIP). According to the MIP, the Pu‘unani Growth Area was intended to be a mixed-use project (by others) located at the southwest edge of Wailuku, south of Kehalani below Wailuku Heights east of Honoapi‘ilani Highway. The growth area was envisioned to be buffered by a 200-foot greenbelt along its eastern edge and adjacent to Honoapi‘ilani Highway, as well as a 500-foot greenbelt along the

area's southern extent. The greenbelt and rural lands were intended to provide separation between Wailuku and Waikapū, and provide a visual relief by creating a lower-density residential pattern than surrounding communities.

The Puʻunani Growth Area plan supports a number of goals and objectives of the MIP, including those related to supporting a thriving population, providing housing options for residents, use of existing infrastructure systems and public facilities, responsible land use, and supporting directed growth plans as identified in the MIP.

However, as the project site has since been acquired by the DHHL, the Puʻunani Growth Area plan, as envisioned by the MIP, is no longer a feasible alternative, as it does not directly meet the stated purposes of the DHHL and the HHCA as discussed above, nor would the plan directly meet the needs of DHHL beneficiaries. The currently proposed project is a separate and distinct project from the Puʻunani Growth Area Plan. Also, the proposed project is not intended to connect with existing developments in Wailuku, thereby maintaining the existing physical separation between Waikapū and Wailuku. In addition, it is noted that the aforementioned greenbelts, if included in the project, would equate to a reduction of approximately 68 homes, thus, also not allowing the DHHL to optimally fulfill its mission of providing housing opportunities for beneficiaries.

D. NO ACTION ALTERNATIVE

Under the "no action" alternative, the project site would remain "as is". The "no action" alternative is not considered to be in the best interest of DHHL beneficiaries as the "no action" alternative would not provide new homestead opportunities. The "no action" alternative is in direct conflict with the stated purposes of the DHHL and HHCA. In this context, the proposed project is considered the most appropriate alternative.

E. DEFERRED ACTION ALTERNATIVE

A deferral of the proposed action means that the development proposal would be pursued at a later point in time. The deferral alternative is not considered viable from a project implementation standpoint. The DHHL's commitment to planning, design, and construction allows for the project to proceed at this time. Delays in project implementation will likely result in higher development costs and greater uncertainty with respect to infrastructure systems adequacy. The DHHL believes that the project can be viably developed under current market and financing conditions. With this in mind, the "deferred action alternative" is not considered appropriate.

SUMMARY OF ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED

V

V. SUMMARY OF ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED

Assessment of construction-related impacts, noise and air quality impacts, and potential impacts on the physical and socio-economic environment, as well as a Cultural Impact Assessment and an Archaeological Inventory Survey were carried out as part of the environmental assessment documentation process. The proposed development may result in limited, unavoidable construction-related impact on the environment, as described in Chapter II.

In the short term, construction associated with the proposed project will have a temporary impact on air quality from dust generation and discharge of exhaust from construction equipment during ground altering activities and site grading. Appropriate Best Management Practices will be incorporated to mitigate adverse construction-related impacts, including but not limited to, watering of exposed surfaces, installing dust screens, and regular maintenance of construction equipment.

Construction of the proposed project will also generate unavoidable short-term noise impacts. The use of properly maintained construction equipment will mitigate noise impacts caused by equipment. The incorporation of State Department of Health construction noise limits and curfew times are measures to mitigate noise impacts caused by construction activities.

The project will provide access and related improvements to ensure that project-related traffic impacts can be mitigated. Refer to **Appendix "K"**.

In summary, the proposed action is not anticipated to create any significant, long-term adverse environmental effects.

VI

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

VI. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

The proposed action will not entail a substantial commitment of public services or facilities. Offsite infrastructure systems will be improved by the Applicant to address additional demands generated by the proposed project. Development of the proposed project will involve a commitment of energy, labor, fiscal, and material resources. The use of these resources, when weighed against the expected benefit to be derived from the single-family residential project for DHHL beneficiaries, is not considered an adverse commitment.

LIST OF PERMITS AND APPROVALS

VII

VII. LIST OF PERMITS AND APPROVALS

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

State of Hawai‘i

1. Chapter 343, Hawai‘i Revised Statutes, Environmental Assessment
2. Chapter 11-46, Community Noise Control, as applicable
3. Chapter 11-60.1-33, Fugitive Dust, as applicable
4. National Pollutant Discharge Elimination System (NPDES) Permit
5. Work on State Highway Permit

County of Maui

1. Construction permits (i.e., building and grading permits)
2. Approvals for removal and replacement of exceptional trees, as applicable.

SIGNIFICANCE CRITERIA ASSESSMENT

VIII

VIII. SIGNIFICANCE CRITERIA ASSESSMENT

The "Significance Criteria", defined in Chapter 11-200.1-13 of the Hawai'i Administrative Rules, were reviewed and analyzed to determine whether the proposed project will have significant impacts to the environment. The following criteria and analyses are provided.

1. <u>Irrevocably commit a natural, cultural, or historic resource.</u>

There are no known rare, threatened, or endangered species of flora, fauna, avifauna, or important habitats located within the project site. As mentioned previously, an Archaeological Inventory Survey (AIS) and an Archaeological Assessment (AA) were completed for the two (2) affected project parcels and no burial features or human remains were identified. As such, the AIS did not recommend any further archaeological mitigation. The AIS was submitted to and accepted by the State Historic Preservation Division (SHPD). The AA, which was prepared for the Wailuku Apartment Rental Housing Project and also accepted by the SHPD, recommended archaeological monitoring be conducted for all ground altering activities. DHHL will coordinate with the developer of the Wailuku Apartment Rental Housing Project to ensure that archaeological monitoring of the site of the proposed sewerline construction will be conducted in accordance with the SHPD-accepted archaeological monitoring plan. In addition, the project archaeologist previously submitted a Section 6E, Hawai'i Revised Statutes (HRS) form to the SHPD to reconfirm SHPD's acceptance of the previous AIS and that no further action is necessary on the proposed subdivision site. It is further noted that the DHHL, by letter dated March 27, 2020, requested the SHPD's reconfirmation of the previous determinations made on the AIS and AA, and that no further work was required for Parcel 2, and monitoring would be required for the limited work within Parcel 64. The SHPD provided their concurrence via return signature on the March 27, 2020 letter. Refer to **Appendix "G"**. Should archaeological features, cultural artifacts, or human burials be located during construction activities, work in the immediate area of the find shall be promptly halted and the find protected from further disturbance. The SHPD will be immediately contacted to determine the significance of the find and establish appropriate mitigative measures, as necessary.

2. <u>Curtail the range of beneficial uses of the environment.</u>

The proposed action will be implemented adjacent to existing residential developments of a similar nature, and the commitment of land resources for the proposed action will not curtail the range of beneficial uses of the environment. The project site, although designated for agricultural use, has not been in

agricultural production for some time. The proposed use of the site for development of a new subdivision is compatible with surrounding residential uses.

3. Conflict with the State's environmental policies or long-term environmental goals established by law.

The proposed action does not conflict with the policies and guidelines of Chapter 343, HRS. An environmental assessment is being carried out to ensure the proposed project will not have adverse impacts on the environmental resources.

4. Have a substantial adverse effect on the economic welfare, social welfare, or cultural practices of the community and State.

The proposed action will have a beneficial effect on the local economy during the short and long term. As previously discussed, positive economic and social impacts are anticipated as a result of the project including construction-related jobs, real property assessment revenues, and contribution of water, wastewater, and educational assessment fees. In addition, a CIA was prepared for the Proposed Puʻunani Homestead Subdivision project and noted that based on historical research and consultation, there is evidence of cultural practices for Hawaiian rights for agricultural pursuits, access to resources, and other customary activities presently occurring in the vicinity of the proposed project. In addition, a legendary grinding stone (Pōhākoʻi) is believed to be located in the vicinity of the site of the proposed subdivision. As such, the CIA provided a recommendation that an archaeological field inspection be conducted by a qualified archaeologist prior to the commencement of any construction related ground altering activities in an effort to locate Pōhākoʻi.

5. Have a substantial adverse effect on public health.

As mentioned previously, although the proposed subdivision site is former agricultural lands, a Phase I Environmental Site Assessment conducted did not reveal any recognized environmental conditions. Refer to **Appendix "I"**. In addition, the project is not anticipated to result in long-term air or noise impacts. As such, no adverse impact to public health or welfare is anticipated as a result of the proposed action.

6. Involve adverse secondary impacts, such as population changes or effect on public facilities.

The proposed project will provide needed additional residential lots in Waikapū for DHHL beneficiaries. While some residents of this new community may come from off island, most are expected to relocate from other areas on Maui. As such, the

project is not anticipated to involve substantial secondary impacts due to population change. Secondary impacts on public facilities are not anticipated.

The DHHL will provide the necessary onsite and offsite infrastructure to support the proposed project. No substantial changes or effects on public facilities are expected with project implementation.

7. Involve a substantial degradation of environmental quality.

No substantial degradation of environmental quality resulting from the action is anticipated. Best Management Practices (BMPs) and appropriate erosion control measures will be utilized during the construction period. Drainage system improvements will be constructed in accordance with applicable regulatory design standards to ensure that surface runoff will not have an adverse effect on adjacent or downstream properties.

Any potential short-term impacts to air and noise quality during the construction phase of the project, will be mitigated through employing BMPs. In the long term, the project will not adversely impact air quality and ambient noise.

8. Be individually limited but cumulatively have substantial adverse effect upon the environment or involves a commitment for larger actions.

The proposed action is a stand-alone project, and does not represent a commitment to a larger action. There are no anticipated cumulative impacts associated with the proposed action.

9. Have a substantial adverse effect on a rare, threatened, or endangered species, or its habitat.

No rare, threatened, or endangered species of flora, fauna, avifauna, or important habitats were identified on the affected properties. Refer to **Appendix "B" and Appendix "C"**. The project site is located adjacent to existing residential developments of a similar nature. The project is not anticipated to substantially affect rare, threatened, or endangered species, or its habitat.

10. Have a substantial adverse effect on air or water quality or ambient noise levels.

Construction activities may pose a temporary short-term impact on air and noise quality; however, impacts will be mitigated through the use of BMPs. Dust control measures, such as regular watering and sprinkling, and installation of dust screens will be implemented to minimize wind-blown emissions. Noise impacts will be

mitigated by limiting construction to daylight work hours. Utilizing approved BMPs, significant impacts to water quality are not anticipated.

In the long term, the proposed action is not anticipated to have a significant adverse impact on air and water quality or ambient noise levels.

11. Have a substantial adverse effect on or be likely to suffer damage by being located in an environmentally sensitive area such as a flood plain, tsunami zone, sea level rise exposure area, beach, erosion-prone area, geologically hazardous land, estuary, fresh water, or coastal waters.

The project site is situated inland and is not anticipated to have any adverse impact upon coastal waters or resources, beaches, estuaries, or other fresh water bodies.

According to the Federal Emergency Management Agency's Flood Insurance Rate Maps currently in effect, the project site falls within Zone X (unshaded), an area of minimal flooding. The project site is located outside of the tsunami inundation zone. In addition, the project site is located outside of the 3.2-foot projected sea level rise exposure area.

Drainage improvements will be designed to mitigate runoff in accordance with County drainage and stormwater rules and regulations. During construction, recommended BMPs will be implemented for erosion and sedimentation control to minimize potential impacts to water quality.

12. Have a substantial adverse effect on scenic vistas and viewplanes, day or night, identified in county or state plans or studies.

The proposed development has been designed to integrate with its surrounding environment in an effort to not block established scenic vistas, viewplanes, or corridors during the day or night. The project is located inland away from coastal and open space areas and will not substantially affect coastal scenic or open space resources. In addition, the slope mauka of Honoapiʻilani Highway up to the houselots will be vegetated in an effort to maintain scenic vistas.

13. Require substantial energy consumption or emit substantial greenhouse gasses.

The proposed action will involve the short-term commitment of fuel for equipment, vehicles, and machinery during construction activities. However, this use is not anticipated to result in a substantial consumption of energy resources or substantial emission of greenhouse gasses. In the long term, the project will create an additional demand for electricity. However, this demand will not be substantially

or excessively more than the energy consumed by similar developments throughout the region.

In summary, the project site is situated adjacent to existing residential uses of a similar nature, in close proximity to services and commercial areas in the Wailuku and Kahului region. This project will be developed in an area with existing infrastructure systems, and will not extend County service areas. The proposed project is not anticipated to have a significant adverse impact on the physical, cultural and socio-economic environments. Based on the preceding analysis in this Draft EA document, and in accordance with the significance criteria set forth in 11-200.1-13, HAR, it is anticipated that the proposed project will result in a finding of no significant impact (FONSI).

PARTIES CONSULTED DURING THE PREPARATION OF THE DRAFT ENVIRONMENTAL ASSESSMENT; LETTERS RECEIVED AND RESPONSES TO SUBSTANTIVE COMMENTS

IX

IX. PARTIES CONSULTED DURING THE PREPARATION OF THE DRAFT ENVIRONMENTAL ASSESSMENT; LETTERS RECEIVED AND RESPONSES TO SUBSTANTIVE COMMENTS

The following agencies, organizations, and individuals were consulted during preparation of the Draft Environmental Assessment (EA). This Chapter addresses early consultation comments received from these agencies, organizations, and individuals.

FEDERAL AGENCIES

1. Larry Yamamoto, State Conservationist
   Natural Resources Conservation Service
   U.S. Department of Agriculture
   P.O. Box 50004
   Honolulu, HI 96850-0001

2. Tunis McElwain, Acting Chief
   U.S. Department of the Army, Regulatory Branch
   U.S. Army Engineer District, Honolulu
   Regulatory Branch, Building 230
   Fort Shafter, HI 96858-5440

3. Michelle Bogardus, Island Team Leader
   U. S. Fish and Wildlife Service
   300 Ala Moana Blvd., Rm. 3-122
   Honolulu, HI 96850

STATE AGENCIES

4. Curt Otaguro, Comptroller
   State of Hawai‘i
   Department of Accounting and General Services
   1151 Punchbowl Street, #426
   Honolulu, HI 96813

5. Denise Albano,Chair
   State of Hawai‘i
   Department of Agriculture
   1428 South King Street
   Honolulu, HI 96814-2512

6. Mike McCartney, Director
   State of Hawai‘i
   Department of Business, Economic Development & Tourism
   P.O. Box 2359
   Honolulu, HI 96804

7. Christina Kishimoto, Superintendent
   State of Hawai‘i
   Department of Education
   P.O. Box 2360
   Honolulu, HI 96804

8. Bruce Anderson, Director
   State of Hawai‘i
   Department of Health
   1250 Punchbowl St., Room 325
   Honolulu, HI 96813

9. State of Hawai‘i
   Department of Health
   Environmental Health Administration
   P.O. Box 3378
   Honolulu, HI 96801

10. Lene Ichinotsubo
    State of Hawai‘i
    Department of Health
    Solid and Hazardous Waste Branch
    2827 Waimano Road, Suite 100
    Pearl City, HI 96782-1407

11. Patti Kitkowski
    State of Hawai‘i
    Department of Health
    Maui Sanitation Branch
    54 South High Street, Room 300
    Wailuku, HI 96793

12. Suzanne Case, Chairperson
    State of Hawai‘i
    Department of Land and Natural Resources
    P. O. Box 621
    Honolulu, HI 96809

13. Dr. Alan Downer, Administrator
State of Hawai‘i
Department of Land and Natural Resources
State Historic Preservation Division
601 Kamokila Blvd., Room 555
Kapolei, HI 96707

14. Jade Butay, Director
State of Hawai‘i
Department of Transportation
869 Punchbowl Street
Honolulu, HI 96813

15. Craig Hirai, Executive Director
State of Hawai‘i
Hawai‘i Housing Finance and Development Corporation
677 Queen Street
Honolulu, HI 96813

16. Scott Glenn, Director
State of Hawai'i
Office of Environmental Quality Control
235 S. Beretania Street, Suite 702
Honolulu, HI 96813

17. State of Hawai‘i
Office of Hawaiian Affairs
560 N. Nimitz Highway, Suite 200
Honolulu, HI 96817

18. Mary Alice Evans, Director
State of Hawai‘i
Office of Planning
P. O. Box 2359
Honolulu, HI 96804

19. Dan Orodenker, Executive Officer
State of Hawai‘i
State Land Use Commission
P.O. Box 2359
Honolulu, HI 96804

MAUI COUNTY AGENCIES

20. Eric Nakagawa, Director
County of Maui
Department of Environmental Management
2050 Main Street, Suite 2B
Wailuku, HI 96793

21. David Thyne, Chief
County of Maui
Department of Fire and Public Safety
200 Dairy Road
Kahului, HI 96732

22. Lori Tsuhako, Director
County of Maui
Department of Housing and Human Concerns
2200 Main Street, Suite 546
Wailuku, HI 96793

23. Karla Peters, Director
County of Maui
Department of Parks and Recreation
700 Halia Nakoa Street, Unit 2F
Wailuku, HI 96793

24. Michele Chouteau McLean, Director
County of Maui
Department of Planning
2200 Main Street, Suite 315
Wailuku, HI 96793

25. Rowena Dagdag-Andaya, Director
County of Maui
Department of Public Works
200 South High Street
Wailuku, HI 96793

26. Marc Takamori, Director
County of Maui
Department of Transportation
David Trask Building, Suite 102
2145 Kaohu Street
Wailuku, HI 96793

27. Jeffrey Pearson, Director
County of Maui
Department of Water Supply
200 South High Street, 5th Floor
Wailuku, HI 96793

28. Herman Andaya, Emergency Management Officer
County of Maui
Emergency Management Agency
200 South High Street
Wailuku, HI 96793

29. Tivoli Faaumu, Chief
County of Maui
Police Department
55 Mahalani Street
Wailuku, HI 96793

30. Kelly King, Council Chair
Maui County Council
200 South High Street
Wailuku, HI 96793

31. Alice Lee
Maui County Council
200 South High Street
Wailuku, HI 96793

32. Tasha Kama
Maui County Council
200 South High Street
Wailuku, HI 96793

MAUI COUNTY ORGANIZATIONS

33. Hawaiian Telecon
60 South Church St
Wailuku, HI 96793

34. Michael Grider, Manager, Engineering
Maui Electric Company, Ltd.
P.O. Box 398
Kahului, HI 96733

35. Clyde Kahalehau, Poʻo
Aha Moku O Wailuku
Email address:
ahamokuowailuku@yahoo.com

36. Scott Matsuura, President
Kehalani Community Association
Attention: Tiana Raymondo
P.O. Box 1530
Wailuku, HI 96793

37. Debbie Cabebe, Chief Executive Officer
Maui Economic Opportunity
99 Mahalani Street
Wailuku, HI 96793

38. Blossom Feteira
Maui Mokupuni Council
Email address: blossom96708@yahoo.com

39. Reid Kawabata
Waikapu Community Association
P.O. Box 3046
Wailuku, HI 96793

40. Waikapu Gardens Homeowners Association
P.O. Box 2390
Wailuku, HI 96793

41. Wailuku Heights Extension Unit I
Community Association
P.O Box 698
Wailuku, HI 96793

42. Lester Yano
Wailuku Heights Extension Unit II
Community Association
c/o Hawaiiana Management Co.
140 Hoohana Street, Suite 208
Kahului, HI 96732

43. Joseph G. Blackburn, II
Waiolani Community Association
P.O. Box 1067
Wailuku, HI 96793

44. Joseph G. Blackburn,II
Waiolani Elua Community Association
P.O. Box 1067
Wailuku, HI 96793

45. Joseph G. Blackburn, II
Waiolani Mauka Community Association
P.O. Box 1067
Wailuku, HI 96793

DHHL HOMESTEAD LEADERS

46. Charmaine Day, Secretary
Ka ʻOhana o Kahikinui
P.O. Box 434
Kula, Hawaiʻi 96790

47. Harry Rodriguez, Jr., President
ʻAhahui ʻĀina Hoʻopulapula o Waiohuli
PO Box 81712
Haiku, Hawaiʻi 96708

48. Mark Adams, Representative
Waiʻehu Kou 2
2 Kuu One Hanau Way
Wailuku, Hawaiʻi 96793

49. Perry Artates, President
Waiohuli Hawaiian Homestead Association
95 Lono Ave Ste 104
Kahului, Hawaiʻi 96732

50. Robin Newhouse, President
Kēōkea Agriculture Hawaiian Homestead
Association
695 Keanuhea Street
Kula, Hawaiʻi 96790

51. Rod Paʻahana, President
Leialiʻi Homestead Association
124 Aipuni St.
Lahaina, Hawaiʻi 96761

52. Roy Oliveira, President
Waiʻehu Kou 3
49 Kaulana Na Pua Way
Wailuku, Hawaiʻi 96793

53. Andrew A.M. Hatchie, Jr., Executive Director
Paʻupena Community Development
Corporation
P.O. Box 81678
Haiku, Hawaiʻi 96708

54. Blossom Feiteira, Board Member
Ka ʻOhana o Kahikinui
blossom96708@yahoo.com

55. Kekoa Enomoto, Board Member
Pauʻpena Community Development
Corporation
393 Pueo Drive
Kula, Hawaiʻi 96790

56. Stephen Cramer, President
Paukukalo Community Association
626 Kalakaua Street
Wailuku, Hawaiʻi 96793

57. Kaleo Cullen, President
Ka ʻOhana o Kahikinui
PO Box 5014
Kahului, Hawaiʻi 96733

OCT 1 6 2019

DEPARTMENT OF THE ARMY
HONOLULU DISTRICT, U.S. ARMY CORPS OF ENGINEERS
FORT SHAFTER, HAWAII 96858-5440

October 15, 2019

SUBJECT: U.S. Army Corps of Engineers Regulatory Program Information for Hawaiian Home Lands Pu'unani Homestead, Waikapu, Maui, HI;
Corps Reference Number: POH-2019-00175

Mr. Bryan Esmeralda
Munekiyo Hiraga
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Esmeralda:

The Honolulu District, U.S. Army Corps of Engineers (Corps), Regulatory Branch is in receipt of the State of Hawaii, Department of Hawaiian Home Lands' (DHHL) proposed Pu'unani Homestead Subdivision project proposal to develop a new residential subdivision on approximately 48.3-acre portion of land in Waikapu, Island of Maui, Hawaii. There will be approximately 137 turn-key single-family residences and 24 vacant single-family lots, along with related improvements to be developed within the project that include internal roadways and sidewalks, a drainage detention basin, utility connections, as well as roadway frontage improvements along Honoapi'ilani Highway. You submitted a description of the preliminary project design with associated figures and requested comments regarding permitting requirements. The Corps reference number for this project is POH-2019-00175; please include it in any future correspondence regarding this project.

We have reviewed your submittal pursuant to our authorities under Section 404 of the Clean Water Act (33 U.S.C. 1344; "Section 404") and Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403; "Section 10"). Section 404 requires Department of the Army (DA) authorization for the discharge (placement) of dredged and/or fill material into waters of the U.S., including marine waters, streams, drainages, and wetlands. Under Section 404, our line of jurisdiction is the high tide line. Section 10 requires DA authorization for the placement of structures in, under or over navigable waters of the U.S. and/or other work affecting the course, location, condition or capacity of such waters. Under Section 10, our line of jurisdiction is the mean high water mark.

Based on the preliminary project description and associated figures, it is unclear whether the project would require a DA permit. I've noted that Iao stream is located on the north western section of the property. Work in a waters of the United States (U.S.) would require a permit from the Corps.

At the design stage, we strongly encourage project proponents to avoid all impacts to waters of the U.S. If you cannot design the project to avoid work in waters of the U.S. or if you do not know if the proposed work is in waters of the U.S., the Corps recommends you submit a request for a jurisdictional determination on the project site.

Information pertaining to our permitting program and the link to the Corps' jurisdictional determination request form can be found at:
https://www.poh.usace.army.mil/Missions/Regulatory/Permits.aspx

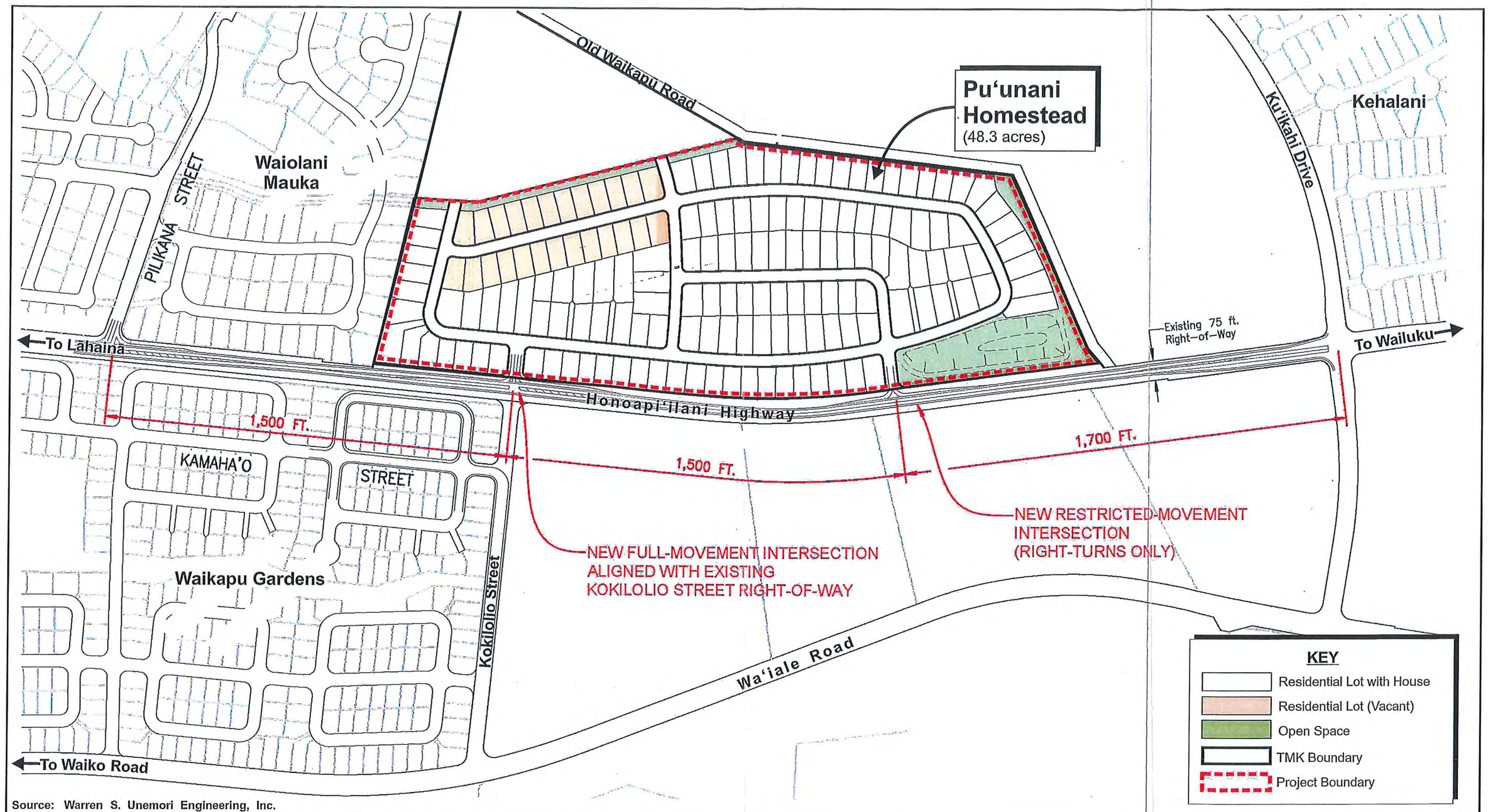
Please be aware that if a Corps permit is required we would also need to ensure your project is compliant with the following federal laws.

1. Section 7 of the Endangered Species Act.
2. Magnuson-Stevens Fishery Conservation and Management Act, Essential Fish Habitat.
3. Section 106 of the National Historic Preservation Act.
4. Coastal Zone Management Act, Federal Consistency.
5. Section 401 of the Clean Water Act

Thank you for your early coordination with the Honolulu District Regulatory Program. Please don't hesitate to contact me by email at Frank.J.Winter@usace.army.mil or (808) 835-4107 if you have any questions regarding the permitting process or our regulatory program.

Sincerely,

Linda Speerstra
Chief, Regulatory Branch



Source: Warren S. Unemori Engineering, Inc.

Figure 3

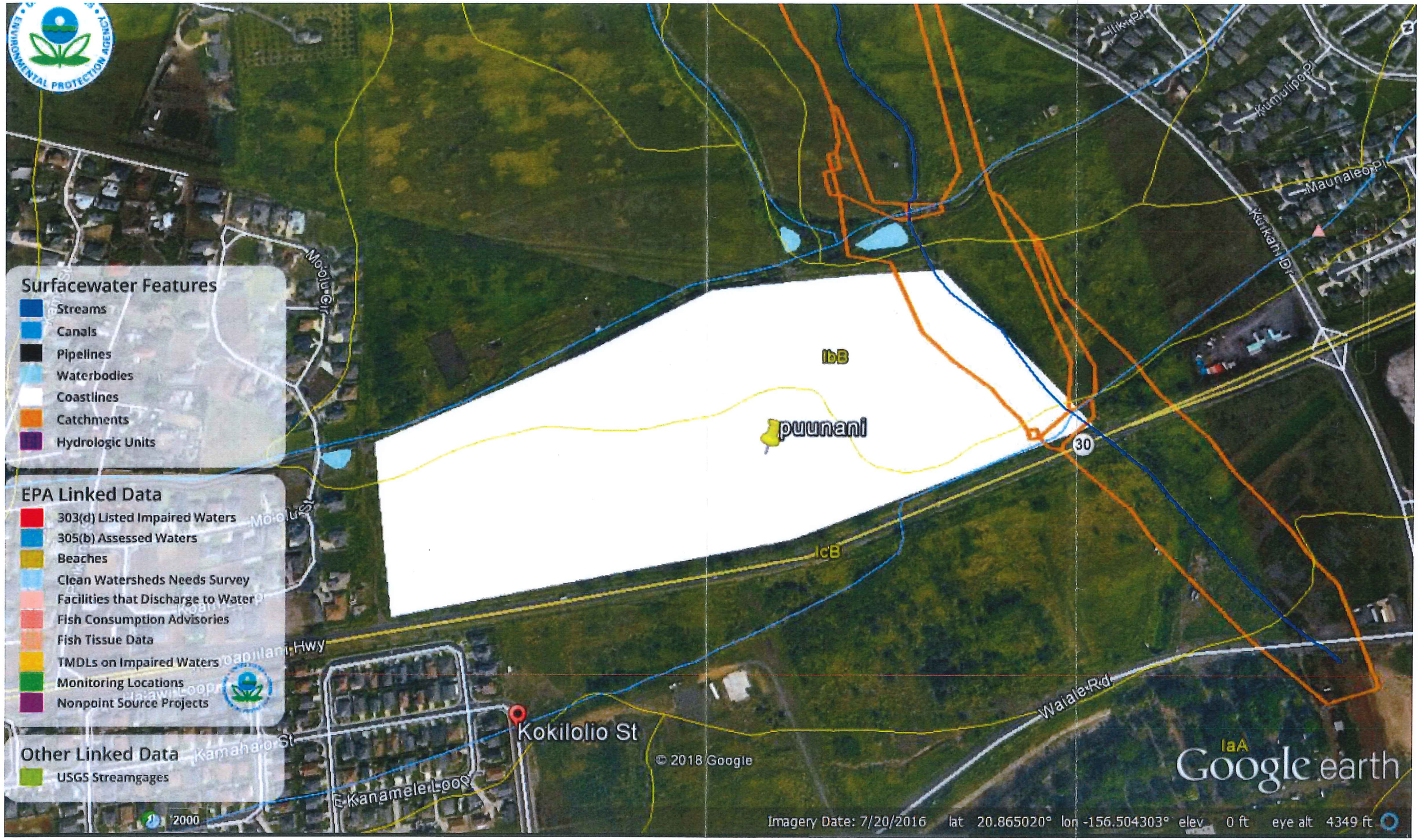
Pu'unani Homestead
Preliminary Site Plan

NOT TO SCALE

Prepared for: State of Hawai'i, Department of Hawaiian Home Lands

MUNEKIYO HIRAGA

DDC\PuananiHomestead\Applications\Figures\Preliminary Site Plan


Surfacewater Features
Streams
Canals
Pipelines
Waterbodies
Coastlines
Catchments
Hydrologic Units
EPA Linked Data
303(d) Listed Impaired Waters
305(b) Assessed Waters
Beaches
Clean Watersheds Needs Survey
Facilities that Discharge to Water
Fish Consumption Advisories
Fish Tissue Data
TMDLs on Impaired Waters
Monitoring Locations
Nonpoint Source Projects
Other Linked Data
USGS Streamgages
IbB
puunani
30
IcB
IaA
Kokilolio St
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Waiale Rd
Mo'olu St
Kamahaor St
E Kanamele Loop
Kumulipo Pl
Maunaleo Pl
Kukani Dr
Google earth
Imagery Date: 7/20/2016 lat 20.865020° lon -156.504303° elev 0 ft eye alt 4349 ft

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VICE PRESIDENT

May 18, 2020

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

SUBJECT: Response to Early Consultation Comments Regarding the Proposed Department of Hawaiian Home Lands Pu'unani Homestead Subdivision Project; TMK Nos. (2)3-5-002:002(por.) and (2)3-5-001:064(por.); Wailuku, Maui, Hawai'i (POH-2019-00175)

Dear Chief Speerstra:

On behalf of the State of Hawai'i, Department of Hawaiian Home Lands (DHHL), thank you for your letter dated October 15, 2019, providing comments on the proposed Pu'unani Homestead Subdivision project. We offer the following information in response to the comments received.

We understand that you reviewed our early consultation correspondence in relation to Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act, both of which require Department of Army (DA) authorization when triggered. We also note your comment that it is unclear from our correspondence if the project would require a DA permit for any work within waters of the U.S. We note your comment regarding 'Īao Stream. However, it is our understanding that 'Īao Stream lies approximately 7,600 feet to the north, and outside of the project site. There is a natural, typically dry drainageway located in the northwestern section of the property.

We acknowledge that if waters of the U.S. are anticipated to be affected by the project, a Jurisdictional Determination should be sought. Further, we understand that should a DA permit be required, compliance with the following Federal laws will also be required:

1. Section 7 of the Endangered Species Act
2. Magnuson-Stevens Fishery Conservation and Management Act, Essential Fish Habitat
3. Section 106 of the National Historic Preservation Act

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www.munekiyohiraga.com

4. Coastal Zone Management Act, Federal consistency
5. Section 401 of the Clean Water Act

Thank you for your participation in the Chapter 343, Hawai'i Revised Statutes environmental review process. A copy of your letter and this response will be included in the Draft EA being prepared for the project. In the meantime, should you have any questions or require additional information, please feel free to contact me at 983-1233.

Very truly yours,

Bryan K. Esmeralda, AICP
Senior Associate

BKE:tn
cc: Stewart Matsunaga, State of Hawai'i, Department of Hawaiian Home Lands
Darren Okimoto, DDC LLC
Darren Unemori, Warren S. Unemori Engineering, Inc.
K:\DATA\DDC\PuunaniHomestead\Applications\EC\EC Response Letters\ArmyDept.doc

SEP 03 2019

United States Department of the Interior

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

In Reply Refer To:
01EPIF00-2019-TA-0467

August 30, 2019

Mr. Bryan Esmeralda
Senior Associate
Munekiyo Hiraga
305 High Street, Suite 104
Wailuku, Hawai'i 96793

Subject: Technical Assistance for Pu'unani Homestead Subdivision Project, Waikapū, Maui

Aloha Mr. Esmeralda:

The U.S. Fish and Wildlife Service (Service) received your August 12, 2019, request for information to inform your development of a Draft Environmental Assessment for the Pu'unani Homestead Subdivision Project in Waikapū, Maui [TMK: (2) 3-5-002:002]. The Service offers the following comments to assist you in your planning process so that impacts to threatened and endangered species can be minimized. Our comments are provided under the authorities of the Endangered Species Act of 1973 (ESA), as amended (16 U.S.C 1531 *et seq.*).

The proposed residential project will consist of development of up to 161 residential lots in a 48-acre parcel and related infrastructure improvements. Each lot will be the site of a single-family dwelling and related accessory uses. The project will also include internal roadways and sidewalks, a drainage detention basin, utility connections, as well as roadway frontage improvements along Honoapi'ilani Highway. Based on information you provided and pertinent information in our files, including data compiled by the Hawaii Biodiversity and Mapping Project, six listed animal species that have the potential to either be in or fly through the vicinity of the project area: the federally endangered Hawaiian hoary bat (*Lasiurus cinereus semotus*), nēnē or Hawaiian goose (*Branta sandvicensis*), Hawaiian stilt (*Himantopus mexicanus knudseni*), Blackburn's sphinx moth (*Manduca blackburni*) and three Hawaiian seabirds: the endangered Hawaiian petrel (*Pterodroma sandwichensis*), band-rumped storm-petrel (*Oceanodroma castro*), and the threatened Newell's shearwater (*Puffinus newelli*). We recommend you incorporate the following conservation measures into your project design to minimize risks to these species:

Hawaiian hoary bat
The Hawaiian hoary bat roosts in both exotic and native woody vegetation across all islands and will leave young unattended in trees and shrubs when they forage. If trees or shrubs 15 feet or taller are cleared during the pupping season, there is a risk that young bats could inadvertently be

harmed or killed since they are too young to fly or may not move away. Additionally, Hawaiian hoary bats forage for insects from as low as 3 feet to higher than 500 feet above the ground and can become entangled in barbed wire used for fencing.

To avoid or minimize impacts to the endangered Hawaiian hoary bat we recommend you incorporate the following applicable measures into your project description:

- Do not disturb, remove, or trim woody plants greater than 15 feet tall during the bat birthing and pup-rearing season (June 1 through September 15).
- Do not use barbed wire for fencing.

Nēnē

Nēnē are found on the islands of Hawai'i, Maui, Moloka'i, and Kaua'i predominately, with a small population on O'ahu. They are observed in a variety of habitats, but prefer open areas, such as pastures, golf courses, wetlands, natural grasslands and shrublands, and lava flows. Threats to the species include introduced mammalian and avian predators, wind facilities, and vehicle strikes.

To avoid or minimize potential project impacts to nene we recommend you incorporate the following measures into your project description, as applicable:

- Do not approach, feed, or disturb nēnē.
- If nēnē are observed loafing or foraging within the project area during the breeding season (September through April), have a biologist familiar with the nesting behavior of nēnē survey for nests in and around the project area prior to the resumption of any work. Repeat surveys after any subsequent delay of work of 3 or more days (during which the birds may attempt to nest).
    - Cease all work immediately and contact the Service for further guidance if a nest is discovered within a radius of 150 ft of proposed work, or a previously undiscovered nest is found within said radius after work begins.
- In areas where nēnē are known to be present, post and implement reduced speed limits, and inform project personnel and contractors about the presence of endangered species. on-site.

Hawaiian seabirds

Hawaiian seabirds may traverse the project area at night during the breeding, nesting and fledging seasons (March 1 to December 15). Outdoor lighting could result in seabird disorientation, fallout, and injury or mortality. Seabirds are attracted to lights and after circling the lights they may become exhausted and collide with nearby wires, buildings, or other structures or they may land on the ground. Downed seabirds are subject to increased mortality due to collision with automobiles, starvation, and predation by dogs, cats, and other predators. Young birds (fledglings) traversing the project area between September 15 and December 15, in their first flights from their mountain nests to the sea, are particularly vulnerable.

To avoid or minimize potential project impacts to seabirds we recommend you incorporate the following applicable measures into your project description:

- Fully shield all outdoor lights so the bulb can only be seen from below bulb height and only use when necessary.
- Install automatic motion sensor switches and controls on all outdoor lights or turn off lights when human activity is not occurring in the lighted area.

- Avoid nighttime construction during the seabird fledging period, September 15 through December 15.

Hawaiian stilt
Listed Hawaiian waterbirds are found in fresh and brackish-water marshes and natural or man-made ponds. Hawaiian stilts may also be found wherever ephemeral or persistent standing water may occur. Threats to these species include non-native predators, habitat loss, and habitat degradation. Based on the project details provided, our information suggests that your project has the potential to result in standing water or the creation of open water during construction, thus attracting Hawaiian waterbirds to the site. In particular, the Hawaiian stilt is known to nest in sub-optimal locations (e.g. any ponding water), if water is present. Hawaiian waterbirds attracted to sub-optimal habitat may suffer adverse impacts, such as predation and reduced reproductive success, and thus the project may create an attractive nuisance. If Hawaiian stilts are noted on the project site, we recommend you work with our office so that we may assist you in developing measures to avoid potential project-related impacts to listed species (e.g., fencing, vegetation control, predator management).

Blackburn's sphinx moth
The Blackburn's sphinx moth may be in the vicinity of the proposed project area. Adult moths feed on nectar from native plants, including beach morning glory (*Ipomoea pes-caprae*), iliee (*Plumbago zeylanica*), and maiapilo (*Capparis sandwichiana*); larvae feed upon non-native tree tobacco (*Nicotiana glauca*) and native aiea (*Nothocestrum* sp.). To pupate, the larvae burrow into the soil and can remain in a state of torpor for up to a year (or more) before emerging from the soil. Soil disturbance can result in death of the pupae.

We offer the following survey recommendations to assess whether the Blackburn's sphinx moth is within the project area:

- A biologist familiar with the species should survey areas of proposed activities for Blackburn's sphinx moth and its larval host plant tree tobacco prior to work initiation.
    - Surveys should be conducted during the wettest portion of the year (usually November-April or several weeks after a significant rain) and within 4-6 weeks prior to construction.
    - Surveys should include searches for eggs, larvae, and signs of larval feeding (chewed stems, frass, or leaf damage).
    - If moths or the native aiea or tree tobacco over 3 feet tall are found during the survey, please contact the Service for additional guidance to avoid take.

If no Blackburn's sphinx moth, aiea, or tree tobacco are found during surveys, it is imperative that measures be taken to avoid attraction of Blackburn's sphinx moth to the project location and prohibit tree tobacco from entering the site. Tree tobacco can grow greater than 3 feet tall in approximately 6 weeks. If it grows over 3 feet, the plants may become a host plant for Blackburn's sphinx moth. We therefore recommend that you:

- Remove any tree tobacco less than 3 feet tall.
- Monitor the site every 4-6 weeks for new tree tobacco growth before, during and after the proposed ground-disturbing activity.
    - Monitoring for tree tobacco can be completed by any person provided with picture placards of tree tobacco at different life stages.

Native Plants for Landscaping
Where disturbed areas do not need to be maintained as an open area, restore disturbed areas using native plants as appropriate for the location. Whenever possible we recommend using native plants for landscaping purposes. The following website is a good resources to use when choosing landscaping plants: Native Plants Hawaii (https://nativeplants.hawaii.edu/index/).

If this project should receive federal funding, federal permits, or any federal authorization, it will require a Section 7 consultation with the Service. The Service only conducts Section 7 consultations with the federal action agency or their designated representative.

Thank you for participating with us in the protection of our endangered species. If you have any further questions or concerns regarding this consultation, please contact John Vetter, Fish and Wildlife Biologist, 808-792-9406, e-mail: john_vetter@fws.gov. When referring to this project, please include this reference number: ***01EPIF00-2019-TA-0467***.

Sincerely,

MICHELLE BOGARDUS

Digitally signed by MICHELLE BOGARDUS
Date: 2019.09.03 12:00:48 -10'00'

Michelle Bogardus
Island Team Leader
Maui Nui and Hawaii Island

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VICE PRESIDENT

May 18, 2020

Michelle Bogardus, Island Team Leader
Maui Nui and Hawai'i Island
U.S. Fish and Wildlife Service
Pacific Islands Fish and Wildlife Office
300 Ala Moana Boulevard
Honolulu, Hawai'i 96850

SUBJECT: Response to Early Consultation Comments Regarding the Proposed Department of Hawaiian Home Lands Pu'unani Homestead Subdivision Project; TMK Nos. (2)3-5-002:002(por.) and (2)3-5-001:064(por.); Wailuku, Maui, Hawai'i (01EPIF00-2019-TA-0467)

Dear Ms. Bogardus:

On behalf of the State of Hawai'i, Department of Hawaiian Home Lands (DHHL), thank you for your letter dated August 30, 2019, providing comments on the proposed Pu'unani Homestead Subdivision project. We offer the following information in response to the comments received.

We acknowledge your comment that the Hawai'i Biodiversity and Mapping project lists seven (7) animal species that have the potential to either be in or fly through the vicinity of the project area, which include: the federally endangered Hawaiian hoary bat *(Lasiurus cinereus semotus)*; nēnē or Hawaiian goose *(Branta sandvicensis)*; Hawaiian stilt *(Himantopus mexicanus knudseni)*; Blackburn's sphinx moth *(Manduca blackburni)*; and three (3) Hawaiian seabirds: the endangered Hawaiian petrel *(Pterodroma sandwichensis)*; band-rumped storm-petrel *(Oceanodroma castro)*; and the threatened Newell's shearwater *(Puffinus newelli)*.

We also acknowledge the conservation measures noted in your letter. These conservation measures have been forwarded to the DHHL and design team for review and consideration for incorporation in to the proposed project.

It is further noted that a biological resources survey prepared for the project will be included and the results of the survey will be discussed in the Draft Environmental Assessment (EA) being prepared for the proposed project.

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We note the following information and conservation measures from your letter:

1. Hawaiian Hoary Bat

We acknowledge that the Hawaiian hoary bat roosts in woody vegetation across Hawai'i and that they will leave their young unattended in trees while foraging, thus leaving them prone to being harmed or killed should trees or shrubs be cleared as they are too young to fly. We also acknowledge that the bats forage from as low as three (3) feet to higher than 500 feet above the ground, thus making them prone to becoming entangled in barbed wire fencing. As such, the following conservation measures will be considered:

- No disturbing, removing, or trimming of woody plants higher than 15 feet during the bat birthing and pup-rearing season of June 1 through September 15, as practicable

- No use of barbed wire fencing

2. Nēnē

We acknowledge that nēnē are predominantly found on the islands of Hawai'i, Maui, Moloka'i, and Kaua'i, with a small population on O'ahu, and that they are observed in a variety of habitats but prefer open areas such as pastures, golf courses, wetlands, natural grasslands and shrublands, and lava flows. Threats to these species include introduced mammalian and avian predators, wind facilities, and vehicle strikes. As such, the following conservation measures will be considered:

- No approaching, feeding, or disturbing nēnē

- If nēnē are observed at the project site during the breeding season of September through April, a biologist familiar with the nesting behavior of nēnē will be contacted to survey the area for nests prior to resumption of work. If a nest is discovered within 150 feet of any proposed work, the U.S. Fish and Wildlife Service will be contacted for further guidance.

- Should nēnē be known to be present in the area, reduced speed limits and education for project personnel and contractors about their presence will be implemented.

3. ***Hawaiian Seabirds***

We acknowledge that seabirds may traverse the project area at night during the breeding, nesting, and fledging seasons of March 1 to December 15. Because seabirds are attracted to lights, outdoor lighting could result in seabird disorientation, fallout, injury, or mortality as they become prone to exhaustion and collision with wires, buildings, or other structures. If they land on the ground, they become prone to threats from vehicle strikes, starvation, and predation by dogs, cats, and other mammalian predators. In addition, young birds in their first flights are particularly vulnerable. As such, the following conservation measures will be considered:

- Outdoor lighting will be shielded and downward facing

- Nighttime construction will be avoided during the seabird fledging period of September 15 through December 15

4. ***Hawaiian Stilt***

We acknowledge that listed Hawaiian waterbirds are found in fresh and brackish water marshes and natural or man-made ponds, and that Hawaiian stilts in particular may also be found wherever ephemeral or persistent standing water may occur. Threats to waterbirds include non-native predators, habitat loss, and habitat degradation. Further, we acknowledge that Hawaiian stilts may be attracted to the project site due to the potential for periodic standing water within the proposed detention basin. This sub-optimal location has the potential to expose Hawaiian stilts to predation and reduced reproductive success. As such, should Hawaiian stilts be observed at the project site, the DHHL will consult with the U.S. Fish and Wildlife Service to develop mitigation measures to avoid project-related impacts.

5. ***Blackburn's Sphinx Moth***

The Blackburn's sphinx moth, and/or their larvae, may be present at the project site as they feed on native plants. Further, the larvae burrow into the soil to pupate and can remain in a state of torpor for a year or more. In this regard, soil disturbance presents potential adverse impacts to the larvae in particular. As such, the following conservation measures will be considered:

- A biologist familiar with the species will survey the project area to determine the presence of the Blackburn's sphinx moth or its larval host

plant. If moths or host plants greater than three (3) feet tall are observed, the Service will be contacted for further guidance.

- Removal of tree tobacco plants less than three (3) feet tall, as applicable

- Monitoring of the site every four (4) to six (6) weeks for new tobacco tree growth, as applicable

6. Native Plants for Landscaping

As practicable, native plants will be considered for landscaping. The website noted in your letter containing a resource of native plants will be consulted by the project's design team.

We note that the project will not utilize Federal funding, nor will it require Federal permits or any other Federal authorization. As such, the requirement for Section 7 consultation is not triggered by the proposed project.

Thank you for your participation in the Chapter 343, Hawai'i Revised Statutes environmental review process. A copy of your letter and this response will be included in the Draft EA being prepared for the project. In the meantime, should you have any questions or require additional information, please feel free to contact me at 983-1233.

Very truly yours,

Bryan K. Esmeralda, AICP
Senior Associate

BKE:yp
cc: Stewart Matsunaga, State of Hawai'i, Department of Hawaiian Home Lands
Darren Okimoto, DDC LLC
Robert Hobdy
K:\DATA\DDC\PuunaniHomestead\Applications\EC\EC Response Letters\USFWS.doc

AUG 30 2019

DAVID Y. IGE
GOVERNOR

CURT T. OTAGURO
COMPTROLLER

AUDREY HIDANO
DEPUTY COMPTROLLER

STATE OF HAWAII
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
P.O. BOX 119, HONOLULU, HAWAII 96810-0119

(P)19.185

AUG 28 2019

Mr. Bryan K. Esmeralda, Senior Associate
Munekiyo Hiraga
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Esmeralda:

Subject: Early Consultation Request for the Proposed Department of Hawaiian Home Lands Puunani Homestead Subdivision Project
Waikapu, Maui, Hawaii
TMK No. (2) 3-5-002:002 (por.)

Thank you for the opportunity to comment on the subject project. We have no comments 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,

Audrey Hidano
for CURT T. OTAGURO
Comptroller

c: Mr. Wade Shimabukuro, DAGS-MDO

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VICE PRESIDENT
Tessa Munekiyo Ng
VICE PRESIDENT

May 18, 2020

Curt Otaguro, Comptroller
Department of Accounting and General Services
State of Hawai'i
P.O. Box 119
Honolulu, Hawai'i 96810-0119

SUBJECT: Response to Early Consultation Comments Regarding the Proposed Department of Hawaiian Home Lands Pu'unani Homestead Subdivision Project; TMK Nos. (2)3-5-002:002(por.) and (2)3-5-001:064(por.); Wailuku, Maui, Hawai'i ((P)19.185)

Dear Mr. Otaguro:

On behalf of the State of Hawai'i, Department of Hawaiian Home Lands (DHHL), thank you for your letter dated August 28, 2019, regarding the proposed Pu'unani Homestead Subdivision project. We acknowledge that the Department of Accounting and General Services (DAGS) has no comments to offer at this time, and that the proposed project does not impact any existing DAGS projects or facilities.

Thank you for your participation in the Chapter 343, Hawai'i Revised Statutes environmental review process. A copy of your letter and this response will be included in the Draft Environmental Assessment being prepared for the project. In the meantime, should you have any questions or require additional information, please feel free to contact me at 983-1233.

Very truly yours,

Bryan K. Esmeralda, AICP
Senior Associate

BKE:yp
cc: Stewart Matsunaga, State of Hawai'i, Department of Hawaiian Home Lands
Darren Okimoto, DDC LLC
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SEP 05 2019

DAVID Y. IGE
GOVERNOR

DR. CHRISTINA M. KISHIMOTO
SUPERINTENDENT

STATE OF HAWAI`I

DEPARTMENT OF EDUCATION

P.O. BOX 2360

HONOLULU, HAWAI`I 96804

OFFICE OF FACILITIES AND OPERATIONS

August 30, 2019

Bryan Esmeralda, Senior Associate
Munekiyo & Hiraga Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Re: Early Consultation for Department of Hawaiian Home Lands Puunani Homestead Subdivision, Waikapu, Maui, TMK 3-5-002: por. 002

Dear Mr. Esmeralda:

The Department of Education (DOE) is responding to your request for early consultation on Puunani Homestead Subdivision (Project) proposed by the Department of Hawaiian Home Lands.

The Project is a 161 lot single-family subdivision, located in the DOE's Central Maui Impact Fee District. The state law on school impact fees, Chapter 302-A, Hawaii Revised Statutes, requires any developer of more than 50 residential units to meet with the DOE to execute an Education Contribution Agreement, before any approvals of subdivision or building permits. The agreement would set the timing for the collection of the school impact fees and establish whether the school land fee component would be in the form of land or a fee in lieu of land. The DOE looks forward to this meeting.

We think it is extremely important for the Project's Draft Environmental Assessment to state whether ohana or accessory dwelling units will be permitted on the 161 lots.

Students residing in the Project will most likely attend Puu Kukui Elementary, Maui Waena Intermediate, and Maui High. All three schools have current student enrollments that exceed their facility capacity. It is possible the project area may be reassigned to other schools depending on future conditions.

Thank you for the opportunity to raise these early considerations. If you have any questions, please call Heidi Meeker, Land Use Planer of the Facilities Development Branch, Planning Section, at 784-5095.

Respectfully,

Kenneth G. Masden II
Public Works Manager
Planning Section

KGM:hm

c: Kathleen Dimino, Complex Area Superintendent, Baldwin/Kekaulike/Maui Complex Area

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VICE PRESIDENT

May 18, 2020

Kenneth Masden II, Public Works Manager
Planning Section
Department of Education
State of Hawai'i
P.O. Box 2360
Honolulu, Hawai'i 96804

SUBJECT: Response to Early Consultation Comments Regarding the Proposed Department of Hawaiian Home Lands Pu'unani Homestead Subdivision Project TMK Nos. (2)3-5-002:002(por.) and (2)3-5-001:064(por.);

Dear Mr. Masden:

On behalf of the State of Hawai'i, Department of Hawaiian Home Lands (DHHL), thank you for your letter dated August 30, 2019, providing comments on the proposed Pu'unani Homestead Subdivision project. We offer the following information in response to the comments received.

We acknowldge your comment that the state law on school impact fees, Chapter 302-A, Hawai'i Revised Statutes (HRS), requires developers of more than 50 residential lots to meet with the Department of Education (DOE) to execute an Education Contribution Agreement. The DHHL will be coordinating with the DOE to fulfill these requirements.

The proposed project will not allow 'ohana or accessory dwelling units to be developed. This information will be included in the Draft Environmental Assessment (EA).

We acknowledge your comment that students who will reside in the proposed project will likely attend Puu Kukui Elementary, Maui Waena Intermediate, and Maui High School. We also note your comment that enrollment at these schools currently exceed their facility capacity, which may result in students needing to be reassigned to other schools depending on future conditions.

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www.munekiyohiraga.com

Thank you for your participation in the Chapter 343, HRS environmental review process. A copy of your letter and this response will be included in the Draft EA being prepared for the project. In the meantime, should you have any questions or require additional information, please feel free to contact me at 983-1233.

Very truly yours,

Bryan K. Esmeralda, AICP
Senior Associate

BKE:yp
cc: Stewart Matsunaga, State of Hawai'i, Department of Hawaiian Home Lands
Darren Okimoto, DDC LLC
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AUG 29 2019

DAVID Y. IGE
GOVERNOR OF HAWAII

BRUCE S. ANDERSON, Ph.D.
DIRECTOR OF HEALTH

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

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

August 27, 2019

Mr. Bryan K. Esmeralda
Senior Associate
Munekiyo Hiraga
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Esmeralda:

Subject: Early Consultation Request for the Proposed Department of Hawaiian Home Lands Pu`unani Homestead Subdivision Project, Waikapu, Maui, Hawaii
TMK: (2) 3-5-002:002 (por.)

Thank you for the opportunity to review this project. We have the following comments to offer:

1. Please address the wastewater disposal for this project. If you have any questions, please call Roland Tejano, Environmental Engineer, at 808 984-8232.

2. The land was formerly in the production of sugar cane and/or pineapple. Please contact the Department of Health, Hazard Evaluation and Emergency Response (HEER) office at 808 586-4249.

It is strongly recommended that you review the department's website at https://health.hawaii.gov/epo/files/2018/05/DOHEHA.LandUseContactList.20180502.pdf 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,

Patti Kitkowski

Patti Kitkowski
District Environmental Health Program Chief

c Sina Pruder, Acting EMD Administrator

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CHAIRMAN
Karlynn K. Fukuda
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Mark Alexander Roy
VICE PRESIDENT
Tessa Munekiyo Ng
VICE PRESIDENT

May 18, 2020

Patti Kitkowski, District Environmental
Health Program Chief
Department of Health
Maui District Health Office
State of Hawai'i
54 High Street
Wailuku, Hawai'i 96793

SUBJECT: Response to Early Consultation Comments Regarding the Proposed Department of Hawaiian Home Lands Pu'unani Homestead Subdivision Project; TMK Nos. (2)3-5-002:002(por.) and (2)3-5-001:064(por.); Wailuku, Maui, Hawai'i

Dear Ms. Kitkowski:

On behalf of the State of Hawai'i, Department of Hawaiian Home Lands (DHHL), thank you for your letter dated August 27, 2019 providing comments on the proposed Pu'unani Homestead Subdivision project. We offer the following information in response to the comments received.

Response to Comment No. 1

We acknowledge your comment regarding wastewater disposal. The project will connect to the County of Maui's existing wastewater system. A Preliminary Engineering Report addressing wastewater system requirements will be included in the Draft Environmental Assessment (EA). Coordination will be undertaken with the County Department of Environmental Management during the building permit phase to ensure that the system has adequate capacity. Should DHHL or its design team have any questions regarding Department of Health wastewater disposal regulation, coordination will be undertaken with Mr. Roland Tejano.

Response to Comment No. 2

We acknowledge your comment regarding prior use of the site. Although the property was formerly utilized for agriculture, the property has not been in active agricultural production for some time. Nevertheless, a Phase I Environmental Site Assessment was conducted for the property and the findings of which will be included in the Draft EA.

Oahu: 735 Bishop Street, Suite 321 • Honolulu, Hawaii 96813 • Tel: 808.983.1233
Maui: 305 High Street, Suite 104 • Wailuku, Hawaii 96793 • Tel: 808.244.2015 • Fax: 808.244.8729
www.munekiyohiraga.com

Your comment has been forwarded to DHHL for further coordination with the Department of Health (DOH), Hazard Evaluation and Emergency Response in this regard, if required.

The standard comments on the DOH website will be reviewed for applicability to the proposed project.

Thank you for your participation in the Chapter 343, Hawai'i Revised Statutes environmental review process. A copy of your letter and this response will be included in the Draft EA being prepared for the project. In the meantime, should you have any questions or require additional information, please feel free to contact me at (808) 983-1233.

Very truly yours,

Bryan K. Esmeralda, AICP
Senior Associate

BKE:yp
cc: Stewart Matsunaga, State of Hawai'i, Department of Hawaiian Home Lands
Darren Okimoto, DDC LLC
Darren Unemori, Warren S. Unemori Engineering, Inc.
K:\DATA\DDC\PuunaniHomestead\Applications\EC\EC Response Letters\DOH Maui.doc

SEP 03 2019

DAVID Y. IGE
GOVERNOR OF HAWAII

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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

September 3, 2019

Munekiyo Hiraga
Attn: Mr. Bryan Esmeralda
Senior Associate
305 High Street, Suite 104
Wailuku, Hawaii 96793

via email: planning@munekiyohiraga.com

Dear Mr. Esmeralda:

SUBJECT: Early Consultation Request for the Proposed Department of Hawaiian Home Lands **Pu'unani Homestead Subdivision Project** located at Waikapu, Island of Maui; TMK: (2) 3-5-002: 002 (por.) on behalf of Department of Hawaiian Home Lands

Thank you for the opportunity to review and comment on the subject matter. The Land Division of the Department of Land and Natural Resources (DLNR) distributed or made available a copy of your request pertaining to the subject matter to DLNR's Divisions for their review and comments.

At this time, enclosed are comments from the Engineering Division on the subject matter. Should you have any questions, please feel free to contact Darlene Nakamura at (808) 587-0417 or email: darlene.k.nakamura@hawaii.gov. Thank you.

Sincerely,

Russell Y. Tsuji
Land Administrator

Enclosure
cc: Central Files

DAVID Y. IGE
GOVERNOR OF HAWAII

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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

August 20, 2019

RECEIVED
LAND DIVISION
2019 AUG 27 AM 8:31
DEPT. OF LAND & NATURAL RESOURCES
STATE OF HAWAII

MEMORANDUM

TO: **DLNR Agencies:**
__Div. of Aquatic Resources
__Div. of Boating & Ocean Recreation
X Engineering Division
X Div. of Forestry & Wildlife
__Div. of State Parks
X Commission on Water Resource Management
__Office of Conservation & Coastal Lands
X Land Division – Maui District
X Historic Preservation

FROM

FROM: Russell Y. Tsuji, Land Administrator
SUBJECT: Early Consultation Request for the Proposed Department of Hawaiian Home Lands **Pu'unani Homestead Subdivision Project**
LOCATION: Waikapu, Island of Maui; TMK: (2) 3-5-002: 002 (por.)
APPLICANT: Munekiyo Hiraga on behalf of Department of Hawaiian Home Lands

Transmitted for your review and comment is information on the above-referenced subject matter. Please submit any comments by **August 29, 2019.**

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact Darlene Nakamura at 587-0417 or by email at darlene.k.nakamura@hawaii.gov. Thank you.

( ) We have no objections.
( ) We have no comments.
(✓) Comments are attached.

Signed: _____

Print Name: Carty S. Chang, Chief Engineer

Date: 8/23/19

Attachments
cc: Central Files

DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

LD/Russell Y. Tsuji
Ref: Early Consultation Request for the Proposed Department of Hawaiian Home Lands Pu'unani Homestead Subdivision Project
TMK(s): (2) 3-5-002: 002 (por.)
Location: Waikapu, Island of Maui
Applicant: Munekiyo Hiraga on behalf of Department of Hawaiian Home Lands

COMMENTS

The rules and regulations of the National Flood Insurance Program (NFIP), Title 44 of the Code of Federal Regulations (44CFR), are in effect when development falls within a Special Flood Hazard Area (high risk areas). State projects are required to comply with 44CFR regulations as stipulated in Section 60.12. Be advised that 44CFR reflects the minimum standards as set forth by the NFIP. Local community flood ordinances may stipulate higher standards that can be more restrictive and would take precedence over the minimum NFIP standards.

The owner of the project property and/or their representative is responsible to research the Flood Hazard Zone designation for the project. Flood Hazard Zones are designated on FEMA's Flood Insurance Rate Maps (FIRM), which can be viewed on our Flood Hazard Assessment Tool (FHAT) (http://gis.hawaiinfip.org/FHAT).

If there are questions regarding the local flood ordinances, please contact the applicable County NFIP coordinating agency below:

- Oahu: City and County of Honolulu, Department of Planning and Permitting (808) 768-8098.
- Hawaii Island: County of Hawaii, Department of Public Works (808) 961-8327.
- Maui/Molokai/Lanai County of Maui, Department of Planning (808) 270-7253.
- Kauai: County of Kauai, Department of Public Works (808) 241-4896.

Signed: _____
CARTY S. CHANG, CHIEF ENGINEER

Date: 4/23/19

MUNEKIYO HIRAGA
Planning. Project Management. Sustainable Solutions.

Michael T. Munekiyo
CHAIRMAN
Karlynn K. Fukuda
PRESIDENT
Mark Alexander Roy
VICE PRESIDENT
Tessa Munekiyo Ng
VICE PRESIDENT

May 18, 2020

Russel Tsuji, Land Administrator
Land Division
Department of Land and Natural Resources
State of Hawai'i
P.O. Box 621
Honolulu, Hawai'i 96809

SUBJECT: Response to Early Consultation Comments Regarding the Proposed Department of Hawaiian Home Lands Pu'unani Homestead Subdivision Project; TMK Nos. (2)3-5-002:002(por.) and (2)3-5-001:064(por.); Wailuku, Maui, Hawai'i

Dear Mr. Tsuji:

On behalf of the State of Hawai'i, Department of Hawaiian Home Lands (DHHL), thank you for your letter dated September 3, 2019, providing comments on the proposed Pu'unani Homestead Subdivision project. We offer the following information in response to the comments received.

Engineering Division

We acknowledge the comment that State projects are required to comply with the rules and regulations of the National Flood Insurance Program, Title 44 of the Code of Federal Regulations when the proposed development falls within a Special Flood Hazard Area. We note that the project site is not located within a Special Flood Hazard Area. Nonetheless, should any local flood regulations be triggered, the proposed project will coordinate with the County of Maui, Department of Planning.

Oahu: 735 Bishop Street, Suite 321 • Honolulu, Hawaii 96813 • Tel: 808.983.1233
Maui: 305 High Street, Suite 104 • Wailuku, Hawaii 96793 • Tel: 808.244.2015 • Fax: 808.244.8729
www.munekiyohiraga.com

Thank you for your participation in the Chapter 343, Hawai'i Revised Statutes environmental review process. A copy of your letter and this response will be included in the Draft Environmental Assessment being prepared for the project. In the meantime, should you have any questions or require additional information, please feel free to contact me at 983-1233.

Very truly yours,

Bryan K. Esmeralda, AICP
Senior Associate

BKE:yp
cc: Stewart Matsunaga, State of Hawai'i, Department of Hawaiian Home Lands
Darren Okimoto, DDC LLC
Darren Unemori, Warren S. Unemori Engineering, Inc.
K:\DATA\DDC\PuunaniHomestead\Applications\EC\EC Response Letters\DLNR Eng..doc

SEP 11 2019

DAVID Y. IGE
GOVERNOR OF HAWAII

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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

September 11, 2019

Munekiyo Hiraga
Attn: Mr. Bryan Esmeralda
Senior Associate
305 High Street, Suite 104
Wailuku, Hawaii 96793

via email: planning@munekiyohiraga.com

Dear Mr. Esmeralda:

SUBJECT: Early Consultation Request for the Proposed Department of Hawaiian Home Lands **Pu'unani Homestead Subdivision Project** located at Waikapu, Island of Maui; TMK: (2) 3-5-002: 002 (por.) on behalf of Department of Hawaiian Home Lands

Thank you for the opportunity to review and comment on the subject matter. In addition to our previous comments dated September 3, 2019, enclosed are comments from the Commission on Water Resource Management on the subject matter. Should you have any questions, please feel free to contact Darlene Nakamura at (808) 587-0417 or email: darlene.k.nakamura@hawaii.gov. Thank you.

Sincerely,

Russell Y. Tsuji
Land Administrator

Enclosure
cc: Central Files

DAVID Y. IGE
GOVERNOR OF HAWAII

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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

RECEIVED
LAND DIVISION
2019 SEP -5 PM 4:49
DEPT. OF LAND & NATURAL RESOURCES STATE OF HAWAII

RECEIVED
COMMISSION ON WATER RESOURCE MANAGEMENT
2019 AUG 20 PM 2:48

August 20, 2019

MEMORANDUM

TO: **DLNR Agencies:**
__Div. of Aquatic Resources
__Div. of Boating & Ocean Recreation
X Engineering Division
X Div. of Forestry & Wildlife
__Div. of State Parks
X Commission on Water Resource Management
__Office of Conservation & Coastal Lands
X Land Division – Maui District
X Historic Preservation

FROM: Russell Y. Tsuji, Land Administrator
SUBJECT: Early Consultation Request for the Proposed Department of Hawaiian Home Lands **Pu'unani Homestead Subdivision Project**
LOCATION: Waikapu, Island of Maui; TMK: (2) 3-5-002: 002 (por.)
APPLICANT: Munekiyo Hiraga on behalf of Department of Hawaiian Home Lands

Transmitted for your review and comment is information on the above-referenced subject matter. Please submit any comments by **August 29, 2019.**

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact Darlene Nakamura at 587-0417 or by email at darlene.k.nakamura@hawaii.gov. Thank you.

( ) We have no objections.
( ) We have no comments.
(x) Comments are attached.

Signed: /s/ M. Kaleo Manuel

Print Name: Deputy Director

Date: September 4, 2019

Attachments
cc: Central Files

FILE ID: RFD.5214.6
DOC ID: 21791v

DAVID Y. IGE
GOVERNOR OF HAWAII

SUZANNE D. CASE
CHAIRPERSON

BRUCE S. ANDERSON, PH.D.
KAMANA BEAMER, PH.D.
MICHAEL G. BUCK
NEIL J. HANNAHS
WAYNE K. KATAYAMA
PAUL J. MEYER

M. KALEO MANUEL
DEPUTY DIRECTOR

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P.O. BOX 621
HONOLULU, HAWAII 96809

September 4, 2019

REF: RFD.5214.6

TO: Mr. Russell Tsuji, Administrator
Land Division

FROM: M. Kaleo Manuel, Deputy Director
Commission on Water Resource Management

SUBJECT: Early Consultation Request for the Proposed Department of Hawaiian Home Lands Puunani Homestead Subdivision Project

FILE NO.: RFD.5214.6
TMK NO.: (2) 3-5-002:002 (por.)

Thank you for the opportunity to review the subject document. The Commission on Water Resource Management (CWRM) is the agency responsible for administering the State Water Code (Code). Under the Code, all waters of the State are held in trust for the benefit of the citizens of the State, therefore all water use is subject to legally protected water rights. CWRM strongly promotes the efficient use of Hawaii's water resources through conservation measures and appropriate resource management. For more information, please refer to the State Water Code, Chapter 174C, Hawaii Revised Statutes, and Hawaii Administrative Rules, Chapters 13-167 to 13-171. These documents are available via the Internet at http://dlnr.hawaii.gov/cwrm.

Our comments related to water resources are checked off below.

[X] 1. We recommend coordination with the county to incorporate this project into the county's Water Use and Development Plan. Please contact the respective Planning Department and/or Department of Water Supply for further information.

[X] 2. We recommend coordination with the Engineering Division of the State Department of Land and Natural Resources to incorporate this project into the State Water Projects Plan.

[X] 3. We recommend coordination with the Hawaii Department of Agriculture (HDOA) to incorporate the reclassification of agricultural zoned land and the redistribution of agricultural resources into the State's Agricultural Water Use and Development Plan (AWUDP). Please contact the HDOA for more information.

[X] 4. We recommend that water efficient fixtures be installed and water efficient practices implemented throughout the development to reduce the increased demand on the area's freshwater resources. Reducing the water usage of a home or building may earn credit towards Leadership in Energy and Environmental Design (LEED) certification. More information on LEED certification is available at http://www.usgbc.org/leed. A listing of fixtures certified by the EAP as having high water efficiency can be found at http://www.epa.gov/watersense.

[X] 5. We recommend the use of best management practices (BMP) for stormwater management to minimize the impact of the project to the existing area's hydrology while maintaining on-site infiltration and preventing polluted runoff from storm events. Stormwater management BMPs may earn credit toward LEED certification. More information on stormwater BMPs can be found at http://planning.hawaii.gov/czm/initiatives/low-impact-development/

[X] 6. We recommend the use of alternative water sources, wherever practicable.

[ ] 7. We recommend participating in the Hawaii Green Business Program, that assists and recognizes businesses that strive to operate in an environmentally and socially responsible manner. The program description can be found online at http://energy.hawaii.gov/green-business-program.

[X] 8. We recommend adopting landscape irrigation conservation best management practices endorsed by the Landscape Industry Council of Hawaii. These practices can be found online at

http://www.hawaiiscape.com/wp-content/uploads/2013/04/LICH_Irrigation_Conservation_BMPs.pdf.

[X] 9. There may be the potential for ground or surface water degradation/contamination and recommend that approvals for this project be conditioned upon a review by the State Department of Health and the developer's acceptance of any resulting requirements related to water quality.

[ ] 10. The proposed water supply source for the project is located in a designated water management area, and a Water Use Permit is required prior to use of water. The Water Use Permit may be conditioned on the requirement to use dual line water supply systems for new industrial and commercial developments.

[ ] 11. A Well Construction Permit(s) is (are) are required before the commencement of any well construction work.

[ ] 12. A Pump Installation Permit(s) is (are) required before ground water is developed as a source of supply for the project.

[ ] 13. There is (are) well(s) located on or adjacent to this project. If wells are not planned to be used and will be affected by any new construction, they must be properly abandoned and sealed. A permit for well abandonment must be obtained.

[ ] 14. Ground-water withdrawals from this project may affect streamflows, which may require an instream flow standard amendment.

[ ] 15. A Stream Channel Alteration Permit(s) is (are) required before any alteration can be made to the bed and/or banks of a steam channel.

[ ] 16. A Stream Diversion Works Permit(s) is (are) required before any stream diversion works is constructed or altered.

[ ] 17. A Petition to Amend the Interim Instream Flow Standard is required for any new or expanded diversion(s) of surface water.

[ ] 18. The planned source of water for this project has not been identified in this report. Therefore, we cannot determine what permits or petitions are required from our office, or whether there are potential impacts to water resources.

[X] OTHER: Planning - The proposed water source(s) and projected water demands for the project, both potable and non-potable, should be identified and the calculations used to estimate demands should be provided. A discussion of the potential impacts on water resources and other public trust uses of water should be included, and any proposed mitigation measures described. Water conservation and efficiency measures to be implemented should be discussed.

If you have any questions, please contact Lenore Ohye of the Commission staff at 587-0216.

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Michael T. Munekiyo
CHAIRMAN
Karlynn K. Fukuda
PRESIDENT
Mark Alexander Roy
VICE PRESIDENT
Tessa Munekiyo Ng
VICE PRESIDENT

May 18, 2020

Russel Tsuji, Land Administrator
Land Division
Department of Land and Natural Resources
State of Hawai'i
P.O. Box 621
Honolulu, Hawai'i 96809

SUBJECT: Response to Early Consultation Comments Regarding the Proposed Department of Hawaiian Home Lands Pu'unani Homestead Subdivision Project; TMK Nos. (2)3-5-002:002(por.) and (2)3-5-001:064(por.); Wailuku, Maui, Hawai'i

Dear Mr. Tsuji:

On behalf of the State of Hawai'i, Department of Hawaiian Home Lands (DHHL), thank you for your letter dated September 11, 2019, providing comments on the proposed Pu'unani Homestead Subdivision project. We offer the following information in response to the comments received.

Commission on Water Resource Management

- We acknowledge the comment to work with the County of Maui, Department of Water Supply to have the project incorporated into the County's Water Use and Development Plan. Your comment has been forwarded to DHHL for consideration.

- We acknowledge your comment to work with the Engineering Division of the Department of Land and Natural Resources to have the project incorporated into the State Water Projects Plan. The comment has been forwarded to DHHL for consideration.

- We acknowledge your comment to work with the Department of Agriculture to incorporate the reclassification of agricultural zoned land and the redistribution of agricultural resources incorporated into the State's Agricultural Water Use and Development Plan. The comment has been shared with DHHL for consideration. We note that while the project site has been designated "Agriculture" by the State

Land Use Commission, a District Boundary Amendment is not proposed as part of the project. The Hawaiian Homes Commission Act vests onto DHHL the authority to use its lands at its discretion. As such, the DHHL is able to proceed with the project without having to reclassify the lands for residential use.

- To the extent practicable, water efficient fixtures and practices will be incorporated into the house packages and will be encouraged for implementation by individual lot only lessees of the proposed project. Furthermore, the resource provided regarding Leadership in Energy and Environmental Design certification will be reviewed.

- Best Management Practices (BMPs) for stormwater management to minimize the impact of the proposed project on the existing area's hydrology while maintaining onsite infiltration and prevention of polluted runoff will be implemented as part of the project. We note that as part of the project, an onsite stormwater detention basin will be constructed to capture stormwater runoff generated by the project so as to minimize potential impacts to neighboring and downstream properties and other water resources.

- We acknowledge the comment regarding the encouragement for use of alternative water sources. We note that the proposed project is anticipated to be serviced by the County's existing municipal water system.

- We acknowledge your comment regarding the use of landscape irrigation conservation BMPs endorsed by the Landscape Industry Council of Hawai'i. The resource provided in your letter will be reviewed by the project team for applicability to the proposed project.

- We acknowledge your comment. The State Department of Health has been included in the early consultation request for the proposed project.

- The Draft Environmental Assessment (EA) being prepared for the proposed project will include a Preliminary Engineering Report, which will calculate the estimated water demand for the proposed project, and describe water system improvements required to service the project. Potential impacts to water resources and proposed mitigation measures will also be included in the Draft EA.

Thank you for your participation in the Chapter 343, Hawai'i Revised Statutes environmental review process. A copy of your letter and this response will be included in the Draft EA being prepared for the project. In the meantime, should you have any questions or require additional information, please feel free to contact me at 983-1233.

Very truly yours,

Bryan K. Esmeralda, AICP
Senior Associate

BKE:yp
cc: Stewart Matsunaga, State of Hawai'i, Department of Hawaiian Home Lands
Darren Okimoto, DDC LLC
Darren Unemori, Warren S. Unemori Engineering, Inc.
K:\DATA\DDC\PuunaniHomestead\Applications\EC\EC Response Letters\DLNR CWRM.doc

SEP 2 7 2019

DAVID Y. IGE
GOVERNOR OF HAWAII

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

ROBERT K. MASUDA
FIRST DEPUTY

M. KALEO MANUEL
Deputy Director - Water

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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

STATE HISTORIC PRESERVATION DIVISION
KAKUHIHEWA BUILDING
601 KAMOKILA BLVD, STE 555
KAPOLEI, HAWAII 96707

September 24, 2019

IN REPLY REFER TO:
Log No. 2019.01856
Doc. No. 1909GC13
Archaeology

Russell Y. Tsuji, Land Administrator
Land Division
Department of Land and Natural Resources
P.O. Box 621
Honolulu, HI 96809
c/o Darlene.K.Nakamura@hawaii.gov

William J. Aila Jr., Chairman
Department of Hawaiian Homelands
P.O. Box 1879
Honolulu, HI 96805
William.J.Ailajr@hawaii.gov

Dear Sirs:

SUBJECT: **Chapter 6E-8 Historic Preservation Review –**
Early Consultation Request for the Proposed Department of Home Lands
Pu'unani Homestead Subdivision Project
Pū'ali Komohana Ahupua'a, Waikapu District, Island of Maui
TMK: (2) 3-5-002:002 por.

This letter provides the State Historic Preservation Division's (SHPD's) comments on the submittal titled *Early Consultation Request for the Proposed Department of Hawaiian Home Lands (DHHL) Pu'unani Homestead Subdivision.* The DHHL is proposing to develop a new residential subdivision on an ~48.3-acre portion of the 60.087-acre State-owned property. The SHPD received this submittal on August 21, 2019. The submittal includes a memorandum dated August 20, 2019 and project maps.

The submittal indicates that that the proposed project will include a maximum of 161 lots, with appurtenances. Additionally, the project will involve related improvements including internal roadways, sidewalks, drainage detention basin, roadway frontage improvements along Honoapi'ilani Highway. Roadway improvements along Honoapi'ilani Highway include turning lanes and a bike lane.

At this time, the SHPD has insufficient information regarding the potential for the proposed project to adversely affect significant archaeological historic properties.

SHPD requests the following:

1. Cover letter initiating historic preservation consultation pursuant to HRS Chapter 6E including items #4 through #7;
2. Permit Set;
3. HRS 6E Submittal Form available at: https://dlnr.hawaii.gov/shpd/files/2018/01/012918-SHPD-HRS-6E-Submittal-Intake-Form-2.pdf

4. Cultural Resources Report produced in support of permit review, per Hawaii Administrative Rules (HAR) §13-275-5(a);
5. DHHL's evaluation of significance per HAR §13-275-6(a). If a historic property is identified, an assessment of significance shall be submitted;
6. Pursuant to HAR §13-275-7(a), the DHHL's HRS 6E historic properties project effect determination of:

    - No historic properties affected **or**
    - Effect, with agreed upon mitigation commitments

Note: Effect means destruction or alteration of the historic property, detrimental alteration, of the properties' surrounding environment, detrimental visual, spatial, noise or atmospheric impingement, increasing access with the chances of resulting damage and neglect resulting in deterioration or destruction.

7. Request for the State Historic Preservation Division's (SHPD's) concurrence with the HRS 6E project effect determination;

SHPD looks forward to continued consultation with the Department of Hawaiian Home Lands and the DLNR Land Division.

Please contact Dr. Susan A. Lebo, Archaeology Branch Chief at (808) 692-8019 or at Susan.A.Lebo@hawaii.gov for any questions regarding this letter.

Aloha,
Alan Downer

Alan S. Downer, PhD
Administrator, State Historic Preservation Division
Deputy, State Historic Preservation Officer

cc: Bryan Esmeralda, Munekiyo Haraga bryan@munekiyoharaga.com
Stewart Matsunaga, DHHL, Stewart.t.matsunaga@hawaii.gov

MUNEKIYO HIRAGA
Planning. Project Management. Sustainable Solutions.

Michael T. Munekiyo
CHAIRMAN
Karlynn K. Fukuda
PRESIDENT
Mark Alexander Roy
VICE PRESIDENT
Tessa Munekiyo Ng
VICE PRESIDENT

May 18, 2020

Alan Downer, PhD, Administrator
State Historic Preservation Divsion
Department of Land and Natural Resources
State of Hawai'i
601 Kamokila Boulevard, Suite 555
Kapolei, Hawai'i 96707

SUBJECT: Response to Early Consultation Comments Regarding the 0Proposed Department of Hawaiian Home Lands Pu'unani Homestead Subdivision Project; TMK Nos. (2)3-5-002:002(por.) and (2)3-5-001:064(por.); Wailuku, Maui, Hawai'i (Log No.: 2019.01856, Doc. No.: 1909GC13, Archaeology)

Dear Dr. Downer:

On behalf of the State of Hawai'i, Department of Hawaiian Home Lands (DHHL), thank you for your letter dated September 24, 2019, providing comments on the proposed Pu'unani Homestead Subdivision project. We offer the following information in response to the comments received.

We note that the project's archaeological consultant, Scientific Consultant Services, Inc. (SCS), previously submitted to the State Historic Preservation Division (SHPD) by separate transmittal on April 5, 2019, a Chapter 6E, Hawai'i Revised Statutes (HRS) Submittal Form. This Chapter 6E, HRS Submittal Form noted prior SHPD correspondence (Log No. 2005.2398; Doc No. 0511MK22) that confirmed SHPD's previous acceptance of a 2005 Archaeological Inventory Survey (AIS) Report that was prepared for the area and SHPD's determination that no further archaeological mitigation is necessary. In addition, the proposed project involves the construction of a sewerline which will traverse a portion of Tax Map Key (2)3-1-5-001:064, which is the site of the proposed Wailuku Apartment Rental Housing Project by others. An Archaeological Assessment (AA) was prepared for this project and accepted by the SHPD. The AA recommended that archaeological monitoring be done for all ground altering activities. As such, we understand that an archaeological monitoring plan was prepared and submitted to the SHPD by others. DHHL will ensure that monitoring in the area of the proposed sewerline is undertaken in accordance with said monitoring plan.

Oahu: 735 Bishop Street, Suite 321 • Honolulu, Hawaii 96813 • Tel: 808.983.1233
Maui: 305 High Street, Suite 104 • Wailuku, Hawaii 96793 • Tel: 808.244.2015 • Fax: 808.244.8729
www.munekiyohiraga.com

It is further noted that the DHHL, by letter dated March 27, 2020, requested the SHPD's reconfirmation of the previous determinations made on the AIS and AA, and that no further work was required for Parcel 2, and monitoring would be required for the limited work within Parcel 64. The SHPD provided their concurrence via return signature on the March 27, 2020 letter.

Thank you for your participation in the Chapter 343, HRS environmental review process. A copy of your letter and this response will be included in the Draft Environmental Assessment being prepared for the project. In the meantime, should you have any questions or require additional information, please feel free to contact me at 983-1233.

Very truly yours,

Bryan K. Esmeralda, AICP
Senior Associate

BKE:tn
cc: Stewart Matsunaga, State of Hawai'i, Department of Hawaiian Home Lands
Darren Okimoto, DDC LLC
Mike Dega, Scientific Consultant Services, Inc.
K:\DATA\DDC\PuunaniHomestead\Applications\EC\EC Response Letters\SHPD.doc

SEP 1 3 2019

DAVID Y. IGE
GOVERNOR

JADE T. BUTAY
DIRECTOR

Deputy Directors
LYNN A.S. ARAKI-REGAN
DEREK J. CHOW
ROSS M. HIGASHI
EDWIN H. SNIFFEN

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

IN REPLY REFER TO:
DIR 0839
STP 8.2750

September 13, 2019

Mr. Bryan Esmeralda, AICP
Senior Associate
Munekiyo Hiraga
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Esmeralda:

Subject: Department of Hawaiian Home Lands (DHHL)
Puunani Homestead Subdivision Project
Early Consultation for Draft Environmental Assessment (DEA)
Waikapu, Maui, Hawaii
TMK: (2) 3-5-002:002 (por)

The State Department of Transportation (DOT) understands that DHHL is proposing to develop a new 161 lot residential subdivision in Waikapu. The project is located mauka of Honoapi'ilani Highway. Related improvements to be developed with the project include internal roadways and sidewalks, a drainage detention basin, utility connections, and roadway frontage improvements along Honoapi'ilani Highway. Proposed roadway improvements along Honoapi'ilani Highway include provision of turning lanes and a bike lane. DOT's comments on the subject project are as follows:

Highways Division

1. A Traffic Impact Analysis Report (TIAR) is to be included in the DEA and should be prepared by a Professional Engineering with State certification and traffic expertise.

   a. The study should include intersections:

      i. Honoapi'ilani Highway and Waiko Road.

      ii. Honoapi'ilani Highway and Kuikahi Drive.

   b. The TIAR should include any phasing plan and the transportation improvements of each phase.

2. According to the site plan (Figure 3), it appears that two stub-outs are planned at the rear property boundary. A discussion should be provided whether the stub-outs are for the purpose of connecting to a future expansion of the development.

Airports Division

1. The closest point of the proposed project area is approximately three miles from Kahului Airport (OGG). All projects within five miles from Hawaii State airports are advised to comply with the Technical Assistance Memorandum (TAM) for guidance with development and activities that may require further review and permits. The TAM can be viewed at this link: http://files.hawaii.gov/dbedt/op/docs/TAM-FAA-DOT-Airports_08-01-2016.pdf.

2. The developer and occupants of the residential subdivision should be aware of potential single event noise from aircraft operating to and from OGG.

3. In accordance with Federal Aviation Administration (FAA) Advisory Circular 150/5200-33B - *Hazardous Wildlife Attractants on or near Airports,* the proposed drainage detention basin should be designed, engineered, constructed, and maintained for a maximum 48-hour detention period after the design storm and remain completely dry between storms to minimize hazardous wildlife attractants. If the project results in a wildlife attractant, these effects shall be immediately mitigated by the developer upon notification by DOT and/or FAA.

If there are any questions, please contact Mr. Blayne Nikaido of the DOT Statewide Transportation Planning Office at (808) 831-7979 or via email at blayne.h.nikaido@hawaii.gov.

Sincerely,

JADE T. BUTAY
Director of Transportation

MUNEKIYO HIRAGA
Planning. Project Management. Sustainable Solutions.

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CHAIRMAN
Karlynn K. Fukuda
PRESIDENT
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VICE PRESIDENT
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VICE PRESIDENT

May 18, 2020

Jade Butay, Director
Department of Transportation
State of Hawai'i
869 Punchbowl Street
Honolulu, Hawai'i 96813-5097

SUBJECT: Response to Early Consultation Comments Regarding the Proposed Department of Hawaiian Home Lands Pu'unani Homestead Subdivision Project; TMK Nos. (2)3-5-002:002(por.) and (2)3-5-001:064(por.); Wailuku, Maui, Hawai'i (DIR 0839, STP 8.2750)

Dear Mr. Butay:

On behalf of the State of Hawai'i, Department of Hawaiian Home Lands (DHHL), thank you for your letter dated September 13, 2019, providing comments on the proposed Pu'unani Homestead Subdivision project. We offer the following information in response to the comments received.

Highways Division

1. A Traffic Impact Analysis Report (TIAR) is being conducted for the proposed project by the project's traffic engineer. The results of the TIAR will be included in the Draft Environmental Assessment (EA) being prepared. Your comment regarding suggested study intersections was provided to the project's traffic engineer for inclusion in the TIAR. In addition, a phasing plan for the 137 turn-key homes is not anticipated. The 24 vacant improved lots will be lessee built and subject to each lessee timeline. As such, the study will include analyses of the Honoapiilani Highway and Waiko Road intersection and the Honoapiilani Highway and Kuikahi Drive intersection.

2. We note that the stub-outs illustrated on the mauka portion of the project site on Figure 3 (Conceptual Site Plan) of the early consultation letter are to provide access for the adjacent mauka property through the project site and to Honoapi'ilani Highway, as required by the County of Maui. This adjacent mauka property is not part of the project and will be under separate ownership. We

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note, however, that moving forward, the site plan will reflect only one (1) access (or stub-out) to the adjacent mauka property. At this time, no future expansion of the project is planned.

Airports Division

1. We acknowledge your comment that the closest point of the proposed project is approximately three (3) miles from Kahului Airport (OGG), and that all projects within five (5) miles of Hawai'i airports are advised to comply with the Technical Assistance Memorandum (TAM) for guidance with development and activities that may require further review and permits. The TAM will be reviewed by DHHL and its design team for applicability to the proposed project.

2. We acknowledge your comment and note that the DHHL is aware of potential single event noise from aircrafts en route to and from OGG.

3. We acknowledge your comment that the proposed drainage detention basin should be designed, engineered, constructed, and maintained for a maximum 48-hour detention period after the design storm and remain dry between storms to minimize wildlife attractants pursuant to Federal Aviation Administration Advisory Circular 150/5200-33B – Hazardous Wildlife Attractants on or near Airports. The Advisory Circular will be reviewed for applicability to the proposed project.

Thank you for your participation in the Chapter 343, Hawai'i Revised Statutes environmental review process. A copy of your letter and this response will be included in the Draft EA being prepared for the project. In the meantime, should you have any questions or require additional information, please feel free to contact me at 983-1233.

Very truly yours,

Bryan K. Esmeralda, AICP
Senior Associate

BKE:tn
cc: Stewart Matsunaga, State of Hawai'i, Department of Hawaiian Home Lands
Darren Okimoto, DDC LLC
Tyler Fujiwara, Austin, Tsutsumi & Associates, Inc.
Darren Unemori, Warren S. Unemori Engineering, Inc.
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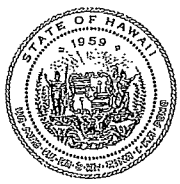
SEP 0 2 2019

DAVID Y. IGE
Governor

MIKE MCCARTNEY
Director



DANIEL E. ORODENKER
Executive Officer

LAND USE COMMISSION
Department of Business, Economic Development & Tourism
State of Hawai`i

August 28, 2019

Mr. Bryan K. Esmeralda, Senior Associate
Munekiyo Hiraga
305 High Street, Suite 104
Wailuku, Hawai`i 96793

Dear Mr. Esmeralda:

Subject: Early Consultation Request for the Proposed Department of Hawaiian Home Lands Pu`unani Homestead Subdivision Project
Waikapū, Maui, Hawai`i
TMK: (2) 3-5-002: 002 (por.)

We are in receipt of your letter dated August 12, 2019, requesting comments on the subject project.

Based on your description of the project, we understand that it will consist of a residential subdivision on approximately 48.3 acres of land. A total of 161 lots, consisting of approximately 137 turn-key single-family residences and 24 vacant single-family lots, are proposed. In addition to the planned residences and lots, the project will include internal roadways and sidewalks, a drainage detention basin, and utility connections. We further understand that the project will require roadway frontage improvments along the state-owned Honoapi`ilani Highway and will be developed by the Department of Hawaiian Home Lands (DHHL) on state-owned lands with state and private funds, all of which trigger the environmental review process under Hawai`i Revised Statutes (HRS) chapter 343.

As correctly indicated in your letter, the project site is designated within the State Land Use Agricultural District. As you may know, the site was included as part of a Petition for District Boundary Amendment filed with the Land Use Commission (LUC) under Docket No. A06-766/Towne Development of Hawaii, Inc.; Endurance Investors, LLC; and Association of II Wai Hui LP. Petitioners had requested the reclassification of approximately 210 acres of land from the State Land Use

235 SOUTH BERETANIA STREET ◉ SUITE 406 ◉ HONOLULU, HAWAI`I 96813 ◉ TEL: (808) 587-3822 ◉ FAX: (808) 587-3827
EMAIL: dbedt.luc.web@hawaii.gov
MAILING ADDRESS: P. O. Box 2359, Honolulu, Hawai`i 96804

Agricultural District to the State Land Use Rural and Urban Districts for a residential development of 214 half-acre rural lots, 6 one-acre rural lots, approximately 90 single-family residential lots of 4,000 square feet, approximately 240 multi-family units, and a 14.6-acre park that would serve as a retention basin for the development.[1] In January 2017, the LUC acknowledged Petitioners' request to withdraw the Petition as they would no longer be pursuing the project and deactivated the Petition. The Environmental Impact Statement Preparation Notice for the project was also withdrawn from the HRS chapter 343 environmental review process.

We request that the Draft Environmental Assessment (DEA) include the above history of the site in its description of the affected environment. We further request clarification as to whether the DHHL has any development plans for the remaining portion of TMK: (2) 3-5-002: 002.

Finally, we request that a copy of the DEA be forwarded to our office for review as soon as it becomes available.

We have no further comments to offer at this time. Thank you for the opportunity to comment during the early consultation period.

Should you have any questions or require further clarification, please call our office at 587-3822.

Sincerely,

Daniel E. Orodenker
Executive Officer

[1] Petitioners subsequently revised the plans for the project to include 147 residential lots, a village mixed-use district consisting of approximately 450 multi-family units and approximately 25,000 square feet of commercial retail/office space, and an approximately 15-acre park/stormwater retention area.

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PRESIDENT
Mark Alexander Roy
VICE PRESIDENT
Tessa Munekiyo Ng
VICE PRESIDENT

May 18, 2020

Daniel Orodenker, Executive Officer
Land Use Commission
State of Hawai'i
P.O. Box 2359
Honolulu, Hawai'i 96804

SUBJECT: Response to Early Consultation Comments Regarding the Proposed Department of Hawaiian Home Lands Pu'unani Homestead Subdivision Project; TMK Nos. (2)3-5-002:002(por.) and (2)3-5-001:064(por.); Wailuku, Maui, Hawai'i

Dear Mr. Orodenker:

On behalf of the State of Hawai'i, Department of Hawaiian Home Lands (DHHL), thank you for your letter dated August 28, 2019, providing comments on the proposed Pu'unani Homestead Subdivision project. We offer the following information in response to the comments received.

We acknowledge your comment and note that the history of the subject property and previous development proposal by others will be included in the Draft Environmental Assessment (EA), as requested. In addition, we note that the DHHL has no development plans for the remainder of the subject property, which will be under separate ownership.

As requested, the Draft EA will be provided to your office for review and comment when available.

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www.munekiyohiraga.com

Thank you for your participation in the Chapter 343, Hawai'i Revised Statutes environmental review process. A copy of your letter and this response will be included in the Draft EA being prepared for the project. In the meantime, should you have any questions or require additional information, please feel free to contact me at 983-1233.

Very truly yours,

Bryan K. Esmeralda, AICP
Senior Associate

BKE:yp
cc: Stewart Matsunaga, State of Hawai'i, Department of Hawaiian Home Lands
Darren Okimoto, DDC LLC
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AUG 2 6 2019

MICHAEL P. VICTORINO
Mayor

ERIC A. NAKAGAWA, P.E.
Acting Director

SHAYNE R. AGAWA, P.E.
Deputy Director

MICHAEL P. RATTE
Solid Waste Division

SCOTT R. ROLLINS, P.E.
Wastewater Reclamation Division

TAMARA FARNSWORTH
Environmental Protection &
Sustainability Division

COUNTY OF MAUI
DEPARTMENT OF
ENVIRONMENTAL MANAGEMENT
2050 MAIN STREET, SUITE 2B
WAILUKU, MAUI, HAWAII 96793

August 15, 2019

Munekiyo Hiraga
Attention: Bryan K. Esmeralda, Senior Associate
305 High Street, Suite 104
Wailuku, Hawaii 96793

SUBJECT: PU'UNANI HOMESTEAD SUBDIVISION, DEPARTMENT OF HAWAIIAN HOMELANDS TMK (2) 3-5-002:002 (POR.), WAIKAPU, MAUI, HAWAII

We reviewed the subject application and have the following comments:

1. Solid Waste Division comments:

   a. None.

2. Wastewater Reclamation Division (WWRD) comments:

   a. Although wastewater system capacity is currently available as of the date of this letter, the developer should be informed that wastewater system capacity cannot be ensured until the issuance of the building permit.
   b. Developer is required to fund any necessary off-site improvements to collection system and wastewater pump stations.
   c. Show or list minimum slope of new sewer laterals.
   d. Plans should show the installation of a single service lateral and advanced riser for each lot. Any request for waiver of this requirement shall be made submitted in writing for approval by WWRD.
   e. Indicate on the plans the ownership of each easement (in favor of which party). Note: County will not accept sewer easements that traverse private property.
   f. Non-contact cooling water and condensate should not drain to the wastewater system.

g. Connection to any County owned wastewater system shall be within street right of way and not easements.
h. County will not accept any sewer easements for the ownership/maintenance of sewer infrastructure.
i. Connection cannot occur until the Lower Main Sewer Upgrade project is completed and operating.
j. Developer/builder will be responsible for any current and retroactive assessment fees as a condition of connecting to the County wastewater system.
k. Developer may be required to upgrade sewer trunk line near Wailuku Wastewater Pump Station to expand capacity prior to connection.

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

Sincerely,

SHAYNE R. AGAWA
Deputy Director of Environmental Management

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CHAIRMAN
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VICE PRESIDENT
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VICE PRESIDENT

May 18, 2020

Eric Nakagawa, P.E., Director
Department of Environmental Management
County of Maui
2050 Main Street, Suite 2B
Wailuku, Hawai'i 96793

SUBJECT: Response to Early Consultation Comments Regarding the Proposed Department of Hawaiian Home Lands Pu'unani Homestead Subdivision Project; TMK Nos. (2)3-5-002:002(por.) and (2)3-5-001:064(por.); Wailuku, Maui, Hawai'i

Dear Mr. Nakagawa:

On behalf of the State of Hawai'i, Department of Hawaiian Home Lands (DHHL), thank you for your letter dated August 15, 2019, providing comments on the proposed Pu'unani Homestead Subdivision project. We offer the following information in response to the comments received.

Solid Waste Division

We acknowledge that the Solid Waste Division has no comments at this time.

Wastewater Reclamation Division

a. We acknowledge the comment, and understand that wastewater system capacity for the proposed project cannot be confirmed until the issuance of building permits.

b. We acknowledge the comment and DHHL will work with the Department regarding necessary offsite improvements related to the wastewater system.

c. The Draft Environmental Assessment (EA) being prepared for the proposed project will include a Preliminary Engineering Report (PER) discussing the infrastructural needs and proposed systems to service the project. At the time of building permit, as requested, plans will reflect the minimum slope of proposed new sewer laterals.

d. As requested, at the time of building permit, the plans submitted will show the installation of a single service lateral and advanced riser for each lot. We acknowledge your comment that a request for waiver of this requirement must be submitted in writing to the Wastewater Reclamation Division, should it be desired.

e. As requested, the building permit plans will indicate the ownership of each easement. Please see response g./h. regarding sewer easements.

f. We acknowledge your comment that non-contact cooling water and condensate should not drain to the wastewater system.

g./h. We acknowledge your comment that connections to the County wastewater system should be made in rights-of-way, and not within easements. DHHL will coordinate with the Wastewater Reclamation Division (WWRD) regarding sewer easements and ownership or maintenance of wastewater infrastructure.

i. We acknowledge your comment and understand that connection to the County wastewater system cannot occur until the proposed Lower Main Sewer Upgrade project (by others) is complete and operating.

j. We acknowledge your comment that DHHL and/or builder will be responsible for any current and retroactive assessment fees as a condition of connecting to the County wastewater system. Coordination will be undertaken with the WWRD by the project engineer as the project moves forward to determine applicable requirements.

k. We acknowledge your comment that DHHL may be required to upgrade the wastewater trunk line near the Wailuku Wastewater Pump Station to expand capacity prior to the proposed project connecting to the system. As stated previously, coordination will be undertaken by the project engineer with WWRD as the project moves forward to determine applicable requirements.

Thank you for your participation in the Chapter 343, Hawai'i Revised Statutes environmental review process. A copy of your letter and this response will be included in the Draft EA being prepared for the project. In the meantime, should you have any questions or require additional information, please feel free to contact me at (808) 983-1233.

Very truly yours,

Bryan K. Esmeralda, AICP
Senior Associate

BKE:yp
cc: Stewart Matsunaga, State of Hawai'i, Department of Hawaiian Home Lands
Darren Okimoto, DDC LLC
Darren Unemori, Warren S. Unemori Engineering, Inc.
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SEP 1 3 2019

MICHAEL P. VICTORINO
Mayor

DAVID C. THYNE
Fire Chief

BRADFORD K. VENTURA
Deputy Fire Chief

DEPARTMENT OF FIRE & PUBLIC SAFETY
COUNTY OF MAUI
200 DAIRY ROAD
KAHULUI, HI 96732

September 13, 2019

Munekiyo Hiraga
Attn: Bryan K. Esmeralda, Senior Associate
305 High St. Suite 104
Wailuku, HI 96793

SUBJECT: Pu'unani Homestead Subdivision – DHHL Proposed
Waikapu, HI
TMK: (2) 3-5-002: 002 (por.)

Dear Bryan,

Thank you for allowing our office to provide comment on the subject proposed project. As per your request, comments are provided below:

- Proposed water supply for fire protection shall be at a minimum of 1000 gallons per minute. Hydrant spacing shall be at 350 feet maximum.
- Where the proposed project abuts undeveloped lands, fire prevention measures shall be incorporated into the proposed project to address the concern of wildland fires. A minimum of 30 feet of defensible space shall be provided between proposed structures and the undeveloped lands. Our office can assist with this matter.
- Our office also reserves the right to comment on the proposed project during the subdivision process and the building permit review process when detailed plans for this project are routed to our office for review. At that time, fire department access, water supply for fire protection, and fire and life safety requirements will be addressed.

If there are any questions or comments, please feel free to contact me at (808) 876-4693 or by email at paul.haake@mauicounty.gov.

Sincerely,

Paul Haake

Paul Haake

Captain - Fire Prevention Bureau

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VICE PRESIDENT
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VICE PRESIDENT

May 18, 2020

Paul Haake, Captain
Fire Prevention Bureau
Department of Fire & Public Safety
County of Maui
313 Manea Place
Wailuku, Hawai'i 96793

SUBJECT: Response to Early Consultation Comments Regarding the Proposed Department of Hawaiian Home Lands Pu'unani Homestead Subdivision Project; TMK Nos. (2)3-5-002:002(por.) and (2)3-5-001:064(por.); Wailuku, Maui, Hawai'i

Dear Captain Haake:

On behalf of the State of Hawai'i, Department of Hawaiian Home Lands (DHHL), thank you for your letter dated September 13, 2019, providing comments on the proposed Pu'unani Homestead Subdivision project. We offer the following information in response to the comments received.

- We acknowledge your comment regarding water demand for fire protection. Your comment has been forwarded to the project's civil engineer for review and incorporation in the water system design for the proposed project.

- We acknowledge your comment regarding buffers for fire protection where the proposed project abuts undeveloped lands. Coordination on fire prevention measures will be undertaken with the Fire Prevention Bureau by the project engineer as the project moves forward.

- We acknowledge your comment that the Fire Prevention Bureau reserves the right to comment on the proposed project during the subdivision and building permit processes, when Fire Department access, water supply for fire protection, and fire and life safety requirements will be addressed.

Thank you for your participation in the Chapter 343, Hawai'i Revised Statutes environmental review process. A copy of your letter and this response will be included in

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the Draft Environmental Assessment being prepared for the project. In the meantime, should you have any questions or require additional information, please feel free to contact me at (808) 983-1233.

Very truly yours,

Bryan K. Esmeralda, AICP
Senior Associate

BKE:tn
cc: Stewart Matsunaga, State of Hawai'i, Department of Hawaiian Home Lands
Darren Okimoto, DDC LLC
Darren Unemori, Warren S. Unemori Engineering, Inc.
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AUG 2 6 2019

MICHAEL P. VICTORINO
Mayor

LORI TSUHAKO
Director

LINDA R. MUNSELL
Deputy Director

DEPARTMENT OF HOUSING
& HUMAN CONCERNS
COUNTY OF MAUI
2200 MAIN STREET, SUITE 546
WAILUKU, MAUI, HAWAI'I 96793
PHONE: (808) 270-7805

August 21, 2019

Mr. Esmeralda, Senior Associate
Munekiyo & Hiraga, Inc.
305 High Street
Wailuku, HI 96793

Dear Mr. Esmeralda:

Subject: Early Consultation Request for Proposed Department of Hawaiian Home Lands Pu'unani Homestead Subdivision Project, Waikapu, Maui, Hawaii.
TMK: (2)3-5-002:002(por.)

The Department has reviewed the Draft Environmental Request for the above subject project. Based on our review, we have determined that the project is subject to Chapter 2.96, Maui County Code, and must comply with all applicable regulations.

Please feel free to contact me at (808) 270-7355 if you have any questions.

Sincerely,

BUDDY ALMEIDA
Housing Administrator

cc: Director of Housing and Human Concerns

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VICE PRESIDENT

May 18, 2020

Buddy Almeida, Housing Administrator
Department of Housing and Human Concerns
County of Maui
2200 Main Street, Suite 546
Wailuku, Hawai'i 96793

SUBJECT: Response to Early Consultation Comments Regarding the Proposed Department of Hawaiian Home Lands Pu'unani Homestead Subdivision Project; TMK Nos. (2)3-5-002:002(por.) and (2)3-5-001:064(por.); Wailuku, Maui, Hawai'i

Dear Mr. Almeida:

On behalf of the State of Hawai'i, Department of Hawaiian Home Lands (DHHL), thank you for your letter dated August 21, 2019 providing comments on the proposed Pu'unani Homestead Subdivision project. We offer the following information in response to the comments received.

We acknowledge your determination that the project is subject to the workforce housing requirements of Chapter 2.96, Maui County Code (MCC). We note, however, that the Hawaiian Homes Commission Act vests onto DHHL the authority to use its lands at its discretion. In this regard, although DHHL intends to exempt the project from the County workforce housing requirements of Chapter 2.96 from MCC, DHHL will develop and deliver affordable homesteads to their beneficiares. As appropriate, further coordination may be undertaken with your office by DHHL.

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www.munekiyohiraga.com

Thank you for your participation in the Chapter 343, Hawai'i Revised Statutes environmental review process. A copy of your letter and this response will be included in the Draft Environmental Assessment being prepared for the project. In the meantime, should you have any questions or require additional information, please feel free to contact me at (808) 983-1233.

Very truly yours,

Bryan K. Esmeralda, AICP
Senior Associate

BKE:yp
cc: Stewart Matsunaga, State of Hawai'i, Department of Hawaiian Home Lands
Darren Okimoto, DDC LLC
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MICHAEL P. VICTORINO
Mayor

KARLA H. PETERS
Director

JOHN L. BUCK III
Deputy Director

AUG 28 2019

DEPARTMENT OF PARKS AND RECREATION

700 Hali'a Nakoa Street, Unit 2, Wailuku, Hawaii 96793
Main Line (808) 270-7230 / Facsimile (808) 270-7942

August 21, 2019

Bryan Esmeralda, Senior Associate
Munekiyo Hiraga
305 High Street, Suite 104
Wailuku, HI 96793

Dear Mr. Esmeralda:

SUBJECT: Early Consultation Request for the Proposed Department of Hawaiian Home Lands Pu'unani Homestead Subdivision Project; TMK: (2) 3-5-002:002 (por.); Waikapu, Maui, Hawaii

Thank you for the opportunity to review and comment on the subject project. The Department of Parks & Recreation has no comment at this time, and is in support of the project.

Please feel free to contact me or Robert Halvorson, Chief of Planning and Development, at robert.halvorson@co.maui.hi.us or (808) 270-7387, should you have any questions.

Sincerely,

KARLA H. PETERS
Director of Parks & Recreation

c: Robert Halvorson, Chief of Planning and Development

KHP:RH:csa

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Michael T. Munekiyo
CHAIRMAN
Karlynn K. Fukuda
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VICE PRESIDENT
Tessa Munekiyo Ng
VICE PRESIDENT

May 18, 2020

Karla Peters, Director
Department of Parks and Recreation
County of Maui
700 Hali'a Nakoa Street, Unit 2
Wailuku, Hawai'i 96793

SUBJECT: Response to Early Consultation Comments Regarding the Proposed Department of Hawaiian Home Lands Pu'unani Homestead Subdivision Project; TMK Nos. (2)3-5-002:002(por.) and (2)3-5-001:064(por.); Wailuku, Maui, Hawai'i

Dear Ms. Peters:

On behalf of the State of Hawai'i, Department of Hawaiian Home Lands (DHHL), thank you for your letter dated August 21, 2019, regarding the proposed Pu'unani Homestead Subdivision project. We acknowledge that the Department of Parks and Recreation has no comments to offer at this time, and that the Department is in support of the project.

Thank you for your participation in the Chapter 343, Hawai'i Revised Statutes environmental review process. A copy of your letter and this response will be included in the Draft Environmental Assessment being prepared for the project. In the meantime, should you have any questions or require additional information, please feel free to contact me at (808) 983-1233.

Very truly yours,

Bryan K. Esmeralda, AICP
Senior Associate

BKE:yp
cc: Stewart Matsunaga, State of Hawai'i, Department of Hawaiian Home Lands
Darren Okimoto, DDC LLC
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Oahu: 735 Bishop Street, Suite 321 • Honolulu, Hawaii 96813 • Tel: 808.983.1233
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www.munekiyohiraga.com

MICHAEL P. VICTORINO
Mayor

MICHELE CHOUTEAU MCLEAN, AICP
Director

JORDAN E. HART
Deputy Director

SEP 12 2019

DEPARTMENT OF PLANNING
COUNTY OF MAUI
ONE MAIN PLAZA
2200 MAIN STREET, SUITE 315
WAILUKU, MAUI, HAWAII 96793

September 9, 2019

Mr. Bryan Esmeralda
Senior Associate
Munekiyo Hiraga
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Esmeralda:

SUBJECT: REQUEST FOR COMMENT ON THE PROPOSED DEPARTMENT OF HAWAIIAN HOMELANDS, PU'UNANI HOMESTEAD SUBDIVISION PROJECT LOCATED IN WAIKAPU, ISLAND OF MAUI, HAWAII; TMK: (2) 3-5-002:002 (POR.) (RFC 2019/0078)

The Department of Planning (Department) is in receipt of the proposed Department of Hawaiian Homelands (DHHL) Pu'unani Homestead Subdivision Project (Project) Request for Comment (RFC) in preparation of the Draft Environmental Assessment (EA).

The Department understands the project will be comprised of a maximum of 161 lots with approximately 137 turn-key single-family residences and 24 vacant single-family lots on approximately 48.3 acres mauka of Honoapiilani Road in Waikapu. The site plan and lot counts will be finalized following detailed site engineering and design work and upon the completion of site acquisition by DHHL.

The Department is aware that the Hawaiian Homes Commission Act (HHCA) vests onto DHHL the authority to use its lands at its discretion when that use is for homesteading purposes and, as indicated in your proposal, DHHL has the authority to proceed with the project without the lands being fully entitled for residential use.

The Department therefore offers for your consideration the following comments:

1. The Maui Island Plan (MIP), Chapter 8 Directed Growth Plan, includes the identification and development story for the Pu'unani Planned Growth Area (See **Exhibit 1** identified as page 8-21 of the MIP for the Planned Growth Area rationale for Pu'unani). This area, of which the Pu'unani Homestead Subdivision is a portion, is intended to be a mixed-use project bounded by a 200-foot greenbelt buffer along its eastern edge adjacent to

Honoapiilani Highway. (See **Exhibit 2** for a map of the Pu'unani Planned Growth Area.) A critical component of this area is the 200-foot wide greenbelt, defined in detail in **Exhibit 3** and shown in the map in **Exhibit 4** identified as Lahaina-Central WC-1 map. The greenbelt along Honoapiilani Highway is intended to enhance views of the West Maui Mountains when traveling along Honoapiilani Highway and to reduce the visual impact of mauka development. Additionally, the MIP Pu'unani Plan includes a 500-foot wide preservation greenbelt along the area's southern boundary which is the Waiolani Mauka community. The preservation greenbelt extends from Honoapiilani Highway to the Old Waikapu Road shown in the map in **Exhibit 4**. This 500-foot wide greenbelt separates the Waiolani Mauka community from Wailuku providing a visual relief and a lower residential density pattern than surrounding communities. There also is consideration that such greenbelts can enhance fire protection by serving as fire breaks. It appears that the proposed Project is planned to cover portions of both of these greenbelts.

2. The subject 48.3 acre portion of the parcel includes approximately:
   a. 14.7 acres within the urban growth boundary;
   b. 15.8 acres within the rural growth boundary;
   c. 9.9 acres of greenbelt (protected area), and;
   d. 7.9 acres of preservation (protected area).

   The density for the urban area of the MIP Pu'unani Plan is envisioned to include multi-family units, commercial and public/quasi-public uses with a residential density of 9-12 dwelling units/acre. See **Exhibit 5** for the Waikapu/Kahului C3 Growth Boundary Map provided in the MIP.

3. The Wailuku-Kahului Community Plan supports the provision of sufficient land areas for new residential growth which relax constraints on the housing market and afford variety in type, price, and location of units: Item 2, Housing Objectives and Policies.

4. While the HHCA vests the DHHL with the authority to use its lands at its discretion for homesteading purposes, the MIP is a blueprint that provides direction for future growth, the economy, and social and environmental decisions on the Island of Maui. It incorporated input from residents, including native Hawaiians, from across the Island through a multitude of community, planning commission and county council meetings held over several years and the Department hopes the MIP is considered when plotting out the Pu'unani Homestead Subdivision Project. The Department recognizes that the Project is providing much needed housing but the current proposed development does not conform to the MIP's designated

growth densities for the area nor does it incorporate a buffer between Wailuku and Waiolani Mauka/Waikapu. Furthermore, the MIP has specific language that calls for the separation of development between Wailuku and Waikapu: *"Policy 7.3.1.b Maintain a distinct separation between communities, such as but not limited to, Wailuku and Waikapu, ... to protect the character and identity of Maui's communities."* The Department asks that there be consideration in the Project to consider the voice of the Maui Island community and provide a distinctive greenbelt preservation buffer between the Project and the Waiolani Subdivision and the greenway along Honoapiilani Highway.

5. The Department asks that the Draft EA addresses alternatives that more closely follow the goals and objectives of the MIP for this Pu'unani Growth Area and that consideration be given to the incorporation of the proposed greenbelts into the Project.

6. Finally, the Department would like to make comments on the Draft EA when completed and requests a copy of the Draft EA when available.

Thank you for the opportunity to comment on the preparation of the Draft EA for the Pu'unani Homestead Subdivision Project by DHHL. Should you require further clarification, please contact Staff Planner Kurt Wollenhaupt by email at kurt.wollenhaupt@mauicounty.gov or by phone at (808) 270-1789.

Sincerely,

MICHELE MCLEAN, AICP
Planning Director

Attachments
xc: Clayton I. Yoshida, AICP, Planning Program Administrator (PDF)
Pam Eaton, Planning Program Administrator (PDF)
Danny A. Dias, Acting Planning Program Administrator (PDF)
Kathleen Aoki, Administrative Planning Officer (PDF)
Carolyn Cortez, Staff Planner (PDF)
Ann Cua, Current Planning Supervisor (PDF)
Kurt F. Wollenhaupt, Staff Planner (PDF)
Paul Critchlow, Staff Planner (PDF)
Bryan Esmeralda, Munekiyo Hiraga (PDF)
Project File
MCM:KFW:lak
K:\WP_DOCS\Planning\RFC\2019\0078_PuunaniHomestead\FOR AX\CommentLetter.doc

Pu`unani

The Pu`unani planned growth area is intended to be a mixed-use project located at the southwest edge of Wailuku. This urban and rural expansion is located south of Kehalani below Wailuku Heights and is bounded to the east by Honoapi`ilani Highway. The growth area will be buffered by a 200-foot greenbelt along its eastern edge and adjacent to Honoapi`ilani Highway. Additionally, a 500-foot greenbelt along the area's southern extent shall provide a separation between the Waiolani community and Wailuku. The greenbelt, greenway, and rural lands are intended to provide separation between Wailuku and Waikapu, and to provide a visual relief by creating a lower-density residential pattern than surrounding communities. This planned growth area will mark the southern boundary of Wailuku.

Planned Growth Area Rationale

Pu`unani is a residential expansion of the existing southern boundary of Wailuku Town. It is intended that infrastructure development be coordinated with neighboring developments including Kehalani, Wai`ale and Waikapū Tropical Plantation Town. The urban portion of the growth area will be comprised primarily of approximately 450 multifamily units and commercial and public/quasi-public uses. The rural component will be comprised of low-density residential lots that will provide for a transitional zone from the high-density, multifamily component of the growth area as well as Wailuku to the north. The precise rural residential densities and unit count for the rural component of the project will be determined at the time of zoning.

The area is currently zoned for agricultural use, and water and wastewater infrastructure, as well as transit access are in place. The Pu`unani planned growth area is depicted on Figure 8-1. Table 8-7 provides planning guidelines for this planned growth area:

Table 8 - 7: Pu`unani Planned Growth Area

Background Information:			
Project Name:	Pu`unani	Directed Growth Map #:	C3
Type of Growth:	Urban & Rural Expansion	Gross Site Acreage:	209 Acres
Planning Guidelines			
Dwelling Unit Count:	Approximately Urban - 450 Units Rural – To be determined[8]	Residential Product Mix:	MF/VMX - 64 Acres Rural - 143 Acres
Net Residential Density:	Urban – 9-12 du/acre Rural - To be determined	Parks and Open Space%[9]:	≥ 36%
		Commercial:	Neighborhood Serving

[8] Additional units may be permitted through a transfer of development rights program or to provide affordable housing in excess of what is required by law. Unit counts may be further defined through the entitlement process in response to infrastructure and environmental constraints.

[9] The distinct boundaries of the parks and open space, specific location of the recreational uses, and the precise amenities will be further defined during the Wailuku – Kahului Community Plan Update and the project review and approval process.

EXHIBIT 7

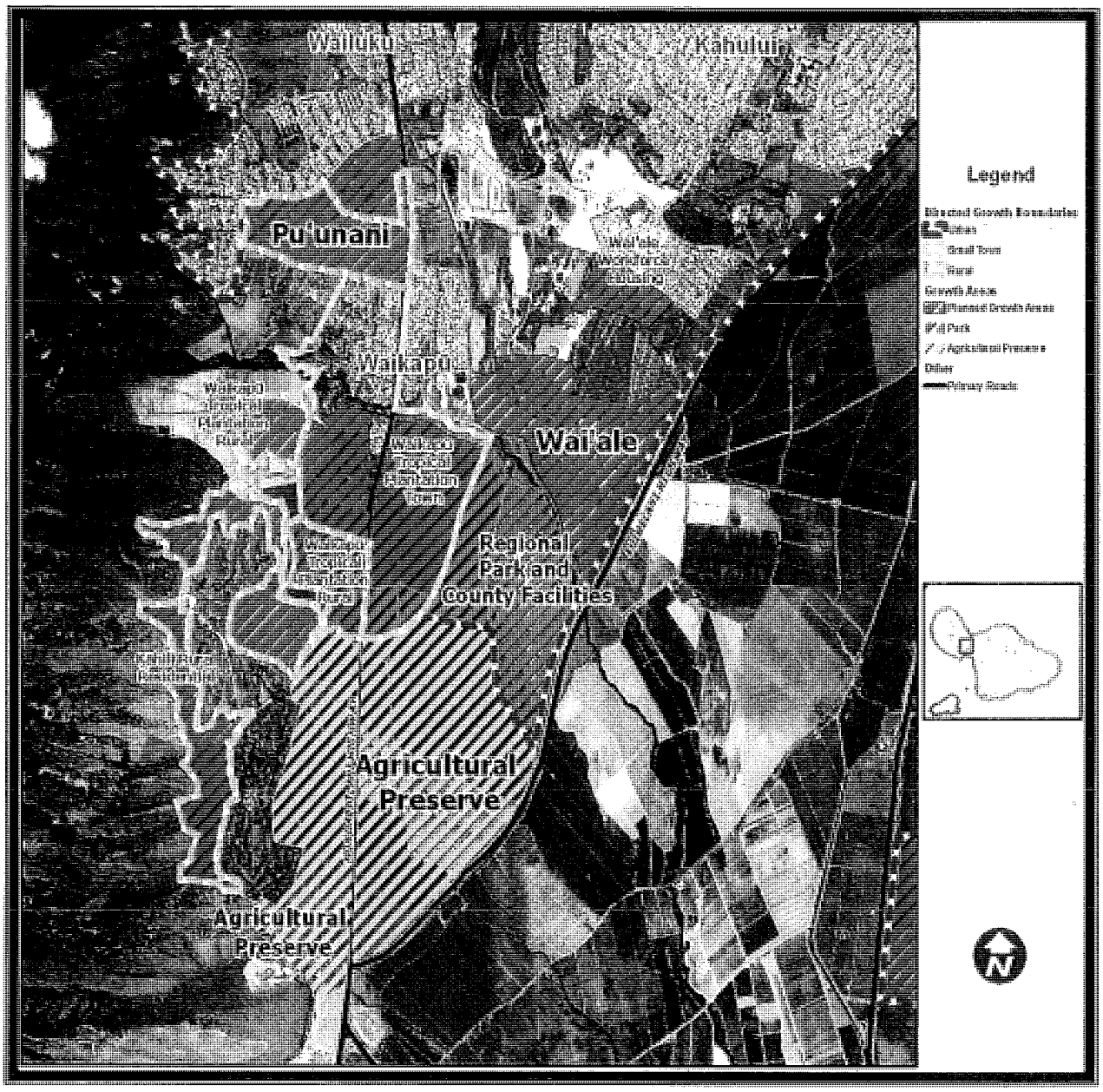


Figure 8-1: Wailuku-Kahului Planned Growth Areas.

Kahului Infill and Redevelopment and Revitalization of Wailuku Town

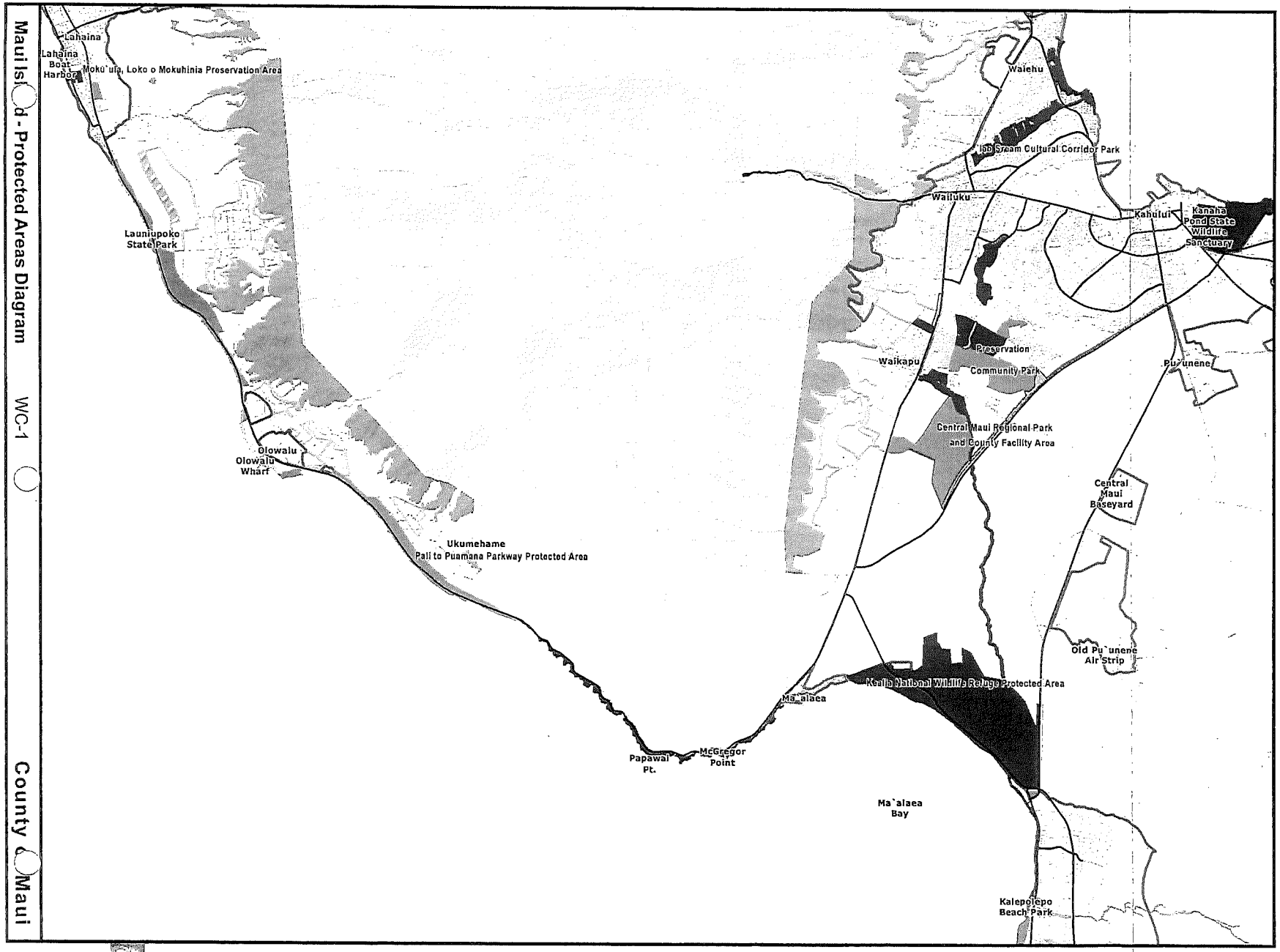
The plan proposes infill and redevelopment within Kahului. Much of Kahului is significantly underutilized and redevelopment will strengthen the economy, provide diverse housing opportunities within close proximity to jobs and services, and protect agricultural lands and the character of Maui's rural communities by making higher and better use of our existing urban areas. Redevelopment will also strengthen Kahului's identity, promote urban beautification and livability, and breathe vitality and life into the area.

The County should work with area landowners and the community to prepare the following studies: 1) Risk and Vulnerability Assessments (RVA); 2) specific area plans; and 3) supporting model development

EXHIBIT 2

Table 8 - 2: Growth Boundaries and Protected Area Types

GROWTH BOUNDARIES (See Maps C-1 to C-5, S-1 to S-3, U-1 to U-4, N-1 to N-2, W-1 to W-4, E-1 to E-2)		CHARACTERISTICS	PURPOSE	IMPLEMENTATION STRATEGY
GROWTH BOUNDARY TYPES	Urban	Urban areas contain a greater variety of land use types, including various housing types and densities, commercial, retail, industrial uses, and resort destination areas. Infrastructure is more complete and reflects the need to serve higher-density land uses.	Ensure that future development occurs in an orderly fashion; allows in-fill and revitalization opportunities and encourages "new urbanism" and "neo-traditional design" techniques.	Protect separation between communities through the use of Urban Growth Boundaries. Require community-based design processes and require design guidelines for future major development. Identify and promote redevelopment and in-fill opportunities. Encourage a mix of housing types and higher-density residential development to encourage resident housing opportunities.
	Small Town	Small Towns are less intensely developed than urban areas with fewer services and a lower level of infrastructure. They may be more self-sufficient than Rural Villages. Primary employment opportunities are usually in nearby urban areas.	Protect the integrity, unique sense of place, and economic viability of Maui's traditional small towns.	Protect separation between communities through the use of Small Town Boundaries. Allow for expansion where appropriate. Utilize design guidelines and rural infrastructure standards to protect Small Town character.
	Rural	Rural Areas contain a mixture of agricultural activities, low-density residential areas, and small villages. Rural Villages may contain limited amounts of State and County urban designated lands including residential and small clusters of businesses and civic uses mostly to support surrounding rural residential uses and agricultural activities. Level of government services is generally limited and many essential goods and services are located in a larger town. The level of infrastructure may be lower than Small Towns. Employment is generally a function of nearby Urban Areas or Small Towns. Rural Residential Areas are primarily a residential development pattern with lower residential densities (0.5 to 10 ACRE/du), agricultural activities, and few services or employment opportunities. Limited commercial and civic uses (churches, schools) may be allowed in accordance with applicable community plan and zoning.	Provide a transition between Urban Areas and Small Towns and those areas in need of protection, including agricultural lands. Contain the spread of residential uses into prime agricultural lands and provide a tool for designing villages with a mix of lots and lifestyle choices.	Minimize expansion of infrastructure that could lead to urbanization. Define areas appropriate for additional rural development patterns. Promote an equitable tax/water rate structure that reflects actual land use. Adopt appropriate infrastructure and subdivision standards to protect rural character. Maintain the separation of communities through the use of boundaries. Allow for Rural Villages where appropriate. Utilize rural design guidelines and appropriate infrastructure and subdivision standards to protect rural character.
PROTECTED AREA TYPES (See Diagrams NW-1, WC-1, S-1, N-1, NE-1, E-1, SE-1)				
PROTECTED AREA TYPES	Preservation	Areas with significant natural and environmental resources, scenic, open space, and recreational resources, historic resources and other important assets that warrant additional protection. Preservation areas may include accessory structures such as public restrooms, structures related to a cultural or historical resource, and other structures and ancillary uses consistent with the purpose and intent of the preservation area.	Permanent protection of areas on the island that have significant environmental, ecological, cultural and recreational value and the degradation of the resource would result in an irretrievable loss.	Protection using regulation, easements, Transfer of Development Rights (TDR) program or fee-simple purchase in cooperation with land trusts, environmental organizations, the County of Maui, State of Hawai`i and the Federal government. The appropriate community plan designation for this protected area type is park or open space as determined during a community plan update or the entitlement process.
	Park	Land areas devoted to passive (picnic facilities and gathering areas) and/or active (including, but not limited to, bike paths, hiking trails, ball fields, and tennis courts) uses that serve recreational needs.	Ensure that recreational and open space needs keep pace with future growth and are appropriately located consistent with the Maui Island Plan's Directed Growth Plan.	Acquisition, Transfer of Development Rights (TDR) program, and/or cooperative efforts with the development community during the design, project review and approval process. The appropriate community plan designation for this protected area type is park or open space as determined during a community plan update or the entitlement process.
	Greenbelt	Extensive area of largely undeveloped or sparsely occupied land established along natural corridors to protect environmental resources and to separate distinct communities. Greenbelts may include accessory structures and ancillary uses consistent with the purpose and intent of the greenbelt area.	Ensure natural and undisturbed separation between communities and protect environmentally sensitive lands.	Acquisition, Transfer of Development Rights (TDR) program, and/or cooperative efforts with the development community during the design, project review and approval process. Also implemented through the subdivision review process. The appropriate community plan designation for this protected area type is park or open space as determined during a community plan update or the entitlement process.
	Greenway	Typically a long, narrow piece of land, often times used for recreation, pedestrian, and bicycle traffic. Greenways can include community gardens and can be used to link community amenities (e.g. parks, shoreline). Greenways may include accessory structures and ancillary uses consistent with the purpose and intent of the greenway area.	Provide opportunities to inter-connect communities, ensure adequate recreational amenities, protect scenic resources, and link residential projects with service areas. Greenways may be improved to accommodate pedestrian, bicycle, equestrian and other similar uses.	Acquisition, Transfer of Development Rights (TDR) program, and/or cooperative efforts with the development community during the design, project review and approval process. Also implemented through the subdivision review process. The appropriate community plan designation for this protected area type is park or open space as determined during a community plan update or the entitlement process.
	Sensitive Land	Lands that contain development constraints including steep slopes greater than 35 percent, floodplains, significant drainage features, and adjacent intact forested areas.	Protect areas with significant development constraints and ensure sensitive areas are taken into consideration during site design.	An area that may require site design review and approval to ensure that areas with significant development constraints are avoided or appropriate mitigation measures are incorporated into projects.



Maui Island Plan Protected Areas Diagram

Lahaina-Central

WC-1

Legend

Protected Areas

- Greenbelt
- Greenway
- Park
- Preservation
- Sensitive Lands

Reference

- Primary Roads
- 2011 Parcels
- State Land Use Conservation
- Urban Growth Boundary
- Small Town Growth Boundary
- Rural Growth Boundary

NW-1 | N-1 | NE-1 | WC-1 | SE-1 | E-1 | S-1

Miles

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Product Code: M-CET_20121210-E2

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This is not a zoning map. Please contact the Planning Department for Zoning confirmation.

PREPARED BY:

Long Range Planning Division
Department of Planning
County of Maui
250 South High Street
Wailuku, Hawaii 96793

EXHIBIT 4

Maui Island Plan Directed Growth Map

Waikapu / Kahului

C3

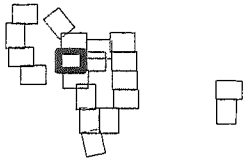
Legend

Growth Boundaries

- Urban
- Small Town
- Rural

Reference

- 2011 Parcels
- Primary Roads



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Product Code: M-CET_20121210-02
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PREPARED BY:

Long Range Planning Division
Department of Planning
County of Maui
250 South High Street
Wailuku, Hawaii 96793

EXHIBIT 5

MUNEKIYO HIRAGA
Planning. Project Management. Sustainable Solutions.

Michael T. Munekiyo
CHAIRMAN
Karlynn K. Fukuda
PRESIDENT
Mark Alexander Roy
VICE PRESIDENT
Tessa Munekiyo Ng
VICE PRESIDENT

May 18, 2020

Michele Chouteau McLean, AICP, Director
Department of Planning
County of Maui
2200 Main Street, Suite 315
Wailuku, Hawai'i 96793

SUBJECT: Response to Early Consultation Comments Regarding the Proposed Department of Hawaiian Home Lands Pu'unani Homestead Subdivision Project; TMK Nos. (2)3-5-002:002(por.) and (2)3-5-001:064(por.); Wailuku, Maui, Hawai'i

Dear Ms. McLean:

On behalf of the State of Hawai'i, Department of Hawaiian Home Lands (DHHL), thank you for your letter dated September 9, 2019, providing comments on the proposed Pu'unani Homestead Subdivision project. We offer the following information in response to the comments received.

1. We acknowledge your comment that the proposed subdivision area is included within the Pu'unani Planned Growth Area as designated within the Maui Island Plan (MIP). The MIP states that the previous project (by others) was envisioned to be a mixed-use project bounded by a greenbelt buffer along its eastern edge adjacent to Honoapi'ilani Highway, as well as a preservation greenbelt buffer along the southern boundary adjacent to the existing Waiolani Mauka neighborhood.

   We note that the currently proposed project is a separate and distinct project from the former Pu'unani project identified within the MIP, and is planned to be smaller in size, and limited to single-family residential development for DHHL beneficiaries as well as construction of a new sewerline to provide service to the new homes.

   Further, it is noted and acknowledged that the project does not provide for a greenbelt buffer along Honoapi'ilani Highway or a preservation greenbelt buffer along the property's boundary adjacent to Waiolani Mauka. We note, however, that the massing of the proposed single-family community will be lesser in scale

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Maui: 305 High Street, Suite 104 • Wailuku, Hawaii 96793 • Tel: 808.244.2015 • Fax: 808.244.8729
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than the mixed-use project envisioned within the MIP, and will be similar in scale to the adjacent Waiolani Mauka community, thereby being less obstructive on existing view corridors. We also note that the proposed project is not intended to connect with existing developments in Wailuku, thereby maintaining the existing physical separation between Waikapū and Wailuku.

2. We acknowledge the comment regarding density. As previously stated, the proposed project will have a lower density than that of the previously proposed Pu'unani plan described within the MIP.

3. We acknowledge your comment and add that the proposed project will provide new dwelling units for Native Hawaiian beneficiaries of the DHHL. The current Wailuku-Kahului Community Plan designates the project subdivision site as "Single-Family Residential" and "Agriculture". The proposed project maintains consistency with the "Single-Family Residential" designation.

4. We acknowledge your comment and note that the proposed project will be located in the Pu'unani Planned Growth Area of the MIP, an area designated for residential growth, and will be lesser in density and smaller size with regards to the former mixed-use Pu'unani project (by others) as envisioned in the MIP. In addition, as previously noted, the proposed project, although adjacent to Waiolani Mauka, is not intended to connect to existing developments in Wailuku, thereby maintaining the physical separation between Waikapū and Wailuku.

   Your comments regarding greenbelts and buffers are noted and was discussed further with DHHL for consideration. While the use of buffers and greenbelts would provide visual separation between the proposed project and adjacent properties, in part, the mission of DHHL is to develop and deliver land to Native Hawaiians. It is the priority of DHHL to provide as many housing opportunities to its beneficiaries as possible. The 500-foot wide greenbelt along the project's southern boundary and the 200-foot wide greenbelt along the project's eastern edge adjacent to Honoapi'ilani Highway, would equate to a reduction of approximately 68 homes. However, DHHL intends to install a landscaping strip along the project frontage, parallel to Honoapi'ilani Highway.

5. The Draft Environmental Assessment (EA) being prepared for the proposed project will address alternative(s) that more closely follow the goals and objectives of the MIP for the Pu'unani Growth Area. As indicated above, your comments regarding the incorporation of greenbelts is noted.

6. We acknowledge your comment, the Draft EA will be made available to the Department of Planning for review and comment.

Thank you for your participation in the Chapter 343, Hawai'i Revised Statutes environmental review process. A copy of your letter and this response will be included in the Draft EA being prepared for the project. In the meantime, should you have any questions or require additional information, please feel free to contact me at (808) 983-1233.

Very truly yours,

Bryan K. Esmeralda, AICP
Senior Associate

BKE:tn
cc: Stewart Matsunaga, State of Hawai'i, Department of Hawaiian Home Lands
Darren Okimoto, DDC LLC
Darren Unemori, Warren S. Unemori Engineering, Inc.
K:\DATA\DDC\PuunaniHomestead\Applications\EC\EC Response Letters\Planning.doc

SEP 12 2019

MICHAEL P. VICTORINO
Mayor

ROWENA M. DAGDAG-ANDAYA
Director

Deputy Director

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

RODRIGO "CHICO" RABARA, P.E.
Engineering Division

JOHN R. SMITH, P.E.
Highways Division

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

COUNTY OF MAUI
DEPARTMENT OF PUBLIC WORKS
200 SOUTH HIGH STREET, ROOM 434
WAILUKU, MAUI, HAWAII 96793

September 9, 2019

Mr. Bryan Esmeralda, Senior Associate
MUNEKIYO HIRAGA
305 High Street, Suite 104
Wailuku, Maui, Hawaii 96793

Dear Mr. Esmeralda:

SUBJECT: EARLY CONSULTATION REQUEST FOR THE PROPOSED DEPARTMENT OF HAWAIIAN HOME LANDS PU'UNANI HOMESTEAD SUBDIVISION PROJECT; TMK: (2) 3-5-002:POR. 002

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

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

Sincerely,

ROWENA M. DAGDAG-ANDAYA
Director of Public Works

RMDA:da
xc: Engineering Division
S:\DSA\Engr\CZM\Draft Comments\35002002_DHHL_puunani_homestead_subd_proj_ec.rtf

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Karlynn K. Fukuda
PRESIDENT
Mark Alexander Roy
VICE PRESIDENT
Tessa Munekiyo Ng
VICE PRESIDENT

May 18, 2020

Rowena Dagdag-Andaya, Director
Department of Public Works
County of Maui
200 South High Street, Room 434
Wailuku, Hawai'i 96793

SUBJECT: Response to Early Consultation Comments Regarding the Proposed Department of Hawaiian Home Lands Pu'unani Homestead Subdivision Project; TMK Nos. (2)3-5-002:002(por.) and (2)3-5-001:064(por.); Wailuku, Maui, Hawai'i

Dear Ms. Dagdag-Andaya:

On behalf of the State of Hawai'i, Department of Hawaiian Home Lands (DHHL), thank you for your letter dated September 9, 2019, regarding the proposed Pu'unani Homestead Subdivision project. We acknowledge that the Department of Public Works has no comments to offer at this time.

Thank you for your participation in the Chapter 343, Hawai'i Revised Statutes environmental review process. A copy of your letter and this response will be included in the Draft Environmental Assessment being prepared for the project. In the meantime, should you have any questions or require additional information, please feel free to contact me at (808) 983-1233.

Very truly yours,

Bryan K. Esmeralda, AICP
Senior Associate

BKE:tn
cc: Stewart Matsunaga, State of Hawai'i, Department of Hawaiian Home Lands
Darren Okimoto, DDC LLC
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AUG 23 2019

MICHAEL P. VICTORINO
Mayor

MARC I. TAKAMORI
Director

MICHAEL B. DU PONT
Deputy Director

DEPARTMENT OF TRANSPORTATION
COUNTY OF MAUI
200 SOUTH HIGH STREET
WAILUKU, MAUI, HAWAI'I 96793

TELEPHONE: (808) 270-7511
FAX: (808) 270-7505

August 22, 2019

Munekiyo Hiraga
Attn: Bryan K. Esmeralda, Senior Associate
305 High Street, Suite 104
Wailuku, HI 96793

SUBJECT: Early Consultation Request for the Proposed Department of Hawaiian Home Lands Pu'unani Homestead Subdivision Project; TMK (2)3-5-002:002(por.); Waikapū, Maui, Hawaii.

Dear Mr. Esmeralda,

We appreciate the opportunity to provide comments on the Pu'unani Homestead project.

We currently have one bus route that operates within the vicinity of the Pu'unani Homestead project. The Lahaina Islander Route #20 which travels past this area on Honoapi'ilani Highway hourly traveling between Kahului and Lahaina. The closest bus stop to this area is in Waikapū. There are two Wailuku Loop and Reverse Routes #1 and #2 that provide services within the Wailuku area but the nearest stops are at Kamole Street in Kehalani and Ka Hale A Ke Ola on Waiale Rd.

While loop or villager services are not currently in this vicinity, planning for expansions are always considered. Such expansions are dependent on through streets within an area. Providing interconnecting sidewalks and ample lighting in the evening is necessary for walkable communities and the safety of potential public transit riders.

Sincerely,

Marc Takamori
Director

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Michael T. Munekiyo
CHAIRMAN
Karlynn K. Fukuda
PRESIDENT
Mark Alexander Roy
VICE PRESIDENT
Tessa Munekiyo Ng
VICE PRESIDENT

May 18, 2020

Marc Takamori, Director
Department of Transportation
County of Maui
2145 Kaohu Street, Suite 102
Wailuku, Hawai'i 96793

SUBJECT: Response to Early Consultation Comments Regarding the Proposed Department of Hawaiian Home Lands Pu'unani Homestead Subdivision Project; TMK Nos. (2)3-5-002:002(por.) and (2)3-5-001:064(por.); Wailuku, Maui, Hawai'i

Dear Mr. Takamori:

On behalf of the State of Hawai'i, Department of Hawaiian Home Lands (DHHL), thank you for your letter dated August 22, 2019, providing comments on the proposed Pu'unani Homestead Subdivision project. We offer the following information in response to the comments received.

We acknowledge that the County of Maui, Department of Transportation (MDOT) has one (1) bus route, the Lahaina Islander Route #20, that currently travels along Honoapi'ilani Highway fronting the site of the proposed project, and that the closest bus stop for this route is nearby in Waikapū. We also acknowledge that two (2) Wailuku Routes, the Wailuku Loop and Reverse Routes #1 and #2 currently provide service to the Wailuku area, with bus stops on Kamole Street and on Wai'ale Road being the closest in proximity to the project site.

We acknowledge that while these Wailuku routes do not currently service the area of the proposed project, MDOT frequently considers potential expansions. We acknowledge your comments that expansions are dependent on through streets, and sidewalks and lighting, which you also noted are necessary for walkable communities and the safety of potential transit riders.

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Maui: 305 High Street, Suite 104 • Wailuku, Hawaii 96793 • Tel: 808.244.2015 • Fax: 808.244.8729
www.munekiyohiraga.com

Thank you for your participation in the Chapter 343, Hawai'i Revised Statutes environmental review process. A copy of your letter and this response will be included in the Draft Environmental Assessment being prepared for the project. In the meantime, should you have any questions or require additional information, please feel free to contact me at (808) 983-1233.

Very truly yours,

Bryan K. Esmeralda, AICP
Senior Associate

BKE:yp
cc: Stewart Matsunaga, State of Hawai'i, Department of Hawaiian Home Lands
Darren Okimoto, DDC LLC
Tyler Fujiwara, Austin, Tsutsumi & Associates, Inc.
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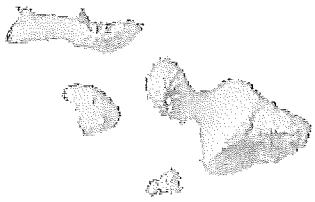
SEP 18 2019

MICHAEL P. VICTORINO
Mayor

JEFFREY T. PEARSON, P.E.
Director

HELENE KAU
Deputy Director



DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
200 SOUTH HIGH STREET
WAILUKU, MAUI, HAWAI'I 96793
www.mauiwater.org

September 17, 2019

Mr. Bryan K. Esmeralda, Senior Associate
Munekiyo Hiraga
305 High Street, Suite 104
Wailuku, Hawaii 96793

RE: Early Consultation Request for the Proposed Department of Hawaiian Home Lands (DHHL) Puunani Homestead Subdivision Project
TMK: (2) 3-5-002:002(por.); Waikapu, Maui, Hawaii

Dear Mr. Esmeralda,

The Department of Water Supply (DWS) thanks you for the opportunity to offer an early consultation on the proposed DHHL new residential subdivision.

Source, Infrastructure, and Demand
The property overlies the Iao Aquifer with a sustainable yield of 20 million gallons per day according to the Commission on Water Resource Management (CWRM). According to Water System Standards, 2002, State of Hawaii, projected water demand for the entire project area will be approximately 144,900 gallons per day. This project is subject to the County of Maui's availability policy, codified in Title 14 of the Maui County Code in the subdivision process. Written verification of a long-term, reliable supply of water and the receipt of an approved engineering report for a long-term reliable supply of water for the subdivision will be required.

Wellhead Protection, Pollution Prevention, and Conservation
A portion of the proposed development (approximately 32 acres) is within the 10-year time of travel capture zone/wellhead protection area of a DWS municipal well (see attached). This project may be subject to design guidelines in the proposed July 24, 2018 "Bill for An Ordinance Amending Title 19, Maui County Code, To Establish A Wellhead Protection Overlay District." The best location of storm water detention facilities is outside the Wellhead Protection Overlay District. Additional measures should be undertaken during construction and in developing the community covenants, conditions, and restrictions for protecting the ground water in this zone.

CWRM promotes the protection of groundwater and the value of treating storm water as a resource including groundwater recharge capability when contained onsite with its document titled A Handbook for Stormwater Reclamation and Reuse Best Management Practices in Hawaii, December, 2008 found

here: http://files.hawaii.gov/dlnr/cwrm/planning/hsrar_handbook.pdf. DWS recommends including design elements and Best Management Practices (BMPs) contained in the document, such as permeable surfaces to reduce storm water loss (for example, permeable detention ponds and vegetated filter strips), bio-retention rain gardens, and the incorporation of native plants in landscaping design. All permeable water facilities would need ground water contamination prevention design as well. LEED certification is recommended for water conservation.

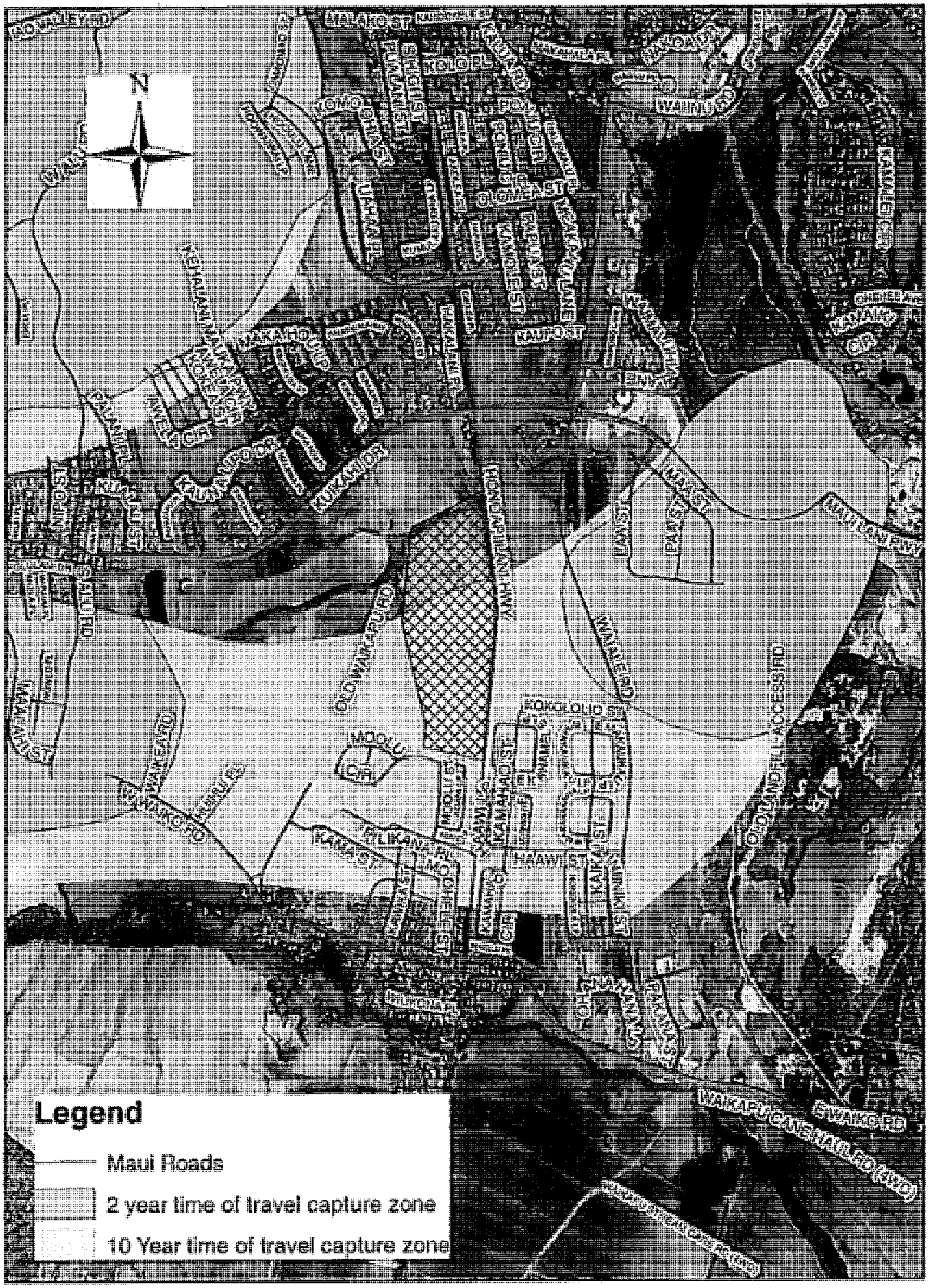
DWS recommends conserving resources and preventing pollution of the aquifer by following BMPs for Conservation and Construction (see attached) as well as integrating stormwater reclamation BMPs for ground water recharge and ground water contamination prevention.

Should you have any questions, please contact staff planner Audrey Dack at (808) 463-3109 or audrey.dack@co.maui.hi.us.

Sincerely,

Jeffrey T. Pearson, P.E.
Director
apd
cc: DWS engineering division
attachments

Puunani Subdivision Project Wellhead Protection Area



Best Management Practices BMPs

Construction BMPs for Pollution Prevention

In order to protect ground and surface water resources as well as our coastal areas, we recommend that in addition to any required Best Management Practices (BMPs) the following measures designed to minimize infiltration and runoff be implemented during construction:

- Prevent cement products, oil, fuel and other toxic substances from falling or leaching into the ground. Remove all construction debris and toxic substances daily to prevent entry into the ocean.
- Maintain vehicles and equipment to prevent oil or other fluids from leaking. Concrete trucks and tools used for construction should be rinsed off-site.
- Properly install and maintain erosion control barriers such as silt fencing or straw bales.
- Disturb the smallest area possible.
- Retain ground cover until the last possible date. Stabilize denuded areas by sodding or planting as soon as possible. Use high seeding rates to ensure rapid stand establishment. Apply biocides only during dry periods of low rainfall to minimize chemical run-off.
- Keep run-off on site.
- Dust control: Reclaimed water for dust control is available from the Kahului Wastewater Treatment plant at a reasonable cost. If feasible, it should be considered as an alternative source of water for dust control during construction.

Conservation BMPs

Indoor

DWS recommends the following indoor conservation measures be implemented:

- Use EPA WaterSense labeled plumbing fixtures.
- Install flow reducers and faucet aerators in all plumbing fixtures wherever possible.
- Install dual flush toilets with high efficiency models that use 1.28 gallons per flush or less.
- Install showerheads with a flow rate of 1.5 gallons per minute (gpm) at 60 pounds per square inch (psi).
- Install bathroom sink faucets with fixtures that do not exceed 1 gpm at 60 psi.
- Laundry facilities and/or individual unit machines should use Energy Star labeled washers.

Outdoor

DWS recommends the following outdoor conservation measures be implemented:

- Use Smart Approved WaterMark irrigation products. Examples include evapotranspiration irrigation controllers, drip irrigation, and water saving spray heads.
- After plants are established, avoid fertilizing and pruning to stimulate excessive growth. Time watering to occur in the early morning or evening to limit evaporation. Limit turf to as small an area as possible.
- Use native climate-adapted plants for landscaping. Native plants adapted to the area conserve water and protect the watershed from degradation due to invasive alien species.

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VICE PRESIDENT

May 18, 2020

Jeffrey Pearson, P.E., Director
Department of Water Supply
County of Maui
200 South High Street
Wailuku, Hawai'i 96793

SUBJECT: Response to Early Consultation Comments Regarding the Proposed Department of Hawaiian Home Lands Pu'unani Homestead Subdivision Project; TMK Nos. (2)3-5-002:002(por.) and (2)3-5-001:064(por.); Wailuku, Maui, Hawai'i

Dear Mr. Pearson:

On behalf of the State of Hawai'i, Department of Hawaiian Home Lands (DHHL), thank you for your letter dated September 17, 2019, providing comments on the proposed Pu'unani Homestead Subdivision project. We offer the following information in response to the comments received.

Source, Infrastructure, and Demand

We acknowledge your comment that the subject property overlies the 'Īao Aquifer, which has a sustainable yield of 20 million gallons per day according to the Commission on Water Resource Management (CWRM). We also acknowledge your comment that the project is subject to the County of Maui's availability policy in regards to subdivision processes, as codified in Title 14 of the Maui County Code (MCC). We note, however, that the Hawaiian Homes Commission Act vests onto DHHL the authority to use its lands at its discretion. In this regard, DHHL intends to exempt the project from the County of Maui's availability policy, codified in Title 14 of the MCC. Additionally, the Draft Environmental Assessment (EA) being prepared for the project will describe the planned water system improvements that will serve the proposed subdivision.

Wellhead Protection, Pollution Prevention, and Conservation

We acknowledge your comment that a portion of the project area is within the 10-year time of travel capture zone/wellhead protection area of a DWS municipal well, as depicted in the attachment to your letter. As such, we understand that the project may

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be subject to design guidelines as established by the "Bill for An Ordinance Amending Title 19, Maui County Code, To Establish A Wellhead Protection Overlay District", dated July 24, 2018. We note that per the Preliminary Site Plan (Figure 3 of the early consultation letter), the proposed stormwater detention basin for the project lies outside of the wellhead protection area. Furthermore, your comment regarding the suggested implementation of additional measures to protect groundwater in the area both during construction and occupancy was forwarded to the DHHL and its civil engineer for consideration.

We acknowledge the comment that CWRM promotes the protection of groundwater and the value of treating stormwater as a resource for groundwater recharge capability when contained onsite. The handbook for stormwater reclamation cited in your letter is noted. Design elements and Best Management Practices (BMPs) for stormwater management as described in the handbook will be reviewed and incorporated into the project's design where feasible.

In addition, the DWS' BMPs for conservation and construction as well as those for stormwater reclamation will be reviewed and implemented as feasible.

Thank you for your participation in the Chapter 343, Hawai'i Revised Statutes environmental review process. A copy of your letter and this response will be included in the Draft EA being prepared for the project. In the meantime, should you have any questions or require additional information, please feel free to contact me at (808) 983-1233.

Very truly yours,

Bryan K. Esmeralda, AICP
Senior Associate

BKE:tn
cc: Stewart Matsunaga, State of Hawai'i, Department of Hawaiian Home Lands
Darren Okimoto, DDC LLC
Darren Unemori, Warren S. Unemori Engineering, Inc.
K:\DATA\DDC\PuunaniHomestead\Applications\EC\EC Response Letters\DWS.doc

SEP 03 2019

COUNTY OF MAUI
EMERGENCY MANAGEMENT AGENCY
200 South High Street Wailuku, HI 96793
phone: 808.270.7285; fax: 808.270.7275
e-mail: emergency.management@mauicounty.gov

Michael Victorino
Mayor

Herman Andaya
Administrator

August 21, 2019

MEMO TO: Munekiyo Hiraga
Attn: Bryan K. Esmeralda, Senior Associate
305 High Street, Suite 104
Wailuku, Hawai'i 96793

FROM: Anthony Joyce, Maui Emergency Management Agency (MEMA)

SUBJECT: Re: Early Consultation Request for the Proposed Department of Hawaiian Home Lands Pu'unani Homestead Subdivision Project; TMK (2)3-5-002:002(por.); Waikapū, Maui, Hawai'i

Dear Mr. Esmeralda,

Thank you for your proposal and the opportunity for us to submit suggestions and comments on the proposed Pu'unani Homested Subdivision project. We have read the request and have offered some comments and considerations for your convenience below.

1) The current proposed location of the Pu'unani Homestead off of Honoapi'ilani Highway in Waikapū is in a low-to-moderate risk flood zone and determined to be outside of the 0.2% annual chance floodplain (for technical guidance, please see the State of Hawai'i Department of Land and Natural Resources Flood Hazard Assessment Tool). Although there is no mandatory need for homeowners in this region to have flood insurance, it is still available to these communities. We urge the developer to speak with county engineers to determine if flooding is a threat to this particular subdivision from other drainage retention basins in the area.

2) In regards to surface runoff, special consideration should be taken in determining whether surface runoff from the proposed subdivision will drain to the detention basin east of Wa'iale Road (20.44° N, 156.37° W), and if so, this detention basin should be enlarged. If this is not the plan, we recommend installing proper water drainage to reduce flooding down slope of the development, and decrease the possibility of overwhelming the city sewer.

3) We strongly urge the developer to build homes that adhere or exceed Hawai'i building

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EMERGENCY MANAGEMENT AGENCY
200 South High Street Wailuku, HI 96793
phone: 808.270.7285; fax: 808.270.7275
e-mail: emergency.management@mauicounty.gov

Michael Victorino
Mayor

Herman Andaya
Administrator

code regulations, and are hurricane resistant. Based on historical data from the National Oceanic and Atmospheric Administration (NOAA) and the National Weather Service (NWS), MEMA recommends that future dwellings be built to withstand at least a Category 2 hurricane (winds 96-110 mph; for technical guidance, please refer to Hwang, Dennis J. 3rd ed., vol. 3.2, University of Hawai'i, Sea Grant Program, 2018) and coast.noaa.gov/hurricanes for historical data.

Thank you for allowing us to make our suggestions to your project. Should you have any questions, please feel free to contact Anthony Joyce at (808) 270-7286, or via email at Herman.Andaya@co.maui.hi.us.

Sincerely,

Herman Andaya
MEMA Administrator

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VICE PRESIDENT
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VICE PRESIDENT

May 18, 2020

Herman Andaya, Administrator
Emergency Management Agency
County of Maui
200 South High Street
Wailuku, Hawai'i 96793

SUBJECT: Response to Early Consultation Comments Regarding the Proposed Department of Hawaiian Home Lands Pu'unani Homestead Subdivision Project; TMK Nos. (2)3-5-002:002(por.) and (2)3-5-001:064(por.); Wailuku, Maui, Hawai'i

Dear Mr. Andaya:

On behalf of the State of Hawai'i, Department of Hawaiian Home Lands (DHHL), thank you for your letter memo dated August 21, 2019, providing comments on the proposed Pu'unani Homestead Subdivision project. We offer the following information in response to the comments received.

1. We acknowledge your comment that the proposed project site is in a low-to-moderate risk flood zone, and outside of the 0.2 percent chance floodplain. Your request that the developer speak to County engineers regarding potential threats of flooding as it relates to flood insurance options was forwarded to the DHHL for consideration. We also note that the County Department of Public Works has been and will continue to be consulted as part of the Chapter 343, Hawaii Revised Statutes (HRS), environmental review process.

2. Thank you for your comment. As part of the proposed development, an onsite drainage detention basin will be constructed to collect runoff generated from development of the project. We note that a Preliminary Engineering Report addressing the project's drainage plan will be included as part of the Draft Environmental Assessment (EA) being prepared for the project.

3. We acknowledge your comment. The homes will be constructed in compliance with adopted building code regulations.

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Thank you for your participation in the Chapter 343, HRS environmental review process. A copy of your letter and this response will be included in the Draft EA being prepared for the project. In the meantime, should you have any questions or require additional information, please feel free to contact me at (808) 983-1233.

Very truly yours,

Bryan K. Esmeralda, AICP
Senior Associate

BKE:yp
cc: Stewart Matsunaga, State of Hawai'i, Department of Hawaiian Home Lands
Darren Okimoto, DDC LLC
Darren Unemori, Warren S. Unemori Engineering, Inc.
K:\DATA\DDC\PuunaniHomestead\Applications\EC\EC Response Letters\MEMA.doc

SEP 11 2019

POLICE DEPARTMENT

COUNTY OF MAUI

MICHAEL P. VICTORINO
MAYOR

OUR REFERENCE

YOUR REFERENCE

55 MAHALANI STREET
WAILUKU, HAWAII 96793
(808) 244-6400
FAX (808) 244-6411

TIVOLI S. FAAUMU
CHIEF OF POLICE

DEAN M. RICKARD
DEPUTY CHIEF OF POLICE

September 3, 2019

Mr. Bryan K. Esmeralda
Senior Associate
Munekiyo Hiraga
305 High Street, Suite 104
Wailuku, Hawaii 96793

Re: Early Consultation Request for the Proposed Department of Hawaiian Home Lands Pu'unani Homestead Subdivision Project, TMK (2) 3-5-002:002 (por.), Waikapu, Maui, Hawaii

Dear Mr. Esmeralda:

This is in response to your letter dated August 12, 2019 requesting comments on the proposed Hawaiian Home Lands Pu'unani Homestead Subdivision project in Waikapu.

In review of the submitted documents, we have no comments or recommendations to offer at this time.

Thank you for giving us the opportunity to comment on this project.

Sincerely,

Assistant Chief John Jakubczak
for: TIVOLI S. FAAUMU
Chief of Police

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May 18, 2020

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

SUBJECT: Response to Early Consultation Comments Regarding the Proposed Department of Hawaiian Home Lands Pu'unani Homestead Subdivision Project; TMK Nos. (2)3-5-002:002(por.) and (2)3-5-001:064(por.); Wailuku, Maui, Hawai'i

Dear Chief Faaumu:

On behalf of the State of Hawai'i, Department of Hawaiian Home Lands (DHHL), thank you for your letter dated September 3, 2019, regarding the proposed Pu'unani Homestead Subdivision project. We acknowledge that the Police Department has no comments to offer at this time.

Thank you for your participation in the Chapter 343, Hawai'i Revised Statutes environmental review process. A copy of your letter and this response will be included in the Draft Environmental Assessment being prepared for the project. In the meantime, should you have any questions or require additional information, please feel free to contact me at (808) 983-1233.

Very truly yours,

Bryan K. Esmeralda, AICP
Senior Associate

BKE:yp
cc: Stewart Matsunaga, State of Hawai'i, Department of Hawaiian Home Lands
Darren Okimoto, DDC LLC
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OCT 03 2019

September 30, 2019

Munekiyo Hiraga
Attn: Mr. Bryan Esmeralda, Senior Associate
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Esmeralda,

Subject: Pu'unani Homestead Subdivision Project
Early Consultation Request for the Proposed Department of Hawaiian Homelands along Honoapiilani Highway
Waikapu, Maui, Hawaii
Tax Map Key: (2) 3-5-002:002 (por.)

Thank you for allowing us to comment on the subject project.

In reviewing our records and the information received, Maui Electric Company, Limited has no objections to the project at this time. However, we highly encourage the customer's electrical consultant to submit the electrical demand requirements and project time schedule as soon as practical so that any new service and facility upgrades can be provided on a timely basis.

Should you have any other questions or concerns, please feel free to call me at 871-2340.

Sincerely,

Ray Okazaki
Engineer II, Engineering

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Karlynn K. Fukuda
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VICE PRESIDENT
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VICE PRESIDENT

May 18, 2020

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

SUBJECT: Response to Early Consultation Comments Regarding the Proposed Department of Hawaiian Home Lands Pu'unani Homestead Subdivision Project; TMK Nos. (2)3-5-002:002(por.) and (2)3-5-001:064(por.); Wailuku, Maui, Hawai'i

Dear Mr. Okazaki:

On behalf of the State of Hawai'i, Department of Hawaiian Home Lands (DHHL), thank you for your letter dated September 30, 2019, providing comments on the proposed Pu'unani Homestead Subdivision project. We note that Maui Electric Company has no objections to the proposed project.

In addition, as requested, the project's electrical engineer will submit the electrical demand requirements and project time schedule, when ready, in order to ensure that any needed service and facility upgrades to serve the project can be provided.

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www.munekiyohiraga.com

Thank you for your participation in the Chapter 343, Hawai'i Revised Statutes environmental review process. A copy of your letter and this response will be included in the Draft Environmental Assessment being prepared for the project. In the meantime, should you have any questions or require additional information, please feel free to contact me at (808) 983-1233.

Very truly yours,

Bryan K. Esmeralda, AICP
Senior Associate

BKE:tn
cc: Stewart Matsunaga, State of Hawai'i, Department of Hawaiian Home Lands
Darren Okimoto, DDC LLC
Mark Rickard, ECM, Inc.
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AUG 2 8 2019

Maui Economic Opportunity, Inc.

P.O. Box 2122
Kahului, HI 96733
808-249-2990
Fax: 808-249-2991
www.meoinc.org

May 29, 2018

Bryan Esmeralda, AICP
Muneyiko Hiraga
305 High Street, Suite 104
Wailuku, HI 96793

Re: Early Consultation Request for the Proposed Department of Hawaiian Home Lands Pu'unani Homestead Subdivision Project; TMK (2)3-5-002:002(por.); Waikapū, Maui, Hawai'i

Dear Mr. Esmeralda,

We do not have any objection or comment to the proposed DHHL proposed Pu'unani Homestead Subdivision Project in Waikapū, Maui.

Thank you for seeking community comments.

Mahalo nui loa,

Debbie Cabebe, SPHR
Chief Executive Officer

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VICE PRESIDENT

May 18, 2020

Debbie Cabebe, SPHR, Chief Executive Officer
Maui Economic Opportunity, Inc.
P.O. Box 2122
Kahului, Hawai'i 96733

SUBJECT: Response to Early Consultation Comments Regarding the Proposed Department of Hawaiian Home Lands Pu'unani Homestead Subdivision Project; TMK Nos. (2)3-5-002:002(por.) and (2)3-5-001:064(por.); Wailuku, Maui, Hawai'i

Dear Ms. Cabebe:

On behalf of the State of Hawai'i, Department of Hawaiian Home Lands (DHHL), thank you for your letter received August 28, 2019, regarding the proposed Pu'unani Homestead Subdivision project. We acknowledge that Maui Economic Opportunity, Inc. has no objection to the project or additional comments to offer at this time.

Thank you for your participation in the Chapter 343, Hawai'i Revised Statutes environmental review process. A copy of your letter and this response will be included in the Draft Environmental Assessment being prepared for the project. In the meantime, should you have any questions or require additional information, please feel free to contact me at (808) 983-1233.

Very truly yours,

Bryan K. Esmeralda, AICP
Senior Associate

BKE:yp
cc: Stewart Matsunaga, State of Hawai'i, Department of Hawaiian Home Lands
Darren Okimoto, DDC LLC
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AUG 30 2019

Waikapu Gardens

August 28th 2019

Munekiyo Hiraga
Attention: Bryan K. Esmeralda, Senior Associate
305 High Street, Suite 104
Wailuku HI 96793

RE: Response to Letter Dated August 12th 2019: Pu'unani Homestead Subdivision Project

Dear Bryan:

The Waikapu Gardens Homeowners Association is very concerned about the map showing Kokololio Street having access to Honoapiilani Highway. This road is owned by the Waikapu Gardens Homeowner's Association and the Board does not feel the area should be used as a highway access at the intersection of Honoapiilani Highway and Kokololio Street.

If have any questions, please contact Joseph Blackburn at (808)442-3063 or via email at MLB@MLB808.com.

Sincerely Yours,

Joseph Blackburn
Managing Agent

P.O. Box 2390, Wailuku HI 96793
Phone: 808.442.3063 Fax: 808.442.7482
Email: MLB@MLB808.com Website: www.MauiProperty4You.com

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Tessa Munekiyo Ng
VICE PRESIDENT

May 18, 2020

Joseph Blackburn, Managing Agent
Waikapū Gardens
P.O. Box 2390
Wailuku, Hawai'i 96793

SUBJECT: Response to Early Consultation Comments Regarding the Proposed Department of Hawaiian Home Lands Pu'unani Homestead Subdivision Project; TMK Nos. (2)3-5-002:002(por.) and (2)3-5-001:064(por.); Wailuku, Maui, Hawai'i

Dear Mr. Blackburn:

On behalf of the State of Hawai'i, Department of Hawaiian Home Lands (DHHL), thank you for your letter dated August 28, 2019, providing comments on the proposed Pu'unani Homestead Subdivision project from the Waikapu Gardens Homeowners Association. We offer the following information in response to the comments received.

Thank you for your comments regarding Kokololio Street. We note that the proposed project does not include planned improvements to the privately-owned Kokololio Street. The base map utilized in the project's site plan showing the existing Kokololio Street right-of-way came from a previous County-approved subdivision map for Waikapu Gardens and is reflected on the County's Real Property Tax map. We note again, that the project does not include any improvements to the existing Kokololio Street, including its extension to Honoapi'ilani Highway on the makai side.

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Thank you for your participation in the Chapter 343, Hawai'i Revised Statutes environmental review process. A copy of your letter and this response will be included in the Draft Environmental Assessment being prepared for the project. In the meantime, should you have any questions or require additional information, please feel free to contact me at (808) 983-1233.

Very truly yours,

Bryan K. Esmeralda, AICP
Senior Associate

BKE:yp
cc: Stewart Matsunaga, State of Hawai'i, Department of Hawaiian Home Lands
Darren Okimoto, DDC LLC
Darren Unemori, Warren S. Unemori Engineering, Inc.
Tyler Fujiwara, Austin, Tsutsumi & Associates, Inc.
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SEP 0 5 2019

Subject: FW: Pu'unani Project - Waikapu Gardens Comments
Attachments: Pu'unani Hwan Hms. Comments Final.docx

From: gncadolpho@hawaiiantel.net [mailto:gncadolpho@hawaiiantel.net]
Sent: Thursday, September 5, 2019 5:36 AM
To: Bryan Esmeralda <bryan@munekiyohiraga.com>
Subject: Pu'unani Project - Waikapu Gardens Comments

Aloha Bryan,

Hope this email finds you doing well. Please see attached comments from our Waikapu Gardens HOA regarding the proposed Pu'unani Hawaiian Homes project.
Thank you for allowing our HOA an extension to submit comments. Please advise if you need me to mail a copy to you or if this attachment will be sufficient.

Have a wonderful day!

Glenn Adolpho
Waikapu Gardens HOA

SEP 0 5 2019

September 2, 2019

Attention: Bryan K. Esmeralda, Senior Associate
Munekiyo Hiraga
305 High street, Suite 104
Wailuku, HI 96793

RE: Pu'unani Hawaiian Homes Project – Request for Comments

Dear Mr. Esmeralda:

The Waikapu Gardens Homeowners Association (HOA) appreciates the opportunity to give the following comments on the proposed Pu'unani Hawaiian Homes Project, located in Waikapu, Maui.

After reviewing the information forwarded to our Homeowners Association, we would like to offer the following comments for your consideration:

1. Being one of Maui's truly affordable projects, The Waikapu Gardens Homeowners Association supports the Pu'unani project as it will help bring much needed "affordable housing" to our local families who live and work on Maui.

2. The Waikapu Gardens HOA **is very concerned** about potential plans to connect Kokololio Street, which is part of our subdivision and privately owned, to the existing Honoapi'ilani Highway. This would generate a significant increase in traffic through our subdivision causing negative impacts on our homeowners. Considering the current and future developments which are being proposed on Waiale Road, connecting thru Kokololio would contribute significantly to increased traffic and cause a safety concern for residents exiting out of our subdivision onto Waiale Road.

3. Our HOA kindly requests to be included in all future planning and consultations regarding the development of the Pu'unani Project.

Mahalo for allowing our Waikapu Gardens HOA the opportunity to provide comments regarding this project. We look forward to working with you and developing a positive relationship as future neighbors of the Waikapu Community.

Sincerely,

The Waikapu Gardens Homeowners Board of Directors
P.O. Box 2390
Wailuku, HI 96793

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CHAIRMAN
Karlynn K. Fukuda
PRESIDENT
Mark Alexander Roy
VICE PRESIDENT
Tessa Munekiyo Ng
VICE PRESIDENT

May 18, 2020

Glenn Adolpho
Waikapū Gardens
Homeowners Association
P.O. Box 2390
Wailuku, Hawai'i 96793

SUBJECT: Response to Early Consultation Comments Regarding the Proposed Department of Hawaiian Home Lands Pu'unani Homestead Subdivision Project; TMK (2)3-5-002:002(por.); Wailuku, Maui, Hawai'i

Dear Mr. Adolpho:

On behalf of the State of Hawai'i, Department of Hawaiian Home Lands (DHHL), thank you for your letter dated September 2, 2019, providing comments on the proposed Pu'unani Homestead Subdivision project from the Waikapu Gardens Homeowners Board of Directors. We offer the following information in response to the comments received.

1. We thank you and appreciate your support of the project.

2. We acknowledge your comment, and understand that Kokololio Street is owned by the Waikapū Gardens Homeowners Association. We note that the proposed project does not include planned improvements to the privately-owned Kokololio Street. The base map utilized in the project's site plan showing the existing Kokololio Street right-of-way came from a previous County-approved subdivision map for Waikapu Gardens and is reflected on the County's Real Property Tax Map. We note again, however, that the project does not include any improvements to the existing Kokololio Street, including its extension to Honoapi'ilani Highway on the makai side.

3. We will continue to include the Waikapū Gardens Homeowners Association in all future outreach related to the proposed project.

Oahu: 735 Bishop Street, Suite 321 • Honolulu, Hawaii 96813 • Tel: 808.983.1233
Maui: 305 High Street, Suite 104 • Wailuku, Hawaii 96793 • Tel: 808.244.2015 • Fax: 808.244.8729
www.munekiyohiraga.com

Thank you for your participation in the Chapter 343, Hawai'i Revised Statutes environmental review process. A copy of your letter and this response will be included in the Draft Environmental Assessment being prepared for the project. In the meantime, should you have any questions or require additional information, please feel free to contact me at (808) 983-1233.

Very truly yours,

Bryan K. Esmeralda, AICP
Senior Associate

BKE:yp
cc: Stewart Matsunaga, State of Hawai'i, Department of Hawaiian Home Lands
Darren Okimoto, DDC LLC
Tyler Fujiwara, Austin, Tsutsumi & Associates, Inc.
Darren Unemori, Warren S. Unemori Engineering, Inc.
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OCT 1 6 2019

Waiolani Mauka Community Association, P.O. Box 1067, Wailuku, HI 96793

October 16, 2019

Munekiyo Hiraga
Attention: Bryan K. Esmeralda, Senior Associate
305 High Street, Suite 104
Wailuku, HI 96793

Dear Bryan,

I the Waiolani Mauka Community Association Board of Directors has the following comments regarding the Proposed Department of Hawaiian Homelands Puunani Homestead Subdivision Project.

1. Please follow the Wailuku Community Plan and provide a 500' greenway buffer between proposed project and the Waiolani Mauka Subdivision.
2. General Plan documents call for a separation between the communities of Wailuku and Waikapu.
3. An Environmental Assessment should be done and include our request as a the Waiolani Mauka Community Association for a 500' greenway between proposed development and Waiolani Mauka.

If you have any questions, please call Joe Blackburn at 442.3063.

Sincerely Yours

Joseph Blackburn
Managing Agent

Ph: 808.442.3063 Fax: 808.442.7482
Email: MLB@MauiProperty4You.com Web Page: www.MauiProperty4You.com

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PRESIDENT
Mark Alexander Roy
VICE PRESIDENT
Tessa Munekiyo Ng
VICE PRESIDENT

May 18, 2020

Joseph Blackburn, Managing Agent
Waiolani Mauka Community Association
P.O. Box 1067
Wailuku, Hawai'i 96793

SUBJECT: Response to Early Consultation Comments Regarding the Proposed Department of Hawaiian Home Lands Pu'unani Homestead Subdivision Project; TMK Nos. (2)3-5-002:002(por.) and (2)3-5-001:064(por.); Wailuku, Maui, Hawai'i

Dear Mr. Blackburn:

On behalf of the State of Hawai'i, Department of Hawaiian Home Lands (DHHL), thank you for your letter dated October 16, 2019, providing comments on the proposed Pu'unani Homestead Subdivision project from the Waiolani Mauka Community Association Board of Directors. We offer the following information in response to the comments received.

1. We acknowledge your comment and note that the currently proposed project is a separate and distinct project from the former Pu'unani mixed use project (by others) identified within the Maui Island Plan (MIP), which provided for a 500-foot greenway buffer between the project site and Waiolani Mauka Subdivision. The current Wailuku-Kahului Community Plan designates the project site as "Single-Family Residential" and "Agriculture". See **Exhibit "A"**. The proposed project maintains consistency with the "Single-Family Residential" designation.

   We note that the proposed DHHL Pu'unani Homestead Subdivision project is planned to be smaller in size, and limited to single-family residential development.

   In addition, the massing of the proposed single-family community will be lesser in scale than the planned Pu'unani mixed-use project envisioned within the MIP, and will be similar in scale to the adjacent Waiolani Mauka community, thereby being less obstructive on existing view corridors.

Your comments regarding the provision of a greenway buffer are noted and was discussed further with DHHL for consideration. While the use of a greenway buffer would provide visual separation between the proposed project and adjacent properties, in part, the mission of DHHL is to develop and deliver land to Native Hawaiians. It is the priority of DHHL to provide as many housing opportunities to its beneficiaries as possible. The 500-foot wide buffer along the project's southern boundary would equate to a reduction of approximately 30 homes.

2. We note that the proposed project is not intended to connect with existing developments in Wailuku, thereby, maintaining the existing physical separation between Waikapū and Wailuku.

3. A copy of your letter will be included in the Draft Environmental Assessment (EA) being prepared for the project. As previously mentioned, the 500-foot greenway buffer cannot be provided at the site, due to the number of residential homes for DHHL beneficiaries and their families that would be lost as a result.

Thank you for your participation in the Chapter 343, Hawai'i Revised Statutes environmental review process. A copy of your letter and this response will be included in the Draft EA being prepared for the project. In the meantime, should you have any questions or require additional information, please feel free to contact me at (808) 983-1233.

Very truly yours,

Bryan K. Esmeralda, AICP
Senior Associate

BKE:tn
Attachment
cc: Stewart Matsunaga, State of Hawai'i, Department of Hawaiian Home Lands
Darren Okimoto, DDC LLC
Darren Unemori, Warren S. Unemori Engineering, Inc.
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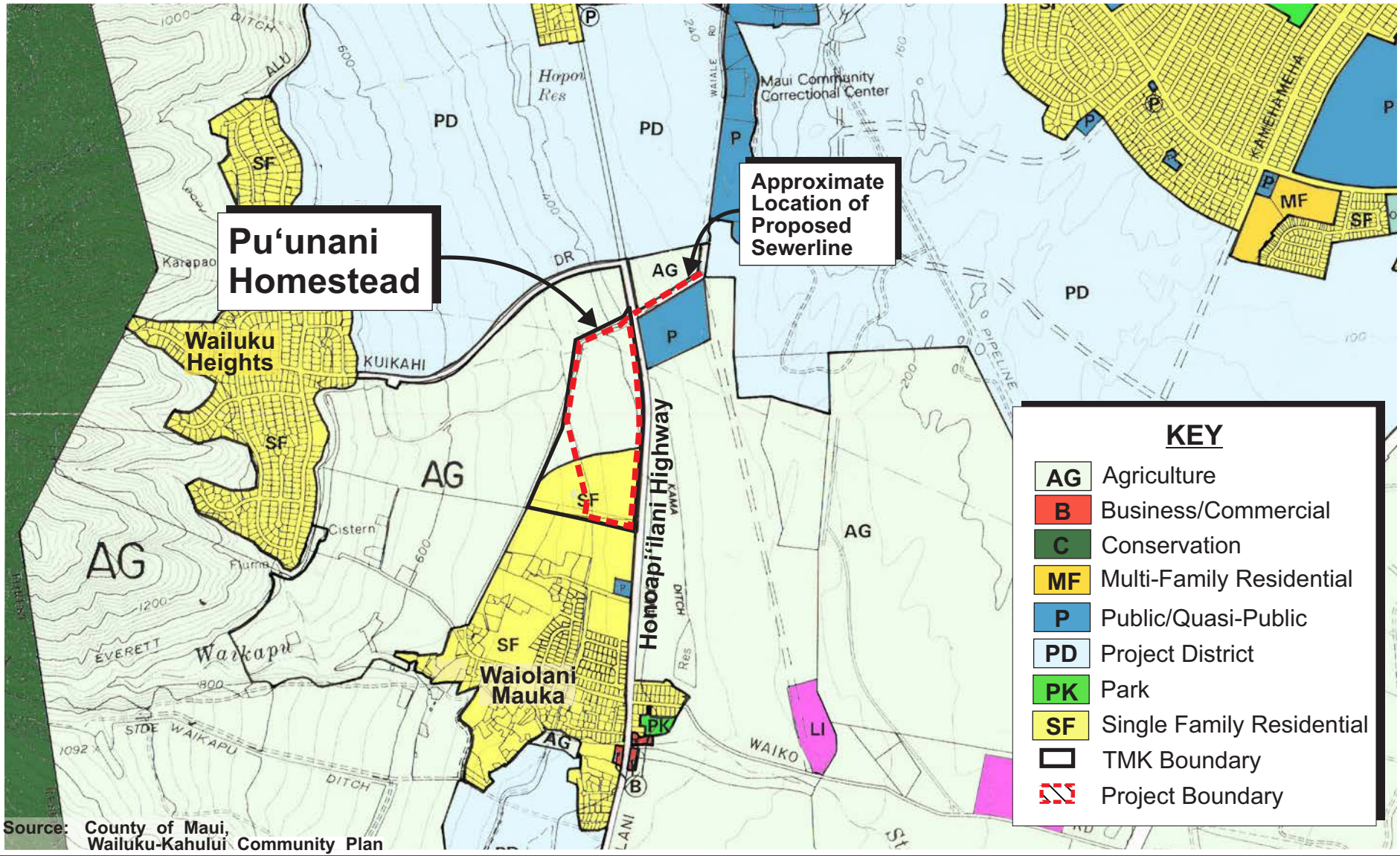

Source: County of Maui, Wailuku-Kahului Community Plan

Pu'unani Homestead Subdivison

Wailuku-Kahului Community Plan Map

NOT TO SCALE

Prepared for: State of Hawai'i, Department of Hawaiian Home Lands

MUNEKIYO HIRAGA

EXHIBIT A

DDC\PuunaniHomestead\Applications\Figures\WKCPM

SEP 3 0 2019

Subject: FW: DHHL Proposed Puunani Estates.
Attachments: DHHL EA Statement from WCA.pdf; ATT00001.htm

From: Waikapu Community Association <waikapuca@gmail.com>
Date: September 30, 2019 at 11:38:13 AM HST
To: Bryan Esmeralda <bryan@munekiyohiraga.com>
Cc: Travis Polido <trpolido@gmail.com>
Subject: DHHL Proposed Puunani Estates.

Bryan,

Attached is some of the communities concerns for the proposed project listed above. Please confirm the receipt of this email along with attachment. Thank you for this opportunity and I look forward to working with you folks in the near future.
Aloha,

Travis Polido
8082984680
waikapuca@gmail.com
President, Waikapu Community Association

SEP 3 0 2019

ATTN: Bryan Esmeralda
Munekiyo Hiraga
305 High street, Suite 104
Wailuku, HI 96793
RE: Pu'unani Hawaiian Homes Project – Request for Comments
30September2019

Dear Mr. Esmeralda,
Below are a few comments that came from the community about the proposed Department of Hawaiian Home Lands(DHHL) Puunani Homestead Subdivision Project .

Aloha,
I want to ask for DHHL to assist more in building homes in Lahaina because there are so many kanaka maoli waiting for their homes. There's only a very small percentage of homes built there. They need more support out there before building this Waikapu phase!!!!

Aloha kākou,
I am giving input about Waikapu Pu'unani Homestead subdivision, I'm currently an applicant for DHHL residential. And so are many of my family members, my mom, brothers, and sister. We have been waiting many years for Lahaina Leiali'i 1B and/ or Honokowai agriculture lots to get built. I feel that there needs to be more focus on getting Hawaiians on the land in Lahaina and Honokowai that anywhere else on Maui. West Maui only has 7% of the housing for DHHL on Maui, as opposed to 38% for Central Maui. We need to build up our community in West Maui. Hawaiians have been waiting decades to get a home. And will continue waiting because we want to live where our community is, ie. West Maui. We are trying to get our legislators to be on board to advocate for the funding. We also are trying to advocate for the funding as well. Please help West Maui out by allowing us to prioritize getting Hawaiians on the land. It will also help preserve that side. The more Hawaiians, the better because we could advocate for that part of the island. Currently, DHHL only wants to build 50 lots in 7 years at Leiali'i 1B. However, we have a total of 260 lots that are supposed to built there, but that project lacks the funding. And there are supposed to be hundreds more ag lots that will be built at Honokowai. Both projects are heavily delayed. Honokowai Ag lots should have been built by 2024 already and they haven't even started the process yet and don't plan to for a long time.

Thank you for listening to my concerns.

September 2, 2019

Attention: Bryan K. Esmeralda, Senior Associate
Munekiyo Hiraga
305 High street, Suite 104
Wailuku, HI 96793

RE: Pu'unani Hawaiian Homes Project – Request for Comments

Dear Mr. Esmeralda:

The Waikapu Gardens Homeowners Association (HOA) appreciates the opportunity to give the following comments on the proposed Pu'unani Hawaiian Homes Project, located in Waikapu, Maui.

After reviewing the information forwarded to our Homeowners Association, we would like to offer the following comments for your consideration:

1. Being one of Maui's truly affordable projects, The Waikapu Gardens Homeowners Association supports the Pu'unani project as it will help bring much needed "affordable housing" to our local families who live and work on Maui.

2. The Waikapu Gardens HOA **is very concerned** about potential plans to connect Kokololio Street, which is part of our subdivision and privately owned, to the existing Honoapi'ilani Highway. This would generate a significant increase in traffic through our subdivision causing negative impacts on our homeowners. Considering the current and future developments which are being proposed on Waiale Road, connecting thru Kokololio would contribute significantly to increased traffic and cause a safety concern for residents exiting out of our subdivision onto Waiale Road.

3. Our HOA kindly requests to be included in all future planning and consultations regarding the development of the Pu'unani Project.

Mahalo for allowing our Waikapu Gardens HOA the opportunity to provide comments regarding this project. We look forward to working with you and developing a positive relationship as future neighbors of the Waikapu Community.

Sincerely,

The Waikapu Gardens Homeowners Board of Directors
P.O. Box 2390
Wailuku, HI 96793

Other concerns are:
If this project was to move forward, what type of infrastructure is the developer or DHHL planning to set in place for its development so that the existing communities, as well as the future communities in the surrounding areas will benefit.

1. How is the developer or DHHL planning to help relieve the already congested area such as, Honoapiilani Highway, Pilikana Street, E. Waiko/W. Waiko Roads, Waiale Road, Kuikahi Drive. If we were to take a low number of two (2) cars that would mean we just added Three Hundred Twenty Two (322) more cars on our already congested roads.
2. How is the developer or DHHL planning to help relieve the overcrowding of the schools in the district. As of right now Wailuku district has Three (3) Elementary schools feeding one (1) Intermediate School. If we were to take a low number of two (2) children per household that would mean we have added Three Hundred Twenty Two (322) more children in our area. Puu Kukui is only built for Five Hundred Fifty (550) students.
3. How is the developer or DHHL planning on getting the water for this development. Where is the water going to come from, as of right now the Waikapu Community is on a "VOLUNTARY WATER RESTRICTION" adding these houses will just add to the problem.
4. How is the developer or DHHL planning to take care of the sewage problem.
5. What is the developer or DHHL planning to do about power. It the development going to be dependent on MECO, or is going to take the " go green approach".
6. Is the developer or DHHL planning to add street lamps to light up a very dark Honoapiilani Highway at its full-movement and right turn in and right turn out entrances.
7. Is the developer or DHHL planning to put in lighted crosswalk signs at these entrances.
8. As stated in one of the comments above from "The Waikapu Gardens HOA **is very concerned** about potential plans to connect Kokololio Street, which is part of our subdivision and privately owned, to the existing Honoapi'ilani Highway. This would generate a significant increase in traffic through our subdivision causing negative impacts on our homeowners. Considering the current and future developments which are being proposed on Waiale Road, connecting thru Kokololio would contribute significantly to increased traffic and cause a safety concern for residents exiting out of our subdivision onto Waiale Road".
9. We also see as a potential "HAZARD" and a "SAFETY" issue due to the fact that you folks are proposing two (2) entrances from Honoapiilani Highway. One (1) full-movement intersection with the existing Kokololio Street, and another right-turn in, right-turn out only entrance approximately 1,500 feet to the North, which would put the (right-turn in, right-turn out only entrance) right on or near the bend in the road that is located on Honoapiilani Highway.
10. Is the developer or DHHL planning to install another Street light on Honoapiilani Highway at its full-movement intersection.

Mr. Esmeralda,

We the Waikapu Community Association ask that your office, as well as the developer, and DHHL not only hears but listens to the voices, and comments in the community on what the wants and needs are for the community to support this project. We the Waikapu Community Association humbly ask that we get a commitment in writing stating that if this project moves forward with its plans, our Waikapu Community will be updated from start-finish of the project which includes planning, permitting, committee and council hearings(if any) etc... and everything in between from both the developer and DHHL. We also ask that if the project does move forward in our community, that we the Waikapu Community get another commitment in writing stating that the Waikapu Community will get an update every six (6) months once the project breaks ground from both the developer and DHHL. The Waikapu Community wants to thank you, your place of business, the developer, and the DHHL for giving the Waikapu Community this opportunity to let our voices, and concerns be expressed. We ask that in the future, if a development proposal is being proposed in our community and it passes through your folks place of business that your office gives our community this opportunity again so that we the community can collaboratively work together with all entities involved to try and make our Island a better community. We look forward to working with the offices of Munekiyo Hiraga on any future endeavors that involves the Waikapu Community and wish you folks the best, until then Mahalo for your time and consideration.

Aloha,
Travis Polido
8082984680
waikapuca@gmail.com
President, Waikapu Communty Association

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Michael T. Munekiyo
CHAIRMAN
Karlynn K. Fukuda
PRESIDENT
Mark Alexander Roy
VICE PRESIDENT
Tessa Munekiyo Ng
VICE PRESIDENT

May 18, 2020

***Via email**: waikapuca@gmail.com*

Travis Polido, President
Waikapū Community Association

SUBJECT: Response to Early Consultation Comments Regarding the Proposed Department of Hawaiian Home Lands Pu'unani Homestead Subdivision Project; TMK Nos. (2)3-5-002:002(por.) and (2)3-5-001:064(por.); Wailuku, Maui, Hawai'i

Dear Mr. Polido:

On behalf of the State of Hawai'i, Department of Hawaiian Home Lands (DHHL), thank you for your email of September 30, 2019, providing comments on the proposed Pu'unani Homestead Subdivision project from individuals within the community, the Waikapu Community Association, and the Waikapu Gardens Homeowners Board of Directors. We offer the following information in response to the comments received.

Comments from the Waikapū Community Association

Project Location

We acknowledge your association members' comments regarding their preference for the DHHL to provide housing for beneficiaries in West Maui rather than at the proposed location in Waikapū. We note that based on surveys conducted of DHHL beneficiaries in 2003 and 2014, the majority of respondents stated that they desired housing in Central Maui. The DHHL has noted its priority to provide housing for its beneficiaries and the need for housing in all regions.

Traffic

We acknowledge your comment requesting information on the developer's plans to address congestion on area roadways that may result from implementation of the proposed project. As part of the environmental review process, a licensed traffic engineer will prepare a Traffic Impact Analysis Report (TIAR) which will project an estimated number of trips to be generated by the buildout and occupancy of the proposed project, and the impact of these added trips on area roadways. The report will

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Maui: 305 High Street, Suite 104 • Wailuku, Hawaii 96793 • Tel: 808.244.2015 • Fax: 808.244.8729
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also take into account other known planned developments in the area. Based on the projections and anticipated impacts, the TIAR will recommend mitigation strategies, as appropriate, for the area roadways which will aim to avoid or minimize added congestion. The results of the TIAR will be discussed in the Draft Environmental Assessment (EA).

Schools

We note your comment regarding potential overcrowding at area schools that may result from implementation of the project. The DHHL will coordinate with the State Department of Education (DOE) to address any requirements that may be necessitated as a result of the project. It is also noted that the DHHL will comply with requirement for school impact fees and will execute an Education Contribution Agreement with the DOE.

Water

We note your comment regarding water supply for the project. The DHHL and its design team will coordinate with the County Department of Water Supply to ensure that there is adequate water to serve the project. Further, a Preliminary Engineering Report (PER) addressing water requirements for the project will be included in the Draft EA.

Wastewater

We note your comment regarding wastewater systems for the project. The DHHL and its design team will coordinate with the County Department of Environmental Management to ensure that there is adequate system capacity to serve the project. As noted above, a PER will be included in the Draft EA. The PER will also assess wastewater requirements for the project.

Electrical Demand

We acknowlege your comment regarding electrical systems for the project. The DHHL will coordinate with Maui Electric Company (MECO) to ensure that there is adequate system capacity to serve the project. It is also noted that individual homeowners may choose to install solar panels to provide photovoltaic energy to their respective homes thereby lessening demand on the existing MECO grid.

Kokololio Street

We acknowledge your comment, and understand that Kokololio Street is owned by the Waikapū Gardens Homeowners Association. The proposed project will have an access point along the mauka portion of Honoapiʻilani Highway that lines up in the vicinity of existing Kokololio Street, although Kokololio Street does not currently provide access from Honoapiʻilani Highway on the makai side. The proposed project does not include planned improvements to the privately-owned Kokololio Street. The site plan for the project utilizes a previous County-approved subdivision map for this area which shows Kokololio Street's right-of-way up to Honoapiʻilani Highway, although currently there is no roadway connection point. As such, the existing

Kokololio Street is not planned to connect to Honoapiʻilani Highway as part of the project.

Project Access Points

We acknowledge your comment regarding safety of the project's proposed access points along Honoapiʻilani Highway. We note that the design of the access points was made with the safety of residents of the project, as well as other motorists traveling along Honoapiʻilani Highway in mind.

We note your comment and add that at this time, an additional traffic signal along Honoapiʻilani Highway is not warranted by the proposed project. Street lights illuminating the project's two (2) access points at Honoapiʻilani Highway are proposed.

Further, through consultation with the State Department of Transportation, no crosswalks are proposed at the project's access points. Rather, existing crosswalks are provided at Honoapiʻilani Highway's signalized intersections with Kuikahi Drive and Pilikana Street, to the north and south, respectively. As such, lighted crosswalk signage is not proposed at the project's access points.

Project Updates

We acknowledge your comment. The Waikapū Community Association (WCA) was and will continue to be consulted as the project moves forward through the EA process. As such, the WCA will receive a copy of the Draft EA that will be prepared for the project. In addition, the WCA will be notified of public meetings on the project, including meetings before the Hawaiian Homes Commission.

Waikapū Gardens Homeowners Board of Directors Letter Dated September 2, 2019

Thank you for providing a copy of the Waikapū Gardens Homeowners Board of Directors letter dated September 2, 2019 providing comments on the proposed project. We note that our office has received this letter separately and directly from the Waikapu Gardens Homeowners Board of Directors. A response letter has been prepared and sent directly to their organization.

Thank you for your participation in the Chapter 343, Hawai'i Revised Statutes environmental review process. A copy of your letter and this response will be included in the Draft EA being prepared for the project. In the meantime, should you have any questions or require additional information, please feel free to contact me at (808) 983-1233.

Very truly yours,

Bryan K. Esmeralda, AICP
Senior Associate

BKE:tn
cc: Stewart Matsunaga, State of Hawai'i, Department of Hawaiian Home Lands
Darren Okimoto, DDC LLC
Daren Unemori, Warren S. Unemori Engineering, Inc.
Tyler Fujiwara, Austin, Tsutsumi & Associates, Inc.
K:\DATA\DDC\PuunaniHomestead\Applications\EC\EC Response Letters\WCA.doc

REFERENCES X

X. REFERENCES

Bureau Veritas North America, Inc. Phase I Environmental Site Assessment, Southeast of Honoapiilani Highway and Kuikahi Drive, TMK No. (2)3-5-002:002, Wailuku, Maui, Hawaii, November 13, 2018.

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

County of Maui, 2030 General Plan, Maui Island Plan, December 2012.

County of Maui, Department of Planning, Maui Island Digital Zoning Map 1 - Page 82, 2018.

County of Maui, Department of Planning, Wailuku-Kahului Community Plan, 2002.

County of Maui, Department of Planning, Long Range Planning Division, Socio-Economic Forecast The Economic Projections For the Maui County General Plan 2030, SMS June 2006.

County of Maui, "Island of Maui TMK Parcels", [GIS Polygon Shapefile]. Created by Geographic Decision Systems International and County of Maui. 2010. Retrieved from http://hawaii.gov/dbedt/gis/download.htm.

County of Maui, Office of Economic Development, Maui County Data Book 2018.

Foote etal, U.S. Department of Agriculture, Soil Conservation Service, Soil Survey of the Islands of Kauʻai, Oʻahu, Maui, Molokaʻi, and Lānaʻi, State of Hawaiʻi. 1972

Gershman, Brickner & Bratton, Inc., Integrated Solid Waste Management Overview 2009.

Hawaiʻi Climate Change Mitigation and Adaptation Commission, Sea Level Rise Vulnerability and Adaptation Report, December 2017.

Hawaiʻi Department of Health, Clean Air Branch, "Hawaii Greenhouse Gas Emissions Report for 2015, Final Report", January 2019.

Hawaiʻi Energy, "Average Energy Use Per Household by County", https://dashboard.hawaii.gov/stat/goals/5xhf-begg/fgyu-2f7k/ydqr-r2fu, 2017, Accessed August 21, 2019.

Hawaiʻi Public Utilities Commission, "Report to the 2019 Legislature on Hawaii's Renewable Portfolio Standards", December 2018.

IPCC (2007). Summary for Policymakers. In: Climate Change 2007: The Physical Science Basis. EXIT Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

Munekiyo Hiraga, Final Environmental Assessment, Wailuku Apartment Rental Housing Project (TMK (2)3-5-001:064, July 2018.

State of Hawai‘i, Coastal Zone Management, Chapter 205A Hawai‘i Revised Statutes.

State of Hawai‘i, Department of Agriculture. “Agricultural Lands of Important to the State of Hawai‘i” [GIS Shapefile]. Digitized by State Office of Planning using ArcInfo version 6 from State Department of Agriculture’s 1 :24,000 blueline maps. Retrieved from http://hawaii.gov/dbedt/gis/download.htm.

State of Hawai‘i, Department of Agriculture, Agriculture Functional Plan, 1991.

State of Hawai‘i, Department of Business, Economic Development, and Tourism, Energy State Functional Plan, 1991.

State of Hawai‘i, Department of Business, Economic Development, and Tourism, Tourism State Functional Plan, 1991.

State of Hawai‘i, Department of Education, Enrollment Data (2019-2020), 2020.

State of Hawai‘i, Department of Education, Education State Functional Plan, 1989.

State of Hawai‘i, Department of Health, Health State Functional Plan, 1989.

State of Hawai‘i, Department of Labor and Industrial Relations, Employment State Functional Plan, 1990.

State of Hawai‘i, Department of Labor and Industrial Relations, https://www.hiwi.org/admin/gsipub/htmlarea/uploads/LFR_LAUS_Urate_current.pdf, accessed April 2020.

State of Hawai‘i, Department of Hawaiian Home Lands, Maui Island Plan, 2004.

State of Hawai‘i, Department of Hawaiian Home Lands, Paukukalo-Wai‘ehu Kou Regional Plan, 2010.

State of Hawai‘i, Department of Human Services, Human Services State Functional Plan, 1989.

State of Hawai‘i, Department of Land and Natural Resources, Conservation Lands State Functional Plan, 1991.

State of Hawai‘i, Department of Land and Natural Resources, Historic Preservation Functional Plan, 1991.

State of Hawai‘i, Department of Land and Natural Resources, Recreation State Functional Plan, 1991.

State of Hawai‘i, Department of Transportation, Transportation State Functional Plan, 1991.

State of Hawai‘i Hawai‘i Housing Finance and Development Corporation, Housing State Functional Plan, 1989.

State of Hawai‘i, Hawai‘i State Planning Act, Chapter 226, Hawai‘i Revised Statutes.

State of Hawai‘i, Hawaiian Homes Commission Act. Volume 06, Hawai‘i Revised Statutes.

State of Hawai‘i, State Land Use Commission. “State Land Use District Boundaries.” [GIS shapefile]. Digitized by State Office of Planning using Arclnfo 4, 5, and 6 from State Land Use Commission’s 1 :24,000 mylar maps. (2010). Retrieved from http://hawaii.gov/dbedt/gis/download. htm.

State of Hawai‘i, University of Hawai‘i, Higher Education Functional Plan, 1984.

U.S. Census Bureau, 2000 Census Summary File 1, accessed July 2019.

U.S. Census Bureau, 2010 Census Summary File 1, accessed July 2019.

U.S. Department of Agriculture. “Soil Survey Geographic database for Island of Maui, Hawai‘i”. [GIS Shapefile]. Digitized by State Office of Planning using Arclnfo 7.1.2 from Department of Agriculture’s 7.5 minute quadrangles. Retrieved from http://hawaii.gov/dbedt/gis/download.htm.

U.S. Energy Information Administration, “Commercial Building Energy Consumption Survey”, “Table C14. Electricity consumption and expenditure intensities, 2012”, May 2016.

U.S. Environmental Protection Agency, “AVERT, U.S. national weighted average CO2 marginal emission rate, year 2017 data”, 2018, Accessed August 21, 2019.

U.S. Environmental Protection Agency, “GHG Reporting Program Data, 2017”, https://ghgdata.epa.gov/ghgp/main.do, Accessed August 27, 2019.

U.S. Environmental Protection Agency, “Sources of Greenhouse Gas Emissions”, https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions, 2018, Accessed August 21, 2019.

University of Hawai‘i, Land Study Bureau. “Land Study Bureau Detailed Land Classification” [GIS Shapefile]. Digitized by State Office of Planning using Arclnfo 7.1
.1 from Land Study Bureau’s 1 :24,000 topographic and orthophoto quads. Retrieved from http://hawaii.gov/dbedt/gis/download.htm.

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Planning. Project Management. Sustainable Solutions.

VOLUME II OF II

Draft Environmental Assessment

PU‘UNANI HOMESTEAD SUBDIVISION

(TMK NOs. (2)3-5-002:002(por.) and (2)3-5-001:064 (por.))

Prepared for:
State of Hawai‘i,
Department of Hawaiian Home Lands

Approving Agency:
Hawaiian Homes Commission

May 2020

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Appendix C.	Biological Resources Survey for the Wailuku Apartment Rental Housing Project
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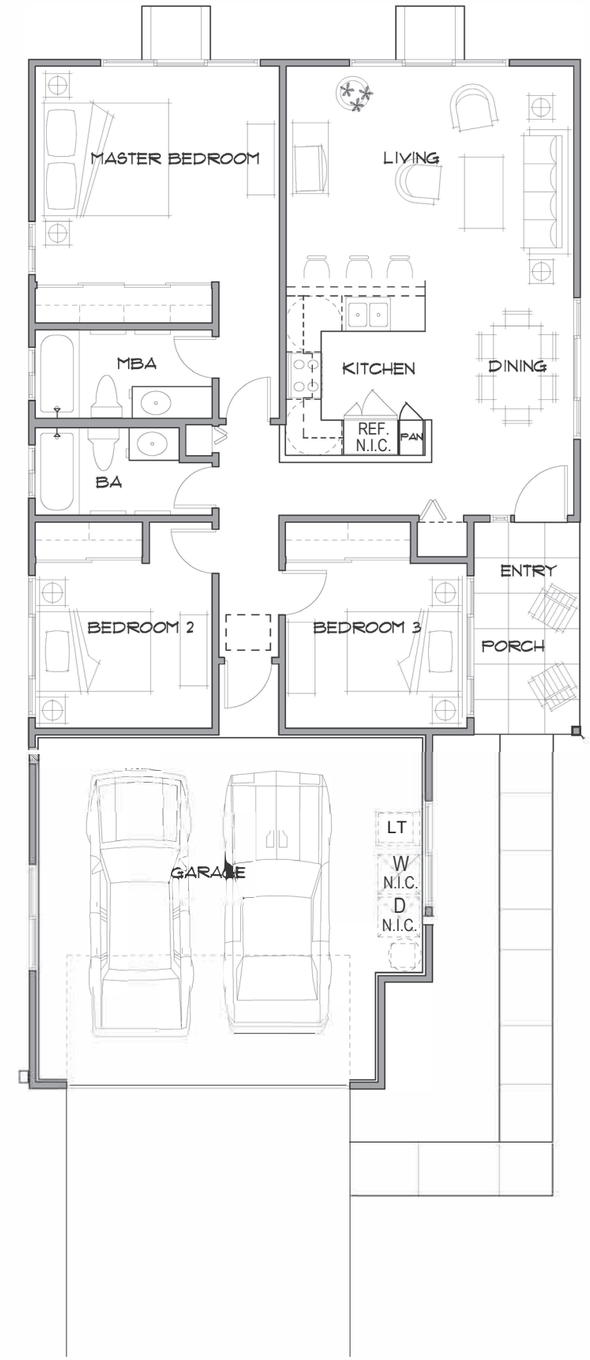
APPENDIX A

HOUSE PLANS

PLUMERIA

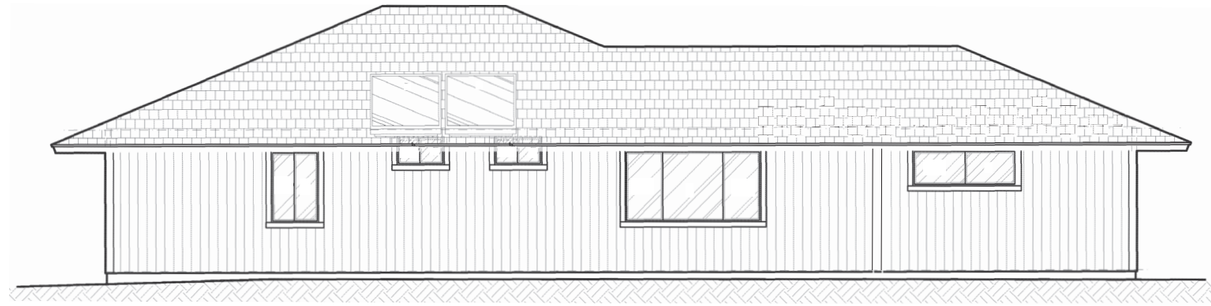
3 BEDROOM / 2 BATH

LIVING	1,088SF
LANAI/PORCH	72SF
GARAGE	456SF
TOTAL AREA	1,616SF



Not to scale. Subject to change. The developer, its agents, associate companies and suppliers reserve the right to modify plans, building elevations, roof design, specifications, features and sales price without prior notice or obligation. Plan does not reflect final construction. Does not include furniture or vehicles.

PLUMERIA
3 BEDROOM / 2 BATH



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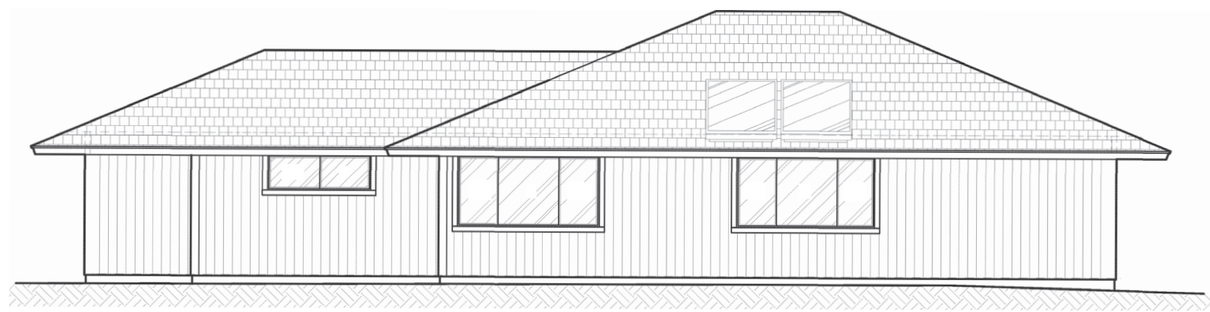

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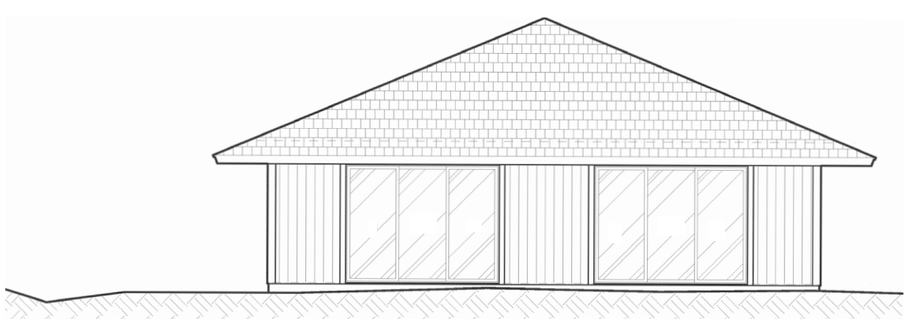

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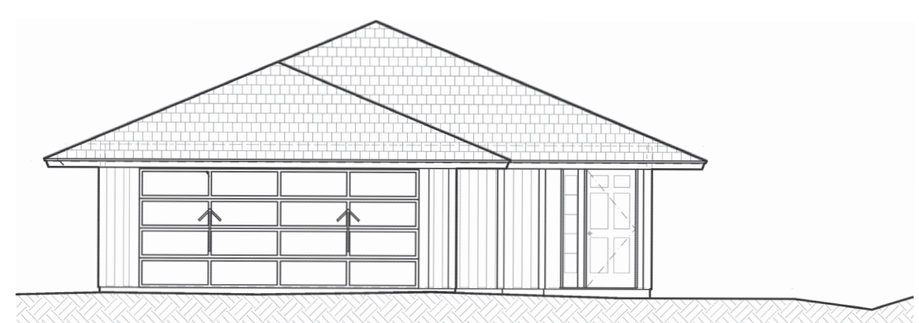

FRONT ELEVATION

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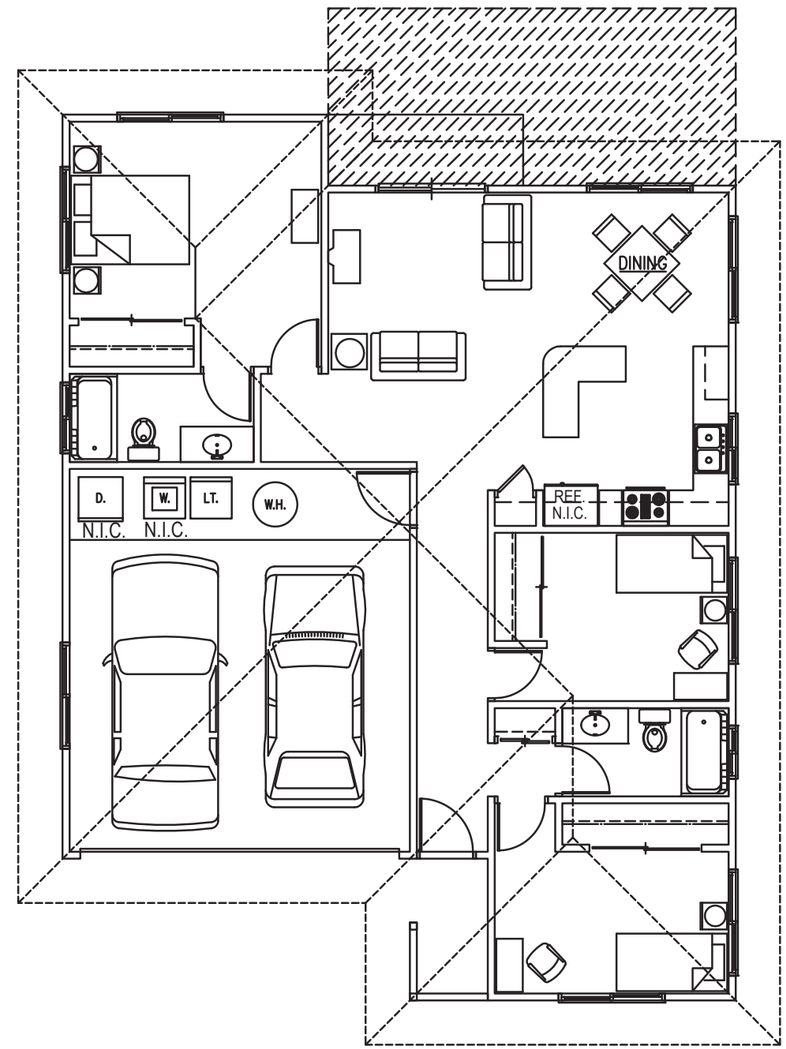
KAMANI

3 BEDROOM / 2 BATH

LIVING	1,193SF
LANAI/PORCH	26SF
GARAGE	470SF
TOTAL AREA	1,689SF



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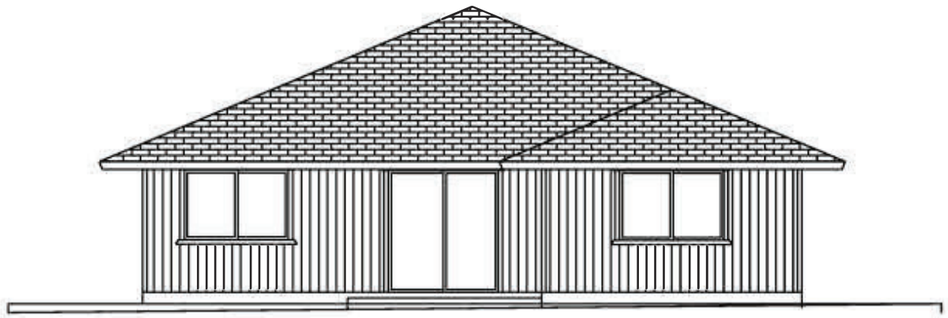
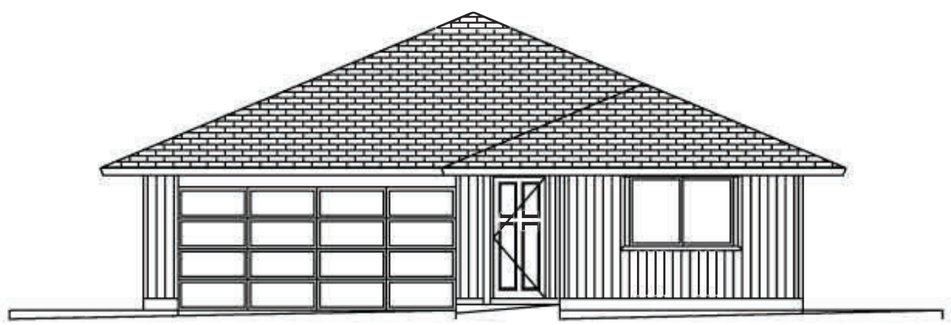
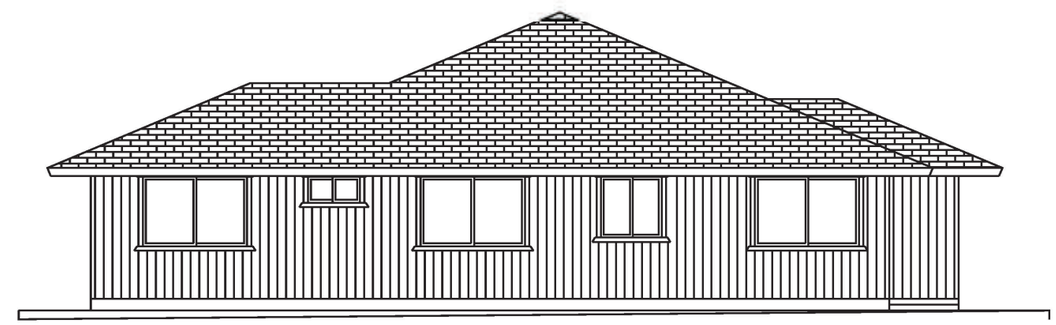


REAR ELEVATION

RIGHT ELEVATION



FRONT ELEVATION



LEFT ELEVATION

KAMANI

3 BEDROOM / 2 BATH

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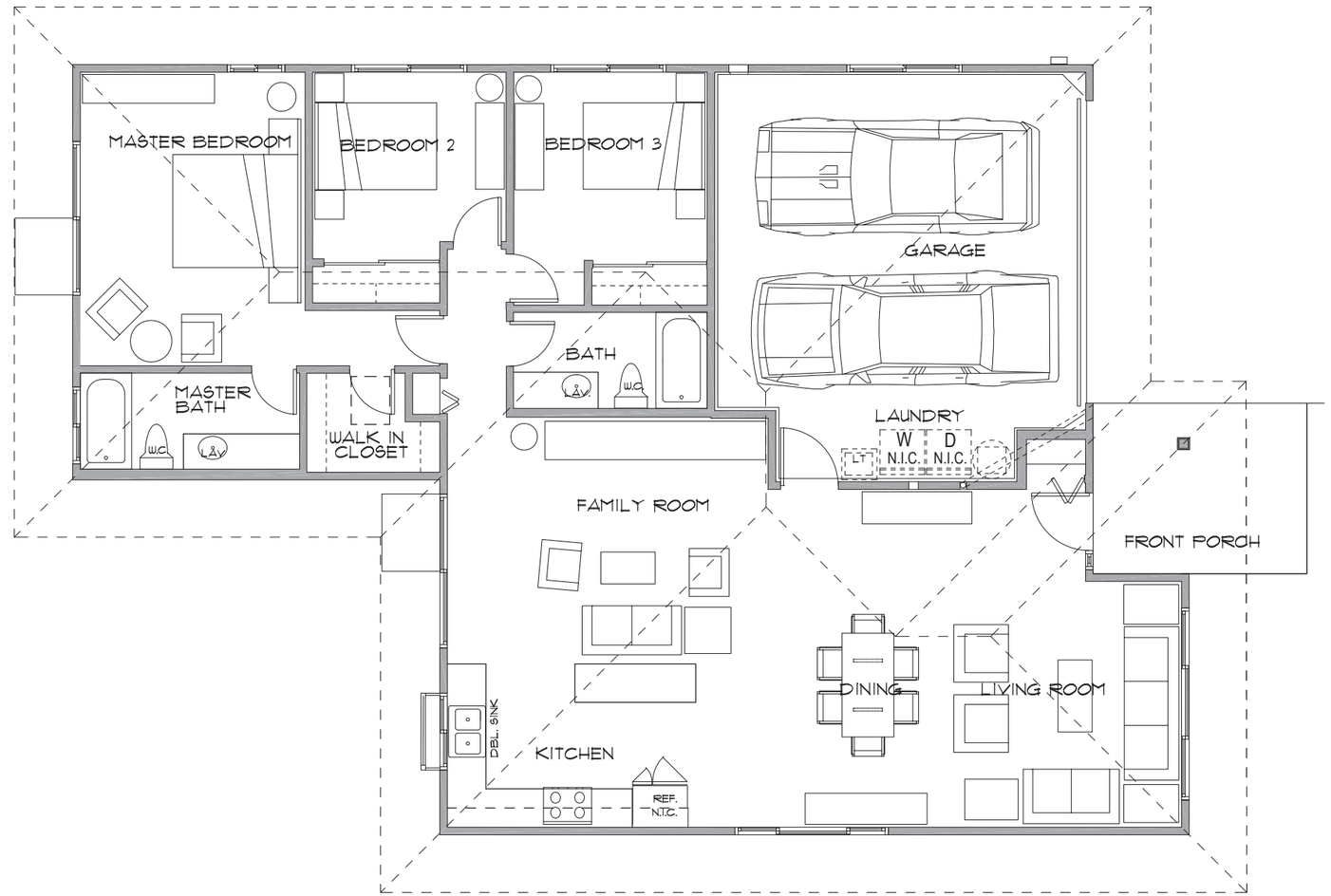


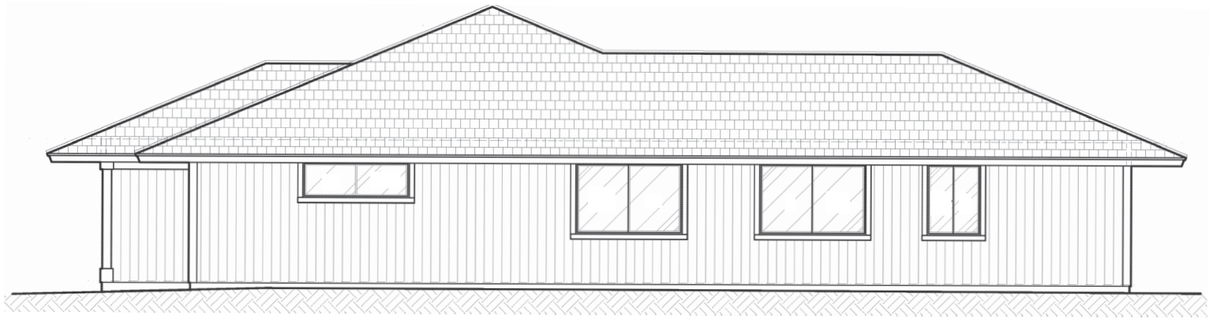
MAILE

3 BEDROOM / 2 BATH

LIVING	1,462SF
LANAI/PORCH	30SF
GARAGE	409SF
TOTAL AREA	1,865SF

Not to scale. Subject to change. The developer, its agents, associate companies and suppliers reserve the right to modify plans, building elevations, roof design, specifications, features and sales price without prior notice or obligation. Plan does not reflect final construction. Does not include furniture or vehicles.

MAILE
3 BEDROOM / 2 BATH



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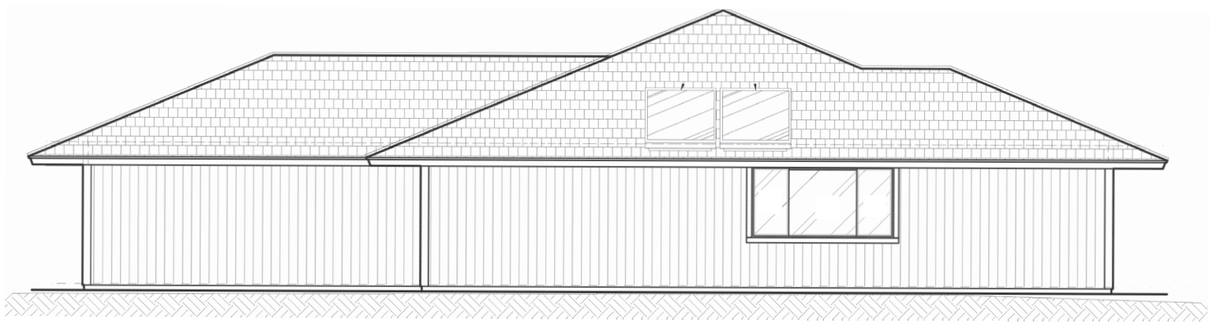

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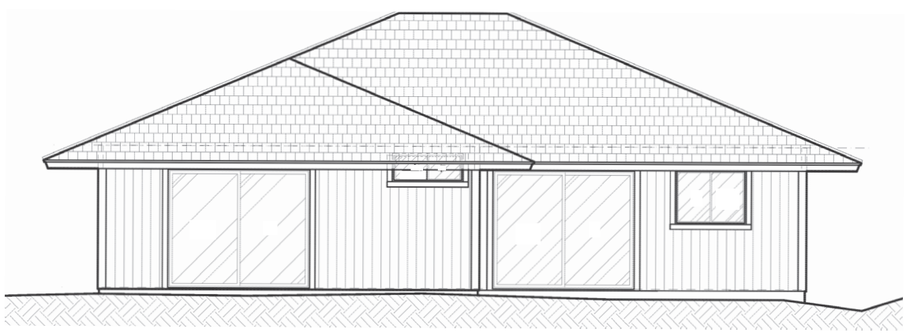

REAR ELEVATION

FRONT ELEVATION

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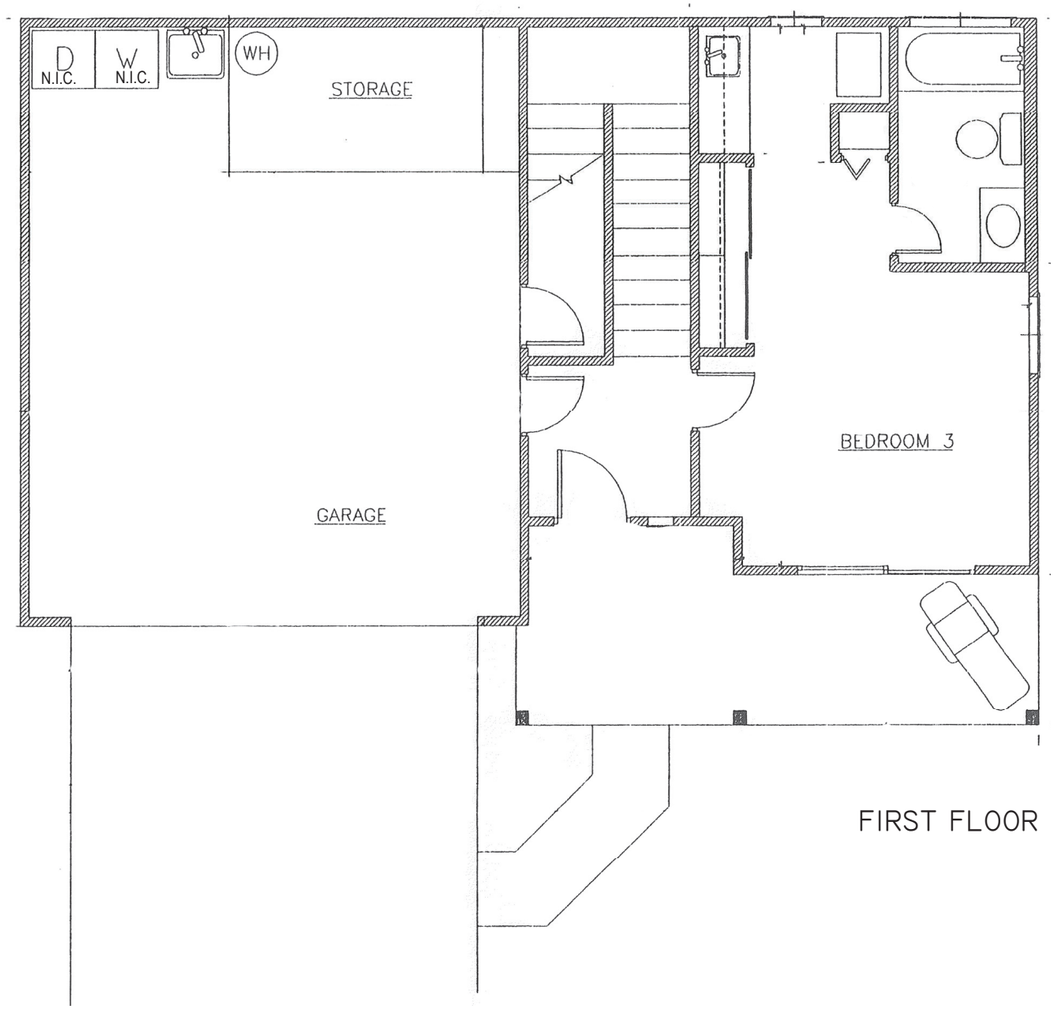
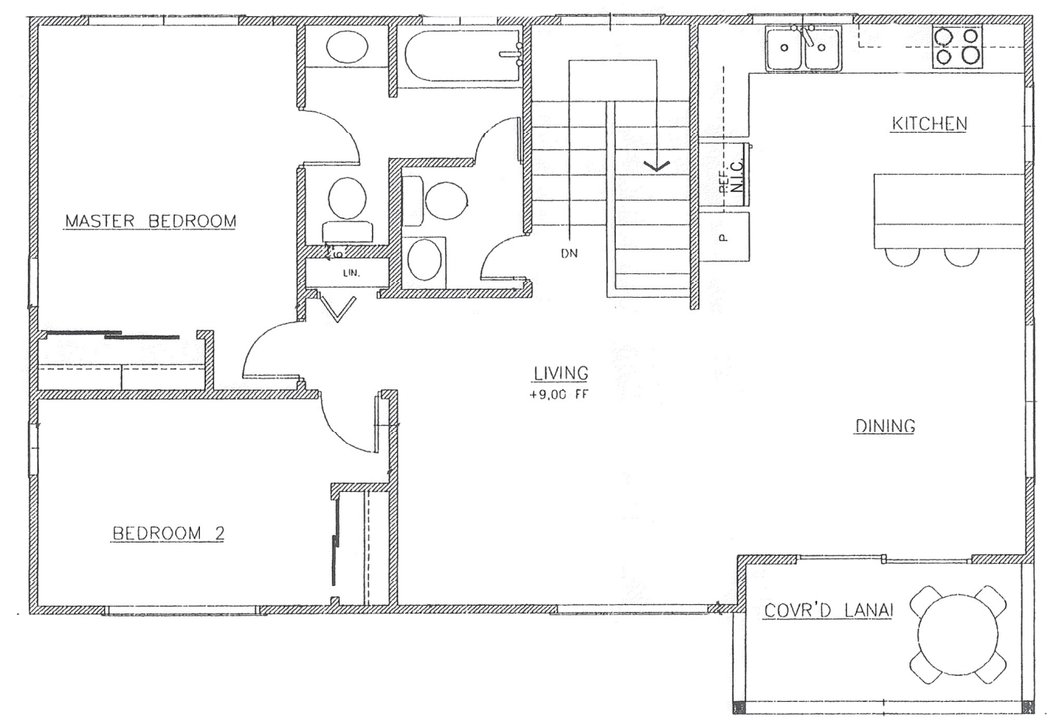


FIRST FLOOR



SECOND FLOOR

LAWAI'A

3 BEDROOM / 2.5 BATH

LIVING	1,280SF
LANAI/PORCH	192SF
GARAGE	451SF
TOTAL AREA	1,691SF

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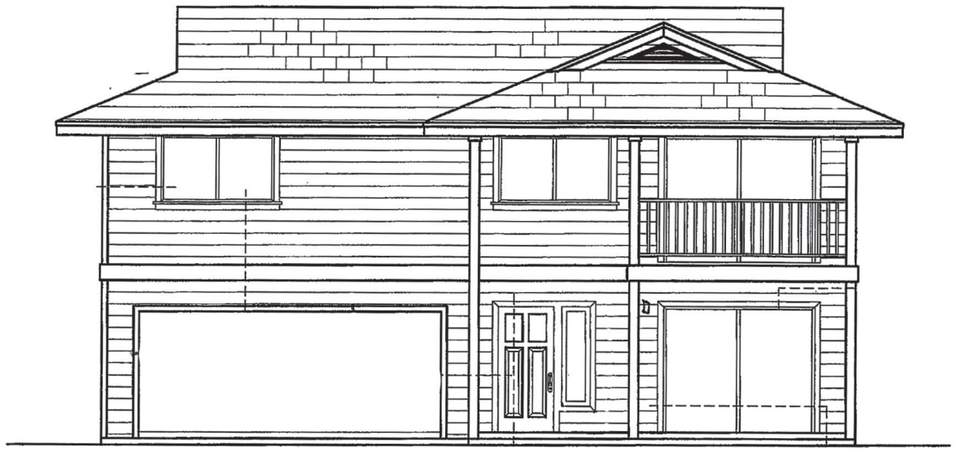

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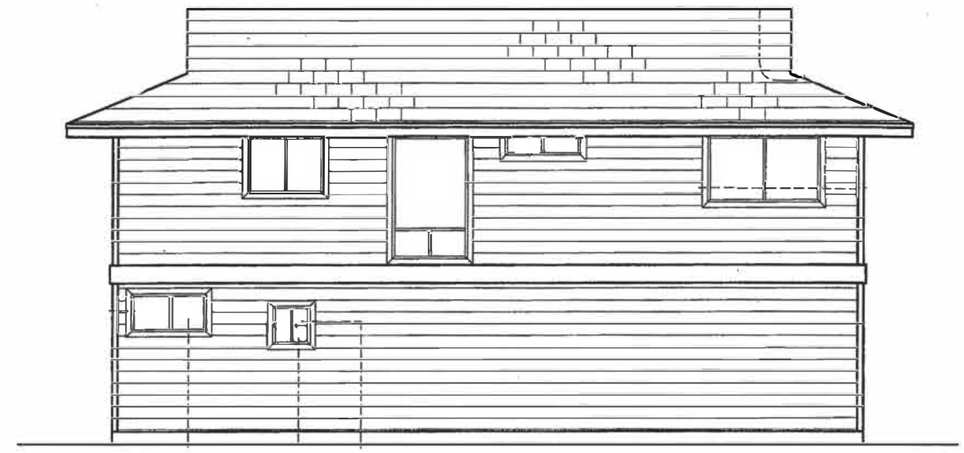

BACK

LEFT

RIGHT

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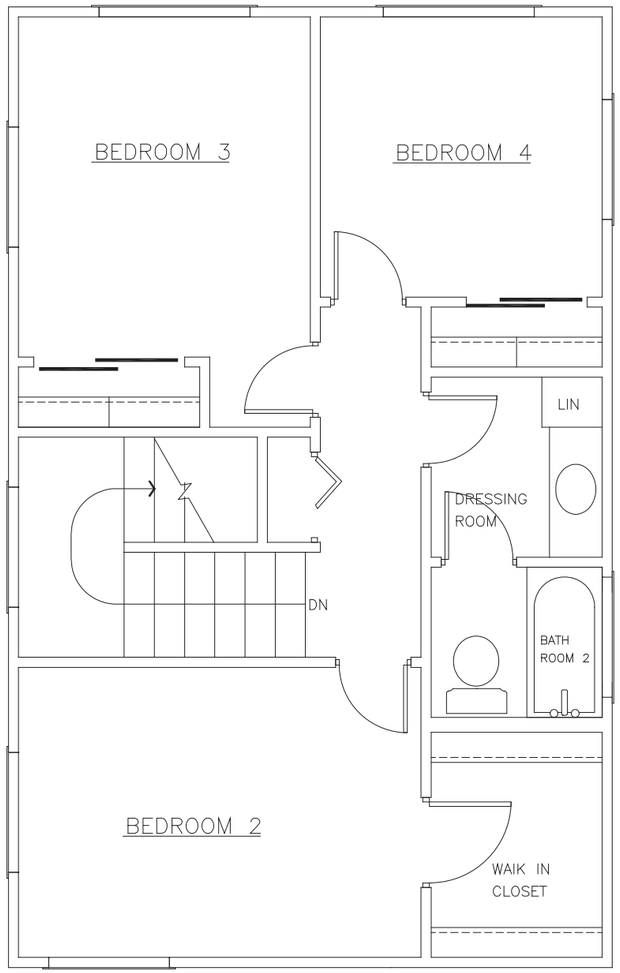
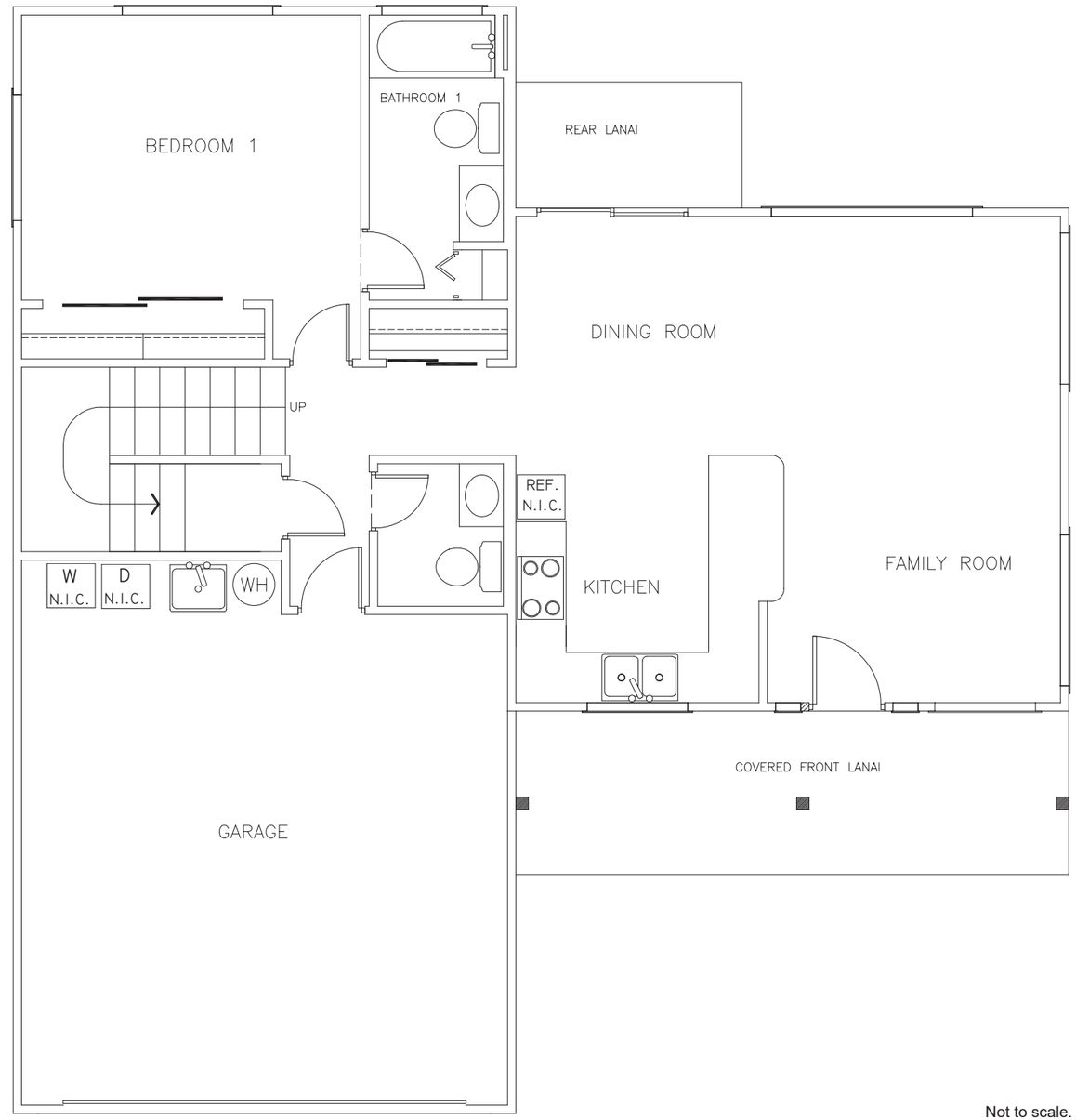
EXTERIOR ELEVATION

LAWAI'A

3 BEDROOM / 2.5 BATH



SECOND FLOOR PLAN



FIRST FLOOR PLAN

WAILELE

4 BEDROOM / 2.5 BATH

LIVING	1,646SF
LANAI/PORCH	143SF
GARAGE	400SF
TOTAL AREA	2,189SF

Not to scale. Subject to change. The developer, its agents, associate companies and suppliers reserve the right to modify plans, building elevations, roof design, specifications, features and sales price without prior notice or obligation. Plan does not reflect final construction. Does not include furniture or vehicles.

FRONT

BACK

LEFT

RIGHT

EXTERIOR ELEVATION

WAILELE

4 BEDROOM / 2.5 BATH
TWO STORY

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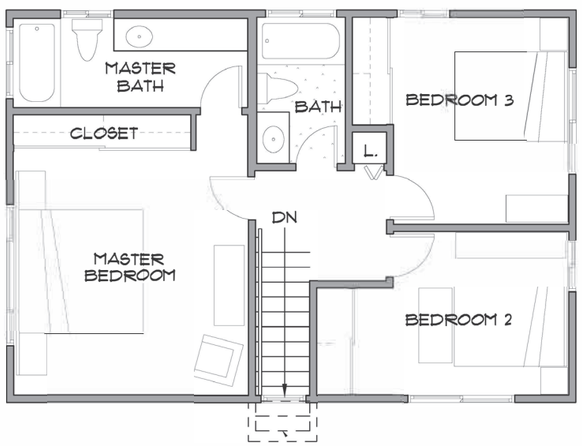
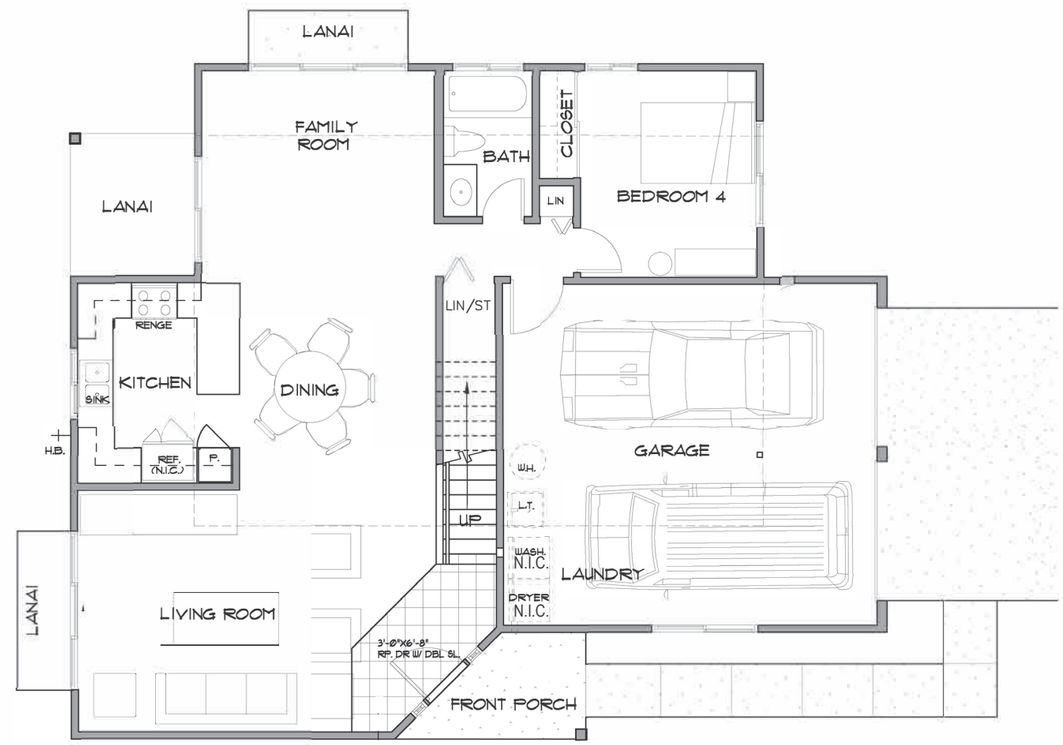


UPPER LEVEL FLOOR PLAN



GROUND FLOOR PLAN

PIKAKE

4 BEDROOM / 3 BATH

LIVING	1,674 SF
LANAI/PORCH	110 SF
GARAGE	434 SF
TOTAL AREA	2,218 SF

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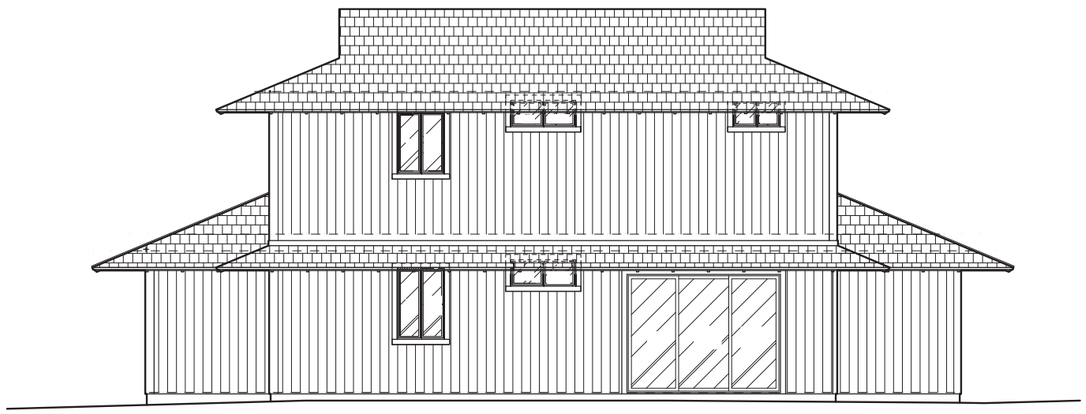
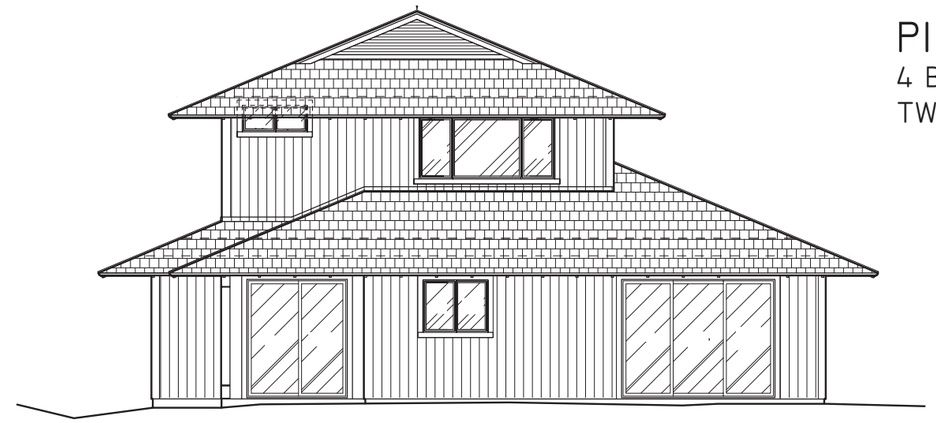
PIKAKE

4 BEDROOM / 3 BATH

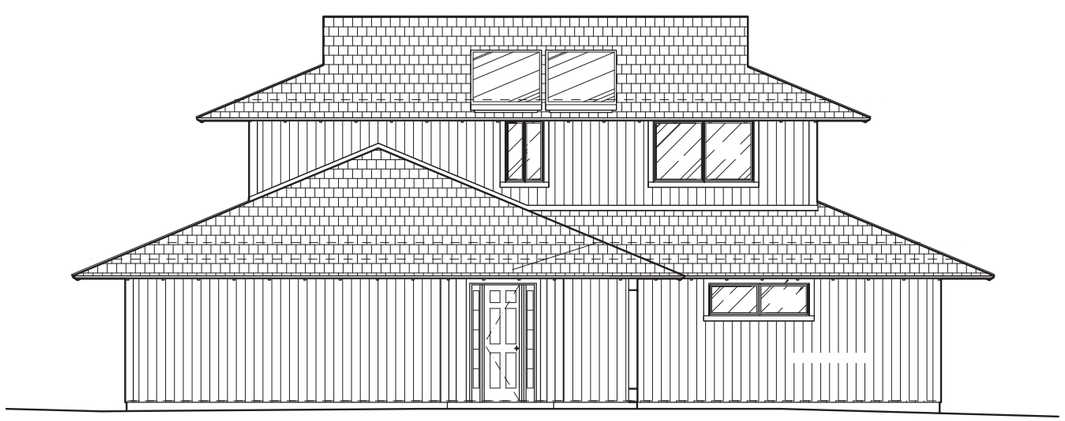
TWO STORY



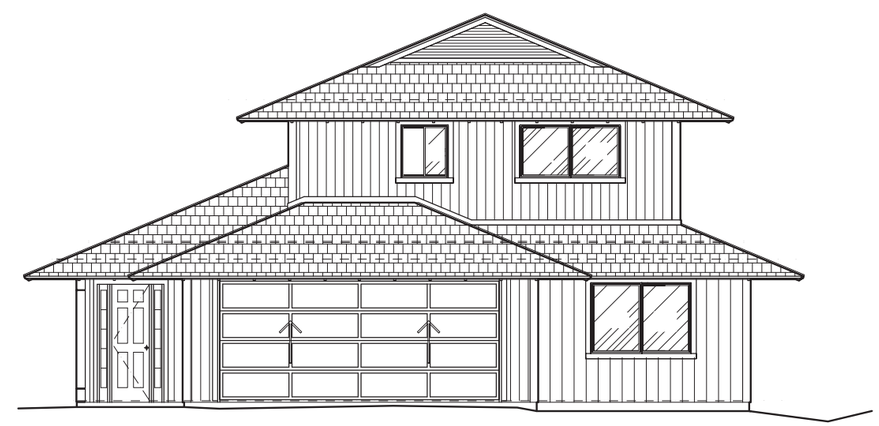
SIDE 2 ELEVATION



BACK ELEVATION



SIDE 1 ELEVATION



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FLORA AND FAUNA SURVEY REPORT

APPENDIX

B

FLORA AND FAUNA SURVEY

PUUNANI HOMESTEAD PROJECT

WAIKAPŪ, MAUI

By

ROBERT W. HOBDY
Environmental Consultant
Kokomo, Maui
June 2019

Prepared for:
DDC LLC

FLORA AND FAUNA SURVEY AND ASSESSMENT FOR THE PUUNANI HOMESTEAD PROJECT WAIKAPŪ, MAUI

INTRODUCTION

The Puunani Homestead project is located in northern Waikapū, West Maui on 60.09 acres of former sugar cane land (TMK (2) 3-5-02:002). It lies above Honoapiʻilani Highway and below the old Waikapū County Road and is adjacent to a residential community to the south (see Figures 1&2). This biological survey and assessment was initiated by the owner in fulfillment of environmental requirements of the planning process.

SITE DESCRIPTION

The project area lies on gently sloping land between the elevations of 380 and 510 feet above sea level. The vegetation is somewhat sparse, due to the present grazing of livestock. A few small trees are scattered throughout the area among closely cropped grasses and shrubs. Soils are characterized as Iao clay, 3 – 7% slopes (lcB) and Iao Cobbly Silty Clay, 3 – 7% slopes (1bB), which are deep, well-drained alluvial soils (Foote et al, 1972). Rainfall averages between 25 and 30 inches per year, with most occurring during the winter months. A portion of the Waiheʻe Ditch runs through the property.

SURVEY OBJECTIVES

This report summarizes the findings of a flora and fauna survey of the Puunani Homestead Project which was conducted in June 2019. The objectives of the survey were to:

1. Document what plant and animal species occur on the property.

2. Document the status and abundance of each species.

3. Determine the presence of any native flora and fauna particularly any that are Federally listed as Threatened or Endangered (USFWS, 2019). If such occur, identify what features of the habitat may be essential for these species.

4. Determine if the project area contains any special habitats which if lost or altered might result in a significant negative impact on the flora and fauna in this part of the island.

BOTANICAL SURVEY REPORT

A walk-through botanical survey was conducted covering all parts of the project area and habitats. Notes were made on all plant species present, their abundance and their status. Results were compiled in a complete flora inventory for analysis and assessment.

DESCRIPTION OF THE VEGETATION

The vegetation was dominated by one non-native grass species, the hardy Guinea grass (*Megathyrsus maximus*) which was found throughout all parts of the area. Four other species were common, the koa haole (*Leucaena leucocephala*), sourgrass (*Digitaria insularis*), balloon plant (*Asclepias physocarpa*) and glycine (*Neonotonia wightii*). A total of 65 plant species were recorded. Sixty-two of these were not native to Hawaii and are considered to be pasture grasses or agricultural weeds. Two species were Polynesian plants brought to Hawaii by the Hawaiians centuries ago. These were the kukui (*Aleurites molucccana*) and the niu or coconut (*Cocos nucifera*), both of which had been recently planted.

The only native species recorded was the ʻuhaloa (*Waltheria indica*) which is common throughout drier habitats in Hawaii and is also native to many other Pacific islands as well.

DISCUSSION AND RECOMMENDATIONS

The Puunani Homestead project is largely overrun with non-native grasses, shrubs and trees. The one native plant species that does occur here is widespread in Hawaii. No Endangered or Threatened species (USFWS, 2019) were found and none of the species here are candidates for such status. The disturbed environment was not found to include any special habitats of plant species or ecosystems.

The development of this project area is not expected to result in any significant negative impacts on native plant communities in this part of Maui.

PLANT SPECIES LIST

Following is a checklist of all those vascular plant species inventoried during the field studies. Plant families are arranged alphabetically within two groups: Monocots and Dicots. Taxonomy and nomenclature of the Monocots and Dicots are in accordance with Wagner et al. (1999).

For each species, the following information is provided:

1. Scientific name with author citation.

2. Common English or Hawaiian name.

3. Bio-geographical status. The following symbols are used:

   Endemic = native only to the Hawaiian Islands; not naturally occurring anywhere else in the world.

   Indigenous = native to the Hawaiian Islands and also to one or more other geographic area(s).

   Polynesian introduction = plants introduced to Hawaii in the course of the Polynesian migrations and prior to western contact.

   Non-native = all those plants brought to the islands intentionally or accidentally after western contact.

4. Abundance of each species within the project area:

   Abundant = forming a major part of the vegetation within the project area.

   Common = widely scattered throughout the area or locally abundant within a portion of it.

   Uncommon = scattered sparsely throughout the area or occurring in a few small patches.

   Rare = only a few isolated individuals within the project area.

SCIENTIFIC NAME	COMMON NAME	STATUS	ABUNDANCE
MONOCOTS			
ARECACEAE (Palm Family)			
Cocos nucifera L.	niu, coconut	Polynesian	rare
Washingtonia filifera (Andre) S. Watson	California washingtonia	non-native	rare
MUSACEAE (Banana Family)			
Musa acuminata x balbisiana Colla	banana	non-native	rare
POACEAE (Grass Family)			
Cenchrus ciliaris L.	buffelgrass	non-native	rare
Chloris barbata (L.) Sw.	swollen fingergrass	non-native	rare
Cynodon dactylon (L.) Pers.	Bermuda grass	non-native	rare
Digitaria insularis (L.) Mez ex Ekman	sourgrass	non-native	common
Eleusine indica (L.) Gaertn.	wire grass	non-native	rare
Megathyrsus maximus (Jacq.) Simon & Jacobs	Guinea grass	non-native	abundant
Melinis repens (Willd.) Zizka	Natal redtop	non-native	rare
POTAMOGETONACEAE (Pondweed Family)			
Potamogeton foliosus Raff.	pondweed	indigenous	rare
DICOTS			
ACANTHACEAE (Acanthus Family)			
Thunbergia fragrans Roxb.	white thunbergia	indigenous	rare
AMARANTHACEAE (Amaranth Family)			
Alternanthera pungens Kunth	khaki weed	non-native	rare
Amaranthus spinosus L.	spiny amaranth	non-native	uncommon
ANACARDIACEAE (Mango Family)			
Schinus terebinthifolius Raddi	Christmas berry	non-native	rare
APOCYNACEAE (Dogbane Family)			
Asclepias physocarpa (E. Mey.) Schlect.	balloon plant	non-native	common
Calotropis procera (Aiton) W.T.Aiton	small crown flower	non-native	uncommon
ASTERACEAE (Sunflower Family)			
Ageratina riparia (Regel) R. King & H. Robinson	*Hāmākua pāmakani*	non-native	rare
Conyza bonariensis (L.) Cronq.	hairy horseweed	non-native	uncommon
Emilia fosbergii Nicolson	red pualele	non-native	rare
Heterotheca grandiflora Nutt.	telegraph weed	non-native	uncommon
Pluchea carolinensis (Jacq.) G. Don	sourbush	non-native	rare
Senecio madagascariensis Poir.	Madagascar fireweed	non-native	uncommon
T*ridax procumbens* L.	coat buttons	non-native	rare
Verbesina encelioides (Cav.) Benth & Hook.	golden crown-beard	non-native	rare
Xanthium strumarium L.	kīkānia	non-native	rare
BIGNONIACEAE (Bignonia Family)			
Spathodea campanulata P. Beauv.	African tulip tree	non-native	rare
BORAGINACEAE (Borage Family)			
Heliotropium amplexicaule Vahl	summer heliotrope	non-native	rare
Heliotropium procumbens Mill.	fourspike heliotrope	non-native	rare
BRASSICACEAE (Mustard Family)			
Lepidium virginicum L.	pepperwort	non-native	rare

SCIENTIFIC NAME	COMMON NAME	STATUS	ABUNDANCE
CARICACEAE (Papaya Family)			
Carica papaya L.	papaya	non-native	rare
CASUARINACEAE (She-oak Family)			
Casuarina equisetifolia L.	common ironwood	non-native	rare
CONVOLVULACEAE (Morning Glory Family)			
Ipomoea obscura *(L.) Ker-Gawl.*	obscure morning glory	non-native	rare
Ipomoea triloba L.	little bell	non-native	rare
CUCURBITACEAE (Gourd Family)			
Momordica charantia L.	bitter melon	non-native	rare
EUPHORBIACEAE (Spurge Family)			
Aleurites mollucana (L.) Willd.	kukui	Polynesian	rare
Euphorbia heterophylla L.	kaliko	non-native	rare
Euphorbia hirta L.	hairy spurge	non-native	rare
Euphorbia hypericifolia L.	graceful spurge	non-native	rare
Macaranga tanarius (L.) Mull. Arg.	parasol leaf tree	non-native	rare
Ricinus communis L.	Castor bean	non-native	uncommon
FABACEAE (Pea Family)			
Acacia confusa Merr.	Formosa koa	non-native	uncommon
Canavalia cathartica Thouars	mauna loa	non-native	uncommon
Chamaecrista nictitans (L.) Moench	partridge pea	non-native	rare
Crotalaria retusa L.	rattle pod	non-native	uncommon
Desmanthus pernambucanus (L.) Thellung	slender mimosa	non-native	uncommon
Indigofera spicata Forssk.	creeping indigo	non-native	uncommon
Indigofera suffruticosa Mill.	*inikō*	non-native	rare
Leucaena leucocephala (Lam.) de Wit	*koa haole*	non-native	common
Macroptilium atropurpureum (DC.) Urb.	glycine	non-native	common
Pithecellobium dulce (Roxb.) Benth.	*'opiuma*	non-native	uncommon
Prosopis pallida (Humb. & Bonpl. ex Willd) Kunth	*kiawe*	non-native	rare
Samanea saman (Jacq.) Merr.	monkeypod	non-native	rare
LAMIACEAE (Mint Family)			
Leonotis nepetifolia (L.) R. Br.	lion's ear	non-native	rare
MALVACEAE (Mallow Family)			
Malvastrum coromandelianum (L.) Garcke	false mallow	non-native	uncommon
Sida ciliaris L.	bracted fanpetals	non-native	rare
Sida spinosa L.	prickly sida	non-native	uncommon
Waltheria indica L.	*'uhaloa*	indigenous	rare
MORACEAE (Fig Family)			
Ficus microcarpa L. fil.	Chinese banyan	non-native	rare
MYRTACEAE (Myrtle Family)			
Syzygium cumini (L.) Skeels	Java plum	non-native	rare
NYCTAGINACEAE (Four-o'clock Family)			
Boerhavia coccinea Mill.	scarlet spiderling	non-native	uncommon
Mirabilis jalapa L.	four o'clock	non-native	rare

SCIENTIFIC NAME	COMMON NAME	STATUS	ABUNDANCE
PAPAVERACEAE (Poppy Family)			
Argemone mexicana L.	Mexican poppy	non-native	rare
VERBENACEAE (Verbena Family)			
Lantana camara L.	lantana	non-native	rare

FAUNA SURVEY REPORT

SURVEY METHODS

A walk-through fauna survey method was conducted in conjunction with the botanical survey. All parts of the project area were covered. Field observations were made with the aid of binoculars and by listening to vocalizations. Notes were made on species, abundance, activities and locations as well as observations of trails, tracks, scat and signs of feeding. In addition, an evening visit was made in the area to record crepuscular activities and vocalizations and to see if there was any evidence of occurrence of the Hawaiian hoary bat (*Lasiurus cinereus semotus*).

RESULTS

MAMMALS

Six non-native species of mammals were seen during three site visits in the area. Taxonomy and nomenclature follow Tomich (1986). These species included cattle (*Bos Taurus*), pigs (*Sus scrofa*), dogs (*Canis familiaris*), horses (*Equus caballus*), mongoose (*Herpestes auropunctatus*) and axis deer (*Axis axis*). While not seen, one would expect to find mice (*Mus domesticus*), rats (*Rattus* spp.) and perhaps domestic cats (*Felis catus*).

A special effort was made to look for the Endangered ʻōpeʻapeʻa or Hawaiian hoary bat by making an evening survey in the middle of the project area. When present in an area these bats can be easily identified as they forage for insects, their distinctive flight patterns clearly visible in the glow of twilight. No evidence of such activity was observed though visibility was excellent. In addition, a bat detecting device (Batbox IIID) was used, set to the frequency of 27,000 Hertz, which is the frequency these bats are known to use for echo-location. No bats were detected with the use of this device.

BIRDLIFE

Birdlife was modest in both species diversity and in total numbers. A total of ten non-native species were observed during three site visits. Taxonomy and nomenclature follow American Ornithologists' Union (2019). Four species were common, the zebra dove (*Geopelia striata*), spotted dove (*Streptopelia chinensis*), common myna (*Acridotheres tristis*) and black francolin (*Francolinus francolinus*). Five other species were uncommon, and one was rare. No native birds were seen.

INSECTS

Insects were modest in numbers. A total of twelve species were observed during three site visits. Taxonomy and nomenclature follow Nishida et al (1992). Three species were common throughout the project area, the monarch butterfly (*Danaus plexippus*), the globe skimmer dragonfly (*Pantala flavescens*) and dung fly (*Musca sorbens*). Another three species were uncommon, the house fly (*Musca domestica*), the sleepy orange butterfly (*Eurema niccipe*) and the pinao or green darner dragonfly (*Anax junius*). Six other insect species were rare. The two dragonfly species, the pinao and the globe skimmer, are indigenous Hawaiian species that are native here, but which also occur naturally in other parts of the world.

DISCUSSION AND RECOMMENDATIONS

The fauna on this property is strongly represented by non-native species. Just two indigenous dragonflies, the pinao and the globe skimmer, were found here. These dragonflies are common in many habitats in Hawaii and are also native in other parts of the world.

While no Endangered bats were detected during the evening survey, the ʻōpeʻapeʻa is known to occur in many habitats in Hawaii. These bats are highly mobile and appear to migrate around in response to flushes in insect activity, wherever it may occur. There is likelihood that these bats may utilize the habitat on this property at some times of the year. It is recommended, should these bats show up here, that the U.S. Fish and Wildlife Service be consulted on how to proceed so that these bats are not harmed or killed.

Additionally, there are two native seabirds, the Endangered Hawaiian petrel (*Pterodroma sanwichensis*) and the Threatened Newell's shearwater (*Puffinus newelli*), that fly over these lowlands during the evenings on their way to their burrows high in the mountains and then fly out to the ocean early in the morning during the summer and fall months. These seabirds, and especially their young fledglings, are attracted to bright lights and can be disoriented and crash. They are then vulnerable to injury, vehicle strikes or predators. It is recommended that any significant outdoor lighting in any proposed development on this property be shielded to direct the light downward to minimize any disorientation of these protected birds.

In summary, no Endangered or Threatened animal species (USFWS, 2019) were found on the property in the course of this survey, nor were any found that are candidates for such status. The development of this project should not result in a significant negative impact on native fauna or habitats in this part of Maui.

ANIMAL SPECIES LIST

Following is a checklist of the animal species inventoried during the field work. Animal species are arranged in descending abundance within three groups: Mammals, Birds and Insects. For each species the following information is provided:

1. Common name.

2. Scientific name.

3. Bio-geographical status. The following symbols are used:

   Endemic = native only to Hawaii; not naturally occurring anywhere else in the world.

   Indigenous = native to the Hawaiian Islands and also to one or more other geographic area(s).

   Non-native = all those animals brought to Hawaii intentionally or accidentally after western contact.

   Migratory = spending a portion of the year in Hawaii and a portion elsewhere. In Hawaii the migratory birds are usually in the overwintering/non-breeding phase of their life cycle.

4. Abundance of each species within the project area:

   Abundant = many flocks or individuals seen throughout the area at all times of day.

   Common = a few flocks or well scattered individuals throughout the area.

   Uncommon = only one flock or several individuals seen within the project area.

   Rare = only one or two seen within the project area.

SCIENTIFIC NAME	COMMON NAME	STATUS	ABUNDANCE
MAMMALS			
CANIDAE (Dog Family)			
Canis familiaris L.	domestic dog	non-native	uncommon
VIVERRIDAE (Mongoose Family)			
Herpestes auropunctatus Hodgson	small Indian mongoose	non-native	rare
EQUIDAE (Horse Family)			
Equus caballus L.	domestic horse	non-native	rare
SUIDAE (Swine Family)			
Sus scrofa L.	domestic pig	non-native	uncommon
BOVIDAE (Cattle Family)			
Bos taurus L.	domestic cattle	non-native	uncommon
CERVIDAE (Deer Family)			
Axis axis Erxleben	axis deer	non-native	rare
BIRDS			
CARDINALIDAE (Cardinal Family)			
Cardinalis cardinalis L.	northern cardinal	non-native	uncommon
COLUMBIDAE (Dove Family)			
Geopelia striata L.	zebra dove	non-native	common
Streptopelia chinensis Scopoli	spotted dove	non-native	common
ESTRILDIDAE (Estrildid Finch Family)			
Lonchura punctulata L.	nutmeg mannikin	non-native	rare
FRINGILLIDAE (Carduelin Finch Family)			
Carpodacus mexicanus Muller	house finch	non-native	uncommon
PASSERIDAE (Sparrow Family)			
Passer domesticus L.	house sparrow	non-native	uncommon
PHASIANIDAE (Pheasant Family)			
Francolinus francolinus L.	black francolin	non-native	common
Gallus gallus L.	chicken	non-native	uncommon
STURNIDAE (Starling Family)			
Acridotheres tristis L.	common myna	non-native	common
THRAUPIDAE (Tanager Family)			
Paroaria coronata Miller	Red-crested cardinal	non-native	uncommon

SCIENTIFIC NAME	COMMON NAME	STATUS	ABUNDANCE
INSECTS			
Order ARANEAE - true spiders			
ARANEIDAE (Orb Weaver Family)			
Argiope appensa Walkenaer	common garden spider	non-native	rare
Gasteracantha mammosa Koch	Asian spiny-backed spider	non-native	rare
CULICIDAE (Mosquito Family)			
Culex quinquefasciatus Say	southern house mosquito	non-native	rare
Order DIPTERA - flies			
MUSCIDAE (House Fly Family)			
Musca domestica L.	house fly	non-native	uncommon
Musca sorbens Wiedemann	dung fly	non-native	common
Order LEPIDOPTERA - butterflies and moths			
GEOMETRIDAE (Geometer Moth Family)			
Cyclophora nanaria Walker	dwarf tawny wave	non-native	rare
LYCAENIDAE (Gossamer-winged Butterfly Family)			
Lampides boeticus L.	long-tailed blue butterfly	non-native	uncommon
NYMPHALIDAE (Brush-footed Butterfly Family)			
Danaus plexippus L.	monarch butterfly	non-native	common
PIERIDAE (White & Sulphur Butterfly Family)			
Eurema niccipe Cramer	sleepy orange butterfly	non-native	uncommon
Pieris rapae L.	cabbage butterfly	non-native	rare
Order ODONATA - dragonflies, damselflies			
AESHNIDAE (Hawker Dragonfly Family)			
Anax junius Drury	green darner dragonfly	indigenous	uncommon
LIBELLULIDAE (Skimmer Dragonfly Family)			
Pantala flavescens Fabricius	globe skimmer	indigenous	common
Order ORTHOPTERA - grasshoppers and crickets			
TETTIGONIIDAE (Katydid Family)			
Elimaea punctifera Walker	katydid	non-native	rare

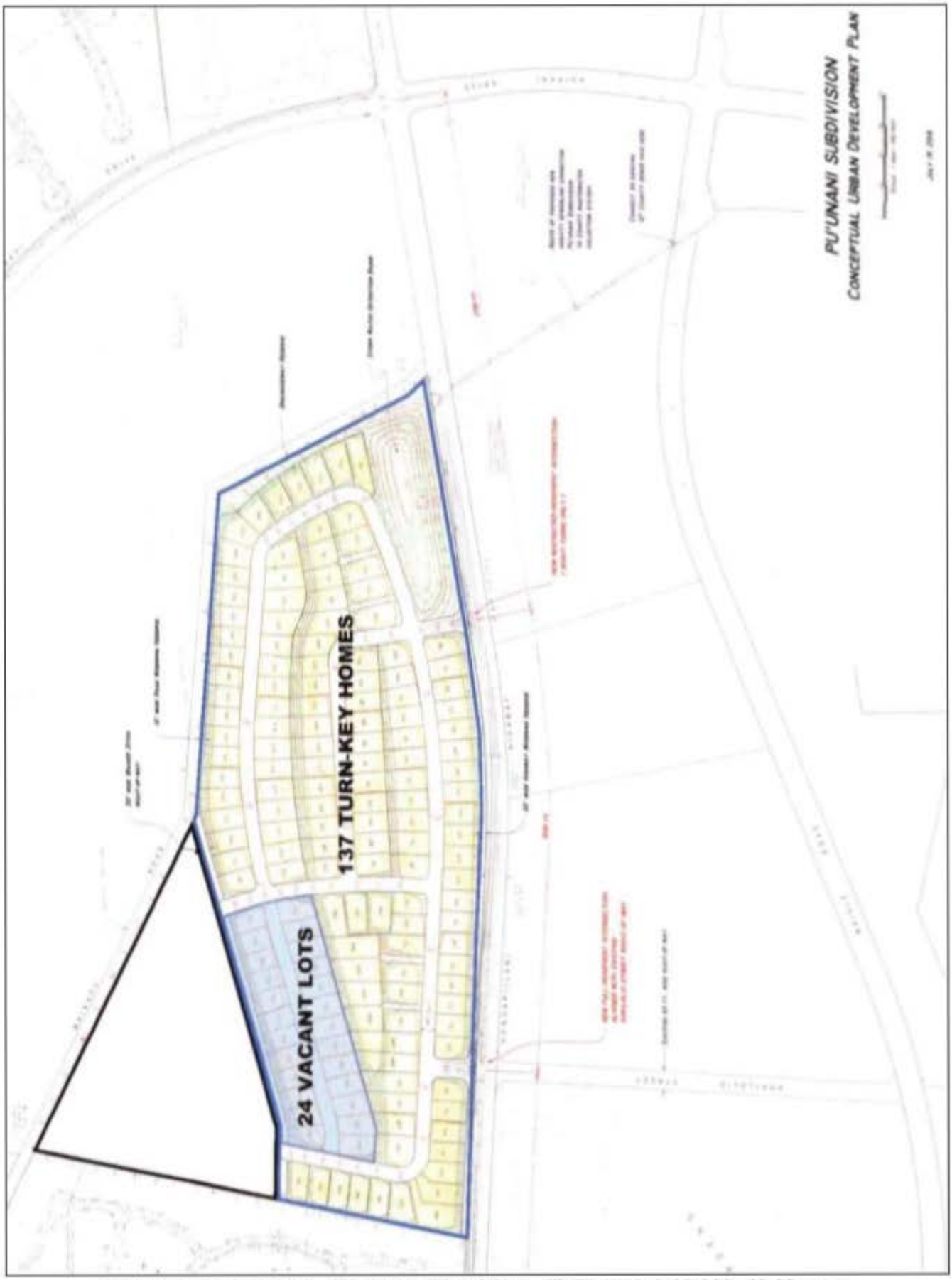

Figure 1. Project Area - Waikapū, West Maui. TMK (2) 3-5-02:002 60.09 acres

Figure 2. Project Area – Waikapū, West Maui. TMK (2) 3-5-02:002 60.09 acres

Figure 3. Project Area – heavily grazed pasture.

Figure 4. Project Area – showing sparse vegetation.

LITERATURE CITED

American Ornithologists' Union (2019). Checklist of North American Birds. 7th Edition. American Ornithologists' Union. Washington D.C.

Armstrong, R.W. (ed.) 1983. Atlas of Hawaii. (2nd edition) University of Hawaii Press.

Foote, D.E., E.L. Hill, S. Nakamura & F. Stephens. 1972. Soils Survey of Kauai, Oahu, Maui, Molokai and Lanai. State of Hawaii. Soil Conservation Service, Washington DC.

Nishida, G.M., G.A. Samuelson, J. S. Strazanac and K.S. Kami, 1992. Hawaiian Terrestrial Arthropod Checklist. Hawaiian Biological Survey. Honolulu.

Tomich, P.Q. 1986. Mammals in Hawaii. Bishop Museum Press, Honolulu.

U.S. Fish and Wildlife Service. 2019. Endangered and Threatened Wildlife and Plants. Occurrences and Listings for Hawaii. www.fws.gov/endangered

Wagner, W.L., D.R. Herbst, and S.H. Sohmer. 1999. Manual of the Flowering Plants of Hawaii. University of Hawaii Press and Bishop Museum Press. Honolulu.

BIOLOGICAL RESOURCES SURVEY FOR THE WAILUKU APARTMENT RENTAL HOUSING PROJECT

APPENDIX

C

BIOLOGICAL RESOURCES SURVEY

for the

KEHALANI 201-H AFFORDABLE HOUSING PROJECT

WAILUKU, MAUI, HAWAII

by

ROBERT W. HOBDY
ENVIRONMENTAL CONSULTANT
Kokomo, Maui
February 2017

Prepared for:
Pier Management Hawaii, LLC

FLORA AND FAUNA SURVEY
KEHALANI 201-H AFFORDABLE HOUSING PROJECT
WAILUKU, MAUI, HAWAII

INTRODUCTION

The Kehalani 201-H Affordable Housing project consists of 14.416 acres located between Wailuku and Waikapu in central Maui. It lies between Honoapiilani Highway and Waiale Road, adjacent to the south edge of East Kuikahi Drive, TMK (2) 3-5-01:064, (see Figures 1 & 2). This biological resources study was initiated by the owners in fulfillment of environmental requirements of the planning process.

SITE DESCRIPTION

The project area lies on gently sloping land on the lower eastern slopes of the West Maui Mountains. The vegetation consists of dense grassland with scattered shrubs and small trees. Elevations range between 320 and 380 feet above sea level. The soils are characterized as Iao silty clay, 0 – 3% slopes (IaA,), and Iao clay, 3 – 7% slopes (IcB), which are deep, dark brown alluvial soils (Foote et al, 1972). Rainfall averages 20 inches per year with winter maximums.

BIOLOGICAL HISTORY

The original vegetation in this area consisted of a dense low statured native forest and shrubland with such components as 'ōhi'a (*Metrosideros polymorpha*), 'a'ali'i (*Dodonaea viscosa*), olopua (*Nestegis sandwicensis*), lama (*Diospyros sandwicensis*), halapepe (*Chrysodracon auwahiensis*), and a variety of ferns, vines and herbaceous plants.

Hawaiians lived in the area for several centuries, farming in the valley bottoms and lowlands and utilizing forest plants for food, construction materials, tools, fiber and medicines. They altered the landscape somewhat through cultivation and burning. This area is situated on farming lands that were irrigated with waters from the ancient Kama Ditch.

During the mid-1800's this area was cleared for sugar cane agriculture and the area was plowed, planted, burned and harvested in continuous cycles for over 100 years. Native ecosystems were replaced by sugar cane and increasing numbers of agricultural weeds.

When sugar production here ended in the 1990s this area became fallow. All of these practices have resulted in an environment that is now nearly totally lacking in native plants and animal species.

SURVEY OBJECTIVES

This report summarizes the findings of a flora and fauna survey of the proposed Kehalani 201-H Affordable Housing project which was conducted in February 2017. The objectives of the survey were to:

1. Document what plant, and animal species occur on the property or may likely occur in the existing habitat.

2. Document the status and abundance of each species.

3. Determine the presence or likely occurrence of any native flora and fauna, particularly any that are federally listed as Threatened or Endangered. If such occur, identify what features of the habitat may be essential for these species.

4. Determine if the project area contains any special habitats which if lost or altered might result in a significant negative impact on the flora and fauna in this part of the island.

BOTANICAL SURVEY REPORT

SURVEY METHODS

A walk-through botanical survey method was used covering the entire project area. Notes were made on plant species, distribution and abundance as well as on terrain and substrate.

A special focus was made to identify any native plants and ascertain if there were any Endangered or Threatened species (USFWS, 2017) that would require special focus. A complete plant species list is presented herein.

DESCRIPTION OF THE VEGETATION

The vegetation within the project area was dominated by two non-native species, Guinea grass (*Megathyrsus maximus*) and glycine (*Neontonia wightii*). These two species form a tall dense grassland that is smothered by a tangle of vines. Also common were koa haole (*Leucaena leucocephala*) and Castor bean (*Ricinus communis*).

A total of 63 plant species were recorded during two site visits to the project area. Four of these were common native plant species, 'uhaloa (*Waltheria indica*), kou (*Cordia subcordata*), (*Cyperus polystachyos*) no common name, and koali kua hulu (*Merremia aegyptia*) which are all widespread in Hawaii as well as in many other tropical countries. The remaining 59 species were non-native grasses or agricultural weeds.

DISCUSSION AND RECOMMENDATIONS

The vegetation throughout the project area is dominated by non-native species that are of no particular environmental interest or concern. Just four common indigenous plants, 'uhaloa, kou, koali kua hulu and (*Cyperus polystachyos*) were found. No federally listed Endangered or Threatened plant species (USFWS, 2017) were found, nor do any plants that are candidates for such status occur on the project area. No special plant habitats occur on or near the project and no potential wetlands occur in this dry upland site.

This project is not expected to have any significant negative impacts on the botanical resources in this part of Central Maui. No recommendations regarding botanical resources are deemed necessary or appropriate.

PLANT SPECIES LIST

Following is a checklist of all those vascular plant species inventoried during the field studies. Plant families are arranged alphabetically within each of two groups: Monocots and Dicots. Taxonomy and nomenclature of the flowering plants (Monocots and Dicots) are in accordance with Wagner et al. (1999).

For each species, the following information is provided:

1. Scientific name with author citation

2. Common English or Hawaiian name.

3. Bio-geographical status. The following symbols are used:

   endemic = native only to the Hawaiian Islands; not naturally occurring anywhere else in the world.

   indigenous = native to the Hawaiian Islands and also to one or more other geographic area(s).

   Polynesian = all those plants brought to Hawaii during the course of Polynesian migrations

   non-native = all those plants brought to the islands intentionally or accidentally after western contact.

4. Abundance of each species within the project area:

   abundant = forming a major part of the vegetation within the project area.

   common = widely scattered throughout the area or locally abundant within a portion of it.

   uncommon = scattered sparsely throughout the area or occurring in a few small patches.

   rare = only a few isolated individuals within the project area.

SCIENTIFIC NAME	COMMON NAME	STATUS	ABUNDANCE
MONOCOTS			
CYPERACEAE (Sedge Family)			
Cyperus polystachyos Rottb.	----------	indigenous	rare
Cyperus rotundus L.	nut sedge	non-native	rare
POACEAE (Grass Family)			
Cenchrus ciliaris L.	buffelgrass	non-native	rare
Cenchrus echinatus L.	common sandbur	non-native	rare
Chloris barbata (L.) Sw.	swollen fingergrass	non-native	uncommon
Cynodon dactylon (L.) Pers.	Bermuda grass	non-native	rare
Digitaria ciliaris (Retz.) Koeler	Henry's crabgrass	non-native	rare
Digitaria fuscescens (K. Presl) Henr.	creeping crabgrass	non-native	rare
Digitaria insularis (L.) Mez ex Ekman	sourgrass	non-native	rare
Eleusine indica (L.) Gaertn.	wiregrass	non-native	rare
Eragrostis amabilis (L.) Wight & Arnott	Japanese lovegrass	non-native	rare
Eragrostis pectinacea (Michx.) Nees	Carolina lovegrass	non-native	rare
Megathyrsus maximus (Jacq.) Simon & Jacobs	Guinea grass	non-native	abundant
Melinis repens (Willd.) Zizka	Natal redtop	non-native	rare
Saccharum officinarum L.	sugar cane	non-native	rare
DICOTS			
AMARANTHACEAE (Amaranth Family)			
Alternanthera pungens Kunth	khaki weed	non-native	rare
Amaranthus spinosus L.	spiny amaranth	non-native	uncommon
Amaranthus viridis L.	slender amaranth	non-native	rare
APOCYNACEAE (Dogbane Family)			
Asclepias physocarpa (E. Meyen) Schlect.	baloon plant	non-native	rare
Calotropis procera (Aiton) Aiton	small crown flower	non-native	rare
Plumeria rubra L.	plumeria	non-native	rare
ASTERACEAE (Sunflower Family)			
Bidens pilosa L.	Spanish needle	non-native	uncommon
Conyza bonariensis (L.) Cronq.	hairy horseweed	non-native	rare
Emilia fosbergii Nicolson	red pualele	non-native	rare
Senecio madagascariensis Poir.	fireweed	non-native	rare
Sonchus oleraceus L.	pualele	non-native	uncommon
Tridax procumbens L.	coat buttons	non-native	uncommon
Verbesina encelioides (Cav.) Benth. & Hook.	golden crown-beard	non-native	rare
BORAGINACEAE (Borage Family)			
Cordia subcordata Lam.	kou	indigenous	rare
Heliotropium procumbens Mill.	fourspike heliotrope	non-native	rare
BRASSICACEAE (Mustard Family)			
Lepidium virginicum L.	Virginia pepperwort	non-native	rare
CONVOLVULACEAE (Morning Glory Family)			
Ipomoea triloba L.	little bell	non-native	uncommon
Merremia aegyptia (L.) Urb.	hairy merremia	indigenous	rare

SCIENTIFIC NAME	COMMON NAME	STATUS	ABUNDANCE
CUCURBITACEAE (Gourd Family)			
Cucumis dipsaceus Ehrenb. ex Spach	hedgehog gourd	non-native	rare
Momordica charantia L.	bitter melon	non-native	uncommon
EUPHORBIACEAE (Spurge Family)			
Euphorbia hirta L.	hairy spurge	non-native	rare
Euphorbia hypericifolia L.	graceful spurge	non-native	rare
Ricinus communis L.	Castor bean	non-native	common
FABACEAE (Pea Family)			
Chamaecrista nictitans (L.) Moench	partridge pea	non-native	rare
Crotalaria pallida Aiton	smooth rattlepod	non-native	uncommon
Crotalaria retusa L.	rattlepod	non-native	uncommon
Desmanthus pernambucanus (L.) Thellung	slender mimosa	non-native	rare
Desmodium tortuosum (Sw.) DC.	Florida beggarweed	non-native	uncommon
Indigofera spicata Forssk.	creeping indigo	non-native	rare
Indigofera suffruticosa Mill.	inikō	non-native	rare
Leucaena leucocephala (Lam.) de Wit	koa haole	non-native	common
Macroptilium atropurpureum (DC.) Urb.	siratro	non-native	uncommon
Neonotonia wightii (Wight & Arnott) Lackey	glycine	non-native	abundant
Pithecellobium dulce (Roxb.) Benth.	ōpiuma	non-native	uncommon
Samanea saman (Jacq.) Merr.	monkeypod	non-native	rare
Sesbania grandiflora (L.) Poir.	sesban	non-native	rare
LAMIACEAE (Mint Family)			
Leonotis nepetifolia (L.) R. Br.	lion's ear	non-native	rare
MALVACEAE (Mallow Family)			
Abutilon grandifolium (Willd.) Sweet	hairy abutilon	non-native	rare
Malva parviflora L.	cheese weed	non-native	rare
Malvastrum coromandelianum (L.) Garcke	false mallow	non-native	uncommon
Sida rhombifolia L.	arrowleaf sida	non-native	uncommon
Sida spinosa L.	prickly sida	non-native	rare
Waltheria indica L.	'uhaloa	indigenous	rare
MORINGACEAE (Drumstick Tree Family)			
Moringa oleifera Lamarck	marunggay, horeradish tree	non-native	uncommon
NYCTAGINACEAE (Four-o'clock Family)			
Boerhavia coccinea Mill.	scarlet spiderling	non-native	rare
SOLANACEAE (Nightshade Family)			
Solanum lycopersicum L.	cherry tomato	non-native	uncommon
Solanum torvum Sw.	pea aubergine	non-native	rare
VERBENACEAE (Verbena Family)			
Stachytarpheta jamaicensis (L.) Vahl	Jamaica vervain	non-native	rare

FAUNA SURVEY REPORT

SURVEY METHODS

A walk-through survey method was conducted in conjunction with the botanical survey. All parts of the project area were covered. Field observations were made with the aid of binoculars and by listening to vocalizations. Notes were made on species, abundance, activities and location as well as observations of trails, tracks scat and signs of feeding. In addition an evening visit was made to the area to record crepuscular activities and vocalizations and to see if there was any evidence of occurrence of the Hawaiian hoary bat (*Lasiurus cinereus semotus*) in the area.

RESULTS

MAMMALS

Just two non-native mammals the mongoose (*Herpestes auropunctatus*) and the axis deer (*Axis axis*) were observed during two site visits. Several common non-native mammal species, however, could be occasionally expected to utilize this habitat. These include cats (*Felis catus*), domestic dogs (*Canis familiaris*), rats (*Rattus* spp.) and mice (*Mus domesticus*). These species can be difficult to detect because of the dense vegetation. Taxonomy and nomenclature follow Tomich (1986).

A special effort was made to look for the native Hawaiian hoary bat by making an evening survey of the area. When present in an area these bats can be easily identified as they forage for insects, their distinctive flight patterns clearly visible in the glow of twilight. No evidence of such activity was observed though visibility was excellent. In addition, a bat detecting device (Batbox IIID) was used at two locations, set to the frequency of 27,000 to 28,000 hertz which is the typical range within which these bats are known to echolocate for flying insect prey. No activity was detected using this device.

BIRDS

Birdlife was somewhat sparse within the project area due to the lack of habitat diversity. Just six species of non-native birds were recorded during two site visits. Taxonomy and nomenclature follow American Ornithologists' Union (2017). One species was common, the zebra dove (*Geopelia striata*). Three other species were uncommon, the common myna (*Acridotheres tristis*), the spotted dove (*Streptopelia chinensis*) and the nutmeg mannikin (*Lonchura punctulata*). Two other species were rare, the gray francolin (*Francolinus pondicerianus)* and the red-crested cardinal (*Paroaria coronata*).

A few other non-native bird species may occasionally occur in this habitat such as the northern cardinal (*Cardinalis cardinalis*), the Japanese white-eye (*Zosterops japonicus*), the house finch (*Carpodacus mexicanus*) and the chestnut mannikin (*Lonchura malacca*), but the habitat is unsuitable for Hawaii's native forest birds that are presently restricted to higher elevation native forests beyond the range of mosquitoes and the avian diseases they carry and transmit.

INSECTS

Insect life was moderate in both species diversity and in total numbers. Eighteen species were recorded during two site visits, representing seven insect Orders. Taxonomy and nomenclature follow Nishida et al (1992).

Two species were of common occurrence, the long-tailed blue butterfly (*Lampides boeticus*) and the large Sulphur butterfly (*Phoebis agarithe*). Eleven species were uncommon and four species were rare (see the insect inventory).

Just two native dragonfly species were observed, the green darner (*Anax junius*) and the globe skimmer (*Pantala flavescens*). These two dragonflies are both indigenous in Hawaii and common here, and both also naturally occur in other countries as well. The other 16 species were all non-native insects that are of no special conservation concern.

MOLLUSKS

Just one non-native mollusk species, the giant East African snail (*Achatina fulica*) was found during the survey.

DISCUSSION AND RECOMMENDATIONS

The wildlife within the project area were nearly all non-native species that have come into Hawaii either accidentally or as intentional introductions since first Western contact. The two indigenous dragonflies are both widespread and common in Hawaii and are rated as "of least concern" in conservation status.

No Endangered Hawaiian hoary bats were detected during the evening survey. These bats, however, are wide-ranging and are opportunistic in taking advantage of spikes in nocturnal insect populations wherever they may occur. They may utilize this project area occasionally or seasonally. These bats also breed and raise their young between the months of April and mid-September, and during that time they utilize trees larger than 15 feet in height to place their young when they are too immature to fly. The U.S. Fish and Wildlife service usually recommends not removing these larger trees during the breeding and pupping season to prevent potentially injuring or killing any juvenile bats.

No Endangered Blackburn's sphinx moths or their eggs or larvae were found during the survey and none of their specific obligate host plants were found growing in the project area either. As a result these moths are not currently likely to occur here and no specific recommendations are offered.

While no protected seabirds were found on the property, the Endangered ua'u (*Pterodrama sanwichensis*) and Threatened 'a'o (*Puffinus newelli*) are known to overfly the area at dawn and dusk to their burrows high in the mountains between the months of March and November. In late fall young birds fledge from their burrows to take their first tentative flights out to sea. These inexperienced birds are easily confused and distracted by bright lights and often crash to the ground where they are particularly vulnerable to being run over by vehicles or killed by predators.

It is recommended that any significant outdoor lighting such as street lights or flood lights that are incorporated into the project design be shielded to direct the light downward so that it is not visible from above.

As a result of these findings, it is determined that there is little of environmental concern with regard to animal life within the project area. With the above recommendations, the development of the project is not expected to have a significant negative effect on the native animal resources int his part of central Maui.

ANIMAL SPECIES LIST

Following is a checklist of the animal species inventoried during the field work. Animal species are arranged in descending abundance within three groups: Mammals, Birds, Insects and Mollusks. For each species the following information is provided:

1. Common name

2. Scientific name

3. Bio-geographical status. The following symbols are used:

   endemic = native only to Hawaii; not naturally occurring anywhere else in the world.

   indigenous = native to the Hawaiian Islands and also to one or more other geographic area(s).

   non-native = all those animals brought to Hawaii intentionally or accidentally after western contact.

   migratory = spending a portion of the year in Hawaii and a portion elsewhere. In Hawaii the migratory birds are usually in the overwintering/non-breeding phase of their life cycle.

4. Abundance of each species within the project area:

   abundant = many flocks or individuals seen throughout the area at all times of day.

   common = a few flocks or well scattered individuals throughout the area.

   uncommon = only one flock or several individuals seen within the project area.

   rare = only one or two seen within the project area.

SCIENTIFIC NAME	COMMON NAME	STATUS	ABUNDANCE
MAMMALS			
Axis axis Erxleben	axis deer	non-native	rare
Herpestes auropunctatus Hodgson	mongoose	non-native	rare
BIRDS			
Geopelia striata L.	zebra dove	non-native	common
Acridotheres tristis L.	common myna	non-native	uncommon
Streptopelia chinensis Scopoli	spotted dove	non-native	uncommon
Lonchura punctulata L.	nutmeg mannikin	non-native	uncommon
Francolinus pondicerianus Gmelin	gray francolin	non-native	rare
Paroaria coronata Miller	red-crested cardinal	non-native	rare
MOLLUSKS			
Achatina fulica Bowdich	giant East African snail	non-native	rare

SCIENTIFIC NAME	COMMON NAME	STATUS	ABUNDANCE
INSECTS			
Order ARANAE - true spiders			
ARANEIDAE (Orb Weaver Family)			
Araneus diadematus Clerck	European garden spider	non-native	rare
Order COLEOPTERA - beetles			
COCCINELLIDAE (Lady Beetle Family)			
Coccinella septempunctata brucki Multsant	seven-spot lady beetle	non-native	rare
SCARABAEIDAE (Scarab Beetle Family)			
Protaetia orientalis Burmeister	Asian flower beetle	non-native	uncommon
Order DIPTERA - flies			
MUSCIDAE (Housefly Family)			
Musca sorbens Wiedemann	dung fly	non-native	uncommon
SYRPHIDAE (Hoverfly Family)			
Ornidia obesa Fabricius	drone fly	non-native	rare
Order HYMENOPTERA - bees, wasps, ants			
APIDAE (Honey Bee Family)			
Apis mellifera L.	honeybee	non-native	uncommon
Xylocopa sonorina Smith	Sonoran carpenter bee	non-native	uncommon
FORMICIDAE (Ant Family)			
Pheidole megacephala Fabricius	big-headed ant	non-native	uncommon
Order LEPIDOPTERA - butterflies, moths			
CRAMBIDAE (Grass Moth Family)			
Spoladea recurvalis Fabricius	beet webworm moth	non-native	uncommon
LYCAENIDAE (Gossamer-winged Butterfly Family)			
Lampides boeticus L.	long-tailed blue butterfly	non-native	common
NOCTUIDAE (Owlet Moth Family)			
Melipotis indomita Walker	indomitable melipotis	non-native	rare
NYMPHALIDAE (Brush-footed Butterfly Family)			
Danaus plexippus L.	monarch butterfly	non-native	uncommon
PIERIDAE (White and Sulphur Butterfly Family)			
Eurema nicippe Cramer	sleepy orange butterfly	non-native	uncommon
Phoebis agarithe Boisduval	large sulphur butterfly	non-native	common
Pieris rapae L.	cabbage butterfly	non-native	uncommon
Order ODONATA - dragonflies, damselflies			
AESHNIDAE (Hawker Dragonfly Family)			
Anax junius Drury	green darner dragonfly	indigenous	uncommon
LIBELLULIDAE (Skimmer Dragonfly Family)			
Pantala flavescens Fabricius	globe skimmer dragonfly	indigenous	uncommon

SCIENTIFIC NAME	COMMON NAME	STATUS	ABUNDANCE
Order ORTHOPTERA - grasshoppers, crickets			
ACRIDIDAE (Grasshopper Family)			
Schistocercis nitens Thunberg	gray bird grasshopper	non-native	uncommon

Kehalani - 15 Acre Ag Parcel
TMK: (2) 3-5-01:064 Wailuku, Maui

Figure 1.

Figure 2. Kehalani 201-H Affordable Housing Project

Figure 3. View west across project area toward Honoapiilani Highway and the West Maui Mountains.

Figure 4. View north across the project area toward Wailuku.

Literature Cited

American Ornithologists' Union 2017. Check-list of North American Birds. 7th edition. American Ornithologists' Union. Washington D.C.

Armstrong, R. W. (ed.) 1983. Atlas of Hawaii. (2nd. ed.) University of Hawaii Press.

Foote, D.E. , E.L. Hill, S. Nakamura, and F. Stephens. 1972. Soil survey of the islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii. U.S. Dept. of Agriculture, Soil Conservation Service. Washington, D.C.

Nishida, G.M. & G.A. Samuelson, J.S. Strazanac & K.S. Kami. 1992. Hawaiian Terrestrial Arthropod Checklist. Hawaiian Biological Survey.

Tomich, P.Q. 1986. Mammals in Hawaii. Bishop Museum Press, Honolulu.

U.S. Fish and Wildlife Service. 2017. Endangered and threatened wildlife and Plants. Listings and Occurrences for Hawaii www.fws.gov/endangered

Wagner, W. L., D.R. Herbst, and S. H. Sohmer, 1999. Manual of the flowering plants of Hawai'i. Univ. of Hawai'i Press and Bishop Museum Press. Honolulu.

ARCHAEOLOGICAL INVENTORY SURVEY (AIS)

APPENDIX

D

SCS Project Number 607-1

ARCHAEOLOGICAL INVENTORY SURVEY REPORT ON 215.800 ACRES LOCATED IN WAIKAPU AHUPUA`A, WAILUKU DISTRICT, MAUI ISLAND, HAWAI`I [TMK (2) 3-5-02: 02 and 03]

Prepared by:
Jon Wilson, B.A.
and
Michael F. Dega, Ph.D.
October 2005

Prepared for:
Towne Development of Hawaii
and
Endurance Investors, LLC
and
Associationof II Wai Hui, LP

c/o Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, HI 96793

SCIENTIFIC CONSULTANT SERVICES Inc.

711 Kapiolani Blvd. Suite 975 Honolulu, Hawai`i 96813

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ABSTRACT

Scientific Consultant Services, Inc. (SCS) conducted Archaeological Inventory Survey on two parcels totaling 215.800 acres, which form one large land tract within Waikapu (and partially Wailuku) Ahupua`a, Wailuku District, Maui Island, Hawai`i [TMK (2) 3-5-02: 02 and 03]. Towne Development of Hawaii is developing the "Pu`unani" project in conjunction with Endurance Investors, LLC and the Association of II Wai Hui, LP.

Seven historic sites were documented during this Inventory Survey, two of which were previously recorded in the State Index of Historic Places (SIHP). All seven sites relate to historic sugarcane agriculture; the project area is 100 percent covered by abandoned cane land. Sites include two major concrete irrigation ditches; two lesser, more localized ditches; a reservoir; erosion-control earthen berms; and a cane-haul dirt road.

State Site Number 50-50-04-5197 represents the previously recorded Waihee Ditch, and State Site Number 50-50-04-5493 represents the previously recorded Waikapu Ditch. Five new sites were added to the SIHP during Inventory Survey. State Site Number 50-50-04-5729 represents a lesser, un-named, rock and mortar ditch. Likewise, State Site Number 50-50-04-5726 represents a second lesser, un-named, earthen ditch/drainage. Site 50-50-04-5727 is a large, un-named reservoir—the terminus of Waikapu Ditch. State Site Number 50-50-04-5728 is a sugar field erosion-control site comprised of 14 cross-slope, earthen berms of varying length that are positioned regularly throughout the project area. Finally, State Site Number 50-50-04-5730 represents "Old Waikapu Road", a cane-haul transport, dirt road that spans the border of parcels 02 and 03.

Excavation consisted of twenty-one backhoe-dug stratigraphic trenches evenly spread across the project area. Extensive pedestrian survey and this representative subsurface testing did not yield artifacts or cultural deposits.

All seven sites (all representing historic period sugarcane agriculture activities) were assessed as significant under Criterion D of Hawai`i's State Historic Preservation criteria. Based on the results of this project and depth of documentation, all seven sites have yielded all potential information important to this historic period and no additional archaeological mitigation is recommended within this project area.

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INTRODUCTION

Scientific Consultant Services, Inc. (SCS) conducted Archaeological Inventory Survey on two parcels totaling 215.800 acres, which form one large land tract within Waikapu (and partially Wailuku) Ahupua`a, Wailuku District, Maui Island, Hawai`i [TMK (2) 3-5-02: 02 and 03]. Towne Development of Hawaii is developing the "Pu`unani" project in conjunction with Endurance Investors, LLC and the Association of II Wai Hui, LP. The Inventory Survey included historic background research and settlement pattern analysis prior to fieldwork, a complete pedestrian survey of the project area, representative subsurface testing via backhoe, and reporting (Figures 1 and 2).

Fieldwork, primarily consisting of systematic pedestrian survey, recordation, and representative subsurface backhoe testing, was conducted between August 16, 2005 and August 25, 2005 by SCS personnel Ian Bassford, B.A.; Randolph Ogg, B.A.; and Jon Wilson, B.A. The Principle Investigator for this project was Michael Dega, Ph.D.

Archaeological Inventory Survey of the project area was conducted to determine the presence/absence of archaeological deposits in surface and subsurface contexts through complete systematic survey and representative subsurface testing. The ultimate goals were to determine if historically significant archaeological sites occurred on the parcel and to provide recommendations to the State Historic Preservation Division (SHPD) concerning site mitigation during future land use of the project area.

ENVIRONMENTAL SETTING

LOCATION

The large survey area lies between coastal flats to the east and more mountainous terrain to the west along the medial reaches of the Maui isthmus between Wailuku and Mā`alaea (Figure 3). The project area is located between Wailuku (2 km north) and Waikapu to the south. Roughly ten percent of the project area (the northeast corner) lies within Wailuku Ahupua`a; the remainder is in the *ahupua`a* to the south—Waikapu (see Figure 1). The project area is composed of two adjacent parcels: TMK parcel 02 is located in the southeast quadrant of the project area and is less than half the size of parcel 03. The eastern perimeter of the project area abuts Honoapi`ilani Highway as it traverses from Wailuku toward Waikapu across the central Maui isthmus. The western border is defined by Wailuku Heights, an existing residential neighborhood. The northern boundary of the survey area is the curving Kuikahi Drive; the southern boundary is an arbitrary TMK line through abandoned cane lands (Figure 4).

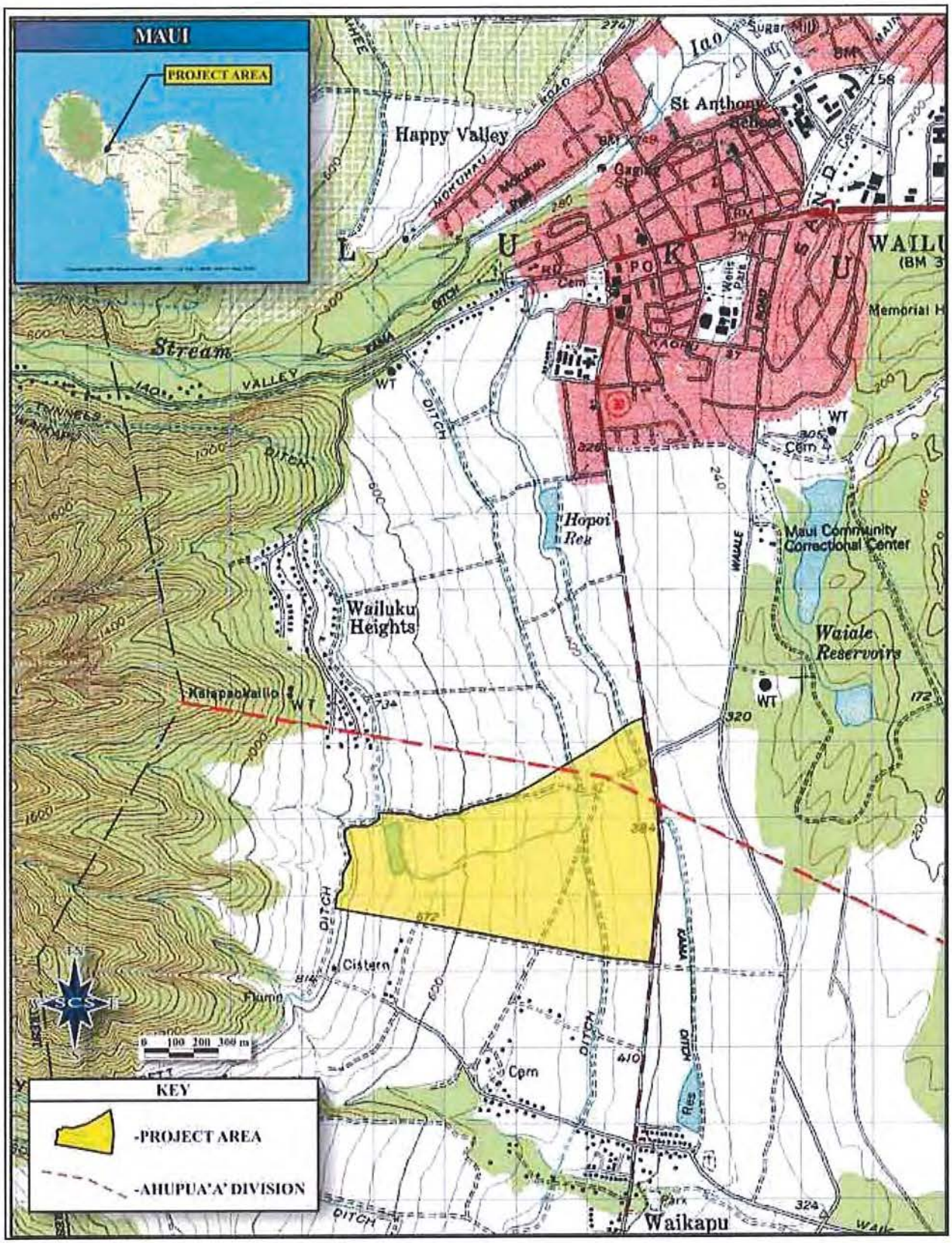


Figure 1: USGS Wailuku Quadrangle Map.

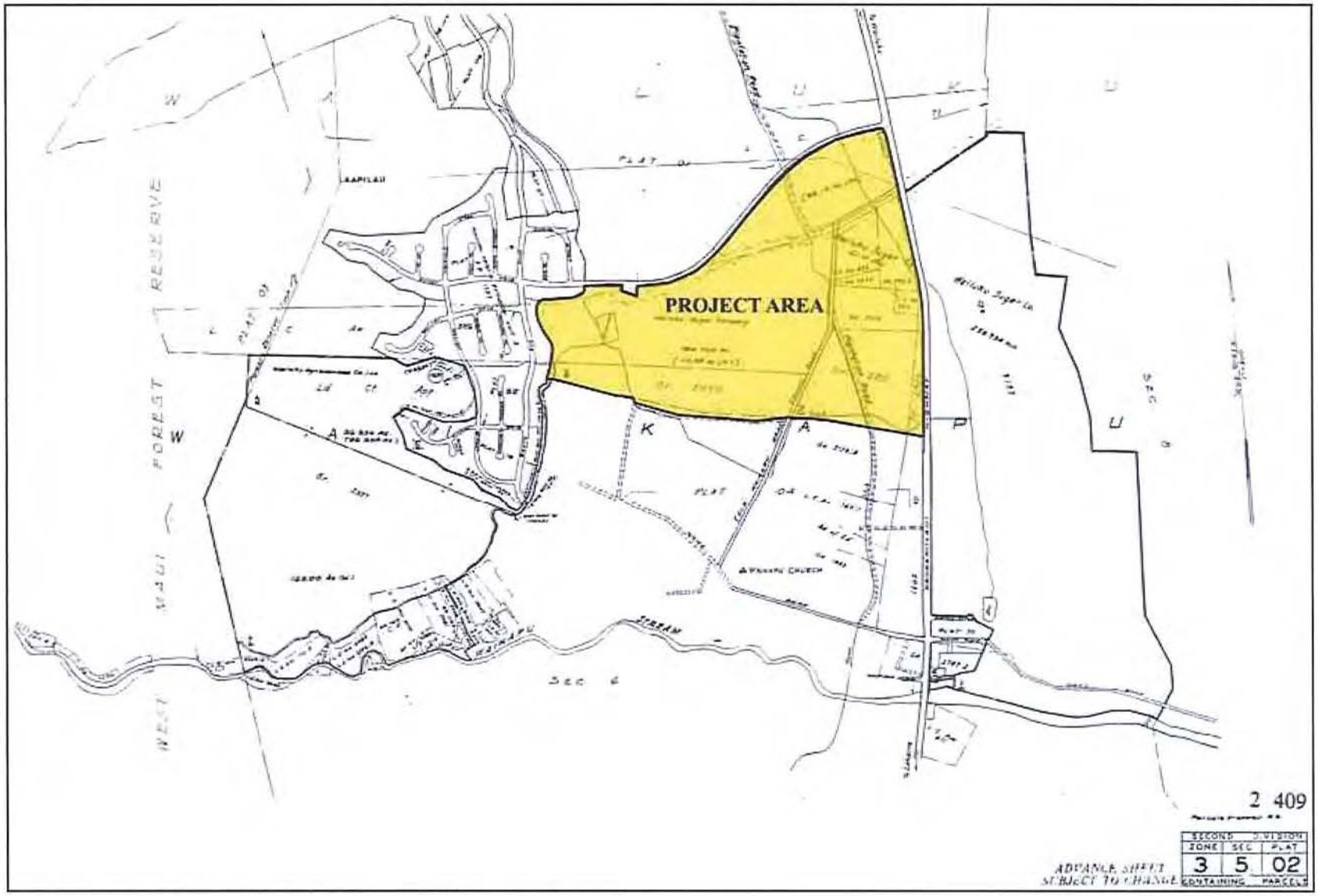


Figure 2: Tax Map Key [TMK] Showing Project Area.

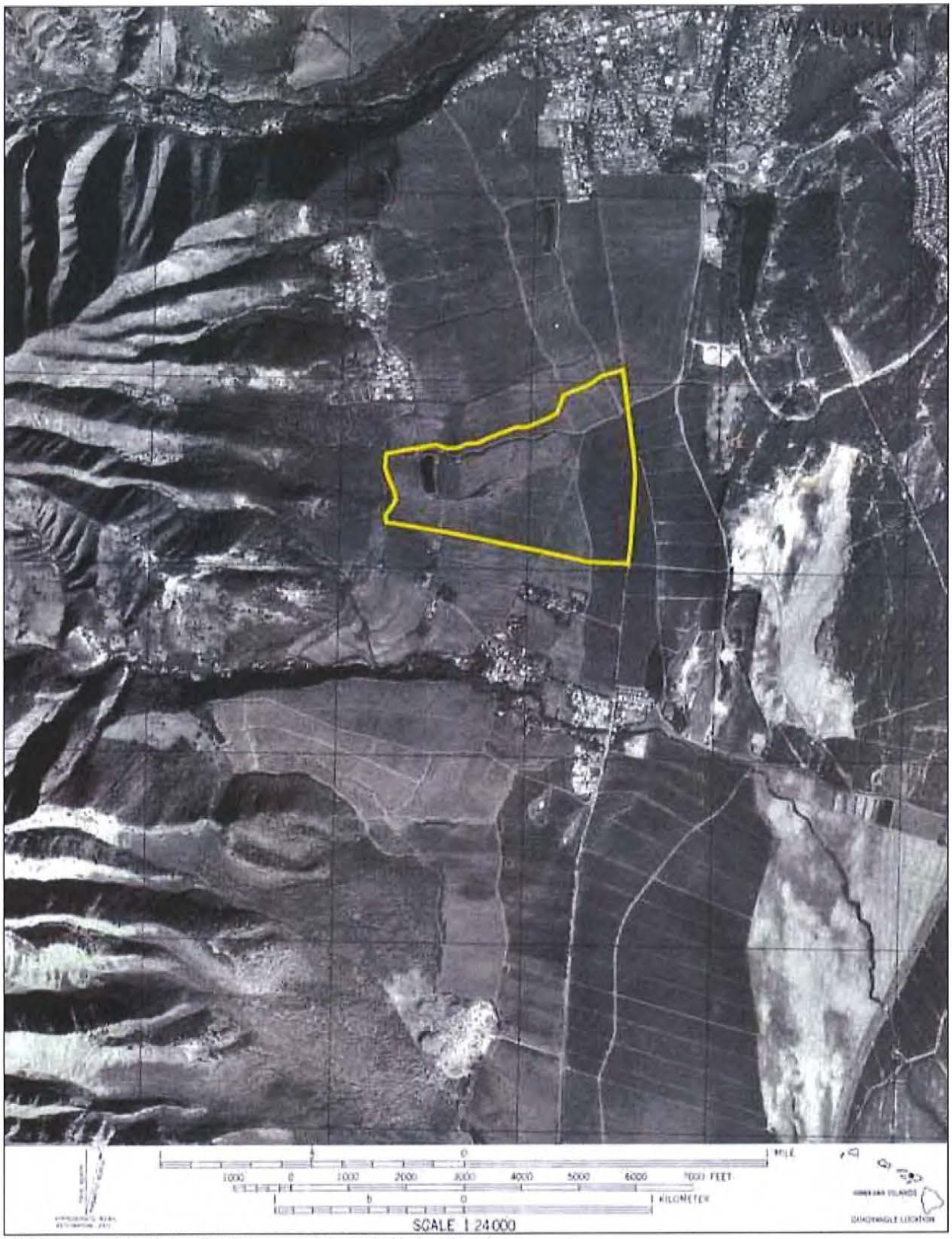


Figure 3: 1977 Aerial Photo of the Wailuku Region.

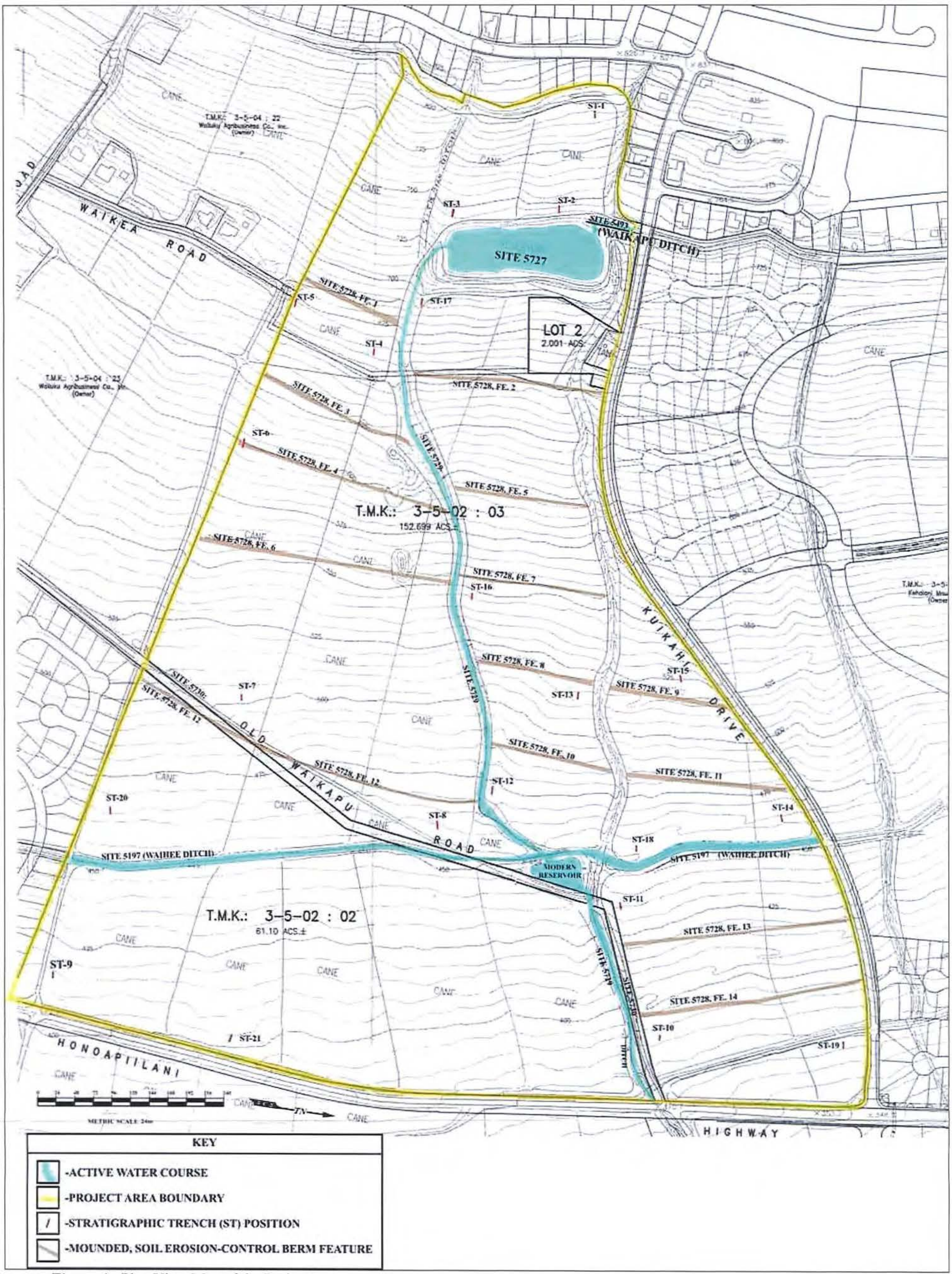


Figure 4: Plan View Map of the Project Area.

PROJECT AREA LANDFORM

Both archeological field survey and a review of geotechnical reports for the parcel reveal that the slightly sloping project area lies in locations previously utilized for the cultivation of now-abandoned sugar cane. According to Cavanaugh (1995:2), who conducted geotechnical studies on the 450-acre Kehalani Mauka Subdivision (the parcel that borders Kuikahi Drive to the north), "site topography slopes down moderately toward the east at a gradient of 10 percent." This accurately describes the slope of the current project area, which is steeper at its western (*mauka*) perimeter, and relatively flat near Honoapi`ilani Highway (Figure 5). Ground elevations range from approximately 115 meters (380 feet) above mean sea level (amsl) to 200 meters (660 feet) amsl. Various historic and modern dirt roads transect the surveyed area. As is discussed more below, project area exclusively consists of tilled zone, fill, and alluvial sediments. To the east, near the Maui Lani development, sandy matrices were identified. Sandy matrices were not identified in the current study area. Likewise, neither archaeological nor geotechnical subsurface testing detected any sandy matrices in areas immediately to the east of Honoapi`ilani Highway (Monahan 2003) or north of Kuikahi Drive during the Kehalani Mauka Subdivision (Dega 2004).

Figure 5: Distant Photograph of Project Area (lighter colored grass at center roughly defines boundaries). View to West.

Hydrology within the relatively dry project area is mostly in the form of historic irrigation modifications. Some of these modifications were the creation of a larger web of water conduits, drainages, and reservoirs, some built as early as 1905. No perennial streams run directly through the project area, and thus artificial ones had to be created for proper irrigation. By comparison, `Īao Stream runs west-east to the north of the proposed development while Waikapu Stream runs west-east to the south of the project area. Being located near these two major streams appears to have been beneficial for cultivation on the present parcel, at least during historic times. Several still-utilized irrigation ditches (*i.e.*, Waihee Ditch, Site -5197) transect the project area, and a still-active larger reservoir is linked to one of these ditches. The remnant irrigation ditches and reservoir not only point to massive landscape modification in the area during historic times but also strongly infer the aridness of the area, which required large-scale water importation. The water table was not encountered in any of the 21 stratigraphic trenches excavated within the project area (maximum depth of 2.60 meters). Soil borings conducted during geotechnical analyses in a nearby project area failed to reveal the presence of the area's water table to at least 25 feet below the surface (Shimamoto 1995:4).

The project area has seen significant modern activity. A 25 meter high cinder/ soil pile has been consistently mined (or imported) via truck traffic into the western half of the project area from a dirt road linking Kuikahi Drive. Modern rubbish is scattered over the surface of each quadrant; nearly a dozen abandoned cars are located in the southeast quadrant. Land owners have a construction trailer and small, dirt parking lot at the northeast corner of parcel 03. Consistent, daily vehicle traffic across the parcel indicates the modern maintenance efforts related to the irrigation systems (necessary to serve locations outside of the project area).

VEGETATION AND SOILS

Vegetation in the project area is dominated by the presence abandoned cane that has been overtaken by non-native secondary growth shrubs and various introduced grasses (Figure 6). Several ironwood trees (*Casuarina glauca*) dot the landscape. *Haole koa (Leucaena leucocephala*) are fairly common especially bordering the eastern highway perimeter and near irrigation conduits. Native vegetation was not documented within the project area.

According to Foote *et al.* (1972:46–47, 100), soils in the project area fall into four sub-classifications of the `Īao soil series. These soils consist of well-drained soils on valley fill and alluvial fans that have developed from igneous rock and are nearly level to moderately sloping. The `Īao Series derivatives are similar to each other, yet primarily differ by the slope of the surface layer and inclusions of a higher content of cobblestones, such as in `Īao cobbly silty clay

Figure 6: Project Area Vegetation and Topography. View to Northeast.

(classified as both IbB and IbC). The IbC soil (7 to 15 percent slopes) is distributed along the Kuikahi Drive area; whereas the IbB soil forms the central region. Also occurring within the project area (in roughly equal percentages) are `Īao clay, on lesser slopes (IcB), and `Īao clay on steeper slopes (IcC). Figure 7 shows the project area distribution of these derivatives.

The presence of these soil types was confirmed through geotechnical studies in bordering parcels and archaeological testing during the current project. Important to emphasize again, no sandy sediment was identified in the project area. Sandy sediment (sand dunes) and mixed coastal-terrigenous sediments occur to the east of the current parcel (*i.e.*, Maui Lani).

The fairly homogenous nature of soils in the project area does provide contrast to soil regimes occurring more to the east (coastal-terrigenous and coastal) and to the north and south (dynamic stream valleys). The current project area occurs in a medial or intermediate environmental zone, both on a north-south and east-west axis. Along a north-south axis, the property lies in a very dry, open area between two perennial streams (`Īao and Waikapu). On an east-west axis, the project parcel lies above the influence of the coastal plain and below the wetter uplands. The current parcel thus lies in a fairly non-dynamic environmental zone that is practically surrounded on all sides by contrastingly vibrant areas (see Figure 5). That this

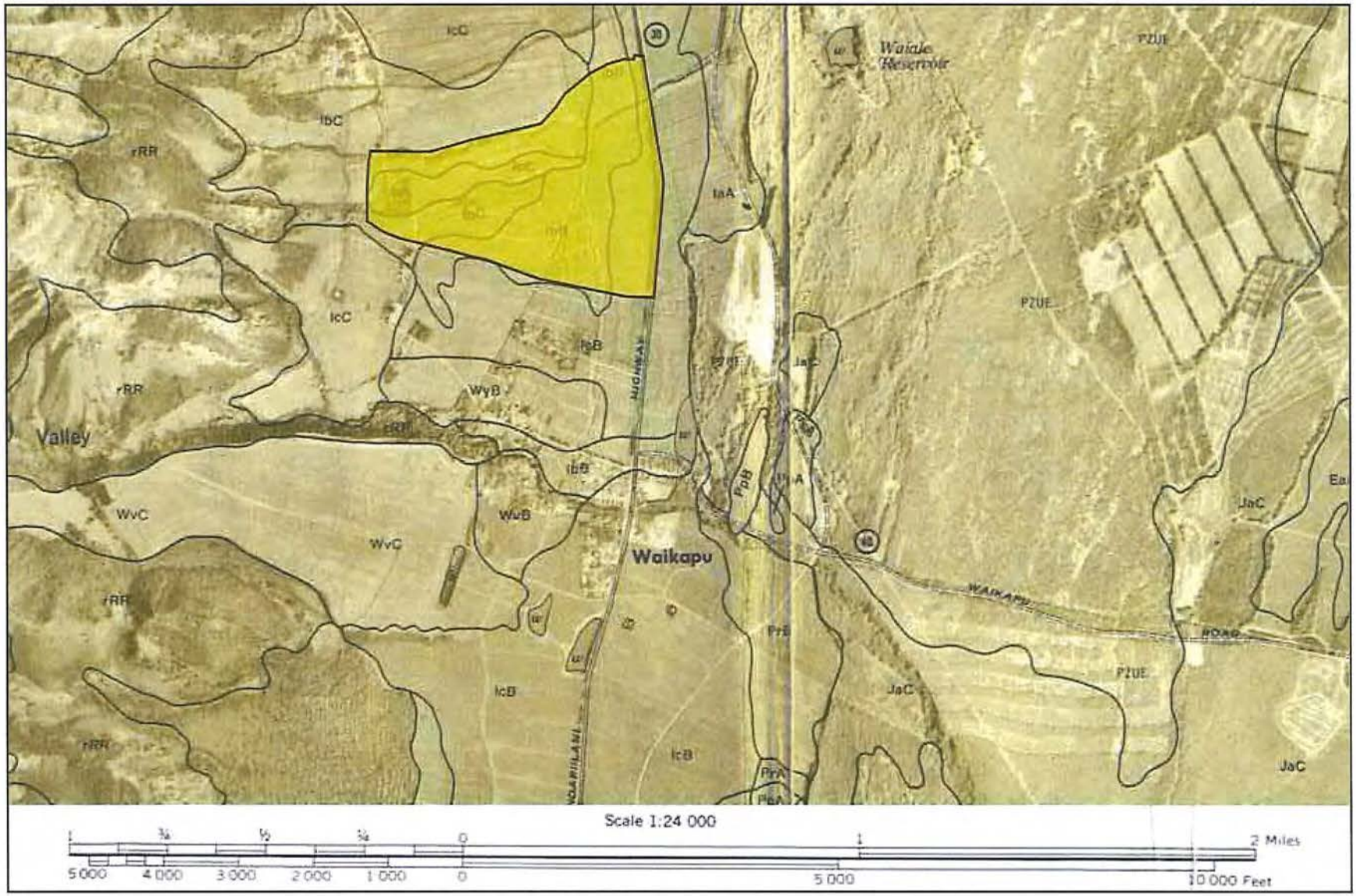


Figure 7: Project Area Soils and their Distribution [Adapted from Foote *et. al* (1972)].

intermediate area, occurring between more dynamic zones, required artificial controls is well-observed throughout the project area in the form of irrigation ditches and reservoirs.

CLIMATE

Rainfall in this intermediate environment is very modest. The project area receives an average annual rainfall of only 33 to 44 centimeters (Price 1983:63), with much of this rainfall occurring during the winter months (November–April). Seasonal variation in rainfall amount follows normal orographic patterns for leeward-type areas of Maui. The project area occurs just to the south of what may be considered the leeward-windward boundary. At higher elevations within Wailuku Ahupua`a, the amount of rainfall doubles and triples that of the project area. To the north, from `Īao Stream Valley area toward Waihee Valley, rainfall is much more intensive, with combined rainfall and geographic patterns being more conducive to traditional types of agricultural cultivation (*i.e.*, *lo`i*, sweet potato). The rainfall in this gently sloping project area drains downhill to the east and provides an additional water source for traditional Hawaiian agriculture in the lowland flats to the east of the project area (see Handy and Handy 1972).

TRADITIONAL AND HISTORIC SETTING

Wailuku District inhabits the eastern side of the West Maui Mountains (Mauna Kahalawai) and occupies the isthmus through the center of the island to coastal reaches in Kahukui and Mā`alaea. Wailuku, together with Waikapū, Waihee, and Waiehu, is one of the *Na Wai `Ehā,* or "the four waters," known for the occupancy of chiefly individuals (Kame`eleihiwa 1992; Pukui and Elbert 1992; and Creed 1993). Wailuku District and Wailuku Ahupua`a are frequently mentioned in historical texts and oral traditional accounts as being politically, ceremonially, and geographically important areas during traditional times (Cordy 1981, 1996; Kirch 1985). Wailuku was considered a "chiefly center" (Sterling 1998:90) with many of the chiefs and much of the area's population residing near or within portions of `Īao Valley and lower Wailuku. The many *heiau* constructed in the Wailuku area point to its ceremonial and religious importance during pre-Contact times. During historic times, after numerous battles in the area, the large concentration of Land Commission Awards granted in Wailuku, particularly in lower `Īao Valley, also attest to a sizeable population base and the importance of the lands for cultivation through time. More recent land use in the area included sugar cane cultivation and use of the land for pasture.

THE TRADITIONAL SETTING OF WAILUKU

Archaeological settlement data indicates that initial colonization and occupation of the Hawaiian Islands first occurred on the windward sides of the main islands, with populations

eventually settling into drier leeward areas at later periods (Kirch 1985). Archaeological dates for initial occupation of the Hawaiian Islands far pre-dates accepted ranges gleaned from palynological data. A more secure estimate for initial occupation of the islands is the A.D. 9th century (Athens 1997), if one is to lay more credibility with the pollen record than the archaeological record. In the Waihee and Waiehu areas of Wailuku, Kirch (1985:87) notes that "a number of coastal dune midden sites have been reported, and at least one of these contained pearl-shell fishhooks similar to those from the Bellows Site, eroding from the wave-cut midden." (The Bellows site, located on the windward coast of O`ahu, has yielded dates of occupation, albeit controversial, from A.D. 300 to 600 [Pearson *et al.* 1971], one of the earliest dated sites in the Hawaiian Islands. For the most part, these dates have now been diagnosed as very problematical and are no longer valid.) More recent research within Wailuku Ahupua`a indicates that the area was likely settled between *c.* A.D. 1100 (Kirch 1985:142) and A.D. 1200 (Fredericksen and Fredericksen 1996).

To the north of the current project area lies `Īao Valley, one of the most important locations in the area for prehistoric activity. Connolly (1974:5) states that the pre-Contact valley [`Īao] had a large population base with "most people residing in a settlement near `Īao Needle," just north of the project area. Supposedly, the subsistence base of this population consisted of fish and taro, with Kahului Harbor and the coast close by and *lo`i* systems lining `Īao Valley's stream banks. Prehistoric ditches or *`auwai* were utilized in taro cultivation (Connolly 1974:5). Sterling (1998:86) adds that two *`auwai* within the valley:

> have existed immemorially and were evidently constructed for the purpose of irrigating *kalo* on the plains which stretch away to the northward and southward of the [`Īao] river. Several minor *`auwai* have, since ancient times, tapped the river at different points lower down and spread the water through the lands in the gulch on either side of the river bed.

Handy in Sterling (1998:63) further notes that "From Waihee and Wailuku Valley, in ancient times, was the largest continuous area of wet taro cultivation in the islands." Cheever (1851:124) writes: "the whole valley of Wailuku, cultivated terrace after terrace, gleaming with running waters and standing pools, is a spectacle of uncommon beauty to one that has a position a little above it."

Recent archaeological research (Fredericksen and Fredericksen 1996:52) has revealed that habitation sites along what is now Lower Main Street in Wailuku, "are associated with the

rich taro producing lands in the Lower `Īao River flood plain, and the extensive cultivation systems present in `Īao Valley." These habitation sites have been dated to the A.D. 15th through 17th centuries. The `Īao Valley area was not only renowned for its agricultural base during prehistoric times but its ceremonial and political base as well (see also Cordy 1996; Donham 1996).

No discussion of Wailuku is complete without mentioning the important *heiau* complex above `Īao Valley near its seaward terminus. During the mid to late 18th century, the Halekii-Pihana *heiau* complex was supposedly designed by a Hawaiian named Kiha (Sterling 1998:89). These monuments, designated as State Site Number 50-50-04-522 and occurring along the northwest flank of the current project area, are described as very important *heiau* within Hawaiian history. Yent (1983:7) notes the life cycle of the *ali`i* was represented here. It was the place where Kamehameha I's wife was born, Kahekili lived, and Kekaulike died. Thrum (1909:46) reported that Kamehameha I evoked his war god at Pihana Heiau after his warriors defeated Kalanikupuli's forces during the Battle of `Īao in 1790. The two *heiau* are primarily associated with Kahekili, who is connected with the Halekii-Pihana complex between *c*. A.D. 1765 and 1790, and Kamehameha, during his conquering of Maui in 1792 (Yent 1983:18). Halekii and Pihana Heiau are the only remaining pre-Contact Hawaiian structures of religious and historical importance in the Wailuku-Kahului area that are easily accessible to the public (Estioko-Griffin and Yent 1986:3). As stated, the area within and adjacent to the current project is known not only for its religious and/or ceremonial significance, but for its political prominence as well.

The Fredericksens' (1996:52) report states that politically, Wailuku [village] was known as a central settlement for high ranking chiefs and their retinue. The Wailuku area was also witness to many battles, from the Battles of `Īao and Sand Hills to the Battles of Kepaniwai and Kakanilua. The most famous battle was that of Kepaniwai where Kamehameha I, in July 1790, finally wrested control of Maui Island. Kamehameha I and his warriors landed at the Kawela portion of Kahului Bay and proceeded up `Īao and other valleys to score a decisive victory. Wailuku, meaning water of destruction, succinctly describes the area in which many of these major battles occurred. Of additional note is that in the Kauahea area of `Īao Valley (southeast of `Īao Stream below Pihana Heiau-supposedly within the current project area), warriors apparently dwelt and were "trained in war skills and there was a boxing site in the time of Kahekili" (Sterling 1998:89).

TRADITIONAL SETTING OF THE PROJECT AREA

Creed (1993) has written extensively on the traditional background of the Waikapu area, much of which directly applies to the open landscape of the current project area just to the north of Waikapu. Many classes of sites are found or may have existed in the Waikapu-Wailuku area during traditional times. Creed (1993:19–21) provides an extensive list, including some site types that would not apply to the current parcel due to its distance from major drainages, the coastline, and its open land classification. Traditional sites that would apply include agricultural sites (*kula* lands, *wauke* patches, *hala* trees, pigs, and potato patches), boundary walls, burials (sometimes located in habitation terraces), feather gathering areas (particularly in the mountains to the west), habitation loci, and *pohaku* (an adze stone marks the border between Wailuku and Waikapu). While populations were predominantly centered in `Īao Valley and Waikapu Valley, there was agricultural and habitation activity in the open grasslands of the current project area above the coastal flats. Much evidence for such activities has not yet been found through archaeological means, a situation that places much culpability on historic land use that may have erased or scattered this evidence. As such, there is much more evidence for historic activities occurring in the area.

HISTORIC SETTING OF THE PROJECT AREA

Current project area lands were first assigned to the district formerly known as Kula. Taken literally, *Kula* refers to open land or plains (Pukui and Elbert 1992:70). Kula District is known for its dry, arid lands being vacant of perennial streams. Kula was always an arid region, throughout its long, low seashore, vast stony *kula* lands, and broad uplands. There are exceptions in Wailuku as one proceeds along Īao Stream Valley and further to the west/northwest past Waihee and Waiehu. However, even the vast stony *kula* lands were utilized during traditional and historic times. Most evidence for such land utilization has come in the form historic records.

THE GREAT MāHELE

In 1848, during the late historic period, commissioners of the Great Māhele instigated an extreme modification to traditional land tenure on all islands that resulted in a division of lands and a system of private ownership. The Māhele was based upon the principles of western law. While a complex issue, many scholars believe that in order to protect Hawaiian sovereignty from foreign powers, Kauikeaouli (Kamehameha III) was forced to establish laws changing the traditional Hawaiian society to that of a market economy (Kuykendall Vol. I 1938:145 footnote 47 *et passim*; Daws 1968:111; Kame`eleihiwa 1992:169–170, 176). The dramatic shift from a redistributive economy to a market economy resulted in drastic changes to land tenure, among

other things. Case in point, foreigners demanded private ownership of land to ensure their investments (Kuykendall Vol. I 1938: 145 *et passim*; Kame`eleihiwa 1992:178; Kelly 1998:4).

Once lands were made available and private ownership was instituted, native Hawaiians, including the *maka`āinana* (commoners), were able to claim land plots upon which they had been cultivating and living. Oftentimes, foreigners were simply just given lands by the *ali`i*. However, in the case of commoners, they would only make claims only if they had first been made aware of the foreign procedures (*kuleana* lands, land commission awards). These claims could not include any previously cultivated or currently fallow land, *okipu*, stream fisheries, or many other natural resources necessary for traditional survival (Kame`eleihiwa 1992:295; Kirch and Sahlins 1992). Awarded parcels were labeled as Land Commission Awards (LCAs). If occupation could be established through the testimony of witnesses, the petitioners were issued a Royal Patent number and could then take possession of the property. Commoners claiming houselots in Honolulu, Hilo, and Lāhianā were required to pay commutation to the government before obtaining a Royal Patent for their awards (Chinen 1961:16).

Wailuku District was declared Crown Land during the Great Māhele and numerous Land Commission Awards, approximately 180, were awarded within Wailuku Ahupua`a while approximately 100 were awarded for Waikapu Ahupua`a (Creed 1993). A handful of foreigners (*i.e.*, Anthony Catalena, James Louzada, E. Bailey) gained control of large parcels of lands that would later be used for mass cultivation of sugarcane. Significantly, the majority of LCAs were awarded to Hawaiians, a gauge that can be used to measure pre-Contact settlement, since there was little overall change in traditional land use among Hawaiians prior to 1853 (Creed 1993:38).

During the Great Māhele of 1848, a total of three land claims were awarded in the current project area (Waihona `Aina 2005): LCA 433, 3201, and 3525—all of which are located in parcel 02, in the central area of the eastern border near Honoapi`ilani Highway (Figure 8). Table 1 summarizes archival research of these three LCAs.

Table 1: LCA and Land Grant Data for [TMK:(2) 3-5-02: 02].[1]

LCA No.	Awardee	Land Use	Comments
00433	William Crowningburgh and wife Maile	*lo`i* – 21 *`apana* – 4	Stream also on property. Crowningburgh surrounded this land with a fence and raised animals on the property. Plot of land was referred to as *Pili Pili* at the time.
03201	Wm. A. McLane	*`apana* – 2	One ditch on piece of land. Plot of land was referred to as *Awakamanu* at the time.
03525	Keliiolelo	*lo`i* – 3 *`apana* – 3 House lot –1	Stream on property. Plot of land was referred to as *Awakamanu* at the time.

[1] Source: Waihona Aina website (www.waihona.com), information obtained in September, 2005.

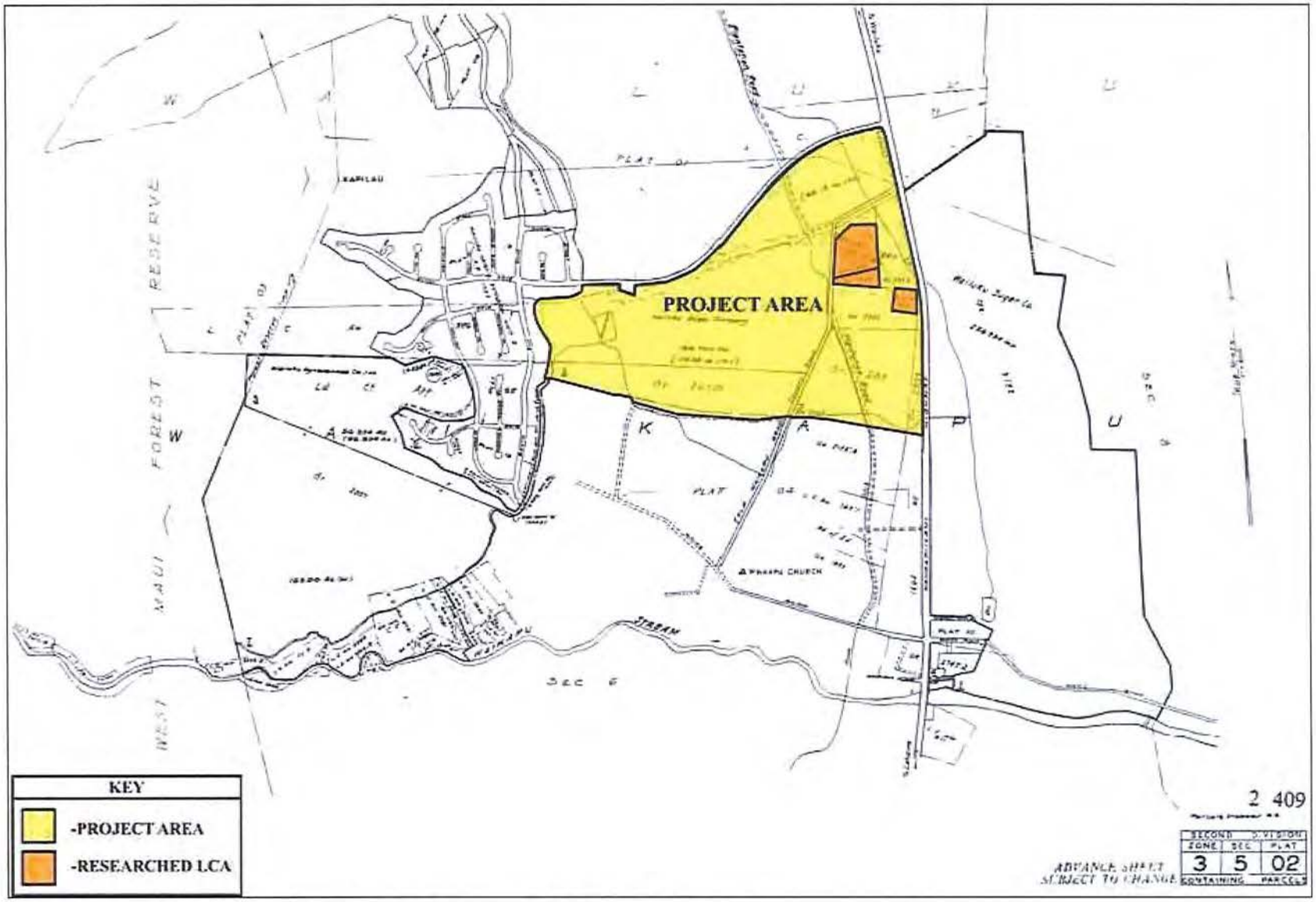


Figure 8: Adapted 1992 Tax Map Key with Researched LCAs Highlighted.

This LCA record keeps with the overall LCA pattern of the Waikapu-Wailuku area intimating taro cultivation in association with permanent residences. Such a pattern is historically documented from 1848, but likely extended deeper into the past. *Lo`i* (irrigated taro patches or planted terraces) and evidence of smaller, private land plot divisions, *`apana*, are no longer detectable within this surface or subsurface landscape.

Similarly, the Wailuku Ahupua`a parcel north of Kuikahi Drive predominantly lists among its LCA records 'property for raising cattle' and 'pasture grounds for cattle' (Dega 2004). There also is some mention of stone walls, *kalo* patches, and *lauhala* trees on the landscape. Perhaps the most significant structures on this adjacent land were built by the American Board of Commissioners for Foreign Missions (A.B.C.F.M.) which consisted of two house lots with adobe walls. The lots occurred "near pasture land," a common theme for the area (Waihona `Aina 2005). In Waikapu, to the south, the LCAs reflect *lo`i* cultivation, *kula* lands, and house sites. However, much or all of the evidence related to such settlement of the Waikapu area has been effaced by late-historic and modern cultivation. The current project area is a prime example of this trend.

Land use in Wailuku and Waikapu Ahupua`a in the mid 19th and early 20th century was largely devoted to the sugar industry. During the 1860s, the sugar business was growing, with plantations and mills at Wailuku, Waihe`e, Waikapu, and Haiku. Many of the plantation camps associated with these mills were centered in the Pu`unene, Kahului, and Wailuku area (see Denham *et al.* 1992:16). Historic utilization of the Waikapu-Wailuku landscape within and near the project area focused on industrial-levels of cultivating sugar cane and pineapple. Water was channeled from traditional sources (*e.g.*, Waikapū Stream, western aquifers or springs) through plantation lands. Both local and imported workers operated on these plantation lands and the area maintained fair population density. Evidence for expansive landscape modifications to accommodate the industrial-level of production is very evident across the current subject parcel in the form of the north-south oriented known historic ditches. The significant amount of plastic and tubing and sheeting found within Layer I of excavations attests to even more recent utilization of the open landscape for cultivation. These former sugarcane lands are now being reclaimed through residential developments.

PREVIOUS ARCHAEOLOGY

IMMEDIATE VICINITY OF PROJECT AREA

Intensive research within the State Historic Preservation Division (SHPD) archives concluded that no previous archaeological study was conducted within the present project area. However, of primary importance for the present study are the results from three projects recently conducted within and bordering the 348-acre subdivision to the north (Figure 9). First, Archaeological Inventory Survey was conducted on approximately 100 acres of land that included five separate lots and a proposed road corridor in the Kehalani Mauka Subdivision (Dega 2003). Three historic sites were documented during this Inventory Survey. State Site Number 50-50-04-5473 has been assigned to Hopoi Reservoir. This reservoir predates Hopoi Camp and was present at least by 1922 (see Dega 2003). Occurring to the immediate east of Hopoi Reservoir and running north-south to Waikapu is Kama Ditch (State Site No. 50-50-04-5474), a water conduit carrying the precious commodity to dry southern lands. A single basalt adze (Site 50-50-04-5478) was recovered from the northern flank of Lot 21 along the eastern flank of the parcel. Extensive survey and testing in the area of the isolated find failed to produce additional artifacts or cultural deposits. Representative subsurface testing (18 trenches) on the lots only revealed highly homogenous soil matrices across the open, barren intermediate area.

A second SCS Inventory Survey Report dealing with these same Kehalani Mauka lands (Dega 2004) documented lots not surveyed in the first study. This survey recorded six additional sites, all historic. Similar to the present project area, a series of un-named, lesser ditches was found within Kehalani Mauka, represented by State Site Numbers 50-50-04-5490 and 50-50-04-5493. Waihee Ditch (Site -5197) flows from this former SCS project area into the present project area. Historic-modern roadways (50-50-04-5489), a historic surface artifact scatter (50-50-04-5491), and several plantation-era clearing mounds (50-50-04-5492).

In summary, the results of the Kehalani Mauka Subdivision Inventory Survey roughly duplicate the present project area's findings. Aside from a lone traditional artifact (an adze)—which could remain despite a century of cultivation—larger traditional sites were destroyed during the sugar-era.

An Archaeological Assessment Report was published based on a negative results survey on Kehalani lands just to the east of Honoapi`ilani Highway (Monahan 2003). This survey did not produce any structures or artifact scatters. Trench excavation demonstrated a fairly consistent subsurface stratigraphy with a thick layer of dark brown silt (Layer II) inclusive of historical

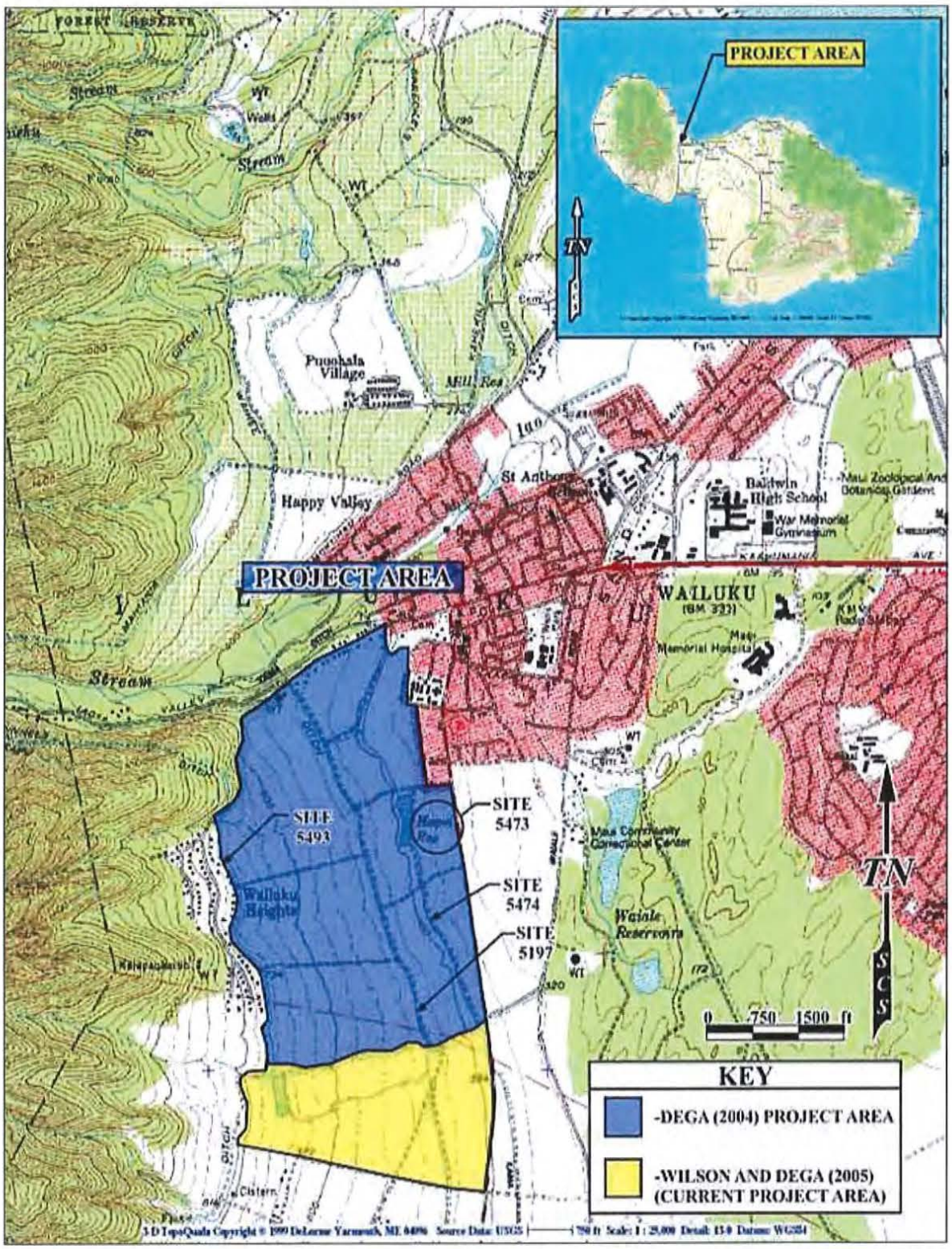


Figure 9: USGS Wailuku Quadrangle Map Showing Adjacent Areas of Archaeological Study.

garbage (*i.e.,* black plastic and rubber tubing, white plastic irrigation pipes, and black plastic sheeting) over an undisturbed very dark grayish-brown silty clay subsurface (Layer III). A dark brown, silty root mat-layer (Layer I) was present in some units. No undisturbed sandy deposits were encountered, although a few trenches close to the eastern boundary of the project area did contain thin lenses of yellowish-brown sand. These sand lenses were clearly introduced as recent fill.

GENERAL WAIKAPU AREA

In terms of general projects in the Wailuku-Waikapu environs, the earliest archaeological endeavors on Maui were undertaken by Thrum (1909), Stokes (1918), Emory (1921), and Walker (1931). None of their archaeological finds directly pertain to the current project area; however, their data allows for a deeper understanding of the traditional use of the Wailuku-Waikapu area.

In an area south of the project area, within open lands similar to what is being researched herein, Thrum mentions that two *heiau* may have possibly existed within the *ahupua`a* of Waikapū, but evidence of the two sites no longer remains (1909–1918:59). A group of approximately 45 house and shelter sites (State Sites 50-50-09-1441, the McGregor Point C-shaped structures, and 50-50-09-1287, the Mā`alaea Complex) was identified by Walker (1931) to the west of Mā`alaea. Chronology for these sites has yet to be determined (Creed 1993). Walker (1931:58) also described a *koa*, or fishing shrine, and two petroglyph fields with an associated *heiau* (State Site numbers 50-50-09-1169 and -1199) at Mā`alaea. The *koa* was not assigned a State Site number, nor has it been relocated.

Recent archaeological work in Waikapū Ahupua`a (Kennedy 1988, 1989; Folk and Hammatt 1989; Haun 1989; Brisbin *et al.* 1991; Donham 1991; Titchenal 1996) has revealed a low density of sites ranging in function from habitation to agriculture. Radiocarbon dating results in these studies have produced dates ranging from the A.D. 1100s to modern times. Together, their collective data suggests a "general trend toward development of large, densely settled populations between A.D. 1200 and about 1800, and the expansion and intensification of dryland field systems, particularly during the latter two centuries of this period" (Creed 1993:33).

Other recent archaeological work just to the south and/ or east of the current project area has been limited to two field inspections (Donham 1991, 1995) and near the eastern boundary line of the current project location, two archaeological Inventory Survey-level investigations

(Kennedy 1988, 1989; Buffum and Dega 2001). The conclusions offered by these few projects primarily indicate that any surface and/or subsurface features of cultural value that were once present within the area have most likely since been destroyed by intensive agricultural use of the land (*i.e.*, sugar cane and/or pineapple cultivation); this pattern was also confirmed by subsurface examination. As such, a broader background for Wailuku District is offered herein (see below).

WAILUKU DISTRICT OVERVIEW

The following section provides a brief overview of archaeological research in Wailuku District itself and is presented in two arbitrary sections: Upper Wailuku and Lower Wailuku District. Upper Wailuku is considered to be the lands above Kuihelani Highway while Lower Wailuku encompasses the lands below Kuihelani Highway and extends to Mā`alaea Bay in Waikapu Ahupua`a. The following district-specific research appears in its entirely as first published in Dega (2004).

UPPER WAILUKU DISTRICT

The majority of archaeological work is associated with the Pu`u One region in the northern most section of Wailuku District. Prior archaeological work in the Pu` One region indicates an emerging pre-Contact settlement pattern for this region. SCS (Dunn and Spear 1995) conducted research at the intersection of Naniloa and Waiale Roads where habitation features and a cultural layer interspersed with hearth and pit features were identified during a monitoring project. These features all occurred in sandy substrate. Radiocarbon dates submitted from these features yielded dates ranging from A.D. 1434 to A.D. 1807, dates suggesting pre-Contact sites and early historic land use. SCS (Burgett and Spear 1995) conducted Archaeological Inventory Survey in the sand hills along lower Main Street. One habitation site (50-50-04-4004) located in a remnant of a once larger cultural deposit was identified. Radiocarbon samples dated the site to A.D. 1420 and A.D. 1640, or to the early to mid-prehistoric time range.

SCS (Morawski and Spear 2001) conducted Archaeological Monitoring during the installation of a water pipeline and fire hydrants on Naniloa, Helenani, Leilani, Kainani, Naniluna, and Ka`ahumanu Highway roads with the town of Wailuku. During the research, a historic refuse dump was discovered, as were the remains of previously disturbed human burials. SCS (Buffum and Spear 2001; Zachman and Spear 2002) conducted Archaeological Monitoring at the Maui Medical Center. Due to extensive landscape modifications, no archaeological or traditional materials were identified during excavation.

Pantaleo and Sinoto (1996) conducted archaeological work at the Maui Lani Development to the east of the present project area. As of the 1996 publication, only one concentration of multiple burials was discovered while the remainder were isolated individual burials at the tip of the dune (at the highest elevations). A more contemporary report documenting additional burial finds at Maui Lani should aid in clarifying the overall results of that project. Research conducted by Fredericksen and Fredericksen (1997) indicated that this section of dunes was primarily used during prehistoric times as an interment area, a contention easily supported by the previous year's study. Habitation sites (several with associated burials) have been found mostly in the dune area associated with the Lower Main Street/Waiale Road Corridor. Conversely, studies east of this corridor have yielded only human burials (Fredericksen and Fredericksen 1998). Fredericksen and Fredericksen (1998) lists many of the archaeological studies conducted in the Lower Main Street/Waiale Road Corridor and Central Maui area.

LOWER WAILUKU DISTRICT

A limited number of archaeological projects have been conducted in this particular land section, much of which was disturbed during the massive sugar cane cultivation. The fair amount of archaeological work conducted along Lower Main Street is summarized elsewhere (see Morawski and Dega 2003). In comparison, Sinoto and Pantaleo (1992) conducted Archaeological Inventory Survey of a proposed location for the Kihei Gateway complex, on the *makai* side of the Piilani-Mokulele Highway junction. One historic site, the remains of concrete footings from a bridge across Waiakoa stream, was identified (Site 50-50-09-31).

SCS (Burgett and Spear 1997) conducted large-scale Archaeological Inventory Survey of the Puunene Bypass/Mokulele Highway improvements stretching across the majority of Wailuku District. Although no sites were identified, this absence may account for the lack of archaeological remains: extensive disturbance associated with prior sugar cane cultivation, highway and private construction activities, and little or no prehistoric occupation of the area. However, *lo`i* cultivation was reported to be intensively cultivated in this area (Handy and Handy 1972). The replacement of *lo`i* with sugar cane during historic times would be the most likely cause for the destruction of all traditional sites related to prehistoric cultivation in the area.

Fredericksen and Federicksen (1998) conducted archaeological research on 232 acres northeast of Puunene Avenue stretching to Haleakala Highway. No formalized traditional or prehistoric sites were discovered. Several sites consisting of volcanic-glass surface scatters were identified in the former sugar cane fields along with a historic irrigation ditch.

SETTLEMENT PATTERN

Archaeological investigations within the currently studied portion of Wailuku-Waikapū have revealed relatively little regarding traditional settlement patterns due to the dearth of supporting empirical evidence. Archival research and analyses of the generalized settlement pattern for Wailuku District have been the foremost sources for discerning an established settlement pattern for the current project area.

Archaeological evidence suggests that early settlement in the Hawaiian Islands occurred along windward shoreline areas between the A.D. 4th and 11th centuries. Pollen evidence suggests a settlement date of the A.D. 9th century (see Athens 1997). For the most part, these populations used local resources and seldom ventured into upland valleys. Cordy (in Creed 1993) suggests, however, that upper valley areas on windward coasts were likely populated before the A.D. 1100s. Coastal settlement was still dominant, but populations began exploiting and living in more upland *kula* zones. Greater population expansion to inland areas did not occur until the *c*. A.D. 12th century but continued through the 16th century. Large scale or intensive agricultural endeavors were implemented in association with habitation. Coastal lands were used for settlement and taro was cultivated in near-coastal reaches and in the uplands. Upland areas of Maui such as the Waiohuli-Kula area contained large garden enclosures, ceremonial structures, and permanent habitation sites by *c*. A.D. 1600.

Nearer the coast in intermediate lands such as the current project area (*c*. 60–85 meters amsl), taro was cultivated along stream courses, dryland taro was grown on *kula* lands such as the project area, and populations were settled. It is possible that the *kalo* patches described in the aforementioned LCA accounts originated during the "Expansion Period" of A.D. 1400 to 1600, perpetuating through historic times (Kirch 1985). However, most of the LCAs for the area describe almost no cultivation occurring in the area during the 1850s as pasture land and sugar cane cultivation were already dominating the use of the land (Creed 1993:74). Primary settlement and resource zones lay outside the current medial environmental zone in Wailuku proper, near perennial water sources (`Īao Valley, Waihee, Waiehu). The only substantial settlement along this medial isthmus zone between 300 and 600 feet amsl was at Waikapu, to the south of the current project area, near the base of Waikapu Stream Valley (see Creed 1993). As the current project area does not contain a perennial water source and is primarily open grassland, the area is considered to lie at the periphery of the more resource-rich zones in Wailuku.

Historic utilization of the Wailuku-Waikapu landscape was dominated by the cash cropping of sugar cane and pineapple, made possible by water channeled from traditional sources (*e.g.*, Waikapu Stream) through plantation lands. Historic features associated with this period are represented as water features in the form of reservoirs (Hopoi Reservoir) and water channels (Waikapu Ditch, Waihee Ditch). This area was also an important transportation corridor linking both the south and north flanks of the Maui isthmus, with Honoapi`ilani Highway having been demarcated as a Government Road on area maps by 1882 (Creed 1993:20).

PROJECT AREA EXPECTATIONS

Prior to commencing archaeological fieldwork, a review of archival resources and the results of previous archaeological work conducted in the area was undertaken to assess possible findings during fieldwork. Based on previous archaeological work—primarily north and east of this intermediate landscape—and on LCA information, site patterns prior to intensive historic land alteration activities show systematic use of the terrain as taro planting areas, limited habitation, and divisions of pastureland. Previous archaeological investigations within this portion of the Wailuku-Waikapū corridor have revealed very little data to confirm these patterns, this not surprising considering the impact that long and intensive agricultural exploitation has had on the surface of the area and subsurface strata. Traditional site components expected prior to these land-altering activities consist of dryland taro patches, associated agricultural components such as *`auwai* and/or terracing, house sites, boundary walls, and pasture walls. Expectations for identifying such data sets were low, however, due to the aforementioned historic land uses.

Traditional sites that may once have been present within the current project area were not expected to remain unaltered. Given LCA testimony and general settlement patterns for this inland, intermediate area, land use patterns for the current project area were thought to be most obviously related to historic-period settlement and cultivation—but on a very limited scale. At present, an empirically-based chronology of this area has yet to be provided, given intensive historic land modifications and the lack of datable archaeological evidence. According to Creed (1993:77):

> . . . we have no carbon dates to indicate the possible beginnings for this wetland agriculture in Waikapū Valley. Moreover, this area has been in constant use for crops and habitations at least since the time of the *Māhele*, if not long before and modern uses may have destroyed all traces of prehistoric uses. However, the LCA records and early maps document the extent of the *lo`i* agriculture in the

1850s. The stream valley in its upper reaches may have some remnants of these *Māhele* period *lo`i* or *`auwai*.

Expectations for this project area rested on several assumptions, some of which were proven valid at the end of fieldwork. First, the project area, lying in an open, intermediate zone containing hard soil composed of silty clay with cobbles was not intensively occupied during traditional times. Traditional and early historic-period populations were focused elsewhere in areas such as Waikapu, `Īao Valley, Waihee Valley, and Waiehu Valley. Thus, there were low expectations for identifying larger, intact sites or deposits; they simply were not constructed in this area. Secondly, there was the possibility that sand sediment could be present along the eastern flank of the project area. The association of sand and traditional/historic burials and cultural deposits has been well documented (see Kirch 1985). Thus, if sandy deposits did occur along the eastern flank, cultural deposits could be present. Third, the area was heavily modified for industrial cultivation. Remnants of such modifications, such as fill strata, excavated areas, reservoirs, and earth mounds/ berms were expected throughout the project area. A cursory study of the USGS Wailuku Quadrangle Map showed that irrigation ditches crossed the current project area. Finally, based on the primarily negative results from other archaeological projects conducted along the intermediate Wailuku-Waikapu corridor, there were limited expectations for identifying intact traditional-period architectural structures or intact cultural deposits lying beneath the tilled surface. However, historic structures related to irrigation and were likely, considering they were previously documented near the parcel (see Dega 2003). In all, some of these expectations were met during the current study.

METHODOLOGY

FIELD METHODS

Fieldwork consisted of systematic pedestrian survey of the entire 215.800 acre parcel and mechanical subsurface testing across representative portions of the parcel. Written and photographic documentation occurred during each phase of research. First, 100 percent systematic pedestrian survey was conducted to assess the presence/absence of surface features and artifacts as well as to assess soil deposits amenable to testing. As visibility was moderate within fifty percent of the project area (*makai* half), and low-to-moderate in the *mauka* half, 100 percent surface survey was conducted by two to three crewmembers spaced closely together (5 meters apart), walking parallel along north-south transects. When any structures, artifacts, or intriguing topographical changes were identified, they were plotted on an overall site map and flagged. Surface artifact assemblages, surface features, or anomalies were assigned temporary

site numbers. Temporary site numbers were converted to State Site Numbers upon a cursory project review by SHPD following the completion of fieldwork.

After survey, the crew returned to each flagged location to fully investigate the area and assess excavation potential. Representative areas were demarcated for subsurface testing. All subsurface testing was done mechanically by backhoe. Following excavation each trench was thoroughly documented via stratigraphic layer profiles, soil analysis, photography, and location plotting on a project area map (see Figure 4). A vast area was tested with these intermittent trenches, however, excavation produced negative results in terms of subsurface cultural material of interest to the archaeological record.

While no cultural materials were collected from any trench, soil samples were taken from each trench and analyzed in the field. The results revealed a fairly homogenous soil matrix. None of the excavated soil was screened, but all trench walls were thoroughly inspected. Photographs were taken first of trench locations prior to excavation, secondly of at least one profile (or multiples) of each trench, and thirdly, overview shots were taken of the respective trench at the base of excavation. Representative photographs are offered in Appendix A.

LABORATORY METHODS

As the results of survey and excavation were negative in terms of collected artifact classes and samples, laboratory work was not necessary. Because none of the soils analyzed in the field were deemed to be associated with past habitation surfaces, traditional agricultural levels, or cultural deposits, no samples were submitted for specialized analysis (*e.g.*, radiocarbon, pollen, phytolith analysis). Subsurface charcoal was an extremely rare commodity, and when found it was in association with modern debris from modern agricultural activity or dumping. Drafting of stratigraphic profiles, mapping illustration, and section drawings, were the primary components to laboratory work. All field notes, maps, photographs, and artifacts pertaining to this project are being curated at the SCS laboratory in Honolulu.

ARCHAEOLOGICAL INVENTORY SURVEY RESULTS

A 100-percent pedestrian survey of the project area revealed the presence of a network of historic-period surface structures that are represented as the seven sites described below. The previously documented (Dega 2004) Waikapu Ditch (State Site No. 50-50-04-5493) and Waihee Ditch (State Site No. 50-50-04-5197) were subject to additional documentation during this survey. No traditional Hawaiian cultural material was found.

DITCHES

Four ditches are present within the project area. All four ditches originate outside of the project area and/ or extend beyond the project area's limits; no ditch exists as a segment contained strictly within the project area. Two of these ditches are of a larger historic context within Maui's sugarcane era. These are named ditches and some limited information regarding their construction and use appears within the historic record. It is important to note that up to as recently as 1983 (the publication of one series of USGS maps) two more of these significant, longer range water courses flowed into the project area. The Everett Ditch and Kama Ditch, however, have since been diverted or destroyed and no longer appear within the project area. Additionally, two lesser ditches served a more localized role within the project area. Only one lesser ditch, a possibly historic drainage from upslope, did not flow consistently at the time of survey.

State Site Number 50-50-04-5197 (Waihee Ditch)

FORM	Concrete water-course
FUNCTION:	Sugarcane irrigation
AGE:	Historic (1905–1907 construction)
DIMENSIONS:	Length: 960.00 m; Width: 2.40m; Depth: 1.70 m (within P. Area)
CONDITION:	Good
SURFACE ARTIFACTS:	None
EXCAVATION:	None

DESCRIPTION: The Waihee Ditch is a flowing, concrete water conduit. Within the project area, the ditch is U-shaped, having two vertical concrete sides, an open top, and a flat concrete bottom (Figure 10). Concrete cross-braces reinforce the relatively thin (0.10 m) concrete sides. The curving ditch flows into the project area from the north and roughly keeps a north-south orientation as it transects parcels 03 then 02 (see Figure 4). A smaller ditch (Site - 5729) that serviced only the locality of the project area, flows into the Waihee ditch from the west (pictured in Figure 10).

Modern alterations and maintenance to the Waihee Ditch are evidenced within the project area in the form of fortifications, a watergate near a modern reservoir, and foot and car bridges over the ditch. Additionally, nearby surface deposits of freshwater clam shells and *kukui* nuts are evidence of modern maintenance in the form of regular cleaning of the ditch. These finds are also a testament to the Waihee Ditches length and volume (Figure 11), as neither of these species exists within the project area; they traveled here via the ditch from environments north and *mauka*. In terms of historic information regarding a single project area site, the most available for

Figure 10: Waihee Ditch (50-50-04-5197). View to South.

Figure 11: Waihee Ditch (50-50-04-5197) paralleling Old Waikapu Road (50-50-04-5730). View to South.

the area pertains to Waihee Ditch. This history is worth noting in detail as it lends to an understanding of project area utilization around the turn of the century.

According to Wilcox's *Sugar Water: Hawai`i's Plantation Ditches* (1996:124), the Waihee "Canal" was started in June 1905 and was completed in May 1907. The entire canal cost $160,000 to construct and was used by Wailuku Sugar Company (founded 1862) and HC&S. The Waihee Canal was built under the leadership of an engineer named James T. Taylor. The canal, or ditch as it is now known, represents a monumental effort to carry water to dry areas of Maui. Wilcox's research emphasizes this display of manpower for the purpose of sugar irrigation:

> this 50-mgd-capacity ditch tapped the Waihee stream at the 650 foot elevation, just below the Aliele falls. . . . Its 10.62 miles included twenty-two tunnels totaling 16,539 feet; thirty-nine flumes totaling 2764 feet; 35,549 feet of open, cement-lined ditch; and a 1253-foot-long, 3-foot-diameter siphon to cross Iao Valley. Ditch grade averaged 2/5 feet per 1000. The longest tunnel (2246 feet) was especially challenging, as much of it went through hard close-grained rock and it required compressed air and percussion drills. This tunnel took eighteen months to cut. The contract price for the labor ranged from 85 cents to $5 per foot, depending on the material cut, the location, and the length of the tunnel. (1996:124)

The Waihee Ditch represents the oldest securely dated site on the project area landscape. Three other ditches are also located within the project area: two lesser, more localized ditches run from west to east; the Waikapu Ditch parallels the Waihee Ditch as it enters the project area from the north.

State Site Number 50-50-04-5493 (Waikapu Ditch)

FORM	Concrete water-course
FUNCTION:	Sugarcane irrigation
AGE:	Historic (in use by 1913)
DIMENSIONS:	Length: 61.00 m; Width: 1.70m; Depth: 1.00 m (within P. Area)
CONDITION:	Good
SURFACE ARTIFACTS:	None
EXCAVATION:	None

DESCRIPTION: The Waikapu Ditch is a flowing, concrete water conduit that taps the Iao Stream at upper elevations within Iao Valley. Within the project area, the ditch is U-shaped, having two vertical concrete sides, an open top, and a flat concrete bottom (Figure 12)

Figure 12: Waikapu Ditch (50-50-04-5493) at point where it enters Project Area. View to South.

—and is very similar in appearance to Waihee ditch. The concrete sides of the ditch measure 0.20 m thick. The curving ditch flows into the *mauka* fifth of the project area from the north and roughly keeps a north-south orientation. Unlike, the Waihee Ditch, the Waikapu Ditch does not transect the project area, rather it enters and then ceases.

The Waikapu Ditch flows into the Site -5727 reservoir where it terminates (although this may not have been the historic termination point of this ditch). The out-flow of this reservoir is a smaller, localized ditch that runs *makai* (Site -5729) and does not resemble the Waikapu ditch. Modern alterations and maintenance to the Waikapu Ditch are evidenced within the project area in the form of fortifications and a car bridge over the ditch. Wilcox (1996:124-125) notes that the ditch was in use prior to 1913 and was built by Wailuku Sugar Company.

State Site Number 50-50-04-5729 (un-named ditch)

FORM	Rock and concrete mortar water-course
FUNCTION:	Sugarcane irrigation
AGE:	Likely historic
DIMENSIONS:	Length: 1200.00 m; Width: 0.90m; Depth: 0.75 m (within P. Area)
CONDITION:	Fair

SURFACE ARTIFACTS: None
EXCAVATION: None
DESCRIPTION: This un-named, flowing ditch was almost certainly built after Waihee and Waikapu Ditch construction. Site -5729 serves as a *mauka-makai* link between these two major sources of imported water. Site -5729 is constructed of basalt rock walls, specifically small boulders that are often welded together with concrete mortar (Figures 13 and 14). The walls of this U-shaped ditch are four to six courses high, and average 0.20 m thick. The bottom of the ditch is a concave, roughly-molded concrete basin. This construction material is an indicator of a localized irrigation effort, as the cost of labor and materials was a significantly smaller undertaking than the major ditches flowing in from the north. The origin of the Site -5729 ditch is the outflow of the Site -5727 reservoir (which gathers its water from the Waikapu Ditch terminus). Site -5929 then flows into the Waihee Ditch (Figure 15). The Site -5729 ditch is controlled by modern mechanisms in its flow into and out of the modern, smaller reservoir, and eventually downslope toward Honoapi`ilani Highway and out of the project area.

Figure 13: Site 50-50-04-5729 Ditch. View to West.

Figure 14: Site 50-50-04-5729 Ditch, Showing Rock and Mortar Construction of Side Walls. View to Northwest.

Figure 15: Site 50-50-04-5729 Ditch (at center) flowing into Waihee Ditch (50-50-04-5197). View to West.

State Site Number 50-50-04-5726 (un-named ditch)

FORM	Earthen berm ditch
FUNCTION:	Sugarcane irrigation
AGE:	Possibly historic
DIMENSIONS:	Length: 215.00 m; Width: 7.00m; Depth: 2.50 m (within P. Area)
CONDITION:	Fair
SURFACE ARTIFACTS:	None
EXCAVATION:	None

DESCRIPTION: This un-named, intermittently flowing ditch was possibly constructed within the historic sugar era. It is a wider U-shape than the other ditches, and is choked with thick introduced grasses that stand over two meters tall. Like the Site -5729 ditch, this is a localized irrigation effort. The possibility exists that this is not a sugar cane agriculture feature, but a modern widening of a natural watershed drainage. However, its earthen berm sides resemble the historic, machine-created berms (Site -5728) constructed on the project area as erosion control during the sugar era. This ditch / drainage runs downslope, approximately west to east.

State Site Number 50-50-04-5727 (un-named reservoir)

FORM	Rectangular reservoir
FUNCTION:	Sugarcane irrigation
AGE:	Likely historic
DIMENSIONS:	Length: 229.00 m; Width: 76.00m; Depth: undetermined
CONDITION:	Excellent (currently maintained)
SURFACE ARTIFACTS:	None
EXCAVATION:	None

DESCRIPTION: This un-named, large reservoir is currently active and maintained by modern pumping equipment and fencing (Figure 16). It is surrounded by machine-created earthen berms of the same construction seen elsewhere on the project area in association with historic agriculture. Waikapu Ditch flows from the north and empties into Site -5727 (see Figure12). Everett Ditch, flowing downslope from the *mauka* West Maui Mountains, also once terminated at this reservoir (however, this ditch no longer exists within the project area). The out-flow for Site -5727 is the Site -5729 localized, lesser ditch. The length of this reservoir is oriented north-south.

The size, construction, elevation, position, and shape of Site -5727 resembles that of Hopoi Reservoir (State Site 50-50-04-5473), a documented sugar era irrigation site. Hopoi Reservoir is located 1 kilometer northeast of the Site -5727 reservoir and the latter is likely of the same construction period as the former. Hopoi Reservoir, although empty and abandoned during

Figure 16: Site 50-50-04-5727 Reservoir. View to North.

initial recordation (see Dega 2004), also was a collection point of a known major water course (Kama Ditch, Site 50-50-04-5474).

Note: A smaller, modern reservoir is located within the *makai* third of the project area (Figure 17). A 1977 aerial map of the Kahului isthmus (see Figure 3) clearly shows the Site -5727 reservoir, and also shows that this smaller reservoir was not yet constructed.

State Site Number 50-50-04-5728 (erosion-control berms)

FORM	Earthen berms (n = 14)
FUNCTION:	Sugarcane field erosion control
AGE:	Likely historic
DIMENSION RANGE:	Length: 132 to 456 m; Width: 5.0 to 17.0 m; Height: 1.0 to 1.8 m
CONDITION:	Fair
SURFACE ARTIFACTS:	None
EXCAVATION:	ST-6
DESCRIPTION:	Fourteen soil berms comprise Site -5728 (Figure 18). This historic

method of machine-piled earthen mounds was used within cane fields to prevent topsoil erosion. As depicted by Figure 4, the positions of the fourteen berm segments vary slightly from a general north-south orientation. What is consistent, however, is that the position of each individual

Figure 17: Modern Reservoir at center of Project Area's Eastern Half.

Figure 18: Site 50-50-04-5728, Feature 13 (Erosion-control Berm). The contour of the berm running cross-slope can be seen as a mound in the dirt road. View to Northeast.

segment runs perpendicular to the sloping terrain within that specific locality of the project area. The mounded soil acted to block rainwater runoff, preserving both moisture and topsoil. To a lesser degree, it is possible that the berms also prevented some wind blown soil erosion, as some of the berms were mounded to a height of 1.80 m. State Site Number 50-50-04-5522 provides a documented case of such berms in the nearby former cane fields of Waiehu, Maui (Wilson and Dega 2004).

Stratigraphic Trench 6

One stratigraphic trench (ST-6) was backhoe excavated through a single soil berm segment of Site -5728. The Feature 4 berm ran north-south at the center of the project area's south perimeter (see Figure 4). ST-6 perpendicularly transected the Feature 4 berm with the intent to explore its interior construction and subsurface depth. A cross sectional profile of ST-6 (Figures 19 and 20) indicates Site -5728 berms are 100 percent made up of naturally occurring soils that have been machine mounded in the past. No imported rock or other substance was used in the construction of these berms. The soil disturbance extends into Layer II (to a maximum depth of 50 cmbs) as evidenced by the mounded subsurface contour in shown in Figure 20. This simply means that the plow mechanism that created these berms cut deeper into the natural landscape in this berm building effort than was generally used when tilling the surrounding fields. (The surrounding fields consistently display an undisturbed Layer II.) Subsurface content is explored further under the heading "Subsurface Testing."

State Site Number 50-50-04-5730 (Old Waikapu Road)

FORM	Dirt road
FUNCTION:	Probable cane-haul route
AGE:	Likely historic
DIMENSIONS:	Length: 945.00 m; Width: 3.50m
CONDITION:	Good
SURFACE ARTIFACTS:	None
EXCAVATION:	None
DESCRIPTION:	A dirt road that enters the project area from the eastern perimeter

(Honoapi`ilani Highway)—and then turns southwest before crossing the southern perimeter—forms the boundary between parcels 02 and 03. On a 1992 Tax Map Key the following words are printed in association with this road: "(Old Waikapu Road) County Road". At the time of survey, this road continued to see infrequent pedestrian and vehicle traffic—reserved for those transecting this undeveloped swath of land as a possible shortcut between paved roads. For this reason, this dirt road remains free of vegetation (Figure 21).

Figure 19: ST-6 (Photograph of North Wall) Profile Shows Subsurface Contour of Machine-mounded Site -5728, Feature 4 Berm. View to North.

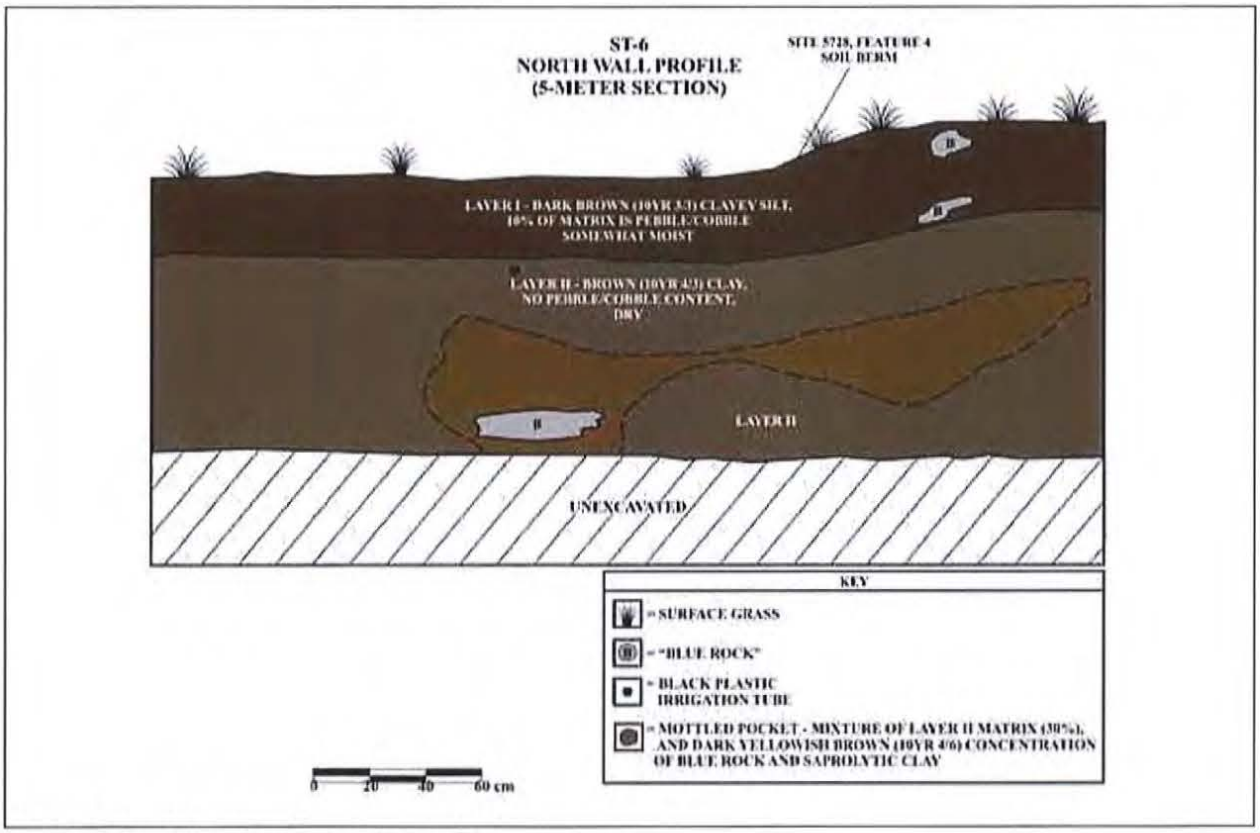


Figure 20: ST-6 Stratigraphic Profile.

Figure 21: "Old Waikapu Road" (50-50-04-5730). View to Southwest.

Exactly how old "Old" Waikapu Road is difficult to determine precisely. However it is safe to assume that this newly recorded State Site Number (50-50-04-5730) originated in the same sugar period as the other six sites within the project area. A Cultural Impact Assessment (CIA) within the same project area provides further detail backing a historic origin to the Old Waikapu Road. Author of the CIA, Kalei Tsuha, interviewed a local resident who, as a child in 1922, remembers traveling across the project area on this same road by horse (K. Tsuha, personal communication 9/25/05).

SUBSURFACE TESTING

Twenty-one stratigraphic trenches (STs) were mechanically excavated by backhoe to test for the presence/absence of subsurface cultural deposits in a variety of project area locations. Excavation took place over a three-day period, August 22–24, 2005. Of these trenches, only one (the previously described ST-6) revealed any kind of subsurface cultural material. ST-6 was placed through an existing soil berm in order to document construction technique of these historic agricultural features. ST-6 documented the subsurface extent of the Site -5728, Feature 4 soil berm (the base of which does extend into the otherwise undisturbed Layer II matrix) (see

Figure 20). None of the 21 trenches revealed any type of artifact, charcoal deposit, or midden deposit.

Testing was spread evenly across the project area with the intent of documenting soil stratigraphy trends by project area location. In total, 21 stratigraphic trenches (ST-1 through ST-21) were excavated and documented. The trenches averaged 7.86 m long, 0.70 m wide, and 1.58 m deep.

Calculating the above averages, an approximate area of 155 m^2 and volume of 183 m^3 of soil was excavated during testing. These sampling figures are primarily indicative of the limited positive results achieved for each trench; if significant cultural resources were documented during the project, it is likely that less geographic space would have been excavated as documentation and sampling of such cultural resources would have been more time consuming. In the amount of time allowed for the project, testing was geared toward obtaining the most information available to assess the presence/absence of subsurface cultural deposits (as it was fairly quickly determined that all surface sites were historic).

STRATIGRAPHIC TRENCH LAYER ANALYSIS

As expected, excavation within the former sugarcane fields resulted in a consistent stratigraphy of culturally sterile soils. Trenching revealed no more or less than two distinct layers in each ST. The variation between trenches was even less than expected, as in each, Layer I represented soil that had been disturbed by historic and modern agricultural practices, and Layer II represented undisturbed soil. The minimal variation between trenches was threefold: the thickness of Layer I varied by 41 centimeters at most; the soil color and qualities variety slightly in among some trenches; and the pebble, cobble, and or saprolytic rock content within Layer II somewhat varied. Otherwise, the project area is extremely homogenous in subsurface content. This can be credited primarily the effects of decades of agricultural use, and also the fact that the Iao Series soils existing here show only minor variation. The following two examples, ST-7 and ST-9, display the typical slight range of stratigraphic variation within the project area (Figure 22).

ST-9 is the standard project area stratigraphy. Layer I has a surface cover of thick, dried grass. Layer I is 65 cm deep and consists of a moderately moist, very dark grayish-brown (10YR 3/2) clayey silt, of which less than ten percent is pebble/ cobble. Layer I contains evidence of the modern agricultural practices in the form of plastics. Only two of the 21 STs excavated did not

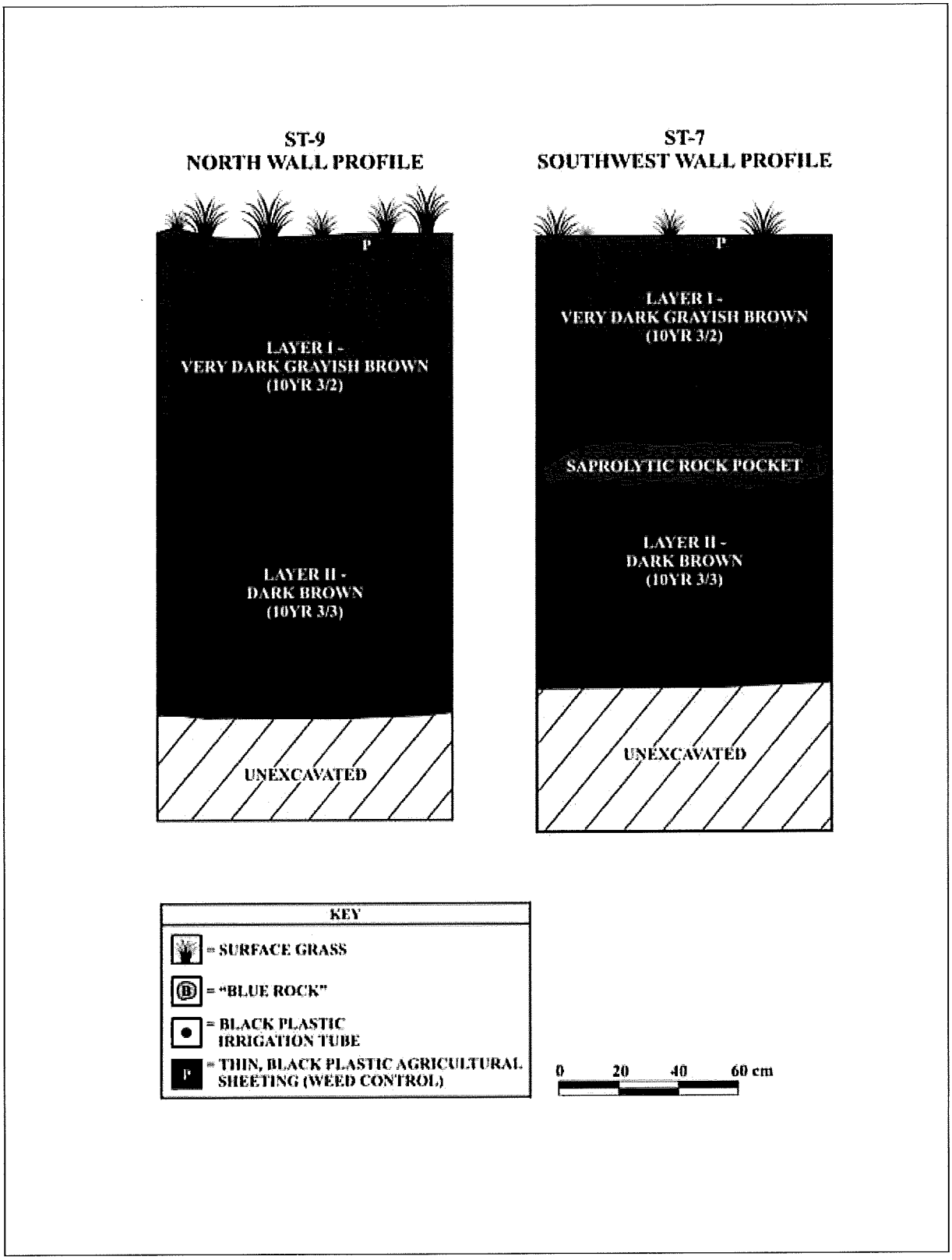


Figure 22: ST-9 and ST-7 Profiles Display Typical Subsurface Stratigraphy within Project Area.

contain either drip line irrigation tubing or black plastic weed-control sheeting in Layer I (see Appendix A). In the majority of STs, Layer I contained both of these plastics at varying depths.

Layer II, as evidenced in ST-9, was often a very compact, moderately dry, dark brown (10YR 3/3) clay, of zero pebble or cobble content. Often, however, a pocket of saprolytic (decomposing) rock or "blue" rock could be found in Layer II (as shown in the ST-7 profile). Layer II thickness remains undetermined as this layer proved too deep to find bedrock, even with the reach of a large backhoe. ST-20 was excavated to a maximum depth of 2.60 m in an unsuccessful attempt to reach bedrock. It is safe to assume that Layer II of the project area is at least 2.00 m thick, but probably much thicker.

DISCUSSION AND CONCLUSIONS

Scientific Consultant Services, Inc. (SCS) conducted Archaeological Inventory Survey on two parcels totaling 215.800 acres, which form one large land tract within Waikapu (and partially Wailuku) Ahupua`a, Wailuku District, Maui Island, Hawai`i [TMK (2) 3-5-02: 02 and 03]. Inventory Survey included archival research, systematic pedestrian survey of the project area, and representative subsurface testing. While the landscape did not yield traditional Hawaiian archaeological sites, it did reveal a network of irrigation systems in the form of ditches and a reservoir, erosion-control berms, and a historic dirt road—forming seven sites. Five of these sites are new additions to the State's rich historic record of turn-of-the century sugar industry in Hawai`i.

WATER CIRCUITRY

In his 2004 Inventory Survey Report of the Kehalani Mauka Development lands Dr. M. Dega initiated three hypotheses regarding historic water circuitry within this Wailuku / Waikapu landscape. Aside from the small area of land covered by the pre-existing Kuikahi Drive that acts to separate the two surveys—the 348.613 acres in Dega's study and the 215.800 to the south (the present survey) may be viewed as 564.413 contiguous acres for the archaeological record. This is not an arbitrary relationship, as the *ahupua`a* division separating these fields did not individualize their historic utilization. The following text is from *An Intermediate Zone Archaeology Inventory Survey [TMK (2) 3-5-001:portion of 001]* (Dega 2004:41–42):

> Several intriguing patterns emerge as one focuses upon the empirical, historic-period evidence at hand. One of these patterns is the direction in which the historic ditches have been constructed and utilized across the parcel. Case in

point: three main ditches or canals run north-south, or [*perpendicular*] to the slope, across the project area and beyond. Waihee Ditch, Kama Ditch, and the westernmost ditch of Site T-24 (Site -5493) [*Waikapu Ditch*] are the most well-constructed on the parcel. These ditches were water conduits across these dry zones. Typically they could be used to water areas along their course or would simply empty into large retention basins (reservoirs) at selected points.

However, there is also a network of ditches, mostly earthen berms and small channels, that run [*parallel*] to the slope on a west (upslope)-east (downslope) axis. These ditches are commonly non-formalized like the north-south ditches and tend to be more localized. Site T-16 (Site -5490), built on an east-west axis for instance, runs a total of 1,000 meters while the north-south Waihee Ditch runs for more than 16 kilometers. The important point is that there is a functional difference between the north-south oriented ditches and the east-west coursing ditches. The more formalized [and costly] north-south ditches are actually water conduits wherein water may be carried long distances to irrigate such water-poor locales as the present project area. The less conventional ditches situated on an east-west axis are simply drainages and do not fulfill an irrigation role on these dry parcels. These smaller ditches appear to be more naturally formed by erosion and were simply modified to accommodate excess water and sediment flow so as not to interfere with the main purpose of cultivation. This pattern appears valid for the present project area but requires additional information from other locales to be proven, negated, or amended.

Thus, we propose two hypotheses that remain to be examined:

1. All north-south canals or ditches along central Maui that run [*perpendicular*] to the slope are water conduits and inherently contain an irrigation function.

2. All east-west bearing canals or ditches along Central Maui that run [*parallel*] to the slope are only drainages that do not disseminate water for irrigation purposes but function to remove overflow so as not to curtail cultivation potential.

DISCUSSION POINTS

The current study provides a second example within the archaeological record confirming Dega's first hypothesis. Both the Waihee Ditch and Waikapu Ditch (numbered, but not named in Dega 2004) were identified as running north to south. These major irrigation conduits continue this flow direction into the current project area. These are large, long, costly, historic structures that were designed to carry stream waters great distances. These ditches run cross-slope within the project area.

The current project area findings expand upon, but do not necessarily confirm Dega's second hypothesis. Two lesser, localized ditches do indeed follow the same orientation as those in the Kehalani lands. Both of these lesser ditches run with the slope contour (perpendicularly linking the major ditches, at times). However, the hypothesis of a functional difference is not soundly reinforced. The Site -5726 ditch is a subtle, earthen feature that may have filled a drainage role rather than an irrigation role. But there is no proof that the more elaborately constructed Site -5729 ditch (stacked basalt boulders that are mortared with concrete) did not in fact serve as a *mauka* to *makai* irrigation artery. This ditch may have served as an outlet to the reservoir's (Site 5727) spill-over, however, this function should not exclude a dual purpose of localized irrigation.

Finally, like in Dega's (2004) study, four points contribute to the current project's lack of traditional Hawaiian cultural material. First, and most obviously for this location, historic impacts have dramatically altered the landscape so much as to erase larger archaeological traces of traditional-period activities. Second, the lack of traditional-period evidence suggests that these open lands were probably not intensively utilized during prehistoric times. The current project area may have not been selected as a habitation zone as it is an open area without perennial water resources—and more preferable lands were readily available. Third, the types of traditional activities conducted within and near the project area may not have left archaeological signatures. Fourth, as is the case for all archaeological projects, testing may have not coincided with the existing subsurface cultural materials. This is unlikely but always a possibility as 100 percent of any parcel is rarely ever fully excavated.

SIGNIFICANCE ASSESSMENT AND RECOMMENDATIONS

Seven archaeological sites were documented in the project area: Waihee Ditch (50-50-04-5197); Waikapu Ditch (50-50-04-5493); an un-named, lesser ditch (50-50-04-5729); a second un-named, lesser ditch (50-50-04-5726); a large, un-named reservoir (50-50-04-5727); a series of fourteen sugarcane-field erosion-control, soil berms (50-50-04-5728); and a County dirt road named "Old Waikapu Road" (50-50-04-5730).

These sites have been evaluated for significance according to the criteria established for the Hawai`i State Register of Historic Places. The five criteria are classified below:

Criterion A: Site is associated with events that have made a significant contribution to the broad patterns of our history

Criterion B: Site is associated with the lives of persons significant to our past

Criterion C: Site is an excellent site type; embodies distinctive characteristics of a type, period, or method of construction, or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components may lack individual construction

Criterion D: Site has yielded or has the potential to yield information important in prehistory or history

Criterion E: Site has cultural significance to an ethnic group; examples include religious structures, burials, major traditional trails, and traditional cultural places

All seven of these historic sites have been assessed as significant under Criterion D.

Based upon the results of this Inventory Survey and the results of archaeological work on adjacent parcels that have also produced primarily negative results (see Dega 2003, 2004; Monahan 2003; Buffum and Dega 2001), it appears as though additional archaeological research on the subject parcels would not contribute a significant volume of additional data to the interpretation of the area or region, or to Hawaiian prehistory/history. Archaeological Monitoring is not recommended during construction within the project area. The seven sites documented herein have yielded their information to the historical record and no additional archaeological work is recommended.

REFERENCES

Athens. J.S.

1997 "Hawaiian Native Lowland Vegetation in Prehistory." In *Historical Ecology in the Pacific Islands: Prehistoric Environment and Landscape Change*, ed. By P.V. Kirch and T.L. Hunt. Yale University Press, New Haven.

Brisbin, J., A. E. Haun, and P. M. Jensen

1991 *Data Recovery Excavations Waikapū Mauka Partners Golf Resort Project Area: Land of Waikapū, Wailukū District, Island of Maui.* PHRI. Hilo, Hawaii.

Buffum, A., and M. Dega

2001 *Archaeological Inventory Survey of 7.5 Acres in Waikapu Ahupua`a, Wailuku District, Island of Maui, Hawai`i (TMK:3-5-04:92).* Scientific Consultant Services, Inc., Honolulu.

Buffum, A., and R.L. Spear

2001 An Archaeological Monitoring Report for the Proposed Maui Memorial Medical Center, *Wailuku Ahupua`a, Wailuku District, Maui Island, Hawai`i (TMK:3-8-48:013 & 029*). Scientific Consultant Services, Inc., Honolulu.

Burgett, B. and R.L. Spear

1995 *An Archaeological Inventory Survey of TMK: 3-8-37:48, Wailuku Ahupua`a,* Wailuku District, Island of Maui. Scientific Consultant Services: Honolulu.

1997 *Inventory Survey of Puunene Bypass/Mokulele Highway Improvements Corridor, Pulehunui and Wailuku Ahupua`a Wailuku District, Island of Maui, Hawai`i (TMK:3-8:04, 05, 06, 07).* Scientific Consultant Services, Inc., Honolulu.

Cavanaugh, T. J.

1995 *Subsurface Investigation Report, Roadway and Utility Improvements, Wailuku Project District, Wailuku, Maui, Hawaii.* Fewell Geotechnical Engineering, Inc., Kahului.

Cheever, Rev. H.T.

1851 *Life in the Sandwich Islands: or, The Heart of the Pacific, As it Was and Is.* A.S. Barnes (New York) and H.W. Darby (Cincinnati).

Chinen, J. J.

1961 *Original Land Titles in Hawaii.* Copyright 1961 Jon Jitsuzo Chinen.

Connolly, R.D. III

1974 *Phase I Archaeological Survey of `Īao Valley Flood-Control-Project Area, Maui.* MS. Report 100374, B.P. Bishop Museum, Honolulu.

Cordy, R.H.

1981 *A Study of Prehistoric Social Change: The Development of Complex Societies in the Hawaiian Islands*. Academic Press, New York.

1996 *Settlement Patterns of Wailuku Ahupua`a from Mahele Records*. Paper Presented at the 9th Annual Conference for the Society of Hawaiian Archaeology in Wailea, Maui.

Creed, V. S.

1993 *Settlement Pattern for Waikapū, Wailukū District, Maui, Hawaii.* Volume 1. Cultural Surveys Hawaii. Kailua, Hawai`i.

Daws, G.

1968 *Shoal of Time: History of the Hawaiian Islands*. University of Hawai`i Press. Honolulu

Dega, M.F.

2003 *Archaeological Inventory Survey in the Intermediate Dry Zone of Wailuku, Wailuku Ahupua`a, Wailuku (Kula) District, Maui Island, Hawai`I (TMK:3-5-001:portion of 001*). Scientific Consultant Services, Inc. SCS Report No. 385-2, Honolulu.

2004 *An Intermediate Zone Archaeology Inventory Survey Located in Wailuku, Wailuku Ahupua`a, Wailuku (Kula) District, Maui Island, Hawai`i (TMK: 3-5-001: portion of 001)*. SCS Report No. 396-2. Prepared for Standford Carr. On file at SHPD, Kapolei, Hawaii.

Denham, T., J. Kennedy, and L. Reintsema

1992 *Inventory Survey with Subsurface Testing Report for a Property at TMK:3-5-03:01, Wailuku Ahupua`a, Wailuku District, Island of Maui*. Archaeological Consultants of Hawaii, Inc., Haleiwa. On file as report M-395 at SHPD, Kapolei, Hawaii.

Donham , T. K.

1991 *Field Inspection of a Water Pipeline Easement Across Waikapū Stream, Waikapū, Maui TMK 3-5-04:14 and 3-6-04:2*. On file as report M-347 at SHPD, Kapolei, Hawaii.

1995 *Field Inspection of the Richardson Family Cemetery (50-50-04-4001), Kukuialamaka, Waikapū, Wailukū District, Island of Maui (TMK:3-5-04:22).* SHPD. Kapolei, Hawaii.

1996 *A Summary of Archaeological Finds in Wailuku Showing Settlement Patterns*. Paper Presented at the 9th Annual Conference for the Society of Hawaiian Archaeology in Wailea, Maui.

Dunn, A., and R.L. Spear
1995 *Archaeological Monitoring Report Waiale Road, Land of Wailuku, Wailuku District, Island of Maui (TMK:3-4-02:36; 3-4-03:19; 3-4-10:2)*. Scientific Consultant Services, Inc., Honolulu.

Emory, K. P.
1921 *An Archaeological Survey of Haleakala.* B.P. Bishop Museum Occasional Papers 7 (11):237-59.

Estioko-Griffin A., and M. Yent
1986 *Management and Interpretive Plans for Halekii-Pihana Heiau State Monument* (Draft). Division of State Parks, Department of Land and Natural Resources. Ms. on file State Historic Preservation Division, Honolulu.

Folk, W. H., and H. H. Hammatt
1989 *Archaeological Survey at Ma`alaea, Waikapu, Maui.* Cultural Surveys Hawaii, Kaneohe.

Foote, D. E., E. L. Hill, S. Nakamura, and F. Stephens
1972 *Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii.* U.S. Dept. of Agriculture, Soil Conservation Science and University of Hawai`i Agricultural Experimentation Station. Washington D.C., U.S. Govt. Printing Office.

Fredericksen, E.M., and D.L. Fredericksen
1996 *Archaeological Data Recovery Report on Site 50-50-04-4127, Lower Main and Mill Streets, Wailuku Ahupua`a, Wailuku District, Maui Island (TMK 3-4-39: por. 81 & 82).* Ms. on file State Historic Preservation Division, Honolulu.

1997 *Archaeological Data Recovery report on Site 50-50-04-4127, Lower Main and Mill Streets, Wailuku Ahupua`a, Wailuku District, Maui Island, (TMK:3-4-39:por 81 and 82).* On File, State Historic Preservation Division: Kapolei.

1998 *Archaeological Inventory Survey for Proposed Maui Texaco Service Station, Located at Lower Main and Mill Streets, Wailuku Ahupua`a, Wailuku District, Island of Maui.* On File, State Historic Preservation Division: Kapolei.

Handy, E. S. and E. G. Handy
1972 *Native Planters in Old Hawaii: Their Life, Lore, and Environment.* Bishop Museum, Bulletin 233. Honolulu.

Haun, A. E.
1989 *Interim Report: Archaeological Mitigation Program Waikapu Mauka Partners Golf Resort Project Area. Land of Waikapu, Wailuku District, Island of Maui.* PHRI. Hilo, Hawaii.

Kame`eleihiwa, L.
1992 *Native Lands and Foreign Desires: Pahea La E Pono Ai?* Bishop Museum Press. Honolulu.

Kelly, M.
1998 "Gunboat Diplomacy, Sandalwood Lust and National Debt." in *Ka Ola o Oha*, Vol.15, No.4, April 1998.

Kennedy, J.
1988 *Preliminary Archaeological Survey of Phase IA of the Waikapu Master Plan (TMK 3-5-04: Portion of 25).* Letter Report. ACH. Haleiwa, Hawaii.

1989 *Archaeological Subsurface Testing Results at Phase IA of the Waikapu Master Plan (TMK 3-5-04: Portion of 25).* Letter Report. ACH. Haleiwa, Hawaii.

Kirch, P. V.
1985 *Feathered Gods and Fishhooks: An Introduction to Hawaiian Archaeology and Prehistory*. University of Hawaii Press, Honolulu.

Kirch, P. V. and M. Sahlins
1992 *Anahulu: The Anthropology of History in the Kingdom of Hawaii*. Vols. 1 and 2. University of Chicago Press. Chicago, IL.

Kuykendall, R. S.
1938 *The Hawaiian Kingdom.* Vol.I. University of Hawai`i Press. Honolulu.

Monahan, C.
2003 *Archaeological Assessment Report on Approximately 30 Acres of Land on Two Undeveloped Lots in Wailuku Ahupua`a, Wailuku District, Maui Island, Hawai`i (TMK:3-5-01:Portion 17*). Scientific Consultant Services, Inc., SCS Report No. 404-AA, Honolulu.

Morawski, L., and M. F. Dega
2003 *Archaeological Monitoring Plan During Limited Construction on a Parcel Along Ho`okahi Street, Wailuku, Wailuku District, Island of Maui, Hawai`i (TMK:3-4-026:028).* Scientific Consultant Services, Inc., Honolulu.

Morawski, L., and R. L. Spear
2001 *Archaeological Monitoring for Fleming Tract Waterline Replacement, Wailuku Ahupua`a, Wailuku District, Maui Island, Hawai`i (TMK:3-4-01 and 3-4-02*). Scientific Consultant Services, Inc., Honolulu

Pantaleo, J. and A. Sinoto
1996 *Archaeological Subsurface Sampling of the Proposed Maui Lani Development Phases I and IA, Wailuku Ahupua`a, Wailuku District, Maui Island.* For Maui Lani Partners.

Pearson, R. J., P. V. Kirch, and M. Pietrusewsky
1971 "An Early Prehistoric Site at Bellows Beach, Waimanalo, Oahu, Hawaiian Islands." In *Archaeology and Physical Anthropology in Oceania* VI(3):204-234.

Price, S.
1983 "Climate." In *Atlas of Hawaii*, ed. By Warwick Armstrong. The University Press of Hawaii, Honolulu.

Pukui, M. K., and S.H. Elbert
1992 *Place Names of Hawaii*. University of Hawaii Press, Honolulu.

Shimamoto, A. J.
1995 *Subsurface Investigation Report, B-2 Subdivision, Wailuku Project, Wailuku, Maui, Hawaii*. Fewell Geotechnical Engineering, Inc., Kahului.

Sterling, E. P.
1998 *Sites of Maui*. Bishop Museum Press, Honolulu.

Stokes, J. F. G.
1918 *Report on the Heiau of Maui*. Transcipt on file at the B.P. Bishop Museum, Honolulu.

Thrum , T. G.
1909–1918 "Maui's Heiaus and Heiau Sites Revisited," *Hawaiian Almanac*. Honolulu.

Titchenal, P.
1996 *Archaeological Inventory Survey of the Proposed Retention Basin and Adjoining Lands, Waikapu and Wailuku Ahupua`a, Wailuku District, Maui Island (TMK 3-5-02:01 Por.) (TMK 3-5-01:17 Por.)*. Aki Sinoto Consulting. On file as report M-570 at SHPD, Kapolei, Hawaii.

Waihona `Aina Corperation
2005 Mahele Database, www.waihona.com. Kaneohe, HI.

Walker, W.
1931 *Archaeology of Maui*, Manuscript. Bishop Museum, Honolulu.

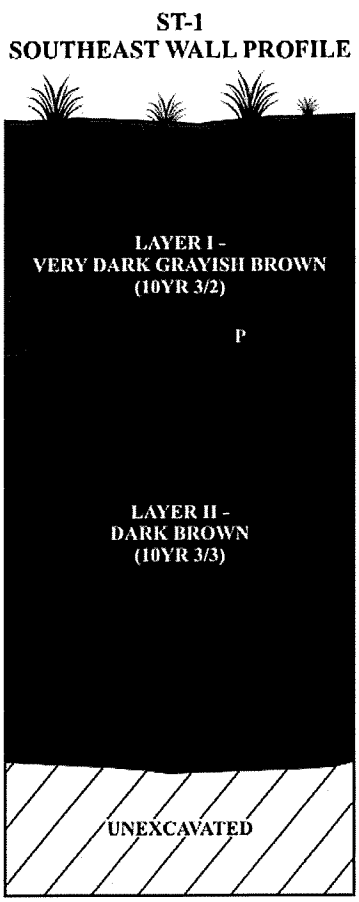
Wilcox, C.
1996 *Sugar Water: Hawai`i's Plantation Ditches*. University of Hawai`i Press, Honolulu.

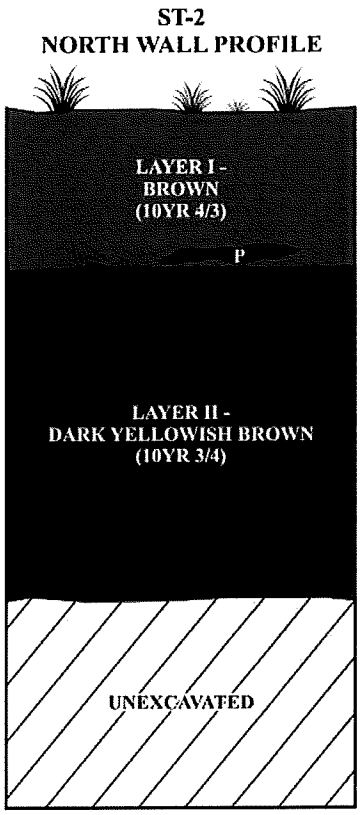
Wilson, J. and M. Dega
2004 *An Archaeological Inventory Survey Report of 240.087 Acres located in Wai`ehu and Wailuku Ahupua`a, Wailuku District, Maui Island, Hawai`i [TMK (2) 3-3-02: portion of 001].* Prepared by Scientific Consultant Services, Inc. for Sterling Kim. SCS Report No. 425, On file at SHPD, Kapolei, Hawaii.

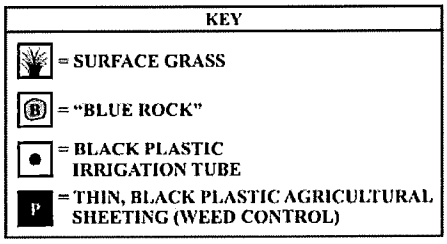
Yent, M.
1983 *Halekii-Pihana State Monument Phase I: Archaeological Testing and the Development of Interpretive Themes.* Ms. on file State Historic Preservation Division, Honolulu.

Zachman, J. and R. L. Spear
2002 *Archaeological Monitoring Report for Installation Work at Maui Memorial Medical Center, Wailuku Ahupua`a, Wailuku District, Maui Island, Hawai`i (TMK:3-8-48:013 & 029).* Scientific Consultant Services, Inc., Honolulu.

APPENDIX A: STRATIGRAPHIC PROFILES


ST-1
SOUTHEAST WALL PROFILE
LAYER I -
VERY DARK GRAYISH BROWN
(10YR 3/2)
P
LAYER II -
DARK BROWN
(10YR 3/3)
UNEXCAVATED


ST-2
NORTH WALL PROFILE
LAYER I -
BROWN
(10YR 4/3)
P
LAYER II -
DARK YELLOWISH BROWN
(10YR 3/4)
UNEXCAVATED


KEY
= SURFACE GRASS
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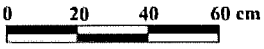
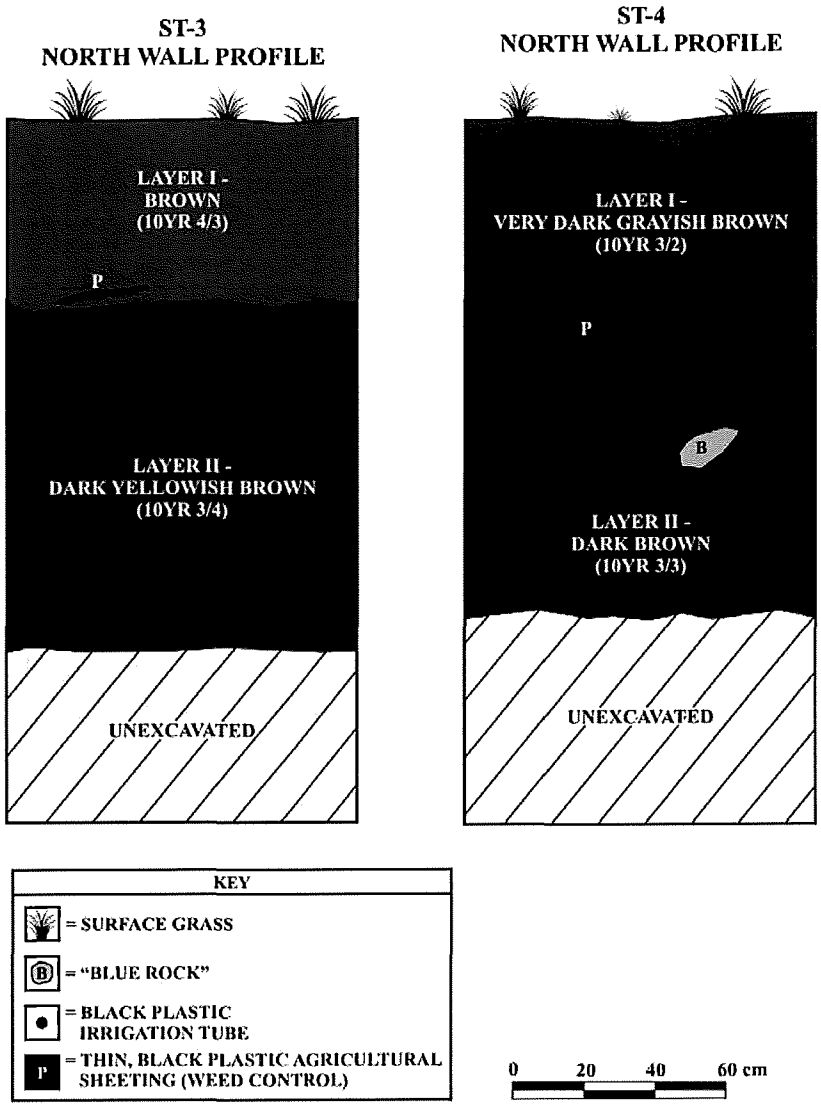
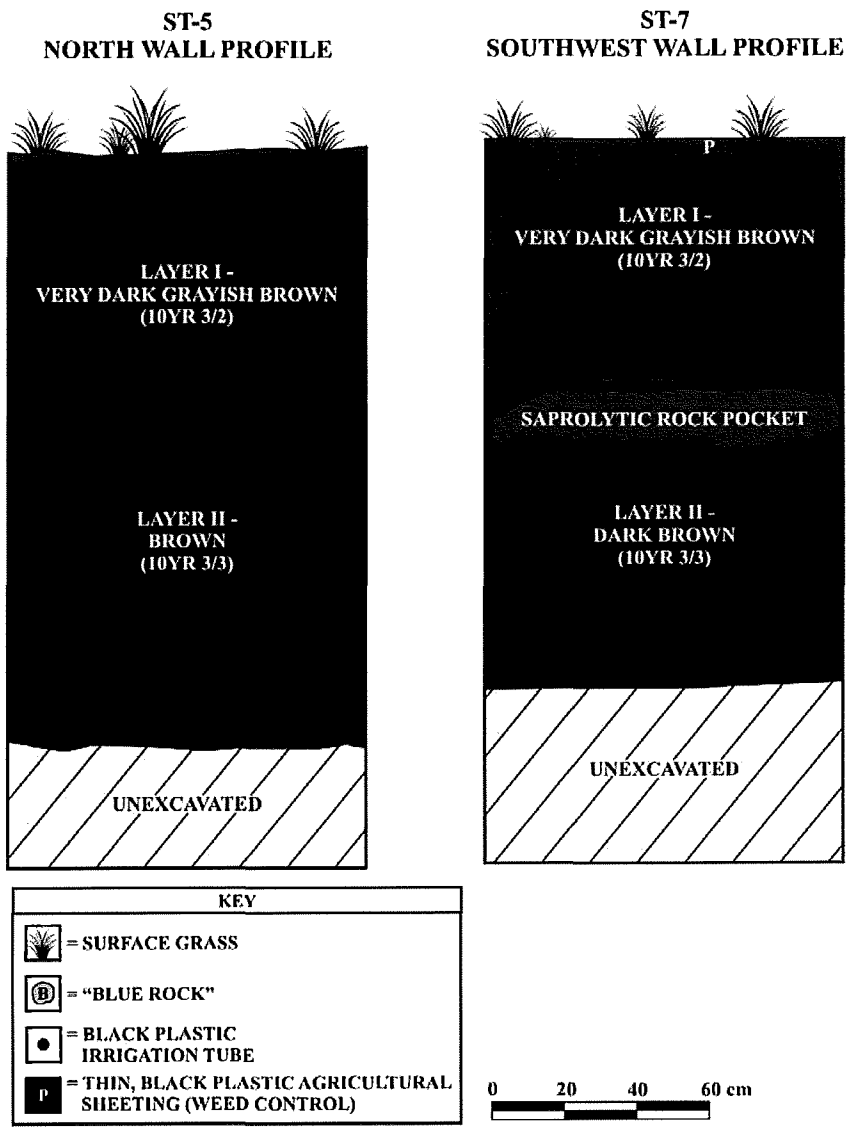
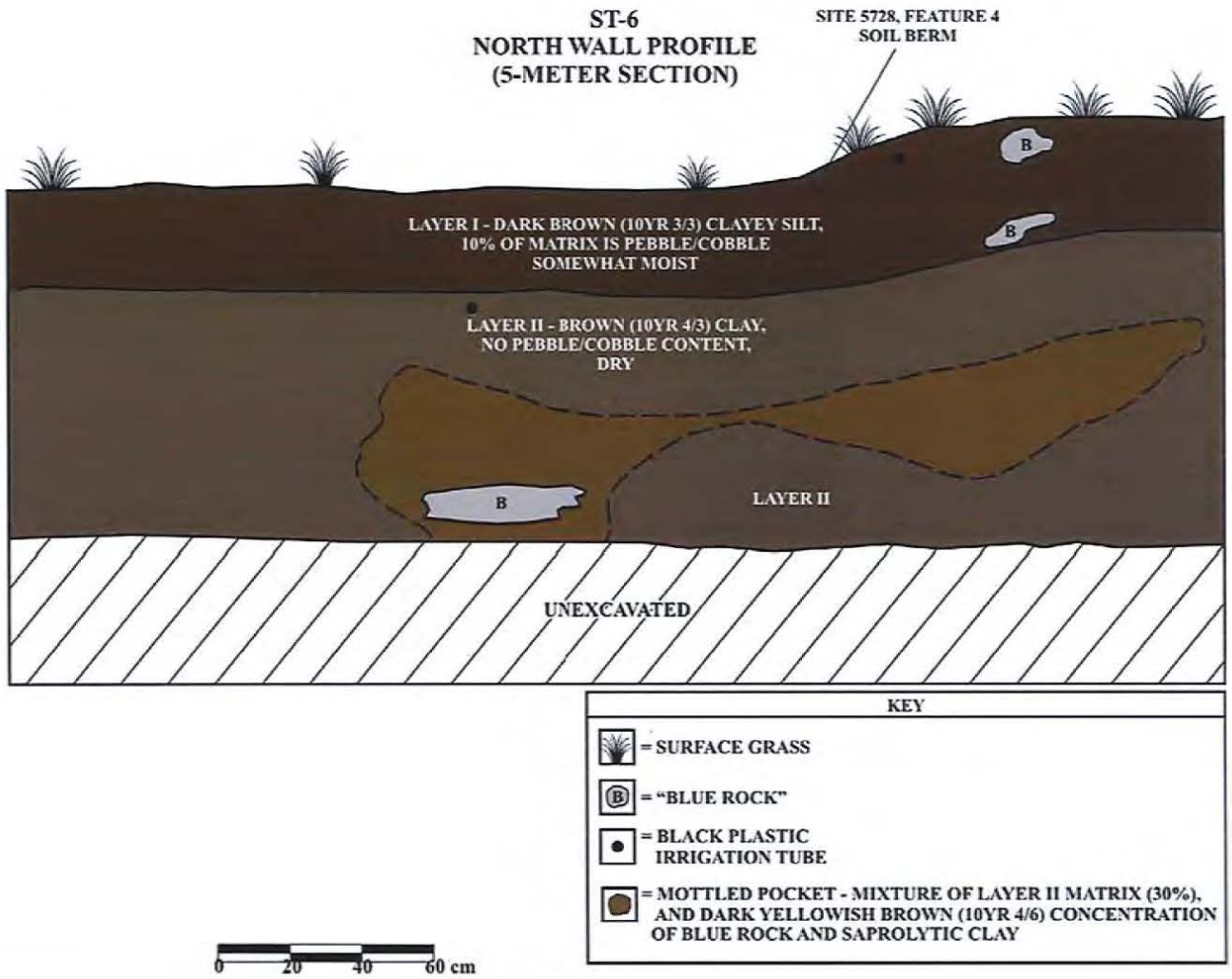
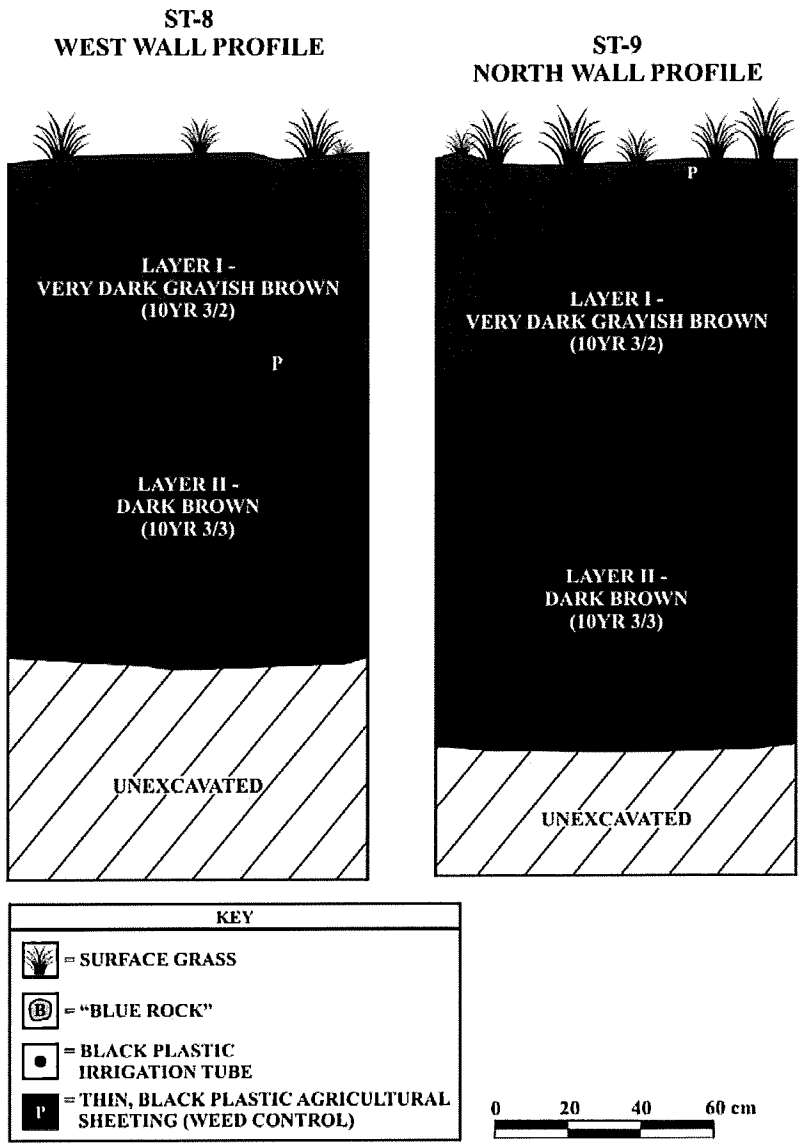
= BLACK PLASTIC
IRRIGATION TUBE
P
= THIN, BLACK PLASTIC AGRICULTURAL
SHEETING (WEED CONTROL)

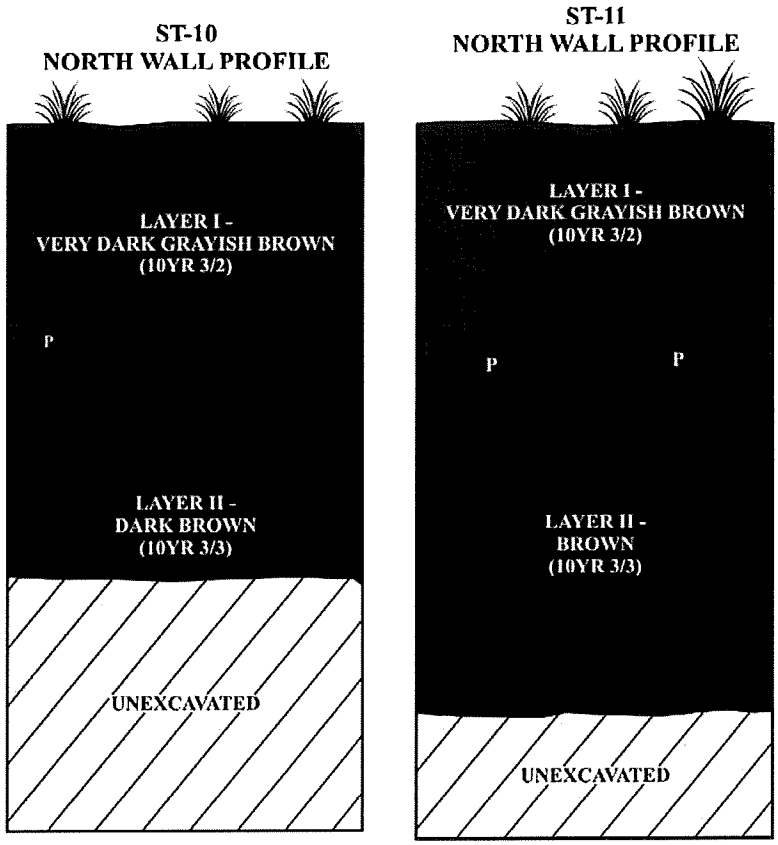

0
20
40
60 cm

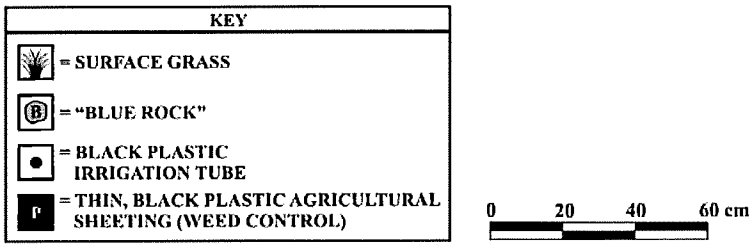

ST-3
NORTH WALL PROFILE
LAYER I -
BROWN
(10YR 4/3)
P
LAYER II -
DARK YELLOWISH BROWN
(10YR 3/4)
UNEXCAVATED
ST-4
NORTH WALL PROFILE
LAYER I -
VERY DARK GRAYISH BROWN
(10YR 3/2)
P
B
LAYER II -
DARK BROWN
(10YR 3/3)
UNEXCAVATED
KEY
= SURFACE GRASS
= "BLUE ROCK"
= BLACK PLASTIC
IRRIGATION TUBE
= THIN, BLACK PLASTIC AGRICULTURAL
SHEETING (WEED CONTROL)
0
20
40
60 cm


ST-5
NORTH WALL PROFILE
LAYER I -
VERY DARK GRAYISH BROWN
(10YR 3/2)
LAYER II -
BROWN
(10YR 3/3)
UNEXCAVATED
ST-7
SOUTHWEST WALL PROFILE
P
LAYER I -
VERY DARK GRAYISH BROWN
(10YR 3/2)
SAPROLYTIC ROCK POCKET
LAYER II -
DARK BROWN
(10YR 3/3)
UNEXCAVATED
KEY
= SURFACE GRASS
= "BLUE ROCK"
= BLACK PLASTIC
IRRIGATION TUBE
P = THIN, BLACK PLASTIC AGRICULTURAL
SHEETING (WEED CONTROL)
0 20 40 60 cm


ST-6
NORTH WALL PROFILE
(5-METER SECTION)
SITE 5728, FEATURE 4
SOIL BERM
B
B
LAYER I - DARK BROWN (10YR 3/3) CLAYEY SILT,
10% OF MATRIX IS PEBBLE/COBBLE
SOMEWHAT MOIST
LAYER II - BROWN (10YR 4/3) CLAY,
NO PEBBLE/COBBLE CONTENT,
DRY
B
LAYER II
UNEXCAVATED
KEY
= SURFACE GRASS
= "BLUE ROCK"
= BLACK PLASTIC
IRRIGATION TUBE
= MOTTLED POCKET - MIXTURE OF LAYER II MATRIX (30%),
AND DARK YELLOWISH BROWN (10YR 4/6) CONCENTRATION
OF BLUE ROCK AND SAPROLYTIC CLAY
0
20
40
60 cm


ST-8
WEST WALL PROFILE
LAYER I -
VERY DARK GRAYISH BROWN
(10YR 3/2)
P
LAYER II -
DARK BROWN
(10YR 3/3)
UNEXCAVATED
ST-9
NORTH WALL PROFILE
P
LAYER I -
VERY DARK GRAYISH BROWN
(10YR 3/2)
LAYER II -
DARK BROWN
(10YR 3/3)
UNEXCAVATED
KEY
= SURFACE GRASS
= "BLUE ROCK"
= BLACK PLASTIC
IRRIGATION TUBE
P
= THIN, BLACK PLASTIC AGRICULTURAL
SHEETING (WEED CONTROL)
0
20
40
60 cm


ST-10
NORTH WALL PROFILE
LAYER I -
VERY DARK GRAYISH BROWN
(10YR 3/2)
P
LAYER II -
DARK BROWN
(10YR 3/3)
UNEXCAVATED
ST-11
NORTH WALL PROFILE
LAYER I -
VERY DARK GRAYISH BROWN
(10YR 3/2)
P
P
LAYER II -
BROWN
(10YR 3/3)
UNEXCAVATED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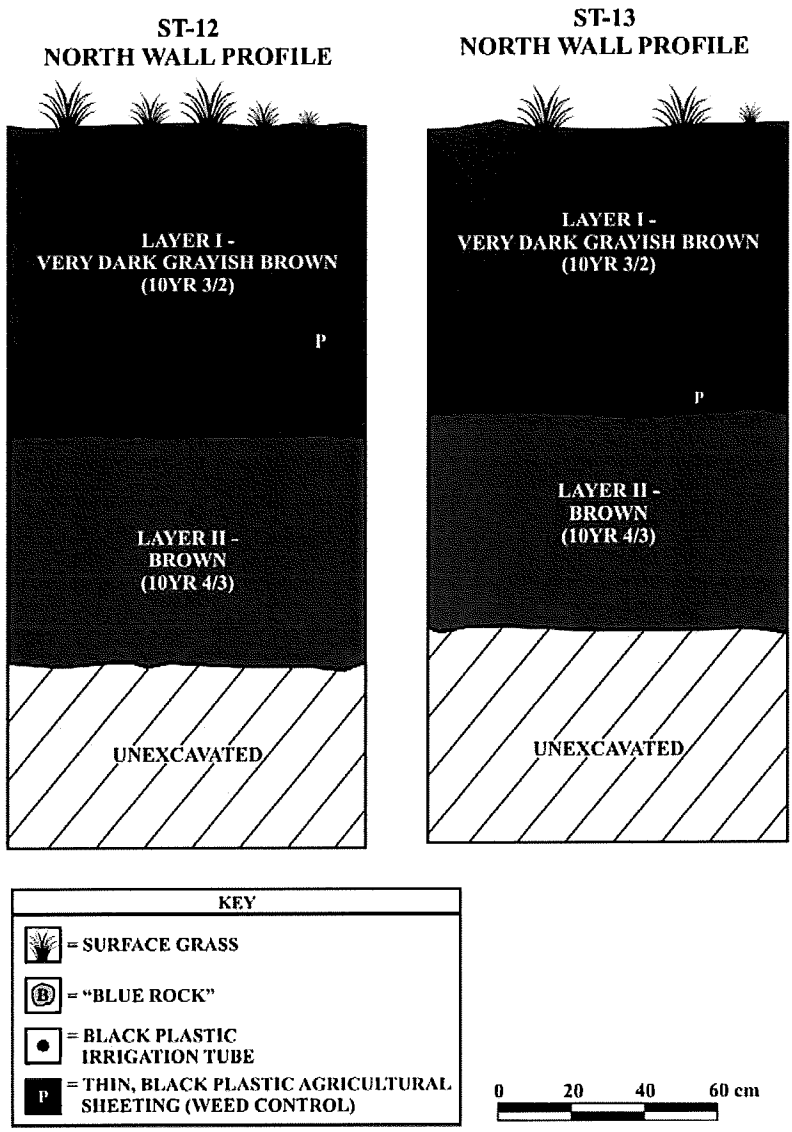
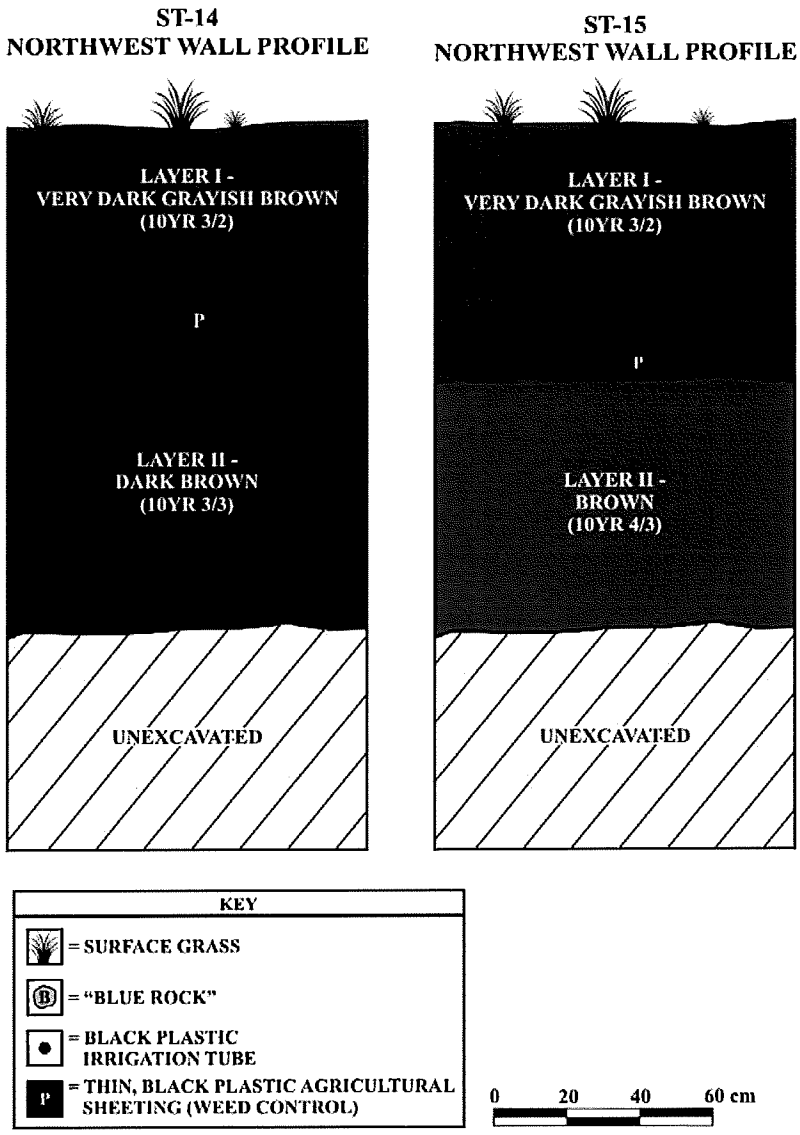
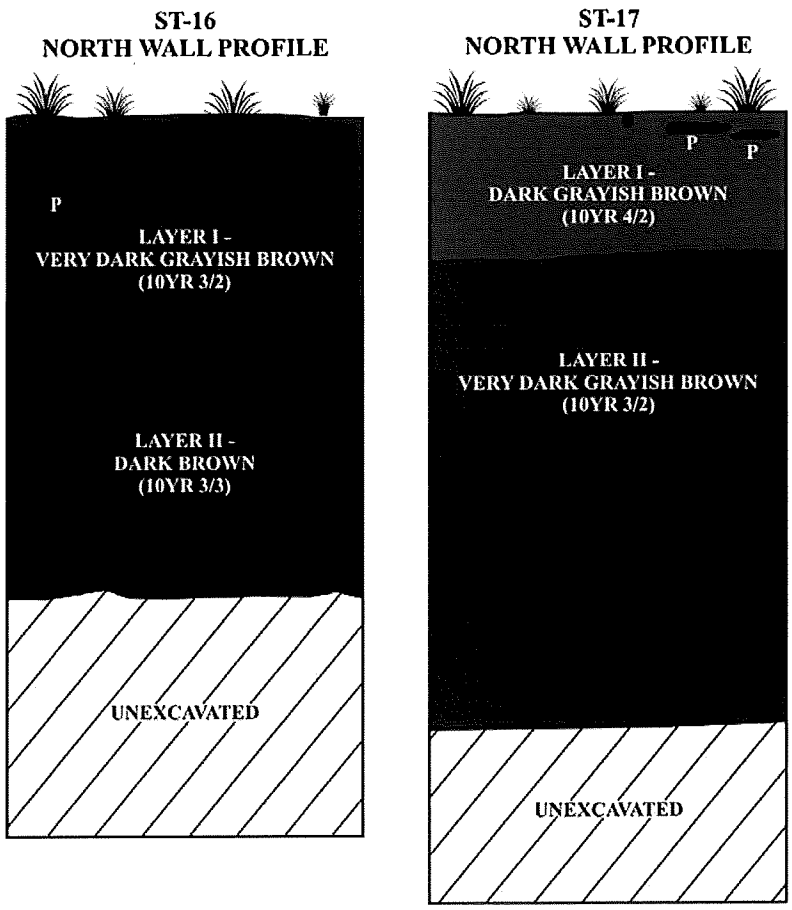
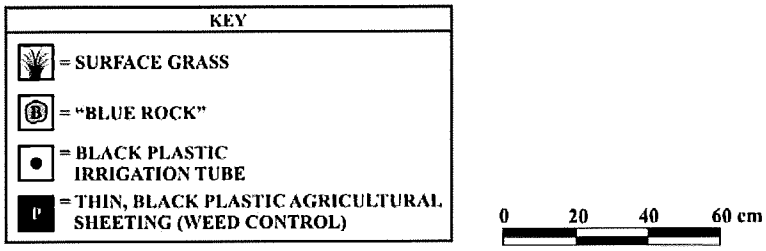
= "BLUE ROCK"
= BLACK PLASTIC
IRRIGATION TUBE
= THIN, BLACK PLASTIC AGRICULTURAL
SHEETING (WEED CONTROL)
0
20
40
60 cm


ST-12
NORTH WALL PROFILE
LAYER I -
VERY DARK GRAYISH BROWN
(10YR 3/2)
P
LAYER II -
BROWN
(10YR 4/3)
UNEXCAVATED
ST-13
NORTH WALL PROFILE
LAYER I -
VERY DARK GRAYISH BROWN
(10YR 3/2)
P
LAYER II -
BROWN
(10YR 4/3)
UNEXCAVATED
KEY
= SURFACE GRASS
= "BLUE ROCK"
= BLACK PLASTIC
IRRIGATION TUBE
P
= THIN, BLACK PLASTIC AGRICULTURAL
SHEETING (WEED CONTROL)
0
20
40
60 cm


ST-14
NORTHWEST WALL PROFILE
LAYER I -
VERY DARK GRAYISH BROWN
(10YR 3/2)
P
LAYER II -
DARK BROWN
(10YR 3/3)
UNEXCAVATED
ST-15
NORTHWEST WALL PROFILE
LAYER I -
VERY DARK GRAYISH BROWN
(10YR 3/2)
P
LAYER II -
BROWN
(10YR 4/3)
UNEXCAVATED
KEY
= SURFACE GRASS
= "BLUE ROCK"
= BLACK PLASTIC
IRRIGATION TUBE
P
= THIN, BLACK PLASTIC AGRICULTURAL
SHEETING (WEED CONTROL)
0
20
40
60 cm


ST-16
NORTH WALL PROFILE
P
LAYER I -
VERY DARK GRAYISH BROWN
(10YR 3/2)
LAYER II -
DARK BROWN
(10YR 3/3)
UNEXCAVATED
ST-17
NORTH WALL PROFILE
P
P
LAYER I -
DARK GRAYISH BROWN
(10YR 4/2)
LAYER II -
VERY DARK GRAYISH BROWN
(10YR 3/2)
UNEXCAVATED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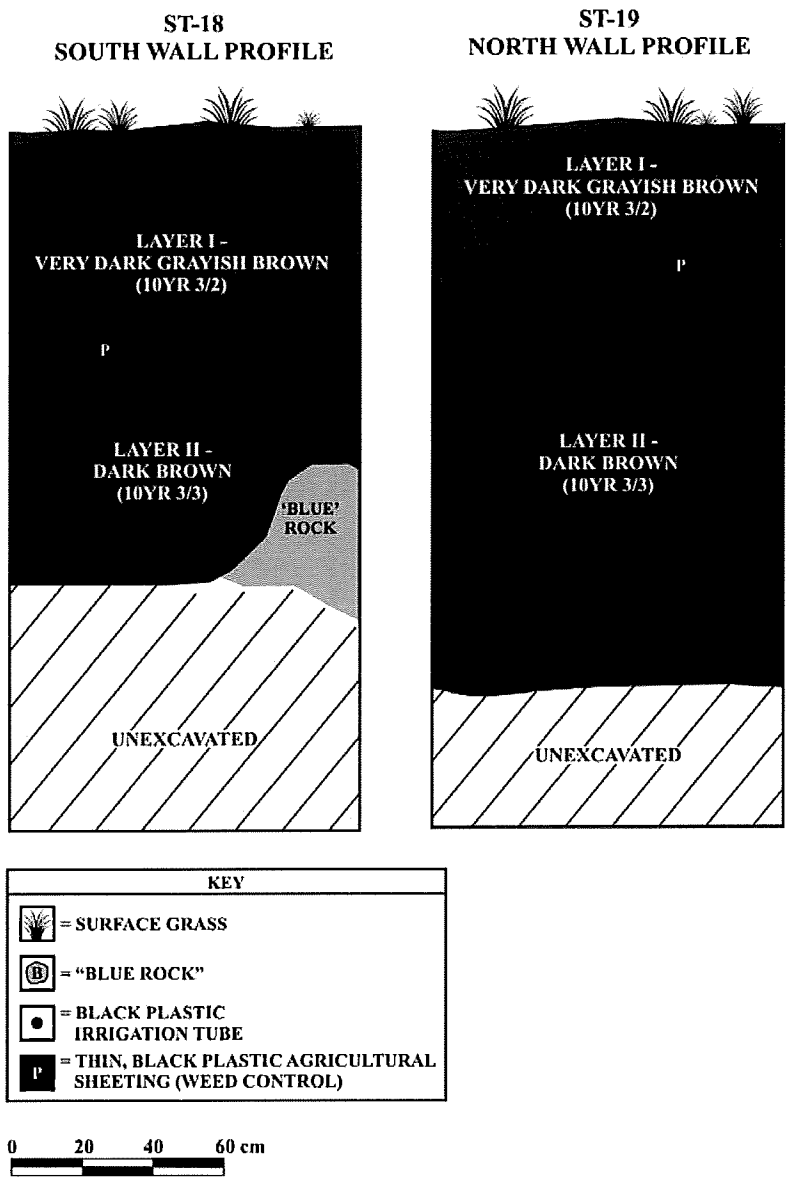
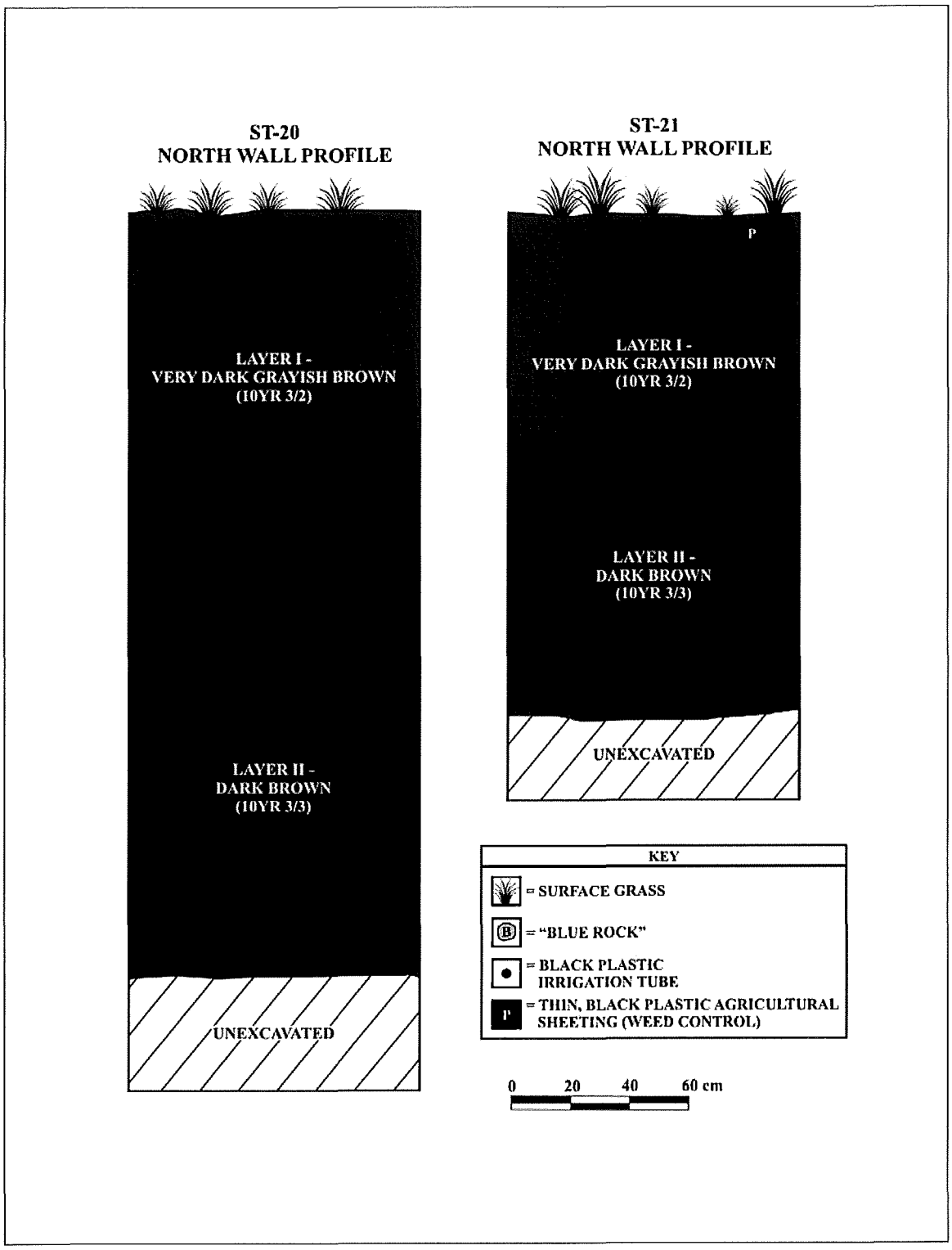
= THIN, BLACK PLASTIC AGRICULTURAL SHEETING (WEED CONTROL)
0
20
40
60 cm


ST-18
SOUTH WALL PROFILE
LAYER I -
VERY DARK GRAYISH BROWN
(10YR 3/2)
P
LAYER II -
DARK BROWN
(10YR 3/3)
'BLUE'
ROCK
UNEXCAVATED
ST-19
NORTH WALL PROFILE
LAYER I -
VERY DARK GRAYISH BROWN
(10YR 3/2)
P
LAYER II -
DARK BROWN
(10YR 3/3)
UNEXCAVATED
KEY
= SURFACE GRASS
= "BLUE ROCK"
= BLACK PLASTIC
IRRIGATION TUBE
= THIN, BLACK PLASTIC AGRICULTURAL
SHEETING (WEED CONTROL)
0
20
40
60 cm


ST-20
NORTH WALL PROFILE
LAYER I -
VERY DARK GRAYISH BROWN
(10YR 3/2)
LAYER II -
DARK BROWN
(10YR 3/3)
UNEXCAVATED
ST-21
NORTH WALL PROFILE
P
LAYER I -
VERY DARK GRAYISH BROWN
(10YR 3/2)
LAYER II -
DARK BROWN
(10YR 3/3)
UNEXCAVATED
KEY
= SURFACE GRASS
= "BLUE ROCK"
= BLACK PLASTIC
IRRIGATION TUBE
= THIN, BLACK PLASTIC AGRICULTURAL
SHEETING (WEED CONTROL)
0 20 40 60 cm

AIS ACCEPTANCE LETTER FROM THE STATE HISTORIC PRESERVATION DIVISION DATED NOVEMBER 18, 2005

APPENDIX

D-1

LINDA LINGLE
GOVERNOR OF HAWAII

(607)

PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

ROBERT K. MASUDA
DEPUTY DIRECTOR - LAND

DEAN NAKANO
ACTING DEPUTY DIRECTOR - WATER

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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

STATE HISTORIC PRESERVATION DIVISION
601 KAMOKILA BOULEVARD, ROOM 555
KAPOLEI, HAWAII 96707

November 18, 2005

Michael Dega, Ph.D.
Scientific Consultant Services
711 Kapiolani Blvd. Suite 975
Honolulu, HI 96813

LOG NO: 2005.2398
DOC NO: 0511MK22

Dear Dr. Dega:

SUBJECT: Historic Preservation Review - 6E-42 - Archaeological Inventory Survey On 215.800 Acres for Towne Development of Hawaii and Endurance Investors, LLC
Waikapu Ahupua'a, Wailuku District, Maui
TMK (2) 3-5-002:002 and 003

Thank you for the opportunity to review this report which our staff received on October 14, 2005 (Wilson and Dega 2005, *Archaeological Inventory Survey Report on 215.800 Acres Located in Waikapu Ahupua'a, Wailuku District, Maui Island, Hawai'i [TMK (2) 3-5-02: 02 and 03])*...Scientific Consultant Services, Inc., ms.

The background section acceptably establishes the ahupua'a settlement pattern and predicts the likely site pattern in the project area. The historical information provided summarizes the history of the post-contact period land uses. The summary of previous archaeological work in the area provides a baseline for the current work. The subject parcel has formerly been utilized for commercial agriculture, and consists 100% of abandoned cane land. Three small Land Commission Awards are situated within the subject parcel, in an area through which a stream and/or ditch formally ran.

The survey has adequately covered the project area documenting five new historic properties in the project area, and re-identifying two previously identified historic properties. Previously identified sites, SIHP 50-50-04-5197 and -5493, consist of the Waihe'e and Waikapu Ditches. Newly identified SIHP sites 50-50-5729 and -5726 represent an unnamed rock and mortar ditch and an unnamed earthen ditch/drainage. A large unnamed reservoir, SIHP 50-50-04-5727, is situated at the terminus of the Waikapu Ditch (-5493). SIHP 50-50-04-5728 is a sugar field erosion control site, incorporating 14 earthen berms cross slope. These are clearly identified topographically. One additional site, SIHP 50-50-04-5730, the

"Old Waikapu Road" was identified as spanning the border of Parcels 002 and 003. Subsurface testing (twenty-one backhoe trenches) were also negative for evidence of cultural deposits. These were distributed evenly across the project area.

We concur that all seven sites are significant under Criterion "D" and have the potential to yield information important to understanding the history of the region. The sites have been adequately documented.

We also agree that no further archaeological mitigation is necessary.

We find this report to be acceptable. The historic preservation review process is concluded. Development of the project areas will have "no effect" on significant historic sites. As always, if you disagree with our comments or have questions, please contact Dr. Melissa Kirkendall (Maui/Lana'i SHPD 243-5169) as soon as possible to resolve these concerns.

Aloha,

MELANIE A. CHINEN, Administrator
State Historic Preservation Division

MK: kf

c: Bert Ratte, DPWEM, County of Maui
Michael Foley, Director, Dept of Planning, 250 S. High Street, Wailuku, HI 96793
Maui Cultural Resources Commission, Dept. of Plng, 250 S. High St., Wailuku, HI 96793

ARCHAEOLOGICAL ASSESSMENT (AA) FOR THE WAILUKU APARTMENT RENTAL HOUSING PROJECT

APPENDIX

E

FINAL ARCHAEOLOGICAL ASSESSMENT REPORT FOR A 15.0 ACRE PARCEL LOCATED ALONG WAIALE ROAD IN WAILUKU *AHUPUA'A* AND DISTRICT PŪ`ALI KOMOHANA *MOKU* ISLAND OF MAUI TMK: (2) 3-5-001:064

FOR: Pier Management-Hawaii, LLC

vbagoyo-devgroup@hawaii.rr.com and lindaschatz@shatzcollaborative.com

BY: Jenny O`Claray-Nu (B.A.), Lisa J. Rotunno-Hazuka (B.A.)

and Jeffrey Pantaleo (M.A.)

REVISED FEBRUARY 2018

MAY 2017

ARCHAEOLOGICAL SERVICES HAWAII, LLC.

POB 1015; PU`UNĒNĒ, HI 96784

"Protecting, Preserving, Interpreting the Past, While Planning the Future"

EXECUTIVE SUMMARY

Under contract to Pier Management-Hawaii, LLC of 3401 E. Kentucky Avenue, Denver CO, 80209 and pursuant to recommendations by the State Historic Preservation Division (SHPD); Archaeological Services Hawaii, LLC (ASH) performed an archaeological assessment (archaeological inventory survey with negative findings) for a 15.0 acre parcel located along Waiale Road within Wailuku *ahupua'a* and District, Pū`ali Komohana *Moku*, Island of Maui at TMK: (2) 3-5-001:064.

The current investigation was conducted to determine the presence absence, extent and significance of surface historic properties (if present) and the potential for buried cultural remains. The subject parcel is located along the culturally sensitive Waiale Road/Lower Main Corridor which is known to contain numerous traditional burials and extensive habitation sites.

The proposed development plans comprise an affordable residential housing project and will be processed according to the 201H permit process. It will include residential structures, access roads and associated infrastructural improvements. The subject area has been previously disturbed by prior grubbing, grading and stockpiling of material from sugar cane cultivation and the construction of a retention ditch in the western half of the parcel which continues south outside the project area.

The archaeological assessment was comprised of a 100% pedestrian survey with mechanical test excavations and these procedures were performed from 17-22 March 2018 by archaeological supervisor, Ms. Jenny O'Claray-Nu (B.A.) and archaeologist, Mr. Cody Sheets (B.A.). A total of 40 field hours were expended during the course of this project. Overall coordination and supervision was undertaken by Ms. Lisa Rotunno-Hazuka (B.A.) and Mr. Jeffrey Pantaleo (M.A.) was the Principal Investigator.

A review of the USDA web soil survey indicated that the project area was comprised of the `Īao soil series. `Īao silty clay soil was noted on the east and `Īao clay to the west, although remnant sand dune deposits from the Pu`uone series (PZUE) were known to exist to the east along Waiale Road. A total of 11 mechanical test trenches were conducted at the project area, where the majority were placed in the eastern portion to ascertain the presence/absence of subsurface historic properties and remnant sand dune deposits. The trenches were negative for buried cultural remains, intact sand dune matrices and exemplified disturbances from 0.60 m below surface (bs) to 1.85 mbs, with bedrock encountered from 1.6 mbs (TR8) to 2.30 mbs (TR3).

No historic properties were identified during the subsurface investigations, and these negative results may be due to the compounded disturbances across the parcel. Pursuant to HAR §13-284-7, the overall development plan for the parcel will have no effect on significant historic properties. However, given that

the subject parcel is in close proximity to known, unmarked traditional sand burials (east of the project area), the proposed mitigation pursuant to HAR §13-284-8 (1) (A) will comprise data recovery in the form of archaeological monitoring. Prior to the commencement of construction activities, an archaeological monitoring plan (AMP) will be prepared and submitted to SHPD for review and approval.

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INTRODUCTION

Under contract to Pier Management-Hawaii, LLC of 3401 E. Kentucky Avenue, Denver CO, 80209 and pursuant to recommendations by the State Historic Preservation Division (SHPD); Archaeological Services Hawaii (ASH) has prepared this Archaeological Assessment (AA) report according to the standards set forth in the Hawaii Administrative Rules (HAR) §13-284-5 (5) (A) and 276-5 (a) and (c) for a parcel located along Waiale Road within Wailuku *ahupua'a* and District, Island of Maui, TMK: (2) 3-5-001:064 (Figures 1-3).

The current investigation was conducted to determine the presence absence, extent and significance of surface historic properties (if present) and the potential for buried cultural remains. The subject parcel is located along the culturally sensitive Waiale Road/Lower Main Corridor which is known to contain numerous traditional burials and extensive habitation sites.

The proposed development plans comprise an affordable residential housing project and will be processed under a 201H permit application. The planned improvements will include residential structures, access roads and associated infrastructural improvements. The subject area has been previously disturbed by prior grubbing, grading and stockpiling of material from sugar cane cultivation and the construction of a retention ditch within the western half of the parcel which extends further south outside the project area. The retention ditch extends along the *mauka* and *makai* (west and east) sides of Waiale Road to a retention basin to the south near Waiko Road. These drainage improvements underwent prior archaeological studies comprised of archaeological assessment and monitoring program (Sinoto and Titchenal 2005 and Morawski, Shefcheck, and Dega 2006).

PROJECT AREA

The project area, comprised of 15.0 acres is located along the base of the West Maui Mountains within the northwestern portion of the isthmus (see Figures 1 and 2). It situated adjacent and on the west side of Waiale Road, centrally located between Waikapu and Wailuku Towns. Specifically, it is bounded to the north by Kuikahi Drive, to the south by an un-named gulch and partially developed lands of Emanuel Lutheran Church, to the east by Waiale Road and to the west by Honoa`pi`ilani Highway (Figures 1-3).

ENVIRONMENT

The parcel has undergone extensive compounded disturbances comprised of grubbing and grading for prior sugar cane cultivation, sand mining and recent construction activities for the drainage ditch, parking lot, access roads and existing drainage ditch. Due to these prior activities, the parcel is open (few trees), with stockpiles and densely covered of low grasses and weeds. Vegetation in the project area is dominated by fallow sugar cane (*saccharum officinarum)* with various *koa haole* (*Leucaena glauca*), cane

grass (*Setaria sp.)*, *`ilima* (*Sida fallax*), *`uhaloa* (*Waltheria americana*), *Ki* or *ti* (*Cordyline fruticosa*) and various grasses and weeds.

Rainfall for the area averages between 20-30 inches a year, predominantly occurring during the winter months between November and February (Giambelluca et. al. 2013) (Armstrong 1973). The subject parcel slopes west to east from 310 ft. to 360 ft. AMSL and according to the web soil survey, contains two soils from the `Īao soil series; however past experience in the area has shown that the Pu`uone Sand (PZUE) is extent within the eastern portion of the parcel. The `Īao silty clay (IaA) comprises 30% of the parcel along the eastern third and occurs on 0-3% slopes, is well-drained and good farmland when irrigated. The remaining portion of the parcel contains `Īao clay 3 to 7% slopes and is also well drained, prime farmland if irrigated. As previously discussed, the eastern section is known to contain Pu`uone Sand, which likely overlies the `Īao silty clay.

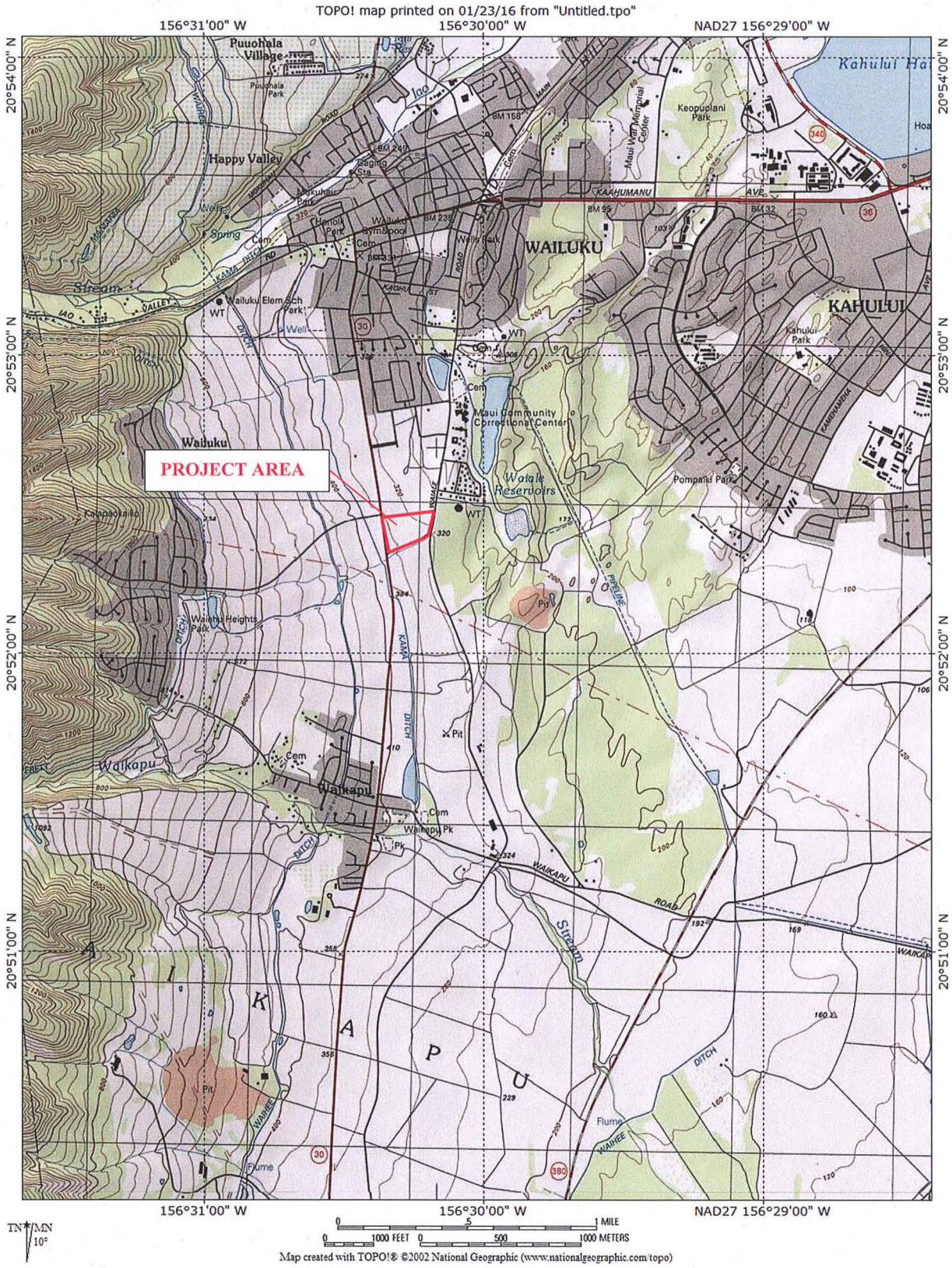


Figure 1. Map Showing Location of Project Area on USGS Quadrangle

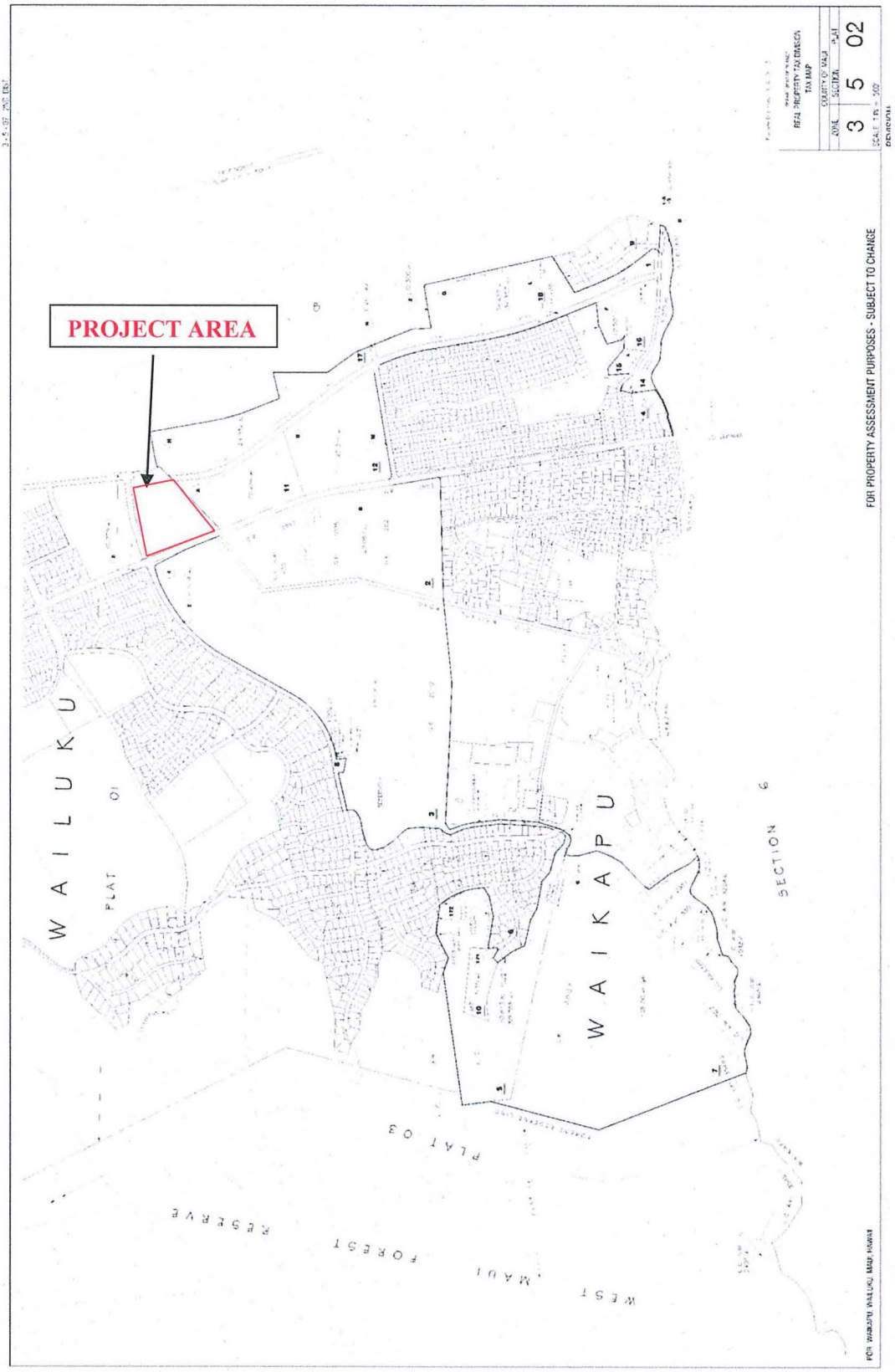


Figure 2. TMK Map Showing Location of Project Area

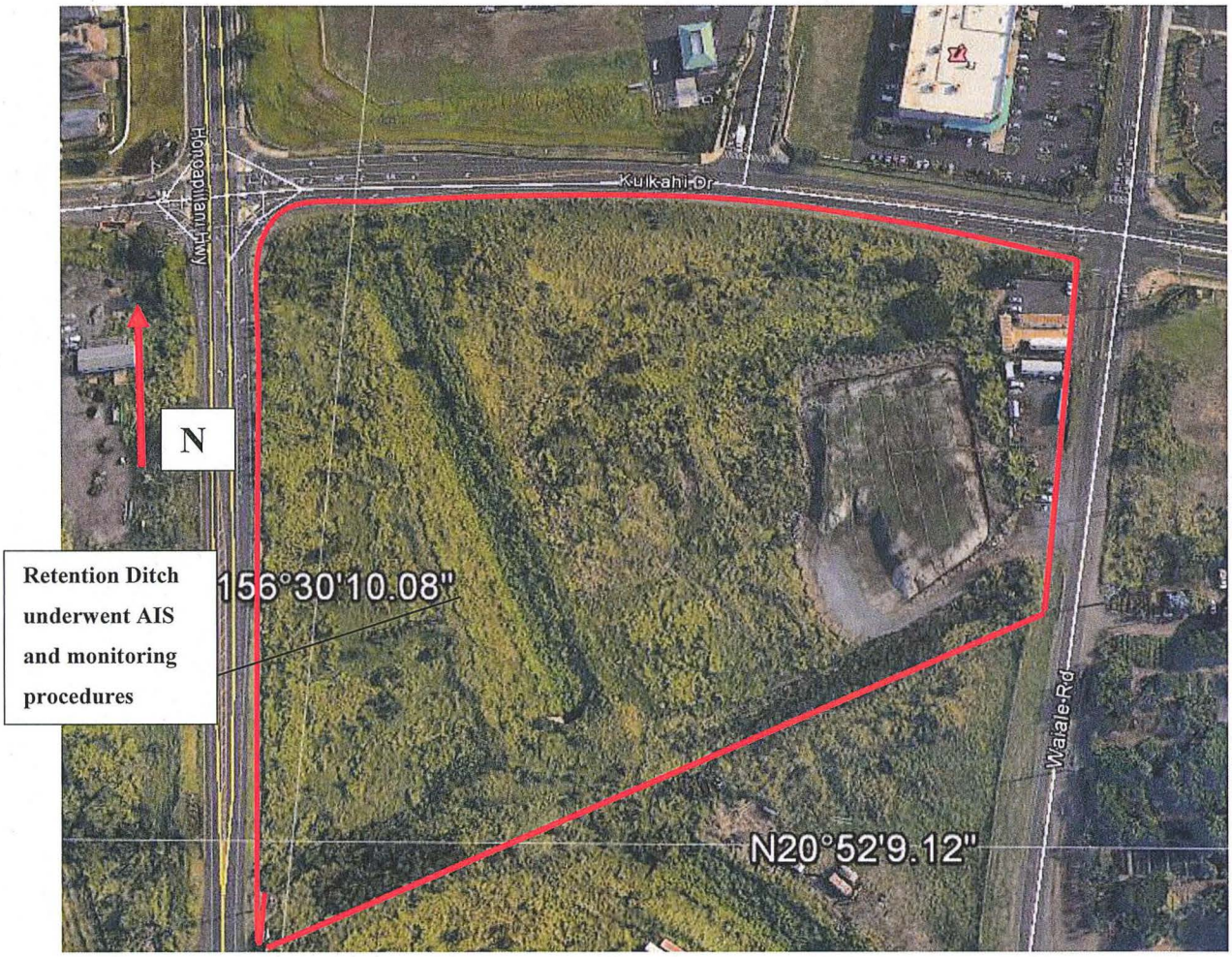


Figure 3. Aerial Photograph of Project Area Showing Existing Conditions

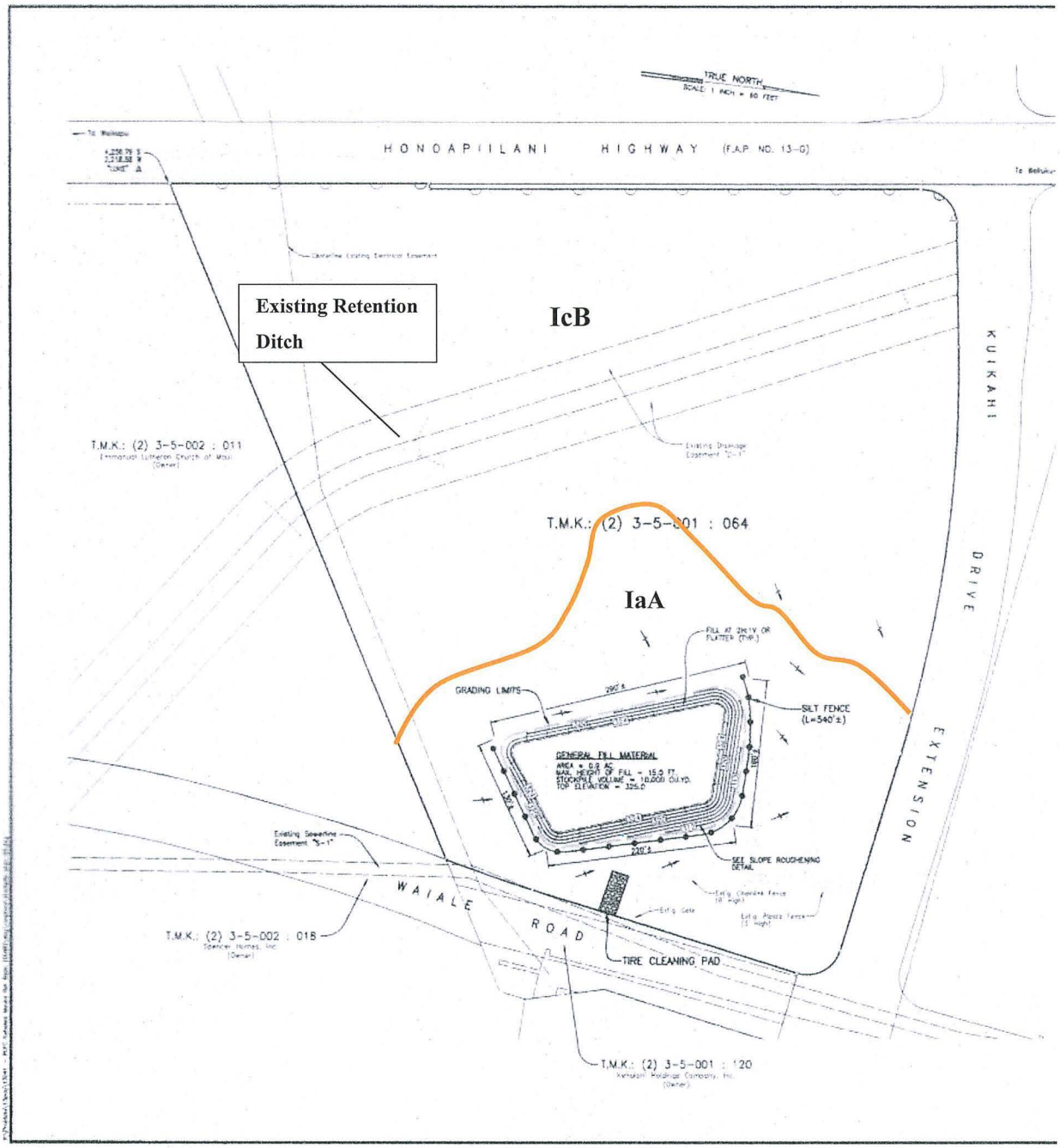


Figure 4. BMP Map of Project Area

HISTORIC BACKGROUND

Since this is an Archaeological Assessment report, only pertinent information regarding traditional and historic events, land use, previous archaeology and site expectations will be provided below as stated in Chapter §13-284-5(5)(A).

> *Chapter §13-284-5 (5) (A) an archaeological assessment shall include information on the property and the survey methods set forth in §13-276-5 (a) and (c). Chapter §13-276-5 (a) (1)-(3) includes the information on the property, and (c) (1)-(8) is the methodology section.*
>
> *Chapter §13-276-5(b)* ***is not*** *required for the Archaeological Assessment Report. This subsection provides detailed background research (archival research, previous archaeological studies, LCA and Grant research) to predict the kinds and distributions of historic properties that may be extant and to provide a context for evaluating significance of these historic properties.*

Legendary and Traditional History

The project area is located within the traditional *Moku* (district) of Pū`ali Komohana, the modern District of Wailuku and Wailuku *ahupua`a* (Figure 5). Wailuku District is comprised of the following *ahupua`a*: Waihe`e, Waiehu, Waikapū, Wailuku and Pūlehu Nui, and has been referred to as Nā Wai`ehā (the four waters) due to the four inland associated streams and valleys inland; Waihe`e, Waiehu, Wailuku (Wailuku River and `Īaō Valley), and Waikapu (Pukui and Elbert 1986: 377) (Figure 5). Due to this geologic landscape, Wailuku District was extremely fertile with an abundance of water; thus, enabling large scale cultivation of *kalo* (taro). Agricultural terraces spilled over onto the slopes at the entrances of valleys...and taro was fed by mountain rains (Handy and Handy 1940:108). Other accounts note that the coastal regions of Wailuku *ahupua`a* contained lesser areas of cultivated sweet potato and an abundance of marine resources.

As exemplified on Figure 6, Wailuku *ahupua`a* occupies almost half of Wailuku District comprising the northern portion of the isthmus closest to the coast. It extends from Paukūkalo to the west, Kahului Bay and Kapukaulua, which is where Kailua Gulch empties into the ocean and is the eastern boundary for both Wailuku District and Wailuku *ahupua`a*. Ethno-historic accounts indicate that a battle occurred in 1738 at Pu`unene between Ka`uhi and Peleio`holani (Oahu) chief against Kamehameha-nui and Alapa`i warriors. The battle at Pu`unene was considered one of the fiercest, hardest fighting wars where "Pele`io`holani was surrounded on all sides, *mauka* and *makai*, by the forces of Alapa`i led by Kalaniopu`u and Keoua. The two ruling Chiefs met there again, face to face to end the war and became friends again, so great had the slaughter been on both sides..." (Kamakau 1961:74).

A number of battles took place in the neighboring Waikapū region, including Fornander's (1969:153) account of the battle of the Waikapū Commons or the Battle of Kakanilua. The following account describes the battle on the sand hills southeast of Wailuku:

> ...The detachment or regiment known as the Alapa, mustering 800 men, was selected for this hazardous expedition, and with high courage they started across the isthmus of Kamaomao, now known as the Waikapū common, as the legend says, "to drink the waters of Wailuku that day. "...Little did this gallant troop apprehend the terrible fate that awaited them...Kahekili distributed his forces in various directions on the Wailuku side of the common, and fell upon the Hawaii corps d`armee as it was entering among the sandhills southeast of Kalua, near Wailuku. After one of the most sanguinary battles recorded in Hawaiian legends,...the gallant and devoted alapa was literally annihilated; only two out of the 800 escaped alive to tell Kalaniopuu of this Hawaiian Balaclava (Fornander 1969:153).

Historic Period

In 1778, with the appearance of Captain James Cook in Kahului Bay on Maui, the post-contact documentation of the indigenous populace on Maui began. A comprehensive account of history of the Hawaiian Kingdom commencing from contact (1778) is provided in Kuykendall (1938). There were additional voyagers to Hawai`i subsequent to the arrival of Cook - including La Perouse and Vancouver. By the early 1800s, whaling ships, merchants, and missionaries had arrived. The arrival of foreigners severely impacted the life style and demographics of the Hawaiian people and caused a significant depopulation of the native people due to the introduction of Western diseases, in combination with the populace beginning to cluster around growing port towns. According to Kuykendall (1938:336), an early estimate of the population (made by missionaries) in 1823 was 142,050 and decreased to 86,593 by 1850.

In 1845, land reform legislation, which developed into 'The Great *Māhele* in 1848 was established. During the *Māhele*, crown lands were divided between the Government, Royalty, and commoners. It was during this time that the *maka`ainana* and foreigners could apply for land ownership by stating their *kuleana* claim to the Board of Commissioners to Quiet Land Titles. As part of claim process, the *maka`ainana* described the land and its contents, ownership on adjoining parcels, and discussed how the land was being utilized (i.e. house lot, taro, *lo`i*, fishpond and etc.). Once the claim was validated, a Land Claim Award (LCA) was awarded and following payment, a Royal Patent (R.P.) was issued.

Unfortunately, the *Māhele* movement and or private land ownership, like several other historic events (missionaries, whaling ships and etc.) drastically altered the Native Hawaiian way of life with deleterious effects to socio-political relationships. The concept of the traditional *ahupua'a,* a communal piece of land containing various ecosystems to be utilized, nurtured and cultivated by its inhabitants began to shift towards private ownership. The sharing of land was so interconnected with everyday life that again, it severely affected the Native Hawaiian populace.

> In 1848, there were approximately 88,000 Hawaiians, but only 14,195 applications were made...of the 14,195 *kuleana* claims, only 8,421 were actually awarded. The

> *Maka`ainana* received less than 1% of the land. Countless Native Hawaiians lost their land use rights as a result of the Great Māhele of 1848, with the establishment of a system of private land ownership. Many landless Native Hawaiians signed on as laborers in the emerging sugar industry, which began on Maui in the 1820s. Within a short time, large tracts of land were turned over to commercial agriculture, primarily sugarcane cultivation (Kame`eleihiwa 1992:295). In many cases, the purchases or leases to non-Hawaiians included entire *`ili* or *ahupua`a*.

Thus, by the end of the Māhele, naturalized foreign citizens were given the right to purchase land in Hawai`i. The ultimate result of this decision placed more land in the hands of non-Hawaiians than native Hawaiians between the years of 1850 and 1865 (Moffatt and Fitzpatrick 1995:51).

LAND USE

The project area is positioned within Grant 3343 to Claus Spreckels, which historically has been utilized for sugarcane cultivation and further discussed below (Figure 5 and Table I). In 1848, the entire Wailuku *Ahupua`a* (L. C. A. 7713:23) was designated as Government Lands and or Crown Lands. The Native Register (1846-1848) documents King Kamehameha I's great granddaughter, Ruth Ke`elikolani, and the sister of Kamehameha IV and V, Victoria Kamamalu, as the only persons of royal heritage that are designated as land owners. On September 30th, 1882, King Kalakaua signed over 24,000 acres in the Wailuku *Ahupua`a* (eastern portion) to Claus Spreckels in a fee-simple title "Grant 3343".

The earliest commercial sugar production on Maui Island began in Wailuku in 1823 when Hungtai Sugar Works was founded by Chinese merchants (Morrow n.d.:51-51). Wailuku Sugar Company was started in November of 1862 by James Robinson and company, Thomas Cumming, J. Fuller, and C. Brewer and Company. In 1865, C. Brewer and company acquired controlling interest, with Robinson and Company and Cumming as the minority stockholders.

In 1876, when the Reciprocal Trade Treaty was signed in Washington D.C., this caused an increase in the price and demand for sugar, creating a boom in the sugar cane industry. In 1878, Alexander and Baldwin purchased land east of Kahului for sugar cane production and founded the Pā`ia Plantation and incorporated the Haiku Plantation the following year (Best 1978:13). In 1882, Princess Ruth sold one-half of the Crown Lands of Hawai`i to Claus Spreckels in order to settle her debts with him. Spreckels already held a lease (purchased from Henry Cornwell) for 16,000 acres of Wailuku *ahupua`a* (Waikapū Commons), dating from 1878 (R.P. 3152) and as stated above King Kalakaua gave him (Grant 3343) in 1882, a 24,000 acre portion of the southeastern section of Wailuku *ahupua`a*, in return for the surrender of his claim to Crown Lands and established Hawaiian Commercial & Sugar (HC&S). In 1898, control of HC&S passed from Claus Spreckels to that of S.T. Alexander and H.P. Baldwin (Figure 7). In 1926,

Alexander and Baldwin bought Spreckel's Hawaiian Commercial and Sugar Company, which resulted in the intensification of the sugar industry in Wailuku.

The escalation of the sugar industry on Maui brought with it the need for water (irrigation ditches) and imported labor. Immigrants from around the world (Scandanavian, Scottish, Italian, German, Russian, Spanish, Hawaiian, Chinese, Portuguese, and Japanese) arrived on Maui to work on the sugar plantations; and hence the establishment of several plantation camps and railroad spur lines in the Wailuku and Waikapu areas. As shown on Figure 8, no plantation camps were in the vicinity of the subject parcel (Figure 8).

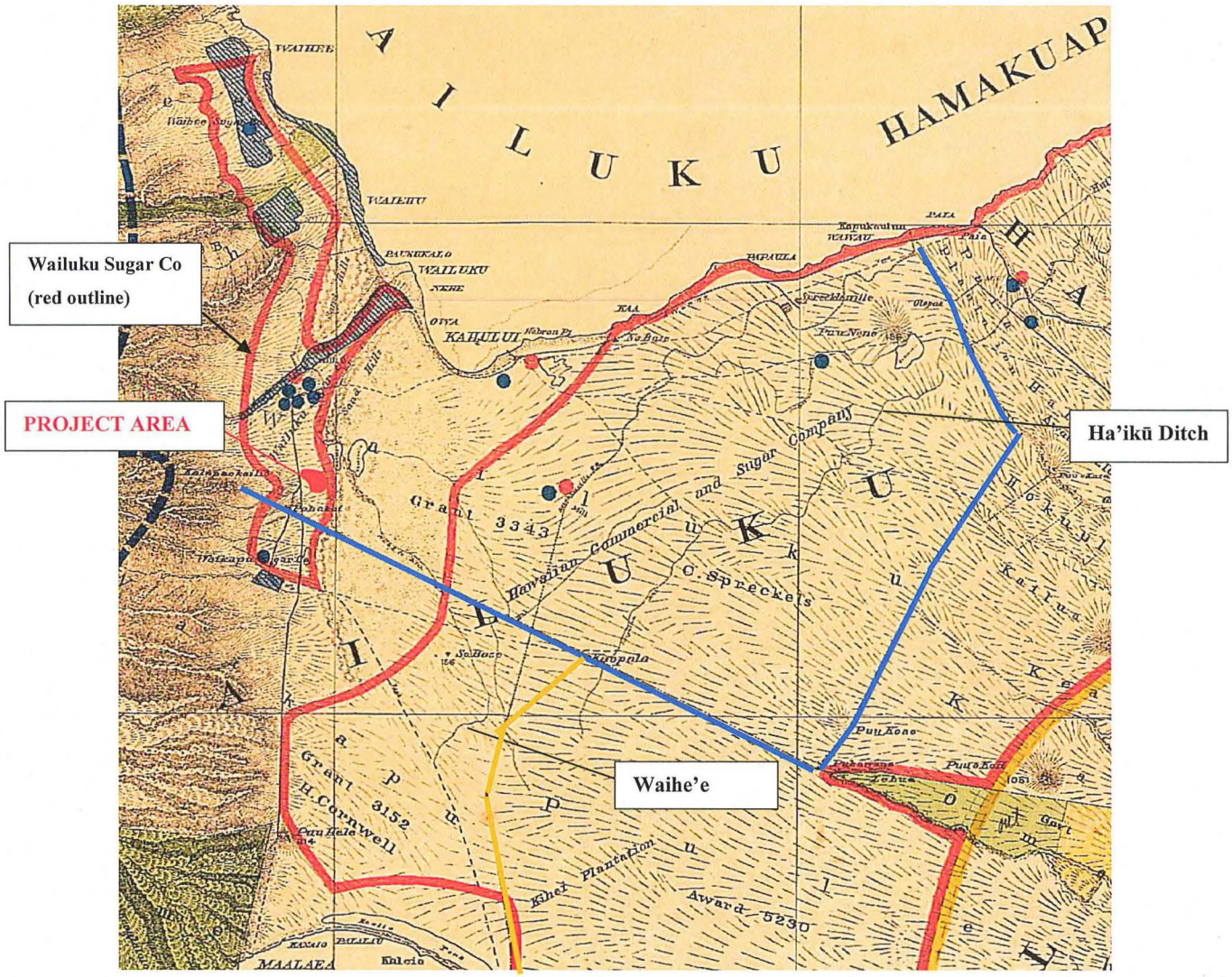


Figure 5. Portion of Hawaiian Government Survey Registered Map (1268) Showing Portions of Wailuku *Ahupua`a* (blue line), Waikapu and Pūlehu Nui *ahupua`a* (either side of gold line) Project Area within HC&S Landholdings and Grant 3343 to C. Spreckels (Dodge 1885 updated by Donn 1903)

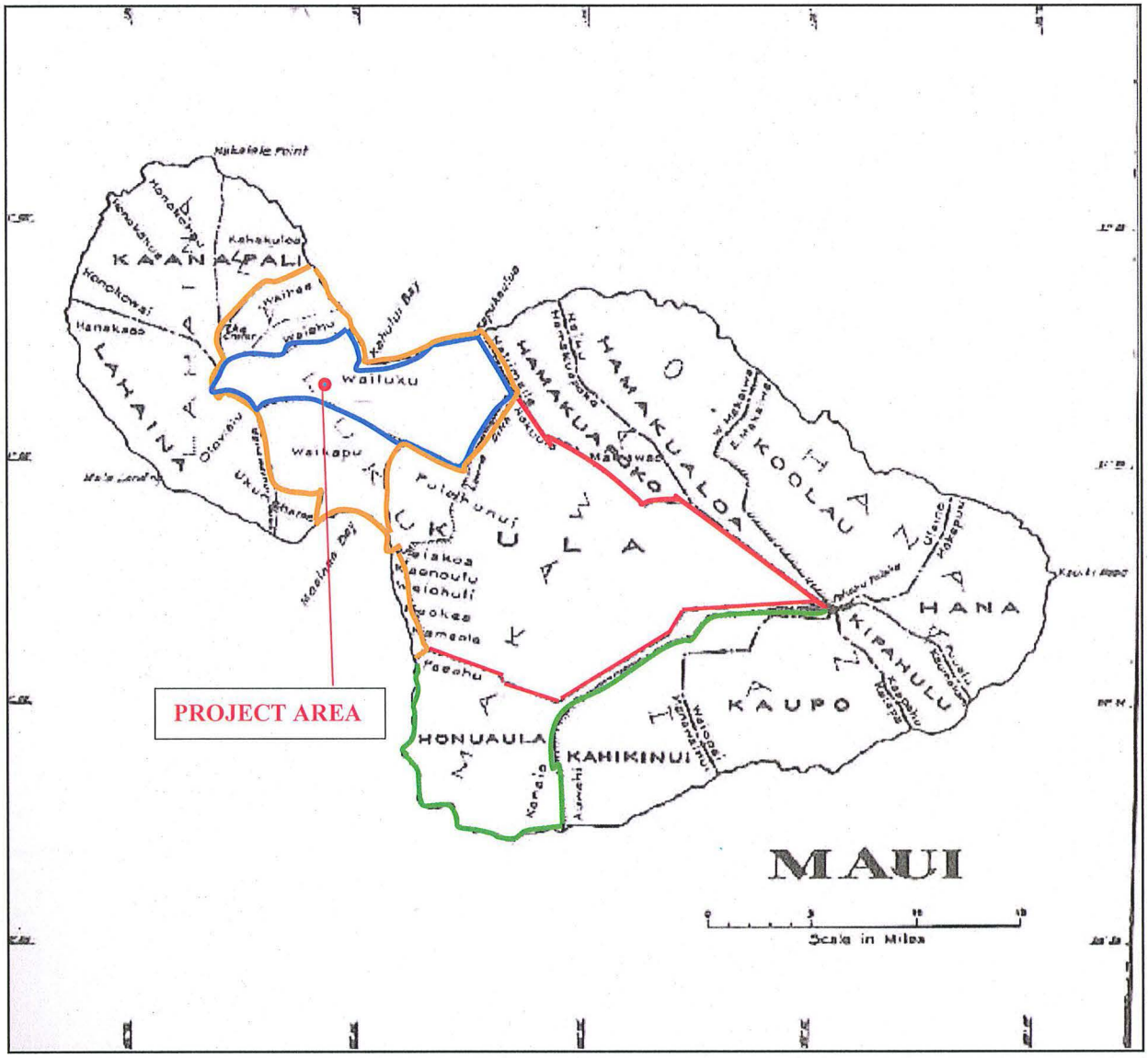


Figure 6. Island of Maui Map Showing Districts and Ahupua`a Boundaries (from a Gazetteer of Territory of Hawai`i, John Wesley Coulter-1935)

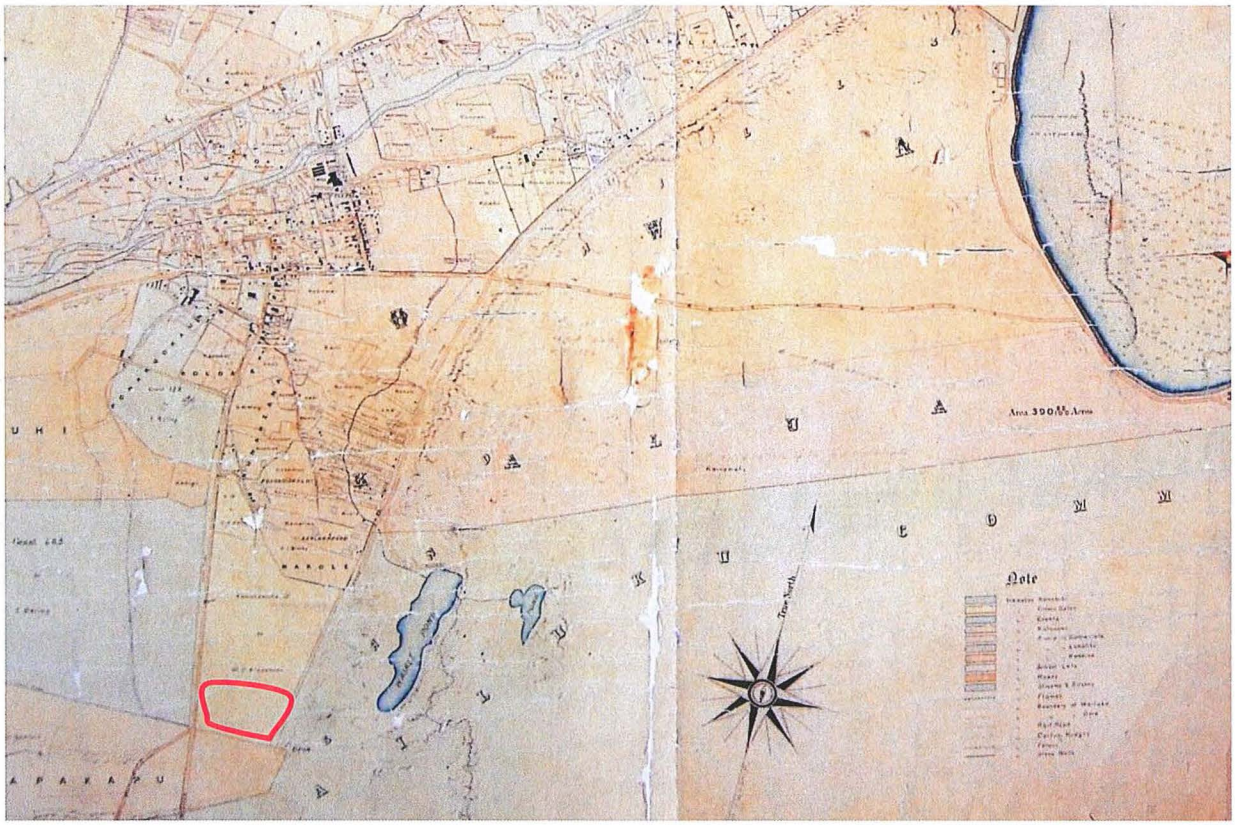


Figure 7. Approximate Location of Project Area (red) on Monserrat Map of 1882 (note name above project area exemplifies name of Alexander)

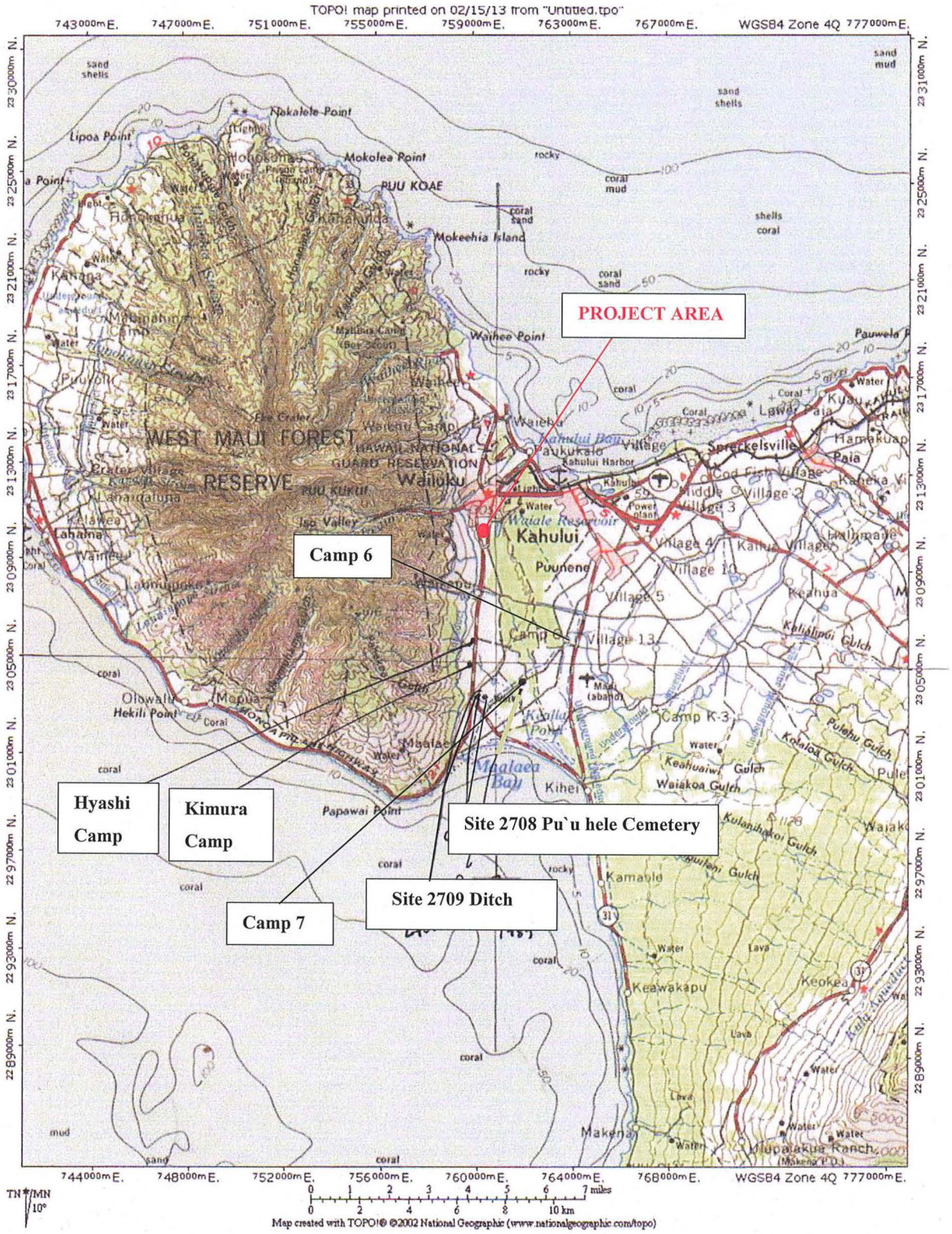


Figure 8. USGS Map Showing the Location of Closest Plantation Camps to the Subject Project Area (red)

Table I. Summary of LCA's and Grants Adjacent to Project Area (Source: Waihona `Aina Corp. 2004)

NAME	L.C.A.	R.P.	*GRANT*	*COMMENTS*	*ACREAGE*
H. Cornwell			3152	Present project area within awarded land	256.113
Wm. McLane	3201			Land given in 1822 by Puupahoehoe	3.85
Keliolelo	3525			Taro land and houselot	1.77
Wm. Crowningburg	433			Houselot; 14 patches (son-in-law of *konohiki* Puupahoehoe	5.93
C. Louzada / H. Cornwell			2951	No land use indicated	17
Spreckles		3343		Waikapū Commons PROJECT AREA	16,000

PREVIOUS ARCHAEOLOGY

As discussed in the aforementioned Historic Background section, since this is an archaeological assessment, only those studies performed in close proximity to the subject parcel will be discussed below. The early archaeological studies conducted on Maui consisted of recording *heiau* (religious structures) sites along the coastline. These studies were carried out by Thrum (1909) and Stokes (1916). An island-wide survey was executed in 1928 by Winslow Walker (1931) though the Bishop Museum, where numerous *heiau* sites were recorded primarily in the west, central portion of Wailuku District and many of these have been damaged and or destroyed. As exhibited on Figure 10, no sites were recorded in the vicinity of the subject parcel (Figure 10).

Within the project area, the western portion underwent an archaeological survey (Titchenal 1996) and monitoring procedures (Morawski et. al. 2006) for the existing retention ditch in the west, central portion (see Figures 3 and 10). Aki Sinoto Consulting conducted an archaeological inventory survey of the proposed retention basin and adjoining lands in Waikapū and Wailuku *ahupua`a*, Wailuku District, Maui Island (TMK 3-5-01:17 por: 3-5-02:1, por.), located within and south of the current project area. No surface cultural remains were located during the surface survey, and no subsurface cultural remains or deposits were identified in the thirteen backhoe trenches excavated in selected localities throughout the project area.

Site 50-50-04-2916 comprised of human skeletal remains were identified at the Maui Home Affordable Living Shelter by Donham in 1992.

Xamanek Researches (Fredericksen 2004) recently conducted an archaeological inventory survey for the Waikapū affordable housing subdivision (TMK 3-5-02:001 por and 3-8-07:101), located adjacent to; south of the present project area (see Figure 10). One previously identified historic property was noted during the inventory survey. State Site 50-50-04-5474 consists of an approximate 2000- foot portion of the Kama Ditch and a substantial reservoir (Reservoir No. 6). No other cultural remains were identified during the survey, it was estimated that approximately 40% of the project area was previously impacted by sand mining activities in the last 20 or so years and that much of the remainder of the 100-acre study area was most recently planted in pineapple. Determination by the SHPD architecture branch that sufficient information was collected at Site 5474 Kama Ditch to document the site and that the proposed demolition of the bulk of Site 5474 for proposed development was approved.

Scientific Consultants (Dega 2004) conducted an archaeological inventory survey of approximately 348 acres in Wailuku for the Kehalani Mauka Subdivision, Wailuku *ahupua`a* and District just northwest of the project area (TMK 3-5-001:001 por) (see Figure 10). Eight historic sites were documented during the

survey, two of which were recorded during a previous project. State Site 50-50-04-5473 represents Hopoi Reservoir, this reservoir predates Hopoi Camp and was present at least by 1922. Hopoi camp was not identified during the survey. State Site 50-50-04-5474, the Kama Ditch, was identified east of the Hopoi reservoir running in a north-south direction to Waikapū. State Site 50-50-04-5493 was designated for another unnamed ditch running in a north-south direction occurring along the western flank of the parcel. State Site 50-50-04-5197 represents the Waihe`e Ditch, constructed between 1905 and 1907. The four other sites consist of a combination of historic-modern roadways (Site 5489), a system of smaller historic ditches (Site 5490), a historic artifact scatter on the surface (Site 5491), and several clearing mounds likely created during the plantation era (Site 5492). Twenty-seven subsurface testing trenches revealed homogenous soil matrices across the project area.

Archaeological monitoring was implemented for the Kehalani Subdivision and off-site improvements along the Waiale Road by Scientific Consultant Services (Morawski, Shefcheck, and Dega 2006) (see Figure 10) and Archaeological Services Hawaii (ASH). Five sites were recorded and consisted of a historic road bed (50-50-04-5963), a sugarcane flume (50-50-04-5964), an *in situ* burial (50-50-04-5680), and two areas of isolated human remains (50-50-04-5965 and -5966). Remains associated with the isolated finds were encountered in a previously disturbed soil matrix that was most likely associated with the initial construction of the Waiale Road.

Archaeological Services Hawaii, LLC performed an archaeological inventory survey (AIS) within a 50-acre parcel of land in Wailuku and Waikapū *ahupua'a*, Wailuku District, Maui Island, TMK: (2) 3-5-002:001 portion, for the proposed development of the Emmanuel Lutheran Church (ELC) adjacent and south of the subject parcel, and the Valley Isle Fellowship (VIF) (see Figure 10). The parcels were subsequently subdivided into two approximate 25.0 acre parcels and assigned TMK's [2] 3-5-002:011 for the north and [2] 3-5-002:012 for the south. The AIS included a pedestrian survey with subsurface backhoe testing of a total of 25 backhoe trenches (TR1-25). Results of the pedestrian survey identified one historic property, a disturbed segment of State Site 50-50-04-5474, the Kama Ditch, situated within the southwestern portion of the project area. Also noted was a metal sluice gate, designated Feature 1 of Site 5474. The ditch, also known as *kamaauwai* was constructed around 1905 to 1907 and provided water to irrigate the sugar cane fields surrounding the project area. Site 5474 was assessed as significant under Criterion "a" because of its association with the plantation era and Criterion "d" for its information content under the Federal and State historic preservation guidelines (Guerriero et. al. 2004 revised 2016).

The closest known burial sites to the project area are Site 50-50-04-5965 (secondarily deposited human remains in disturbed soils) identified during the monitoring procedures for the retention basin and trench, as well as Sites Site 50-50-04-6573 and 6261 situated along Kuikahi Drive at the current Walgreens Pharmacy (Site 50-50-04-6573), and along the north and south sides of Kuikahi Drive just near the entrance to Maui Lani (see Figure 10). An AIS (2005) and AMP (2007) were conducted of the Kuikahi Drive Extension and a portion of Maui Lani Parkway corridor which intersects with Kuikahi Drive (Rotunno-Hazuka et. al. 2007). Site 6573 is comprised of a primary traditional burial designated Feature 1 which was preserved in place, and disturbed human skeletal remains (Feature 2), which were reinterred adjacent to the preservation area established around Feature 1. The second Native Hawaiian burial area is Site 50-50-04-6261 comprised of primary burials and secondary deposits of human remains designated Features 1a-1c and 2-12. Site 6261 was identified during monitoring and data recovery procedures and was subsequently preserved along the north and south sides of Kuikahi Drive (ibid).

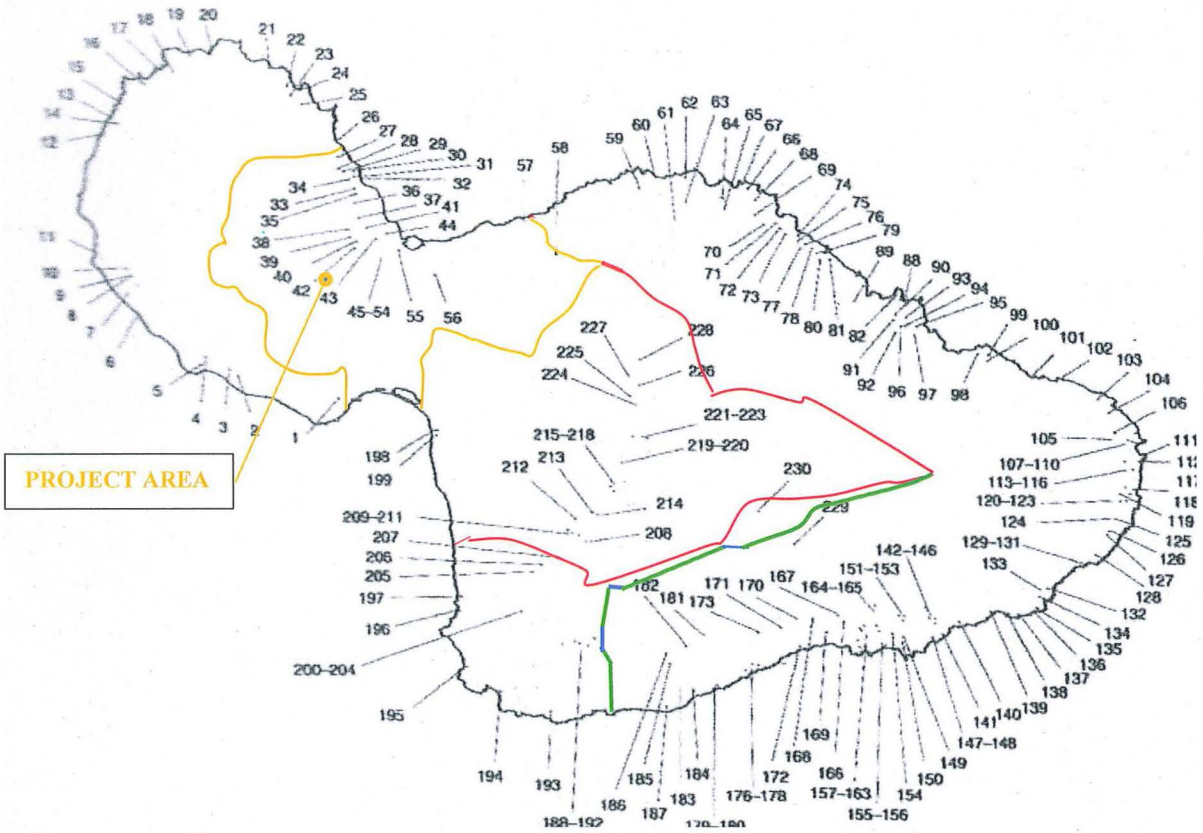


Figure 9. Walker's Site Map Showing Recorded *Heiau*, Project Area and approximate Wailuku (blue), Kula (red) and Honua`ula *Moku* (Traditional) Boundaries (green) (map adapted from Sterling 1998)

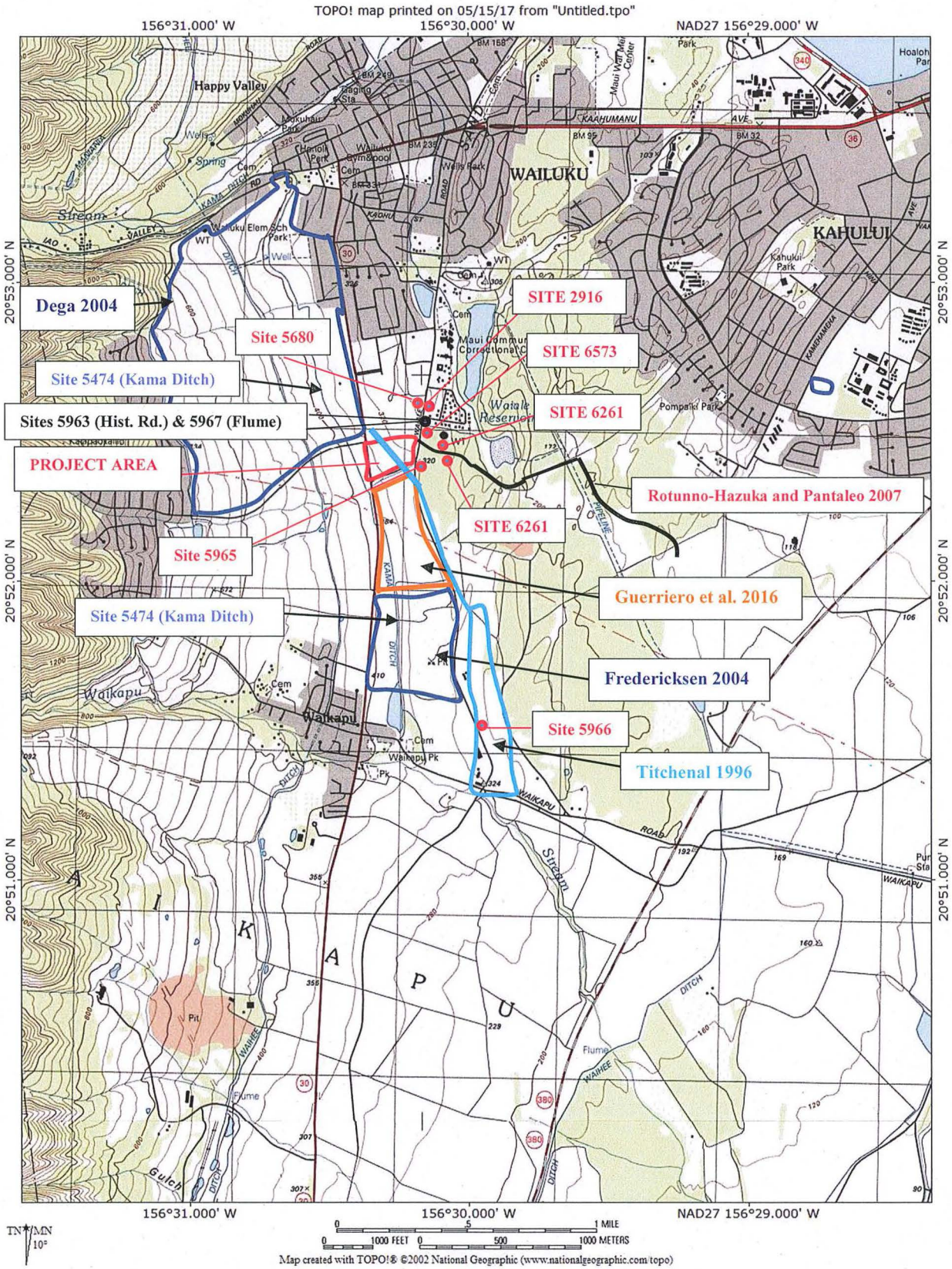


Figure 10. USGS Wailuku Quad (2002) Map Showing Previous Archaeology and Sites near Project Area

SETTLEMENT PATTERNS

The settlement patterns of an indigenous population are surmised from a variety of information and research. Previous archaeological findings and archival research (such as information retrieved during the Great Māhele and etc.) are two of the main determining factors. Another important factor is the existing geology or landforms in the area, be it a harsh or hospitable environment. The proximity to fresh water or marine resources, rain fall, the presence of basaltic ridges and or *a`a* lava flows and etc. As previously discussed, the project area is between Wailuku and Waikapū Towns along Waiale Road which was actively settled during the pre-historic and historic periods. During the pre-Contact era, permanent habitation sites with extensive agricultural complexes would be located in the lower and upper valleys due to the numerous streams and valleys of Nā Wai `Eha; however based on the close proximity of the coast and results of studies in these shoreline areas, dual permanent settlement of the uplands with a focus on agriculture and the coastline with an emphasis on marine exploitation. The Wailuku Sand Hills appear to be more intensively occupied closer to the shore, and less settled more inland but extensively utilized for the interment of Native Hawaiian burials.

SITE EXPECTABILITY

The presumed settlement patterns, coupled with the prior investigations assist in determining the types of historic properties to be expected. However due to the compounded disturbances across the project area from sugar cane cultivation, sand mining and the construction of the retention ditch, the likelihood that historic properties have survived is low but would comprise Native Hawaiian burial features with remnant agricultural (terraces) and or habitation (cultural layers) sites. Since no LCA were present within the subject parcel, historic period sites may comprise agricultural features and refuse sites and or remnant features from WWII.

METHODS AND PROCEDURES

A review of previous archaeological investigations was conducted at the ASH and SHPD libraries in Ma'alaea and Pu`unēnē prior to and during the initiation of the testing strategy. Archaeological investigations included a pedestrian survey and backhoe test trenching which were performed from 17-22 March 2017 under the supervision of Ms. Jenny O'Claray-Nu (B.A.) and archaeologist, Mr. Cody Sheets (B.A.). A total of 40 field hours were expended during the course of this project. Mechanical excavations were undertaken with an excavator provided by T.J. Gomes. Overall coordination and supervision was performed by Ms. Lisa Rotunno-Hazuka (B.A.), drafting by Mr. Nico Fuentes (M.A.) and Mr. Jeffrey Pantaleo (M.A.) was the Principal Investigator.

FIELD METHODS

Initial investigations consisted of a pedestrian survey to determine the presence of surface historic properties, disturbances and or basalt outcrop which would aide in establishing the location of test excavations. No surface sites were noted during the survey; thus subsurface explorations were undertaken in the form of mechanical test trenches. All excavations were undertaken with the supervision of the archaeologist and terminated when sterile subsoil was reached. The testing method employed was systematic random sampling where the areas to be analyzed are chosen at random with a subsequent pre-determined strategy (Hester et. al. 2009). "Use of this sample technique guarantees more uniform coverage of an area than would likely occur with simple random sampling" (Hester et. al. 2009:29) and therefore allows the investigator to obtain information about the subsurface conditions across the project area. The backhoe trenches ranged from 4.0 m to 6.0 m long by 1.2 m wide by 1.4 to 2.3 m deep.

Each trench was recorded using scaled stratigraphic profiles, photographs, dimensions and soil descriptions. The location of the trenches was plotted utilizing known points from the aerial photographs and tape and compass from boundary corners. During the course of this project, all accepted standard archaeological procedures and practices were followed.

LABORATORY PROCEDURES

Soil samples collected during the excavations were stored in bags and labeled with provenience data and date collected. The dry soil color was recorded utilizing the Munsell color system, and soil texture using USDA soil terminology.

RESULTS OF SURVEY

A total of 11 backhoe test trenches were executed across the parcel and were negative for buried cultural remains (Figure 11 and Table II). The trenches exhibited extensive disturbances from 0.65 m (TR5) to 1.85 (TR5), where bedrock was recorded from 1.6 m (TR8) to 2.30 mbs (TR3), imported sand was noted in Layer I (TR2) and within Layer III (0.70 mbs) in TR9 and a rocky lens, possible alluvial deposition was recorded in TR6 at 1.85 mbs. Trenches 1-3 were positioned in the central portion, TR4 along the northern perimeter in the eastern half, TR's 5-9 were placed in the eastern section around the proposed detention basin for future construction activities and to ascertain if remnant sand dune deposits were extant closer to Waiale Road, and TR's 10-11 were situated in the western portion. The test trenches are described and presented below.

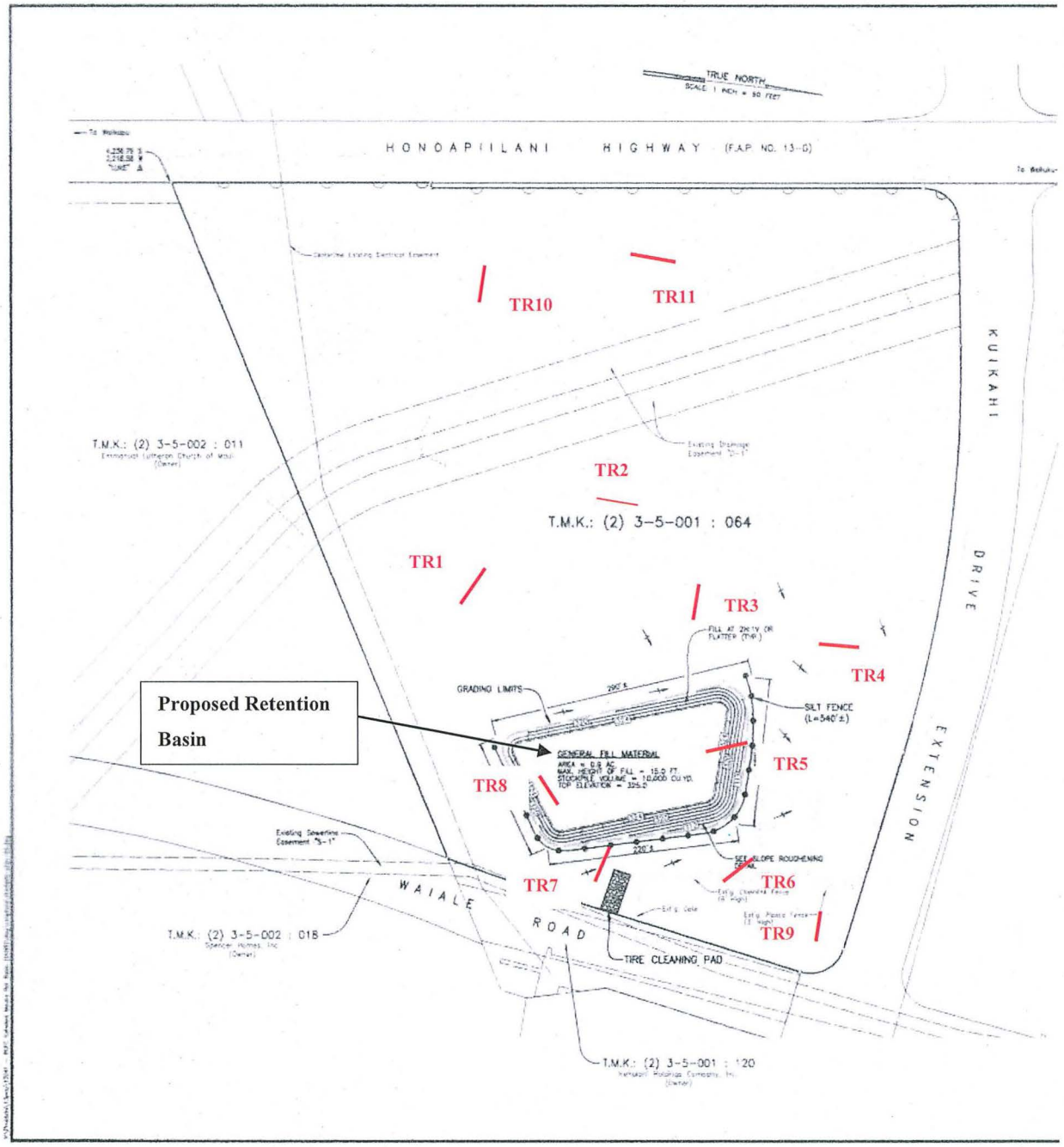


Figure 11. BMP Map Showing Location of Trenches 1-11

Table II. Summary of Trench Testing at Project area

TR	Length (m)	Width (m)	Depth (m)	Orient TN°	Disturbed	Cultural	Assessment
1	6.0	1.2	1.9/2.0	133/313	I/II	none	agricultural
2	7.0	1.2	2.0/2.2	180/360	I/II/III	none	drainage way
3	6.7	1.4	2.6	354/154	I/II	none	agricultural
4	6.5	1.2	2.5	180/360	I/II	none	agricultural
5	5.6	1.1	2.6	359/179	I/II	none	agricultural
6	6.6	1.2	2.4/2.45	349/169	I/II/III	none	ag/alluvial
7	6.2	1.2	2.3	286//106	I	none	construction
8	6.0	1.2	2.0/2.2	251/71	I/II/III	none	agricultural
9	4.3	1.3	1.7/1.8	90/270	I/II/III	none	construction
10	5.5	1.3	1.7/1.8	90/280	I	none	agricultural
11	6.0	1.1	1.7/1.8	360/160	I	none	agricultural

TRENCH 1

Trench 1 was placed in the south central portion of the project area and measured 6.0 m long by 1.2 m wide by 1.9/2.0 m deep and oriented 133/313° (see Figure 11 and Table II). The excavations revealed five stratigraphic layers which were negative for subsurface cultural remains (Figures 12-14). Layers I and II were previously disturbed by agricultural and existing drainage trench development

Layer I 0 –0.15/20 mbs; (7.5YR2.5/2, 2.5/3) agricultural fill zone, dry color very dark brown gravelly very fine silty loam; few sand pockets, common inclusions of rootlets and scattered angular pebbles and cobbles (50%); very abrupt wavy boundary, no cultural remains observed.
Layer II 0.15/0.20-0.80 mbs; (10YR3/2, 3/3) dry color dark grayish brown silt loam; intermix with large and small sub-angular to angular pebble and cobble scatter (30%); abrupt wavy boundary; no cultural remains observed.
Layer III 0.80-1.20/1.30 mbs; (10YR3/3,3/4) dry color very dark brown mottled dark brown stony silt clay; very few rootlet and common layers of sub-angular and angular pebble and cobble inclusions (50%); very abrupt wavy boundary. No cultural remains observed.
Layer IV 1.20/1.30-1.90/2.0 mbs; (7.5YR2.5/3) dry color very dark brown stony silt clay; prismatic of sub-angular and angular blocky inclusions intermix with common layers of sub-angular and angular boulder and cobble inclusions (50%); very abrupt wavy boundary. No cultural remains observed.
Layer V 1.9/2.0mbs; a basal layer; gray mottled grayish brown decomposing to hard bedrock.

Figure 12. Overview Photograph of Proposed TR1 (View to Southwest)

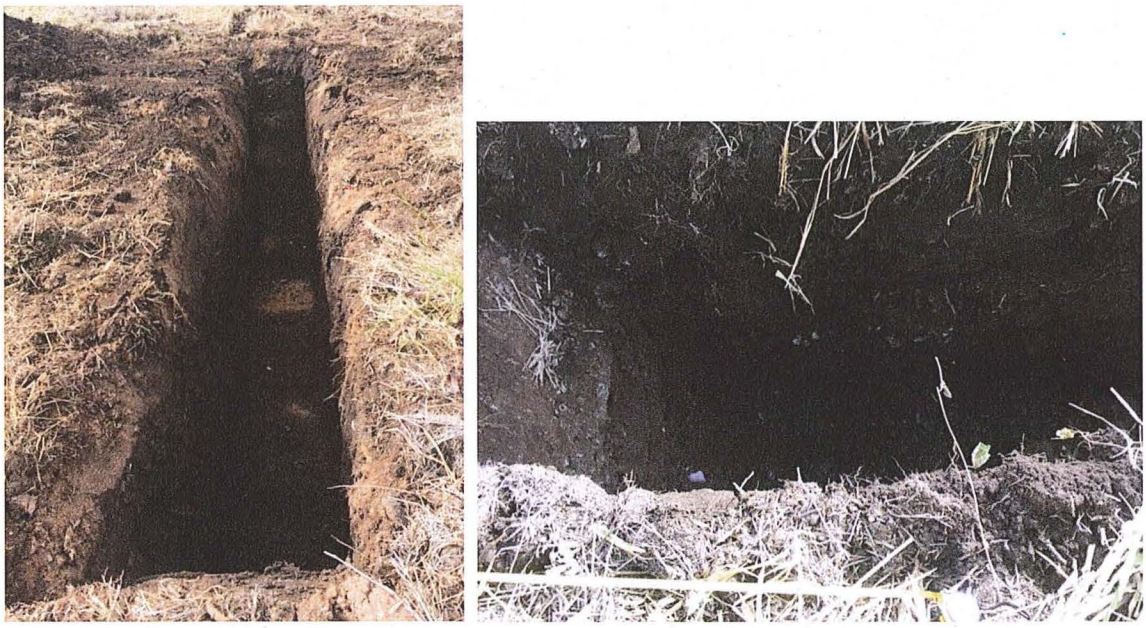


Figure 13. Photograph of Trench 1 (left) (View to South); Photograph of East Wall at TR1

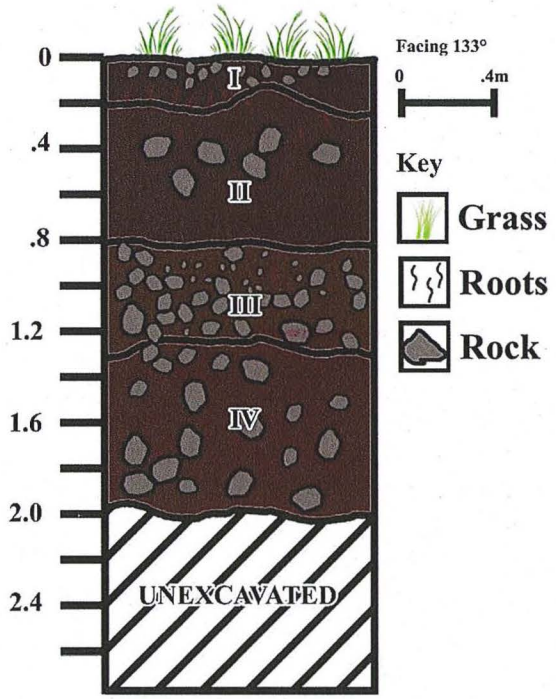


Figure 14. Stratigraphic Profile of East Wall at TR1

TRENCH 2

Trench 2 was located in the central portion of the project area east of the existing retention ditch (see Figure 11 and Table II). It measured 7.0 m long by 1.20 m wide by 2.0/2.2 m deep and oriented 180/360°. The excavations revealed three stratigraphic layers which were negative for subsurface cultural remains (Figures 15 and 16). Layers I and II observed to be previously disturbed by the drainage way development. Layer I appear to be a portion of an access road that comprised of compact gravel and pockets of sand.

> **Layer I** 0–0.22/0.30 mbs; (10YR,3/1, 3/2,5/6) gravel fill with imported sand pockets, dry color dark grayish brown to dark brown very fine silt mottled brown fine sand pockets; intermix with common sub-angular to angular pebble (50%) very abrupt wavy boundary, no cultural remains observed.
> **Layer II** 0.22/0.30-0.60/0.70 mbs; (7.5YR2.5/3, 2.5/2) color very dark brown stony silt; few rootlets intermix with common sub-angular to angular pebble and cobble inclusions (40%); very abrupt wavy boundary; no cultural remains observed.
> **Layer III** 0.60/0.70-2.0/2.10 mbs; (7.5YR3/3, 2.5/3) dry color dark brown mottled very dark brown stony silt clay and few scattered of sub-angular and angular cobble inclusions (20%). No cultural remains observed.

Figure 15. Overview Photograph of TR2 (left) (View to North); Photograph of West Wall at TR2

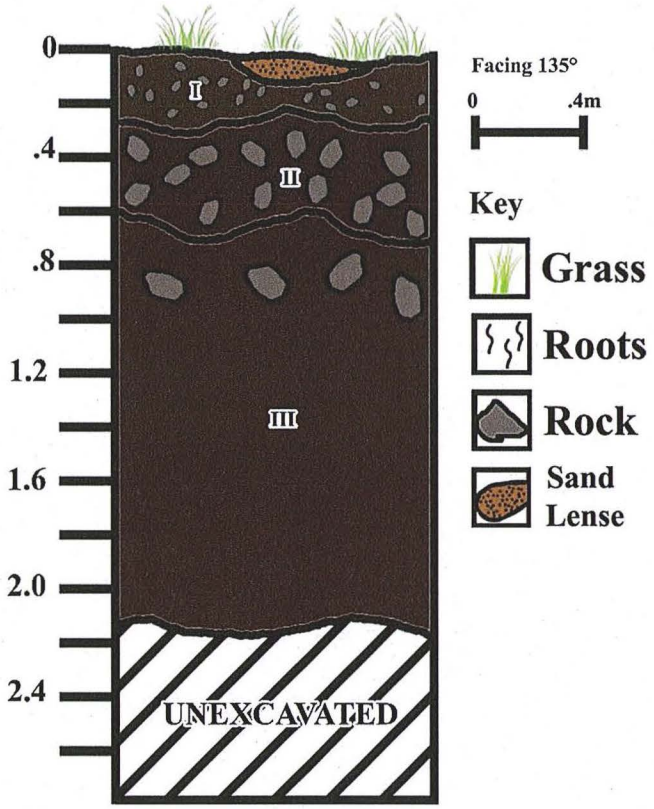


Figure 16. Stratigraphic Profile of West Wall at Trench 2

TRENCH 3

Trench 3 was placed in the east central portion of the parcel and measured 6.7 m long by 1.40 m wide by 2.5/2.6 m deep and oriented 354/174° (see Figure 11 and Table II). The excavations revealed three stratigraphic layers overlying decomposing bedrock which were negative for subsurface remains (Figures 17-19).

Layer I 0 –0.20/0.35 mbs; (7.5YR2.5/2, 2.5/3) agricultural zone, dry color very dark brown gravelly very fine silty loam; common inclusions of rootlets and scattered angular pebbles and cobbles (50%); agricultural material observed intermixed; very abrupt wavy boundary, no cultural remains observed.
Layer II 0.20/0.35-0.60/0.70 mbs; (10YR3/2, 3/3) dry color dark grayish brown silt loam; intermix with large and small sub-angular to angular pebble and cobble scatter(30%); abrupt wavy boundary; no cultural remains observed.
Layer III 0.60/0.70-2.30/2.40 mbs; (10YR3/3,3/4) dry color very dark brown mottled dark brown stony silt clay; very few rootlet and common layers of sub-angular and angular pebble and cobble inclusions (20%); very abrupt wavy boundary. No cultural remains observed.
Layer IV2.30/2.40 mbs; a basal layer; gray mottled grayish brown decomposing to hard bedrock.

Figure 17. Overview Photograph of the Central Portion of Project Area for TR3

Figure 18. Photograph of East Wall at Trench 3

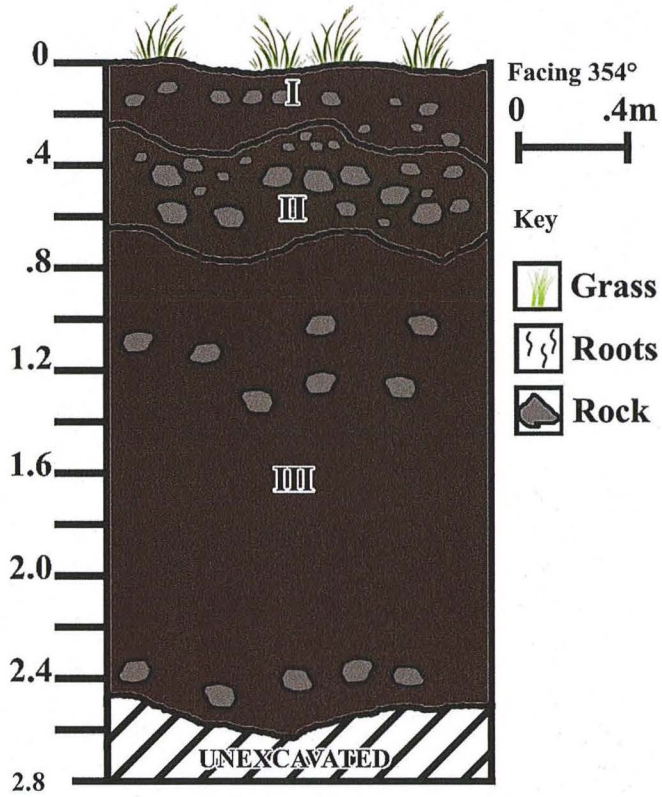


Figure 19. Stratigraphic Profile of East Wall at Trench 3

TRENCH 4

Trench 4 was located in the northeast portion of the parcel and measured 6.5 m long by 1.20 m wide by 2.50 m deep and oriented 180/360° (see Figure 11 and Table II). The excavations revealed three stratigraphic layers overlying bedrock and were negative for buried remains (Figures 20-21).

Layer I 0 –0.30/0.40 mbs; (7.5YR2.5/2, 2.5/3) agricultural zone, dry color very dark brown gravelly very fine silty loam; common inclusions of rootlets and scattered angular pebbles and cobbles (50%); very abrupt wavy boundary, agricultural black plastic and irrigation material observed intermixed; no cultural remains observed.
Layer II 0.30/0.40-1.30/1.40 mbs; (10YR3/2, 3/3) upper portion is disturbed and comprised of dark grayish brown silt loam; intermix with large and small sub-angular to angular pebble and cobble scatter (30%); abrupt wavy boundary; no cultural remains observed.
Layer III1.30/1.40-2.30/2.40 mbs; (10YR3/3, 3/4) dry color very dark brown mottled dark brown stony silt clay; very few rootlet and common layers of sub-angular and angular pebble and cobble inclusions (50%); very abrupt wavy boundary. No cultural remains observed.
Layer IV 2.50 mbs; a basal layer; gray mottled grayish brown decomposing to hard bedrock.

Figure 20. Overview Photograph of TR4 (left); Photograph of East wall at Trench 4

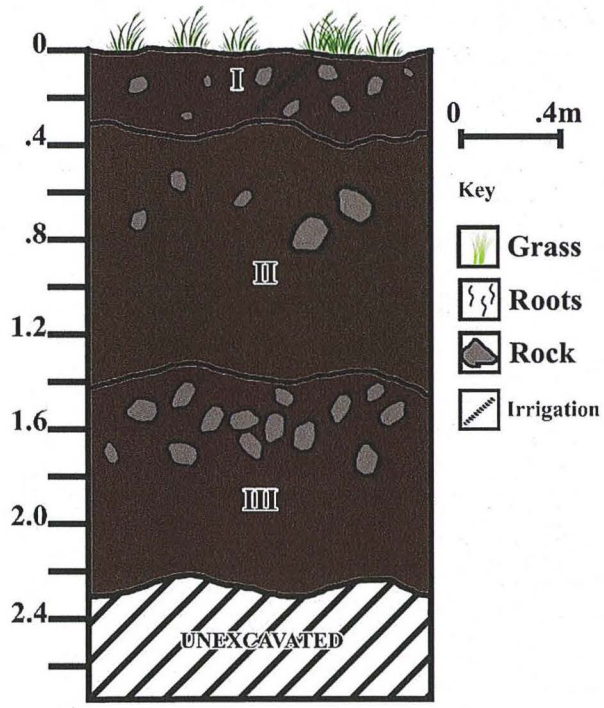


Figure 21. Stratigraphic Profile of East Wall at Trench 4

TRENCH 5

Trench 5 was positioned in the proposed retention basin in the northeast quadrant (see Figure 11 and Table II). It measured 5.6 m long by 1.10 m wide by 2.6 m deep and oriented 180/360°. The excavations revealed four negative stratigraphic layers (Figures 22-24).

Layer I 0 –0.25/0.30 mbs; (10YR,4/2, 3/2) agricultural zone, dark grayish brown gravelly fine silty loam and sand pockets; strong, medium, granular; common rootlet, sub-angular cobble and pebble inclusions (50%); very abrupt boundary, observe agricultural irrigation lines, glass and plastic fragments no; very abrupt wavy boundary.
Layer II 0.25/0.30-0.60/0.65 mbs; (7.5YR3/3, 2.5/3) dark brown mottled very dark brown stony silt loam; well formed, sub-angular blocky peds intermix with sub-angular to angular pebble and cobble inclusions (60%); very abrupt wavy boundary; no cultural remains observed.
Layer III 0.60/0.65-2.15/2.20 mbs; (10YR4/3, 3/3) very dark brown mottled dark brown silt clay; soft, massive poorly formed sub-angular blocks; sub-angular and angular cobble scatter (20%); very abrupt boundary. No cultural remains observed.
Layer IV 2.15/2.20-2.60 mbs; (10YR 3/6, 3/4) dark yellowish brown mottled brown silt clay; weakly, massive medium blocky poorly formed peds; no cultural remains observed.

Figure 22. Overview Photograph of Northeast Portion for TR's 4 and 5

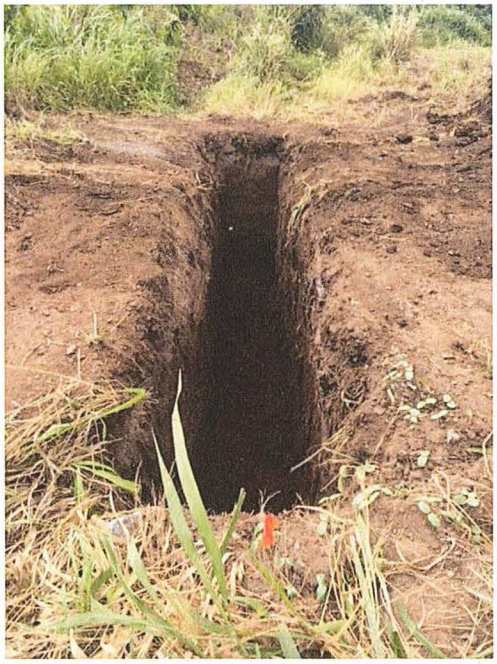


Figure 23. Overview Photograph of Trench 5 (left) (View to South); Photograph of East Wall at TR5

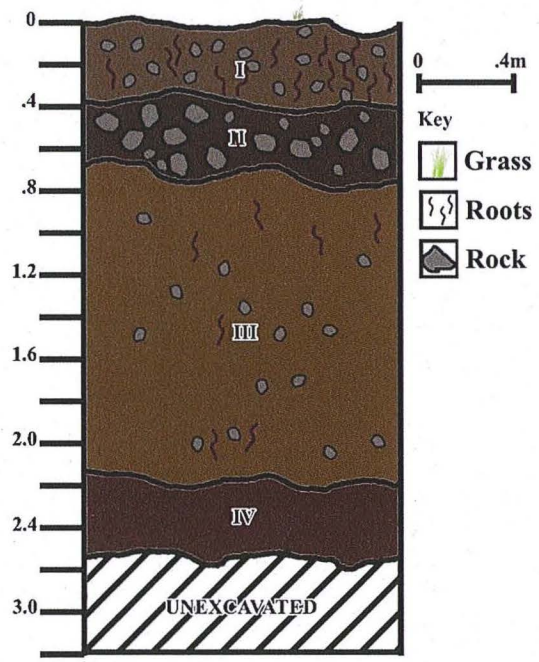


Figure 24. Stratigraphic Profile of East Wall at TR5

TRENCH 6

Trench 6 was located near the northeast corner of the subject area and measured 6.60 m long by 1.20 m wide by 2.40/2.45 m deep and oriented 349/169° (see Figure 11 and Table II). The excavations revealed five stratigraphic layers which were negative for significant subsurface cultural remains (Figures 25-26). Layers I and II revealed previously disturbed layers of agricultural activities, and Layer III appeared to contain an alluvial lens at the interface of Layers II and III.

Layer I 0 –0.60/0.75 mbs; (7.5YR,2.5/2, 2.5/3) fill zone, dry color very dark brown gravelly fine silt loam; well-formed coarse sub-angular block, peds; common rootlet, sub-angular cobble and pebble inclusions (50%); very abrupt boundary, observe agricultural irrigation lines, glass and plastic fragment; very abrupt wavy boundary.
Layer II 0.60/0.75- 1.35/1.40 mbs; (7.5YR3/3, 2.5/3) dry color dark brown mottled very dark brown stony silt loam; well formed, sub-angular blocky peds intermix with sub-angular to angular pebble and cobble inclusions (20%); very abrupt wavy boundary; 0.60 mbs PVC water line observed along southeast corner.
Layer III 1.35/1.40-2.0/2.10 mbs; (10YR4/3, 3/3) dry color very dark brown mottled dark brown silt clay; soft, sub-angular and cobble and pebble inclusions (50%); very abrupt boundary. No cultural remains observed.
Layer IV 2.15/2.20-2.40/2.45 mbs; (10YR 3/6, 3/4) dark yellowish brown mottled brown silt clay; weakly, massive medium blocky poorly formed peds; no cultural remains observed.
Layer V 2.40/2.45 mbs; a basal layer; gray hard and decomposing bedrock.

Figure 25. Overview Photograph of TR6 (left) (View to North); Photograph of East Wall at Trench 6

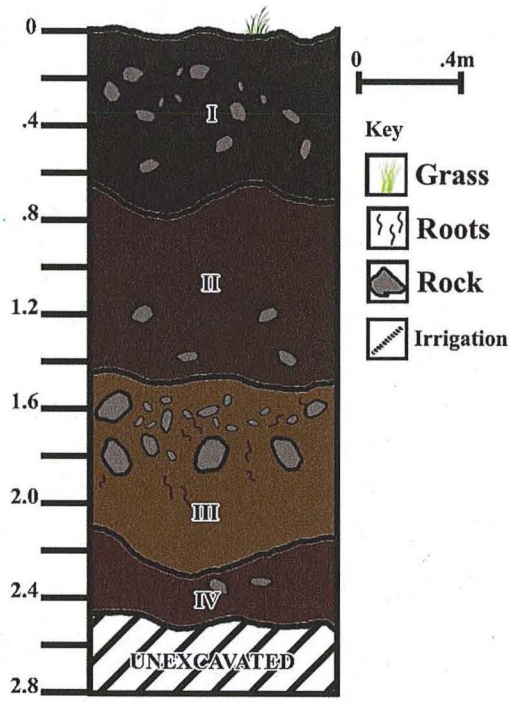


Figure 26. Stratigraphic Profile of East Wall at TR6

TRENCH 7

Trench 7 is located along the southeast portion of the project area and measured 6.2 m long by 1.20 m wide by 2.30 m deep and oriented 286/106° (see Figure 11 and Table II). The excavations revealed two stratigraphic layers which were negative for subsurface cultural remains (Figures 27-29).

Layer I 0-0.30/0.34 mbs; (7.5YR3/4, 3/3) very dark brown gravelly very fine silt; durable sub-angular blocky peds; few inclusions of rootlet intermix with scattered sub-angular and angular pebbles (50%); very abrupt plane boundary, recent historic material of glass, plastic metal fragments observed.

Layer II 0.30/0.34-2.30 mbs; (7.5YR4/1, 3/1) dark brown mottled very dark gray stony silt clay; slightly hard, poorly formed sub-angular block intermix with very few rootlet, no cultural remains observed.

Figure 27. Overview Photograph of the Southeast Corner and Proposed Trench 7

Figure 28. Photograph of North Wall at Trench 7

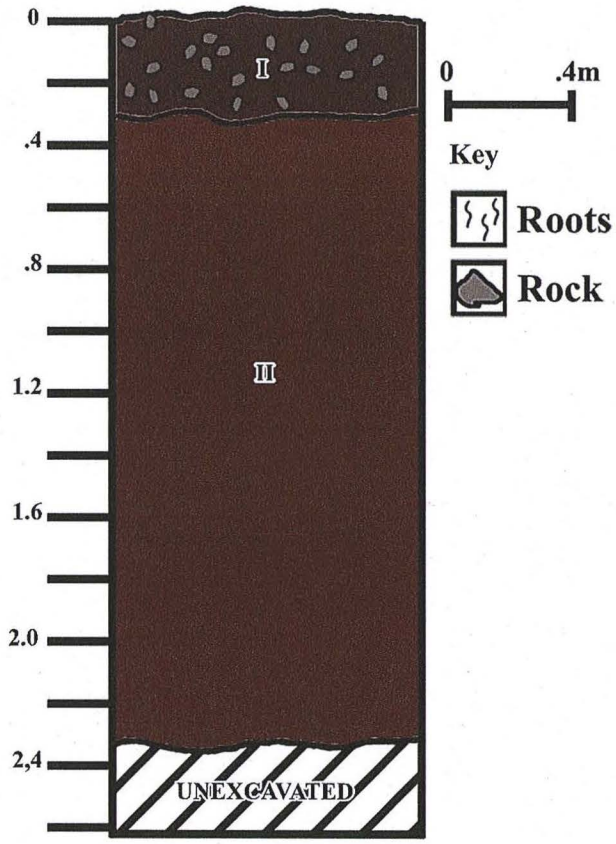


Figure 29. Stratigraphic Profile of West Wall at TR7

TRENCH 8

Trench 8 is located in the southeast corner of the parcel and measured 6.0 m long by 1.20 m wide by 2.20 m deep and oriented 251/71° (see Figure 11 and Table II). The excavations revealed four stratigraphic layers overlying bedrock (Figures 30 and 31).

Layer I 0 –0.15/0.20 mbs; (10YR/4/2, 3/2) agricultural zone, dark grayish brown gravelly fine silty loam; strong, medium, granular; common rootlet, sub-angular cobble and pebble inclusions (40%); very abrupt boundary, observe agricultural irrigation lines, glass and plastic fragments; very abrupt wavy boundary.
Layer II 0.15/0.20-0.40/0.50 mbs; (10YR5/1, 5/2) dry color gray mottled grayish brown stony silt loam; well formed, sub-angular blocky peds intermix with sub-angular to angular pebble and cobble inclusions (50%); very abrupt wavy boundary; no cultural remains observed.
Layer III 0.40/0.50-1.10/1.20 mbs; (7.5YR3/2, 2.5/3) dry color dark brown mottled very dark brown silt clay; soft, massive poorly formed sub-angular blocks; sub-angular and angular pebble scatter (15%); very abrupt boundary. No cultural remains observed.
Layer IV 1.10/1.20-2.20 mbs; (10YR 4/3, 3/3) brown mottled dark brown silt clay; weakly, massive medium blocky poorly formed peds; no cultural remains observed.
Layer V (2.10/2.20 mbs) (10YR5/1, 4/2) gray mottled grayish brown and saprolytic/decomposing bedrock.

Figure 30. Overview Photograph of TR 8 (left) (View to West); Photograph of North Wall at TR 8 (right)

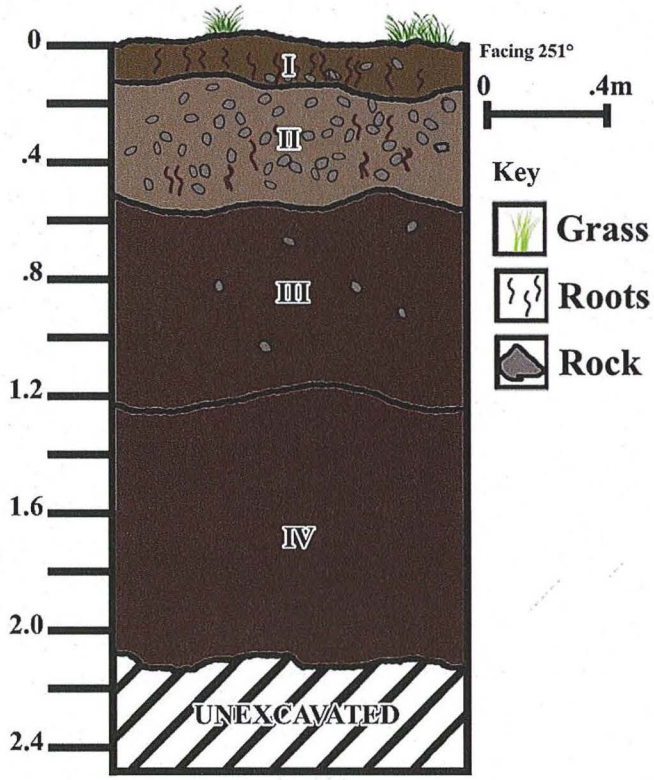


Figure 31. Stratigraphic Profile of North Wall at TR8

TRENCH 9

Trench 9 is located within the parking area of temporary offices along the northeast corner of project area (see Figure 11 and Table II). It measured 4.30 m long by 1.30 m wide by 1.55/1.80 m deep, oriented 90/270° and was negative for cultural remains. The excavations revealed four strata where Layers I and II were previously disturbed by recent developmental activities and a sand lens at Layer III (Figures 32 and 33).

Layer I 0 –0.30/0.35 mbs; (10YR/5/2) gravel fill zone, dark grayish brown gravelly fine silt loam; strong, medium, granular; few rootlet, common sub-angular gravel and pebble inclusions (50%); very abrupt boundary, observe water and electrical lines with sparse sand, very abrupt wavy boundary.

Layer II 0.30/0.35-0.55/0.60 mbs; (7.2YR4/3, 4/4) brown gravelly silt loam; well formed, sub-angular blocky peds few rootlet inclusions intermix with scattered sub-angular to angular pebble and gravel (30%); very abrupt wavy boundary; no cultural remains observed.

Layer III 0.55/0.60-0.70/0.75 mbs; (10YR5/6, 6/6) yellowish brown mottled brown fine sand; structureless fine to coarse single grain; very abrupt wavy irregular boundary; No cultural remains observed.

Layer IV 0.70/0.75-1.60/1.70 mbs; (7.5YR 4/3, 3/3) brown mottled dark brown stony silt clay; weakly, massive medium blocky well formed peds; sub-angular boulder and cobble scatter (30%); very abrupt clear boundary. no cultural remains observed.

Figure 32. Overview Photograph of TR9 with Water line in Foreground (View to West) (left); Photograph of South Wall at TR9 (after utility line was removed, note thin sand lens (red arrows)

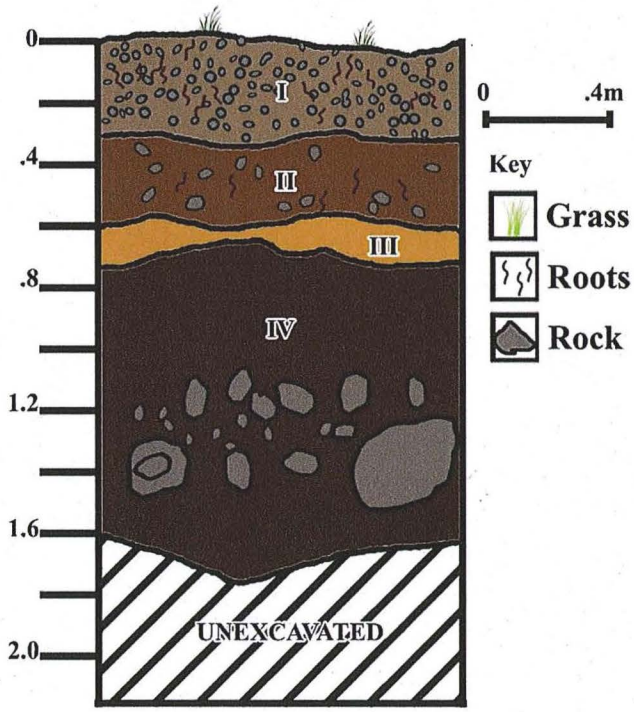


Figure 33. Stratigraphic Profile of South Wall at TR9

TRENCH 10

Trench 10 is located in the southwest quadrant of the subject parcel and measured 5.5 m long by 1.30 m wide by 1.70/1.80 m deep and oriented 90/270° (see Figure 11 and Table II). The excavations revealed three stratigraphic layers overlying saprolytic bedrock and all were negative (Figures 34-36).

Layer I 0 –0.30/0.40 mbs; (7.5YR3/2,3/3) fill zone, dry color dark brown gravelly fine silt loam; strong, medium, granular; common rootlet, common sub-angular gravel and pebble inclusions (40%); very abrupt boundary, observe irrigation lines, very abrupt wavy boundary.
Layer II 0.30/0.40-1.35/1.40 mbs; (7.2YR4/3,3/3) dry color dark brown mottled brown stony silt loam; well formed, sub-angular blocky peds few rootlet inclusions intermix with scattered sub-angular to angular pebble and gravel (40%); very abrupt wavy boundary; no cultural remains observed.
Layer III 1.35/1.40-1.71/1.75 mbs; (5YR4/4, 4/6) dry color reddish brown mottled yellowish red; prismatic sub-angular blocky peds; very abrupt boundary; No cultural remains observed.
Layer IV 1.70/1.75 mbs; (10YR5/1, 4/2) gray mottled grayish brown decomposing bedrock.

Figure 34. Overview Photograph of Southwest Area Showing Location for TR10

Figure 35. Photograph of North Wall at TR10

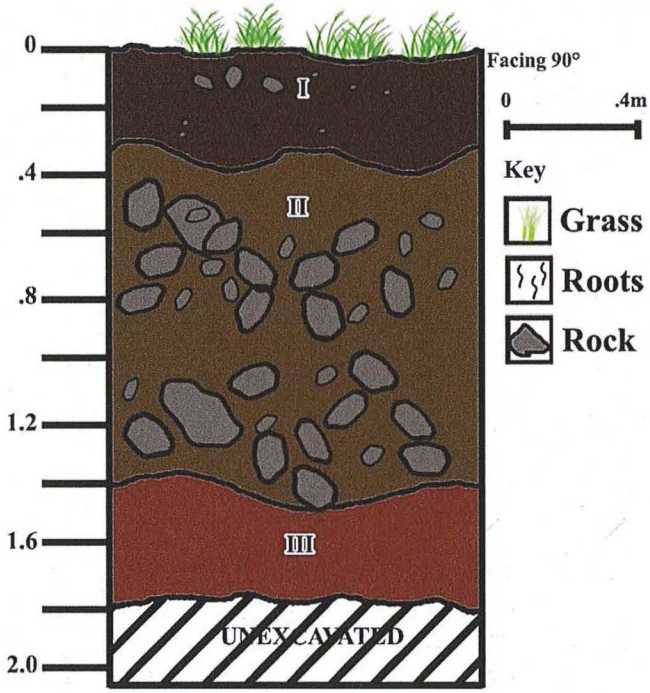


Figure 36. Stratigraphic Profile of North Wall at Trench 10

TRENCH 11

Trench 11 is located along the west, central boundary and measured 6.0 m long by 1.10 m wide by 1.70/1.80 m deep and was oriented 180/360° (see Figure 11 and Table II). The excavations revealed two stratigraphic layers that were negative for subsurface cultural remains (Figures 37 and 38).

> **Layer I** 0 –0.30/0.40 mbs; (7.5YR3/2, 3/3) fill zone, dark brown gravelly fine silt loam; strong, medium, granular; common rootlet, common sub-angular gravel and pebble inclusions (40%); very abrupt boundary, observe irrigation lines, very abrupt wavy boundary.
> **Layer II** 0.30/0.40-1.35/1.40 mbs; (7.2YR4/3, 3/3) dry color dark brown mottled brown stony silt loam; well formed, sub-angular blocky peds few rootlet inclusions intermix with scattered sub-angular to angular pebble and gravel (50%); very abrupt wavy boundary; no cultural remains observed.

Figure 37. Overview Photograph of TR11 (View to North) (left); Photograph of West Wall at Trench 11

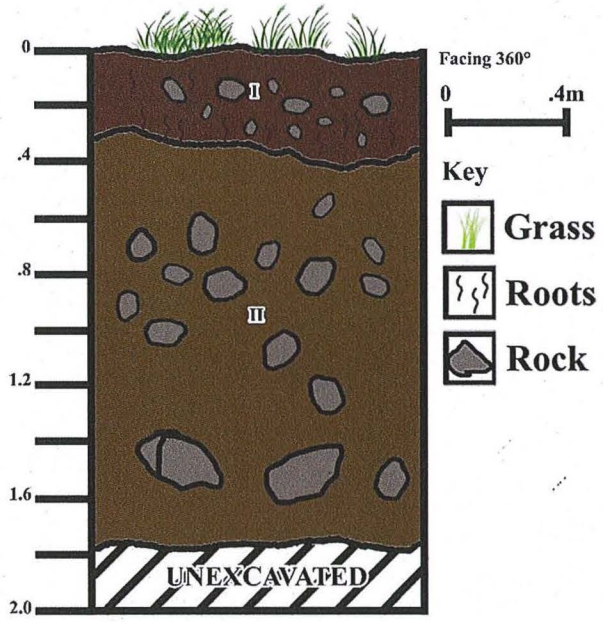


Figure 38. Stratigraphic Profile of West Wall at Trench 11

DISCUSSION AND RECOMMENDATIONS

An archaeological assessment was performed of a 15.0 acre parcel proposed for affordable residential development under the 201H permit process. The subject area has been extensively altered through the construction of a wide drainage trench on the western, sugar cane cultivation and past sand mining activities, where no evidence of traditional occupation and/or inland sand dune deposits appear to be extant. Despite these alterations, the subject parcel is positioned within a culturally sensitive area, and in close proximity to traditional burial features designated Sites 50-50-04-2916, 5965, 5966, 5680, 6261 and 6573; and a few historic period sites consisting of an historic road bed-Site 5963, a sugar cane flume-Site 5967 and Kama Ditch-Site 5474; thus subsurface testing was implemented.

A total of 11 mechanical test trenches were conducted at the project area, where the majority were placed in the eastern portion to ascertain the presence/absence of subsurface historic properties and remnant sand dune deposits. The trenches exhibited disturbances from 0.60 mbs to 1.85 mbs with bedrock encountered from 1.6 mbs to 2.30 mbs and all were negative for buried cultural remains and intact sand dune matrices.

No historic properties were identified during the subsurface investigations, and these negative results may be due to the compounded disturbances across the parcel. Pursuant to HAR §13-284-7, the overall development plan for the parcel will have no effect on significant historic properties. However, given that the subject parcel is in close proximity to known, unmarked traditional sand burials (east of the project area), the proposed mitigation pursuant to HAR §13-284-8 (1) (A) will comprise data recovery in the form of archaeological monitoring. Prior to the commencement of construction activities, an archaeological monitoring plan (AMP) will be prepared and submitted to SHPD for review and approval.

REFERENCES

Armstrong

1973 *Atlas of Hawaii.* Department of Geography, University of Hawaii. University Press of Hawaii, Honolulu.

Bates, G.W.

1854 *Sandwich Island Notes.* Harper and Brothers, New York.

Beckwith, Martha

1970 *Hawaiian Mythology.* University of Hawaii Press, Honolulu.

Brisbin, J., A.E. Haun, and P. Jensen

1991 *Archaeological Data Recovery Excavations Waikapū Mauka Partners Golf Resort Project Area.* Ms. on File, State Historic Preservation Division, DLNR, Honolulu.

Creed, Victoria S.

1993 *Settlement Pattern for Waikapū, Wailuku District, Maui, Hawaii, Vols. I and II,* Cultural Surveys Hawaii.

Donham, T.

1991 *Field Inspection of the Water Pipeline Easement Across Waikapū Stream, Waikapū, Maui Island (TMK3-5-4:14, 3-6-04:2).* State Historic Preservation Division, Dept. of Land and Natural Resources, Honolulu.

Farber, Joseph M.

1997 *Ancient Hawaiian Fishponds: Can Restoration Succeed on Moloka`i.* Neptune House Publications, Encinitas, CA.

Foote, Donald E., E. L. Hill, S. Nakamura, and F. Stephens

1972 *Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai, and Lana, State of Hawaii.* U.S.D.A. Soil Conservation Service, U.S. Government Printing Office, Washington, D.C.

Fornander, A.

1969 *Account of the Polynesian Race: Its Origins and Migrations. Volumes I-III,* Charles E. Tuttle, Co., Tokyo.

Fredericksen, Walter and Demaris

1996 *Report on the Waikapū Human Remains Recovery Project, Waikapū, Maui, Hawaii (Borrow Site 50-50-04-3525) TMK 3-8-07:104.* Prepared for SHPD, by Xamanek Researches, Pukalani, HI.

2004 *Archaeological Inventory Survey for Waikapū Affordable Housing Subdivision, Waikapū Ahupua`a, Wailuku District, Island of Maui (TMK: 3-5-02: por. 01 and 3-8-07: 101).* Prepared for Mr. Jesse Spencer, Xamanek Researches, Pukalani, HI.

Guerriero, Diane, Lisa Rotunno-Hazuka, and Jeffrey Pantaleo

2016 *Archaeological Inventory Survey of a 50 Acre Parcel of Land of Waikapu and Wailuku Ahupua'a , Wailuku District Maui Island TMK: (2) 3-5-002:011 and 012 (formerly 3-5-002:001 pors.)* Prepared for Valley Isle Fellowship and The Emmanuel Lutheran Church.

Guerriero, Diane, Lisa Rotunno-Hazuka, and Jeffrey Pantaleo

2009 *Final Burial Site Component of a Data Recovery Plan for Site 50-50-04-6261 Features 1A, 1C, 2-8, 11 AND 12 and Preservation Plan For Site 6261 Features 1b, 9, 10 and 13 at Kuikahi Drive Extension Located at TMK: 3-8-07:151 Pors. Wailuku Ahupua'a; Wailuku District; Island of Maui.* Prepared for Maui Lani Development

http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx

http://www.nationalgeographic.com/topo

http://www.co.maui.hi.us/757/Tax-Map-Information

Handy, E.S. Craighill and E.G. Handy

1972 *Native Planters in Old Hawaii, their Life, Lore and Environment.* Bishop Museum Bulletin 233. Bishop Museum Press, Honolulu.

Hester, Thomas. Harry J. Shafer and Kenneth L. Feder

2009 *Field Methods in Archaeology,* Academic Press, San Diego.

Kamakau, Samuel, M.

1992 *Ruling Chiefs of Hawaii.* Revised Edition, Kamehameha Schools Press. Honolulu.

Kennedy, Joseph

1988 *Preliminary Archaeological Survey of Phase IA of the Waikapū Master Plan (TMK 3-5-04: Por. Of 25).* Archaeological Consultants of Hawaii, Inc., Haleiwa.

1989 *Subsurface Testing Results for the Proposed Waikapū Grading Project, TMK 3-5-02:1, Waikapū, Maui.* Prepared for C. Brewer Properties. Archaeological Consultants of Hawaii, Inc., Haleiwa.

1990 *Archaeological Inventory Report for the proposed Waikapū Maui Water Tank and Access Road Located at Waikapū, Island of Maui, TMK: 3-6-03: por. 2 and TMK: 3-6-02: por. 2.* Archaeological consultants of Hawaii, Inc., Haleiwa.

1994 *An Archaeological Inventory Survey with Subsurface Testing Report for the Proposed Maui Ocean Center Located at TMK: 3-6-01:1 & 19, in Waikapū Ahupua`a, Wailuku District, Island of Maui.* Prepared for Mr. Michael Spalding. Archaeological Consultants of Hawaii, Inc., Haleiwa.

Kennedy, Joseph, and Moore

1999 *An Archaeological Inventory with Subsurface Testing at TMK: 3-8-07:101 pors. Wailuku Ahupua`a; Wailuku District; Island of Maui.* Prepared for Mr. Bill Hornerman. Archaeological Consultants of Hawaii, Inc., Haleiwa.

Morawski, Lauren. Donna Shefcheck and Michael Dega

2006 *An Archaeological Monitoring Report for Kehalani Subdivision and Offsite Improvements, Wailuku and Waikapu Ahupua`a; Wailuku District; Island of Maui, Hawaii TMK: 3-5-002:01 por. and TMK: 3-5-001:017 por.* Prepared for Stanford Carr, LLC. Scientific Consultant Services, Inc. Honolulu, Hi.

Rotunno-Hazuka, Lisa and Jeffrey Pantaleo

2007 *Archaeological Monitoring Plan for Kuikahi Drive Extension and a Portion of Maui Lani Parkway within Maui Lani Development, Wailuku ahupua`a and District, TMK 3-8-007: 131 por.* Prepared for Maui Lani Development. Archaeological Services Hawaii Wailuku, Hi.

Rotunno-Hazuka, Lisa and Jeffrey Pantaleo

2009 *Final Burial Site Component of a Data Recovery Plan and Preservation Plan for Site 50-50-04-6573 Features 1 and 2 at Lot 78 Within VMX C/R Maui Lani Development TMK: 3-8-07:151 Pors and 152 Wailuku Ahupua'a; Wailuku District; Island of Maui.* Prepared for Maui Lani Development

AA ACCEPTANCE LETTER FROM THE STATE HISTORIC PRESERVATION DIVISION DATED OCTOBER 18, 2017

APPENDIX

E-1

DAVID Y. IGE
GOVERNOR OF
HAWAII

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

ROBERT K. MASUDA
FIRST DEPUTY

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

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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

STATE HISTORIC PRESERVATION DIVISION
KAKUHIHEWA BUILDING
601 KAMOKILA BLVD, STE 555
KAPOLEI, HAWAII 96707

October 18, 2017

IN REPLY REFER TO:
Log No. 2017.02039
Doc No. 1710MBF07
Archaeology
History & Culture

Bagoyo Development Consulting Group
1500 Kilinoe Place
Wailuku, Maui, Hawaii 96793
vbagoyo-devgroup@hawaii.rr.com

Dear Mr. Bagoyo,

SUBJECT: **Chapter 6E-42 Historic Preservation Review –**
Archaeological Assessment Report for a 15.0 Acre Parcel Located Along Waiale Road
Wailuku Ahupua'a, Wailuku District, Island of Maui
TMK: (2) 3-5-001:064

Thank you for the opportunity to review the subject submittal titled, *Draft Archaeological Assessment Report for a 15.0 Acre Parcel Located Along Waiale Road in Wailuku Ahupua'a and District Pū'Ali Komohana Moku Island of Maui; TMK: [2] 3-5-001:064* (O'Claray-Nu et al., May 2017). The draft archaeological inventory survey (AIS) reported as an archaeological assessment (AA) was received by the State Historic Preservation Division (SHPD) as part of a draft environmental assessment (EA) on September 15, 2017. An associated archaeological monitoring plan (AMP) was submitted concurrently in advance of SHPD review of the subject project. This submittal for historic preservation review does not follow Hawaii Administrative Rules (HAR) §13-284-3.

An AIS was conducted on a 15.0-acre parcel proposed for affordable residential development. Reportedly, the entire project area has been extensively altered, including a retention trench for drainage improvements on the western portion of the parcel; as well as, sugar cane cultivation and past sand mining activities, where no inland sand dunes are presently extant. A pedestrian survey was conducted over 100 percent of the project area and a total of 11 backhoe trenches were excavated across the parcel. All subsurface testing produced negative results. Evidenced by the random trenches, the subsurface in some areas of the project area is disturbed from 0.60 meters below surface (mbs) to 1.85 mbs. Bedrock was encountered from 1.6 mbs to 2.30 mbs.

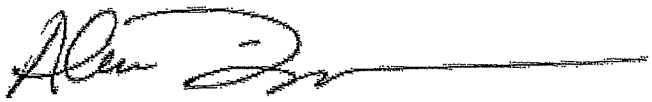
The project area is in a culturally-sensitive area. In proximity to the area there are: burial features, including Sites 50-50-04-2916, 50-50-04-5965, 50-50-04-5966, 50-50-04-5680, 50-50-04-6561 and 50-50-04-6573; Historic period sites included a road bed, Site 50-50-04-5963, a sugarcane flume, Site 50-50-04-5967, and Kama Ditch, Site 50-50-04-5474.

An effect determination is not presented in the subject documentation or the associated EA. However, based on available information, SHPD's determination is no historic properties affected pursuant to HAR §13-284-7; no historic properties have been identified within the project area. The SHPD does not concur with the recommendation of no further archaeological work. Due to the inherent imprecision of random mechanical trenching over large culturally-sensitive areas, there is a high probability of encountering cultural resources during the proposed large-scale earthmoving activities associated with the subject project. **Therefore, SHPD recommends** archaeological monitoring for identification purposes.

In the future, please include the agency point of contact (POC) on all correspondence with the SHPD, and **do not submit unsolicited historic preservation review materials to the SHPD, including monitoring plans, they will not be reviewed.**

You may contact Dr. Matthew Barker Fariss at matthew.b.fariss@hawaii.gov, or by phone at (808) 243-4626, for questions regarding this letter.

Aloha,



Alan S. Downer, PhD
Administrator, State Historic Preservation Division
Deputy State Historic Preservation Officer

cc: County of Maui Planning
Planning@co.maui.hi.us

Jeff Pantaleo, Principal Investigator
Archaeological Services Hawaii (ASH)
jpanta4149@aol.com

County of Maui Cultural Resources Commission
Annalise.Kehler@co.maui.hi.us

County of Maui Public Works
public.works@mauicounty.gov

DLNR Land Division
Russell.Y.Tsuji@hawaii.gov

SECTION 6E, HAWAI‘I REVISED STATUTES FORM

APPENDIX F

State Historic Preservation Division
HRS 6E Submittal Form

Per §6E, Hawai'i Revised Statutes, if the Project requires review by the State Historic Preservation Division (SHPD), please review and fill out this form and submit all requested information to SHPD. Please submit this form and project documentation **electronically** to:

dlnr.intake.shpd@hawaii.gov

If you are unable to submit electronically, please contact SHPD at (808) 692-8015. Mahalo.

The submission date of this form is:

1. APPLICANT (select one)

☐ Property Owner ☑ Government Agency

2. AGENCY (select one)

☐ Planning Department ☐ Department of Public Works ☑ Other (specify): DHHL

Type of Permit Applied For:

3. APPLICANT CONTACT

3.1) Name: Stewart Matsunaga 3.2) Title: Master-Planned Community Development Manager

3.3) Street Address: P.O. Box 1879

3.4) County: Honolulu 3.5) State: HI 3.6) Zip Code: 96805

3.7) Phone: 808-620-9283 3.8) Email: Stewart.T.Matsunaga@hawaii.gov

4. PROJECT DATA

4.1) Permit Number (if applicable):

4.2) TMK [e.g. (3) 1-2-003:004]: (2) 3-5-002:002

4.3) Street Address: Honoapiilani Highway

4.4) County: Wailuku 4.5) State: HI 4.6) Zip Code: 96793

4.7) Total Property Acreage: 60.087 acres

4.8) Project Area (acreage, square feet): 48.72 acres

4.9) List any previous SHPD correspondence (LOG Number & DOC Number, if applicable):

LOG NO. 2005.2398 DOC NO. 0511MK22

5. PROJECT INFORMATION

5.1) Does the Project involve a Historic Property? A Historic Property is any building, structure, object,

district, area, or site, including heiau and underwater site, **which is over 50 years old** (*HRS §6E-2*).

☑ Yes ☐ No

5.2) The date(s) of construction for the historic property (building, structure, object, district, area, or site, including heiau and underwater site) is Historic period-Sugar Cane Cultivation

5.3) Is the Property listed on the Hawai'i and or National Register of Historic Places? To check: http://dlnr.hawaii.gov/shpd/

☐ Yes ☑ No

5.4) Detailed Project Description and Scope of Work:

Houses and related roadway and utility infrastructure for 161 Department of Hawaiian Home Lands residential lots.

5.5) Description of **previous** ground disturbance (e.g. previous grading and grubbing):

Sugar cane cultivation; trenching during archaeological inventory survey (Wilson and Dega 2005)

5.6) Description of **proposed** ground disturbance (e.g. # of trenches, Length x Width x Depth):

Main ground disturbances include: grubbing and grading for roadways, lots, and storm water detention basin; excavation and trenching for utilities and related appurtenances; and excavation for house footings.

5.7) The Agency shall ensure whether historic properties are present in the project area, and, if so, it shall ensure that these properties are properly identified and inventoried. Identify all known historic properties:

Previously identified Sites: 50-50-04-5197, -5493, -5729, -5726, -5727, -5728, -5730. No further work recommended and accepted by SHPD (see Section 4.9 above).

5.8) Once a historic property is identified, then an assessment of significance shall occur.

Integrity (check all that apply):

☐ Location ☐ Design ☐ Setting ☐ Materials ☐ Workmanship ☐ Feeling ☐ Association

Criteria (check all that apply):

☐ a – associated with events that have made an important contribution to the broad patterns of our history
☐ b – associated with the lives of persons important in our past
☐ c – embody the distinctive characteristics of a type, period, or method of construction; represent the work of a master; or possess high artistic value
☐ d – have yielded, or is likely to yield, information important for research on prehistory or history
☐ e – have an important value to the Native Hawaiian people or to another ethnic group of the state due to associations with cultural practices once carried out or still carried out, at the property or due to associations with traditional beliefs, events, or oral accounts - - these associations being important to the group's history and cultural identity

5.9) The effects or impacts of a project on significant historic properties shall be determined by the agency.

Effect Determination (select one):

☐ No Historic Properties Affected
☐ Effect, with Agreed Upon Mitigation Commitments (§6E-42, HRS)
☐ Effect, with Proposed Mitigation Commitments (§6E-8, HRS)

5.10) This project is (check all that apply, if applicable):

☐ an activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including those carried out by or on behalf of a Federal agency;

☐ carried out with Federal financial assistance; and or

☐ requiring a Federal permit, license or approval.

If any of these boxes are checked, then the Project may also be subject to compliance with Section 106 of the National Historic Preservation Act (NHPA).

6. PROJECT SUBMITTALS

6.1) Please submit a copy of the Tax Map Key (TMK) map

6.2) Please submit a copy of the property map showing the project area and indicate if the project area is smaller than the property area.

6.3) Please submit a permit set of drawings. A permit set is a set of drawings prepared and signed by a licensed architect or engineer and is at least 65% complete.

6.4) Are you submitting a survey?

☐ Yes ☑ No

Specify Survey:

6.5) Did SHPD request the survey?

☐ Yes ☑ No

If 'Yes', then please provide the date, SHPD LOG NO, and DOC NO:

Date: LOG NO. DOC NO.

6.6) **SURVEY REVIEW FEES**. Fee for Review of Reports and Plans (§§13-275-4 and 284-4). A filing fee will be charged for all reports and plans submitted to our office for review. Please go to:

http://dlnr.hawaii.gov/shpd/about/branches/archaeology/filing-fee-schedule/

A check payable to the Hawaii Historic Preservation Special Fund should accompany all reports or plans submitted.

6.7) Please submit color photos/images of the Historic Property (any building, structure, object, district, area, or site, including heiau and underwater site) that will be affected by the Project.

The following are the minimum number and type of color photographs required:

Quantity	Description
1-2	Street view(s) of the resource and surrounding area
1-2	Over view of exterior work area
1	exterior photo of the North elevation (if applicable)
1	exterior photo of the South elevation (if applicable)
1	exterior photo of the East elevation (if applicable)
1	exterior photo of the West elevation (if applicable)
1-2	interior photos(s) of areas affected (if applicable)

CHECKLIST

☑ **SHPD FORM 6E** (this form)

☐ **PROJECT SUBMITTALS** (any requested documentation for items 6.1 - 6.7 of this form)

☐ **FILING FEE FORM** (if applicable)

ARCHAEOLOGICAL DETERMINATION RECONFIRMATION LETTER DATED MARCH 27, 2020

APPENDIX

G

DAVID Y. IGE
GOVERNOR
STATE OF HAWAII

JOSH GREEN
LT. GOVERNOR
STATE OF HAWAII

RECEIVED
LAND DEVELOPMENT
DIVISION
2020 APR 23 PM 12: 20

WILLIAM J. AILA, JR
CHAIRMAN
HAWAIIAN HOMES COMMISSION

TYLER I. GOMES
DEPUTY TO THE CHAIRMAN

STATE OF HAWAII
DEPARTMENT OF HAWAIIAN HOME LANDS

P. O. BOX 1879
HONOLULU, HAWAII 96805

March 27, 2020

RECEIVED
2020 APR -8 AM 9: 47
DEPT. OF LAND
& NATURAL RESOURCES
STATE OF HAWAII

Ms. Suzanne D. Case, Chairperson
Department of Land and Natural Resources
1151 Punchbowl St.
Honolulu, Hawaii 96813

Dear Chairperson Case:

Subject: Pu'unani Homestead Subdivision
TMK: (2) 3-5-002:002(por.) and (2) 3-5-001:064(por.)

SHPD acceptance of *Archaeological Inventory Survey Report on 215.800 acres located in Waikapu Ahupua'a Wailuku District, Maui Island, Hawai'i [TMK (2) 3-5-002: 02 and 03]* (Wilson and Dega, October 2005) with SHPD Letter dated November 18, 2005, (SHPD Log Number 2005.2398) and *Archaeological Assessment Report for a 15.0 acre parcel located along Waiale Road in Wailuku Ahupua'a and District, Pū'ali Komohana Moku, Island of Maui [TMK (2) 3-5-001:064]* (O'Claray-Nu et al., May 2017) with SHPD Letter dated October 18, 2017 (SHPD Log No. 2017.02039)

<u>TMK: (2) 3-5-002:002(por.)</u>

The Department of Hawaiian Home Lands (DHHL) acknowledges State Historic Preservation Division's (SHPD) November 18, 2005, letter regarding SHPD's review of the report entitled *Archaeological Inventory Survey Report on 215.800 acres located in Waikapu Ahupua'a Wailuku District, Maui Island, Hawai'i [TMK (2) 3-5-002: 02 and 03]* (Wilson and Dega, October 2005). This AIS covered both the parcel for DHHL's Pu'unani Homestead Subdivision and the 148 acre mauka parcel, owned by others. DHHL concurs with SHPD's previous project effect determination under the HRS 6E jurisdiction as described below:

- The AIS documented 7 historic properties within the project area/area of potential effect (APE), as confirmed in the November 18, 2005 SHPD Letter. In accordance with HAR§13-275-6, all 7 sites are significant under Criterion d. No further work is recommended for the 7 sites as these sites have been adequately documented.

- DHHL's HRS 6E project effect determination is "No Historic Properties Affected" pursuant to HAR §13-275-7(a)(1). The proposed project will have no effect on significant historic properties.

- Based on SHPD's November 18, 2005, letter, SHPD has accepted the AIS (Wilson and Dega, October 2005), the historic preservation review process is concluded, and no further archaeological mitigation is necessary.

- DHHL requests SHPD's updated concurrence with DHHL's HRS 6E project effect determination of "No Historic Properties Affected."

- A Native Hawaiian organization may enter into an agreement with SHPD. DHHL acknowledges that the development of a memorandum of agreement (MOA) with SHPD and other signatories could be mutually beneficial to the parties involved. DHHL will work with SHPD upon updated acceptance of the AIS and concurrence with 6E project effect determinations to assess if a MOA should be developed.

TMK: (2) 3-5-001:064(por.)

DHHL acknowledges SHPD's October 18, 2017, letter regarding SHPD's review of the report entitled *Archaeological Assessment Report for a 15.0 acre parcel located along Waiale Road in Wailuku Ahupua'a and District, Pū'ali Komohana Moku, Island of Maui [TMK (2) 3-5-001:064]* (O'Claray-Nu et al., May 2017). DHHL's work within the portion of TMK (2) 3-5-001:064 will be limited to only sewerline improvements. DHHL concurs with SHPD's previous project effect determination under the HRS 6E jurisdiction as described below:

- SHPD's determination is no historic properties affected pursuant to HAR§13-284-7 and no historic properties have been identified within the project area. However, SHPD recommends archaeological monitoring for identification purposes.

- SHPD anticipates receiving for review and acceptance an archaeological monitoring plan that satisfies the requirements of HAR§13-279-4.

- DHHL's HRS 6E proposed commitment is archaeological monitoring for identification purposes during all DHHL project-related ground disturbances within the portion of TMK (2) 3-5-001:064.

- DHHL requests SHPD's concurrence with DHHL's HRS 6E project effect determination of "No Historic Properties Affected."

Mahalo for the opportunity to provide comments. Should you have any questions, please call me at (808) 620-9501 or Stewart Matsunaga, Acting Administrator, Land Development Division at (808) 620-9283.

Aloha,

William J. Aila, Jr., Chairman
Hawaiian Homes Commission

☐ CONCUR – The HRS 6E project effect determination is "No Historic Properties Affected" as described herein.

Alan Downer

Suzanne D. Case, Chairperson

Enclosures – November 18, 2005, SHPD Letter (DOC NO: 0511MK22) and October 18, 2017, SHPD Letter (DOC NO: 1710MBF07)

c: Dr. Alan Downer, Administrator
State Historic Preservation Division

Dr. Susan Lebo, Archaeology Branch Chief
State Historic Preservation Division

County of Maui Planning Dept.
DHHL Planning Office
DHHL Maui District Office

LINDA LINGLE
GOVERNOR OF HAWAII

(607)

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LAND
STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

STATE HISTORIC PRESERVATION DIVISION
601 KAMOKILA BOULEVARD, ROOM 555
KAPOLEI, HAWAII 96707

November 18, 2005

Michael Dega, Ph.D.
Scientific Consultant Services
711 Kapiolani Blvd. Suite 975
Honolulu, HI 96813

LOG NO: 2005.2398
DOC NO: 0511MK22

Dear Dr. Dega:

SUBJECT: Historic Preservation Review - 6E-42 - Archaeological Inventory Survey On 215.800 Acres for Towne Development of Hawaii and Endurance Investors, LLC
Waikapu Ahupua'a, Wailuku District, Maui
TMK (2) 3-5-002:002 and 003

Thank you for the opportunity to review this report which our staff received on October 14, 2005 (Wilson and Dega 2005, *Archaeological Inventory Survey Report on 215.800 Acres Located in Waikapu Ahupua'a, Wailuku District, Maui Island, Hawai'i [TMK (2) 3-5-02: 02 and 03])*...Scientific Consultant Services, Inc., ms.

The background section acceptably establishes the ahupua'a settlement pattern and predicts the likely site pattern in the project area. The historical information provided summarizes the history of the post-contact period land uses. The summary of previous archaeological work in the area provides a baseline for the current work. The subject parcel has formerly been utilized for commercial agriculture, and consists 100% of abandoned cane land. Three small Land Commission Awards are situated within the subject parcel, in an area through which a stream and/or ditch formally ran.

The survey has adequately covered the project area documenting five new historic properties in the project area, and re-identifying two previously identified historic properties. Previously identified sites, SIHP 50-50-04-5197 and -5493, consist of the Waihe'e and Waikapu Ditches. Newly identified SIHP sites 50-50-5729 and -5726 represent an unnamed rock and mortar ditch and an unnamed earthen ditch/drainage. A large unnamed reservoir, SIHP 50-50-04-5727, is situated at the terminus of the Waikapu Ditch (-5493). SIHP 50-50-04-5728 is a sugar field erosion control site, incorporating 14 earthen berms cross slope. These are clearly identified topographically. One additional site, SIHP 50-50-04-5730, the

"Old Waikapu Road" was identified as spanning the border of Parcels 002 and 003. Subsurface testing (twenty-one backhoe trenches) were also negative for evidence of cultural deposits. These were distributed evenly across the project area.

We concur that all seven sites are significant under Criterion "D" and have the potential to yield information important to understanding the history of the region. The sites have been adequately documented.

We also agree that no further archaeological mitigation is necessary.

We find this report to be acceptable. The historic preservation review process is concluded. Development of the project areas will have "no effect" on significant historic sites. As always, if you disagree with our comments or have questions, please contact Dr. Melissa Kirkendall (Maui/Lana'i SHPD 243-5169) as soon as possible to resolve these concerns.

Aloha,

MELANIE A. CHINEN, Administrator
State Historic Preservation Division

MK: kf

c: Bert Ratte, DPWEM, County of Maui
Michael Foley, Director, Dept of Planning, 250 S. High Street, Wailuku, HI 96793
Maui Cultural Resources Commission, Dept. of Plng, 250 S. High St., Wailuku, HI 96793

DAVID Y. IGE
GOVERNOR OF
HAWAII

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
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LAND
STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

STATE HISTORIC PRESERVATION DIVISION
KAKUHIHEWA BUILDING
601 KAMOKILA BLVD, STE 555
KAPOLEI, HAWAII 96707

October 18, 2017

Bagoyo Development Consulting Group
1500 Kilinoe Place
Wailuku, Maui, Hawaii 96793
ybagoyo-devgroup@hawaii.rr.com

IN REPLY REFER TO:
Log No. 2017.02039
Doc No. 1710MBF07
Archaeology
History & Culture

Dear Mr. Bagoyo,

SUBJECT: **Chapter 6E-42 Historic Preservation Review –**
Archaeological Assessment Report for a 15.0 Acre Parcel Located Along Waiale Road
Wailuku Ahupua'a, Wailuku District, Island of Maui
TMK: (2) 3-5-001:064

Thank you for the opportunity to review the subject submittal titled, *Draft Archaeological Assessment Report for a 15.0 Acre Parcel Located Along Waiale Road in Wailuku Ahupua'a and District Pū'Ali Komohana Moku Island of Maui; TMK: [2] 3-5-001:064* (O'Claray-Nu et al., May 2017). The draft archaeological inventory survey (AIS) reported as an archaeological assessment (AA) was received by the State Historic Preservation Division (SHPD) as part of a draft environmental assessment (EA) on September 15, 2017. An associated archaeological monitoring plan (AMP) was submitted concurrently in advance of SHPD review of the subject project. This submittal for historic preservation review does not follow Hawaii Administrative Rules (HAR) §13-284-3.

An AIS was conducted on a 15.0-acre parcel proposed for affordable residential development. Reportedly, the entire project area has been extensively altered, including a retention trench for drainage improvements on the western portion of the parcel; as well as, sugar cane cultivation and past sand mining activities, where no inland sand dunes are presently extant. A pedestrian survey was conducted over 100 percent of the project area and a total of 11 backhoe trenches were excavated across the parcel. All subsurface testing produced negative results. Evidenced by the random trenches, the subsurface in some areas of the project area is disturbed from 0.60 meters below surface (mbs) to 1.85 mbs. Bedrock was encountered from 1.6 mbs to 2.30 mbs.

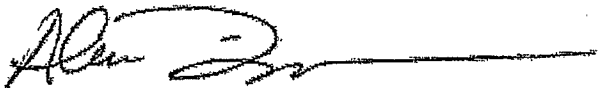
The project area is in a culturally-sensitive area. In proximity to the area there are: burial features, including Sites 50-50-04-2916, 50-50-04-5965, 50-50-04-5966, 50-50-04-5680, 50-50-04-6561 and 50-50-04-6573; Historic period sites included a road bed, Site 50-50-04-5963, a sugarcane flume, Site 50-50-04-5967, and Kama Ditch, Site 50-50-04-5474. .

An effect determination is not presented in the subject documentation or the associated EA. However, based on available information, SHPD's determination is no historic properties affected pursuant to HAR §13-284-7; no historic properties have been identified within the project area. The SHPD does not concur with the recommendation of no further archaeological work. Due to the inherent imprecision of random mechanical trenching over large culturally-sensitive areas, there is a high probability of encountering cultural resources during the proposed large-scale earthmoving activities associated with the subject project. **Therefore, SHPD recommends** archaeological monitoring for identification purposes.

In the future, please include the agency point of contact (POC) on all correspondence with the SHPD, and **do not submit unsolicited historic preservation review materials to the SHPD, including monitoring plans, they will not be reviewed.**

You may contact Dr. Matthew Barker Fariss at matthew.b.fariss@hawaii.gov, or by phone at (808) 243-4626, for questions regarding this letter.

Aloha,



Alan S. Downer, PhD
Administrator, State Historic Preservation Division
Deputy State Historic Preservation Officer

cc: County of Maui Planning
Planning@co.maui.hi.us

Jeff Pantaleo, Principal Investigator
Archaeological Services Hawaii (ASH)
jpanta4149@aol.com

County of Maui Cultural Resources Commission
Annalise.Kehler@co.maui.hi.us

County of Maui Public Works
public.works@mauicounty.gov

DLNR Land Division
Russell.Y.Tsuji@hawaii.gov

Pu'unani Homestead Subdivision

Final Audit Report 2020-04-21

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By:	Kimberly Higashi (kimberly.a.higashi@hawaii.gov)
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ETS
STATE OF HAWAI'I

CULTURAL IMPACT ASSESSMENT

APPENDIX

H

SCS PROJECT NO. 2357-1 CIA

A CULTURAL IMPACT ASSESSMENT REPORT IN ADVANCE OF THE PROPOSED PU‘UNANI HOMESTEAD PROJECT WAIKAPŪ AHUPUA‘A, WAILUKU DISTRICT ISLAND OF MAUI HAWAI‘I TMK: (2) 3-5-002:002 and 3-5-001:064 (por.)

Prepared by:

Cathleen A. Dagher, B.A.

April 2020

DRAFT

Prepared for:

DDC LLC
2005 Main Street|
Wailuku, Maui
Hawaii 96793

SCIENTIFIC CONSULTANT SERVICES, Inc.

HAWAII

1347 Kapiolani Blvd., Suite 408 Honolulu, Hawai`i 96814

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INTRODUCTION

At the request of DDC LLC, Scientific Consultant Services, Inc. (SCS) has prepared a Cultural Impact Assessment (CIA) in advance of the proposed Puʻunani Homestead project. The proposed project will consist of the development of a Department of Hawaiian Home Lands (DHHL) residential subdivision comprised of a total of 161 lots (approximately 137 turn-key single-family residences and 24 vacant single-family improved lots) within the 47.4-acre project area. The Department of Hawaiian Home Lands Subdivision will be located in Waikapū Ahupuaʻa, Wailuku District, Island of Maui, Hawaiʻi [TMK: (2) 3-5-002:002 (Figures 1 through 3). The subject property is owned by the State of Hawaii, Department of Hawaiian Home Lands.

Sewer line improvements within a portion of TMK: (2) 3-5-001:064 will be undertaken as part of the currently proposed DHHL project. A separate CIA report (Dagher2018) was prepared in advance of the proposed Wailuku Affordable Housing project, which was located in Wailuku and Waikapū Ahupuaʻa, Wailuku District, Island of Maui, Hawaiʻi [TMK: (2) 3-5-001:064]. Thus, the results of the Dagher (2018) consultation process are included in the Consultation section of the current CIA report.

Please note that the CIA report is currently in progress as the consultation process of this CIA is on-going as several cultural contacts have recently been added to the consultation process in late-March 2020 (see interview summary for Hōkūao Pellegrino). Once these interviews have been completed the CIA report will be updated to include the additional interview summaries.

The Hawaii State Office of Environmental Quality Control (OEQC 1997:11) states that "an environmental assessment of cultural impacts" gathers information about cultural practices and cultural features that may be affected by significant environmental effects:

> Cultural impacts differ from other types of impacts assessed in environmental assessments or environmental impact statements. A cultural impact assessment includes information relating to the practices and beliefs of a particular cultural or ethnic group or groups.

The purpose of a CIA is to identify the possibility of on-going cultural activities and resources within a project area, or its vicinity, and then assess the potential for impacts on these cultural resources. The CIA is not intended to be a document of in depth archival-historical land research, or a record of oral family histories, unless these records contain information about specific cultural resources that might be impacted by a proposed project.

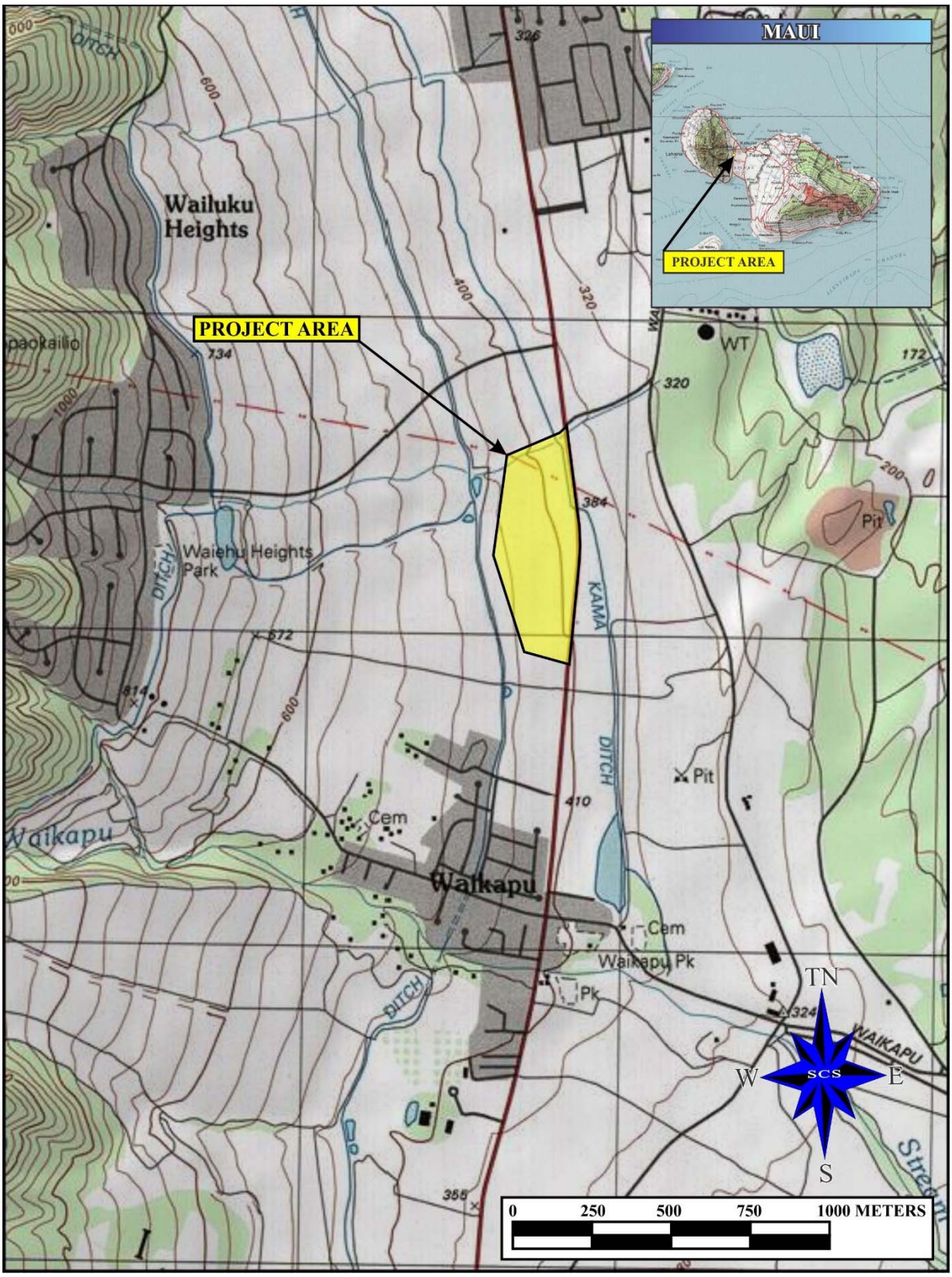

Figure 1: USGS Quadrangle (Wailuku, HI 1997; 1:24,000) Showing Project Area Location.

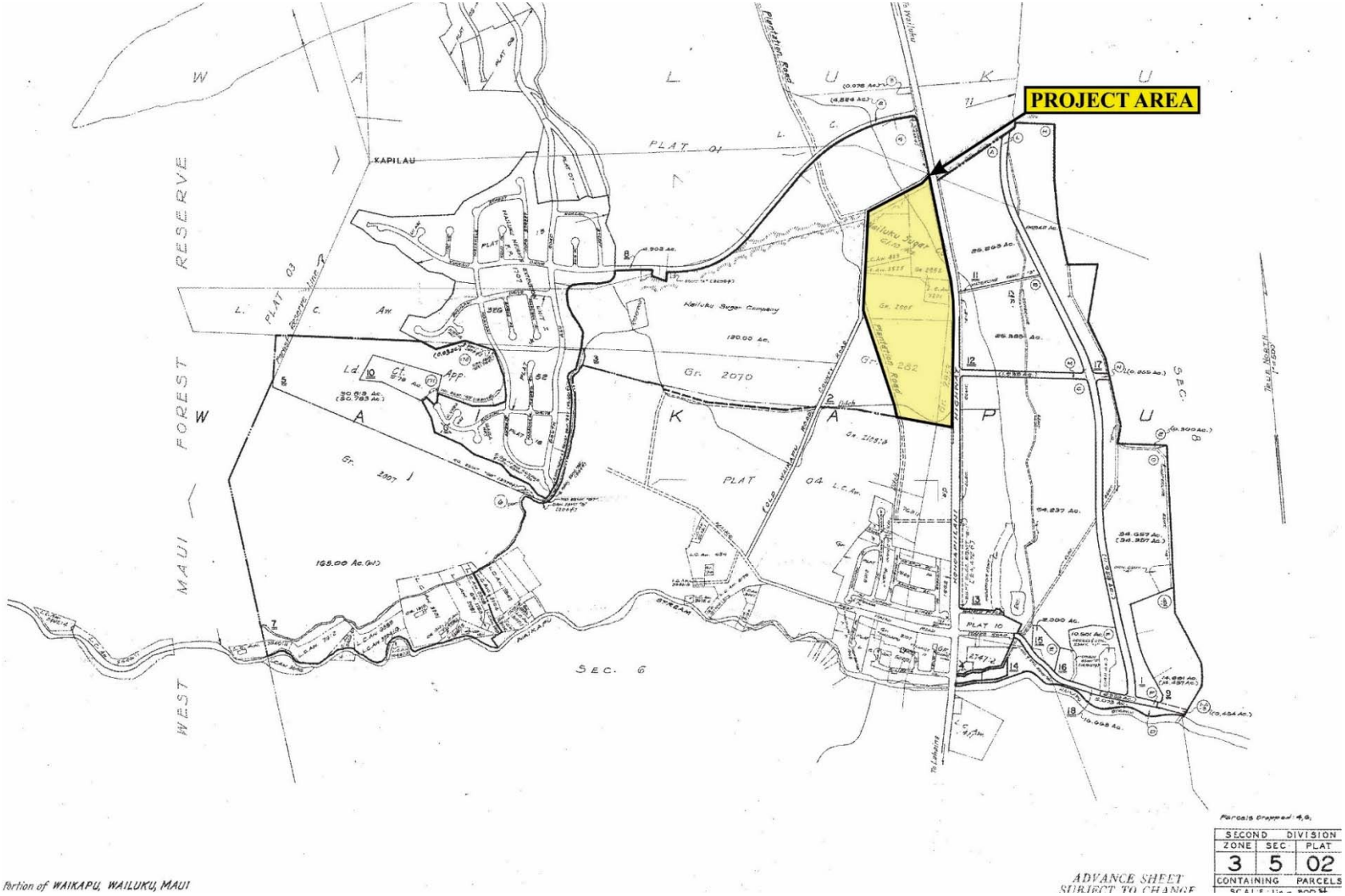

Figure 2: Tax Map Key [TMK: (2) 3-5-002] Showing Project Area Location.

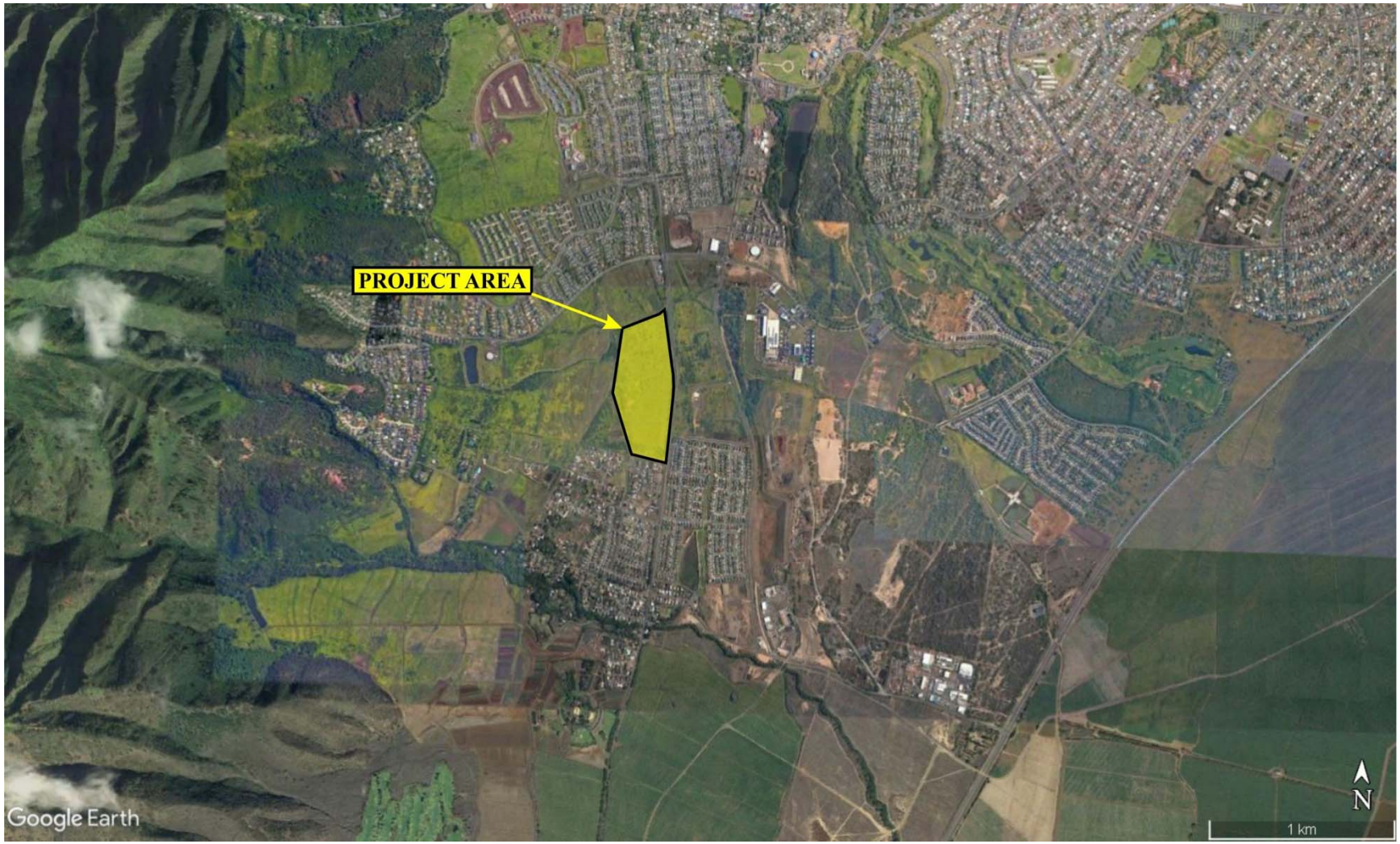

Figure 3: Satellite Image (Google 2018; Imagery Date 7/20/2016) Showing Project Area Location.

CULTURAL IMPACT ASSESSMENT METHODOLOGY

The Constitution of the State of Hawai‘i clearly states the duty of the State and its agencies is to preserve, protect, and prevent interference with the traditional and customary rights of native Hawaiians. Article XII, Section 7 (2000) requires the State to "protect all rights, customarily and traditionally exercised for subsistence, cultural and religious purposes and possessed by *ahupua‘a* tenants who are descendants of native Hawaiians who inhabited the Hawaiian Islands prior to 1778." Additionally, Article IX and XII, of the state constitution, other state laws, and the courts of the State, impose on government agencies a duty to promote and protect cultural beliefs and practices, and resources of native Hawaiians as well as other ethnic groups.

Kamehameha III (Kauikeaouli) preserved the peoples traditional right to subsistence. As a result, in 1850, the Hawaiian Government confirmed the traditional access rights to native Hawaiian ahupua‘a tenants to gather specific natural resources for customary uses from undeveloped private property and waterways under the Hawaiian Revised Statutes (HRS) 7-1. In 1992, the State of Hawai‘i Supreme Court, reaffirmed HRS 7-1 and expanded it to include, "native Hawaiian rights…may extend beyond the *ahupua‘a* in which a native Hawaiian resides where such rights have been customarily and traditionally exercised in this manner" [Pele Defense Fund v. Paty, 73 Haw.578, 620, 837 P.2d 1247, 1272 (1992)].

Act 50, enacted by the Legislature of the State of Hawai‘i (2000) with House Bill (HB) 2895, relating to Environmental Impact Statements, proposes that:

> …there is a need to clarify that the preparation of environmental assessments or environmental impact statements should identify and address effects on Hawaii's culture, and traditional and customary rights… [H.B. NO. 2895].

Act 50 also requires state agencies and other developers to assess the effects of proposed land use or shoreline developments on the "cultural practices of the community and State" as part of the HRS Chapter 343 (2001) environmental review process. It also re-defined the definition of "significant effect" to include "the sum of effects on the quality of the environment including actions that impact a natural resource, limit the range of beneficial uses of the environment, that are contrary to the State's environmental policies, or adversely affect the economic welfare, social welfare or cultural practices of the community and State." Cultural resources can include a broad range of often overlapping categories, including places, behaviors, values, beliefs, objects, records, stories, etc. (H.B. 2895, Act 50, 2000).

GEOGRAPHICAL EXTENT

As defined by the Hawaii State Office of Environmental Quality Control (OEQC 1997:11), the geographical extent should be greater than the area over which the proposed project will take place in order to ensure that cultural practices that occur outside of the project area, but which may still be affected, are included in the assessment. For example, a project that may not itself physically impact traditional gathering practices but may block access to those locations would be included within the assessment. The concept of geographical expansion is recognized by using, as an example, "the broad geographical area, e.g. district or *ahupua'a.*" In some cases, the geographical extent could extend beyond the ahupua'a if cultural practices do so as well.

OEQC GUIDELINES FOR ASSESSING CULTURAL IMPACTS

According to the Guidelines for Assessing Cultural Impacts established by the Hawaii State Office of Environmental Quality Control (OEQC 1997:12):

> The types of cultural practices and beliefs subject to assessment may include subsistence, commercial, residential, agricultural, access-related, recreational, and religions and spiritual customs. The types of cultural resources subject to assessment may include traditional cultural properties or other types of historic sites, both man made and natural, which support such cultural beliefs.

The meaning of "traditional" was explained by in National Register Bulletin:

> "Traditional" in this context refers to those beliefs, customs, and practices of a living community of people that have been passed down through the generations', usually orally or through practice. The traditional cultural significance of a historic property then is significance derived from the role the property plays in a community's historically rooted beliefs, customs, and practices. . . [Parker and King 1998:1]

This CIA was prepared as much as possible in accordance with the suggested methodology and content protocol in the Guidelines for Assessing Cultural Impacts (OEQC 1997:11-13). In outlining the "Cultural Impact Assessment Methodology," the OEQC (1997:11) states that:

> …information may be obtained through scoping community meetings, ethnographic interviews and oral histories…

This Cultural Impact Assessment was prepared in accordance with the Guidelines for Assessing Cultural Impacts (OEQC 1997:11-13). The Guidelines recommend that preparers of assessments analyzing cultural impacts adopt the following protocol:

- Identify and consult with individuals and organizations with expertise concerning the types of cultural resources, practices and beliefs found within the broad geographical area, e.g., district or ahupuaʻa;

- Identify and consult with individuals and organizations with knowledge of the area potentially affected by the proposed action;

- Receive information from or conduct ethnographic interviews and oral histories with persons having knowledge of the potentially affected area;

- Conduct ethnographic, historical, anthropological, sociological, and other culturally related documentary research;

- Identify and describe the cultural resources, practices and beliefs located within the potentially affected area; and

- Assess the impact of the proposed action, alternatives to the proposed action, and mitigation measures, on the cultural resources, practices and beliefs identified.

CULTURAL IMPACT ASSESSMENT CONTENTS

The Guidelines state that an assessment of cultural impacts should address, but not be limited to the following:

- Discussion of the methods applied and results of consultation with individuals and organizations identified by the preparer as being familiar with cultural practices and features associated with the project area, including any constraints or limitations which might have affected the quality of the information obtained.

- Description of methods adopted by the preparer to identify, locate, and select the persons interviewed, including a discussion of the level of effort undertaken.

- Ethnographic and oral history interview procedures, including the circumstances under which the interviews were conducted, and any constraints or limitations which might have affected the quality of the information obtained.

- Biographical information concerning the individuals and organizations consulted their particular expertise and their historical and genealogical relationship to the project area, as well as information concerning the persons submitting information or interviewed their particular knowledge and cultural expertise, if any, and their historical and genealogical relationship to the project area.

- Discussion concerning historical and cultural source materials consulted, the institutions and repositories searched and the level of effort undertaken. This discussion should include, if appropriate, the particular perspective of the authors, any opposing views, and any other relevant constraints, limitations or biases.

- Discussion concerning the cultural resources, practices and beliefs identified, and, for resources and practices, their location within the broad geographical area in which the

proposed action is located, as well as their direct or indirect significance or connection to the project site.

- Discussion concerning the nature of the cultural practices and beliefs, and the significance of the cultural resources within the project area affected directly or indirectly by the proposed project.

- Explanation of confidential information that has been withheld from public disclosure in the assessment.

- Discussion concerning any conflicting information in regard to identified cultural resources, practices and beliefs.

- Analysis of the potential effect of any proposed physical alteration on cultural resources, practices or beliefs; the potential of the proposed action to isolate cultural resources, practices or beliefs from their setting; and the potential of the proposed action to introduce elements which may alter the setting in which cultural practices take place.

- A bibliography of references and attached records of interviews which were allowed to be disclosed.

If on-going cultural activities and/or resources are identified within the project area, assessments of the potential effects on the cultural resources in the project area and recommendations for mitigation of these effects can be proposed.

PROJECT METHODOLOGY

This report contains archival and documentary research, as well as communication with organizations and individuals having knowledge of the project area, its cultural resources, and its practices and beliefs. An example of the initial letter of inquiry is presented in Appendix A, copies of the posted newspaper notice and affidavit are presented in Appendix B, and an example of the follow up letter is presented in Appendix C. Signed information release forms are presented in Appendix D. This Cultural Impact Assessment was prepared in accordance with the suggested methodology and content protocol provided in the Guidelines for Assessing Cultural Impacts (OEQC 1997:13), whenever possible. The assessment concerning cultural impacts may include, but not be limited to the following items discussed below.

ARCHIVAL RESEARCH

Archival research focused on a historical documentary study involving both published and unpublished sources. These included legendary accounts of native and early foreign writers; early historical journals and narratives; historic maps, land records, such as Land Commission Awards, Royal Patent Grants, and Boundary Commission records; historic accounts, and previous archaeological reports.

Historical and cultural source materials were extensively used and can be found listed in the References Cited portion of this report. Such scholars as Samuel Kamakau, Martha Beckwith, Jon J. Chinen, Lilikalā Kameʻeleihiwa, R. S. Kuykendall, Marion Kelly, E. S. C. Handy and E.G. Handy, John Papa ʻĪʻī, Gavin Daws, A. Grove Day, and Elspeth P. Sterling, and Mary Kawena Pukuʻi and Samuel H. Elbert continue to contribute to our knowledge and understanding of Hawaiʻi, past and present.

The works of these and other authors were consulted and incorporated in this report where appropriate. Historic land use document research was supplied by the Waihona ʻAina (2019) Database, the Office of Hawaiian Affairs Kipuka Database (2016), and the County of Maui County Real Property Assessment Division Database (2019).

INTERVIEWS

In general, interviews are conducted in accordance with Federal and State laws and guidelines when knowledgeable individuals are able to identify traditional cultural practices and/or resources procured in the project area or in the environs. If they have knowledge of traditional stories, practices and beliefs, and resources associated with a project area or if they know of historical properties within the project area, they are sought out for additional consultation and interviews. Individuals who have particular knowledge of traditions passed down from preceding generations and a personal familiarity with the project area are invited to share their relevant information concerning particular cultural resources. Often people are recommended for their expertise, and indeed, organizations, such as Hawaiian Civic Clubs, the Island Branch of Office of Hawaiian Affairs (OHA), historical societies, Island Trail clubs, and Planning Commissions are depended upon for their recommendations of suitable informants. These groups are invited to contribute their input and suggest further avenues of inquiry, as well as specific individuals to interview. It should be stressed again that this process does not include formal or in-depth ethnographic interviews or oral histories as described in the OEQCʻs *Guidelines for Assessing Cultural Impacts* (1997). The assessments are intended to identify potential impacts to ongoing cultural practices, or resources, within a project area or in its close vicinity.

If knowledgeable individuals are identified, personal interviews are sometimes taped and then summarized. These draft summaries are returned to each of the participants for their review and comments. After corrections are made, each individual is to sign an information release form, making the interview available for this study. When telephone interviews occur, a summary of the information is also sent for correction and approval or dictated by the informant

and then incorporated into the document. If no cultural resource information is forthcoming and no knowledgeable informants are suggested for further inquiry, interviews are not conducted.

KA PA'A KAI O KA'AINA V. LAND USE COMM'N, STATE OF HAWAI'I

The Land Use Commission (LUC) is also required to apply the analytical framework set forth by the Hawaii Supreme Court in Ka Pa'akai O Ka'Aina v. Land Use Comm'n, State of Hawai'i, 94 Hawai'i 31, 7 P.3d 1068 (2000) (hereinafter, "***Ka Pa'akai***"). In this case, a coalition of native Hawaiian community organizations challenged an administrative decision by the Land Use Commission (the "***LUC***") to reclassify nearly 1,010 acres of land from conservation to urban use, to allow for the development of a luxury project including upscale homes, a golf course, and other amenities. The native Hawaiian community organizations appealed, arguing that their native Hawaiian members would be adversely affected by the LUC's decision because the proposed development would infringe upon the exercise of their traditional and customary rights. Noting that "[a]rticle XII, section 7 of the Hawaii Constitution obligates the LUC to protect the reasonable exercise of customarily and traditionally exercised rights of native Hawaiians to the extent feasible when granting a petition for reclassification of district boundaries," the Hawai'i Supreme Court held that the LUC did not provide a sufficient basis to determine "whether [the agency] fulfilled its obligation to preserve and protect customary and traditional rights of native Hawaiians" and, therefore, the LUC "failed to satisfy its statutory and constitutional obligations." Ka Pa'akai, 94 Hawai'i at 46, 53, 7 P.3d at 1083, 1090.

The Hawai'i Supreme Court in Ka Pa'akai provided an analytical framework in an effort to effectuate the State's obligation to protect native Hawaiian customary and traditional practices while reasonably accommodating competing private interests. In order to fulfill its duty to preserve and protect customary and traditional native Hawaiian rights to the extent feasible, the LUC must—at a minimum—make specific findings and conclusions as to the following:

A. the identity and scope of "valued cultural, historical, or natural resources" in the petition area, including the extent to which traditional and customary native Hawaiian rights are exercised in the petition area;

B. the extent to which those resources--including traditional and customary native Hawaiian rights--will be affected or impaired by the proposed action; and

C. the feasible action, if any, to be taken by the LUC to reasonably protect native Hawaiian rights if they are found to exist.

See Ka Pa'akai, 94 Hawai'i at 47, 7 P.3d at 1084.

To fulfill these purposes outlined by Ka Paʻakai, the Cultural Impact Assessment has reviewed historical research and suggestions from contacts knowledgeable about traditional cultural practices which were conducted within the project area corridor and in the surrounding environs. The potential effect of the proposed project on cultural resources, practices or beliefs, its potential to isolate cultural resources, practices or beliefs from their setting, and the potential of the project to introduce elements which may alter the setting in which cultural practices take place has been analyzed, as required by the OEQC (1997).

ENVIRONMENTAL SETTING

The Island of Maui ranks second in size of the eight main islands in the Hawaiian Archipelago (Stearns 1966:155, Handy and Handy 1972:485). Maui Island was formed by two volcanoes, Puʻu Kukui in the west and Haleakalā in the east. Puʻu Kukui stands 1,215 meters (m.) above mean sea level (amsl.) is composed of large, heavily eroded amphitheater valleys that contain well-developed permanent stream systems that watered fertile agricultural lands extending to the coast. The isthmus between the two volcanoes is primarily composed of alluvial fans made of out-washed silts and gravels overlain by coralline sands blown inland from the coast. Lower sand strata have become firmly lithified, forming a soft rock known as eolianite (Stearns 1966:10).

PROJECT AREA

The proposed project area lies between coastal flats to the east and more mountainous terrain to the west along the medial reaches of the Maui isthmus between Wailuku and Māʻalaea (Figure 4). The project area is positioned between Wailuku (2 km north) and abuts the village of Waikapū to the south. The northern boundary of the project area is approximately 4 km inland of Kahului Harbor, while the southern boundary is approximately 8 km inland of Māʻalaea Bay (see Figures 1 through 3). The eastern perimeter of the project area abuts Honoapiʻilani Highway as it traverses from Wailuku toward Waikapū across the central Maui isthmus. The northern boundary is formed by the Old Waikapu Road and western border is defined by the Waihee Ditch (State Site 50-80-04-5197) and an access road. The project area is currently being used for agricultural purposes such as grazing and raising cattle.

Figure 4: Distant Photograph of Project Area (lighter colored grass at center roughly defines boundaries). View to West.

PROJECT AREA LANDFORM

A review of geotechnical reports for the parcel reveal that the slightly sloping project area lies in locations previously utilized for the cultivation of now-abandoned sugar cane. According to Cavanaugh (1995:2), who conducted geotechnical studies on the 450-acre Kehalani Mauka Subdivision (the parcel that borders Kuikahi Drive to the north), "site topography slopes down moderately toward the east at a gradient of 10 percent." The current project area is similar to where the existing terrain slopes steadily downward across the project area from west to east at a typical grade of 7 to 8 percent. Ground elevations range from approximately 115 meters (380 feet) amsl. to 137 meters (450 feet) amsl. A number of dirt roads, possibly associated with the commercial cultivation of sugar cane production, transect the project area. As is discussed more below, project area exclusively consists of tilled zone, fill, and alluvial sediments. To the east, near the Maui Lani development, sandy matrices were identified. Sandy matrices were not identified in the current study area. Likewise, neither archaeological nor geotechnical subsurface testing detected any sandy matrices in areas immediately to the east of Honoapiʻilani Highway (Monahan 2003) or north of Kuikahi Drive during the Kehalani Mauka Subdivision (Dega 2004).

Hydrology within the relatively dry project area is mostly in the form of historic irrigation modifications. Some of these modifications were the creation of a larger web of water conduits, drainages, and reservoirs, some built as early as 1905. No perennial streams run directly through the project area, and thus artificial ones had to be created for proper irrigation. By comparison, ʻĪao Stream runs west-east to the north of the proposed development while Waikapū Stream runs west-east to the south of the project area. Being located near these two major streams appears to have been beneficial for cultivation on the present parcel, at least during the Historic Period. As stated elsewhere in this report, several still-utilized irrigation ditches (i.e., Waihee Ditch, State Site 50-80-04-5197) are located in close proximity to the proposed project area, and a still-active larger reservoir, to the northeast of the project area, is linked to one of these ditches. The remnant irrigation ditches and reservoir not only point to massive landscape modification in the area during the Historic Period but also strongly infer the aridness of the area, which required large-scale water importation. Soil borings conducted during geotechnical analyses in a nearby project area failed to reveal the presence of the area's water table to at least 25 feet below the surface (Shimamoto 1995:4).

CLIMATE

Rainfall in this intermediate environment is very modest. The proposed project area receives an average annual rainfall of approximately 26 inches (660 mm) (Giambelluca et al. 2013), with much of this rainfall occurring during the winter months (November through April). Seasonal variation in rainfall amount follows normal orographic patterns for leeward-type areas of Maui.

Waikapū Ahupuaʻa is known for its wind and is referred to as "Waikapu I ka makani kokololio" (Waikapu of the gusty wind) (C.M Hyde cited in Sterling 1978:4-5). These strong winds and are also referred to in the ancient Chant of the Maui Winds as "The kokolio (gusty wind) is from Waikapu" (J.H Kanepuu 1867 cited in Sterling 1978:7).

SOILS

According to Foote et al. (1972: Sheet 100; Figure 5), the project area is comprised of soils of the Iao Series, specifically Iao clay, 3 to 7 percent slopes (IcB) and Iao silty clay, 3 to 7 percent slopes (IbB). Foote et al. (1972:46) describes soils of the Iao Series as well-drained volcanic soils which formed in alluvium. The Iao soils typically occur between 100 and 500 feet amsl. in areas receiving 25 to 40 inches of rainfall annually.

The eastern portion of the project area is comprised of IcB soils. A representative profile shows these deposits consisting of a 15 inch surface layer comprised of dark brown clay overlaying 45 inches of very dark brown, dark brown, and very dark brown clay and silty clay, which overlays a substratum comprised of clayey alluvium. In general, the IcB soils exhibit medium runoff, moderately slow permeability, and a slight to moderate erosion hazard. This type of soil is used for sugarcane cultivation and residential areas (Foote et al. 1972:46).

The western portion of the project area is comprised of the IbB soils, which exhibits a similar stratigraphic profile as the IcB soils. The IbB soils exhibiting a different soil texture in the surface layer and a different cobblestone content. Like the IcB soils, the IbB soils are utilized for the cultivation of sugarcane and residential developments (Foote et al. 1972:47).

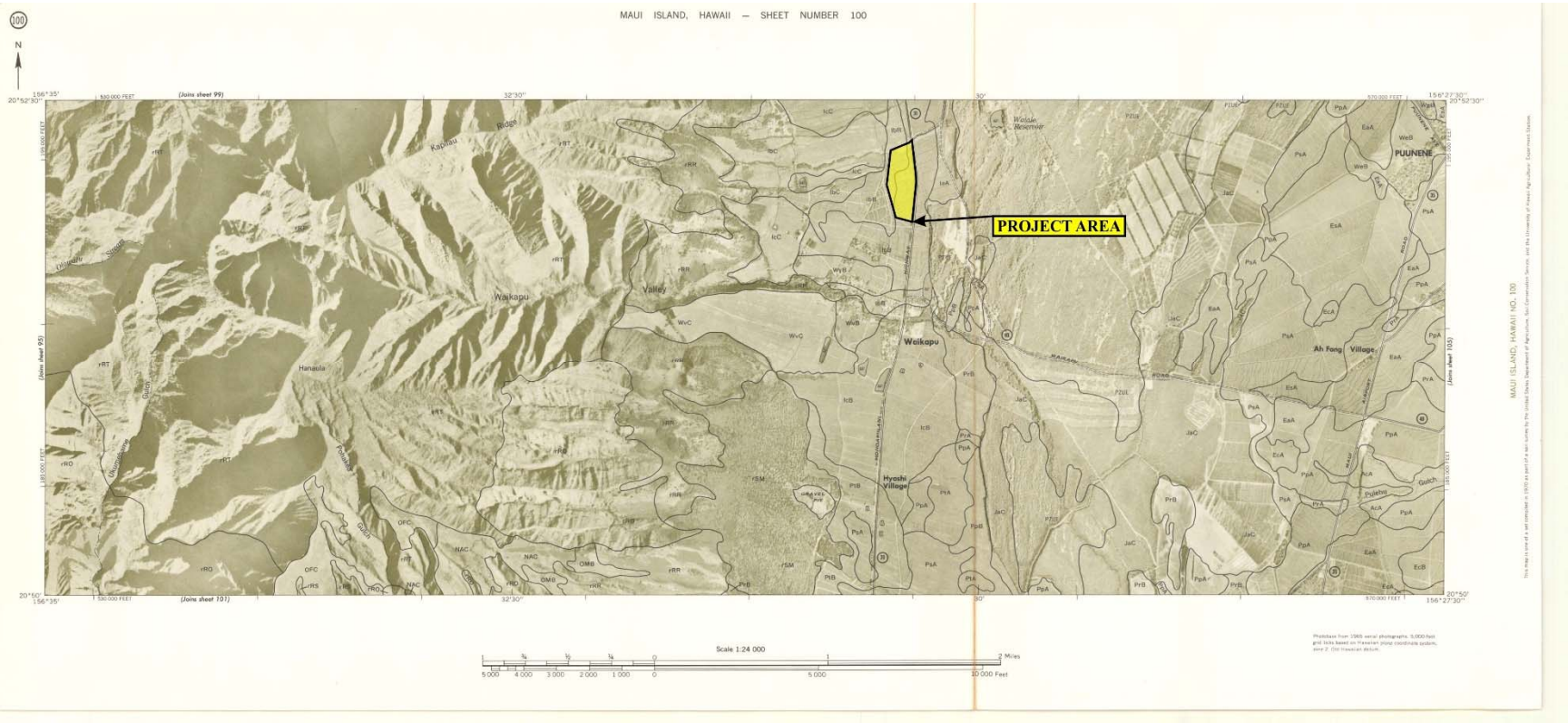

Figure 5: USDA Soil Survey (National Cooperative Soil Survey. Web Soil Survey.) Showing Soil Types within the Project Area and Surrounding Environs.

TRADITONAL AND HISTORICAL CULTURAL CONTEXT

Traditionally, the Hawaiian economy was based on agricultural production and marine exploitation, as well as raising livestock and collecting wild plants and birds. Extended household groups settled in various ahupuaʻa. During pre-Contact times, there were primarily two types of agriculture, wetland and dry land, both of which were dependent upon geography and physiography. River valleys provided ideal conditions for wetland *kalo* (*Colocasia esculenta*) agriculture that incorporated pond fields and irrigation canals. Other cultigens, such as kō (sugar cane, *Saccharum officinaruma*) and maiʻa (banana, *Musa* sp.), were also grown and, where appropriate, such crops as ʻuala (sweet potato, *Ipomoea batatas*) were produced. This was the typical agricultural pattern seen during traditional times on all the Hawaiian Islands (Kirch and Sahlins 1992, Vol. 1:5, 119; Kirch 1985).

PAST POLITICAL BOUNDARIES

Approximately 600 years ago, the Hawaiian population had expanded throughout the Hawaiian Islands to a point where large, political districts could be formed (Lyons 1903; Kamakau 1991). During the pre-Contact Period, Maui was divided into twelve districts (moku) (Sterling 1998:3). Following the Civil Code of 1859, the twelve districts were consolidated into four districts: Lāhainā, Wailuku, Makawao, and Hāna (Sterling 1998:3). Approximately 600 years ago, the Island of Maui was divided into twelve districts: Lāhainā, Kula, Honuaʻula, Kahikinui, Kaupō, Kīpahulu, Hāna, Koʻolau, Hāmākualoa, Hāmākuapoko, Wailuku, and Kāʻanapali (Sterling 1998:3; Figure 6). The division of Maui Island lands into districts and sub-districts was performed by a kahuna (priest, expert) named Kalaihaʻōhia, during the time of the aliʻi Kakaʻalaneo (Beckwith 1979:383; Fornander [1919-20, Vol. 6:248] places Kakaʻalaneo at the end of the 15th century or the beginning of the 16th century). Land was considered the property of the king or aliʻi ʻai moku (the aliʻi who eats the island/district), which he held in trust for the gods. The title of aliʻi ʻai moku ensured rights and responsibilities to the land but did not confer absolute ownership. The king kept the parcels he wanted, his higher chiefs received large parcels from him and, in turn, distributed smaller parcels to lesser chiefs. The makaʻāinana (commoners) worked the individual plots of land.

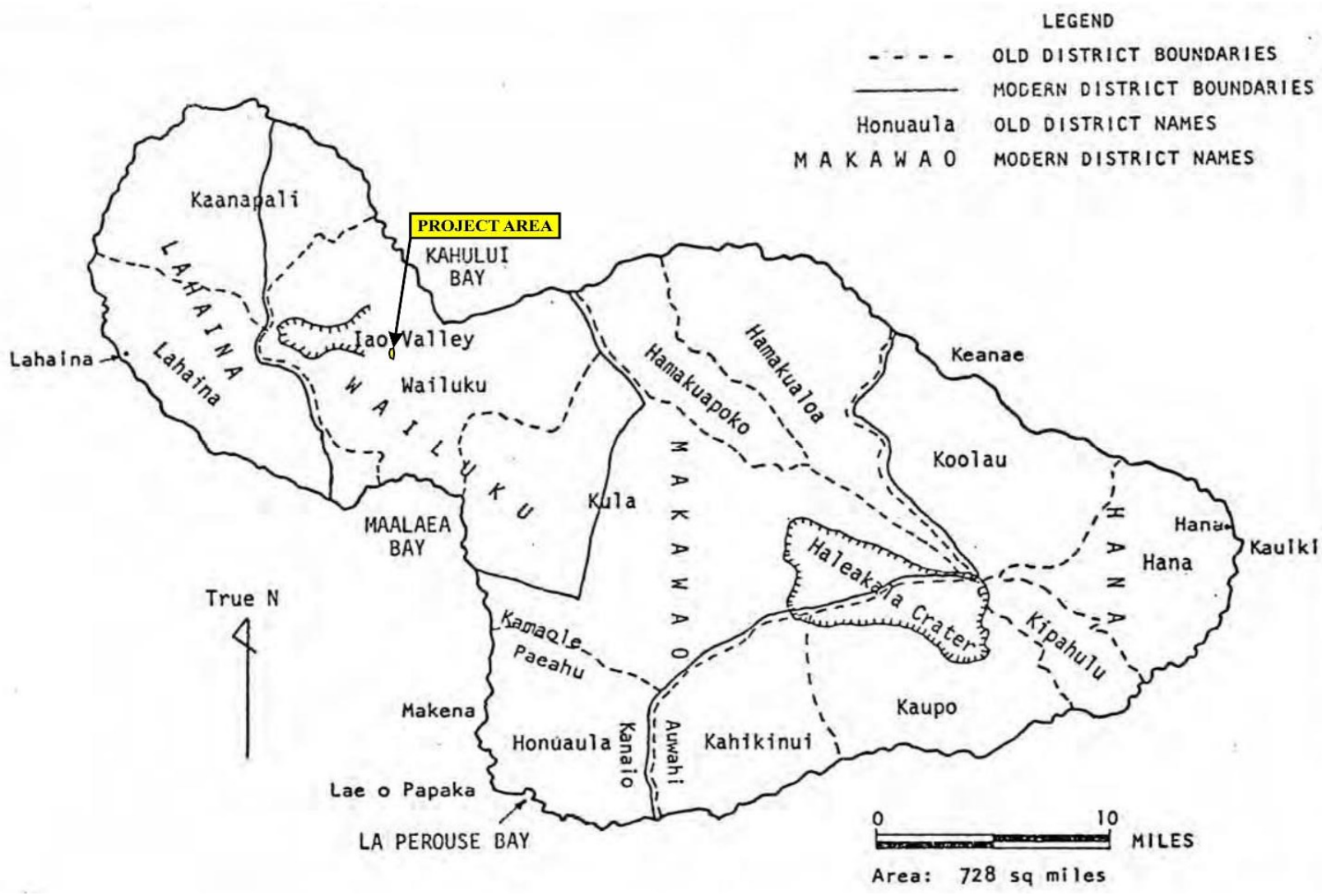

Figure 6: Traditional and Modern Districts of Maui (c. 1875; from Barrère 1975:31).

In general, several terms, such as moku, ahupuaʻa, ʻili or ʻili ʻāina were used to delineate various land sections. A moku contained smaller land divisions (ahupuaʻa), which customarily continued inland from the ocean and upland into the mountains. Extended household groups living within the ahupuaʻa were therefore, able to harvest from both the land and the sea. Ideally, this situation allowed each ahupuaʻa to be self-sufficient by supplying needed resources from different environmental zones (Lyons 1875:111). The ʻili ʻāina or ʻili were smaller land divisions next to importance to the ahupuaʻa and were administered by the chief who controlled the ahupuaʻa in which it was located (Lyons 1875: 33; Lucas 1995:40). The moʻoʻāina were narrow strips of land within an ʻili. The land holding of a tenant or hoa ʻāina residing in an ahupuaʻa was called a kuleana (Lucas 1995:61).

TRADITIONAL SETTLEMENT PATTERNS

Archaeological settlement pattern data suggests that initial colonization and occupation of the Hawaiian Islands first occurred on the windward shoreline areas of the main islands between A. D. 850 and 1100, with populations eventually settling in drier leeward areas during later periods (Kirch 2011). Although coastal settlement was dominant, native Hawaiians began cultivating and living in the upland kula (plains) zones. Greater population expansion to inland areas began around the 14th century and continued through the 16th century. Large scale or intensive agriculture was implemented in association with habitation, religious, and ceremonial activities.

In Hawaiʻi, much of the coastal lands were preferred for chiefly residence. Easily accessible resources such as offshore and onshore fishponds, the sea with its fishing and surfing—known as the sports of kings, and some of the most extensive and fertile wet taro lands were located in the coastal areas (Kirch and Sahlins, 1992 Vol. 1:19). Inland resources necessary for subsistence could easily be brought to the aliʻi residences on the coast from nearby inland plantations. The majority of farming was situated in the lower portions of stream valleys where there were broader alluvial flat lands or on bends in the streams where alluvial terraces could be modified to take advantage of the stream flow. Dry land cultivation occurred in colluvial areas at the base of gulch walls or on flat slopes (Kirch 1985; Kirch and Sahlins 1992, Vol. 2:59).

To the northwest of the current project area lies ʻĪao Valley, one of the most important locations in the area for prehistoric activity. Connolly (1974:5) states that the pre-Contact valley [ʻĪao] had a large population base with "most people residing in a settlement near ʻĪao Needle," just north of the project area. Supposedly, the subsistence base of this population consisted of fish and taro, with Kahului Harbor and the coast close by and loʻi systems lining ʻĪao Valley's

stream banks. Pre-Contact irrigation ditches or ‘auwai were utilized in taro cultivation (Connolly 1974:5). Sterling (1998:86) adds that two ‘auwai within the valley:

> …have existed immemorially and were evidently constructed for the purpose of irrigating kalo on the plains which stretch away to the northward and southward of the [‘Īao] river. Several minor ‘auwai have, since ancient times, tapped the river at different points lower down and spread the water through the lands in the gulch on either side of the river bed.

Handy in Sterling (1998:63) further notes that “… [f]rom Waihee and Wailuku Valley, in ancient times, was the largest continuous area of wet taro cultivation in the islands." Cheever (1851:124) writes, "[t]he whole valley of Wailuku, cultivated terrace after terrace, gleaming with running waters and standing pools, is a spectacle of uncommon beauty to one that has a position a little above it."

No discussion of Wailuku District is complete without mentioning the important heiau complex above ‘Īao Valley near its seaward terminus. During the mid to late 18th century, the Halekii-Pihana heiau complex was supposedly designed by a Hawaiian named Kiha (Sterling 1998:89). These monuments designated as State Site 50-50-04-522 are described as very important heiau within Hawaiian history. Yent (1983:7) notes the life cycle of the ali‘i was represented here. It was the place where Kamehameha I’s wife (Keōpuolani) was born, Kahekili lived, and Kekaulike died. Thrum (1909:46) reported that Kamehameha I evoked his war god at Pihana Heiau after his warriors defeated Kalanikupuli’s forces during the Battle of ‘Īao in 1790. The two heiau are primarily associated with Kahekili, who is connected with the Halekii-Pihana complex between c. A.D. 1765 and 1790, and Kamehameha, during his conquering of Maui in 1792 (Yent 1983:18).

PRE-CONTACT PERIOD (PRE-1778)

The District of Wailuku inhabits the eastern side of the West Maui Mountains (Mauna Kahalawai) and occupies the isthmus through the center of the island to the coastal reaches in Kahului, on the north, and Mā‘alaea, on the south. Wailuku District is frequently mentioned in historical texts and oral traditional accounts as being politically, ceremonially, and geographically important areas during the pre-Contact Period (Cordy 1981, 1996; Kirch 1985). The number of heiau constructed in the Wailuku area point to its ceremonial and religious importance during the pre-Contact Period (pre-1778).

The history of the ahupua‘a of Waikapū, Waihe‘e, Waiehu, are Wailuku are quite intertwined. These four ahupua‘a are collectively known as the Nā Wai ‘Ehā, or “the four

waters" (Handy and Handy 1972:497, Kameʻeleihiwa 1992; Pukui and Elbert 1986; and Creed 1993). This area is …comprised the four great valleys [Waiheʻe, Waiehu, Wailuku, and Waikapū] which cut far back into the slopes of West Maui and drain the eastward watershed of Puʻu Kukui and the ridges radiating northeastward, eastward, and southeastward from it" (Handy and Handy 1972:496). This area was the second of the traditional five major population centers on the Island of Maui (Handy and Handy 1972:272).

Traditionally, the lands of Waiheʻe and Waiehu, now part of Wailuku District, "were independent of any of any *moku* and are listed in the *Book of the Mahele* as being in 'Puali Komohana,' i.e., West Isthmus" (R.D. King in J.W. Coulter 1935 cited in Sterling 1998:3). R.D. King in J.W. Coulter 1935 cited in Sterling 1998:3) further states that Wailuku and Waikapū Ahupuaʻa also were independent of any moku (district), and were referred to as Na Poko, with "…Na Poko in this case meaning a smaller division of land." W. D. Alexander (1891 cited in Sterling 1998:63) stated that the ahupuaʻa of Waiheʻe, Waiehu, Wailuku, and Waikapū were grouped into a district in modern times. R.D. King (in J.W. Coulter 1935 cited in Sterling 1998:3) explains, "…with reference to the *ahupuaa* of Waihee, Waiehu, Wailuku, and Waikapu, on the map it was necessary to form a new district and call it Wailuku [because] Nawaiehu, 'the four waters,' [was] too cumbersome and ill understood."

Waikapū Ahupuaʻa once was renowned for "…its majesty and splendid living, whose native songs gather flowers in the dew and weave wreaths of ohelo berries" (S.W. Nailiili in Sterling 1998:93). Waikapū is landlocked. However, during the pre-Contact Period, the abundant waters of Waikapū Stream "were diverted into *loʻi* and its overflow was dissipated on the dry plains of the broad isthmus between West and East Maui" (Handy and Handy 1972:496).

Remnants of the vast expanse of loʻi systems once supported by Waikapū Stream could still be seen in the 1930s at the time of E.S. Craighill Handy's initial investigation of Hawaiian horticulture (Handy and Handy 1972:496). In the 1930s, many of these areas were subsequently used by the Japanese for truck farming, to cultivate Japanese dry taro, and as ponds "planted with lotus for their edible seed" (Handy and Handy 1972:497).

Sterling (1978:242) surmises that the fishermen from the region of Kula, which was too dry for the cultivation of taro, supplemented their dietary staple of sweet potato with poi, which was made from taro produced in Waikapū and Wailuku Ahupuaʻa and carried "across the plain" (Sterling (1978:242). In addition to taro, Waikapū Ahupuaʻa was also a favorable local for the

breadfruit tree (‘ulu, *Artocarpus altilis*), which grew quite abundantly between Olowalu and Waikapū (Sterling (1978:17).

THE MĀHELE

During the mid-1800s, extreme modification to traditional land tenure occurred throughout all of the Hawaiian Islands. The transition from traditional Hawaiian communal land use to private ownership and division was commonly referred to as the Māhele (Division). The Māhele of 1848 set the stage for vast changes to land holdings within the islands as it introduced the foreign (western) concept of land ownership to the Islands. Although it remains a complex issue, many scholars believe that in order to protect Hawaiian sovereignty from foreign powers, Kauikeaouli (Kamehameha III) established laws changing the traditional Hawaiian system of land tenue, which were intended to keep lands in the hands of the Hawaiians, but resulted in providing an opportunity for foreigners to obtain land (Kuykendall Vol. I, 1938:145 footnote 47, 152, 165–166, 170; Daws 1968:111; Kelly 1983:45; Kame‘eleihiwa 1992:169–170, 176).

The Māhele of 1848 divided Hawaiian lands between the king, the chiefs, the government, and began the process of private ownership of lands. The subsequently awarded parcels were called Land Commission Awards (LCAs). Once lands were made available and private ownership was instituted, the maka‘āinana (commoners) were able to claim the plots on which they had been cultivating and living. These claims did not include any previously cultivated but presently fallow land, stream fisheries, or many other resources necessary for traditional survival (Kelly 1983; Kame‘eleihiwa 1992:295; Kirch and Sahlins 1992). If occupation could be established through the testimony of two witnesses, the petitioners were awarded the claimed LCA and issued a Royal Patent after which they could take possession of the property (Chinen 1961:16).

Once Article IV of the Board of Commissioners to Quiet Land Titles was passed in December 1845, the legal process of private land ownership was begun. The land division, called the Māhele, began in 1848. As stated above, the lands of the kingdom of Hawai‘i were divided among the king (crown lands), the ali‘i and konohiki, and the government.

Once lands were made available and private ownership was instituted, native Hawaiians, including the maka‘ainana (commoners), were able to claim land plots upon which they had been cultivating and living, through the Kuleana Act of 1850. The process for foreigners to acquire land was through the Alien Landownership Act of 1850.

Oftentimes, foreigners were simply just given lands by the aliʻi. However, in the case of commoners, they would only make claims only if they had first been made aware of the foreign procedures (kuleana lands, land commission awards). These claims could not include any previously cultivated or currently fallow land, okipū, stream fisheries, or many other natural resources necessary for traditional survival (Kameʻeleihiwa 1992:295; Kirch and Sahlins 1992). Awarded parcels were labeled as Land Commission Awards (LCAs). If occupation could be established through the testimony of witnesses, the petitioners were issued a Royal Patent number and could then take possession of the property. Commoners claiming house lots in Honolulu, Hilo, and Lāhainā were required to pay commutation to the government before obtaining a Royal Patent for their awards (Chinen 1961:16).

In January 1846, land was made available for eventual ownership to the commoners (makaʻāinana). For native Hawaiians that had been cultivating and living on the lands, lengthy and costly procedures enabled them to possibly claim some of the plots. These claims could not include any previously cultivated or presently fallow land, stream fisheries or many other resources necessary for traditional survival (Kelly 1983; Kameʻeleihiwa 1992:295; Kirch and Sahlins 1992). If occupation could be established through the testimony of two witnesses, the petitioners were awarded the claimed Land Commission Award (LCA), issued a Royal Patent number (RP), and could then take possession of the property (Chinen 1961: 16).

LAND COMMISSION AWARDS (LCAS)

During the Māhele, Wailuku District was declared Crown Land and numerous Land Commission Awards, approximately 100 were awarded for Waikapū Ahupuaʻa (Creed 1993). A handful of foreigners (i.e., Anthony Catalena, James Louzada, and E. Bailey) gained control of large parcels of lands that would later be used for mass cultivation of sugar. Significantly, the majority of LCAs were awarded to Hawaiians, a gauge that can be used to measure pre-Contact settlement (Creed 1993:38). In Waikapū, the LCAs reflect loʻi cultivation, kula lands, and house sites. These keep with the overall LCA pattern of the Waikapū-Wailuku area intimating taro cultivation in association with permanent residences. Such a pattern is historically documented from 1848, but likely extended deeper into the past.

The Waihona ʻAina Database (2019) listed a total of 138 claimed LCAs in Waikapū Ahupuaʻa. The Office of Hawaiian Affairs Kipuka Database (2019) listed five (5) claimed LCAs with lands within the project area are listed in Table 1 (Figure 7).

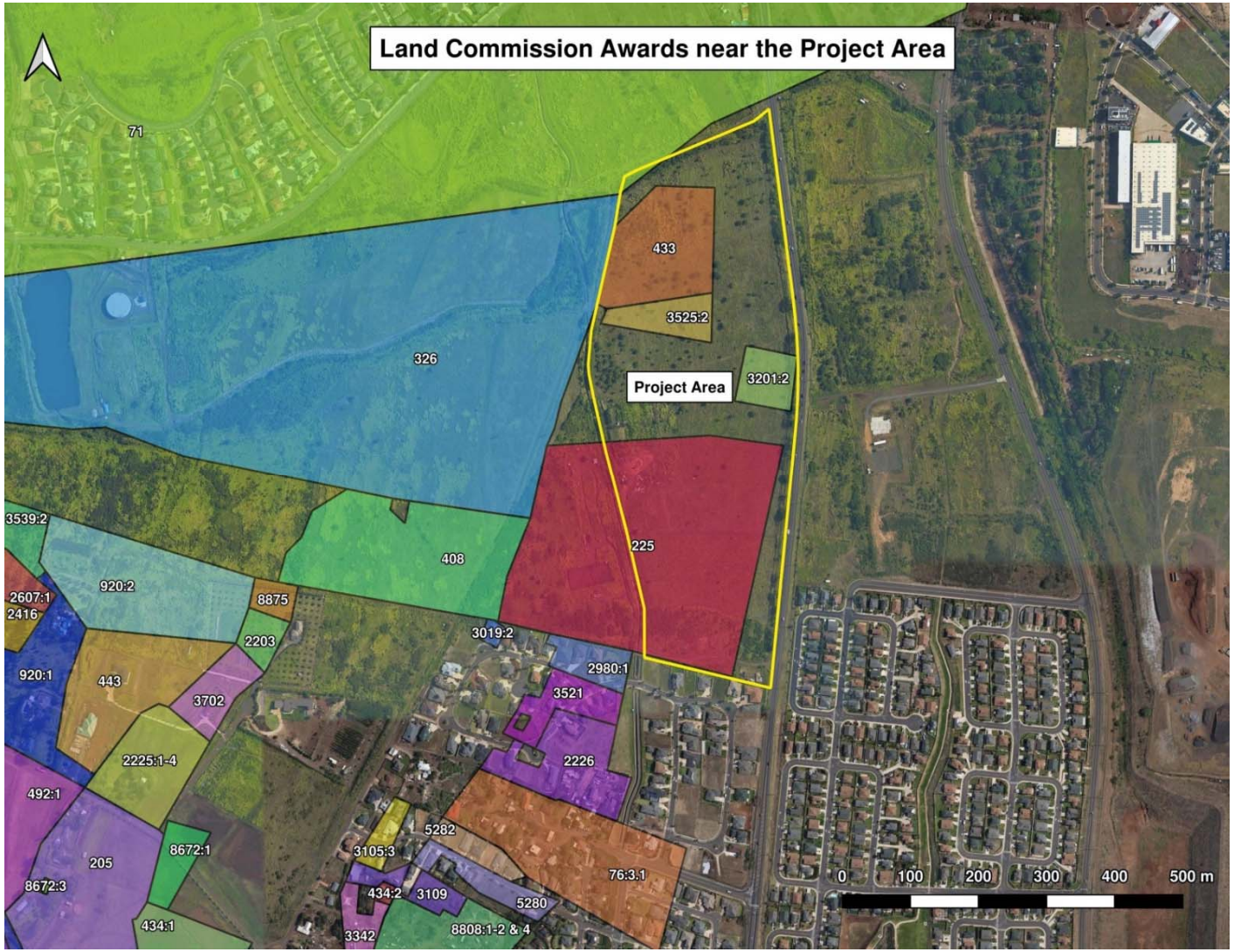

Figure 7: Aerial Photograph (Google 2018; Imagery Date 7/20/2016) Showing the Locations of Land Commission Awards within and Adjacent to the Project Area (from the OHA Kipuka Database 2019

Table 1: Land Commission Awards within the Project Area.

Claimant	LCA/RP	Year	Awarded	Acreage	‘Āpana	‘Ili	Use
Crowningberg, William (Wilama)	433/1111	1852	Yes	5.93	1	Pohakoi	
Humphreys, William	326/7659	1883	Yes	131.3	1	Awikiwiki, and Puhiawaawa	
Keliiolelo	3525:2/3121	1856	Yes	1.66	1	Awakamanu	
Louzada, James	225/7658	1883	Yes	26.1	1	Pualinapao	Farmland
Manu	408/3540	1857	Yes	11.75	1	Pohakuloa	Taro lo‘i
McLane, William	3201:2/2775	1856	Yes	5.45	2	Kapalaalaea and Awakamanu	
Mehao	3019:2/3353	1864	Yes	0.83	2	Ohia and Pilipili	Taro lo‘i
Nowlein, Michael J.	71/4549	1863	Yes	303.5	3	Papakapu and Kapoi	
Pakele	2980:1/5356	1863	Yes	1.8	2	Kaaa and Olohe	mo‘o, lo‘i, hala trees, and houses.

LAND GRANTS

In some cases, the Hawaiian government sold lands to generate income for the Kingdom. These lands were referred to as land grants. According to the Waihona Aina Online Database (2019):

> At the time of the Mahele, some of the land was the King’s own land which later became known as Ceded Lands. Other lands in the possession of ali‘i were returned to the King in exchange for Commutation of property the ali`i kept. Some of these returned lands became Government lands and were sold by the government to generate income for the Kingdom, since the King gave up his traditional right to collect taxes and goods following the Mahele.

The Office of Hawaiian Affairs Kipuka Database (2019) listed nine (9) Land Grants with lands within or adjacent to the project area are listed in Table 2 (Figure 8 and Figure 9).

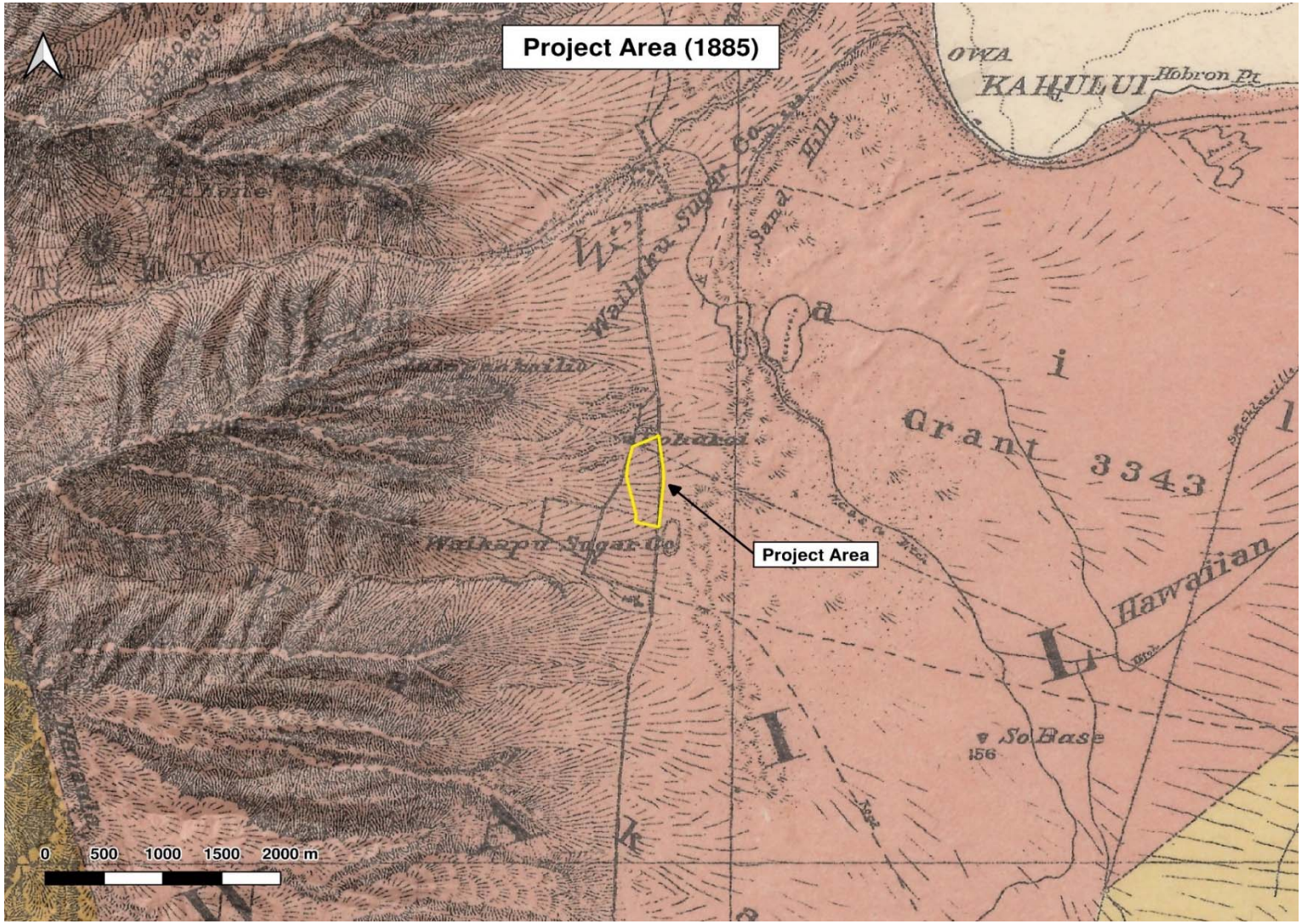

Figure 8: Historic (1885) Map Showing Land Grants within and Adjacent to the Project Area and Vicinity in the late 1800s (F.S. Dodge. Register Map No. 1779)

Table 2: Land Grants within and Adjacent to the Project Area.

Grantee	Land Grant	Year	Acreage	‘Ili
Cockett, Mrs. Beke	2108:6	1856	7.73	Kaaa
Cornwell, Henry	3152	1875		Ohia
Crowningberg, David	2952	1864	7.44	
Flores, Manuel	1680:1	1855	7.07	Pilipili
Louzada, Jas & H Cornwell	2951	1864	17.1	
Richardson, J	2070	1856	15.1	
Ross, John	2005	1856	9.1	Awakamanu
Spreckles, Claus	3343	1882	24,000	

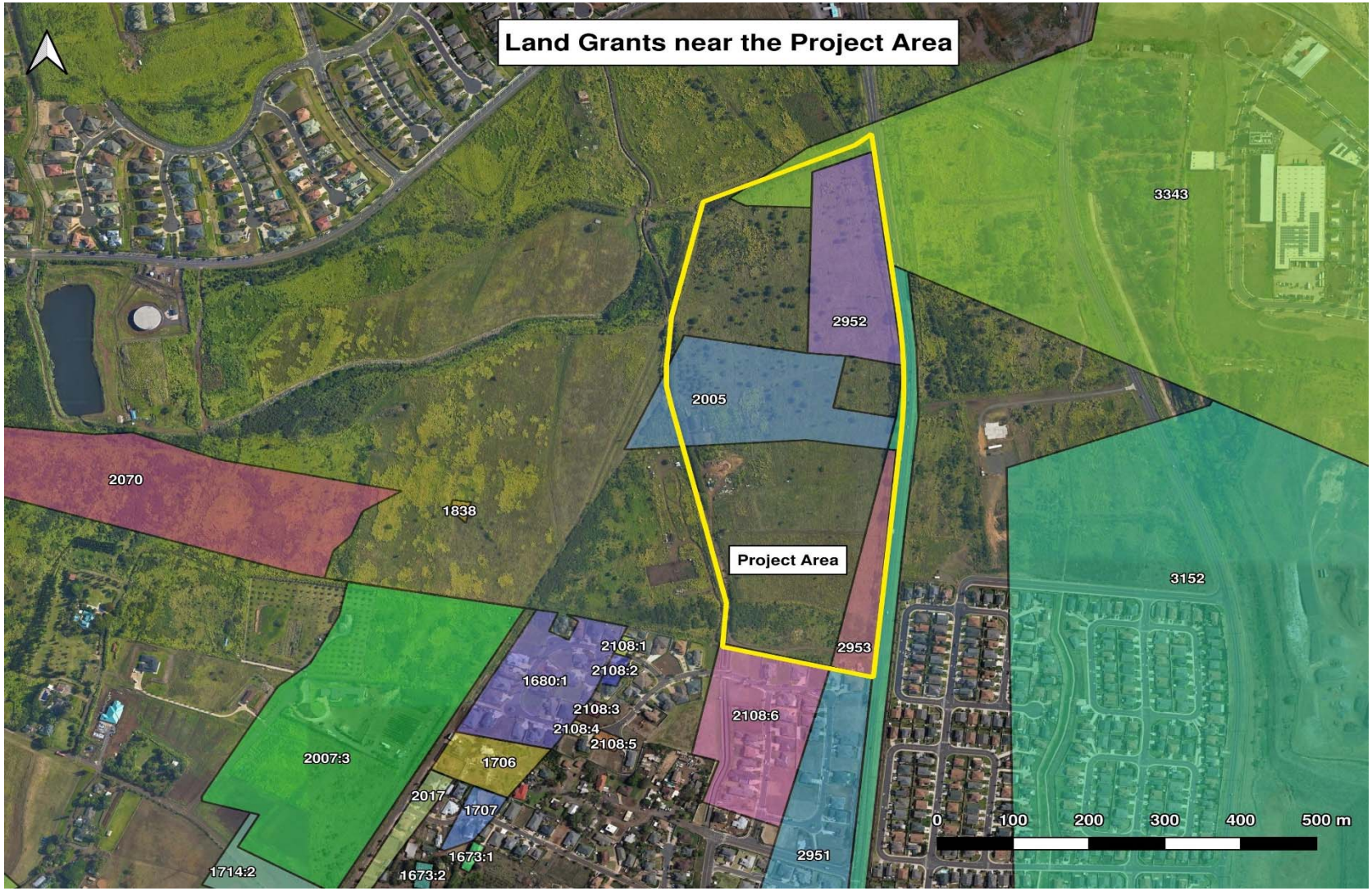

Figure 9: Aerial Photograph (Google 2018; Imagery Date 7/20/2016) Showing the Locations of Land Grants within or Adjacent to the Project Area (Kipuka Online Database 2019).

Historically, Waikapū Ahupuaʻa belonged to the government and was overseen by the Department of Education ((in J.W. Coulter 1935 cited in Sterling 19978:95). According to Sterling (1998:95):

> In 1875 the Board of Education sold at auction the "Land known as the Ahupuaa of Waikapu, saving grants hitherto made within said ahupuaa, or sales by the Board of Education," to Henry Cornwell, the Government issuing a royal patent to the above terms without survey or statement of area. Mr. Cornwall afterward sold to Claus Spreckels and others the part known as Waikapu Commons.

HISTORIC PERIOD (POST-1778)

Contact with the western world occurred on January 18, 1778, with the arrival of Captain James Cook in the Hawaiian Islands during his third voyage into the Pacific Ocean (Daws 1968:1). This section discusses traditional life after Cook's arrival.

As the sugar industry developed in the mid-1800s, sugar cane took over the traditional taro lands (Handy and Handy 1972:272). During this period, more and more land was leased or purchased for what had become an intensely profitable endeavor. Water was an issue, but the water from Waikapū Stream was "utilized for irrigating a great acreage of sugar cane" (Handy and Handy 1972:496). In 1876, the Hamakua Ditch Company (Alexander and Baldwin) was formed and within two years was bringing water from the streams of Haleakalā to four plantations in East Maui (Dorrance and Morgan 2000).

Also in 1876, the Reciprocity Treaty's ratification notice arrived by steamer, along with Claus Spreckles, California's sugar magnate, who viewed the sugar situation and decided two years later to turn the dry plains of Maui into a garden of cultivated cane (Van Dyke 2008). By various questionable means, he was able to acquire half interest in 16,000 acres of land in Waikapū commons and was able to lease 24,000 acres of Crown Lands on the Wailuku plains in central Maui for $1,000 (Van Dyke 2008).

Having seen the success of the recently completed Hamakua Ditch bringing mountain water to the otherwise dry, and unproductive East Maui fields, and having lost his battle to control this ditch water, Spreckles formed the Hawaiian Commercial Company and decided to construct a ditch system of his own on East Maui above the Hamakua Ditch, for his newly acquired land (Wilcox 1996). Spreckles' Haiku Ditch extended 30 miles, from Honomanū Stream to the Kīhei boundary and the water was used to irrigate his cane lands in the central Maui plains (Wilcox 1996).

In 1882, Spreckles reorganized his company into a California corporation, called Hawaiian Commercial and Sugar Company, or HC&S (Wilcox 1996). Later he constructed another water

system known as the Waihee Ditch in West Maui. It brought water from 15 miles away, starting at an elevation of 435 feet, to Kalua where it emptied into HC&S Waiale Reservoir (Wilcox 1996).

The ensuing years brought trials and tribulations between Spreckles, his associates, and the Maui sugar planters, resulting finally in the 1898 sale of his HC&S stock, at an all-time low, to James Castle in partnership with Alexander and Baldwin, and the departure of Claus Spreckles from Hawai‘i (Dorrance and Morgan 2000; Wilcox 1996).

Thomas Hogan built the first western building, a warehouse, near the shoreline of Kahului in 1863 (Clark 1980). The dredging of Kahului harbor through the years filled in large sections of the ponds, eventually blocking the outlet to the sea.

As the sugar industry developed, Kahului became a cluster of warehouses, stores, wheelwright, and blacksmith shops close to the harbor. A small landing was constructed in 1879 to serve the sugar company (Clark 1980). In the late 1800s, Kahului possessed a new custom house, a saloon, Chinese restaurants, a railroad and a small population of residents. Kahului's main focus was shipping. The 1900 bubonic plague outbreak destroyed much of the town as officials decided to burn down the Chinatown area in an effort to contain the epidemic. The Chinese, Japanese and Hawaiian residents were displaced by this action. To further ensure isolation, authorities encircled the entire town with corrugated iron rat-proof fences, which ended the spread of the plague (Bartholomew and Bailey 1994). The Kahului Railroad Company built a 1,800-foot long rubble-mound breakwater in 1910 and dredging of the harbor now allowed ships with a 25-foot draft to dock at the new 200-foot wharf (Clark 1980).

Henry Baldwin and Lorrin Thurston formed the Kihei Sugar Company in 1899, to grow cane on their ranch lands in south central Maui, which included the project area (Dorrance and Morgan 2000). It was sent to the mill at Pu‘unēnē to be ground, but, although production was high, it was not enough to cover the costs (Dorrance and Morgan 2000).

After the annexation in 1898, some of the planters on Maui, including Alexander and Baldwin, had decided to combine plantations to reap maximum profit. They formed the Maui Agricultural Company, a co-partnership that initially encompassed seven plantations and two mills. In 1904, five new plantations became part of the Maui Agricultural Company, as Kula Plantation Company, Makawao Plantation Company, Pulehu Plantation Company, Kailua Plantation and Kalianui Plantation Company were newly formed by carving up the unprofitable Kihei Plantation land (Dorrance and Morgan 2000). Maui Agricultural Company merged with HC&S in 1948 (Dorrance and Morgan 2000).

Land use in Wailuku and Waikapū Ahupuaʻa in the mid-19th and early 20th century was largely devoted to the sugar industry. During the 1860s, the sugar business was growing, with plantations and mills at Wailuku, Waiheʻe, Waikapū, and Haʻikū. Many of the plantation camps associated with these mills were centered in the Puʻunēnē, Kahului, and Wailuku area (see Denham *et al.* 1992:16). Hopoi Camp is said to have been located near Hopoi Reservoir. Hopoi Reservoir was constructed by at least by 1922, when references to Hopoi Camp occurred on an area map. Historic utilization of the Waikapū-Wailuku landscape near the project area focused on industrial-levels of cultivating sugar cane and pineapple. Water was channeled from traditional sources (e.g., Waikapū Stream, western aquifers or springs) through plantation lands. Both local and imported workers operated on these plantation lands and the area maintained fair population density. These former sugar cane and pineapple lands are now being reclaimed through residential developments and industrial baseyards.

WAHI PANA (LEGENDARY PLACES)

"Wahi Pana" can be defined as celebrated or noted places or locations (Pukui and Elbert 1986:313, 376), and refers to legendary places or landmarks of historical significance. These places of note have distinctive features (i.e., mountain peaks, streams, wind, rain, etc.) that are given specific names through which the history of an area is passed down from generation to generation through chants, legends, and songs.

There are several legends associated with the meaning of the name "Waikapū." According to several accounts (Handy and Handy 1972:497, Sterling 1998:93-94, and Pukui et al. 1976:223), the name "Waikapū" (Water of the Conch) refers to an ancient cave in the area where a famous conch shell (pū) was hidden until it was stolen by Puapua-lenalena (a supernatural dog).

According to W. K. Kaualililehua (*Ka Nupepa Kuokoa,* Sept 21, 1872 cited in Sterling 1998:93-94), the conch "sounded all the time, unseen by the public, but a prophet from Kauai listened for it" and came looking for it. On a cliff above the stream and opposite the cave was a dog named Puapualenalena who had also heard the conch and was searching for it. However, those that guarded the conch were very attentive and so far; the dog had not located it:

> The owners of the conch did not believe, perhaps, that any supernatural being would succeed in taking it away, so they tried to be a little careless. It was not taken, but on the day that Pualenalena did get it away, they had been utterly careless. After he took it, it sounded no more to this day. It used to be heard everywhere in these islands and was annoying to some people. From this conch, the whole of the place was named Waikapū (Water of the conch). This is the legend of how it received its name and is a place much visited by strangers who wish to see it [W. K. Kaualililehua (Ka Nupepa Kuokoa, Sept 21, 1872 cited in Sterling 1998:93-94].

Pukui et al. (1974:223) state "Waikapū" literally translates to "water [of] the conch." (Pukui et al. 1974:223) further state that the meaning is associated with the following legend:

> A conch in a cave here could be heard everywhere in the Hawaiian Islands until it was stolen by a supernatural dog, Puapua-Ienalena, yellow tail feathers

Sterling (1998:93) offers two alternative origins of the name "Waikapū." In one account, the area known as "Nā Wai Ehā" was renowned for the battles fought there; the name Waikapū (the water where the conch was blown) referred to a conch shell that was blown to announce the commencement of a battle (C. W. Stoddard 1894 in Sterling 1998). In another account (H. T Cheever 1851 in Sterling 1998:63), "Waikapū" (Forbidden Water) refers to the time Kamehameha I, the Conqueror, beached his canoes at Kalepolepo and placed a kapu (taboo, restriction) on the nearest stream (Stoddard in Sterling 1998:63). Although Waikapū Stream is not the closest stream to Kalepolepo, it does drain into Keālia Pond, and it may have been the closest stream with flowing water at the time of Kamehameha's landing (Sterling 1998:63).

Oral traditions preserved by Fornander (1969) and Kamakau (1963) contribute to our knowledge of Waikapū. According to Fornander (1969:153), the battle of Ahulau ka piipii i Kakanilua featuring the elite 'Ālapa warriors of Kalaniopu'u was fought in 1776 on the sand hills southeast of Wailuku:

> Taking part of his forces around by water, *Kalaniopuu* landed again at Kiheipukoa, near the Kealia or salt marsh between Kalepolepo and Mā'alaea…The detachment or regiment known as the *Alapa*, mustering eight hundred men, was selected for this hazardous expedition, and with high courage they started across the isthmus of Kamaomao, now known as the Waikapu common, determined, as the legend says, "to drink the waters of the Wailuku that day." This regiment was considered the bravest and best of *Kalaniopuu's* army, every man in its ranks being a member of "*la haute noblesse*" of Hawaii. They are said to have all been of equal stature and their spears of equal length; and the legend represents their appearance-with their feather cloaks-reflecting the sunshine and the plumes of their helmets tossing in the wind-as a gorgeous and magnificent spectacle…Offering no resistance to the enemy while crossing the common, *Kahekili* distributed his forces in various directions on the Wailuku side of the common, and fell upon the Hawaii *corps d'arnée* as it was entering among the sandhills south-east of Kalua, near Wailuku. After one of the most sanguinary battles recorded in Hawaiian legends and deeds of valor …the gallant and devoted Alapa were literally annihilated; only two out of the eight hundred escaped alive to tell Kalaniopuu of this Hawaiian Balaclava….

In a similar version, Kamakau (1963:65–86) recounts:

> The Alapa were led by Inaina, Kua'ana, Kane-ha'i-lua, and Keawe-hano. There were 800 of them, all expert spear-point breakers, every one of whose spears went straight

> to the mark, like arrows shot from a bow, to drink the blood of a victim. Across the plains of Puʻuʻainako and Kamaʻomaʻo shone the feather cloaks of the soldiers, woven in the ancient pattern and colored like the hues of the rainbow in red, yellow, and green, with helmets on their heads whose arcs shone like a night in summer when the crescent lies within the moon…Said Ka-leo-puʻupuʻu to Kahekili, "the fish have entered the sluice; draw in the net." Like a dark cloud hovering over the Alapa, rose the destroying host of Ka-hekili seaward of the sandhills of Kahaluʻu, the "smoke head" (*poʻouahi*) and the "red coconut" (*niuʻula*) divisions. They slew the Alapa on the sandhills at the southeast of Kalua. There the dead lay in heaps strewn like *kukui* branches; the corpses lay heaped in death; they were slain like fish enclosed in a net. This great slaughter was called *Ahulau ka Piʻipiʻi Kakanilua.*

Although it has been said that Waikapū Valley contained "many temples and sites", most of their locations were not recorded (Ashdown 1970:58). Thrum (1917) refers to a heiau that was reportedly located on Puʻu Hele, but he did not confirm this. Thrum (1917) also mentions two *heiau* located below the road but again, they were not investigated, and their name and function had been lost (1916). One moʻlelo recounting the origin of its name was published in *Ka Nupepa Kuokoa* in 1872:

> The Wai-Ka-pū now being discussed was named by some of the ancients and it remains by this name to this day. This place, Waikapu, has a cave away up the stream, about a mile or more from the village. On the left side of the stream is a cave and in the cave was the conch. It sounded all the time, unseen by the public, but a prophet of Kauai listened for it and came to seek with the idea of finding it…

According to Manu Moses (in Sterling 1998:94), there is a legend associated with the aliʻi Kihapiʻilani that refers to an "adze rock" which marked the boundary between Wailuku and Waikapū Ahupuaʻa:

> As Kihapiilani and his wife traveled on, they saw many people filling the road. At the stream of Wailuku (Waikapu?) the people were innumerable. Said the wife to the chief, "What are the people doing who are congesting the road? Kihapiilani said, "It would seem it has something to do with adzes.
>
> When they arrived at this place, they decided to go from the place where it was so crowded with people. There was a huge rock directly above the stream of Waikapu, mauka of the road which still passes at this time. This adze rock is the boundary between Wailuku and Waikapū Ahupuaa and it remains there to this day.

PREVIOUS ARCHAEOLOGY

Archaeological studies in the greater area began in the early 20th Century by T. Thrum (1909), J. Stokes (1909–1916), and W. M. Walker (1931), under the auspice of the Bernice Pauahi Bishop Museum. These studies are briefly discussed below, and the project locations are presented in Figure 10.

The earliest reported archaeological work conducted in the District of Lāhainā, was carried out by Winslow Walker (1931), under the auspices of the Bishop Museum, as part of an island-wide archaeological survey of Maui. Thrum (1909-1918:59) mentions that two heiau may have possibly existed within the ahupuaʻa of Waikapū, but evidence of the two sites no longer remains.

The Bernice Pauahi Bishop Museum (Rotunno-Hazuka et al. 1995) conducted archaeological subsurface testing at the Maui Lani Development Property which resulted in the identification of multiple traditional pre-Contact native Hawaiian burials, subsequently designated State Site 50-50-04-2797.

Aki Sinoto Consulting (Pantaleo and Sinoto 1996) conducted archaeological subsurface sampling at the Maui Lani Development. Findings included one concentration of multiple burials and isolated individual burials located at the tip of the dune (in the highest elevational locations).

Scientific Consultant Services, Inc. (Dega 2003) conducted an Archaeological Inventory Survey of 100 acres located in Wailuku Ahupuaʻa, Wailuku District, Maui Island, Hawaiʻi [TMK: (2) 3-5-001: portion of 001]. Three historic sites were documented during this Inventory Survey: State Site 50-50-04-5473, Hopoi Reservoir; State Site 50-50-04-5474, Kama Ditch; and State Site 50-50-04-5478, an isolated basalt adze. Subsurface testing yielded negative findings.

Scientific Consultant Services, Inc. (Monahan 2003) conducted an Archaeological Inventory Survey on two undeveloped lots totaling approximately 30 acres in Wailuku Ahupuaʻa, Wailuku District, Maui Island, Hawaiʻi [TMK: (2) 3-5-001:061, 063, and 066; formerly 017]. No historic properties were identified during the survey.

Archaeological Surveys Hawaii, LLC (Guerriero et al. 2004) conducted an Archaeological Inventory Survey of a 50-acre parcel of land in Wailuku and Waikapū ahupuaʻa, Wailuku District, Maui Island, Hawaiʻi [TMK: (2) 3-5-002: por. 001], located northeast of the current project area. During the survey, the Kama Ditch (State Site 50-50-04-5474) was documented. The Kama Ditch, constructed around 1905 to 1907, provided water to the sugarcane and subsequent pineapple fields.

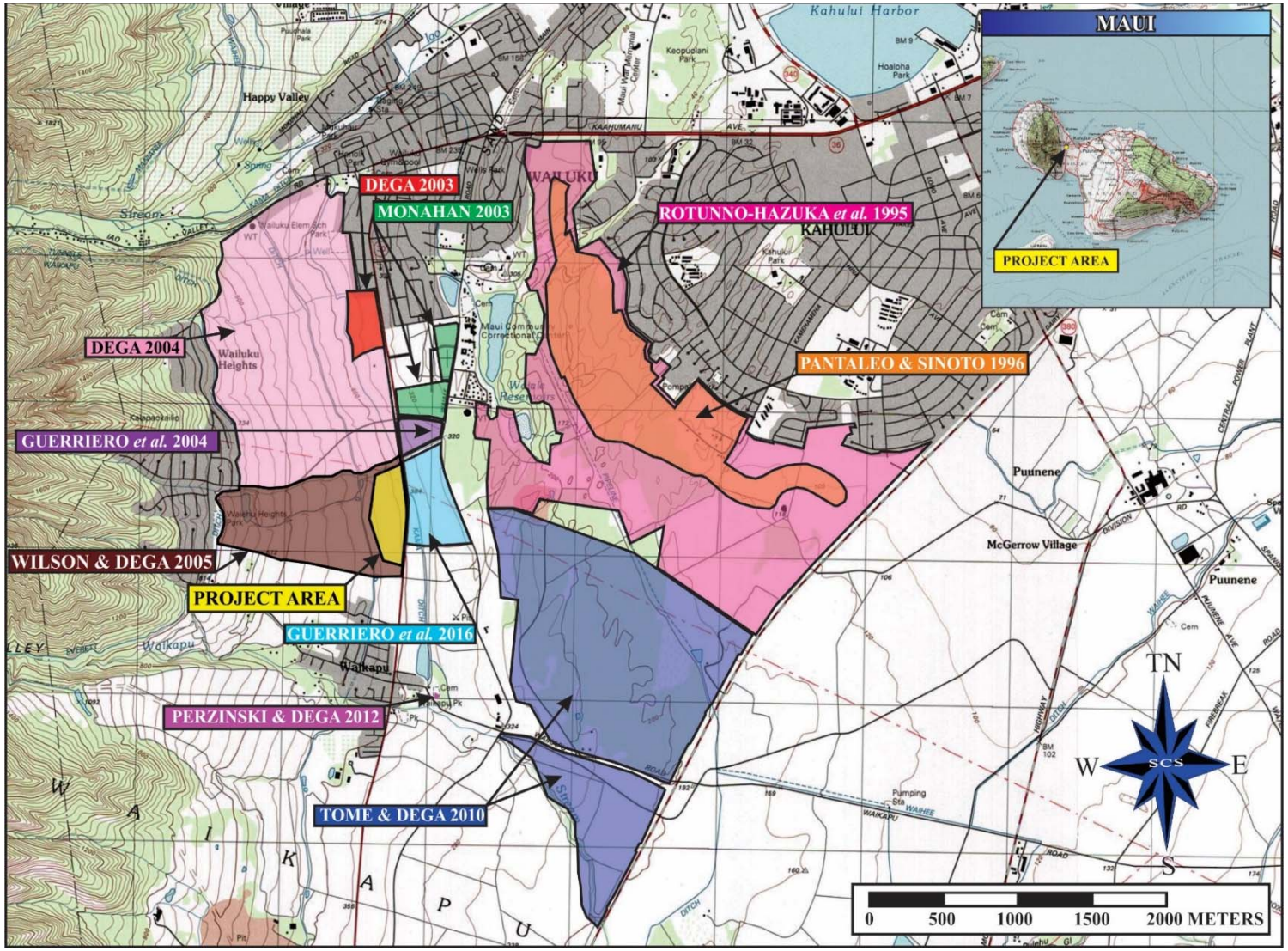

Figure 10: USGS Quadrangle (Wailuku, HI 1997; 1:24,000) Showing Previous Archaeology in the Vicinity of the Project.

Scientific Consultant Services, Inc. (Dega 2004) conducted Archaeological Inventory Survey on 348.613 acres of land composing the main land parcel of the Kehalani Mauka Subdivision, located northwest of the current project area, in Wailuku, Wailuku Ahupuaʻa, Wailuku District, Maui Island, Hawai`i [TMK:(2) 3-5-001:portion of 001]. Eight archaeological sites were documented in the project area: Kama Ditch (State Site 50-50-04-5474), the abandoned Hopoi Reservoir (State Site 50-50-04-5473), a north-south ditch (State Site 50-50-04-5493), Waihee Ditch (State Site 50-50-04-5197), road segments (State Site 50-50-04-5489), east-west bearing drainages (State Site 50-50-04-5490), a historic artifact scatter (State Site 50-50-04-5491), and several clearing mounds/push piles (State Site 50-50-04-5492).

Scientific Consultant Services, Inc. (Wilson and Dega 2005) conducted an Archaeological Inventory Survey of 215.800 acres, Waikapū (and partially Wailuku) Ahupuaʻa, Wailuku District, Maui Island, Hawaiʻi [TMK: (2) 3-5-02: 02 and 03], which included the current project area. During the survey, seven historic properties were identified: State Site 50-50-04-5197, Waihee Ditch; State Site 50-50-04-5493, Waikapu Ditch; State Site 50-50-04-5729, a lesser, un-named, rock and mortar ditch; State Site 50-50-04-5726, a lesser, un-named, earthen ditch/drainage; State Site 50-50-04-5727, a large, un-named reservoir—the terminus of Waikapu Ditch; State Site 50-50-04-5728, a sugar field erosion-control site comprised of 14 cross-slope, earthen berms of varying length that are positioned regularly throughout the project area; and State Site 50-50-04-5730, "Old Waikapu Road", a cane-haul transport, dirt road. All of the sites were interpreted as associated with the historic Plantation-Era.

Scientific Consultant Services, Inc. (Tome and Dega 2010) conducted an Archaeological Inventory Survey of approximately 607-acres of land in Waiʻale, Wailuku, and Waikapū Ahupuaʻa, Wailuku District Maui [TMK: (2) 3-8-005:23 (por.), 37 and (2) 3-8-007: 71, 101, 102, 104], located southeast of the current project area. During the survey, previously identified sites were relocated: State Site 50-50-04-3525, burials; State Site 50-50-04-4200, State Site 50-50-04-4201, a terrace; and State Site 50-50-04-4202, several Historic Period sites. State Site 50-50-04-6578, a subsurface firepit (imu) was newly identified. Mechanical test excavations yielded negative findings.

Scientific Consultant Services, Inc. (Perzinski and Dega 2012) conducted Archaeological Inventory Survey of 2.0 acres of arid land in Waikapū, Waikapū Ahupuaʻa, Wailuku District, Maui Island, Hawaiʻi [TMK:(2): 3-5-002:015]. Four Historic Period archaeological sites were documented during the Inventory Survey. State Site 50-50-04-6808 represents Waikapu Cemetery. The community cemetery, which is not a municipal cemetery, contains

approximately 75 marked burials and 20 unmarked burials, and was used for interment from 1900 through 1961. State Site 50-50-04-6809 is a Historic Period cistern associated with a piggery. State Site 50-50-04-6810 represents an Historic Period overflow ditch, long since abandoned. State Site 50-50-04-6811 represents at least two traditional Native Hawaiian burials that have been identified through consultation as occurring makai or east of the historic cemetery. One Hawaiian burial is demarcated by a headstone and represents the resting place of Ernest Malai. A second burial, identified as that of Papia Nawaʻa, is unmarked and was designated by lineal descendants. Representative subsurface testing yielded negative results.

Archaeological Services Hawaii, LLC, (Guerriero et al. 2016) conducted an archaeological inventory survey within a 50-acre parcel of land in Wailuku and Waikapū Ahupuaʻa, Wailuku District, Maui Island [TMK: (2) 3-5-002:011 and 012], located west of the current project area and across Honoapiilani Highway. The survey resulted in the identification of State Site 50-50-04-5474, the Kama Ditch.

CONSULTATION

The consultation process is conducted via telephone, e-mail, the U.S. Postal Service, and in-person interviews, when possible. Please note that the CIA report is currently in progress as the consultation process of this CIA is on-going as several cultural contacts have recently been added to the consultation process in late-March 2020 (see interview summary for Hōkūao Pellegrino). Once these interviews have been completed the CIA report will be updated to include the additional interview summaries.

The initial letters of inquiry, an example of which is presented in Appendix A, were mailed between July 30, 2019 and March 31, 2020. Information pertaining to cultural resources and traditional cultural practices conducted within the project area or within Waikapū Ahupuaʻa was sought from the following twenty-five (25) individuals and organizations:

1. Hōkūao Pellegrino, cultural practitioner and cultural and lineal descendant of Waikapū and Wailuku Ahupuaʻa, Wailuku Moku, Maui Island, Hawaiʻi
2. Rose Duey, cultural practitioner
3. Hokulani Holt-Padilla, cultural practitioner and Director, Ka Hikina O Ka Lā Hawaiʻi Papa o ke Ao, University of Hawaii Maui College
4. Joyclynn Costa, cultural practitioner and Hāmākualoa Moku Representative, Aha Moku O Maui
5. Kīʻope Raymond, cultural practitioner

6. Kai Markell, Compliance Manager, Office of Hawaiian Affairs
7. Thelma Shimaoka, Community Outreach Coordinator III, Office of Hawaiian Affairs
8. Leslie Kuloloio, Community member and former member Maui/Lānaʻi Islands Burial Council
9. Chris "Ikaika" Nakahashi, Cultural Historian, State Historic Preservation Division
10. Andrew "Kealana" Phillips, Burial Sites Specialist, State Historic Preservation Division
11. Clifford Naeʻole, Hawaiian Cultural Advisor
12. Keʻeaumoku Kapu, CEO, Aha Moku O Maui Inc.
13. Clyde Kahalehau, Wailuku Moku Poʻo, Aha Moku O Maui
14. Wally Rogers, life-long resident of Waikapū
15. Clayton Suzuki, Wailuku Sugar Company and now for the Wailuku Water Company
16. Roger Yamaoka, family comes from Waikapū
17. Blossom Feiteira, Maui Mokupuni Council
18. Johanna Kamaunu, Wailuku District Representative, Maui/Lānaʻi Islands Burial Council
19. Foster Ampong, recognized cultural descendant of inadvertent discovered iwi kupuna of Wailuku Ahupuaʻa, a lineal and cultural descendant of oʻiwi (native Hawaiian) ancestors that lived in the Wailuku Moku, and member of Wailuku Moku, Aha Moku O Maui
20. Kaniloa Kamaunu, member of Wailuku District, Aha Moku O Maui
21. Wallette Pellegrino, mother of Hōkūao Pellegrino, cultural practitioner, and a member of the Waikapū Community Association
22. Travis Polido, President of the Waikapū Community Association and life-long resident of Waikapū Ahupuaʻa
23. Nicholas Harders, life-long resident of Waikapū Ahupuaʻa and cultural practitioner
24. Crystal Smythe, life-long resident of Waikapū Ahupuaʻa
25. ʻIliahi McLean, life-long resident of Waikapū Ahupuaʻa

The follow-up letters of inquiry (see Appendix C) were mailed via e-mail and USPS between August 30, 2019 and December 12, 2019. Follow-up letters were mailed to all the above listed individuals and organizations, with the exception of those individuals and organizations that submitted responses to SCS.

A Cultural Impact Assessment Notice was published in the September 2019 issue of the OHA newsletter, *Ka Wai Ola* (see Appendix B). This notice stated that Scientific Consultant Services, Inc. is seeking information on cultural resources and traditional cultural activities in the area of the proposed project and the surrounding ahupuaʻa, and provided locational information

(i.e., the ahupuaʻa, traditional and modern names of the District, Island, State, and property Tax Map Key designations).

RESULTS

No responses were received as a result of posting a CIA notice in the OHA newsletter, *Ka Wai Ola.* To date, SCS has received ten (10) responses via e-mail and conducted one telephone interview. Based on these responses and interviews, assessment of the potential effects on cultural resources in the project area and recommendations for mitigation of these effects can be proposed.

WRITTEN RESPONSES
Chris (Ikaika) Nakahashi, Cultural Historian, State Historic Preservation Division

Mr. Nakahashi responded via an e-mail dated Tue 9/3/2019 6:14 PM:

Aloha Cathy,

Mahalo for contacting me regarding the CIA for the proposed Puʻunani Homestead Project in the ahupuaʻa of Waikapū, in the Moku of Wailuku, Maui.

I recommend CSH to utilize the media (ex. OHA's Ka Wai Ola, Maui News, etc.) to solicit additional information for this CIA.

I recommend CSH to meet with:

- Keʻeaumoku Kapu – ʻAha Moku o Maui Inc.
- Hōkūao Pellegrino – Hui o Nā Wai ʻEha

I recommend CSH to meet with the native tenants and people that currently live or previously lived in the ahupuaʻa of Paunau on Maui for information about the cultural resources and practices for this CIA.

Please let me know if I can assist with anything else.

A hui hou,

Christopher "Ikaika" Nakahashi, M.S.

Cultural Historian

Department of Land & Natural Resources

State Historic Preservation Division

Concerns: No concerns were expressed.

Note: Scientific Consultant Services, Inc. reached out to Keʻeaumoku Kapu, regarding this CIA, via emails dated July 30, 2019; August 31, 2019; October 1, 2019; and October 28, 2019. Scientific Consultant Services, Inc. contacted Hōkūao Pellegrino via an email dated July 30, 2019 and interviewed him December 23, 2019, via telephone.

Andrew "Kealana" Phillips, Burial Sites Specialist, State Historic Preservation Division

Mr. Phillips, Burial Sites Specialist, State Historic Preservation Division, responded via an email dated Monday 8/5/2019 7:33 PM:

Aloha Cathy,

I forwarded email to the 5 members of the MLIBC. Mahalo

Kealana

Concerns: No concerns were expressed.

Blossom Feiteira, Maui Mokupuni Council

Blossom Feiteira responded via an email dated Sat 8/31/2019 2:26 AM:

Aloha Cathy,

Sorry for the delay in getting back to you.

I am not familiar with the project area or its history. Was hoping to find others who would be familiar with the Waikapu ahupuaʻa but have not been very successful.

As far as I know it was in sugar cultivation for about a century by Wailuku Sugar Company, and most of The Waikapu residents are former plantation workers.

If I find someone who has cultural knowledge of the area will pass on your contact information.

Aloha,

Blossom

Concerns: No concerns were expressed.

Wallette Pellegrino, mother of Hōkūao Pellegrino, cultural practitioner, and a member of the Waikapū Community Association

Mrs. Pellegrino responded via an email dated November 13, 2019 which stated:

Aloha e Cathy,

Please contact Travis Polido, president of the Waikapu Community Association and life-long resident of Waikapu. He is interested in being involved in the process of reviewing the Pu‘unani Homestead Project CIA. Thank you.

Aloha,

Wallette Pellegrino

Concerns: Mrs. Pellegrino did not express any concerns about the proposed project in this email.

Note: Scientific Consultant Services, Inc. reached out to Travis Polido via an email dated November 13, 2019.

Hokulani Holt-Padilla, cultural practitioner and Director, Ka Hikina O Ka Lā

Hawai‘i Papa o ke Ao, University of Hawaii Maui College

Dr. Holt-Padilla responded via an email dated Thu 9/19/2019 3:56 PM:

Aloha and mahalo for checking in again. I don't know what other information I can offer that you would not be able to get from folks like Hōkūao Pellegrino and other natives of that area. I am hopeful that you already have researchers that are looking in the standard resource materials and Hawaiian language newspapers. If that is so, you will have as much as I can additionally share. Mahalo.

‘O au iho nō,

Hōkūlani

Hōkūlani Holt

Director, Ka Hikina O Ka Lā

Hawai'i Papa o ke Ao

University of Hawaii Maui College

Concerns: No concerns were expressed.

Note: Scientific Consultant Services, Inc. contacted Hōkūao Pellegrino via an email dated July 30, 2019 and interviewed him December 23, 2019, via telephone.

Joyclynn Costa, cultural practitioner and Hāmākualoa Moku Representative, Aha Moku O Maui

Joyclynn Costa responded via a series of emails:

On Jul 30, 2019, at 9:45 PM, Joyclynn Costa wrote:

> Mahalo for the information
>
> I have, however forward this communication to the Wailuku Aha Moku Council
>
> and our Maui Aha Moku LLC.. as well as our Kiole.
>
> Joyclynn Costa

July 30, 2019, at 9:59:

> Would you happen to have older maps with kuleana names? The map provided
>
> is to general and hard to imagine.
>
> Mahalo

Joyclynn

And, on Wed 7/31/2019 11:36 AM:

I will also check with the moku. I remember seeing older and more informed maps in the past.

Joyclynn

Concerns: No concerns were expressed.

Note: Scientific Consultant Services, Inc. provided Ms. Costa with maps of the project area via emails sent August 1, 2019; August 31, 2019; and November 6, 2019. Scientific Consultant Services, Inc. also sent Ms. Costa gentle reminders about the current CIA on August 30, 2019; September 25, 2019; October 15, 2019; and October 28, 2019. No further response was received from Ms. Costa.

Kīʻope Raymond, cultural practitioner and University of Hawaii, Maui Campus Hawaiian Language faculty member

Dr. Raymond responded via an email dated Sat 8/31/2019 12:17 AM:

Aloha,

I have no comment at this time.

Mahalo,

Kīʻope

Concerns: No concerns were expressed.

Keʻeaumoku Kapu, CEO, Aha Moku O Maui Inc.

Mr. Kapu responded via an email dated On Aug 31, 2019, at 8:13 PM:

Thank you for the information. I will arrange a date with Kupuna consultation and get back to you soon.

Concerns: No concerns were expressed.

INTERVIEWS
HŌKŪAO PELLEGRINO

To date, one telephone has been conducted for the current CIA. This interview is summarized below. As stated elsewhere in this report, the consultation process of this CIA is on-going as several cultural contacts have recently been added to the consultation process in late-March 2020 (see interview summary for Hōkūao Pellegrino below). Once these interviews have been completed the CIA report will be updated to include the additional interview summaries.

Hōkūao Pellegrino, cultural practitioner and cultural and lineal descendant of Waikapū and Wailuku Ahupuaʻa, Wailuku Moku, Maui Island, Hawaiʻi

Hōkūao Pellegrino was interviewed via telephone, on December 23, 2019, by Cathleen Dagher, SCS Senior Archaeologist. Initially, Mr. Pellegrino had agreed to an interview conducted by Ms. Dagher via Skype. However, at the time of the scheduled interview, Mr. Pellegrino contacted Ms. Dagher, via email, stating that he could not get his Skype to work and that "we wil need to just talk over the phone."

Mr. Pellegrino began the interview by stating he was born and raised in the Waikapū Ahupuaʻa, in the ʻIli of Pilipili and Nohoʻana. His father is Italian from New York. His family,

on his mother's side, is Hawaiian, Chinese, Portuguese, French and English. Through his mother, his family has genealogical connections to a number of kuleana parcels in Waikapū Ahupuaʻa, on multiple sides of his family (i.e., on the Hawaiian side, on the English side, and on the French side). On his French side, there is Eugene Bal (married to Meʻeau), who is Mr. Pellegrino's 4th great grandfather. Mr. Bal received three Māhele awards in Waikapū Ahupuaʻa. The Land Grant was one of the largest Land Grants [comprised of approximately 130 acres] and was located just south and east of the current project area.

On his English side, Edward Bailey, who was also Mr. Pellegrino's 4th great grandfather, had a kuleana parcel located in Waikapū Valley in the ʻili of ʻŌhiʻa, as well, as a large parcel near the boundary of Waikapū and Wailuku Ahupuaʻa.

The kuleana parcel that Mr. Pellegrino lives on today with his wife and family is located adjacent to the parcel of land that he grew up on, in Pilipili ʻIli, where his parents still reside. Mr. Pellegrino and his family currently live in the ʻIli of Nohoana, which he is connected to on his Hawaiian side through Keanini and the Enos family. Mr. Pellegrino has multiple lineal genealogical ties, especially on his Hawaiian side, to Waikapū Ahupuaʻa and to Wailuku Ahupuaʻa.

Being born and raised in Waikapū Ahupuaʻa, Mr. Pellegrino has spent a lot of time with kupuna and elders that are connected to him genealogically and through the community. Mr. Pellegrino stated he feels very blessed to have learned so much from these elders who were very knowledgeable about the history, sense of place, cultural sites, and the cultural and natural resources of the Waikapū area. This knowledge that has been passed down to him is what led him to continue on with the traditions of the land where he and his family live on now. Mr. Pellegrino, his wife and children raise wetland taro on his family kuleana land, which historically was cultivated at the time of the Māhele, and prior to that.

There are a number of cultural sites that he and his family care for on their kuleana parcel, as well as the kuleana parcel they have in the mauka area of the valley, which they are connected to through the Bailey side of his mother's family. And then, on the Eugene Bal side, they don't have ownership of that property, but on East Waiko Road, which is below and east of the property where Mr. Pellegrino and his family live in Waikapū, there is a Japanese Cemetery. This area once was part of the Nā Wai ʻĒha sand dune system that came across part of the upper central plains of Maui. There are ancient burials of his kupuna and the kupuna of others that are buried there. This particular parcel which is located where the Japanese Cemetery and remaining sand dune system is, was described at the time of the Māhele by Edward Bailey who was a

surveyor for the Kingdom of Hawaiʻi, as having ancient Hawaiian burials. While the Nā Wai ʻEhā sand dune system was historically and is currently known as having hundreds if not thousands of iwi kūpuna interred in them, it was one of the only Māhele awards to make this notation, especially in the Waikapū ahupuaʻa.

During time he was growing up, up until 1988, there was in sugar cane cultivation all around, including in the current project area. Following, 1988, the project areas was cultivated in pineapple along with maintenance of the Waiheʻe Irrigation Ditch and a reservoir on the northeaster end. Kupuna have shared with Mr. Pellegrino that prior to the land being in sugar cane there were loʻi kalo and ʻauwai systems that spanned Waikapū in its entirety, even in the project area. Hōkūao in the latter part of his high school years, Mr. Pellegrino engaged into understanding the land tenure Waikapū and the greater part of Nā Wai ʻEhā since there was major changes in the cultural landscape from large scale plantation agriculture to extensive housing developments. Hōkūao has researched, compiled comprehensive data, developed cultural landscape maps, authored documents and curriculum about Waikapū and Nā Wai ʻEhā for over the last 20 years since graduating from Notre Dame de Namur University and University of Hawaiʻi at Hilo. He has researched in detail, all ʻili, Land Commission Awards, Land Grants, traditional ʻauwai/irrigation systems and eco-cultural landscape systems throughout the Waikapū ahupuaʻa, many of which are still in cultivation and in which cultural engagement practices are currently taking place.

In terms of people who have lineal ties to Waikapū, there are not many of them left. In terms of people who actually have genealogical lineal ties to Waikapū that connect back to these kuleana parcels, he can only think of a dozen, or so, who are still living there. That's why this information is so important. Some of those families with genealogical ties to Waikapū and are still very much engaged on their kuleana lands and exercising their traditional and customary practices are but not limited to the, descendants of Pelekai, Makaiwi, Kuamū, Nāhau, Kuolaia, Bailey, Cockett, Bal, Kaʻiliponi, Kaʻaʻa, Haʻa, Kekeleaiku, Palakiko, Richardson, Koa, Kalawaiʻa, Ehunui, Sylva. Hōkūao highly recommends reaching out to many of the descendants of these families as part of the Cultural Impact Assessment as it relates to the Waikapū ahupuaʻa.

While there may have been sugar cane and then, later, pineapple growing on these lands, prior to that, these lands were rich in traditional agricultural terraces. Mr. Pellegrino spent some time, a while ago, when he was doing his graduate work around Waikapū conducting research and he found a number of sites that were connected to the area where the current project area is located. Mr. Pellegrino shared this information with one of his friends who is a Department of

Hawaiian Home Lands Commissioner who was looking for a name for this project. While Mr. Pellegrino did not want to participate in naming the project, he offered to provide background information on the traditional land tenure that was associated with the project area. Mr. Pellegrino prepared a document comprised of a spread sheet listing all of the kuleana parcels, both Land Commission Awards and Land Grants, which were located in the project area and provided a brief description of what was historically there.

According to Mr. Pellegrino's research there were about five Land Commission Awards and three Land Grants in the parcel containing the project area. Predominantly, these lands were traditionally used for cultural ag practices, specifically tied to wetland cultivation. There were animals that were raised there, there were kula lands, and there were ʻauwai systems that connected directly to the Waikapū Stream. Most important is the significance of one of the most important areas in Waikapū Ahupuaʻa. Near the Old Government Road that is adjacent to the western and northern boundaries of the project area, near the northwest corner of the current project area, there once was located a very important stone called Pōhākoʻi. Pōhākoʻi was first and foremost a hoana, or grinding stone used to file and finish koʻi (adzes – stone tool used for cutting and carving wood). Secondly, it was a commonly known palena ʻāina (boundary marker) for the northern end of the Waikapū ahupuaʻa according to Mr. Pellegrino.

Mr. Pellegrino says that Pōhākoʻi is shown on approximately 60 historic maps of Waikapū. Some maps reference that site as the location of Pōhākoʻi (the stone), but, adjacent to where the stone is located, there is reference to a Pōhākoʻi as an ʻili also. However, Land Grant 2952, to David Crowningburg, and Land Commission Award 433, to William Crowningburg, both specified the ahupuaʻa boundary, as well as the ʻili, as Pōhākoʻi. So, it was an important cultural site, not just for being a boundary marker and a grinding stone, but also for being a place name (i.e., the name of an ʻili). Pōhākoʻi is such a significant site; it has been mentioned in mele [songs], in oli [chants], and historical moʻolelo [legends]. The exact location of Pōhākoʻi (the stone) is not known and it is not known if Pōhākoʻi remains in situ, or if it has been relocated. Pōhākoʻi (the stone) is shown on almost every historic map of Waikapū [see Figure 8]. Pōhākoʻi (the stone) is shown on most maps as on the Waikapū Ahupuaʻa boundary and sometimes it is shown more within Waikapū Ahupuaʻa, more along that William Crowningburg property boundary in the ʻIli of Pōhākoʻi. So, if there is any archaeological work conducted in the, that would be a critical thing to look for in addition to former agricultural and irrigation sites.

Also, there was a historic bridge at that same corner [the northwest corner of the current project area] that crossed Kahoi Gulch and Lapaleihua Gulch. These two gulches came down

from the West Maui Mountains. The bridge was in existence at the time of the Māhele [mid-1800s] and is shown on historic maps dated as late as 1939.

One of the points that Mr. Pellegrino would like to stress in this interview is that archaeological work and cultural impact assessment studies do not always make a concerted effort to delve into the historical background of these types of areas that were historically in sugar cane cultivation to present information about how these lands were used traditionally, prior to being under commercial sugar cane cultivation. Although lands were extensively impacted and modified historically for the commercial cultivation of sugar cane, they retain the potential to contain information about the traditional use of these lands. In addition, there may still be kupuna who have connections to those lands. Mr. Pellegrino also recommended that if the project does move forward, that archaeological monitors be required on-site at all times. Many kuleana parcels whether impacted or not by plantation era agriculture, still retain numerous archaeological features above and below the ground, which can include walls, artifacts, and most importantly, burial sites. He stated that it was not uncommon for Māhele land parcels to have burial sites both pre-western and post-contact. He stressed the need especially for a Hawaiian Organization such as DHHL to go above and beyond the basic requirements and processes for developing land, especially knowing that these were Native Hawaiian ancestral kuleana lands.

For cultural practitioners it is very important to know whether, or not, Pōhākoʻi (the stone) is still in or near its original location. There are a number kupuna who conduct traditional cultural practices; i.e., farming, fishing, carving. Mr. Pellegrino is also traditional wood and stone carver; he makes traditional-type stone tools; he has made adzes along with poi pounders and other stone tools. So, for cultural practitioners, the sites where their ancestors conducted the same types of activities are very important. Mr. Pellegrino explained that access to these areas was always limited and/or prohibited to any and all lineal descendants since the plantation and their predecessors took over the project area and adjacent lands.

Of the remaining kuleana land holders that are still left in Waikapū, most of them reside all along Waikō Road, which is the main road that come in and on the north side of the Waikapū Stream as well as those living on the southern portion of the Waikapū Stream. Approximately 25 years ago, there was a development that came about called Waiolani Subdivision and most recently the Waiolani Mauka Subdivision in the last 10 years which abuts the current DHHL project area. At that time, major concerns were widely shared by lineal descendants of Waikapū along with long-standing community members/residents – they didnʻt want the Old Waikapū Government Road open in that section because they didn’t want the extra traffic and most

importantly the impacts that would have on the Waikō Road kuleana properties which still retain, pre-western archaeological sites such as stone walls, loʻi kalo and ʻauwai systems. One of the major ʻauwai flows along Waikō Road. Waikō Road is a main road and a County road, but it is substandard; in some areas it is a two-lane highway and in others it's one lane. So, when the developers for Waiolani and Waiolani Mauka came up, they said they were not going to open up the road to traffic and that the road would just be used for emergency purposes. But, in the end, they defied the cries of the community and ended up opening up that portion of the road; i.e., the Old Government Road which feeds into Waikō Road, and that has caused a lot of issues, including accidents on the road, most which have caused severe damage to portions of the ʻauwai system used by kalo farmers, crime, and people impacting their traditional cultural practices. There are all these ʻulu [breadfruit, *Artocarpus altilis*] trees and traditional pre-Western stone walls located along the ʻauwai and those have been impacted by the traffic. For Mr. Pellegrino, the major issue, if not the only issue, is ensuring that there is no access to that Government Road. Based on the project plan, it looked like the feeder road, inlet, and outlet, would be on Honoapiilani Highway which is what he wants to see happen. Mr. Pellegrino believes that if this section of the Old Government Road is opened up to Waikō Road, which would be all the way up to Honoapiilani Highway, the County or State would have to upgrade the road which would impact all of these cultural sites and their ʻauwai system, which are positioned along part of Waikō Road and part of the Government Road, at least on the Waikō Road side.

Mr. Pellegrinoʻs other major concern is the view plain. There are specific ridges, like Kahoi, Lapaleihua, and Kalapaookaʻīlio, where he and his family gather lāʻau lapaʻau [medicinal plants] and which house some very rare native plant species. These are all ridges mauka [west] of the project area. Mr. Pellegrino is concerned that during the construction phase of the current project the land would be filled to the extent that these culturally important view plains would be blocked from those who are genealogically connected to Waikapū Ahupuaʻa and living in the lower areas below. A prime example of how this occurred is the neighboring Waiolani Subdivision which built up their properties in some cases over 10 feet and directly adjacent to the Honoapiʻilani Highway. This has destroyed any natural view plains of the Kapilau and Hanaʻula Mountain Ranges. Former development plans for this project site under the name of Puʻunani Subdivision had explicit setbacks from the Honoapiʻilani Highway as well as a large buffer between the Waiolani Subdivision and northern boundary of the Waikapū ahupuaʻa near Kuʻikahi Road and Honoapiʻilani Highway. This was to ensure a clear distinction between the Waikapū ahupuaʻa and the Wailuku ahupuaʻa. There is a project the Mr. Pellegrino is working on with the Waikapū and greater Wailuku moku community members to develop ahupuaʻa signage. One such sign for the northern most boundary of the Waikapū ahupuaʻa would be near

and/or adjacent to the project area and he states that it is imperative there are clear distinctions between ahupuaʻa still are retained. Knowing that Waikapū has been greatly impacted by development and continues to be with future development, retaining our cultural identity will be critically important moving forward and something the Waikapū community made clear for as long as he can remember.

Along the Government Road, along the mauka portion, there was a historic ʻauwai. And so, that road is still there and Mr. Pellegrino believes there are remnants of that ʻauwai are still there. That ʻauwai historically connected to the ʻauwai that Mr. Pellegrino's family accesses along Waikō Road. There were four major ʻauwai in Waikapū and this particular ʻauwai that came down, part of it comes off the ʻauwai used by Mr. Pellegrino's family, but above his family's kuleana parcel and currently goes under Waikō Road. On historic (1887) maps you can see that ʻauwai go within the boundary of the project area, as well as along the upper (northern) boundary of the project area. That ʻauwai provided the water that was used to feed all of the loʻi kalo that were in this project area. Water also fed kuleana parcels of land before the project area as well.

Mr. Pellegrino reiterated that while his family had kuleana lands throughout Waikapū Ahupuaʻa, none of them were located within the confines of the current project area. The names of the Hawaiian families who had connections to the project area were Manu and Keliiolelo. There were also a number of foreigners who received kuleana parcels of lands within the project area: James Louzada, who married into a Hawaiian family. A lot of the foreigners like William Crowningberg, David Crowningberg had Hawaiian wives that connected them to the ʻili or parcels of lands as well.

A lot of people see Waikapū as a sleepy little town; but prior to western contact, it was a thriving kalo growing landscape which was part of the greater Nā Wai ʻEhā region. There were over 1,400 loʻi kalo documented on 900 acres of land as being in cultivation at the time of the Māhele in Waikapū alone. Following western contact, Waikapū was really the birthplace of sugarcane industry in Hawaiʻi. One of the kuleana claimants, James Louzada, who had a Land Commission Award in the project area, he and another Italian, were really the forefathers of the sugarcane industry on Maui and in Hawaiʻi. They started cultivation sugarcane on the parcels of land, working with kuleana landowners in Waikapū even before the Māhele occurred and they were milling sugarcane and processing into molasses by 1838.

Lastly, Mr. Pellegrino wanted to include the importance of water resources as being a major cultural impact. While most if not all of the project site's historical land use was wetland

kalo cultivation, these lands are not likely going to be returning to that practiced knowing that a housing development is being proposed. There are currently agricultural practices being conducted on that land, although not cultural, they are an important part of retaining the historic and cultural nature of the Waikapū ahupuaʻa. Hōkūao is a leader in water resource management issues on Maui, especially within the region of Nā Wai ʻEhā. A major concern that he has is the potential impacts this project will have on both surface and ground water resources, both of which are directly tied to cultural practices. While not necessarily tied to the project site, both ground water and surface water resources would likely cause impacts to those surrounding ahupuaʻa in Nā Wai ʻEhā, which have already seen great strain for decades. With the return of in-stream flow standards occurring in all four streams of Nā Wai ʻEhā (Waikapū, Wailuku, Waiehu, and Waiheʻe) he is seeing a huge influx of Native Hawaiian lineal descendants of kuleana lands returning and re-cultivating their lands in kalo and other traditional food crops. Ensuring that these water resources are protected in the areas for which they derive is critical to not only food production and sustainability but the positive impact it is having to our Native Hawaiians community and greater lāhui building. Most if not all development projects have direct impacts to water resource depletion both from our ground water aquifers and surface water. Mr. Pellegrino has grave concerns about this project and its impact to already heavily strains on the Wailuku/Waikapū aquifer and surface water waters of Nā Wai ʻEhā. Mr. Pellegrino is the president of Hui o Nā Wai ʻEhā, an organization that is focused on protecting both surface and ground water resources. There has not been anything shared with him nor their organization about the water needs of this project as it relates to both ground and surface water.

Concerns: Whether Pōhākoʻi (grinding stone) is still there, Mr. Pellegrino would like to see that lineal descendants of the Waikapū ahupuaʻa have the ability to access through the project area for use of the hoana (if still there) but also knowing that the area in general was an important palena ʻāina (boundary point) for the Waikapū ahupuaʻa. Another important factor for his family and for many of the other lineal descendants and community members in Waikapū is use of the Government Road; i.e., ensuring that there is no access in or out of the project area to that Government Road, as that would impact traditional cultural practices. Mr. Pellegrino also expressed concern that during the construction phase of the current project the land would be filled to the extent that these culturally important view plains would be blocked from those who are genealogically connected to Waikapū Ahupuaʻa and living in the lower areas below. He urges that there be large and clearly defined green buffers between Honoapiʻilani Highway, Waiolani Development and the Kuʻikahi Road near the northern most boundary of the Waikapū ahupuaʻa to ensure clear delineation between the Waikapū and Wailuku ahupuaʻa. Lastly, he shares concerns about the cultural impacts of this project as it relates to water resources both

ground and surface water, both within the ahupuaʻa of Waikapū as well as neighboring ahupuaʻa such as Wailuku.

Note: In an email dated March 26, 2020, Mr. Pellegrino suggested SCS contact Nicholas Harders (see Written Response section), Crystal Smythe, and Wallette Pellegrino. In a subsequent email dated March 30, 2020, Mr. Pellegrino suggested SCS also contact ʻIliahi McLean, as all of these individuals are life-ling residents of Waikapū Ahupuaʻa. Scientific Consultant Services, Inc. received Mr. Pellegrino's signed information form March 30, 2020, via e-mail (see Appendix D).

CONSULTATION RESULTS FROM DAGHER (2018)

The currently proposed DHHL project will include sewerline improvements within a portion of TMK: (2) 3-5-001:064. A separate CIA report (Dagher2018) was prepared in advance of the proposed Wailuku Affordable Housing project, which was located in Wailuku and Waikapū Ahupuaʻa, Wailuku District, Island of Maui, Hawaiʻi [TMK: (2) 3-5-001:064]. Thus, the results of the Dagher (2018) consultation process are included in the current CIA report and are presented below.

INTERVIEWS (FROM DAGHER 2018)

Clayton Suzuki, long-time community member and worked for Wailuku Sugar Company.

Clayton Suzuki was interviewed via telephone by Cathleen Dagher on February 27, 2018. Mr. Suzuki reviewed his interview summary between March 2 and March 4, 2018, when SCS received his edited summary, via e-mail.

> Clayton Suzuki grew up on the island of Hawaii and came to Maui for work opportunities. After graduating from the University of Hawaii. He came to Maui in 1975 to work for HC&S then moved to Wailuku Sugar Company in 1978. He worked for the company as an engineer then later as the Operation Manager till retirement in 2016.
>
> Wailuku Sugar Company shut down its sugarcane milling operation in 1979, it delivered the sugarcane to the HC&S mill under contract. The 2500 acres of sugarcane from Iao Valley to Waihee Valley were converted to Macadamia Nut in the early 1980's. Sugarcane was continued in the 2500 acres in the Wailuku to Maalaea area. Some Wailuku fields about 500 acres were left fallow, its long-term plan was for a housing development,
>
> Wailuku Sugar Company became Wailuku Agribusiness in 1988 when its sugarcane growing operation stopped. Much of the lands in sugar were converted to pineapple and

sold to Maui Land & Pineapple. The fields that were of sandy soil were not converted to pineapple. These fields were left fallow. The macadamia nut operation continued.

After closing both its macadamia nut and pineapple operations in 1999, Wailuku Agribusiness became Wailuku Water Company. This company continued its water delivery operations using the existing ditch system used for its agricultural operations.

Mr. Suzuki did not mention any traditional cultural activities practiced in the area.

Concerns: None

Roger Yamaoka, long-time community member and family also comes from Waikapu.

Roger Yamaoka was interviewed via telephone by Cathleen Dagher on February 28, 2018. Mr. Yamaoka reviewed his interview summary between March 2 and March 8, 2018, when SCS received his edited summary, via e-mail.

Roger Yamaoka is a long-time Waikapū community member whose family comes from Waikapū. His father owned a pig farm near the Vida family's in Waikapū, several miles away on Old Waikapu Road, which is where Mr. Yamaoka grew up. Mr. Yamaoka said that the project area was currently used as a baseyard or staging area for a construction company, and that Long's Drugs and Foodland where nearby, and a prison is located to the north. He also mentioned that Emmanuel Lutheran Church of Maui was on the next lot over to the south.

He remembered that when he was a child, some 50 years ago, and while he was growing up, the whole area was planted in sugar cane and later in pineapple. After the sugar mill closed down, the area was abandoned, and eventually was covered in grass and weeds. Gradually the area came to be developed – first homes began to appear (Kealani Subdivision), then Foodland and Long's Drugs, and Maui Lani began to open up.

Mr. Yamaoka stated that he was not aware of any tradition cultural practices conducted in the area nor was he aware of anywhere in the area where traditional cultural practices could be conducted, as the whole area was under commercial agriculture for many years and eventually began to be developed for residential use.

Mr. Yamaoka suggested SCS contact the Vida family, as they may have information pertaining to traditional cultural practices conducted in the area. He also spoke highly of Uncle Les Kuloloio and suggested he be contacted, as he would be a reliable source of information on traditional cultural practices conducted in the area.

Concerns: None

Wally Rogers, long-time community member, family has lived in Waikapū on Upper Waiko Road for several generations. **His father was Eddie Rogers who started the Rogers Ranch and pig farm in Waikapū.**

Scientific Consultant Services, Inc. reached out to Mr. Rogers on February 27 and March 6, 2018, via telephone. Scientific Consultant Services, Inc. spoke with Dolores, Mr. Rogers' wife, on both occasions. Mrs. Rogers said that she and her husband reached out to other family members in an effort to see if they had information about traditional cultural practices conducted in the near the proposed project area. None of the family members had any information to share.

Concerns: None

WRITTEN RESPONSES (FROM DAGHER 2018)

Chris Nakahashi, Cultural Historian State Historic Preservation Division. Scientific Consultant Services receive a written response, via e-mail dated September 11, 2017, from Chris Nakahashi, Cultural Historian State Historic Preservation Division:

Aloha Cathy,

Mahalo for contacting me regarding the CIA for the proposed Wailuku Affordable Housing Project.

The people listed at the bottom of your September 9, 2017 letter are appropriate to contact regarding the traditional cultural practices in the ahupuaʻa of Wailuku and Waikapū, on the island of Maui.

Please contact Keʻeaumoku Kapu… about this CIA.

I recommend SCS to also utilize the media (ex. OHA's Ka Wai Ola, Maui News, etc.) to solicit additional information for this CIA.

I recommend SCS also to contact and meet with the native tenants and people that currently live or previously lived in the ahupuaʻa of Wailuku and Waikapū on Maui for information about the cultural customs and practices for this CIA.

Please let me know if I can assist with anything else.

A hui hou,

Christopher "Ikaika" Nakahashi, M.S.

Cultural Historian

Department of Land & Natural Resources

State Historic Preservation Division

Scientific Consultant Services, Inc. did include Mr. Kapu in the consultation process. The initial letter of inquiry and associated project area maps were sent to Mr. Kapu via an e-mail dated September 29, 2017. The follow-up letter was sent to Mr. Kapu via an e-mail dated October 17, 2017. However, SCS did not receive a response from Mr. Kapu.

Kaniloa Kamaunu, Wailuku District Representative, Aha Moku O Maui

Scientific Consultant Service, Inc. received an e-mail dated November 7, 2017, from Mr. Kamaunu. In his e-mail Mr. Kamaunu stated that the proposed project area is adjacent from Long's on Waiale Drive and expressed concerns about what companies would be conducting the Archaeological Inventory Survey and preparing the Environmental Impact Assessment.

Glenn McLean, community member, community member

Scientific Consultant Services, Inc. made several unsuccessful efforts to contact Mr. McLean:

> In an e-mail dated October 26, 2017, SCS contacted Hinano R. Rodrigues, State Historic Preservation Division (SHPD) Culture and History Branch Chief requesting Mr. McLean's contact information. In an e-mail dated October 27, 2017, Mr. Rodrigues responded, "I don't have contact information for him, but I am sure his son Luke lives in Waikapu on a daily basis. Hokuao [Pellegrino] may be able to contact him."
> As no contact information was provided for Luke McLean, SCS e-mailed Mr. Pellegrino, via an e-mail dated October 27, 2017, requesting this information. Scientific Consultant Services, Inc. did not receive a response from Mr. Pellegrino.
> In an e-mail dated October 27, 2017, SCS reached out to Andrew "Kealana" Phillips, SHPD Burial Sites Specialist requesting Mr. McLean's contact information. Mr. Phillips did not respond.
>
> In e-mails dated October 24 and 27, 2017, SCS reached out to Chris Nakahashi, SHPD Cultural Historian, also requesting Mr. McLean's contact information. Mr. Nakahashi responded, via an e-mail dated October 25, 2017, that he did not have the requested information.

CULTURAL IMPACT ASSESSMENT SUMMARY

This Cultural Impact Assessment was prepared in accordance with the Guidelines for Assessing Cultural Impacts (OEQC 1997:11-13). The Guidelines recommend that a CIA consult relevant individuals/organizations, conduct ethnographic interviews and archival and historical research, identify cultural resources and practices located within the project area or in proximity, and finally, assess the impact of the proposed action and its mitigation measures on the cultural practices or resources identified.

Letters of inquiry were sent to twenty-five individuals and organizations that may have knowledge or information pertaining to the collection of cultural resources and/or practices currently, or previously, conducted in the vicinity of the proposed project area. The consultation process resulted in SCS receiving ten (10) responses via e-mail, conducting one telephone interview, and several potential interviews to be conducted in the near future.

As sewer line improvements for the current DHHL project will occur within a portion of TMK: (2) 3-5-001:064, which was the subject of an earlier CIA report (Dagher2018) prepared under separate cover in advance of the proposed Wailuku Affordable Housing project located in Wailuku and Waikapū Ahupuaʻa, Wailuku District, Island of Maui, Hawaiʻi, the results of the Dagher (2018) consultation process are included in the Consultation section of the current CIA report.

IDENTIFED CULTURAL PRACTICES

The purpose of a CIA is to identify the possibility of on-going cultural activities and resources within a project area, or its vicinity, and then assessing the potential for impacts on these cultural resources. As stated elsewhere in this report, the Hawaii State Office of Environmental Quality Control (OEQC 1997:11), states the geographical extent of the CIA study area should be greater than the area over which the proposed project extends to ensure that cultural practices that occur outside of the project area, but which may still be affected, are included in the assessment. Thus, for the purpose of this CIA study, the entire ahupuaʻa is the project area.

The consultation process of the Dagher (2018) CIA did not identify traditional cultural practices currently conducted in or near the Wailuku Affordable Housing project area and there were no concerns expressed regarding impacts to traditional cultural practices or the gathering of cultural resources. The findings of the current CIA did not identify "valued cultural and natural resources" specifically within the current DHHL project area. The findings of this study indicate

there are on-going traditional cultural practices, primarily consisting of taro cultivation, within Waikapū Ahupuaʻa and on lands near the project area which may be impacted by the proposed DHHL development. In addition, the consultation process identified a unique cultural property, the grinding stone known as Pōhākoʻi, which may be in close proximity to the northwestern boundary of the DHHL project area. However, the exact location of Pōhākoʻi is not known and it is not known if Pōhākoʻi remains in situ, or if it has been relocated.

AGRICULTURE

The findings of previous archaeological studies conducted in the vicinity and the traditional and historic background research indicate Waikapū Ahupuaʻa was not only an area rich with traditional and customary practices during the pre-Contact and early-Historic Periods, it was renowned for its extensive loʻi fields.

One traditional practitioner and lineal descendant is currently living within Waikapū Ahupuaʻa on land near the proposed project area and actively cultivating wet land taro on the property. Taro or kalo (*Colocasia esculenta*) was and continues to be an important staple in the Hawaiian diet. Neal (1965: 58) states that taro was brought to Hawaiʻi by the Polynesians on their voyages and that "it has been the principle food of the natives from the earliest times to the present." Kirch (1985:216) elaborates on the intricate intertwining Hawaiian system of agriculture:

> The Hawaiian planter commanded a sophisticated knowledge of his plants and their varieties (several hundred varieties of taro and sweet potato were named and recognized), of planting, tending, and harvesting methods, and of food preparation. His system of agriculture-along with an intricate web of social, religious, and political relationships - tied him to the land, to his chiefs, and to his gods, especially Lono, deity of fertility…

Water is integral for any agricultural pursuit and is a necessary resource for the traditional practice of wet land taro, which is a dietary supplement for this individual's family. There is the potential for this project to impact the Wailuku/Waikapū aquifer and surface water waters of Nā Wai ʻEhā.

IMPACT ASSESSMENT

The information obtained during the consultation process reflects that the proposed project area is located in an area rich with traditional and customary practices conducted during the pre-Contact and early Historic Period. However, based on historical research and the above listed responses, it is reasonable to conclude that there <u>is</u> evidence of cultural practices related to Hawaiian rights related to agricultural pursuits, access to resources (i.e., water), and possibly other customary activities presently occurring in the vicinity of the proposed project area.

Based on the information obtained during the consultation process portion of the current CIA, ground altering activities associated with the proposed Puʻunani Homestead project has the potential to impact currently conducted traditional native Hawaiian activities.

CONCLUSION AND RECOMMENDATIONS

To date, the findings of the current CIA did not identify valued cultural and natural resources specifically within the proposed DHHL project area. Based upon this review and analysis, sufficient information has been provided in this document to determine that traditional cultural practices were previously and continue to be conducted within the surrounding environs of the proposed DHHL project area. This determination has been substantiated by the culture-historical background, the summarized results of prior archaeological studies in the project area and in the neighboring areas, and primarily in the concerns expressed by the cultural informants during the consultation process of the current CIA. Thus, it is the finding of the current analysis that specific cultural activities are currently conducted on lands in the vicinity of the DHHL project area which may potentially be impacted be the proposed project.

As the location of the legendary grinding stone (Pōhākoʻi) is currently unknown, it is recommended that an archaeological field inspection be conducted by a qualified archaeologist prior to the commencement of any construction related ground altering activities in an effort to locate this cultural feature.

Please note that the consultation process for this CIA is on-going as several cultural contacts were added in late-March 2020 (see note following the interview summary for Hōkūao Pellegrino). Once these interviews have been completed the CIA report will be updated to include the additional interview summaries. Any concerns pertaining to traditional cultural practices or resources will be included in this document, the findings will be summarized, and appropriate recommendations will be made.

REFERENCES

Armstrong, R. W.
1983 "Climate." In *Atlas of Hawaii*. The University Press of Hawaii, Honolulu.

Bartholomew, Gail and Bren Bailey
1994 Maui Remembers: A Local History. Mutual Publishing. Honolulu.

Beckwith, Martha
1940 Hawaiian Mythology. The University of Hawaii. Honolulu.

Chinen, Jon
1961 *Original Land Titles in Hawaii.* Copyright 1961 Jon Jitsuzo Chinen. Library of Congress Catalogue Card No. 61-17314.

Cavanaugh, T. J.
1995 *Subsurface Investigation Report, Roadway and Utility Improvements, Wailuku Project District, Wailuku, Maui, Hawaii*. Fewell Geotechnical Engineering, Inc., Kahului.

Cheever, Rev. H.T.
1851 *Life in the Sandwich Islands: or, The Heart of the Pacific, As it Was and Is.* A.S. Barnes (New York) and H.W. Darby (Cincinnati).

Clark, John
1980 *The Beaches of Maui County*. A Kolowalu Book, University Press of Hawaii: Honolulu.

Creed, V. S.
1993 *Settlement Pattern for Waikapū*, *Wailuku District, Maui, Hawaii.* Volume 1. Cultural Surveys Hawaii. Kailua, Hawai'i.

Connolly, R.D. III
1974 *Phase I Archaeological Survey of 'Īao Valley Flood-Control-Project Area, Maui*. MS. Report 100374, B.P. Bishop Museum. Honolulu.

Cordy, R. H.
1981 *A Study of Prehistoric Social Change: The Development of Complex Societies in the Hawaiian Islands*. Academic Press. New York.
1996 *Settlement Patterns of Wailuku Ahupua'a from Mahele Records*. Paper Presented at the 9th Annual Conference for the Society of Hawaiian Archaeology in Wailea, Maui.

Dagher, Cathleen A.
2018 *A Cultural Impact Assessment Report in Advance of the Proposed Wailuku Affordable Housing Project, Wailuku and Waikapū Ahupuaʻa, Wailuku District, Island of Maui, Hawaiʻi [TMK: (2) 3-5-001:064]*. Scientific Consultant Services, Inc., Honolulu.

Daws, G.
1962 *Shoal of Time: History of the Hawaiian Islands.* University of Hawaiʻi Press. Honolulu.

Day, A. Grove
1984 *History Makers of Hawaii*. Mutual Publishing of Honolulu, Honolulu.

Dega, Michael F.
2003 *Archaeological Inventory Survey in the Intermediate Dry Zone of Wailuku, Wailuku Ahupuaʻa, Wailuku (Kula) District, Maui Island, Hawaiʻi (TMK: 3-5-001: portion of 001*). Scientific Consultant Services, Inc., Honolulu.

2004 *An Intermediate Zone Archaeology Survey Located in Wailuku, Wailuku Ahupuaʻa, Wailuku (Kula) District, Maui Island, Hawaiʻi [TMK:3-5-001:portion of 001]*. Scientific Consultant Services, Inc., Honolulu.

Donham, Theresa K.
1996 A Summary of Archaeological Finds in Wailuku Showing Settlement Patterns. Paper Presented at the 9th Annual Conference for the Society of Hawaiian Archaeology in Wailea, Maui.

Dorrance, William H. and Francis Morgan
2000 Sugar Islands. Mutual Publishing. Honolulu.

Foote, D.E., E.L. Hill, S. Nakamura, and F. Stephens
1972 *Soil Survey of the Islands of Kauaʻi, Oʻahu, Maui, Molokai, and Lanai, State of Hawaiʻi.* USDA Soil Conservation Service, GPO, Washington, D.C.

Fornander, Abraham
1919-1920 *Hawaiian Antiquities and Folklore*. Bishop Museum Press, Honolulu.
1969 *An Account of the Polynesian Race, Its Origins and Migrations*. Vol. 1 to 3. Charles E. Tuttle Co. Inc.: Jutland.

Fredericksen, D.L. and W.M Fredericksen
1992 *An Inventory Survey of a Parcel of Land (TMK 3-8-07: 123), Located in the Ahupuaʻa of Wailuku, District of Wailuku, Island of Maui*. Xamanek Researches, Pukalani. On file at the State Historic Preservation Division, Kapolei.

Fredericksen, Erik M. and Demaris L.
1996 *Archaeological Data Recovery Report on Site 50-50-04 -4127, Lower Main and Mill Streets. Wailuku Ahupuaʻa, Wailuku District, Maui Island (TMK 3-4-39: por. 81 & 82)*. Xamanek Researches, Pukalani.

Giambelluca, T.W., Q. Chen, A.G. Frazier, J.P. Price, Y.-L. Chen, P.-S. Chu, J.K. Eischeid, and D.M. Delparte
2013 Online Rainfall Atlas of Hawaiʻi. Bull. Amer. Meteor. Soc. 94, 313-316, doi: 10.1175/BAMS-D-11-00228.1. http://rainfall.geography.hawaii.edu/howtocite.html. Accessed January 2020.

Guerriero, Diane, Lisa Rotunno-Hazuka, and Jeffrey Pantaleo
2004 *Archaeological Inventory Survey of a 50-Acre Parcel of Land, Waikapu and Wailuku Ahupuaʻa, Wailuku District, Maui Island TMK 3-5-02: por. 001*. Archaeological Services Hawaii, LLC.
2016 *Archaeological Inventory Survey of a 5 0 Acre Parcel of Land of Waikapu and Wailuku Ahupuaʻa, Wailuku District Maui Island TMK: (2) 3-5-002:011 and 012 (formerly 3-5-002:001 pars.)*. Archaeological Services Hawaii, LLC.

Handy, E.S.C., and E.G. Handy
1972 *Native Planters of Old Hawaiʻi.* Bishop Museum Bulletin 233. Bernice Pauahi Bishop Museum, Honolulu.

ʻĪʻī, John Papa
1869 Fragments of Hawaiian History. Mary Kawena Pukui, translated; Dorothy Barrère, edited. Bishop Museum Press, Honolulu.

Kamakau, Samuel M.
1961 *Ruling Chiefs of Hawaii: Revised Edition.* Kamehameha Schools Press, Honolulu.
1963 Ka Poʻe Kahiko. Bishop Museum Special Publication 51. Honolulu.

Kameʻeleihiwa, Lilikalā
1992 *Native Land and Foreign Desires: Pehea La E Pono Ai?* Bishop Museum Press. Honolulu.

Kelly, Marion
1983 *Na Māla o Kona*: *Gardens of Kona*. Report 83-2, Department of Anthropology. Bishop Museum. Bishop Museum Press. Honolulu.
1998 A *Gunboat Diplomacy, Sandalwood Lust and National Debt.* In *Ka Wai Ola o OHA,* Vol. 15, No. 4, April 1998.

Kirch, P.
1985 *Feathered Gods and Fishhooks: An Introduction to Hawaiian Archaeology and Prehistory*. University of Hawaii Press, Honolulu.
2011 "When Did the Polynesians Settle Hawaiʻi? A Review of 150 Years of Scholarly Inquiry and a Tentative Answer," in *Hawaiian Archaeology*. 12 (2011) pp. 3-26.

Kirch, P. V. and Sahlins, M.
1992 *Anahulu*. Vol. 1 and 2. University of Chicago Press. Chicago.
Archaeology and Prehistory. University of Hawaii Press, Honolulu.

Kuykendall, R.S.
1938 *The Hawaiian Kingdom*. Vol. 1. University of Hawai‘i Press. Honolulu.
Maui County Real Property Assessment Division Database
2019 http://www.qpublic.net/hi/maui/search.html. Accessed May 2019.

Lucas, Paul F. Nahoa
1995 *A Dictionary of Hawaiian Legal Land-terms*. Native Hawaiian Legal Corporation. University of Hawai‘i Committee for the Preservation and Study of Hawaiian Language, Art and Culture. University of Hawai‘i Press, Honolulu.

Lyons, C.J.
1875 A Land Matters in Hawaii. *The Islander*, Vol. I, Honolulu.

Monahan, Christopher M.
2003 *An Archaeological Assessment Report on Approximately 30 Acres of Land on Two Undeveloped Lots in Wailuku Ahupua‘a, Wailuku District, Maui Island, Hawai‘i [TMK: 3-5-01: 61, 63, & 66]*. Scientific Consultant Services, Inc., Honolulu.

National Cooperative Soil Survey. Web Soil Survey. http://websoilsurvey.sc.egov.usda.gov. Accessed October 2019.
Office of Environmental Quality Control
1997 G*uide to the Implementation and Practice of the Hawaii Environmental Policy Act*. State of Hawai‘i, Honolulu.

Neal, Marie C.
1965 *In the Gardens of Hawaii.* Bishop Museum, Honolulu.

Office of Hawaiian Affairs
2016 Kipuka Online Database (http://kipukadatabase.com/kipuka). Accessed June 2019.

Pantaleo, J, and A. Sinoto
1996 *Archaeological Subsurface Sampling of the Proposed Maui Lani Development Phases I and IA, Wailuku Ahupua‘a, Wailuku District, Maui Island*. Aki Sinoto Consulting, Honolulu.

Parker, Patricia L., and Thomas F. King
1998 *Guidelines for Evaluating and Documenting Traditional Cultural Properties*. National Register Bulletin 38. Washington, D.C.: National Park Service.

Perzinski, Dave and Michael F. Dega
2012 A*n Archaeological Inventory Survey of a 2.0 Acre Parcel in Waikapu Ahupuaʻa, Wailuku District, Maui Island, Hawaiʻi [TMK: 3-05-002:015]*. Scientific Consultant Services, Inc., Honolulu.

Pukui, Mary Kawena and Samuel Elbert
1986 *Hawaiian Dictionary*. University of Hawaii Press, Honolulu.

Pukui, Mary Kawena, Samuel Elbert, Esther Mookini
1974 *Place Names of Hawaii*. University of Hawaiʻi Press, Honolulu.

Rotunno-Hazuka, L., L. Somer, K. Flood, D. Lazzaro, S. Clark, and B. Dixon
1995 *Historical Research for the Proposed Maui Lani Project and Test Excavations at Site 50-50-04-2797, Wailuku, Maui*. Bernice Pauahi Bishop Museum, Honolulu

Shimamoto, A. J.
1995 *Subsurface Investigation Report, B-2 Subdivision, Wailuku Project, Wailuku, Maui, Hawaii*. Fewell Geotechnical Engineering, Inc., Kahului.

State of Hawaii. Land Survey Division
1885 F.S. Dodge. Register Map No. 1779. Electronic document. http://ags.hawaii.gov/survey/map-search. Accessed October 2019.

State of Hawaii Office of Environmental Quality Control
1997 *Guide to the Implementation and Practice of the Hawaii Environmental Policy Act, 2012 Edition*. State of Hawaii, Office of Environmental Quality Control, Honolulu. (http:// www.hawaii.gov/health/environmental/oeqc/index.html).

Stearns, Harold T.
1966 *Geology of the State of Hawaii*. Pacific Book Publishers, Palo Alto, California.

Sterling, Elspeth P.
1998 *Sites of Maui*. Bishop Museum Press. Honolulu.

Stokes, J.F.G.
1909–1916 Maui Heiau. Manuscript on file at the Bernice Pauahi Bishop Museum, Honolulu.

Thrum, Thomas G.
1909 Heiau and Heiau Sites throughout the Hawaiian Islands. *Hawaiian Almanac and Annual for 1909:* 36-48.
1917 Mauis Heiaus and Heiau Sites Revisited. *Hawaiian Almanac and Annual for 1917:* 52-62.

Van Dyke, Jon
2008 *Who Owns the Crown Lands of Hawai'i?* University of Hawai'i Press. Honolulu.

Waihona Aina Database
2019 https://www.waihona.com. Accessed June 2019.

Walker, Winslow W.
1931 *Archaeology of Maui*. Department of Anthropology, Bernice Pauahi Bishop Museum, Honolulu.

Wilson, Jon and Michael F. Dega
2005 *Archaeological Inventory Survey Report on 215.800 Ares Located in Waikapu Ahupua'a, Wailuku District, Maui Island, Hawai'i [TMK (2) 3-5-02: 02 and 03]*. Scientific Consultant Services, Inc., Honolulu.

Yent, Martha
1983 *Halekii-Pihana State Monument Phase I: Archaeological Testing and the Development of Interpretive Themes*. Manuscript on file State Historic Preservation Division, Honolulu.

APPENDIX A: EXAMPLE LETTER OF INQUIRY

Aloha kāua,

Scientific Consultant Services, Inc. (SCS) is seeking information on cultural resources and traditional, previously or on-going, cultural activities within or near the proposed Pu'unani Homestead Project area. The proposed Project will consist of the development of a subdivision comprised of 137 turn-key homes and 24 vacant lots, for a total of 161 homes and lots, within the 48.23-acre Project area. The proposed State of Hawaii, Department of Hawaiian Home Lands (DHHL) Project will be located in Waikapū Ahupua'a, Wailuku District, Island of Maui, Hawai'i [TMK: (2) 3-5-002:002, Figures 1 through 3]. The subject property is owned by the State of Hawaii, Department of Hawaiian Home Lands.

The purpose of this Cultural Impact Assessment (CIA) is to identify and understand the importance of any traditional Hawaiian and/or historic cultural resources or traditional cultural practices associated with the project area and the surrounding *ahupua'a.* In an effort to promote responsible decision-making, the CIA will gather information about the project area and its surroundings through research and interviews with individuals that are knowledgeable about the area in order to assess potential impacts to the cultural resources, cultural practices, and beliefs identified as a result of the proposed project. We are seeking your *kōkua* and guidance regarding the following aspects of our study:

- General history as well as present and past land use of the project area
- Knowledge of cultural resources which may be impacted by future development of the project area (i.e. historic and archaeological sites, as well as burials)
- Knowledge of traditional gathering practices in the project area, both past and ongoing Cultural associations of the project area, such as legends, traditional uses and beliefs
- Referrals of kūpuna or elders and kama'āina who might be willing to share their cultural knowledge of the project area and the surrounding ahupua'a
- Due to the sensitive nature regarding iwi kūpuna or ancestral remains discovered, mana'o regarding nā iwi kūpuna will be greatly appreciated
- Any other cultural concerns the community has related to Hawaiian cultural practices within or in the vicinity of the project area.

The CIA is in compliance with the Hawai'i Revised Statute (HRS) Chapter 343 Environmental Impact Statements Law and in accordance with the State of Hawai'i Department of Health's Office of Environmental Quality Control (OEQC) *Guidelines for Assessing Cultural Impacts* as adopted by the Environmental Council, State of Hawai'i on November 19, 1997 (and revised in 2012).

According to the *Guidelines for Assessing Cultural Impacts* (Office of Environmental Quality Control 2012:12):

> The types of cultural practices and beliefs subject to assessment may include subsistence, commercial, residential, agricultural, access-related, recreational, and religious and spiritual customs...The types of cultural resources subject to assessment may include traditional cultural properties or other types of historic sites, both man made and natural which support such cultural beliefs...

Enclosed are maps showing the locations of the proposed project area. Please contact me within 30 days at (808) 597-1182 or via e-mail (cathy@scshawaii.com) with any information or recommendations concerning this Cultural Impact Assessment.

Sincerely yours,

Cathleen Dagher
Senior Archaeologist

Enclosures (3)

APPENDIX B: CIA NOTICE PUBLISHED IN KA WAI OLA, SEPTEMBER 2019

PU'UNANI HOMESTEAD

Scientific Consultant Services, Inc. (SCS) is seeking information on cultural resources and traditional, previously or on-going, cultural activities within or near the proposed Pu'unani Homestead project area. The proposed project will consist of the development of a State of Hawai'i, Department of Hawaiian Home Lands (DHHL) subdivision comprised of 137 turnkey homes and 24 vacant lots, for a total of 161 homes and lots, to be located in Waikapū Ahupua'a, Wailuku District, Island of Maui, Hawai'i [TMK: (2) 3-5-002:002]. The 48.23-acre project area is owned by the State of Hawai'i, Department of Hawaiian Home Lands.

APPENDIX C: EXAMPLE FOLLOW-UP LETTER

SCIENTIFIC CONSULTANT SERVICES, Inc.
1347 Kapiolani Blvd., Suite 408 Honolulu, Hawai`i 96814

Aloha kāua,

This is the follow-up letter to our July 31, 2019, letter which was in compliance with the statutory requirements of the State of Hawai`i Revised Statute (HRS) Chapter 343 Environmental Impact Statements Law, and in accordance with the State of Hawai`i Department of Health's Office of Environmental Quality Control (OEQC) Guidelines for Assessing Cultural Impacts as adopted by the Environmental Council, State of Hawai`i, on November 19, 1997.

Scientific Consultant Services, Inc. (SCS) is seeking information on cultural resources and traditional, previously or on-going, cultural activities within or near the proposed Pu'unani Homestead Project area. The proposed Project will consist of the development of a subdivision comprised of 137 turn-key homes and 24 vacant lots, for a total of 161 homes and lots, within the 48.23-acre Project area. The proposed State of Hawaii, Department of Hawaiian Home Lands (DHHL) Project will be located in Waikapū Ahupua'a, Wailuku District, Island of Maui, Hawai'i [TMK: (2) 3-5-002:002]. The subject property is owned by the State of Hawaii, Department of Hawaiian Home Lands.

The purpose of this Cultural Impact Assessment (CIA) is to identify and understand the importance of any traditional Hawaiian and/or historic cultural resources or traditional cultural practices associated with the project area and the surrounding *ahupua'a*. In an effort to promote responsible decision-making, the CIA will gather information about the project area and its surroundings through research and interviews with individuals that are knowledgeable about the area in order to assess potential impacts to the cultural resources, cultural practices, and beliefs identified as a result of the proposed project. We are seeking your *kōkua* and guidance regarding the following aspects of our study:

- General history as well as present and past land use of the project area
- Knowledge of cultural resources which may be impacted by future development of the project area (i.e. historic and archaeological sites, as well as burials)
- Knowledge of traditional gathering practices in the project area, both past and ongoing Cultural associations of the project area, such as legends, traditional uses and beliefs
- Referrals of kūpuna or elders and kama'āina who might be willing to share their cultural knowledge of the project area and the surrounding ahupua'a
- Due to the sensitive nature regarding iwi kūpuna or ancestral remains discovered, mana'o regarding nā iwi kūpuna will be greatly appreciated

Ph: 808-597-1182 SCS... SERVING ALL YOUR *ARCHAEOLOGICAL* NEEDS Fax: 808-597-1193
Neighbor Island Offices • Hawai`i Island • Maui • Kaua`i

- Any other cultural concerns the community has related to Hawaiian cultural practices within or in the vicinity of the project area.

The CIA is in compliance with the Hawai'i Revised Statute (HRS) Chapter 343 Environmental Impact Statements Law and in accordance with the State of Hawai'i Department of Health's Office of Environmental Quality Control (OEQC) *Guidelines for Assessing Cultural Impacts* as adopted by the Environmental Council, State of Hawai'i on November 19, 1997 (and revised in 2012).

According to the *Guidelines for Assessing Cultural Impacts* (Office of Environmental Quality Control 2012:12):

> The types of cultural practices and beliefs subject to assessment may include subsistence, commercial, residential, agricultural, access-related, recreational, and religious and spiritual customs...The types of cultural resources subject to assessment may include traditional cultural properties or other types of historic sites, both man made and natural which support such cultural beliefs...

Please contact me within 30 days at (808) 597-1182 or via e-mail (cathy@scshawaii.com) with any information or recommendations concerning this Cultural Impact Assessment.

Sincerely yours,

Cathleen Dagher
Senior Archaeologist

APPENDIX D: SIGNED INFORMATION RELEASE FORMS

INFORMATION RELEASE FORM

I, the undersigned, personally participated in an interview with Cathleen Dagher, B.A., of Scientific Consultant Services, Inc., on December 23, of the year 2019. The interview was conducted, by telephone. I also provided supplemental information following the interview in late February that was written into the document.

I understand that the information I have provided to Scientific Consultant Services, Inc., shall be submitted as part of a Cultural Impact Assessment report prepared in advance of the proposed Pu'unani Homestead Project, located in Waikapū Ahupua'a, Wailuku District, Island of Maui, Hawai'i [TMK: (2) 3-5-002:002]. This information will be subject to publication which will be submitted to the public for general review.

I have read the summary of the interview and the information is true and accurate to the best of my knowledge. By signing this release form, I am providing my approval for the release of the information to Scientific Consultant Services, Inc., for the purpose outlined above (i.e., making the contents of this interview available for publication to the general public).

Print Name: Hōkūao Pellegrino

Signature: Hōkūao Pellegrino

Release Dated: February 28, 2020

PHASE I ENVIRONMENTAL SITE ASSESSMENT

APPENDIX

I

Phase I Environmental Site Assessment

Southeast of Honoapiilani Highway and Kuikahi Drive
TMK No. (2) 3-5-002:002
Wailuku, Maui, Hawaii

November 13, 2018
Project Number 25018-018132.00

Prepared for:
DDC, LLC
c/o Dowling Company, Inc.
2005 Main Street
Wailuku, Maui, Hawaii

Prepared by:

Bureau Veritas North America, Inc.
Los Angeles Regional Office
1940 East Deere Street, Suite 210
Santa Ana, California 92705
714.431.4100
www.us.bureauveritas.com/hse

The purpose of this report is to assist you, the client, in your responsibility to establish and maintain a health, safety or environmental program to prevent illness and injury to your employees and others. Our activities and recommendations are a supplement to and not a substitute for, any part of your own responsibilities and activities. These services are based upon information supplied by client management and conditions that are readily observable, and should not be relied upon exclusively to prevent all possible illnesses, injuries or losses.

BUREAU VERITAS

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EXECUTIVE SUMMARY

DDC, LLC c/o Dowling Company, Inc. retained Bureau Veritas North America, Inc. (BVNA) to conduct a Phase I Environmental Site Assessment ("ESA" or "Assessment") of the property located southeast of Honoapiilani Highway and Kuikahi Drive (Tax Map Key [TMK] number [2] 3-5-002: Parcel 002) in Wailuku, Maui, Hawaii (the "subject property"). The objective of the Assessment was to provide an independent, professional opinion regarding *recognized environmental conditions*, as defined by ASTM, associated with the subject property. This Assessment was requested in association with a real estate transaction. The planned use for the subject property is development as residences.

This Assessment was performed under the conditions of, and in accordance with BVNA's Proposal Number 2018 4547, dated October 18, 2018, and ASTM International Practice E1527-13, *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process*. Any exceptions to, additions to, or deletions from the ASTM Practice are described in the report. Details of the work performed, sources of information, and findings are presented in the report. Limitations of the Assessment are described in Sections 1.2 and 1.3.

The subject property was assessed on foot. At the time of the walkthrough, the subject property was in good condition; however, BVNA could not access the southwest portion of the property due to minor flooding. The subject property is primarily in use as pasture land for grazing livestock with a farm headquarters area in the southeast portion of the property. This area consists of make-shift animal shelters, abandoned vehicles, equipment, storage containers, and other miscellaneous items. An irrigation ditch bisects the subject property from the northwest of the south. Access can be gained from Honoapiilani Highway to the west.

The historical research presented in this Assessment has established the *obvious* uses of the subject property since 1950. In addition, information on historic uses of adjoining properties was also obtained.

The subject property was developed as agricultural land from at least 1950 until circa 2009 when it became in use as pasture land.

The adjoining properties were developed as agricultural land from at least 1950 until sometime prior to 2009. The north and west adjoining properties have been in use as pasture land since 2009. The current residences and church on the east adjoining property were developed circa 2009 and 2015, respectively. The residences were developed on the south adjoining property by 2011.

This assessment has revealed no evidence of *recognized environmental conditions*, as defined by ASTM, in connection with the subject property.

The following environmental condition, which is not considered a recognized environmental condition, was identified during this assessment:

- **Agricultural Use -** The subject property was in agricultural from at least 1950 until sometime prior to 2009. Given this usage, it is possible that the pesticides and/or herbicides were once used on site. Based on BVNA's experience in sampling soils for residual pesticides and or fertilizers that have been applied in conjunction with normal agricultural activities and the length of time since agricultural activity occurred on site, the likelihood that residual chemicals will be found above clean-up levels is low. In February 2011, a multi-increment sampling investigation was conducted by BVNA on the northern portion of the east adjoining property and at the property approximately 1,075 feet northeast. A total of five multi-increment soil samples were collected from this area and analyzed for arsenic using EPA Method 6010B, dioxins using EPA Method

8290, and organochlorine pesticides using EPA Method 8081. Results indicated that organochlorine pesticides were not detected above their respective method reporting limits. Arsenic and dioxin were both detected above their respective method reporting limits but below their environmental action limits. Exact concentrations were not listed in the report reviewed. Based on nearby results, it is BVNA's opinion that the potential past use of pesticides and/or fertilizers does not present a *recognized environmental condition* to the subject property.

Based on soil sampling on adjoining and nearby properties which did not find pesticides above action limits, no additional sampling is required. However, if site specific pesticide information is needed, then soil sampling would be required.

1.0 INTRODUCTION

DDC, LLC c/o Dowling Company, Inc. retained Bureau Veritas North America, Inc. (BVNA) to conduct a Phase I Environmental Site Assessment ("ESA" or "Assessment") of the property located southeast of Honoapiilani Highway and Kuikahi Drive (Tax Map Key [TMK] number [2] 3-5-002: Parcel 002) in Wailuku, Maui, Hawaii (the "subject property"). The planned use for the subject property is development as residences.

1.1 PURPOSE

The purpose the assessment is to follow ASTM International Practice E1527-13 (practice), which defines good commercial and customary practice in the United States of America for conducting an environmental site assessment of a parcel of commercial real estate with respect to the range of contaminants within the scope of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and petroleum products. As such, this practice is intended to permit a user to satisfy one of the requirements to qualify for the innocent landowner, contiguous property owner, or bona fide prospective purchaser limitation on CERCLA liability (the landowner liability protections or LLPs); that is, the practice that constitutes all appropriate inquiries into the previous ownership and uses of the property consistent with good commercial and customary practice as defined at 42 U.S.C. 9601(35)(B). The term *recognized environmental conditions* is defined as the presence or likely presence of any hazardous substances or petroleum products in, on, or at the property: (1) due to any release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment. D*e minimis* conditions are not *recognized environmental conditions*.

1.2 METHODOLOGY

This Assessment was performed under the conditions of, and in accordance with BVNA's Proposal Number 2018 4547, dated October 18, 2018 and ASTM International Practice E1527-13, *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process*. The United States Environmental Protection Agency (USEPA) has determined that the ASTM E1527-13 standard is consistent with the requirements for conducting All Appropriate Inquiry (AAI) and may be used to comply with the AAI regulations (40 Code of Federal Regulations [CFR] Part 312). The methods and terms are as defined in the ASTM standard and AAI regulations.

The Assessment included the following components:

- Review information provided by the client. This includes that information required by the Standard with respect to "User Responsibilities" as well as other information provided (e.g., Environmental Liens, Activity and Use Limitations [AULs], Specialized Knowledge).
- Review selected information on general geology and topography of the subject property, local groundwater conditions, and proximity to ecologically sensitive receptors, such as streams, that might be impacted by *recognized environmental conditions*.
- Investigate historical use of the subject property through reasonably ascertainable ASTM Standard Historical Sources for evidence of prior land use that could have led to *recognized environmental conditions*. These Standard Historical Sources may include: aerial photography, United States Geological Survey (USGS) topographic maps, fire insurance maps, local street directories, property tax files, building department records and zoning/land use records. Unless otherwise specified by the client/proposal this did not include a review of recorded land title records.
- Review of environmental records available from the client, property owner or site contact for evidence of *recognized environmental conditions* and AULs. This includes helpful documents such as regulatory agency reports, permits, registrations, previous assessments, etc.

- Review a commercial database summary of ASTM Standard Federal, State, and Tribal regulatory agency records pertinent to the subject property and offsite facilities located within ASTM-specified search distances from the subject property.
- Review of reasonably ascertainable Federal, State, Tribal and Local environmental agency case files for onsite facilities and adjoining properties identified in the database summary report and/or during the site reconnaissance that have the potential to adversely impact the subject property.
- Conduct an interview with at least one staff member of any one of the following: local fire department, local health department, local building department, or State/Local environmental agency. This individual was asked about their personal knowledge of the subject property, with the questioning directed to identifying *recognized environmental conditions*. For example, if the site includes a known leaking underground storage tank (LUST) incident, the State agency LUST Program Project Manager for the facility may be the person interviewed under this portion of the scope of services.
- Conduct interviews with the subject property owner (or their designated *Key Site Manager*) and occupants regarding current and previous uses of the subject property, particularly with respect to activities involving hazardous substances and petroleum products. Past owners, operators and occupants were also interviewed to the extent they were identified and their information was not likely to be duplicative. In cases of abandoned properties, where there is evidence of uncontrolled access, this included interviews with Owners/Occupants of one or more neighboring properties (subject to availability).
- Conduct an onsite reconnaissance of the subject property for visual evidence of *recognized environmental conditions*, including, but not limited to: existing or potential soil and water contamination, as evidenced by soil or pavement staining or discoloration, unnaturally stressed vegetation, or indications of waste dumping or burial; pits, ponds, or lagoons; containers of hazardous substances or petroleum products; electrical and hydraulic equipment that may contain polychlorinated biphenyls (PCBs), such as electrical transformers and hydraulic hoists; underground and aboveground storage tanks (USTs and ASTs, respectively); etc.
- A determination of the sources of water, power, and sewer service at the subject property.
- Perform a subject property line visual reconnaissance of adjacent properties for evidence of potential offsite environmental conditions that may affect the subject property.
- Evaluate information gathered during the Assessment to reach conclusions concerning *recognized environmental conditions* and prepare this report.

This Assessment did not include considerations of "Non-ASTM" issues (e.g., asbestos-containing building materials, radon, lead-based paint).

This Assessment did not include sampling or analysis of soil, groundwater or other materials.

A BVNA representative, Ms. Michelle Gonsalves, Consultant, conducted the site walkthrough portion of the Assessment on November 2, 2018, accompanied by Mr. Brian Ige, the Construction Manager with Dowling Company, Inc. This Assessment was performed by (or under the responsible charge of) an *Environmental Professional* as defined in §312.10 of 40 CFR 312 (see Section 11.0).

Copies of selected relevant documents and supporting information are included in the applicable appendices. See the Table of Contents for a list of Appendices. Resumes for assessors and *Environmental Professionals* involved in this Assessment are included in the Appendices. Photographs taken at the time of the walkthrough are included behind the *Photographs* Tab.

1.3 EXCEPTIONS & LIMITING CONDITIONS OF ASSESSMENT

Information for the Assessment was obtained from the sources listed in the Appendices. This information, to the extent it was relied on to form our opinion, is assumed to be correct and complete. BVNA is not responsible for the quality or content of information from these sources.

1.3.1 Unavailable Documentation

Requested documentation regarding the subject property was made available for review, except for the following:

- Maui Fire Department records, if any

BVNA has not received a response from the above request(s) as of the date of this report.

1.3.2 Lack of Access/Reconnaissance Limitations

BVNA did not encounter significant access or reconnaissance limitations at the subject property, except for the following:

- The southwestern portion of the subject property could not be accessed due to minor flooding.

No opinion regarding environmental conditions in areas that were not observed can be formed. It is BVNA's opinion that the access/reconnaissance limitation(s) listed above did not likely impede an evaluation of the subject property with respect to *recognized environmental conditions*.

1.3.3 Data Gaps

The ASTM Standard requires that the report identify the following: 1) *obvious* uses of the subject property since 1940 or first development, whichever is *earlier;* and 2) significant "data gaps" which affect the ability of the Environmental Professional to identify *recognized environmental conditions.* The report is also to include information on the sources consulted to address the data gaps.

Historical subject property ownership and/or use information was obtained for the time period 1950 to present. Based on this information, BVNA has established the history of *obvious* uses of the subject property since 1950 or first development, whichever is *earlier*. No significant data gaps (or other data gaps warranting discussion) were encountered during this Assessment, except for the following:

Data Gap:	Data Failure – pre 1950, a type of data gap as defined by ASTM
Does this data gap affect the EP's ability to identify RECs?	No
Rationale	Use of the subject property has been established since 1950. Prior use was likely the same (agricultural).
Information sources consulted	BVNA obtained and reviewed the following reasonably ascertainable records/information: 1) ASTM Standard Historical Sources (except recorded land title records), 2) selected local environmental records sources, 3) interviewed local government agency personnel, 4) interviewed the current owner, and 5) ASTM Standard Environmental Records Sources (through a commercially available database). Contact information for the previous owner was not provided and the scope of service did not include obtaining a chain-of-title.

1.4 RELIANCE

The information and opinions rendered in this report are exclusively for use by DDC, LLC and Dowling Company, Inc. BVNA will not distribute or publish this report without consent except as required by law or

court order. The information and opinions expressed in this report are given in response to a limited assignment and should be considered and implemented only in light of that assignment. The services provided by BVNA in completing this project were consistent with normal standards of the profession. No other warranty, expressed or implied, is made.

BVNA warrants that the services, findings, and/or recommendations provided to Comerica Incorporated, its affiliates and subsidiaries, and their respective successors and assigns (individually and collectively "Comerica"), have been prepared, performed and rendered in accordance with procedures, practices and standards generally accepted and customary in the consultant's profession for use in similar assignments. BVNA shall indemnify, save and hold harmless Comerica from and against any and all losses, costs, expenses and liabilities, including without limit reasonable attorney's fees, which are attributable to the breach of the above warranty, up to an aggregate amount of $1,000,000 (One Million Dollars), notwithstanding any limitation (expressed or implied) contained in any other agreement or document relating to the services, findings and/or recommendations provided by BVNA.

2.0 USER PROVIDED INFORMATION

ASTM E1527-13 defines "*User*" as the party seeking to use Practice E1527 to complete an environmental site assessment of the subject property. BVNA understands that DDC, LLC c/o Dowling Company, Inc. is the *User* as defined by ASTM E1527-13. ASTM E1527-13 specifies that certain tasks associated with identifying potential *recognized environmental conditions* at the subject property should be performed by the *User* and provided to the Environmental Professional (i.e., *User Responsibilities*). Accordingly, BVNA provided the *User* a questionnaire, requesting specific information (see Appendices).

The User Questionnaire included requests for information on the following: environmental liens and AULs that are filed or recorded against the property; "specialized knowledge" of the *User*; relationship of the purchase price to the fair market value of the property if it were not contaminated; commonly known or reasonable ascertainable information; the degree of obviousness of the presence of likely presence of contamination at the property, and the ability to detect the contamination by appropriate investigation; the presence of *Proceedings Involving the Property* (e.g., litigation, regulatory agency rulings, violations); and the reason for performing the Phase I ESA, and other information/documents (e.g., site plan, ALTA survey).

Based on BVNA' s review of the *User* provided information, no readily apparent evidence of potential *recognized environmental conditions* at the subject property was noted.

BVNA's understands that the *User* intends to develop the subject property as residences.

3.0 SUBJECT PROPERTY DESCRIPTION

3.1 LOCATION

The subject property is located on one parcel with TMK No. (2) 3-5-002: Parcel 002 in Wailuku, Maui, Hawaii (Figure 1, *Figures* Tab). The subject property consists of approximately 60 acres of pasture land.

3.2 CURRENT USE OF SUBJECT PROPERTY

A description of the current uses and improvement(s) (if any) at the subject property is presented in the following table(s):

Parcel/Street Address (including known historic address[es])	TMK No. (2) 3-5-002: Parcel 002
Owner:	Pacific Rim Land

Number and Size of Buildings:	Several make-shift animal shelters and storage containers
Construction Date(s):	Unknown
Tenants:	Endurance Investors LLC and Association of Wai Hui LP
Current Usage:	Pasture Land
Areas Inspected:	The southwest portion of the subject property could not be accessed due to minor flooding. The remainder of the subject property was inspected.

3.3 CURRENT USES OF ADJOINING/NEARBY PROPERTIES

The area surrounding the subject property consists of residential development and pasture land. Adjoining and nearby properties were observed (from the subject property or from public access areas) for evidence of potential *recognized environmental conditions* and their potential to pose an environmental concern to the subject property (Figure 1, *Figures* Tab). The uses and features of adjoining properties are described below (by relative compass direction and across adjoining roadways):

North		
Company/Facility Name	**Address**	**Type/Relevant Observations (if any)**
Pasture	Unaddressed Parcel	Pasture/No Concerns

East		
Company/Facility Name	**Address**	**Type/Relevant Observations (if any)**
Valley Isle Fellowship/ Single-Family Residences, and Undeveloped Land	1033 Waiale Road, 50-63 Kanamele Loop, and Unaddressed Parcel	Church, Residential, Undeveloped/No Concerns

South		
Company/Facility Name	**Address**	**Type/Relevant Observations (if any)**
Single-Family Residences	46-159 Mo'olu Circle, 76-80 Koani Loop	Residential/No Concerns

West		
Company/Facility Name	**Address**	**Type/Relevant Observations (if any)**
Pasture	Unaddressed Parcel	Pasture/No Concerns

Information regarding historical or other documented uses of nearby properties that may pose an environmental concern to the subject property is discussed in Sections 4.0 and 6.0, respectively.

3.4 PHYSICAL SETTING

The "physical setting" of the subject property was assessed through a review of the following: USGS Topographic Map, visual observations at the subject and nearby properties, and selected additional documentation (e.g., soil survey, geotechnical reports, previous Phase II assessment, interviews with local personnel, etc.). General information on the topography, surface water, soils, bedrock and groundwater in the vicinity of the subject property is as follows:

Soil Type	Lao cobbly silty clay, which is well drained and has moderately high runoff potential (ERIS, 2018).
Bedrock (Type and Depth)	Mesozoic volcanic rocks (USGS, 2017).
Nearby Surface Water/Drainage Features	A drainage ditch is currently located in the southwest portion of the subject property (Google image).
Estimated Depth Shallow Groundwater:	Groundwater was measured to be greater than 500 feet below ground surface (bgs) in the vicinity of the subject property (USGS, 2013).
Estimated Shallow Groundwater Flow Direction	East (ERIS, 2018).

The subsurface conditions under the subject property are interpreted from available data and may vary. Estimated groundwater flow direction is based on topography and nearby water features unless otherwise noted. Topography is not always a reliable basis for predicting groundwater flow direction. The local groundwater gradient under the subject property may be influenced naturally by zones of higher or lower permeability, or artificially by nearby pumping or recharge, and may deviate from the regional trend.

4.0 HISTORICAL REVIEW

The following Sections detail BVNA's review of available historical and related information. This includes a review of ASTM Standard Historical Sources, Agency/Department records/personnel interviews and other documents. The historical summary also incorporates information obtained from interviews and other components of the Assessment process.

4.1 SUMMARY OF HISTORICAL REVIEW

The historical research presented in this Assessment has established the *obvious* uses of the subject property since 1950. In addition, information on historic uses of adjoining properties was also obtained. A chronological summary of the historic use of the subject and adjoining/nearby properties is presented below. Please refer to Section 1.3.3 for a summary of significant data gaps (if any).

The subject property was developed as agricultural land from at least 1950 until circa 2009 when it became in use as pasture land.

The adjoining properties were developed as agricultural land from at least 1950 until sometime prior to 2009. The north and west adjoining properties have been in use as pasture land since 2009. The current residences and church on the east adjoining property were developed circa 2009 and 2015, respectively. The residences were developed on the south adjoining property by 2011.

4.2 AERIAL PHOTOGRAPHS

Aerial photographs, including the subject and adjoining properties, were obtained from ERIS for the years 1950, 1965, 1976, 1992, 2000, 2009, 2011, and 2015 which are included in the Appendices. Photographs reviewed are summarized as follows:

Date	Scale	Comments
1950 1965 1976 1992 2000	1”=500’	The subject and adjoining properties were developed for agricultural use.
2009	1”=500’	The subject, north, and west adjoining properties were no longer in agricultural use. Residences were developed on the southern portion of the east adjoining property. The south adjoining property was graded for development. No further changes were noted.
2011	1”=500’	There were no significant changes from the 2009 photograph, except that residences were developed on the south adjoining property.
2015	1”=500’	There were no significant changes from the 2011 photograph, except that one small building was developed in the center of the east adjoining property.

No readily apparent evidence of potential *recognized environmental conditions* at the subject or adjoining properties were noted on the aerial photographs reviewed, except for the following:

- The subject property was in agricultural use since at least 1950 until sometime prior to 2009.

4.3 USGS TOPOGRAPHIC MAPS

Topographic maps for the subject property and vicinity were obtained from ERIS for the years 1955, 1977, 1983, 1997, and 2013, which are included in the Appendices. Topographic maps reviewed are summarized as follows:

Date	Comments
1955 1977 1983 1997 2013	No structures or improvements were depicted on the subject and adjoining properties.

No readily apparent evidence of potential *recognized environmental conditions* at the subject or adjoining properties were noted on the topographic maps reviewed.

4.4 FIRE INSURANCE MAPS

Fire insurance maps were not available for the area of the subject property, according to ERIS.

4.5 CITY DIRECTORIES

City directories covering the subject property and adjoining properties were obtained from ERIS for the period between 1995 and 2018, which are included in the Appendices. A summary of the listings for the subject property and selected adjoining/nearby properties is shown below.

- The subject and adjoining properties were not listed in the city directories reviewed.

No readily apparent evidence of potential *recognized environmental conditions* at the subject or adjoining properties was noted on the city directories reviewed.

4.6 RECORDED LAND TITLE RECORDS

Information (if any) provided to BVNA by the *User* with respect to environmental liens or AULs was discussed in Section 2.0. It should be noted that the ASTM Standard recommends that the User retain a title company or title professional to undertake a review of recorded land title records.

4.7 AGENCY CONTACTS

BVNA contacted various government offices to request information on the subject property. Information was requested with respect to historic use and various environmental-related issues, such as: permits, use of or complaints/spills/violations involving hazardous substance and petroleum products, USTs, ASTs, etc. In addition, interviews were also conducted with available agency personnel. Interviews requested relevant *personal* knowledge regarding the past history of use of, and/or potential *recognized environmental conditions* associated with, the subject property. The government offices and local officials contacted are presented below, along with the relevant information (if any) they provided.

Agency: **BUILDING, PLANNING AND/OR ZONING DEPARTMENTS**

Permits/Comments: The County of Maui Building Department and Tax Assessor was contacted on October 30, 2018 to obtain any structural permits for the subject property. No structural permits are on file for the subject property; however, it was noted that the subject property has been primarily used as pasture land in the tax records since at least 2001.

Agency: **HAWAII DEPARTMENT OF HEALTH**

Permits/Comments: The Hawaii Department of Health was contacted on October 30, 2018 to obtain information regarding permits or violations involving hazardous material use or USTs on record for the subject property. According to the HDOH on November 8, 2018, there were no records on file for the subject property.

Agency: **COUNTY OF MAUI FIRE DEPARTMENT**

Permits/Comments: The Maui Fire Department was contacted on October 30, 2018 to obtain information regarding any files regarding subsurface contamination at the subject property and adjoining properties. BVNA has not received a response as of the date of this report.

Agency: **COUNTY OF MAUI DEPARTMENT OF PUBLIC WORKS**

Permits/Comments: The County of Maui Department of Public Works (MDPW) was contacted October 30, 2018 to obtain any files regarding subsurface contamination at the subject property. According to the MDPW on November 12, 2018 there were no records on file for the subject property.

4.8 PREVIOUS ENVIRONMENTAL REPORTS OR OTHER DOCUMENTS

BVNA made requests to the client and the current property owner/site contact regarding the presence of previous environmental reports or other relevant documents for the subject property (e.g., previous Phase

I or Phase II ESA, geotechnical report, MSDS, etc.) No previous reports were available for review; however, the following report was available for the northern portion of the east adjoining property:

***Phase I Environmental Site Assessment, 160-Acre Kehalani Property, TMKs (2) 3-5-001: Parcels 063 (Portions), 064, and 108 through 117, Wailuku, Maui, Hawaii*, dated March 7, 2016, prepared by BVNA for Redwood Capital Finance Company, LLC.**

This Assessment was completed for a larger property that includes the northern portion of the east adjoining property (Parcel 064). According to the report, a multi-increment sampling investigation was completed in February 2011 for the entirety of the property. A total of 64 multi-increment soil samples were collected and analyzed for arsenic using EPA Method 6010B, dioxins using EPA Method 8290, and organochlorine pesticides using EPA Method 8081. A total of five multi-increment soil samples collected from near the subject property found that organochlorine pesticides were not detected above their respective method reporting limits. Arsenic and dioxin were both detected above their respective method reporting limits but below their respective environmental action limits. Exact concentrations were not listed in the report reviewed. No further action was recommended.

5.0 INTERVIEWS

BVNA interviewed selected individuals associated with the subject property. The purpose of the interview(s) was to obtain additional information related to 1) the current and past operations at the subject and/or adjoining properties that may result in *recognized environmental conditions*, and 2) the presence of *Proceedings Involving the Property* (e.g., litigation, regulatory agency rulings, violations, etc.).

This included interviews with the current property Owner(s) and/or their "*Key Site Manager(s)*" and major Operators/Occupants. The "*Key Site Manager*" is that individual designated by the Property Owner that possesses good knowledge of the uses and physical characteristics of the property. Past owners, operators and occupants were also interviewed if 1) they were identified, 2) contact information was obtained, and 3) the information was not likely to be duplicative of that obtained from other sources. Information (if any) obtained from interviews with local Agency personnel is included in Section 4.7. In addition, in the event the subject property currently appears "abandoned" with evidence of potentially unauthorized uses or uncontrolled access, one or more owners/occupants of adjoining properties were interviewed.

5.1 INTERVIEW WITH OWNER

Mr. Ryan Churchill, the Vice President of Pacific Rim Land, filled out an interview questionnaire via email on November 2, 2018. Mr. Churchill has been associated with the subject property for approximately three years and was forthcoming with information of which he had knowledge. Mr. Churchill was unaware of any USTs, ASTs, or hazardous materials located on the subject property.

Mr. Churchill was asked if he was aware of any of the following:

Any pending, threatened, or past litigation relevant to hazardous substances or petroleum products in, on, or from the property.	Yes ___	No	X
Any pending, threatened or past administrative proceedings relevant to hazardous substances or petroleum products in, on, or from the property.	Yes ___	No	X
Any notices from any governmental entity regarding any possible violation of environmental laws or possible liability relating to hazardous substances or petroleum products.	Yes ___	No	X

Previous owners were not interviewed during this assessment, because adequate information was obtained from other sources.

5.2 INTERVIEWS WITH OTHERS

No other interviews were conducted.

6.0 STANDARD ENVIRONMENTAL RECORD SOURCES: FEDERAL, STATE, AND TRIBAL

Available government database information prepared by ERIS was reviewed to evaluate both the subject property and listed sites within ASTM-recommended search distances. This included ASTM Standard Federal, State, and Tribal databases and may also include other types of records, subject to availability (e.g., local lists).

The regulatory database report also included an Unmappable Sites Section. Unmappable sites are sites that cannot be plotted with confidence, but can be located by zip code or city name. In general, a site cannot be geocoded due to inaccurate or missing information in the environmental database record provided by its applicable agency. Unmappable sites that were identified by BVNA are included, as applicable, within the following paragraphs.

The subject property was not identified in the databases reviewed.

Eight sites and two unmappable sites were identified in the databases reviewed.

The computer database review identified no nearby/adjoining facilities within the specified search distances from the subject property within ASTM-recommended search distances of the subject property. It is BVNA's opinion that these facilities do not represent a potential *recognized environmental condition* with respect to the subject property.

7.0 TIER 1 VAPOR ENCROACHMENT SCREEN (VES)

BVNA conducted a Tier 1 VES during the Phase I ESA. The VES was conducted in accordance with ASTM E2600-10, *Standard Guide for Vapor Encroachment Screening on Property Involved in Real Estate Transactions*. A VES is often conducted in conjunction with a Phase I Assessment as much of the information utilized is common to both processes. The methods and terms are as defined in the ASTM standard.

The goal of a VES is to identify a *vapor encroachment condition* (VEC) at a subject property. A VEC is defined as the presence of likely presence of *chemicals of concern* (COC) vapors in the subsurface of a subject property caused by the release of vapors from contaminated soil or groundwater either on or near the subject property.

In accordance with the Standard, BVNA requested that the *User* provide information on the subject property, with respect to the following: "specialized knowledge" of the *User*; and commonly known or reasonable ascertainable information. No evidence of a VEC was identified in the *User* provided information.

7.1 TIER 1 SCREENING INFORMATION

A Tier 1 VES includes obtaining and reviewing information on the subject property and adjoining properties. This includes information on the following: user provided information; physical setting information; existing/planned use of the subject property; types of structures/existing or planned on the subject property; surrounding area description; selected Federal, State, Local and Tribal environmental records sources; historical records related to the past use of the subject property and adjoining properties within the *area of concern* (AOC), $^{1}/_{3}$ to $^{1}/_{10}$ mile; the likely chemicals of concern (COC); and the presence of significant natural or man-made conduits that can serve as preferential pathways, such as utility corridors, sewers, storm drains, etc. (Note: These "preferential pathways" may provide for a more direct route for vapors to encroach upon the subject property).

As stated previously, most of this information was obtained as part of the standard Phase I assessment process and has already been discussed in the applicable sections of this report. Additional information was also obtained with respect to the following: planned additional structures; and significant natural or man-made "preferential pathways" of potential vapor migration. This information is summarized below:

- The planned use for the subject property is development as residences.
- The subject property is currently not connected to utilities.

7.2 TIER 1 SCREENING EVALUATION

An evaluation of that information includes two tests: 1) a search distance test to evaluate the proximity of the target property to known or suspected "*contaminated properties*", and 2) a chemicals of concern test to determine the likely presence of COCs at the subject or properties within the AOC. In evaluating the data, the distance and proximity to potentially contaminated offsite properties must be evaluated, including whether they are up-, cross-, or down-gradient relative to the subject property. A brief summary of relevant information considered for the Tier 1 screening follows:

Use of Property:	Pasture
Soil Characteristics:	Lao cobbly silty clay
Depth to groundwater:	Greater than 500 feet bgs
Preferential Pathways:	The subject property is not connected with utilities

The *vapor encroachment screen* process has been completed in accordance with the Standard. No evidence of a *vapor encroachment conditions* were identified at the subject property or nearby properties.

8.0 SITE RECONNAISSANCE

8.1 GENERAL OBSERVATIONS

The subject property was assessed on foot. At the time of the walkthrough, the subject property was in good condition; however, BVNA could not access the southwest portion of the property due to minor flooding. The subject property is primarily in use as pasture land for grazing livestock with a farm headquarters area in the southeast portion of the property. This area consists of make-shift animal shelters, abandoned vehicles, equipment, storage containers, and other miscellaneous items. An irrigation ditch bisects the subject property from the northwest of the south. Access can be gained from Honoapiilani Highway to the east.

The following information was obtained regarding subject property utilities:

- Electricity: Not Applicable
- Natural Gas: Not Applicable
- Water: Not Applicable

8.2 CURRENT SITE CONDITIONS

	Yes	No
Stained Soil/Surface		XX
Distressed Vegetation		XX
Odors		XX
Chemical/Hazardous Materials Storage	XX	

Comments (types, amount, location): Small amounts (5 gallons or less) of oil-based materials are stored within a flammable cabinet in farm headquarters. Additionally, three 500-gallon propane ASTs were observed within this area. No secondary containment was observed. All containers were in good condition and no evidence of a release was observed.

	Yes	No
Drums/Unidentified Substance Containers		XX
Wastewater/Stormwater	XX	

Comments (types, amount, location): Wastewater currently does not originate at the subject property. The storm water runoff percolates into the ground or flows into the irrigation ditch located on the subject property.

	Yes	No
Sumps/Floor Drains		XX
Leachfields/Septic Tank		XX
Pits/Ponds/Lagoons/Pools of Liquids		XX

Source of Fuel for Heating: Not Applicable

	Yes	No
Wells		XX

Waste Handling and Disposal:

Comments (types, amount, location): Non-hazardous household waste is currently not generated at the subject property.

Potential PCB-Containing Equipment	**Yes**		**No**	**XX**
Aboveground Storage Tanks (ASTs)	**Yes**	**XX**	**No**	

Comments (types, amount, location): Three 500-gallon propane ASTs and several 220-gallon water totes were observed in the farm headquarters area. No secondary containment was observed. All containers were in good condition and no evidence of a release was observed.

Underground Storage Tanks (USTs)	**Yes**		**No**	**XX**

9.0 NON-ASTM ISSUES

The scope of services for this Assessment did not include an evaluation of "Non-ASTM" issues (e.g., asbestos-containing building materials, radon, lead-based paint, lead in drinking water, wetlands, etc).

10.0 FINDINGS AND OPINIONS

This section presents a summary of available information on known or suspected *recognized environmental conditions, controlled recognized environmental conditions, historical recognized environmental condition, vapor encroachment conditions,* and *de minimis conditions* (if any) at the subject property. It also includes BVNA's opinion and rationale for concluding that a condition is, or is not, currently a *recognized environmental condition.*

BVNA has performed a Phase I Environmental Site Assessment in conformance with the scope and limitations of ASTM Practice E1527-0513 of the property located southeast of Honoapiilani Highway and Kuikahi Drive (TMK No. [2] 3-5-00: Parcel 002) in Wailuku, Maui, Hawaii (the "subject property"). Any exceptions to, or deletions from, this practice are described in Sections 1.2 and 1.3 of this report.

This assessment has revealed no evidence of *recognized environmental conditions*, as defined by ASTM, in connection with the subject property.

The following environmental condition, which is not considered a recognized environmental conditions, was identified during this assessment:

- **Agricultural Use -** The subject property was in agricultural from at least 1950 until sometime prior to 2009. Given this usage, it is possible that the pesticides and/or herbicides were once used on site. Based on BVNA's experience in sampling soils for residual pesticides and or fertilizers that have been applied in conjunction with normal agricultural activities and the length of time since agricultural activity occurred on site, the likelihood that residual chemicals will be found above clean-up levels is low. In February 2011, a multi-increment sampling investigation was conducted by BVNA on the northern portion of the east adjoining property and at the property

approximately 1,075 feet northeast. A total of five multi-increment soil samples were collected from this area and analyzed for arsenic using EPA Method 6010B, dioxins using EPA Method 8290, and organochlorine pesticides using EPA Method 8081. Results indicated that organochlorine pesticides were not detected above their respective method reporting limits. Arsenic and dioxin were both detected above their respective method reporting limits but below their environmental action limits. Exact concentrations were not listed in the report reviewed. Based on nearby results, it is BVNA's opinion that the potential past use of pesticides and/or fertilizers does not present a *recognized environmental condition* to the subject property.

Based on soil sampling on adjoining and nearby properties which did not find pesticides above action limits, no additional sampling is required. However, if site specific pesticide information is needed, then soil sampling would be required.

SIGNATURES

This report was prepared, under the responsible charge of the Environmental Professional noted below, by:

Jennifer Woods
Consultant
Health, Safety and Environmental Services
Los Angeles Regional Office
BVNA North America, Inc.

Environmental Professional's Certification:

I declare that, to the best of my professional knowledge and belief, I meet the definition of Environmental Professional as defined in §312.10 of 40 CFR 312. I have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property. I have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

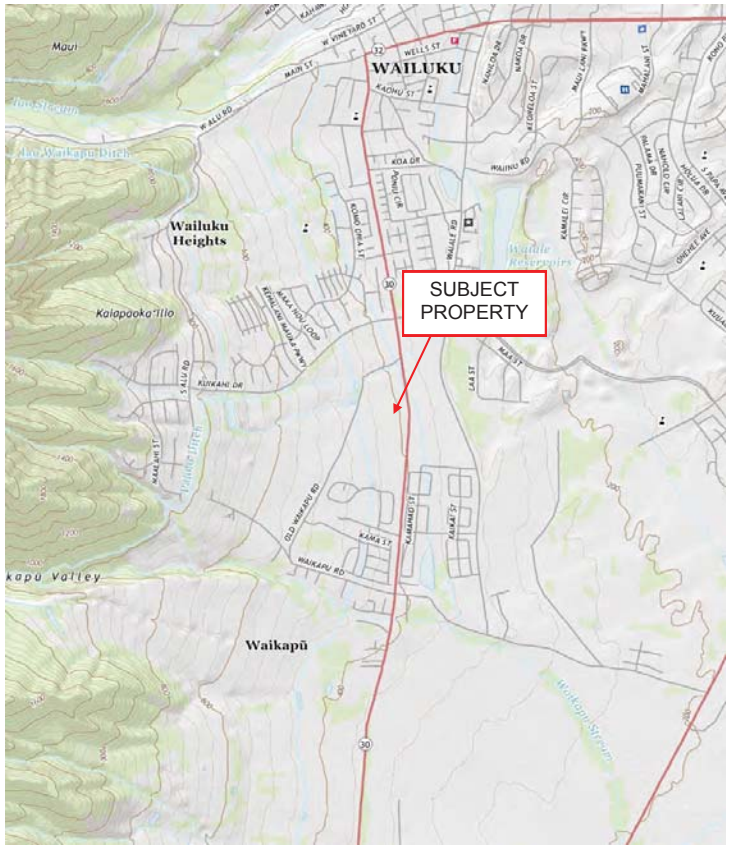
Shannon Gillespie, REA No. 03582
Manager, Due Diligence & Regulated Building Materials
Health, Safety and Environmental Services
Los Angeles Regional Office
Bureau Veritas North America, Inc.

November 13, 2018

Phase I Environmental Site Assessment
Southeast of Honoapiilani Highway and Kuikahi Drive
TMK Nos. (2) 3-5-002:Parcel 002
Wailuku, Maui, Hawaii

BVNA Project No. 25018-018132.00

FIGURES



PORTION OF 7.5-MINUTE
(TOPOGRAPHIC) MAP
UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

WAILUKU QUADRANGLE
(2013)

SCALE 1 : 24,000	SITE LOCATION SOUTHEST OF HONOAPIILANI HIGHWAY AND KUIKAHI DRIVE TMK NO. (2) 3-5-002:002 WAILUKU, MAUI, HAWAII	BUREAU VERITAS	FIGURE
DATE NOVEMBER 7, 2018			1
PRJ NO. 25018-018132.00			

LEGEND

SUBJECT PROPERTY BOUNDARY

SCALE 1 : 24,000	SITE VICINITY SOUTHEAST OF HONOAPIILANI HIGHWAY AND KUIKAHI DRIVE TMK NO. (2) 3-5-002:002 WAILUKU, MAUI, HAWAII	BUREAU VERITAS	FIGURE
DATE NOVEMBER 7, 2018			2
PRJ NO. 25018-018132.00			

PHOTOGRAPHS

SITE:	Southeast of Honoapiilani Highway and Kuikahi Drive	**PROJECT No.:**	25018-018132.00
LOCATION:	TMK No. (2) 3-5-002: 002, Wailuku, Maui, Hawaii	**DATE:**	November 2, 2018

1

View of southeast corner of the subject property facing southeast.

2

Abandoned vehicle located on the southeast corner of the subject property facing north.

SITE: Southeast of Honoapiilani Highway and Kuikahi Drive **PROJECT No.:** 25018-018132.00

LOCATION: TMK No. (2) 3-5-002: 002, Wailuku, Maui, Hawaii **DATE:** November 2, 2018

3

Abandoned equipment located on the southeast corner of the subject property facing west.

4

View of access road, and abandoned equipment, on the southeast side of the subject property, facing west.

SITE: Southeast of Honoapiilani Highway and Kuikahi Drive **PROJECT No.:** 25018-018132.00

LOCATION: TMK No. (2) 3-5-002: 002, Wailuku, Maui, Hawaii **DATE:** November 2, 2018

5

Irrigation ditch that bisects the subject property facing north.

6

Shipping container used for storage, located in the center of the subject property facing north.

SITE:	Southeast of Honoapiilani Highway and Kuikahi Drive	**PROJECT No.:**	25018-018132.00
LOCATION:	TMK No. (2) 3-5-002: 002, Wailuku, Maui, Hawaii	**DATE:**	November 2, 2018

7

Animal shelters located on the central portion of the subject property facing northwest.

8

Arena located on the central portion of the subject property facing east.

SITE:	Southeast of Honoapiilani Highway and Kuikahi Drive	**PROJECT No.:**	25018-018132.00
LOCATION:	TMK No. (2) 3-5-002: 002, Wailuku, Maui, Hawaii	**DATE:**	November 2, 2018

9

Propane tanks located near the farm headquarters on the central portion of the subject property facing west.

10

Fire hazard cabinet located north of the farm headquarters area facing north.

SITE:	Southeast of Honoapiilani Highway and Kuikahi Drive	**PROJECT No.:**	25018-018132.00
LOCATION:	TMK No. (2) 3-5-002: 002, Wailuku, Maui, Hawaii	**DATE:**	November 2, 2018

11

Tires and other rubbish located just north of the farm headquarters facing east.

12

Large dumpsters located just north of the farm headquarters facing north.

SITE:	Southeast of Honoapiilani Highway and Kuikahi Drive	**PROJECT No.:**	25018-018132.00
LOCATION:	TMK No. (2) 3-5-002: 002, Wailuku, Maui, Hawaii	**DATE:**	November 2, 2018

13

One of the pastures on the subject property looking west from the northeast side of the subject property.

14

Gated entrance to the southwest side of the subject property facing south.

SITE:	Southeast of Honoapiilani Highway and Kuikahi Drive	**PROJECT No.:**	25018-018132.00
LOCATION:	TMK No. (2) 3-5-002: 002, Wailuku, Maui, Hawaii	**DATE:**	November 2, 2018

15

Residential properties that border the south side of the subject property facing southeast.

16

Honoapiilani Highway, which borders the east side of the subject property facing northeast.

APPENDIX A

RESUMES

Jennifer Woods

Consultant I

Education

B.S., Environmental Science
University of California, San Diego
La Jolla, CA

Registrations/Certifications

Asbestos Hazard Emergency Response Act (AHERA) Certified Building Inspector (6N10515)

Asbestos Contractor/Supervisor

(5N12392)

Asbestos Certified Site Surveillance Technician

(17-6101)

Certified Lead Sampling Technician (28050)

40-Hour OSHA HAZWOPER Trained

Location

Costa Mesa, CA

Years with Bureau Veritas

2.5 Years

Total Years of Experience

2.5 Years

Ms. Woods conducts Phase I Environmental Site Assessments (ESAs) for various financial, real estate, industrial, and commercial clients. Using American Society for Testing Materials (ASTM) standard practices as a guideline, Ms. Woods has conducted Phase I ESAs of industrial sites, commercial buildings, and undeveloped land throughout California, Arizona, Washington, Nevada, Idaho, and Montana. These have included performing historical research, interviewing owners, occupants, and local government officials, and generating reports. Ms. Woods also has participated in all phases of asbestos and lead projects.

In addition, to assessing potential environmental conditions, Ms. Woods participates in Phase II investigative activities, including soil sampling, groundwater sampling, and soil vapor sampling.

Ms. Woods also performs National Environmental Protection Act (NEPA) compliance work in California for proposed and existing wireless communications facilities. She also researches and generates reports regarding the specific location of historical sites, endangered species and habitats, wildlife and wilderness preserves, and Native American religious areas.

Jennifer Woods

Project Experience

Phase I Environmental Site Assessments (ESAs)

Real Estate Transactions

Ms. Woods has conducted various Phase I ESAs throughout Southern California to satisfy due diligence investigations for real estate transactions, banks, real estate investment companies, developers, and property owners. Ms. Woods has conducted site inspections and investigated surrounding property usage; reviewed relevant regulatory files for investigations at the site or in the immediate area; and surveyed past site and surrounding property uses using aerial photographs, city directories, fire insurance maps and government records.

Phase II Subsurface Investigations

Real Estate Transactions

Ms. Woods has conducted a variety of activities associated with Phase II Subsurface Investigations including field soil, groundwater, and soil vapor sample collection and lithology description, data quality control, and generating reports.

National Environmental Policy Act (NEPA)

Telecommunications

Ms. Woods has conducted environmental assessments in Southern California in compliance with the National Environmental Protection Act (NEPA) for national telecommunications clients. Ms. Woods' research includes consultation with several bureaus within the United States Department of Interior such as National Park Services (NPS), United States Fish & Wildlife Services and Bureau of Land Management (BLM). In addition, Ms. Woods contacts state and local agencies, federally and non-federally recognized Native American Tribes concerning religious areas, and the California Historic Preservation Office. Ms. Woods has investigated potential wildlife and wilderness preserves, wetlands, endangered or threatened species and habitats and Native American religious areas. Ms. Woods has knowledge of the Federal Communications Commission's (FCC) Nationwide Programmatic Agreement (NPA).

Employment History

Bureau Veritas North America, Inc. – Costa Mesa, California
Consultant I
2015 to Present

Shannon Gillespie, REPA

Manager, Due Diligence & Regulated Building Materials

Due Diligence Practice Line Leader

B.S., Chemistry, 1986
Arizona State University,
Tempe, Arizona

California Registered Environmental Assessor, REA-03582: 1992

Registered Environmental Property Assessor: 2013

OSHA 8-hour HAZWOPER Refresher

OSHA 40-hour Hazardous Waste, Health and Safety Accreditation Training

AHERA Building Inspector

Ms. Gillespie has over 27 years of technical experience in conducting environmental assessments. Ms. Gillespie supervises staff responsible for conducting Phase I Environmental Assessments and subsequent subsurface investigations, NEPA projects and asbestos and lead projects and has final review of project deliverables. She interacts with clients and is responsible for assuring report timeliness and maintaining project budgets. She prepares Phase I, subsurface investigation and asbestos and lead proposals and conducts business development. Ms. Gillespie is also the Due Diligence Practice Line Leader, which conducts Phase I training of BVNA personnel, standardizing company boilerplate reports and maintaining company quality.

Ms. Gillespie has coordinated, managed, and conducted Phase I environmental assessments of commercial and industrial properties as part of real estate transactions for due diligence investigations. The Phase I assessments include site visits to inspect current site and vicinity usage, review of relevant regulatory files for investigations at the site or in the area, personnel interviews, reviews of hazardous material and waste handling practices, identifying potential sources of contamination and asbestos-containing materials, and surveys of past site and vicinity usages, and reviewing aerial photographs, city directories, fire insurance maps, and government records.

Ms. Gillespie also reviews environmental assessment reports for financial institutions to assess business risk and assists clients in the preparation of Hazardous Materials Business Plans. Additionally, she conducts Phase II and Phase III assessments to locate and determine the extent of soil and groundwater contamination. Her responsibilities include soil boring installation, developing site-specific work plans and health and safety plans, interpreting analytical results, estimating volumes of impacted soil and groundwater, estimating remediation costs and report preparation. She reviews environmental assessment and subsurface investigation reports written by staff personnel and other consultants.

Shannon Gillespie, REPA

Project Experience

CERCLA Preliminary Assessment

State of California Real Estate Division (formerly Division of the State Architect)

Prepared a CERCLA preliminary assessment for a 1,300-acre Department of Defense and California Army National Guard installation (Los Alamitos Armed Forces Reserve Center). The assessment included: a review of available files, personnel interviews, onsite and offsite reconnaissance, historical aerial photograph review and survey of potential sources of past and current contamination and contaminant sources. The preliminary assessment indicated that past and present operations at the installation had involved the use, storage, treatment, spillage, leakage, and disposal of materials and/or wastes that are now considered hazardous. These materials and wastes were used in a variety of aircraft and vehicle maintenance, fuel storage, landfilling, aircraft-washing, and other facility activities and operations. Based on this information, potential areas of concern at the installation requiring site investigation activities were identified. The Preliminary Assessment was conducted using guidelines developed by the U.S. Environmental Protection Agency (EPA), Waste Management Division, Region IX and the California Department of Toxic Substances (DTSC).

The SI included twelve potential areas of concern identified in the Preliminary Assessment (PA). The areas included two landfills, a flight line area, revetments, fuel tank farms, former rifle ranges, clarifiers, munitions bunkers, agricultural areas and a wastewater treatment plant. Investigation included the collection of air, surface water, groundwater, soil and soil vapor samples to assess the presence of various contaminants that were identified in the previously completed PA. Ms Gillespie was an integral member of the team in the evaluation of data collected during the SI and generation the Remedial Investigation Work plan, Health and Safety Plan, Quality Assurance Project Plan and Field Sampling Plan.

Phase I Environmental Assessments

Lending Institute

Supervised the completion of a 45 site portfolio for a major lending institute to satisfy due diligence. The sites were located in California, Texas and Arizona and required the coordination of staff from 3 other BVNA offices. All field work and written reports had to be completed within a 4 week period of time and within a tight budget. Ms. Gillespie solely maintained client contact and reviewed all deliverables prior to submittal to client. Some of the projects required subsequent Phase II investigations based on findings during the Phase I.

Phase I Environmental Assessments

Residential Housing Developer

Conducted numerous Phase I environmental assessment s of large tracts of land prior to the client purchasing properties for residential development. Based on the findings of the site inspection, subsurface investigations are conducted simultaneous to the completion of the Phase I. The subsurface investigations have to be completed within the same time frame as the Phase Is. Previous site usage ranges from agricultural use to multiple gas stations and industrial use.

Phase I Environmental Assessments

Cellular Communications Company

Managed the completion of over 1000 assessments for a cellular communications company to satisfy due diligence. Completion of the project, which included Phase I Environmental Site Assessments, NEPA work, subsurface investigations and asbestos & lead assessments, required the coordination of staff from five other BVNA offices. All fieldwork and written reports had to be completed within a quick turnaround and within a tight budget. Ms. Gillespie solely maintained client contact and reviewed all deliverables prior to submittal to client.

Employment History

Bureau Veritas North America, Inc., Costa Mesa, California, Manager Due Diligence, 1989 to Present

Rollins Chempak, Inc., Ontario & Los Angeles, California - 1988 to 1989; Disposal Control Service, Phoenix, Arizona, 1987 to 1988; Maricopa County Landfill Department, Phoenix, Arizona, 1987; Salt River Project, Phoenix, Arizona, 1985

APPENDIX B

SOURCES AND REFERENCES

LIST OF SOURCES/REFERENCES

Sources of Information

- ASTM International, "*Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process*," ASTM Designation E1527-13
- ASTM International, "*Standard Guide for Vapor Encroachment Screening on Property Involved in Real Estate Transaction," ASTM Designation E2600-10*

Persons/Agencies Contacted

- Mr. Brian Ige, Construction Manager, November 2, 2018
- Mr. Aaron Churchill, Vice President, November 2, 2018
- Maui Fire Department, October 31, 2018
- Maui Building Department, October 31, 2018
- Hawaii Department of Health, October 31, 2018

Documents Reviewed

- USGS Topographic Map, Wailuku, *Quadrangle Map, 7.5 Minute Series*, 2013
- Aerial photographs, obtained from ERIS: 1950, 1965, 1976, 1992, 2000, 2009, 2011, 2015
- Historic topographic maps, obtained from ERIS: 1955, 1977, 1983, 1997, 2013
- Fire insurance maps, obtained from ERIS: No maps are available for the subject property vicinity
- City Directories, obtained from ERIS: 1995 to 2016
- Database Report, ERIS, dated October 31, 2018

APPENDIX C

USER QUESTIONNAIRE
AND
OTHER DOCUMENTS

BUREAU VERITAS

ASTM PRACTICE E 1527-13 USER/CLIENT QUESTIONNAIRE
To be returned to BVNA with the authorized proposal

GENERAL INFORMATION

User/Client Name(s):	**DDC, LLC**
Property Name and Address (Include known current and former address[es] and parcel no.):	**TMK: (2) 3-5-002:002**
Property Acreage:	**60.087 acres**
Current Property Type (Designate property type and list current tenants [business name and type of operation]):	Residential: __ Commercial: __ Industrial: __ Other: **X Agriculture**
Type of Property Transaction with respect to User (Designate one):	Purchase: **X** Lease: __ Other (provide further information): __
Reason Phase I is Required (Check all that apply):	*Landowner Liability Protections* (e.g. Innocent Landowner Defense): __ Evaluation of Business Risk: **X Suitability of Land for Residential Development** Other (list): __ (Note: If no reason is given it is assumed that this assessment is being performed to satisfy one of the requirements for *Landowner Liability Protections* to *CERCLA* liability.
Site Owner/ Contact(s) (Name and phone number):	Association of II Wai Hui LP & Endurance Investors, LLC Ryan Churchill (808) 270-5946

Please provide the above information as well as a site plan (ALTA Survey, if available) which clearly designates the boundaries of the subject property for purposes of this Phase I ESA. A list of other Helpful Documents is included with the proposal.

Providing the following information (if available) to the *environmental professional* (BVNA) is one of the requirements to qualify for one of the *Landowner Liability Protections (LLPs)* offered under CERCLA. Missing or incomplete information could result in a determination that "*all appropriate inquiry*" is not complete. If further information is desired regarding these issues, BVNA recommends you consult with an Environmental Attorney.

REQUIRED INFORMATION

The citation at the end of each item (e.g., 40 CFR 312.XX) is the section of EPA's November 1, 2005 AAI Final Rule which discusses that item. The ASTM Standard requires that reasonably ascertainable recorded land title records that are filed under federal, tribal, state and local law should be reviewed to determine the presence of Environmental Liens and Activity and Use Limitations (AULs) that are currently recorded against the property. This should also include a review of Environmental Liens and AULs that are imposed by judicial authorities and recorded/filed in judicial records. The Standard recommends that the User retain a title company or title professional to undertake a review of recorded land title records. Furthermore, the User is to provide any actual knowledge on Environmental Liens and AULs, as well as other selected information regarding *recognized environmental conditions,* to the *environmental professional.*

1. Environmental cleanup liens that are filed or recorded against the site (40 CFR 312.25).
Given the above requirement, are you aware of any environmental cleanup liens against the *property* that are filed or recorded under federal, tribal, state or local law? (Check One)

No: **X, We are obtaining a current title report for the property.**

Yes (If "Yes" provide further information): __

(Note: If you desire that BVNA retain a title company/title professional on your behalf to review reasonably ascertainable recorded land title records for the presence of environmental cleanup liens and AULs currently recorded against the property please designate such on the Proposal Acceptance Agreement)

2. Activity and land use limitations (AULs) that are in place on the site or that have been filed or recorded in a registry (40 CFR 312.26).
Given the above requirement, are you aware of any AULs, such as *engineering controls*, land use restrictions or *institutional controls* that are in place at the site and/or have been filed or recorded in a registry under federal, tribal, state or local law? (Check One)

No: **X**

Yes (If "Yes" provide further information): __

3. Specialized knowledge or experience of the person seeking to qualify for the LLP (40 CFR 312.28).
As the *user* of this *ESA* do you have any specialized knowledge or experience related to the *property* or nearby properties? For example, are you involved in the same line of business as the current or former *occupants* of the *property* or an adjoining *property* so that you would have specialized knowledge of the chemicals and processes used by this type of business? (Check One)

No: **X**

Yes (If "Yes" provide further information): __

4. Relationship of the purchase price to the fair market value of the *property* if it were not contaminated (40 CFR 312.29).
Does the purchase price being paid for this *property* reasonably reflect the fair market value of the *property*? If you conclude that there is a difference, have you considered whether the lower purchase price is because contamination is known or believed to be present at the *property*?

Yes: **X**

No (If "No" provide further information): __

Not Applicable (e.g., transaction is a lease): __

5. Commonly known or *reasonably ascertainable* information about the *property* (40 CFR 312.30).
Are you aware of commonly known or *reasonably ascertainable* information about the *property* that would help the *environmental professional* to identify conditions indicative of releases or threatened releases?

No: **X**

Yes (If "Yes" provide further information): __

For example, as *user*,
(a.) Do you know the past uses of the *property*?

No: __

Yes (If "Yes" provide further information): **X, The property was formerly used for the growing of sugar cane.**

(b.) Do you know of specific chemicals that are present or once were present at the *property*?

No: __

Yes (If "Yes" provide further information): __

(c.) Do you know of spills or other chemical releases that have taken place at the *property*?

No: __

Yes (If "Yes" provide further information): __

(d.) Do you know of any environmental cleanups that have taken place at the *property*?

No: __

Yes (If "Yes" provide further information): __

6. The degree of obviousness of the presence or likely presence of contamination at the *property* and the ability to detect the contamination by appropriate investigation (40 CFR 312.31). As the *user* of this *ESA*, based on your knowledge and experience related to the *property* are there any *obvious* indicators that point to the presence or likely presence of contamination at the *property*?
No: **X** Yes (If "Yes" provide further information): __

7. Proceedings involving the *property* (ASTM E 1527-13 § 10.9). Are you aware of any of the following: (a.) Any pending, threatened, or past litigation relevant to hazardous substances or petroleum products in, on, or from the property? No: **X** Yes (If "Yes" provide further information): __ (b.) Any pending, threatened, or past administrative proceedings relevant to hazardous substances or petroleum products in, on, or from the property? No: **X** Yes (If "Yes" provide further information): __ (c.) Any notices from any governmental entity regarding any possible violation of environmental laws or possible liability relating to hazardous substances or petroleum products? No: **X** Yes (If "Yes" provide further information): __

SIGNATURE

It is understood that the information presented in this form is an integral part of the Phase I ESA process and that BVNA will evaluate and rely on this information in the development of the final Phase I ESA report.	
Questionnaire Prepared By:	
Print/Type Name:	Brian H. Ige
Title:	Construction Manager
Company:	DDC, LLC / Dowling Company, Inc.
Date:	10/30/18

APPENDIX D

AERIAL PHOTOGRAPHS

HISTORICAL AERIAL REPORT

for the site:
Wailuku Maui
Honoapiilani Highway and Kuikahi Drive
Wailuku, HI 96793
PO #:

Report ID: 20181030092
Completed: 10/30/2018

ERIS Information Inc.
Environmental Risk Information Services (ERIS)
A division of Glacier Media Inc.
T: 1.866.517.5204
E: info@erisinfo.com

www.erisinfo.com

Search Results Summary

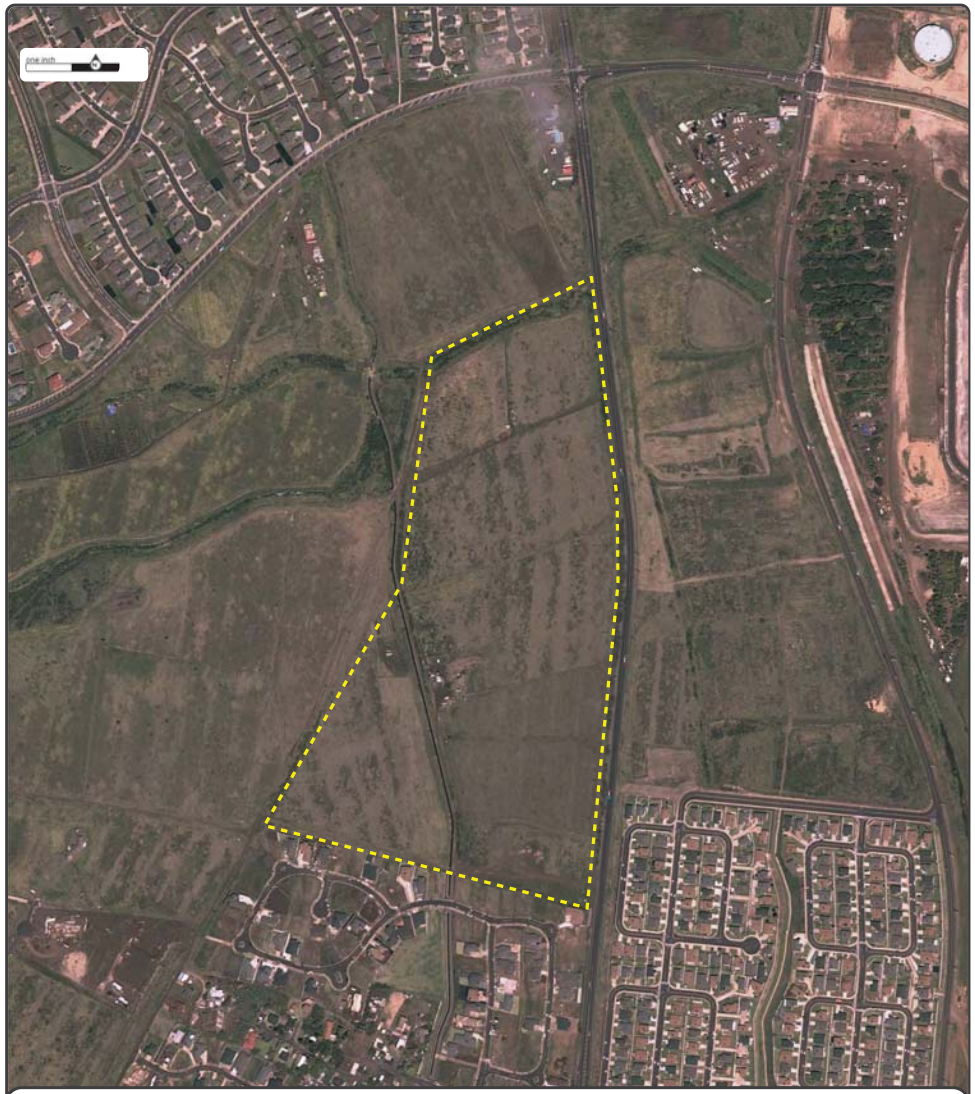
Date	Source	Scale	Comment
2015	**NAIP** - National Agriculture Information Program	1"=500'	
2011	**NAIP** - National Agriculture Information Program	1"=500'	
2009	**NAIP** - National Agriculture Information Program	1"=500'	
2000	**NAIP** - National Agriculture Information Program	1"=500'	
1992	**NASA** - National Aeronautics Space Administration	1"=500'	*BEST COPY AVAILABLE*
1976	**USGS** - US Geological Survey	1"=500'	
1965	**USDA** - US Department of Agriculture	1"=500'	
1950	**USGS** - US Geological Survey	1"=500'	

Date: **2015**
Source: **NAIP**
Scale: **1" to 500'**
Comments:

Subject: Honoapiilani Highway and Kuikahi Drive Wailuku HI
Approx Center: 20.86454 / -156.5043

N

www.erisinfo.com | 1.866.517.5204



Date: **2011**
Source: **NAIP**
Scale: **1" to 500'**
Comments:

Subject: Honoapiilani Highway and Kuikahi Drive Wailuku HI
Approx Center: 20.86454 / -156.5043

N

ERIS
ENVIRONMENTAL RISK INFORMATION SERVICES
www.erisinfo.com | 1.866.517.5204

Date: **2009**
Source: **NAIP**
Scale: **1" to 500'**
Comments:

Subject: Honoapiilani Highway and Kuikahi Drive Wailuku HI
Approx Center: 20.86454 / -156.5043

N

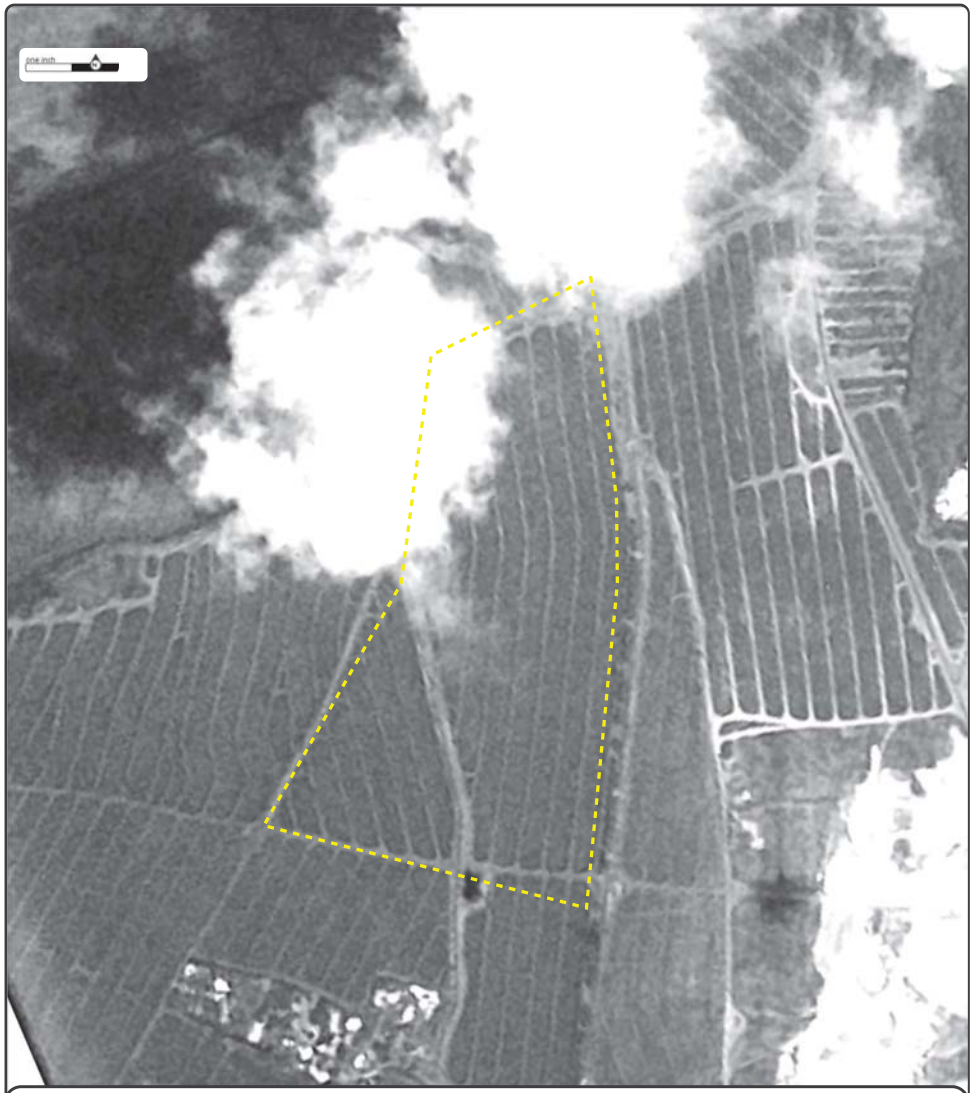
ERIS
ENVIRONMENTAL RISK INFORMATION SERVICES
www.erisinfo.com | 1.866.517.5204

Date: **2000**
Source: **NAIP**
Scale: **1" to 500'**
Comments:

Subject: Honoapiilani Highway and Kuikahi Drive Wailuku HI
Approx Center: 20.86454 / -156.5043

N

ERIS
ENVIRONMENTAL RISK INFORMATION SERVICES
www.erisinfo.com | 1.866.517.5204

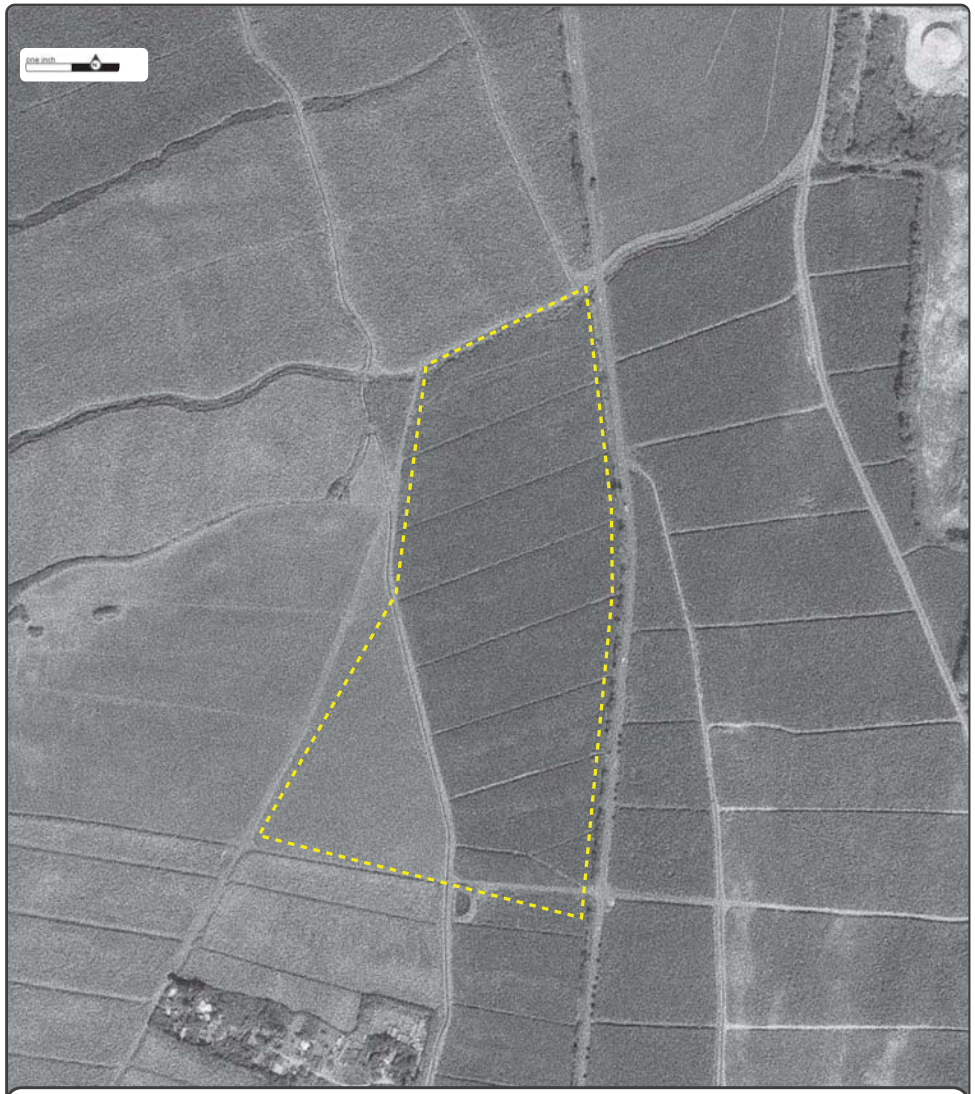


Date: **1992**
Source: **NASA**
Scale: **1" to 500'**
Comments: *BEST COPY AVAILABLE*

Subject: Honoapiilani Highway and Kuikahi Drive Wailuku HI
Approx Center: 20.86454 / -156.5043

N

ERIS
ENVIRONMENTAL RISK INFORMATION SERVICES
www.erisinfo.com | 1.866.517.5204



Date: **1976**
Source: **USGS**
Scale: **1" to 500'**
Comments:

Subject: Honoapiilani Highway and Kuikahi Drive Wailuku HI
Approx Center: 20.86454 / -156.5043

N

ERIS
ENVIRONMENTAL RISK INFORMATION SERVICES
www.erisinfo.com | 1.866.517.5204

Date: **1965**
Source: **USDA**
Scale: **1" to 500'**
Comments:

Subject: Honoapiilani Highway and Kuikahi Drive Wailuku HI
Approx Center: 20.86454 / -156.5043

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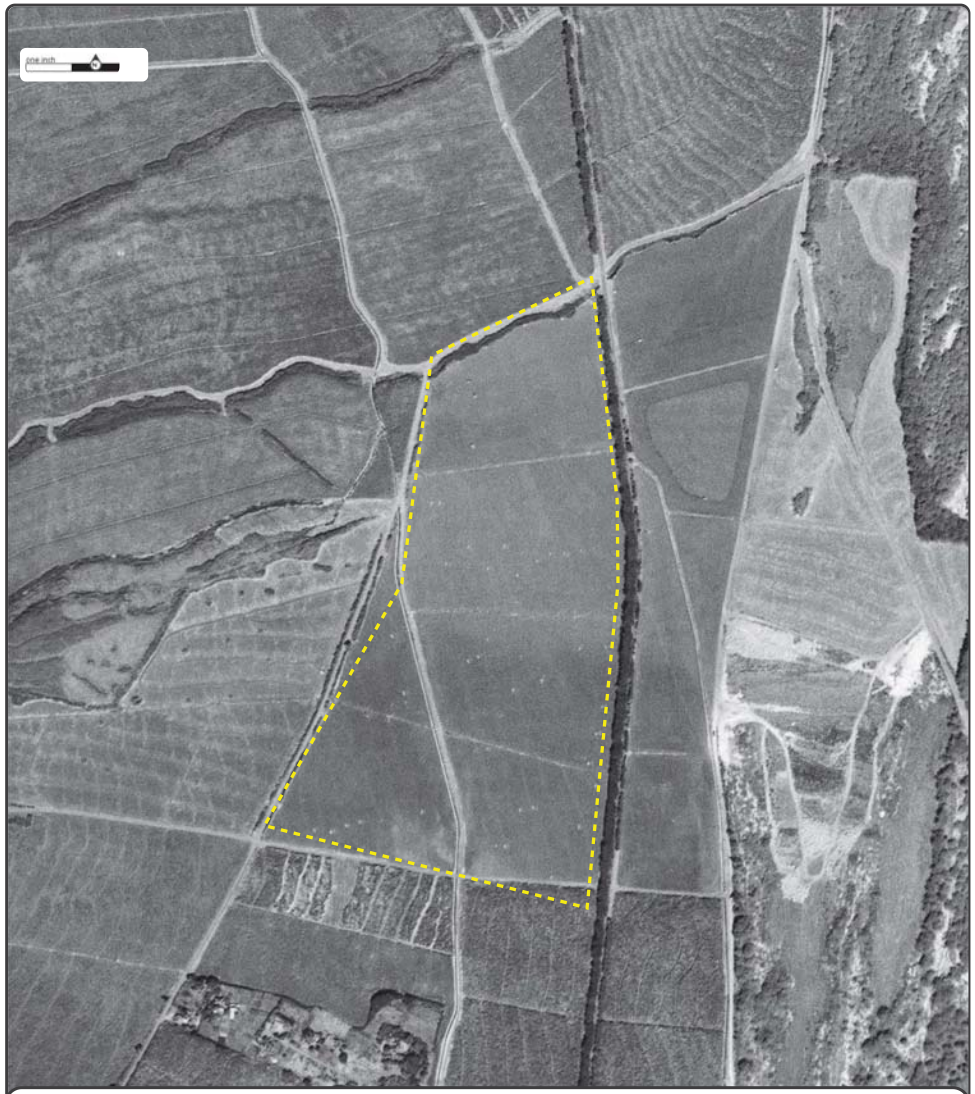
ERIS
ENVIRONMENTAL RISK INFORMATION SERVICES
www.erisinfo.com | 1.866.517.5204



Date: **1950**
Source: **USGS**
Scale: **1" to 500'**
Comments:

Subject: Honoapiilani Highway and Kuikahi Drive Wailuku HI
Approx Center: 20.86454 / -156.5043

N

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ENVIRONMENTAL RISK INFORMATION SERVICES
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APPENDIX E

USGS TOPOGRAPHIC MAPS

TOPOGRAPHIC MAP RESEARCH RESULTS

Date: 2018-10-31

Order Number: 20181030092

Site Name: Wailuku Maui

Address: Honoapiilani Highway and Kuikahi Drive, Wailuku, HI, 96793

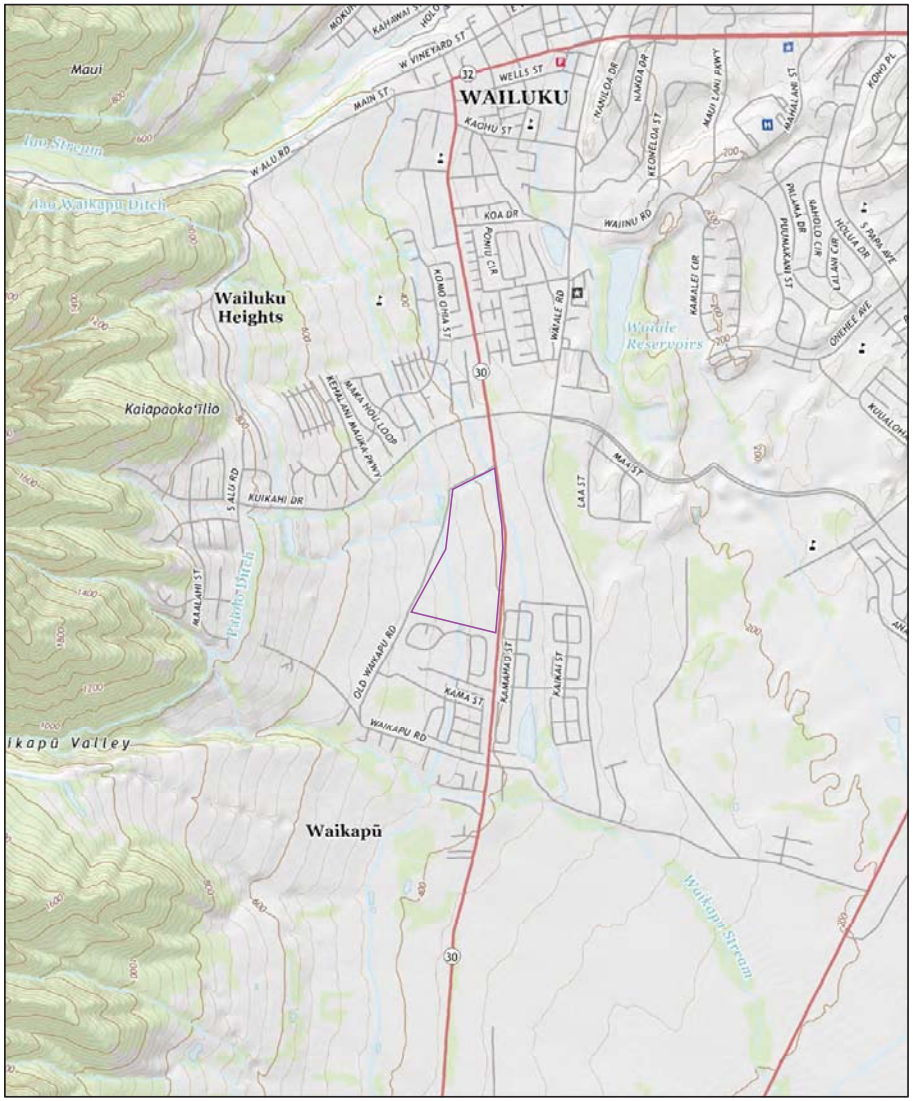
We have searched USGS collections of current topographic maps and historical topographic maps for the project property. Below is a list of maps found for the project property and adjacent area. Maps are from 7.5 and 15 minute topographic map series, if available.

Year	Map Series
2017	7.5
1997	7.5
1983	7.5
1977	7.5
1955	7.5

Topographic Maps included in this report are produced by the USGS and are to be used for research purposes including a phase I report. Maps are not to be resold as commercial property.

No warranty of Accuracy or Liability for ERIS: *The information contained in this report has been produced by ERIS Information Inc. (in the US) and ERIS Information Limited Partnership (in Canada), both doing business as 'ERIS', using Topographic Maps produced by the USGS. This maps contained herein does not purport to be and does not constitute a guarantee of the accuracy of the information contained herein. Although ERIS has endeavored to present you with information that is accurate, ERIS disclaims, any and all liability for any errors, omissions, or inaccuracies in such information and data, whether attributable to inadvertence, negligence or otherwise, and for any consequences arising therefrom. Liability on the part of ERIS is limited to the monetary value paid for this report.*

Address: 38 Lesmill Road Unit 2, Toronto, ON M3B 2T5
Phone: 1-866-517-5204 Fax: 416-447-7658
info@erisinfo.com www.erisinfo.com



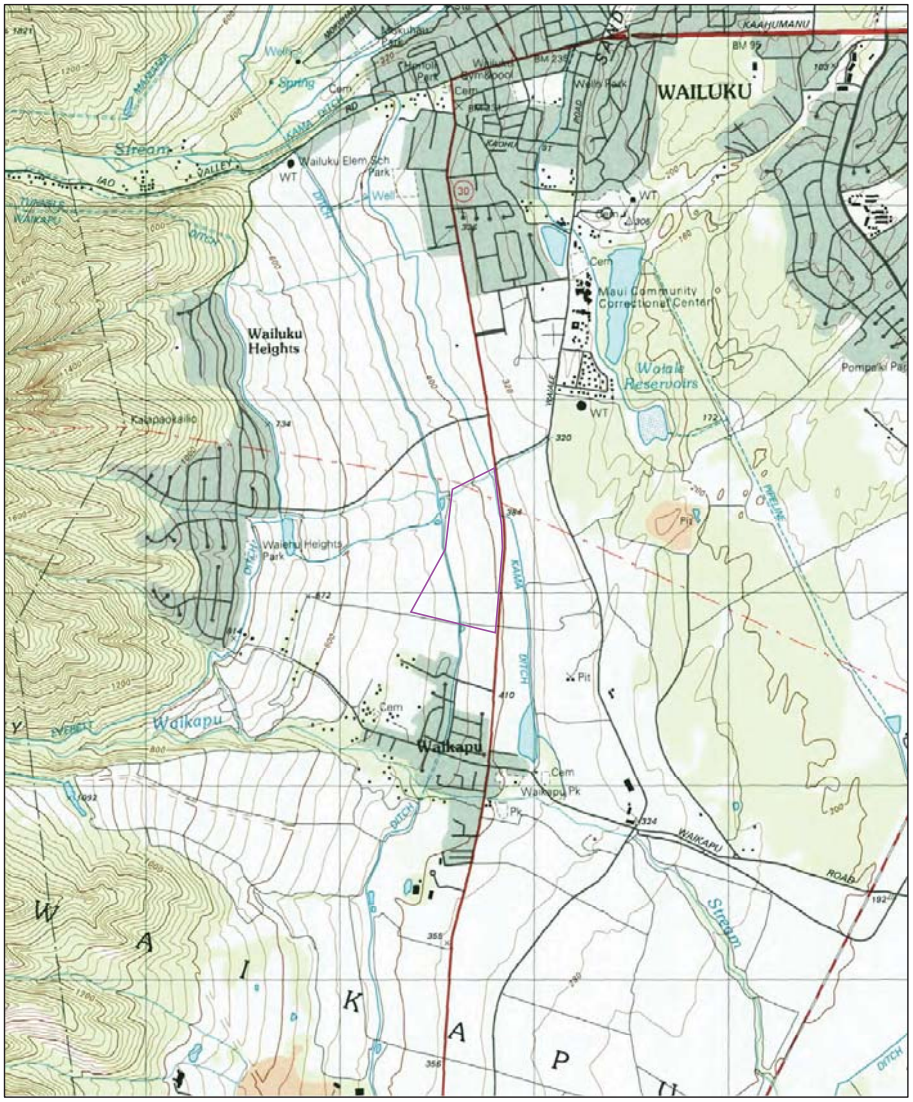
2017

0 0.2 0.4 0.8 Miles

Order No. 20181030092

Quadrangle(s): Wailuku,HI

Source: USGS 7.5 Minute Topographic Map



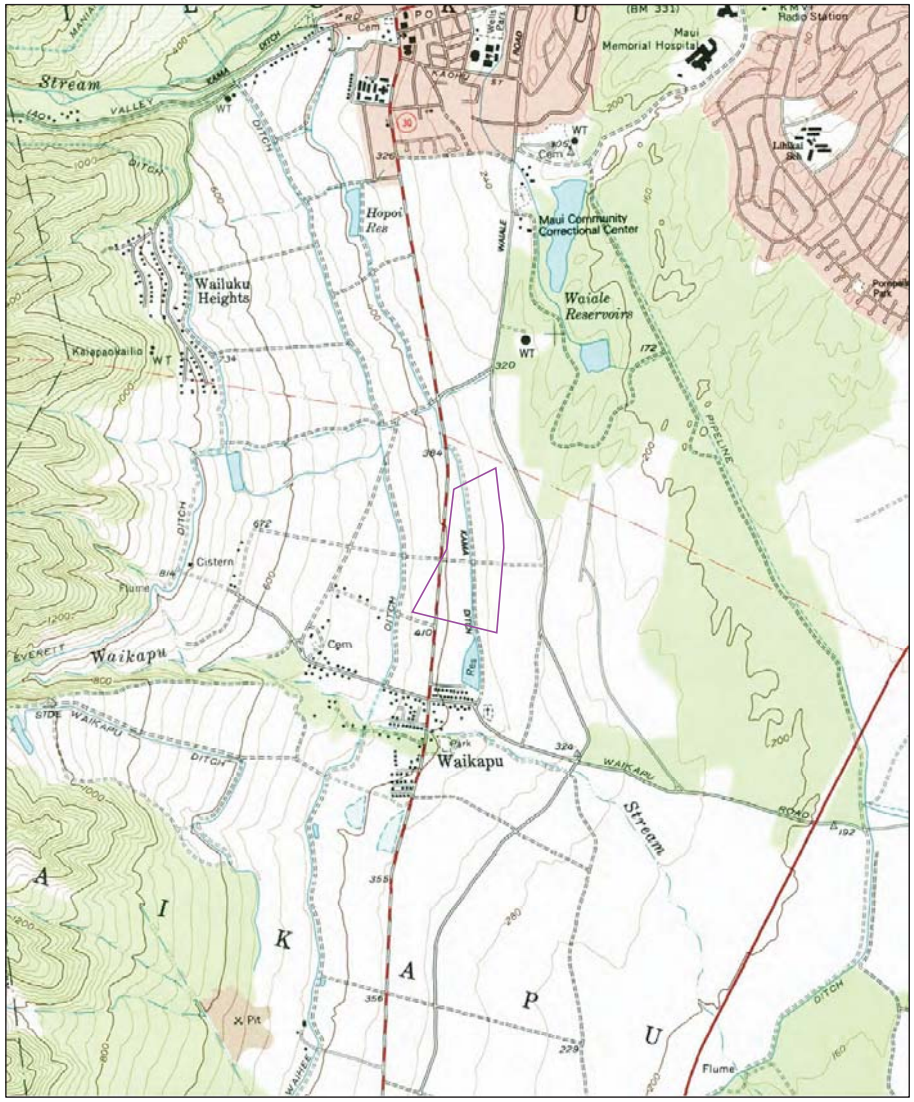
1997

Miles
0 0.2 0.4 0.8

Order No. 20181030092

Quadrangle(s): Wailuku,HI

Source: USGS 7.5 Minute Topographic Map



1983

Miles
0 0.2 0.4 0.8

Order No. 20181030092

Quadrangle(s): Wailuku,HI

Source: USGS 7.5 Minute Topographic Map

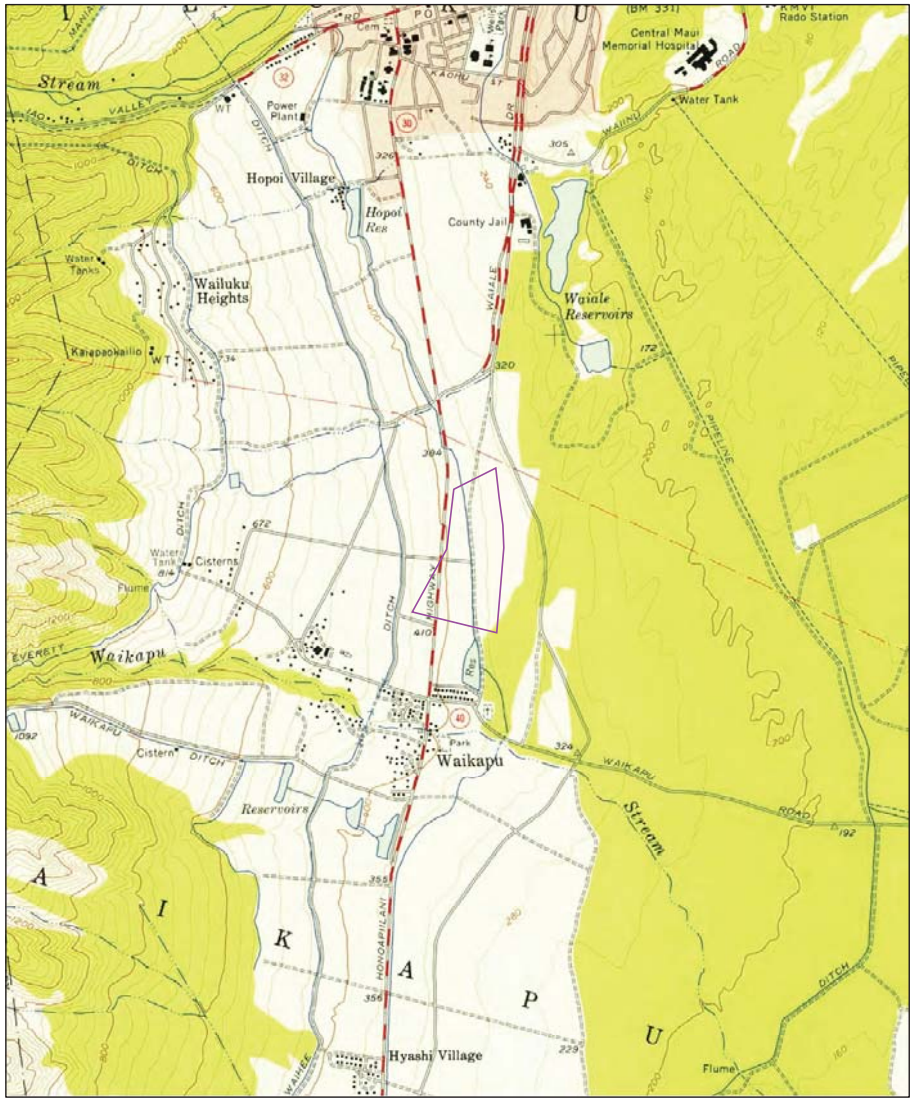
1977

0 0.2 0.4 0.8 Miles

Order No. 20181030092

Quadrangle(s): Wailuku,HI

Source: USGS 7.5 Minute Topographic Map



1955

0 0.2 0.4 0.8 Miles

Order No. 20181030092

Quadrangle(s): Wailuku,HI

Source: USGS 7.5 Minute Topographic Map

APPENDIX F

FIRE INSURANCE MAPS

FIRE INSURANCE MAP RESEARCH RESULTS

Date: 2018-10-31

Order Number:20181030092

Site Name: Wailuku Maui

Address: Honoapiilani Highway and Kuikahi Drive, Wailuku, HI, 96793

ERIS has searched our in-house collection of close to 1 million Fire Insurance Maps for the address at Honoapiilani Highway and Kuikahi Drive, Wailuku, HI, 96793.

Please note that no information was found for your site or adjacent properties.

If you have any questions regarding the enclosed information, please do not hesitate to contact us.

Individual Fire Insurance Maps for the subject property and/or adjacent sites are included with the ERIS environmental database report to be used for research purposes only and cannot be resold for any other commercial uses other than for use in a Phase I environmental assessment.

Address: 38 Lesmill Road Unit 2, Toronto, ON M3B 2T5
Phone: 416-510-5204 Fax: 416-510-5133
info@erisinfo.com www.erisinfo.com

APPENDIX G

CITY DIRECTORIES

HISTORICAL DIRECTORY REPORT

for the site:

Wailuku Maui
Honoapiilani Highway and Kuikahi Drive
Wailuku, HI 96793
PO #:

Report ID: 20181030092
Completed: 10/31/2018

Environmental Risk Information Service (ERIS)
A division of Glacier Media Inc.
T: 1.866.517.5204
E: info@erisinfo.com

www.erisinfo.com

Search Results Summary

Date	Source	Comment
2018	POLKS	
2013	POLKS	
2008	POLKS	
2003	POLKS	
1998	POLKS	
1995	POLKS	

10/31/2018

RE: CITY DIRECTORY RESEARCH
Wailuku Maui
Honoapiilani Highway and Kuikahi Drive Wailuku, HI

Thank you for contacting ERIS for an City Directory Search for the site described above. Our staff has conducted a reverse listing City Directory search to determine prior occupants of the subject site and adjacent properties. We have provided the nearest addresses(s) when adjacent addresses are not listed. If we have searched a range of addresses, all addresses in that range found in the Directory are included.

Note: Reverse Listing Directories generally are focused on more highly developed areas. Newly developed areas may be covered in the more recent years, but the older directories will tend to cover only the "central" parts of the city. To complete the search, we have either utilized the ACPL, Library of Congress, State Archives, and/or a regional library or history center as well as multiple digitized directories. These do not claim to be a complete collection of all reverse listing city directories produced.

ERIS has made every effort to provide accurate and complete information but shall not be held liable for missing, incomplete or inaccurate information. To complete this search we used the general range(s) below to search for relevant findings. If you believe there are additional addresses or streets that require searching please contact us at 866-517-5204.

Search Criteria:

900 - 1100 of Honoapiilani Highway
332 - 432 of Kuikahi Drive

2018 — **HONOAPIILANI HIGHWAY**
SOURCE: POLKS

NO LISTINGS IN RANGE

2018 — **KUIKAHI DRIVE - A**
SOURCE: POLKS

KUIKAHI DR (WAILUKU)-FROM 599 KUALAU ST
+ WAIALE RD CONTINUES
• ZIP CODE 96793 CAR-RT C010
331 Jimenez Jai N & Ann W ✓ [2] ♠ (2012)
Ⓝ Takamori Carol ✓ ♠ (2000)
332 Hasegawa Earl A & Cheryl L ✓ [21] ♠
(1986) 808-244-9844
335 Ⓝ Rich Mark A ✓ ♠ (1986)
+ HONOAPIILANI HWY INTERSECTS
345 Cosma Francis F Sr & Estrella G ✓ [31] ♠
(1986) 808-242-5019
352 Waki Robert M & Thelma T ✓ [32] ♠ (1984)
.....808-242-7248
353 Foronda Rolando E & Estrella V ✓ [30] ♠
(1985) 808-244-7025
363 Janus Shirley F ✓ [9] ♠ (1986)
.....808-214-6638

2018 — **KUIKAHI DRIVE - B**
SOURCE: POLKS

KUIKAHI DR Cont'd

Janus Jan D 808-214-6638
369 No Current Listing
371 Ⓝ Yamaguchi Kyle K ✓ ♠ (1988)
Yamaguchi Shu C
379 Yamashiro Michael N & Lynette S ✓ [24] ♠ (1989)
382 Fujimoto Don S & Luanne K [32] ♠ (2000)
412 Shimabuku Edward N & Cynthia S ✓ @ [30] ♠ (1987) 808-244-4567
413 Vu Hung M [10] ♠ (2009)
Vu Reany
421 No Current Listing
429 Wakamatsu Diane A ✓ [12] ♠ (1988) 808-244-0843
Wakamatsu Leigh I 808-244-0843
441 Kodama Kyle R ✓ [13] ♠ (2001) 808-249-2441
442 Bal Beryl M ✓ @ [20] ♠ (1997)
449 Breen John J & Maureen V ✓ @ [28] ♠ (1984)
453 Waki Daniel I & Sally E ✓ [30] ♠ (1986) 808-244-1029
463 Hamai Clifford T ✓ [31] ♠ (1987)

2013 — **HONOAPIILANI HIGHWAY**
SOURCE: POLKS

NO LISTINGS IN RANGE

2013 — **KUIKAHI DRIVE**
SOURCE: POLKS

KUIKAHI DR (WAILUKU)-FROM 599 KUALAU ST
+ WAIALE RD CONTINUES
• ZIP CODE 96793 CAR-RT C010
332 Hasegawa Cheryl L & Earl A ✓ [16] ♠ (1986) 808-244-9844
335 No Current Listing
+ HONOAPIILANI HWY INTERSECTS
345 Cosma Francis F Sr ✓ [26] ♠ (1986) 808-242-5019
Cosma Kawika F 808-242-5019
352 Waki Robert M & Thelma T ✓ [27] ♠ (1995) 808-242-7248
353 Foronda Rolando E & Estrella V ✓ [25] ♠ (1985) 808-244-7025
363 No Current Listing
369 Tabbal Bernice D ✓ [24] ♠ (1987)
Tabbal Bernie D
371 No Current Listing
379 Yamashiro Michael N & Lynette S ✓ [19] ♠ (1989)
382 Fujimoto Don S & Luanne K ✓ [27] ♠ (1995)
412 Shimabuku Edward N & Cynthia S ✓ [25] ♠ (1987) 808-244-4567
413 Vu Hung M ✓ [5] ♠ (2009)
421 No Current Listing
429 Wakamatsu Diane A ✓ [7] ♠ (1988) 808-244-0843
Wakamatsu Leigh I 808-244-0843
441 Kodama Kyle R ✓ [8] ♠ (2001) 808-249-2441
442 Bal Beryl M ✓ [15] ♠ (1997)

2008 — **HONOAPIILANI HIGHWAY**
SOURCE: POLKS

NO LISTINGS IN RANGE

2008 — **KUIKAHI DRIVE**
SOURCE: POLKS

KUIKAHI DR (WAILUKU)-FROM 501 HIILEI PL WEST
+ WAIALE RD CONTINUES
• ZIP CODE 96793 CAR-RT C010
332 Hasegawa Earl A [11] ♠
335 Ⓝ Glass Brett
Glass Rhonda
+ HONOAPIILANI HWY INTERSECTS
345 Cosma Francis F Sr [21] ♠
.....808-242-5019
352 Waki Robert M [22] ♠
.....808-242-7248
Waki Thelma T 808-242-7248
353 Foronda Rolando E [20] ♠
.....808-244-7025
363 Ⓝ Khozam George M & Jennifer D
369 - 371 No Current Listing (2 Hses)
379 Yamashiro Michael N [14] ♠
382 No Current Listing
+ OLD WAIKAPU RD BEGINS
412 Shimabuku Edward N & Cynthia S
[20] ♠ 808-244-4567
421 Canha Gilbert M [15] ♠
429 Wakamatsu Leigh I [2] ♠
.....808-244-0843
Wakamatsu Kaleena ..808-244-0843
441 Ⓝ Daly Shirley
Kodama Kyle [2] ♠ 808-249-2441
442 Bal Eugene III [10] ♠ ..808-242-5001
449 Breen John J & Maureen V [18] ♠
.....808-214-9849
453 - 463 No Current Listing (2 Hses)
471 Kiyonaga Thelma Y [19] ♠
808-242-4341

2003 — **HONOAPIILANI HIGHWAY**
SOURCE: POLKS

NO LISTINGS IN RANGE

2003 — **KUIKAHI DRIVE**
SOURCE: POLKS

BUSINESSES | HOUSEHOLDS

KUIKAHI DR (WAILUKU)-FROM 599 KUALAU ST
+ WAIALE RD CONTINUES
• ZIP CODE 96793 CAR-RT C010
332 Not Verified
335 Carrithers Edwin F Sr [5] ♠
.....808-242-6890
Carrithers Amanda R ..808-242-6890
HI Cain Kathleen C [5] ..808-249-0473
HI Cain Kyle L 808-249-0473
+ HONOAPIILANI HWY INTERSECTS
345 Cosma Francis F Sr [16] ♠
.....808-242-5019
352 Waki Robert M [17] ♠ ..808-242-7248
353 Foronda Rolando E [15]
.....808-244-7025
363 Moniz Clifford K [3]
369 Tabbal Bernice D [14] ♠
Tabbal Rodolpo R
371 Kim Michael E [12] ♠ 808-242-8185
379 Yamashiro Michael N & Lynette S [9]
♠
382 Fujimoto Don S [17] ♠
+ OLD WAIKAPU RD BEGINS
412 Shimabuku Edward N [15] ♠
.....808-244-4567
Shimabuku Cynthia S ..808-244-4567
421 - 429 Not Verified (2 Hses)
442 Bal Eugene III [5] ♠ 808-242-5001
449 Breen John J [13] ♠
Breen Maureen V
Ⓝ Morgan Jerry A 808-242-7916
453 Waki Daniel I [9] ♠

1998 — **HONOAPIILANI HIGHWAY**
SOURCE: POLKS

NO LISTINGS IN RANGE

1998 — **KUIKAHI DRIVE**
SOURCE: POLKS

BUSINESSES T HOUSEHOLDS

KUIKAHI DR (WAILUKU)-FROM
699 WAIALE RD
SOUTHWEST
· ZIP CODE 96793 CAR-RT C010

332 Hasegawa Earl A [9]+ ☗
335 Sniffen Rose L [8] ☗....244-5347
345 Cosma Francis F Sr [9]+ ☗
.....242-5019
NAKOOKA DANELLE misc
food stores 242-8067
352 Waki Robert M & Thelma [9]+
☗.....242-7248
353 Foronda Rolando R [9]+ ☗
.....244-7025
363 Yap Allen T & Kathleen [9]+ ☗
.....242-7471
369(N)Miura B.....244-9671
Tabbal Bernice D [9]+ ☗
.....244-5929
371 Kim Michael E [8] ☗....242-8185
Kim Patricia Y 242-8185
379 Yamashiro Lynette S [9]+ ☗
Yamashiro Michael N
382 Fujimoto Don S [7] ☗
Fujimoto Luanne K
+*OLD WAIKAPU RD BEGINS*
412 Shimabuku Edward N & Cynthia
[9]+ ☗.....244-4567
421 Not Verified
429 Childs Sophie F [9]+ ☗
442(N)Bal Eugene & Beryl ☗
.....242-5001
453 Waki Daniel I [9]+ ☗....244-1029
463 Hamai Clifford T [9]+ ☗
.....244-4175
471 Kiyonaga Edward S [9]+ ☗
242-4341

1995 — **HONOAPIILANI HIGHWAY**
SOURCE: POLKS

NO LISTINGS IN RANGE

1995 — **KUIKAHI DRIVE**
SOURCE: POLKS

KUIKAHI DR (WAILUKU MAUI)-FROM
HONOAPIILANI HWY WEST
298
· ZIP CODE 96793
+*PO WAILUKU HI*
335 Sniffen John N & Rose [3] ☗ 244-5347
345 Cosma Francis & Estrella [3] ☗ .242-5019
Cosma Francis Jr.....242-5019
352 Waki Robert M & Thelma [2] ☗ 242-7248
353(N)Foronda Roland 244-7025
332(N)Slack Timothy E 242-5413
363 Yap Allen & Kathleen [2] 242-7639
369 Not Verified
371(N)Kim Michael E ☗ 242-8185
412 Shimabuku Edward N & Cindy [3] ☗
.....244-4567
Shimabuku Cindy S.....244-4567
421(N)Canha Robert.....244-4866
449(N)Breen John J 244-9864
471 Kiyonaga Edward S [3] ☗.....242-4341
479(N)Shishido Robert.....242-6773
509(N)Paet Romeo A Sr.....242-8758
512-515 Not Verified (2 Hses)
523 Altura Geoffrey & Esther [3] ☗ ..244-8066

--- END REPORT ---

APPENDIX H

RECORDED LAND TITLE DOCUMENTS

STATUS REPORT

This Report (and any revisions thereto) is issued for the sole benefit of the Purchaser of this Report identified in the Order No. referenced below. Title Guaranty of Hawaii, Inc.'s responsibility for any actual loss incurred by reason of any incorrectness herein is limited to the lesser of $3,500 or two times the amount paid for this Report.

SCHEDULE A

Title Guaranty of Hawaii, Inc. hereby reports as follows as to the title of the Parties named in Schedule A in and to the title to land described in Schedule C, subject to the matters set forth in Schedule B, based solely upon an abstract and examination of the following Indices in the State of Hawaii: (a) the Office of the Clerks of the Circuit Court of the Judicial Circuit within which the land is located; (b) the Office of the Clerk of the District Court of the United States for the District of Hawaii; (c) the Office of the Registrar of Conveyances; and (d) the Office of the Real Property Tax Assessment Division of the County within which the land is located.

ENDURANCE INVESTORS, LLC,
a Washington limited liability company,
and
ASSOCIATION OF II WAI HUI LP,
a Hawaii limited partnership,
as equal Tenants in Common,
as Fee Owner

This report is subject to the Conditions and Stipulations set forth in Schedule D and is dated as of September 14, 2017 at 8:00 a.m.

Inquiries concerning this report
should be directed to
RESIDENTIAL TITLE SERVICES.
Email rtscustomerservice@tghawaii.com
Fax (808) 521-0288

© Title Guaranty of Hawaii, Inc.
235 QUEEN ST., HONOLULU, HAWAII 96813, PH: (808) 533-6261

Telephone (808) 533-5874.
Refer to Order No. 201745960.

SCHEDULE B
EXCEPTIONS

1. Real Property Taxes, if any, that may be due and owing.

   Tax Key: (2) 3-5-002-002 Area Assessed: 60.087 acres

2. Any and all matters not shown in the Indices described in Schedule A.

3. Mineral and water rights of any nature.

4. Rights of native tenants as reserved in Royal Patent Grant Numbers 282, 2005, 2952, 2953, 3152 and Royal Patent Number 1111.

5. GRANT

   TO : MAUI ELECTRIC COMPANY, LIMITED, and HAWAIIAN TELEPHONE COMPANY, now known as HAWAIIAN TELCOM INC.

   DATED : January 5, 1987
   RECORDED : Liber 20331 Page 23
   GRANTING : a nonexclusive right and easement for utility purposes as shown on maps attached thereto

6. Any and all existing roadways, easements of right-of-way and irrigation ditches.

7. The terms and provisions contained in the following:

   INSTRUMENT : DECLARATION OF COVENANTS, CONDITIONS, EASEMENTS, RESERVATIONS AND RESTRICTIONS

   DATED : effective December 30, 2002
   RECORDED : Document No. 2002-234375

Said Declaration was assigned to WAILUKU WATER COMPANY, LLC, a Hawaii limited liability, doing business as WAILUKU WATER COMPANY, by ASSIGNMENT OF DECLARATIONS OF COVENANTS, CONDITIONS, EASEMENTS, RESERVATIONS AND RESTRICTIONS dated effective October 1, 2005, recorded as Document No. 2005-229075.

CORRECTION TO ASSIGNMENT OF DECLARATIONS OF COVENANTS, CONDITIONS, EASEMENTS, RESERVATIONS AND RESTRICTIONS dated August 27, 2007, recorded as Document No. 2007-157854.

8. Claims arising out of customary and traditional rights and practices, including without limitation those exercised for subsistence, cultural, religious, access or gathering purposes, as provided for in the Hawaii Constitution or the Hawaii Revised Statutes.

9. Discrepancies, conflicts in boundary lines, shortage in area, encroachments or any other matters which a correct survey or archaeological study would disclose.

10. The terms and provisions contained in the following:

INSTRUMENT : CO-TENANCY AGREEMENT

DATED : December 31, 2003
RECORDED : Document No. 2004-027470
PARTIES : ENDURANCE INVESTORS, LLC, a Washington limited liability company, "Endurance", and II WAI HUI, a Hawaii limited partnership, "Hui"

11. ASSIGNMENT OF IN GROSS RESERVATIONS dated effective October 1, 2005, by and between WAILUKU AGRIBUSINESS CO., INC., a Hawaii corporation, and WAILUKU WATER COMPANY, LLC, a Hawaii limited liability company, doing business as WAILUKU WATER COMPANY, recorded as Document No. 2005-229077.

Note:- No joinder by ENDURANCE INVESTORS, LLC, a Washington limited liability company, and II WAI HUI, a Hawaii limited partnership.

END OF SCHEDULE B

SCHEDULE C

All of that certain parcel of land (being all of the land(s) described in and covered by Royal Patent Grant Number 2953 to W.P. Brown; Royal Patent Number 2775, Land Commission Award Number 3201, Apana 2 to Wm. McLane; Royal Patent Grant Number 282 to James Louzada; Royal Patent Grant Number 2005 to John Ross; Royal Patent Number 3121, Land Commission Award Number 3525, Apana 2 to Keliiolelo; Royal Patent Number 1111, Land Commission Award Number 433 to William Crowningburg; Royal Patent Grant Number 2952 to David Crowningburg and portions of Royal Patent Numbers 4529-B and 4549, Land Commission Award Number 71 to Michael J. Nowlein; Royal Patent Number 7659, Land Commission Award Number 326 to Wm. Humphreys; Royal Patent Grant Number 3152 to Henry Cornwell; Royal Patent Grant Number 2951 to H. Cornwell and J. Louzada; Royal Patent Number 7658, Land Commission Award Number 225 to James Louzada; Royal Patent Number 5356, Land Commission Award Number 2980:1 to Pakele; Royal Patent Grant Number 1680:1 to Manuel Flores and Royal Patent Number 5333, Land Commission Award 3019:2 to Mehao) situate, lying and being on the westerly side of Honoapiilani Highway (F.A.P. 13-G) at Waikapu, Wailuku, Island and County of Maui, State of Hawaii, and thus bounded and described:

Beginning at a point at the southwesterly corner of this parcel of land, being also the northwesterly corner of Lot 3-A of Waikapu North Large-Lot Subdivision, the coordinates of said point of beginning referred to Government Survey Triangulation Station "LUKE" being: 6,616.94 feet south and 3,748.66 feet west and running by azimuths measured clockwise from true South:

1.	209°	26'		1,210.02	feet along the easterly side of Old Waikapu Road to a point;
2.	186°	59'		1,034.51	feet along same to a point;
3.	246°	10'		717.18	feet along the southerly side of Old Waikapu Road to a point;
4.	231°	17'		92.08	feet along same to a point;
5.	352°	39'	11"	924.10	feet along the westerly side of Honoapiilani Highway (F.A.P. 13-G) to a point;

SCHEDULE C CONTINUED

6. Thence along same on a curve to the right, having a radius of 2,824.93 feet, the chord azimuth and distance being: 359° 05' 41" 633.87 feet to a point;

7. 5° 32' 11" 1,231.66 feet along same to a point;

8. 103° 26' 1,498.62 feet along the remainders of Grant 2951 to H. Cornwell and J. Louzada; Royal Patent 7658, Land Commission Award 225 to James Louzada; Royal Patent 5356, Land Commission Award 2980:1 to Pakele; Grant 1680:1 to Manuel Flores and Royal Patent 5333, Land Commission Award 3019:2 to Mehao, being also along Lot 3-A of Waikapu North Large-Lot Subdivision to the point of beginning and containing an area of 60.087 acres, more or less.

BEING THE PREMISES ACQUIRED BY QUITCLAIM DEED

GRANTOR : LLOYD K. SODETANI, husband of Sharon L. Sodetani, and ENDURANCE INVESTORS, LLC, a Washington limited liability company

GRANTEE : ENDURANCE INVESTORS, LLC, a Washington limited liability company, and II WAI HUI, a Hawaii limited partnership, as equal Tenants in Common

DATED : December 31, 2003
RECORDED : Document No. 2004-027469

Said above Deed was corrected by instrument dated February 17, 2006, recorded as Document No. 2006-044462. Re: to correct name of grantee from II WAI HUI to ASSOCIATION OF II WAI HUI LP.

END OF SCHEDULE C

GENERAL NOTES

1. There is hereby omitted from any covenants, conditions and reservations contained herein any covenant or restriction based on race, color, religion, sex, sexual orientation, familial status, marital status, disability, handicap, national origin, ancestry, or source of income, as set forth in applicable state or federal laws, except to the extent that said covenant or restriction is permitted by applicable law. Lawful restrictions under state or federal law on the age of occupants in senior housing or housing for older persons shall not be construed as restrictions based on familial status.

SCHEDULE D

CONDITIONS AND STIPULATIONS

1. This Status Report (which term shall include any revisions thereto) is a report of the record title only, based solely upon an abstract and examination of the Indices described in Schedule A as of the date of the Report. No responsibility is assumed for (a) matters which may affect the title but either were not disclosed or were incorrectly disclosed in said indices at the date hereof; or (b) matters created, suffered, assumed, or agreed to by Purchaser; or (c) matters not shown herein but actually know to Purchaser. Title Guaranty of Hawaii, Incorporated (the "Company") makes no representation as to the legal effect, validity or priority of matters shown or referred to herein.

2. If the Report is incorrect in any respect, the responsibility of the Company shall be limited to the resulting actual loss, including any attorney's fees and legal costs, but in no event shall exceed the lesser of $3,500 or two times the amount paid for the Report. Upon payment of any loss hereunder, the Company shall be subrogated to all rights the Purchaser may have against any person or property as a result of such loss.

3. If the Purchaser of this Report shall suffer an actual loss by reason of the incorrectness of the Report, the Purchaser shall promptly notify the Company in writing. After receipt of such notice, the Company shall be allowed a reasonable time in which to investigate the claim. At its sole option, the Company may litigate the validity of the claim, negotiate a settlement or pay to Purchaser the amount the Company is obligated to pay under this Report. The Company's responsibility hereunder constitutes indemnity only and nothing herein shall obligate the Company to assume the defense of the Purchaser with respect to any claim made hereunder.

4. This report is the entire contract between the Purchaser and the Company and any claim by Purchaser against the Company, arising hereunder, shall be enforceable only in accordance with the provisions herein.

5. Notice required to be given the Company shall include the Order Number of this Report and shall be addressed to Title Guaranty of Hawaii, Inc., P.O. Box 3084, Honolulu, HI 96802, Attention: Legal Department.

DATE PRINTED: 9/18/2017

STATEMENT OF ASSESSED VALUES AND REAL PROPERTY TAXES DUE

TAX MAP KEY

DIVISION	ZONE	SECTION	PLAT	PARCEL	HPR NO.
(2)	3	5	002	002	0000

CLASS: AGRICULTURAL AREA ASSESSED: 60.087 AC

ASSESSED VALUES FOR CURRENT YEAR TAXES: 2017

The records of this division show the assessed values and taxes on the property designated by Tax Key shown above are as follows:

BUILDING	$	0	
EXEMPTION	$	0	
NET VALUE	$	0	
LAND	$	13,400	HIGHEST & BEST USE
EXEMPTION	$	0	
NET VALUE	$	13,400	
TOTAL NET VALUE	$	13,400	

Installment (1 - due 8/20; 2 - due 2/20) Tax Info As Of - 7/01/2017

Tax Year	Installment	Tax Amount	Penalty Amount	Interest Amount	Other Amount	Total Amount	
2017	2	200.00				200.00	PENDING
2017	1	200.00				200.00	PENDING
2016	2	150.00				150.00	PAID
2016	1	150.00				150.00	PAID
2015	2	125.00				125.00	PAID
2015	1	125.00				125.00	PAID

Total Amount Due: 400.00

Penalty and Interest Computed to: 7/01/2017

The real property tax information provided is based on information furnished by the respective counties, is deemed reliable but not guaranteed, and no warranties are given express or implied. Billing and tax collection details may have changed. Please refer to the appropriate county real property tax offices for any further information or updates for the subject property.

APPENDIX I

**PREVIOUS REPORTS/
MISCELLANEOUS DOCUMENTS**

Project Number 25017-017125.00

Phase I Environmental Site Assessment

160-Acre Kehalani Property
(TMKs: [2] 3-5-001: Parcels 063 [Portions], 064, and 108 through 117)
Wailuku, Maui, Hawaii

March 7, 2016
Project Number 17016-016021.01

Prepared for:

REDWOOD CAPITAL FINANCE COMPANY, LLC
c/o PCCP, LLC
10100 Santa Monica Boulevard, Suite 1000
Los Angeles, California 90067

Move Forward with Confidence

Prepared by:

BUREAU VERITAS NORTH AMERICA, INC.
Health, Safety, and Environmental Services
841 Bishop Street, Suite 1100
Honolulu, Hawaii 96813
808.531.6708
www.us.bureauveritas.com

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List of Acronyms

AAI	All Appropriate Inquiry
ACM	Asbestos-Containing Materials
AOC	Area of Concern
ArCM	Arsenic-Containing Materials
AST	Aboveground storage tanks
ASTM	ASTM International
AULs	Activity and Use Limitations
Bureau Veritas	Bureau Veritas North America, Inc.
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation and Liability Information System
CESQG	Conditionally Exempt Small Quantity Generator
CFR	Code of Federal Regulations
COC	Chemicals of Concern
DLNR	State of Hawaii, Department of Land and Natural Resources
DU	Decision Unit
EAL	Environmental Action Level
EDR	Environmental Data Resources, Inc.
ESA	Environmental Site Assessment
FEMA	Federal Emergency Management Agency
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
FIRM	Flood Insurance Rate Map
FTTS	FIFRA/TSCA Tracking System
GPS	Global Positioning System
HAR	Hawaii Administrative Rules
HEER	Hazard Evaluation and Emergency Response
HDOH	State of Hawaii Department of Health
HUD	Housing and Urban Development
ICIS	Integrated Compliance Information System
LF	Landfill
LUST	Leaking underground storage tank
LBP	Lead Based Paint
LBP	Lead-Containing Paint
MECO	Maui Electrical Company, Ltd.
Mg/Cl-	Milligrams per liter chloride
MLTS	Material Licensing Tracking System
NFA	No Further Action
NFRAP	No Further Remediation Action Planned
NonGen	Non Generator
PCBs	Polychlorinated biphenyls
RCRA	Resource Conservation and Recovery Act
RGA	Recovered Government Archive
SHWB	Soil and Hazardous Waste Branch
SHWS	State Hazardous Waste Site
SQG	Small Quantity Generator
SPILLS	Records of Emergency Release Report
TCLP	Toxicity Characteristic Leaching Procedure
TEFs	Toxicity Equivalence Factors

List of Acronyms (Continued)

TEQ	Toxicity Equivalence
TMK	Tax Map Key
TSCA	Toxic Substances Control Act
UIC	Underground Injection Control
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
UST	Underground storage tank
VEC	Vapor Encroachment Condition
VES	Vapor Encroachment Screen
WHO	World Health Organization

Executive Summary

Redwood Capital Finance Company, LLC ("Client") retained Bureau Veritas North America, Inc. (Bureau Veritas) to conduct a Phase I Environmental Site Assessment ("ESA" or "assessment") of the 160-acre Kehalani property (Tax Map Key numbers [TMKs]: [2] 3-5-001: Parcels 063 [portions], 064, and 108 through 117), located in Wailuku, Maui, Hawaii (the "subject property"). The objective of the assessment was to provide an independent, professional opinion regarding the presence or absence of recognized environmental conditions, as defined by ASTM International (ASTM), associated with the subject property.

This assessment was performed under the conditions of, and in accordance with Bureau Veritas' Proposal Number 1709.16.034, dated January 26, 2016 and ASTM International Practice E1527-13, Standard Practice for Environmental Site Assessments: Phase I ESA Process. The United States Environmental Protection Agency (USEPA) has determined that the ASTM E1527-13 standard is consistent with the requirements for conducting All Appropriate Inquiry (AAI) and may be used to comply with the AAI regulations (40 Code of Federal Regulations [CFR] Part 312). The methods and terms are as defined in the ASTM standard and AAI regulations. Details of the work performed, sources of information, and findings are presented in the report. Limitations of the Assessment are described in Sections 1.2 and 1.3.

The subject property, currently owned by RCFC Kehalani, LLC, Inc. is located on the eastern slope of the West Maui Mountains on the island of Maui. It consists of eight non-contiguous land areas totaling approximately 160 acres, within the larger, planned Kehalani Development. The location of the subject property is presented in Figures 1 and 2, located behind the *Figures* tab.

The subject property is further described by the County of Maui Real Property Tax Assessment Office as the parcels of land identified as TMKs: (2) 3-5-001: Parcels 063 [portions], 064, and 108 through 117. According to the County of Maui Real Property Tax Assessment Office database, the portions of Parcel 063 are currently zoned "Commercial," Parcel 064 is currently zoned "Agriculture," and Parcels 108 through 117 are currently zoned "Residential."

A description of the current uses and improvements at the subject property, by area, is presented in the tables below.

Parcel 63 (Portions)

Parcel/Street Address (including known historic address[es])	Portions of TMK: (2) 3-5-001: Parcel 063, Wailuku, Maui, Hawaii (no designated street address), including eight designated land units (Units 4, 5, 6, 7, 8, 10, 11, and 12), encompassing approximately 8.31 acres
Owners:	RCFC Kehalani, LLC
Number and Size of Buildings:	There are currently no buildings located on the portions of Parcel 063 that are included in the subject property.
Construction Date(s):	Not applicable
Tenants:	Not applicable
Current Usage:	These lower, southeastern portions of the subject property are undeveloped areas within the Kehalani Village Center commercial development. A propane tank is located at the southeast corner of Unit 4.

Parcel 064

Parcel/Street Address (including known historic address[es])	TMK: (2) 3-5-001: Parcel 064, Wailuku, Maui, Hawaii (no designated street address)
Owners:	RCFC Kehalani, LLC
Number and Size of Buildings:	There are currently no permanent structures located on Parcel 064, but there are temporary office trailers on the northeast portion, at the corner of Waialae Road and Kuikahi Drive.
Construction Date(s):	Not applicable
Tenants:	Clean & Green Landscaping (KCA Landscaping), Stanford Carr Development, and Kehalani Community Association (KCA)
Current Usage:	This lower, southeastern portion of the subject property is undeveloped except for several temporary office trailers occupied by a landscaping company, a land developer, and a community association.

Parcels 108 through 117

Parcel/Street Address (including known historic address[es])	TMKs: (2) 3-5-001: Parcels 108 through 117, Wailuku, Maui, Hawaii (no designated street address)
Owners:	RCFC Kehalani, LLC
Number and Size of Buildings:	There are currently no buildings on the majority of this portion of the subject property. However, the northeastern-most area includes the Wailuku Shaft 33 water well (formerly used for irrigation), a corrugated metal Quonset hut (former warehouse), and a Maui Electrical Company, Ltd. (MECO) electrical substation with three large pad-mounted transformers, and three pole-mounted transformers.
Construction Date(s):	Not applicable
Tenants:	Not applicable
Current Usage:	These upper, western portions of subject property are currently under initial residential development, including some grading and infrastructure such as roadways, utility lines, and a water well.

The historical research presented in this assessment has established the obvious uses of the subject property since 1922. In addition, information on historic uses of adjoining properties was also obtained. A chronological summary of the historic use of the subject and adjoining/nearby properties is presented below.

On the earliest available topographic map, from 1922, the subject property and surrounding areas were depicted as undeveloped land. According to the 1950 through 1992 aerial photographs, the subject property appeared as cultivated agricultural land, most likely sugar cane and/or pineapple. The 2000 aerial photographs showed the subject property as fallow agricultural land. The 2010 aerial photographs showed the southeastern-most portion of the subject property (Parcel 064) as a construction baseyard with vehicles, stored building materials, ASTs, equipment, shipping containers, and a few small buildings. This construction baseyard was no longer present in the 2012 through 2014 aerial photographs.

According to records at the County of Maui Real Property Tax Assessment Office, the Wailuku Sugar Company owned the subject property as early as 1939. Maui Pineapple Co, Ltd. leased a portion in the 1950s. In 1993, the property was deeded from Wailuku Agribusiness Company, Inc. to C. Brewer & Company, Ltd., which changed its name to C. Brewer Homes, Inc. and then to Hawaii Land & Farming Company, Inc. Kehalani Mauka, LLC became the landowner in 1999, and the 2006 ownership is listed under the names: Kehalani Village Center-Condo Master, Kehalani Holdings Company, Inc., Kehalani Mauka, LLC, and Wailuku Water Company, LLC. RCFC Kehalani, LLC was listed as the owner of the parcels that comprise the subject property between 2014 and 2016.

Bureau Veritas conducted a Multi-Increment Sampling Investigation at the subject property in 2011 to assess the presence of agricultural chemicals from the past agricultural use of the subject property. Based on the investigation, agricultural chemicals were not detected at or above regulatory levels. The State of Hawaii Department of Health (HDOH), Hazard Evaluation and Emergency Response (HEER) Office subsequently issued a "No Further Action (NFA) Determination" regarding the presence of agricultural chemicals at the subject property.

This Assessment has revealed no evidence of recognized environmental conditions, as defined by ASTM, in connection with the subject property, except for the following:

- **Onsite MECO Electrical Substation** - Three large, pad-mounted electrical transformers are located within a fenced-in MECO electrical substation on the northeast portion of the upper, western residential area at the subject property, next to the Wailuku Shaft 33 water well. No staining or other evidence of releases was observed on or around the transformers.

  According to MECO's records, the transformers were purchased in 1948 and contain PCB concentrations ranging from 2.47 parts per million (ppm) to 34.8 ppm. These transformers contain less than 50 ppm PCBs and are, therefore, considered non-PCB units. However, there is a potential that the transformers formerly contained di-electric fluids with higher PCB concentrations (based on the ages of the transformers), with a potential for past PCB releases to impact the subject property.

  It is MECO's policy to conduct a comprehensive Environmental Site Assessment (including soil testing) whenever they decommission one of their electrical substations. In addition, MECO is responsible for the cleanup and remediation of all releases from their transformers.

  This finding is considered a recognized environmental condition because there is a potential for past releases of PCB fluids from the MECO transformer substation to impact the subject property. However, MECO is responsible for the cleanup and remediation of all releases from their transformers.

This assessment has also revealed the following evidence of a historical recognized environmental condition, as defined by ASTM, in connection with the subject property:

- **Past Agricultural Use** - Agricultural chemicals such as pesticides and/or herbicides formerly used on agricultural crops at the subject property have the potential to impact the subject property. Bureau Veritas conducted multi-increment soil sampling with laboratory analyses for agricultural chemicals of concern on the agricultural portions of the subject property in 2011. Based on the results, agricultural chemicals were not detected at or above regulatory levels. The State of Hawaii Department of Health (DOH), Hazard Evaluation and Emergency Response (HEER) Office subsequently issued a No Further Action Determination letter for the subject property.

  This historical recognized environmental condition is not considered a current recognized environmental condition because the subject property has received a "No Further Action Determination" letter from the DOH HEER Office in regards to elevated agricultural chemicals in the soil.

In addition, this assessment has revealed the following environmental condition, which is not considered a recognized environmental condition, as defined by ASTM, in connection with the subject property:

- **Lead-Based Paint (LBP)** – Based on a 2008 Hazardous Materials Assessment report, the large, corrugated metal Quonset hut (former warehouse) located on the northeastern-most portion of the subject property (next to the Wailuku Shaft 33 water well) includes silver LBPs on the interior and exterior corrugated metal walls/ceiling. The loose and flaking LBP was reportedly removed and disposed; however, the intact LBPs were left in place.

  This finding is not considered a recognized environmental condition because LBP on buildings is not considered an ASTM issue. However, the remaining LBPs should be monitored over time, with loose and flaking LBP properly removed as necessary. If the structures are to be demolished, the building components covered with LBP should be sampled and analyzed for Toxicity Characteristic Leaching Procedure (TCLP) – Lead in order to asses disposal options

1.0 INTRODUCTION

Redwood Capital Finance Company, LLC ("Client") retained Bureau Veritas North America, Inc. (Bureau Veritas) to conduct a Phase I Environmental Site Assessment ("ESA" or "assessment") of the 160-acre Kehalani property (Tax Map Key numbers [TMKs]: [2] 3-5-001: Parcels 063 [portions], 064, and 108 through 117), located in Wailuku, Maui, Hawaii (the "subject property"). The objective of the assessment was to provide an independent, professional opinion regarding the presence or absence of recognized environmental conditions, as defined by ASTM International (ASTM), associated with the subject property.

1.1 PURPOSE

The purpose of the assessment is to follow ASTM Practice E1527-13, which defines good commercial and customary practice in the United States of America for conducting an environmental site assessment of a parcel of commercial real estate with respect to the range of contaminants within the scope of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and petroleum products. As such, this standard is intended to permit a user to satisfy one of the requirements to qualify for the innocent landowner, contiguous property owner, or bona fide prospective purchaser limitation on CERCLA liability (the landowner liability protections or LLPs); that is, the standard that constitutes all appropriate inquiries into the previous ownership and uses of the property consistent with good commercial and customary practice as defined at 42 United States Code 9601(35) (B). The term recognized environmental conditions is defined as the presence or likely presence of any hazardous substances or petroleum products in, on, or at the property: (1) due to any release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment. De Minimis conditions are not recognized environmental conditions.

1.2 METHODOLOGY

This assessment was performed under the conditions of, and in accordance with Bureau Veritas' Proposal Number 1709.16.034, dated January 26, 2016 and ASTM International Practice E1527-13, Standard Practice for Environmental Site Assessments: Phase I ESA Process. The United States Environmental Protection Agency (USEPA) has determined that the ASTM E1527-13 standard is consistent with the requirements for conducting All Appropriate Inquiry (AAI) and may be used to comply with the AAI regulations (40 Code of Federal Regulations [CFR] Part 312). The methods and terms are as defined in the ASTM standard and AAI regulations. Details of the work performed, sources of information, and findings are presented in the report. Limitations of the Assessment are described in Sections 1.2 and 1.3.

The assessment generally included the following components:

- Review information provided by the client. This includes that information required by the Standard with respect to "User Responsibilities" as well as other information provided (e.g., Environmental Liens, Activity and Use Limitations [AULs], Specialized Knowledge).
- Review selected information on general geology and topography of the subject property, local groundwater conditions, and proximity to ecologically sensitive receptors, such as streams, that might be impacted by recognized environmental conditions. A determination of the sources of water, power, and sewer service at the subject property.
- Investigate historical use of the subject property through reasonably ascertainable ASTM Standard Historical Sources for evidence of prior land use that could have led to recognized environmental conditions. These Standard Historical Sources may include: aerial photography,

United States Geological Survey (USGS) topographic maps, fire insurance maps, property tax files, building department records and zoning/land use records.

- Review of environmental records available from the client, property owner or site contact for evidence of recognized environmental conditions and AULs. This includes documents such as regulatory agency reports, permits, registrations, previous assessments, etc.
- Review a commercial database summary of ASTM Standard Federal, State, and Tribal regulatory agency records pertinent to the subject property and offsite facilities located within ASTM specified search distances from the subject property.
- Conduct interviews with the subject property owner (or their designated Key Site Manager) and occupants regarding current and previous uses of the subject property, particularly with respect to activities involving hazardous substances and petroleum products. Past owners, operators and occupants may also be interviewed to the extent they may be identified and their information is not likely to be duplicative. In cases of abandoned properties, where there is evidence of uncontrolled access, this included interviews with Owners/Occupants of one or more neighboring properties (subject to availability).
- Conduct an onsite reconnaissance of the subject property for visual evidence of recognized environmental conditions, including, but not limited to: existing or potential soil and water contamination, as evidenced by soil or pavement staining or discoloration, unnaturally stressed vegetation, or indications of waste dumping or burial; pits, ponds, or lagoons; containers of hazardous substances or petroleum products; electrical and hydraulic equipment that may contain polychlorinated biphenyls (PCBs), such as electrical transformers and hydraulic hoists; underground and aboveground storage tanks (USTs and ASTs, respectively); etc.
- Perform a subject property line visual reconnaissance of adjacent properties for evidence of potential offsite environmental conditions that may affect the subject property.
- Evaluate information gathered during the Assessment to reach conclusions concerning recognized environmental conditions and prepare this report.

This assessment also included the following non-ASTM items:

- Asbestos-Containing Materials (ACM)
- Lead-Based Paint (LBP)
- Radon
- Wetlands

This assessment does not include sampling and laboratory analysis of suspect ACM, paints, soil, groundwater or other materials.

Bureau Veritas representatives Mr. Bryan Starks, Staff Engineer and Mr. Tim Swartz, Senior Project Manager and Environmental Professional as defined in §312.10 of 40 Code of Federal Regulations (CFR) 312 (see Section 10.0), conducted the site reconnaissance portion of the assessment on February 4, 2016, accompanied by Mr. Brian Ige, Construction Manager of Dowling Company, Inc.

Copies of selected relevant documents and supporting information are included in the applicable appendices. See the Table of Contents for a list of Appendices. Resumes for assessors and Environmental Professionals involved in this Assessment are included in the Appendices. Photographs taken at the time of the reconnaissance are included behind the Photographs Tab.

1.3 EXCEPTIONS & LIMITING CONDITIONS OF ASSESSMENT

Information for the assessment was obtained from the sources listed in the Appendices. This information, to the extent it was relied on to form our opinion, is assumed to be correct and complete. Bureau Veritas is not responsible for the quality or content of information from these sources.

1.3.1 Unavailable Documentation

All requested documentation regarding the subject property was made available for review.

1.3.2 Lack of Access/Reconnaissance Limitations

Bureau Veritas did not encounter significant access or reconnaissance limitations at the subject property. However, much of the undeveloped portions of the subject property were covered with vegetation, preventing a thorough assessment of the ground in those areas. The heavily vegetated areas should be monitored for evidence of staining, abandoned items, and structures of environmental concern during the planned redevelopment activities.

1.3.3 Data Gaps

The ASTM E1527-13 requires that the report identify the following: 1) *obvious* uses of the subject property since 1940 or first development, whichever is *earlier;* and 2) significant "data gaps" which affect the ability of the Environmental Professional to identify *recognized environmental conditions.* The report is also to include information on the sources consulted to address the data gaps.

Historical subject property ownership and/or use information was obtained for the time period 1922 to present. Bureau Veritas has established the history of *obvious* uses of the subject property since first development. No significant data gaps (or other data gaps warranting discussion) were encountered during this Phase I ESA.

1.4 RELIANCE

The information and opinions rendered in this report are exclusively for use by Redwood Capital Finance Company, LLC. Bureau Veritas will not distribute or publish this report without consent except as required by law or court order. The information and opinions expressed in this report are given in response to a limited assignment and should be considered and implemented only in light of that assignment. The services provided by Bureau Veritas in completing this project were consistent with normal standards of the profession. No other warranty, expressed or implied, is made.

2.0 USER PROVIDED INFORMATION

ASTM E1527-13 defines "*User*" as the party seeking to use Practice E1527 to complete an environmental site assessment of the subject property. Bureau Veritas understands that Redwood Capital Finance Company, LLC is the *User* as defined by ASTM E1527-13. ASTM E1527-13 specifies that certain tasks associated with identifying potential recognized environmental conditions at the subject property should be performed by the *User* and provided to the Environmental Professional (i.e., *User Responsibilities*). Accordingly, Bureau Veritas provided the *User* a questionnaire, requesting specific information (see Appendices).

The User Questionnaire included requests for information on the following: environmental liens and AULs that are filed or recorded against the property; "specialized knowledge" of the *User*; relationship of the purchase price to the fair market value of the property if it were not contaminated; commonly known or

reasonable ascertainable information; the degree of obviousness of the presence of likely presence of contamination at the property, and the ability to detect the contamination by appropriate investigation; the presence of *Proceedings Involving the Property* (e.g., litigation, regulatory agency rulings, violations); the reason for performing the Phase I ESA, and other information/documents (e.g., site plan, ALTA survey).

Based on Bureau Veritas' review of the *User* provided information, no readily apparent evidence of potential recognized environmental conditions at the subject property was noted except for the findings in the previous environmental report titled, *Phase I Environmental Assessment, 182-Acre Kehalani Property (Tax Map Key [TMK] Numbers: [2] 3-5-001: Parcels 63 [Portion], 64, 67, and 80 and [2] 3-5-001: Parcel 36), Wailuku, Maui, Hawaii*, , dated March 16, 2012, prepared by Bureau Veritas.

3.0 SUBJECT PROPERTY DESCRIPTION

3.1 LOCATION

The subject property, currently owned by RCFC Kehalani, LLC, Inc. is located on the eastern slope of the West Maui Mountains on the island of Maui. It consists of eight non-contiguous land areas totaling approximately 160 acres, within the larger, planned Kehalani Development. The location of the subject property is presented in Figures 1 and 2, located behind the *Figures* tab.

The subject property is further described by the County of Maui Real Property Tax Assessment Office as the parcels of land identified as TMKs: (2) 3-5-001: Parcels 063 [portions], 064, and 108 through 117. According to the County of Maui Real Property Tax Assessment Office database, the portions of Parcel 063 are currently zoned "Commercial," Parcel 064 is currently zoned "Agriculture," and Parcels 108 through 117 are currently zoned "Residential."

3.2 CURRENT USE OF SUBJECT PROPERTY

A description of the current uses and improvements at the subject property, by area, is presented in the tables below.

Parcel 63 (Portions)

Parcel/Street Address (including known historic address[es])	Portions of TMK: (2) 3-5-001: Parcel 063, Wailuku, Maui, Hawaii (no designated street address), including eight designated land units (Units 4, 5, 6, 7, 8, 10, 11, and 12), encompassing approximately 8.31 acres
Owners:	RCFC Kehalani, LLC
Number and Size of Buildings:	There are currently no buildings located on the portions of Parcel 063 that are included in the subject property.
Construction Date(s):	Not applicable
Tenants:	Not applicable
Current Usage:	These lower, southeastern portions of the subject property are undeveloped areas within the Kehalani Village Center commercial development. A propane tank is located at the southeast corner of Unit 4.

Parcel 064

Parcel/Street Address (including known historic address[es])	TMK: (2) 3-5-001: Parcel 064, Wailuku, Maui, Hawaii (no designated street address)
Owners:	RCFC Kehalani, LLC
Number and Size of Buildings:	There are currently no permanent structures located on Parcel 064, but there are temporary office trailers on the northeast portion, at the corner of Waialae Road and Kuikahi Drive.
Construction Date(s):	Not applicable
Tenants:	Clean & Green Landscaping (KCA Landscaping), Stanford Carr Development, and Kehalani Community Association (KCA)
Current Usage:	This lower, southeastern portion of the subject property is undeveloped except for several temporary office trailers occupied by a landscaping company, a land developer, and a community association.

Parcels 108 through 117

Parcel/Street Address (including known historic address[es])	TMKs: (2) 3-5-001: Parcels 108 through 117, Wailuku, Maui, Hawaii (no designated street address)
Owners:	RCFC Kehalani, LLC
Number and Size of Buildings:	There are currently no buildings on the majority of this portion of the subject property. However, the northeastern-most area includes the Wailuku Shaft 33 water well (formerly used for irrigation), a corrugated metal Quonset hut (former warehouse), and a Maui Electrical Company, Ltd. (MECO) electrical substation with three large pad-mounted transformers, and three pole-mounted transformers.
Construction Date(s):	Not applicable
Tenants:	Not applicable
Current Usage:	These upper, western portions of subject property are currently under initial residential development, including some grading and infrastructure such as roadways, utility lines, and a water well.

3.3 CURRENT USES OF ADJOINING/NEARBY PROPERTIES

The area surrounding the subject property consists primarily of residential properties. Adjoining and nearby properties were observed (from the subject property or from public access areas) for evidence of potential recognized environmental conditions and their potential to pose an environmental concern to the subject property (Figure 1, Figures Tab). The uses and features of adjoining properties, by area, are described below (by relative compass direction and across adjoining roadways):

Parcel 63 (Portions)

North		
Company/Facility Name	**Address**	**Type/Relevant Observations (if any)**
Kaupo Street and residential properties	Various private addresses	Roadway, beyond which are single-family houses.

East		
Company/Facility Name	**Address**	**Type/Relevant Observations (if any)**
Waiale Road, beyond which is a Walgreens store and residential properties	700 Waiale Road (Walgreens) and various private addresses	Roadway, beyond which are a drug store and single-family houses.

South		
Company/Facility Name	**Address**	**Type/Relevant Observations (if any)**
Kuikahi Drive, beyond which is undeveloped land and temporary office trailers	Not applicable	Roadway, beyond which is undeveloped land and temporary office trailers occupied by Clean & Green Landscaping, Stanford Carr Development, and Kehalani Community Association.

West		
Company/Facility Name	**Address**	**Type/Relevant Observations (if any)**
Honoapiilani Highway, beyond which are residential properties	Various private addresses	Roadway, beyond which are single-family houses.

Parcel 064

North		
Company/Facility Name	**Address**	**Type/Relevant Observations (if any)**
Kuikahi Drive, beyond which is Kehalani Village Center	135 Kehalani Village Drive	Roadway, beyond which are various commercial facilities including Longs Drugs, Foodland (grocery store), American Savings Bank, Coffee Bean & Tea Leaf, McDonalds (restaurant), and Aloha Gas (gas station).

East		
Company/Facility Name	**Address**	**Type/Relevant Observations (if any)**
Waiale Road, beyond which is undeveloped land	Not applicable	Roadway, beyond which is undeveloped land

South		
Company/Facility Name	**Address**	**Type/Relevant Observations (if any)**
Undeveloped land	Not applicable	Undeveloped land

West		
Company/Facility Name	**Address**	**Type/Relevant Observations (if any)**
Honoapiilani Highway, beyond which is a construction baseyard and undeveloped land	Not applicable	Highway, beyond which is a construction baseyard and undeveloped land

Parcels 108 through 117

North		
Company/Facility Name	**Address**	**Type/Relevant Observations (if any)**
Large water tank (reportedly two million gallons), MECO Electrical substation, and residential properties, beyond which are Iao Valley Road/Main Street, undeveloped land, and Iao Stream/Kama Ditch	Various private addresses	Water tank, electrical substation, and residential properties.

East		
Company/Facility Name	**Address**	**Type/Relevant Observations (if any)**
Residential properties and Puu Kukui Elementary School and residential properties	3700 Kehalani Mauka Parkway (school) and various private addresses	Elementary School and single-family houses.

South		
Company/Facility Name	**Address**	**Type/Relevant Observations (if any)**
Residential properties	Various private addresses	Single-family houses.

West		
Company/Facility Name	**Address**	**Type/Relevant Observations (if any)**
Residential properties of Wailuku Heights	Various private addresses	Single-family houses.

Information regarding historical or other documented uses of nearby properties that may pose an environmental concern to the subject property is discussed in Sections 4.0 and 6.0, respectively.

3.4 PHYSICAL SETTING

The physical setting of the subject property was assessed through a review of the following: USGS Topographic Maps, visual observations at the subject property and nearby properties, and selected additional documentation (e.g., soil survey, geotechnical reports, previous Phase II assessment, and interviews with local personnel). General information on the topography, surface water, soils, bedrock and groundwater in the vicinity of the subject property is as follows:

Parcel 63 (Portions)

Soil Types	Iao clay, 3 to 7 percent slopes (USDA, 1972) Iao silty clay, 0 to 3 percent slopes (USDA 1972)
Nearby Surface Water/Drainage Features	Waiale Reservoir, located approximately 800 feet to the east

Estimated Depth Shallow Groundwater:	Approximately 280 to 360 feet (USGS, Wailuku, 2013)
Estimated Shallow Groundwater Flow Direction	East-northeast, toward the Pacific Ocean (USGS, Wailuku, 2013)

Parcel 064

Soil Types	Iao clay, 3 to 7 percent slopes (USDA, 1972) Iao silty clay, 0 to 3 percent slopes (USDA 1972)
Nearby Surface Water/Drainage Features	Waiale Reservoir, located approximately 1,400 feet to the northeast
Estimated Depth Shallow Groundwater:	Approximately 300 to 380 feet (USGS, Wailuku, 2013)
Estimated Shallow Groundwater Flow Direction	East-northeast, toward the Pacific Ocean (USGS, Wailuku, 2013)

Parcels 108 through 117

Soil Types	Wailuku silty clay, 3 to 7 percent slopes (USDA, 1972) Wailuku silty clay, 3 to 7 percent slopes (USDA 1972) Iao clay, 7 to 15 percent slopes (USDA 1972) Iao clay, 3 to 7 percent slopes (USDA 1972) Iao cobbly silty clay, 7 to 15 percent slopes (USDA 1972)
Nearby Surface Water/Drainage Features	Waihee Ditch (irrigation ditch) extends alongside and through the upper, western portion of the subject property, and Iao Ditch (irrigation ditch) extends alongside the upper, western boundary of the subject property.
Estimated Depth Shallow Groundwater:	Approximately 430 to 740 feet (USGS, Wailuku, 2013)
Estimated Shallow Groundwater Flow Direction	East-northeast, toward the Pacific Ocean (USGS, Wailuku, 2013)

Bureau Veritas reviewed the Aquifer Identification and Classification for Hawaii: Groundwater Protection Strategy for Hawaii, published by the Water Resources Research Center at the University of Hawaii, for information on groundwater conditions below the subject property (Mink, J.F. and L.S. Lau, 1990). According to the report, two aquifer systems underlie the subject property. The boundary between the two aquifer systems is located to the west of Honoapiilani Highway and runs roughly parallel to the west side of the highway. Both aquifer systems are part of the Iao Aquifer System within the Wailuku Aquifer Sector.

The aquifer system underlying the upper, western portion of the subject property is an unconfined, basal aquifer of the flank type, occurring in horizontally extensive lavas. Its status is described as an irreplaceable, fresh (less than 250 milligrams per liter [mg/L] chloride), drinking water aquifer. This aquifer has a high vulnerability to contamination.

The aquifer system underlying the lower, eastern portion of the subject property consists of an upper and lower aquifer. The upper aquifer is an unconfined, basal aquifer of the sedimentary type, with non-volcanic lithology. It is described as an ecologically important aquifer with a potential for use, but it is not considered a drinking water source. The aquifer is also described as a low salinity (250-1,000 mg/L chloride), irreplaceable aquifer with a high vulnerability to contamination.

The lower aquifer is a confined, basal aquifer of the flank type, occurring in horizontally extensive lavas. It is described as an irreplaceable, fresh drinking water aquifer with a potential for use and a low vulnerability to contamination.

The regional shallow groundwater flow direction is inferred to be east-northeast, based on surface topography. However, topography is not always a reliable basis for predicting groundwater flow direction. The local gradient under the subject property may be influenced naturally by zones of higher or lower permeability, or artificially by nearby pumping or recharge, and may deviate from the regional trend. The groundwater depth is expected to range between approximately 230 feet below ground surface (bgs) to approximately 750 feet bgs.

According to the State of Hawaii Department of Health (DOH) Underground Injection Control (UIC) Program, the UIC line runs along Honoapiilani Highway, near or partially through the lower portion of the subject property. Areas above the UIC line are considered to be a source of potable water, while areas below the UIC line are not considered to be a source of potable water.

4.0 HISTORICAL REVIEW

The following Sections detail Bureau Veritas' review of available historical and related information. This includes a review of ASTM Standard Historical Sources, Agency/Department records/personnel interviews and other documents. The historical summary also incorporates information obtained from interviews and other components of the Assessment process.

4.1 SUMMARY OF HISTORICAL REVIEW

The historical research presented in this assessment has established the obvious uses of the subject property since 1922. In addition, information on historic uses of adjoining properties was also obtained. A chronological summary of the historic use of the subject and adjoining/nearby properties is presented below.

On the earliest available topographic map, from 1922, the subject property and surrounding areas were depicted as undeveloped land. According to the 1950 through 1992 aerial photographs, the subject property appeared as cultivated agricultural land, most likely sugar cane and/or pineapple. The 2000 aerial photographs showed the subject property as fallow agricultural land. The 2010 aerial photographs showed the southeastern-most portion of the subject property (Parcel 064) as a construction baseyard with vehicles, stored building materials, ASTs, equipment, shipping containers, and a few small buildings. This construction baseyard was no longer present in the 2012 through 2014 aerial photographs.

According to records at the County of Maui Real Property Tax Assessment Office, the Wailuku Sugar Company owned the subject property as early as 1939. Maui Pineapple Co, Ltd. leased a portion in the 1950s. In 1993, the property was deeded from Wailuku Agribusiness Company, Inc. to C. Brewer & Company, Ltd., which changed its name to C. Brewer Homes, Inc. and then to Hawaii Land & Farming Company, Inc. Kehalani Mauka, LLC became the landowner in 1999, and the 2006 ownership is listed under the names: Kehalani Village Center-Condo Master, Kehalani Holdings Company, Inc., Kehalani Mauka, LLC, and Wailuku Water Company, LLC. RCFC Kehalani, LLC was listed as the owner of the parcels that comprise the subject property between 2014 and 2016.

Bureau Veritas conducted a Multi-Increment Sampling Investigation at the subject property in 2011 to assess the presence of agricultural chemicals from the past agricultural use of the subject property. Based on the investigation, agricultural chemicals were not detected at or above regulatory levels. The State of Hawaii Department of Health (HDOH), Hazard Evaluation and Emergency Response (HEER) Office subsequently issued a "No Further Action (NFA) Determination" regarding the presence of agricultural chemicals at the subject property.

4.2 AERIAL PHOTOGRAPHS

Aerial photographs, including the subject and adjoining properties, were obtained from Environmental Data Resources, Inc. (EDR), and Google Earth™. Photographs taken in the years 1950, 1965, 1976, 2000, 2010, 2012, 2013, and 2014 were reviewed. Aerial photographs from EDR are included in Appendix D. Key findings noted during this review are as follows:

- In the 1950 aerial photograph, the subject property and surrounding areas appeared as cultivated agricultural land, most likely sugar cane and/or pineapple. Narrow waterways (irrigation ditches) were observed in the general area of the subject property. A structure was observed at or near the northeast corner of the subject property, near the former Wailuku Shaft 33 water well. A small reservoir (identified in the earlier topographic maps as "Hopoi Reservoir") and several structures that appeared as houses were observed just east of the upper residential area of the subject property, and several unimproved roads were observed to the south and east. In addition, several small structures, most likely houses or Quonset huts, and a few roadways were observed at the current Wailuku Heights subdivision to the west of the subject property. The City of Wailuku to the northeast appeared densely developed with residential housing and small commercial businesses.

- The 1965 aerial photographs showed no significant changes from the 1950 aerial photograph, although additional development was visible at the Wailuku Heights subdivision to the west of the subject property. In addition, a small group of buildings was observed to the east of the subject property, along Waiale Road. No significant changes were noted on the 1977 aerial photograph.

- The 2000 aerial photographs showed no significant changes from the 1977 aerial photograph, except the subject property appeared as fallow agricultural land. It was covered with vegetation, but the crop lines were no longer distinctly visible. The small reservoir ("Hopoi Reservoir") located just east of the upper, residential area of the subject property appeared as dry land.

- The 2010 aerial photographs showed no significant changes from the 2000 aerial photograph, except for a few small, cleared areas with stored equipment visible on the southernmost portion of the upper, residential area on the subject property. In addition, the southeastern-most portion of the subject property (Parcel 064) appeared as a construction baseyard with vehicles, stored building materials, ASTs, equipment, shipping containers, and a few small buildings. Increased residential development was observed on the adjoining areas, especially on the south and east adjacent properties.

- The 2012 and 2013 aerial photographs appeared similar to the 2010 aerial photograph, except the southeastern-most portion of the subject property (Parcel 064) no longer appeared as a construction baseyard. The current office trailers were observed on the northeast corner of Parcel 064. In addition, the current Longs Drugs store was visible on Parcel 063, with other portions of Parcel 063 (including the subject property) under initial development.

- The 2014 aerial photograph appeared similar to the 2012/2013 aerial photographs, except Parcel 063 of the subject property appeared with two more structures (Foodland/American Savings Bank/Coffee Bean & Tea Leaf and Aloha Gas).

No readily apparent evidence of recognized environmental conditions at the subject or adjoining properties was noted on the aerial photographs reviewed, except that the subject property was historically used for crop cultivation. As such, agricultural chemicals may have been applied to the crops. Past use of agricultural chemicals has the potential to impact the subject property.

4.3 USGS TOPOGRAPHIC MAPS

Available historic topographic maps for the subject property and vicinity were obtained from the Hawaii State Archives and EDR, and included the years 1922, 1955, 1983, 1997, and 2013. Topographic maps from EDR are included in Appendix E. Key findings noted during this review are as follows:

- The 1922 topographic map depicted the subject property and surrounding areas as undeveloped land. Waihee Ditch (an irrigation ditch) was depicted extending through portions of the subject property, and an unnamed irrigation ditch was depicted near the eastern edge of the subject property. The depiction of these irrigation ditches indicates that the subject property was most likely utilized for agricultural purposes. Several railroads owned by the Wailuku Sugar Company were depicted running in a north-west direction more than 3,000 feet east of the subject property. Approximately eight small structures labeled collectively as “Hopoi Camp” were depicted just southeast of the subject property’s upper, residential area. The town of Wailuku was depicted to the northeast of the subject property.

- The 1955 topographic map showed no significant changes from the 1922 topographic map, except several small structures, most likely houses, and a few roadways were depicted to the west of the subject property. This area was labeled “Wailuku Heights.” In addition, a structure labeled “Power Plant” was depicted at or near the northeast corner of the subject property, near the former Wailuku Shaft 33 water well. Irrigation ditches were depicted traversing the subject property from east to west, indicating that the subject property was utilized for agricultural cultivation. Hopoi Reservoir was depicted just south of Hopoi Camp. A round water tank and several small structures (likely houses) were depicted just north of the subject property, along Iao Valley Road.

- The 1983 topographic map showed no significant changes from the 1955 topographic map, except the structure labeled “Power Plant” was no longer depicted at or near the northeast corner of the subject property. In addition, increased development was shown in the Wailuku Heights subdivision located to the west of the subject property. Waiale Road appeared as an improved roadway, with a round water tank depicted to the east, near the subject property.

- The 1997 topographic map showed no significant changes from the 1983 topographic map, except a small structure labeled “Well” was depicted at the northeast corner of the subject property, at the same location as the Wailuku Shaft 33 water well. The town of Wailuku was increased in size and extended closer to the subject property. It was shaded gray to depict unspecified development. Increased development was also shown in the Wailuku Heights

subdivision to the west of the subject property. In addition, most of the irrigation ditches depicted in the previous topographic maps were no longer present on the subject property. Hopoi Reservoir was no longer depicted on this topographic map.

- The 2013 topographic map showed no structures or irrigation ditches on or near the subject property. Only roadways, natural water bodies/waterways, and elevation lines were depicted on this map.

4.4 FIRE INSURANCE MAPS

Fire insurance maps typically depict either the locations of manufacturing and industrial facilities within the city limits or potential hazards existing within individual building structures. In many cases, evidence of environmental concern, such as locations of USTs, can be found by reviewing fire insurance maps.

There were no fire insurance maps available that included the subject property or nearby properties. EDR certification that these fire insurance maps were unavailable is included in Appendix F.

4.5 RECORDED LAND TITLE RECORDS

Information provided to Bureau Veritas by EDR with respect to environmental liens or AULs was discussed in Section 2.0. ASTM E1527-13 recommends that the User retain a title company or title professional to provide recorded land title records.

Preliminary title reports, prepared by Title Guaranty of Hawaii, Inc. and dated from August 18, 2015 to February 5, 2016, were provided by Redwood Capital Finance Company, LLC and were reviewed by Bureau Veritas. According to the reports, no environmental liens or AULs were identified for the subject property.

Readily available records at the County of Hawaii Real Property Tax Assessment Office were reviewed to assess past ownership and uses of the subject property. The subject property is listed as TMKs: (2) 3-5-001: Parcels 063 [portions], 064, and 108 through 117. The current owner of the subject property is listed as RCFC Kehalani, LLC. A summary of past ownership and lease records for the subject property is presented in the table below:

Tax Map Key	Year	Transaction
TMK: [2] 3-5-001: Parcel 001	1939	First record of parcel was in November 6, 1939. The 809.102-acre parcel was owned by Wailuku Sugar Company.
	1950s	After numerous transactions, such as subdivisions and granting of easements, the parcel was subdivided and the final area totaled 740.868 acres. The owner was still listed as Wailuku Sugar Company. Maui Pineapple Co, Ltd. leased 0.162 acres on the parcel on April 22, 1959.
	1960s	After several transactions, the parcel was 736.677 acres. The owner remained Wailuku Sugar Company.
	1970s	After several transactions, the parcel size and the owner remained constant. In 1975, 0.064 acres was exchanged with Parcel 21.
	1981	96.693 acres dropped into other parcels and 14.06 acres received from TMK: 3-5-2: Parcel 3. Total area was 654.044 acres.

Tax Map Key	Year	Transaction
TMK: [2] 3-5-001: Parcel 001 (continued)	1987	Wailuku Sugar Company remained the owner of the 654.044 acre parcel. The County of Maui leased the area of the water tank.
	1990	Zoning was changed from agricultural to agricultural / urban (272.8 acres zoned agricultural and 381.244 acres zoned urban). Lessees were County of Maui and Maui Electric Company, Ltd. The owner remained Wailuku Sugar Company.
	1993	Parcel was sold from Wailuku Agribusiness Company, Inc. to C. Brewer & Company, Ltd., and then to C. Brewer Homes, Inc. Maui County and Maui Electric still leased portions of the parcel.
	1999	C. Brewer Homes, Inc. changed its name to Hawaii Land & Farming Company, Inc. The parcel was sold first to Katy Corp., then Kehalani Mauka, LLC. The parcel size (654.044 acre parcel) and the lessees remained the same.
TMK: [2] 3-5-001: Parcel 067	2003	New tax records established for TMK (2) 3-5-001: Parcel 67. Area listed as 203.193 acres and the owners were listed as Kehalani Holdings Company, Kehalani Mauka LLC, and Wailuku Agribusiness.
	2006	Declaration of merger, with Kehalani Mauka LLC and Wailuku Water Company LLC listed as owners.
	2013	Parcel deeded to RCFC Kehalani, LLC
	2015	Parcel subdivided with 12 new parcels, TMKs: (2) 3-5-001: Parcels 108 through 119, with RCFC Kehalani, LLC listed as owner.
TMK: [2] 3-5-001: Parcel 063 (Portions)	2006	Declaration of merger, with Kehalani Village Center-Condo Master listed as owner.
	2011	Kehalani Village Center – Condo Master listed as owner (no subsequent transactions listed in available records).
	2013	Deeded to RCFC in 2013
TMK: [2] 3-5-001: Parcel 064	2006	Declaration of merger, with Kehalani Holdings Company Inc. listed as owner.
	2013	RCFC Kehalani, LLC listed as owner.

No readily apparent evidence of recognized environmental conditions at the subject property was noted in the chain of title report reviewed, except that portions of the subject property were formerly owned by agricultural companies, including: Wailuku Sugar Company, Wailuku Agribusiness Company, Inc., and Hawaii Land & Farming Company, Inc. In addition, Maui Pineapple Co., Ltd. formerly leased a portion of the subject property. These companies formerly cultivated sugar cane and pineapple crops on the subject property. Past use of agricultural chemicals on sugar cane/pineapple fields has the potential to impact the subject property.

4.6 CITY DIRECTORY

A city directory provides names of former businesses and occupants of the subject property, which may indicate potential environmental concerns associated with the business. A city directory report was provided by EDR, and is included in Appendix G.

The subject property does not currently include street addresses and, therefore, is not listed in the city directory report. The city directory report includes listings for nearby residential properties along Komo Ohia Street and Kapalaia Place for the years 2008 and 2013. All of the listings are names of the individual owners/occupants of the residential properties.

No readily apparent evidence of recognized environmental conditions at the subject property and adjoining properties was noted in the city directory report.

4.7 AGENCY CONTACTS

4.7.1 Building, Planning, and/or Zoning Departments

The County of Maui Real Property Tax Assessment database lists the parcels of land that encompass the subject property as TMKs: (2) 3-5-001: Parcels 063 [portions], 064, and 108 through 117. According to the database, the portions of Parcel 063 are currently zoned “Commercial,” Parcel 064 is currently zoned “Agriculture,” and Parcels 108 through 117 are currently zoned “Residential.” No building permit information was available for the subject property, except for six permits issued in 2005 for the upper residential area. However, the reasons for the permits were not included in the database.

4.7.2 Fire Department

The Maui Fire Department (MFD) was contacted to obtain information regarding any fires, complaints, permits, or violations involving hazardous material use, USTs, or ASTs on record for the subject and/or adjoining properties.

Bureau Veritas received a response from the MFD indicating that the only record they had for the subject property was a permit dated 2008 for a 450-gallon AST on the upper residential area. Bureau Veritas did not observe this AST during the site visit; however, based on the previous Phase I ESAs conducted by Bureau Veritas (see Section 4.8 below), this AST was likely a portable, temporary fuel tank used during construction activities on the south adjoining residential area.

4.7.3 Department of Health (Solid and Hazardous Waste Branch)

The HDOH, Solid and Hazardous Waste Branch (SHWB) UST and leaking underground storage tank (LUST) databases (2014) were reviewed to obtain information regarding any USTs or LUSTs at the subject property or adjoining properties.

The subject parcel/property and adjoining properties were not listed in the SHWB databases reviewed.

4.7.4 Department of Health (Hazard Evaluation & Emergency Response Office)

The HDOH, HEER Office Release Notification database (2014) was reviewed to obtain information regarding any spills or other environmental incidents that may have occurred at the subject property or adjacent properties.

The subject parcel/property and adjoining properties were not listed in the HEER databases reviewed.

4.8 PREVIOUS ENVIRONMENTAL REPORTS OR OTHER DOCUMENTS

During this assessment, Bureau Veritas reviewed the following previous reports for land areas that include the subject property:

***Phase I Environmental Assessment*, 258.315-Acre Undeveloped Property (TMK Nos.: [2] 3-5-001: Parcels 67, 75, 77, 78, and 80), Planned Kehalani Residential Subdivision, Wailuku, Maui, Hawaii, conducted by Bureau Veritas (formerly Clayton Group Services, Inc.), Project No. 85-06214.00, dated March 16, 2006**

Stanford Carr retained Bureau Veritas to conduct this Phase I ESA, which was performed to the ASTM E1527-00 standard and included the upper Residential Area of the subject property (TMK Nos.: [2] 3-5-001: Parcels 67 and 80), plus three more land parcels (TMK Nos.: [2] 3-5-001: Parcels 75, 77, and 78). This assessment revealed no evidence of *recognized environmental conditions*, as defined by ASTM, in connection with the subject property. However, the following environmental issues were identified in connection with the subject property:

- Based on historical references, including aerial photographs and tax assessment records, the subject property was formerly utilized for agricultural cultivation. Past use of chemicals on farmland has the potential to impact the subject property. The historical evidence indicates that any agricultural operations would have been terminated at the site recently after 1999 (the subject property appeared as agricultural land in the 1999 aerial photograph). The past use of agricultural chemicals has a potential to impact the subject property.

  This finding was not considered a recognized environmental condition because there was no evidence of the mixing, storage, or excessive use of pesticides and/or herbicides on the subject property when it was utilized for agricultural cultivation. In addition, according to HAR Chapter 128D, the presence of agricultural chemicals does not constitute a release. However, because the subject property is to be developed with residential properties, Bureau Veritas recommended testing the soil for agricultural chemicals.

- The subject property is heavily vegetated with tall grasses, which prevented a thorough inspection of the ground surface. The subject property may contain abandoned items, debris, and/or stained soils that were obscured from view during Bureau Veritas' site visit.

  This finding was not considered a recognized environmental condition because there is no evidence of hazardous substance releases at the subject property. However, the subject property should be carefully monitored during clearing and grubbing activities for the planned residential development. If chemical containers or stained soils are discovered, environmental cleanup work may be warranted.

***Phase I Environmental Assessment*, 43-Acre Undeveloped Property (TMK Nos.: [2] 3-5-001: Parcels 63 and 64 and TMK No. [2] 3-5-020: Parcel 036), Planned Kehalani Residential Subdivision, Wailuku, Maui, Hawaii, conducted by Bureau Veritas (formerly Clayton Group Services, Inc.), Project No. 85-06214.00, dated March 16, 2006**

Stanford Carr retained Bureau Veritas to conduct this Phase I ESA, which was performed to the ASTM E1527-00 standard and included the lower Commercial and Park Areas of the subject property (TMK Nos.: [2] 3-5-001: Parcels 63 [Portion] and 64, and [2] 3-5-020: Parcel 36). This assessment revealed no evidence of recognized environmental conditions, as defined by ASTM, in connection with the subject property except for the following:

- Bureau Veritas observed soil staining of petroleum product in the area of the 300-gallon capacity ASTs located in the Goodfellow Brothers Inc. base yard. The staining, with an approximate area of

  nine square feet, was observed in front of the 300-gallon ASTs and appeared to be the result of incidental spillage. According to Mr. Mike Dias, Maui Mechanic with Goodfellow Brothers Inc., significant spills have not occurred on the premises; however, incidental spills have occurred in the area periodically.

  This finding was considered a recognized environmental condition because there was evidence of a surficial release. Given that surficial releases have been reported and that the aboveground storage vessels are located on exposed soil, Bureau Veritas recommended that the stained soils be properly removed and disposed, and confirmation soil sampling with laboratory analysis for petroleum hydrocarbons be conducted to assess if cleanup has been completed. The staining was not observed during Bureau Veritas' recent site visit, but it is unknown whether confirmation soil sampling was conducted. However, based on the relatively small size of the stain (nine square feet), the potential for impacts to the subject property appears to be low.

The following environmental issues were identified in connection with the subject property, although they were not deemed to be recognized environmental conditions, as defined by ASTM:

- Goodfellow Brothers Inc. maintained one, 8,000-gallon AST storing diesel fuel; one, 5,000-gallon AST storing used oil; one, 300-gallon AST storing coolant; and four, 300-gallon aboveground storage tanks (ASTs) containing new oil along the southern boundary of Parcel 064. In addition, the operation utilized several 55-gallon drums to store grease. These storage vessels were located in the same unpaved area. The two large capacity ASTs used to store used oil and diesel fuel were located above makeshift catch basins which had been covered with a plastic tarp lining. The tarps were anchored by a number of concrete or sand filled bags. However, based upon the estimated sizes of the ASTs and the poor quality of the underlying catch basins, Bureau Veritas did not believe these controls were adequate secondary containment for these ASTs. In addition, the remaining ASTs and 55-gallon drums had no secondary containment.

  This finding was not considered a recognized environmental condition because it was not associated with a significant release. However, the 8,000-gallon and 5,000-gallon ASTs do not appear to have adequate secondary containment. These ASTs (along with the other ASTs) and storage containers with capacities of 55-gallons and higher should be placed within proper secondary containment.

- Bureau Veritas identified miscellaneous abandoned items along the northern portions of the subject property's Area 1 (Hawaiian Dredging Company). Littered articles observed included pieces of heavy machinery, an automobile, and general refuse.

  This finding was not considered a recognized environmental condition because there is no evidence of a release associated with the refuse items. However, Bureau Veritas recommended that the items be removed and a general inspection be conducted beneath these items to ensure a release has not occurred.

- Based on historical references, including aerial photographs and tax assessment records, the subject property was formerly utilized for agricultural cultivation. Past use of chemicals on farmland has the potential to impact the subject property. The historical evidence indicates that agricultural operations would have been terminated at the site prior to 1997, when the subject property appeared as fallow land. The past use of agricultural chemicals has a potential to impact the subject property.

  This finding was not considered a recognized environmental condition because there is no evidence of the mixing, storage, or excessive use of pesticides and/or herbicides on the subject property when it was utilized for agricultural cultivation. In addition, according to HAR Chapter 128D, the presence of agricultural chemicals does not constitute a release. If the subject property is ever redeveloped as

a residential property or the soil is used as fill for residential properties, however, Bureau Veritas recommended testing the soil for agricultural chemicals.

***Hazardous Materials Assessment Survey, Two Quonset Huts, Wailuku Shaft 33, Kehalani Mauka Subdivision, Wailuku, Maui, Hawaii*, conducted by Bureau Veritas, Project No. 17008-008018.00, dated February 22, 2008**

Stanford Carr retained Bureau Veritas to conduct this hazardous materials assessment of the two Quonset huts at Wailuku Shaft 33, located on the northeast portion of the upper Residential Area of the subject property. The scope of work included the identification and sampling of: (1) suspect asbestos-containing materials (ACM) for asbestos analysis; (2) suspect lead-based paint (LBP) for lead analysis; and (3) suspect arsenic-containing materials (ArCM) for arsenic analysis. Bureau Veritas' findings and recommendations were as follows:

Asbestos-Containing Materials Assessment

Based on Bureau Veritas' inspection and laboratory analysis of bulk samples of suspect ACM, the following materials contain asbestos above the regulatory level of one percent (1%) and were identified as ACM:

- Approximately 1,300 square feet of weatherproof coating with silver paint is present on the exterior of the Small Quonset hut (over Wailuku Shaft 33)
- Approximately 6,700 square feet of weatherproof coating with silver paint is present on the exterior of the Large Quonset hut (electrical panel building)
- Approximately six (6) cubic feet of cementitious arc shoots (18 units) inside the dry-type electrical transformer box located in the Large Quonset hut (electrical panel building)

Bureau Veritas recommended removal of these asbestos-containing building materials prior to building demolition by a qualified asbestos abatement contractor under the supervision of a qualified industrial hygiene professional, in accordance with the HDOH Hawaii Administrative Rules (HAR) Title 11, Chapters 501 - 504.

Lead Paint Assessment

Based on Bureau Veritas' paint sampling and laboratory analytical results, the silver paints on the interior and exterior corrugated metal walls/ceiling of the large Quonset hut (electrical panel building) were confirmed as LBP. The silver paints on the interior and exterior corrugated metal walls/ceiling of the small Quonset hut (over Wailuku Shaft 33), and the turquoise paint on the interior concrete lower walls of the large Quonset hut (electrical panel building) contain detectable lead concentrations and are considered lead-containing paint (LCP). The only paint sample reporting no detectable lead was the gray paint on the interior concrete walls at the below-grade well entrance of the small Quonset hut (over Wailuku Shaft 33).

All of the LBP/LCP were observed in fair to poor condition. During the planned demolition activities, the general contractor and their subcontractors must follow the Hawaii Occupational Safety and Health (HIOSH) Lead in Construction Standard (Health Standards, Title 12,Subtitle 8, Part 3, Chapter 148.1) when workers have a potential to be exposed to lead during work activities (i.e., demolition, renovation, cutting, drilling, sanding, grinding, etc.).

Building materials covered with LBP must undergo Toxicity Characteristic Leaching Procedure (TCLP)-Lead laboratory analysis prior to disposal in the landfill. Therefore, Bureau Veritas returned to the project site and collected one representative sample of the building materials for TCLP-Lead analysis. The laboratory results indicated that the sample contained TCLP-Lead below the regulatory level of 5.0 mg/L. Therefore, the LBP-covered metal may be disposed as general construction waste. However, care should be taken to ensure that the LBP remains intact during demolition activities.

Arsenic-Containing Materials Assessment

Two types of canec materials (fiberboard) were sampled from the large Quonset hut (electrical panel building) and submitted to a qualified laboratory for arsenic analysis. Based on the laboratory results, arsenic concentrations in both materials are significantly greater than the regulatory level of 100 milligrams per kilogram (mg/kg). These confirmed ArCM are listed as follows:

- Approximately 500 square feet of canec wall/ceiling board in the small room at the northeast corner of the large Quonset hut (electrical panel building)
- Approximately 1,000 square feet of 1- by 1-foot canec acoustical tiles on the central portion of the interior walls in the large Quonset hut (electrical panel building)

These materials should be properly handled and removed in accordance with the HIOSH Inorganic Arsenic in Construction Standard prior to building demolition activities. Prior to disposal, the arsenic-containing materials require TCLP-Arsenic analysis to assess disposal options. Therefore, the two canec samples were further analyzed for TCLP-Arsenic, which revealed the following:

- The 1- by 1-foot acoustical tiles sampled from the interior walls of the large Quonset hut contained TCLP-Arsenic well above the regulatory level of 5.0 mg/L. Therefore, this canec material should be properly removed, packaged, and disposed according to regulatory requirements. The work should be conducted by a licensed hazardous waste abatement contractor under the supervision of a qualified industrial hygiene professional.
- The canec wall/ceiling board sampled from the small room at the northeast corner of the large Quonset hut contained no detectable TCLP-Arsenic (below laboratory reporting limit). Therefore, although this material must be properly removed prior to demolition activities, it may be disposed of as general garbage.

Other Potentially Hazardous Materials

During Bureau Veritas' survey, other potentially hazardous materials were observed onsite which may require special handling and disposal prior to the planned demolition activities. These materials are listed as follows:

- Seven unlabelled, 55-gallon drums of liquid located inside the large Quonset hut (electrical panel building), near the southwest corner. Approximately 100 square feet of staining was observed on the floor next to these drums.
- Four 5-gallon closed-top buckets of oil located inside the large Quonset hut (electrical panel building), near the southern entrance. Approximately 5 square feet of staining was observed on the floor next to these buckets.

- Three large, pad-mounted electrical transformers within a fenced enclosure and three pole-mounted transformers on a utility pole (potential polychlorinated biphenyl [PCB] units), located just southwest of the two Quonset huts.

The unlabelled, 55-gallon drums of liquid should be tested and properly disposed and the 5-gallon oil buckets should be removed prior to the planned demolition activities. If the transformers are to be removed, these units should be tested for PCB content prior to removal/disposal.

According to Stanford Carr, all of the confirmed ACM, ArCM, loose and flaking LBP, and other potentially hazardous materials (except for the MECO transformers) have been properly removed and disposed.

***Multi-Increment Sampling Investigation Report, 210.5 Acres of Proposed Residential Use and 38.5 Acres of Proposed Non-Residential Use, Kehalani Development, Wailuku, Maui, Hawaii*, conducted by Bureau Veritas, Project No. 17009-009032.00, dated February 1, 2011**

Bureau Veritas was retained by Stanford Carr to conduct this environmental investigation of the Kehalani Development in Wailuku, Maui, Hawaii. The environmental investigation focused on former agricultural property currently being developed for residential and non-residential uses.

The former agricultural property being developed for residential uses includes 12 contiguous residential lots (Modules 2, 3, 6, 7, 8, 9, 12, 13, 14, 17, 18, and 19), located in the western upper portion, and one non-contiguous commercial lot (Module C11), located on the lower, southeastern portion of the subject property (hereinafter referred to as the "Residential Site"). All of these Modules are part of the subject property included in this Phase I ESA, except for Module 2, which is located south of the other upland parcels. The Modules comprising the subject property are indicated on Figure 2, behind the *Figures* tab.

The former agricultural property being developed for non-residential uses includes five non-contiguous lots (Lots 3-A-2, 1-J, P-1, P-2, and P-3), which comprise a total area of 38.5 acres (hereinafter referred to as the "Non-Residential Site"). The planned future uses for Non-Residential Site include a school, a community center, and three parks.

The purpose of the project was to assess the extent and magnitude of potential environmental impacts resulting from past agricultural use of the proposed Residential Site (consisting of 13 modules) and the proposed Non-Residential Site (consisting of five lots).

The environmental investigation approach for the Residential Site was presented in the *Revised Sampling and Analysis Plan for Multi-Increment Sampling*, dated February 10, 2010 (Bureau Veritas, 2010b). The environmental investigation approach for the Non-Residential Site was documented in the *Addendum to the Sampling and Analysis Plan for Multi-Increment Sampling*, which was dated March 18, 2010 (Bureau Veritas, 2010c). In general, this investigation collected surface soils from the Residential and Non-Residential Sites using Decision Unit (DU) strategies and multi-increment sampling techniques.

For the Residential Site, 59 DUs, each 5,000-square feet in area, were established based on HDOH guidance. The 59 DUs were randomly dispersed throughout the 13 modules creating the Residential Site based on the ratio of an individual module's area to the total area of the Residential Site and the soil type(s) within a module. After the 59 DUs were established and the latitude and longitude of the approximate center of the DUs were determined, a hand-held Global Positioning System (GPS) receiver was used to locate the DUs in the field.

For the Non-Residential Site, five DUs, each with different areas, were established based on HDOH guidance. For the Non-Residential Site, each of the five lots were defined as one individual DU, and a multi-increment soil sample was collected from each of the five DUs.

In February and March 2010, Bureau Veritas collected multi-increment surface soils from 59 Residential Site DUs and five Non-Residential Site DUs. For the Residential Site, a multi-increment sample consisting of 30 increments was collected from each DU, and for the Non-Residential Site, a multi-increment sample consisting of 100 increments was collected from each DU. All of the multi-increment soil samples, plus seven replicate samples, were submitted to an analytical laboratory for preparation and analysis for (1) arsenic using the Environmental Protection Agency (EPA) Method 6010B, (2) dioxins using EPA Method 8290, and (3) organochlorine pesticides using EPA Method 8081.

For dioxins, the analytical results report the concentrations of individual congeners for each sample. The individual congeners were used to calculate the dioxin toxicity equivalence (TEQ) concentration based on the 2005 World Health Organization (WHO) toxicity equivalence factors (TEFs).

The analytical results for arsenic and organochlorine pesticides, and the calculated dioxin TEQ concentrations, were compared to the Final Tier 1 Environmental Action Levels (EALs) for unrestricted land use where groundwater is a drinking water resource and the site is less than 150 meters from a surface water body.

Residential Site Summary, Conclusions, and Recommendations
The analytical results show arsenic and organochlorine pesticides were detected in one or more soil samples at concentrations above their method reporting limits. None of the detected concentrations of arsenic or organochlorine pesticides were above their respective Final Tier 1 EALs.

The dioxin TEQ concentrations were calculated for the multi-increment samples collected from the 59 DUs. The dioxin TEQ concentrations were less than the 2010 HDOH TEQ Dioxin Soil Action Level of 240 ng/kg in all of the 59 soil samples. The dioxin TEQ concentrations were further compared to the Soil Management Categories, which show that nine dioxin TEQ concentrations were included in the Natural Background Soil Management Category (soil category "A") and 50 dioxin TEQ concentrations were included in the Minimally Impacted Soil Management Category (soil category "B").

Based on results of the analytical testing and the comparison of the results to the HDOH Final Tier 1 EALs and the 2010 HDOH TEQ Dioxin Soil Action Level, Bureau Veritas concluded that the surface soils of the Residential Site have not been significantly impacted by historical agricultural land uses and that the surface soil at the site is suitable for unrestricted land use.

Bureau Veritas recommended no further investigation of the Residential Site.

Non-Residential Site Summary, Conclusions, and Recommendations
The analytical results show arsenic was detected in two soil samples, at concentrations below the Final Tier 1 EAL. Organochlorine pesticides were not detected at concentrations above their respective method reporting limits in any of the five soil samples.

The dioxin TEQ concentrations were calculated for the multi-increment samples collected from the five DUs. The dioxin TEQ concentrations were less than the 2010 HDOH TEQ Dioxin Soil Action Level of 240 ng/kg in all five soil samples. The dioxin TEQ concentrations were further compared to the Soil Management Categories, which show that two dioxin TEQ concentrations were included in the Natural Background Soil Management Category (soil category "A") and three dioxin TEQ concentrations were included in the Minimally Impacted Soil Management Category (soil category "B").

Based on results of the analytical testing and the comparison of the results to the HDOH Final Tier 1 EALs and the 2010 HDOH TEQ Dioxin Soil Action Level, Bureau Veritas concluded that the surface soils of the Non-Residential Site have not been significantly impacted by historical agricultural land uses and that the surface soil at the site is suitable for unrestricted land use.

Bureau Veritas recommended no further investigation of the Non-Residential Site.

This Multi-Increment Sampling report was subsequently submitted to the DOH HEER Office for review. Based on their review, the HEER Office issued a "No Further Action (NFA) Determination" letter, dated March 1, 2011, indicating that no further action is warranted in regards to agricultural chemicals in the soil. A copy of the NFA letter from the DOH HEER Office is included in Appendix H.

***Phase I Environmental Assessment*, 182-Acre Kehalani Property (Tax Map Key [TMK] Numbers: [2] 3-5-001: Parcels 63 [Portion], 64, 67, and 80 and [2] 3-5-001: Parcel 36), Wailuku, Maui, Hawaii, conducted by Bureau Veritas, Project No. 17012-012038.00, dated March 16, 2012**

Luce, Forward, Hamilton & Scripps LLP retained Bureau Veritas to conduct this Phase I ESA, which was performed to the ASTM E 1527-05 standard and included the lower Agricultural and Commercial portions of the subject property (TMK Nos.: [2] 3-5-001: Parcels 63 [Portions] and 64, respectively), and the upper Residential portion (formerly TMK No.: [2] 3-5-001: Parcel 067). It also included some of the adjoining and nearby areas.

This Phase I ESA revealed no evidence of current recognized environmental conditions, as defined by ASTM, in connection with the subject property. However, it did identify the past agricultural use as a historical recognized environmental condition. Based on the Multi-Increment Sampling Investigation Report completed in 2011 (summarized above), agricultural chemicals were not detected at or above regulatory levels. The HDOH, HEER Office subsequently issued a "No Further Action Determination" letter regarding the presence of agricultural chemicals at the subject property.

This Phase I ESA report also noted that the Goodfellow Brothers Inc./Campos construction base yard located on Parcel 064 of the subject property no longer included stained surface soil, but the fuel ASTs were stored within inadequate secondary containment. Bureau Veritas recommended the use of proper secondary containment for the ASTs. During Bureau Veritas' recent site visit, the former construction base yard was no longer present, and the area was mostly overgrown with vegetation.

5.0 INTERVIEWS

Bureau Veritas interviewed selected individuals associated with the subject property. The purpose of the interviews was to obtain additional information related to: 1) the current and past operations at the subject and/or adjoining properties that may result in recognized environmental conditions; and 2) the presence of Proceedings Involving the Property (e.g., litigation, regulatory agency rulings, and violations).

Bureau Veritas interviewed Mr. Brian Ige, Construction Manager at Dowling Company, Inc., during the site visit on February 4, 2016. Mr. Ige has been associated with the property for approximately three years and was forthcoming with the information for which he had knowledge.

According to Mr. Ige, some of the Kehalani areas have been sold since Bureau Veritas' previous Phase I ESA in 2012. He stated that the upper residential area was subdivided into 10 new land parcels in 2015. Furthermore, he showed Bureau Veritas the location of a new water well that is currently being installed in the upper residential area of the subject property. Mr. Ige stated that only some roadway construction, utility installation, and other infrastructure work has been conducted at the subject property since Bureau Veritas' previous Phase I ESA in 2012.

Mr. Ige was unaware of any USTs, hydraulic equipment, chemical spills, or hazardous materials releases on the subject property. Furthermore, he was unaware of any undocumented or unpermitted wells on the subject property.

Mr. Ige was asked the following and responded to the best of his knowledge:

Any pending, threatened, or past litigation relevant to hazardous substances or petroleum products in, on, or from the property.	Yes _____	No X
Any pending, threatened or past administrative proceedings relevant to hazardous substances or petroleum products in, on, or from the property.	Yes _____	No X
Any notices from any governmental entity regarding any possible violation of environmental laws or possible liability relating to hazardous substances or petroleum products.	Yes _____	No X

6.0 STANDARD ENVIRONMENTAL RECORD SOURCES: FEDERAL, STATE, AND TRIBAL

Available government database information prepared by EDR was reviewed to evaluate both the subject property and any listed sites within ASTM-recommended search distances, which could potentially impact the subject property. Federal, state, and local databases reviewed are included in Appendix I.

The regulatory database report also included an Unmappable Sites Section. Unmappable sites are sites that cannot be plotted with confidence, but can be located by zip code or city name. In general, a site cannot be geocoded due to inaccurate or missing information in the environmental database record provided by its applicable agency. Unmappable sites that were identified by Bureau Veritas are included, as applicable, within the following paragraphs.

Subject Property

The subject property was not listed in the EDR report.

Offsite Facilities

A total of 128 sites were identified within the specified search distances from the subject parcel, including: one Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) No Further Remediation Action Planned (NFRAP) site; two Resource Conservation and Recovery Act (RCRA) Small Quantity Generator (SQG) sites; seven RCRA Conditionally Exempt Small Quantity Generator (CESQG) sites; 16 State Hazardous Waste Site (SHWS) sites; 20 RCRA Non Generator (NonGen) sites; 12 LUST sites; 26 UST sites; one Institutional Control site; 12 Records of Emergency Release Report (SPILLS) sites; eight RCRA Non-Generator sites; one Integrated Compliance Information System (ICIS) site; two Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) / Toxic Substances Control Act (TSCA) Tracking System (FTTS) sites; two Historic FTTS sites; one Material Licensing Tracking System (MLTS) site; nine EDR Exclusive Historic Gas Stations (EDR Hist Auto) sites; one EDR Exclusive Historic Dry Cleaners (EDR Hist Cleaner) site; nine EDR Exclusive Recovered Government Archive State Hazardous Waste Database (HI RGA HWS) sites; three EDR RGS Landfill (LF) sites; and 14 EDR RGS LUST sites.

All of the listed sites of concern are located topographically down-gradient to the subject property and/or are too distant to reasonably affect it. The nearest site, listed as Waimaluhia Maui Meth/Drug Lab Act 170 at 115 Waimaluhia Lane, Unit 202, is a SHWS and SPILLS site, with a reported ½-gallon chemical release. The SHWS and SPILLS sites are both listed as "No Further Action."

One unmappable site was identified in the vicinity of the subject property. The Aloha Kehalani Village facility located adjacent to the Parcel 063 portion of the subject property is listed as an UST site. This facility is also listed in the HDOH, SHWB database of registered USTs with three active USTs (gasoline and diesel), installed in 2013. However, it is not included in the LUST database, indicating that there have been no reported releases from the USTs.

7.0 TIER 1 VAPOR ENCROACHMENT SCREEN (VES)

Bureau Veritas conducted a Tier 1 VES during the Phase I ESA. The VES was conducted in accordance with ASTM E2600-10, Standard Guide for Vapor Encroachment Screening on Property Involved in Real Estate Transactions (VES standard). A VES is often conducted in conjunction with a Phase I Assessment as much of the information utilized is common to both processes. The methods and terms are as defined in the ASTM VES standard.

The goal of a VES is to identify a vapor encroachment condition (VEC) at a subject property. A VEC is defined as the presence of likely presence of chemicals of concern (COC) vapors in the subsurface of a subject property caused by the release of vapors from contaminated soil or groundwater either on or near the subject property.

In accordance with the VES standard, Bureau Veritas requested that the User provide information on the subject property, with respect to the following: "specialized knowledge" of the User; and commonly known or reasonable ascertainable information.

Based on Bureau Veritas' review of the User provided information, no readily apparent evidence of potential vapor encroachment conditions at the subject property was noted.

7.1 TIER 1 SCREENING INFORMATION

A Tier 1 VES includes obtaining and reviewing information on the subject property and adjoining properties. This includes information on the following: user provided information; physical setting information; existing/planned use of the subject property; types of structures/existing or planned on the subject property; surrounding area description; selected Federal, State, Local and Tribal environmental records sources; historical records related to the past use of the subject property and adjoining properties within the area of concern (AOC), 1/10 to 1/3 mile; the likely COC; and the presence of significant natural or man-made conduits that can serve as preferential pathways, such as utility corridors, sewers, storm drains, etc. (Note: These "preferential pathways" may provide for a more direct route for vapors to encroach upon the subject property).

As stated previously, most of this information was obtained as part of the standard Phase I assessment process and has already been discussed in the applicable sections of this report. Additional information was also obtained with respect to the following: planned additional structures; and significant natural or man-made "preferential pathways" of potential vapor migration. This information is summarized below:

- Installation of underground utilities at the subject property is underway.
- Construction of residential houses is planned for the upper, western portions of the subject property, and commercial development is planned for the lower, southeastern portions of the subject property.

7.2 TIER 1 SCREENING EVALUATION

An evaluation includes two tests: 1) a search distance test to evaluate the proximity of the target property to known or suspected "contaminated properties", and 2) a COC test to determine the likely presence of COCs at the subject or properties within the AOC. In evaluating the data, the distance and proximity to potentially contaminated off-site properties must be evaluated, including whether they are up-, cross-, or down-gradient relative to the subject property. A brief summary of relevant information considered for the Tier 1 screening follows:

Use of Property:	Currently under initial residential and commercial development
Soil Characteristics	Iao silty clay, 0 to 3 percent slopes Iao clay, 7 to 15 percent slopes Iao clay, 3 to 7 percent slopes Iao cobbly silty clay, 7 to 15 percent slopes Wailuku silty clay, 3 to 7 percent slopes Wailuku silty clay, 3 to 7 percent slopes (USDA 1972)
Depth to groundwater:	Approximately 280 to 740 feet (USGS, Wailuku, 2013)
Preferential Pathways:	Current and future underground utilities

The vapor encroachment screen process has been completed in accordance with the VES standard. Based on the information gathered during this assessment, no potential sources of COC, as defined in the ASTM VES standard, were identified. Therefore, no additional evaluation of VECs was conducted.

8.0 SITE RECONNAISSANCE

8.1 GENERAL OBSERVATIONS

At the time of Bureau Veritas' site walkthrough on February 4, 2016, the upper, western Residential areas and lower, eastern Commercial areas of the subject property were mostly undeveloped and vegetated with tall grasses, shrubs, and small trees. The upper, western Residential areas were partially graded and under initial development, and included a site where a water well was undergoing installation.

Upper, Western Residential Areas

This western, upland portion of the subject property, located west of Honoapiilani Highway on the upland area of Wailuku, appeared mostly undeveloped with some initial infrastructure for the planned residential development (e.g., partial roadway construction, utility installation, etc.). The undeveloped areas were covered with tall grasses, shrubs and small trees. Some heavy equipment and stored construction materials, including pipe sections and lumber, were observed in the central area.

The northeast portion of the residential area was observed as a vacant lot covered with low-lying grass. Structures were observed at the northeast corner west of this area, including the Wailuku Shaft 33 water well, a warehouse, and a MECO electrical substation with three large pad-mounted transformers. Three small, pole-mounted transformers were observed atop a nearby utility pole. No staining or other evidence of releases was observed on or around the transformers. The warehouse appeared as a large, corrugated metal Quonset hut, and a small Quonset hut covered the Wailuku Shaft 33 well. At the time of Bureau Veritas' site visit, the large warehouse Quonset hut was locked and not accessible, but this structure is currently empty, according to Mr. Ige.

At the time of Bureau Veritas' site visit, drilling activities were observed at a site located on the central portion of the upper, residential area. According to Mr. Ige, the drilling is being conducted to install a domestic water well for the planned residential development.

Lower, Southeastern Commercial Areas

One of the lower southeastern portions of the subject property (TMK: [2] 3-5-001: Parcels 63 [portions]) is located along the east side of Honoapiilani Highway and on the north side of Kuikahi Drive, with Waiale Road along the east side. The portions of Parcel 063 comprising the subject property are eight designated land units (Units 4, 5, 6, 7, 8, 10, 11, and 12), which appeared as vacant grassy areas within the Kehalani Village commercial development. Four existing buildings were observed on the adjoining areas within Kehalani Village, including: (1) Longs Drugs (drug store), (2) Foodland/American Savings Bank/Coffee Bean & Tea Leaf, (3) McDonalds restaurant, and (4) Aloha Gas (gas station).

The other lower southeastern portion of the subject property (TMK: [2] 3-5-001: Parcel 64) is located on the south side of Kuikahi Drive, with Waiale Road along the east side. The northeast corner of this area was observed with a few temporary office trailers and associated parking lot. The office trailers are currently occupied by Kihei Gardens & Landscaping Company, Stanford Carr Development, and Kehalani Community Association. The remainder of Parcel 064 was vegetated with a small clearing in the central portion. An unlined drainage swale was observed on the western portion of Parcel 064, extending in a north-south direction to a culvert at the southern boundary of Parcel 064.

During the previous Phase I ESA conducted by Bureau Veritas in 2012 (see Section 4.8), the central area of Parcel 064 was occupied by the Goodfellow Brothers Inc./Campos construction base yard. No readiliy apparent evidence of the base yard was observed by Bureau Veritas during the recent site visit.

No evidence of chemical or petroleum hydrocarbon releases was observed, and no evidence of subsurface structures of environmental concern (e.g., USTs, hydraulic lifts) was observed on the subject property.

8.2 HAZARDOUS SUBSTANCES AND PETROLEUM PRODUCTS (OTHER THAN UST/AST)

The subject property was assessed for signs of use, storage, or disposal of hazardous substances and/or petroleum products. Property uses where these types of materials are typically found include: vehicle service bays, vehicle repair operations, auto body shops and related activities (e.g., solvents, cleaners, degreasers, lubricants, paints, antifreeze); dry cleaners, rug cleaners, steam laundries, Laundromats with self-serve dry clean machines (e.g., chlorinated solvents, Naphtha, mineral spirits); manufacturing operations, plating facilities and other industrial/commercial operations. For purposes of this assessment, this does not include use/storage of small quantities of typical janitorial and maintenance materials (if any), unless considered relevant.

No evidence of hazardous materials or petroleum products was observed on the subject property.

8.3 STORAGE TANKS

8.3.1 Underground Storage Tanks

The subject property was assessed for evidence of USTs. The assessment consisted of noting evidence (e.g., fill ports, vent piping, dispensing equipment, and pavement variations) indicating that USTs are currently or were previously located on the subject property.

No visual evidence was observed, and no other information was obtained, to indicate the current and/or potential past presence of USTs at the subject property.

The Aloha Kehalani Village facility located adjacent to the Parcel 063 portion of the subject property is listed as an UST site in the HDOH, SHWB database of registered USTs, with three active USTs (gasoline and diesel) installed in 2013. However, it is not included in the LUST database, indicating that there have been no reported releases from the USTs.

8.3.2 Aboveground Storage Tanks

The subject property was assessed for evidence of ASTs. The assessment included noting evidence (e.g., concrete foundations or saddles, pedestals or steel support structures) indicating that ASTs were previously located on the subject property.

No evidence of ASTs was observed at the subject property, except for a propane gas AST (approximately 1,500 gallons) located at the southeast corner of the Unit 4 area on Parcel 063 of the subject property. This AST appeared new and in good condition. According to Mr. Ige, this AST was recently installed and provides propane gas to the various businesses that occupy the offsite portions of Parcel 063. It should be noted that propane is gaseous at ambient conditions; therefore, releases from the AST would not impact the soils of the subject property.

8.3.3 In-Ground Hydraulic Equipment

The subject property was assessed for evidence of in-ground hydraulic equipment (e.g., hydraulic elevators or lifts that have hydraulic fluid-containing reservoirs or jacks below ground surface) or other types of hydraulic equipment. Hydraulic fluid in equipment installed in 1978 or before may contain PCBs.

No visual evidence was observed, and no other information was obtained, to indicate the current and/or potential past presence of in-ground hydraulic equipment at the subject property.

8.4 WASTES

The subject property was assessed for evidence suggesting the generation or disposal of "wastes" onsite (e.g., drums, dumpsters, debris piles). Observations suggesting the presence of wastes onsite (if any) are presented below. This includes observations/information suggesting 1) the placement of significant quantities of "fill" materials (from an unknown or potentially contaminated source) or 2) the "disposal" of wastes/debris/trash onsite.

No significant debris or other evidence of unauthorized dumping was observed at the subject property.

8.5 POLYCHLORINATED BIPHENYLS

The subject property was assessed for the presence of liquid-cooled electrical units (e.g., transformers) and major sources of hydraulic fluid (e.g., elevators, lifts). Such units are notable because they may be potential PCB sources.

No evidence of potential PCB sources was observed at the subject property, except for the transformers observed in the northeast portion of the upper, western residential area, next to the Wailuku Shaft 33 water well. These transformers include a fenced-in MECO electrical substation with three large pad-mounted transformers, and a nearby utility pole with three small, pole-mounted transformers mounted at the top. No staining or other evidence of releases was observed on or around the transformers.

Bureau Veritas requested information on the PCB content of the transformers from MECO on February 16, 2016, and received a response from MECO the same day. According to MECO's records. the three pole-mounted transformers were purchased in 1996 and are non-PCB units. The three pad-mounted transformers were purchased in 1948 and contain PCB concentrations ranging from 2.47 parts per million (ppm) to 34.8 ppm. These transformers contain less than 50 ppm PCBs and are, therefore, considered non-PCB units. However, there is a potential that the transformers formerly contained di-electric fluids with higher PCB concentrations (based on the ages of the transformers), with a potential for past PCB releases to impact the subject property.

Bureau Veritas contacted MECO to see if they had conducted any PCB testing of the soil at the substation. According to Ms. Brittani Capps-Balinbin, Environmental Specialist with MECO, a comprehensive assessment of the substation has not been completed. However, a small leak of fluid from Transformer #1372 was reported in April of 2012, and was cleaned up within 72 hours. Although the spill only impacted the concrete pad below the transformer, three confirmation soil samples were collected from the ground surface immediately adjacent to the stained pad and were analyzed for PCB content. According to the laboratory report, no PCBs were detected in the three soil samples. Ms. Capps-Balinbin provided Bureau Veritas with a copy of the Soil Sample Collection Form, the laboratory report (with chain-of-custody), and a Photograph of the soil sampling site. A copy of the correspondence from MECO is included as Appendix J.

Although the PCB testing conducted by MECO in 2012 indicated no PCBs in the surface soil, the testing was limited to a small portion of the substation and does not provide a comprehensive assessment of the entire substation and surrounding areas.

According to Ms. Capps-Balinbin, it is MECO's policy to conduct a comprehensive Environmental Site Assessment (including soil testing) whenever they decommission one of their electrical substations. It should also be noted that MECO is responsible for the cleanup and remediation of all PCB releases from their transformers.

8.6 WASTE WATER AND STORM WATER DISCHARGE

The subject property was assessed for evidence of waste or process water discharges (if any) and storm water discharges. For purposes of this assessment, this generally includes discharges other than domestic waste water from sinks and toilets. In addition, properly functioning septic systems used strictly for residential and most commercial operations generally do not represent a cause for concern. Exceptions can include those instances where hazardous substances/petroleum products may be discharged through the system (e.g., spent solvents at an auto repair facility).

No evidence of industrial wastewater discharge was observed at the subject property.

Storm water infiltrates the subsurface through the unpaved ground surface, and flows via sheet flow to the east-northeast, toward the Pacific Ocean coastline.

The assessment consisted of noting evidence of the following: hatches, manholes, patches on the floor slabs, clean out access points; oil/water separators, clarifiers, sumps and trench drains; septic systems; pools of liquid (i.e., likely to contain hazardous substances or petroleum products); pits, ponds, or lagoons (i.e., associated with waste disposal or treatment); industrial or other process discharge sources; etc.

No visual evidence was observed, and no other information was obtained, to indicate the current and/or potential past presence of the above noted features or discharges sources.

8.7 WELLS

The subject property was assessed for evidence of wells (e.g., dry, irrigation, injection, abandoned, monitor, supply).

At the time of Bureau Veritas' site visit, drilling activities were being conducted on the central portion of the upper residential area of the subject property. According to Mr. Ige, the drilling is being conducted to install a domestic water well that will service the planned residential area.

The Wailuku Shaft 33 water well was observed on the northeastern portion of the upper residential area of the subject property. It is a deep well formerly used for irrigation purposes that is housed in a Quonset hut. During the site visit, Bureau Veritas observed the well as a deep, angled tunnel with a railway and stairs.

According to the State of Hawaii Department of Land and Natural Resources, Division of Water Resource Management *Ground Water Index and Summary* (2006), the Wailuku Shaft 33 well (identification [ID] number 4-5330-05) was drilled in 1946 and is used as a municipal water well by Kehalani Mauka LLC. Another well (ID number 4-5330-03) is indicated approximately 800 feet northwest of Wailuku Shaft 33. This well, named "Field 63," was drilled in 1945 as an observation well, and the owner/user is listed as Wailuku Sugar. Bureau Veritas did not observe evidence of this well during their site visit.

9.0 NON-ASTM ISSUES

9.1 ASBESTOS-CONTAINING MATERIALS

The subject property was inspected for the presence of suspect asbestos-containing materials (ACM) such as ceiling and roofing materials, and presumed asbestos-containing materials (PACM) as defined by the Occupational Safety and Health Administration (OSHA) (29 CFR 1926.1101), which includes thermal system insulation and surfacing material, if building construction was prior to 1981. Asphalt and vinyl flooring material installed prior to 1980 must also be considered asbestos-containing unless proven otherwise.

The subject property is not yet developed with permanent buildings, except for the Wailuku Shaft 33 Quonset hut and nearby warehouse Quonset hut, located on the northeastern portion of the upper residential area of the subject property. Bureau Veritas conducted a hazardous materials assessment of these buildings in 2008 for Stanford Carr (see Section 4.8), which included sampling and laboratory analyses of suspect asbestos-containing materials (ACM). However, according to Stanford Carr, all of the identified ACM were properly removed and disposed.

9.2 RADON

Radon is a naturally occurring radioactive gas formed by the decay of uranium in bedrock and soil. The potential adverse health effects associated with radon gas depend on various factors, such as the concentration of the gas and duration of exposure. The concentration of radon gas in a building depends on subsurface soil conditions, the integrity of the building's foundation, and the building's ventilation system.

Due to the relatively young geological age (less than five million years) of the southernmost islands of the Hawaiian archipelago, radon gas does not occur at elevated levels. Therefore, no further investigation of radon is recommended for the subject property.

9.3 LEAD-BASED PAINT

Lead-based paint (LBP) was commonly used for corrosion protection in the 1960s, and in prime, intermediate, and finish coats well into the 1970s. Regulations specifically addressing LBP include Housing and Urban Development (HUD) (1995) guidelines and the Consumer Product Safety Act (1977). These regulations define LBP as containing 0.5% lead by weight (5,000 ppm), and 0.009% lead by weight (90 ppm), respectively, for housing and consumer products. There is no industrial definition. There are specific testing methods for sampling and analyzing lead in paint.

The subject property is not yet developed with permanent buildings or structures, except for the Wailuku Shaft 33 Quonset hut and nearby warehouse Quonset hut. Bureau Veritas conducted a hazardous materials assessment of these buildings in 2008 for Stanford Carr (see Section 4.8), which included sampling and laboratory analysis of suspect LBP. However, according to Stanford Carr, the loose and flaking LBP was properly removed and disposed.

The remaining LBP should be monitored over time, with loose and flaking LBP properly removed as necessary. If the structure is to be demolished, the building components covered with LBP should be sampled and analyzed for Toxicity Characteristic Leaching Procedure (TCLP) – Lead in order to asses disposal options.

9.4 WETLANDS

The subject property was inspected for the presence of sensitive ecological areas by noting environmental indicators (e.g., wetlands, vegetation, floodplains) located on or immediately adjoining the subject property.

No sensitive ecological areas were observed on the subject property. The USGS 7.5-Minute Topographic Quadrangle Map, Wailuku (2013), which includes the subject property and adjoining properties, and the National Wetlands Inventory Map do not depict wetlands or other sensitive ecological areas on the subject property. The nearest designated wetlands area is located approximately 800 feet east of the upper western portion of the subject property. The wetland is the former Hopoi Reservoir, which is currently developed as a residential area, and it is listed as a “Palustrine” system, “Unconsolidated Bottom” class, and “Permanently Flooded” water regime, with a “Diked/Impounded” special modifier.

Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps were reviewed to determine if the subject property is located in a flood hazard area. According to the designated map (FEMA Panel #150003 0319E, revised September 25, 2009) the subject property is located within Flood Zone X, which denotes areas determined to be outside the 0.2% annual chance floodplain.

10.0 FINDINGS AND OPINIONS

Bureau Veritas has performed a Phase I ESA in conformance with the scope and limitations of ASTM Practice E1527-13 of the 160-acre Kehalani property (Tax Map Key numbers [TMKs]: [2] 3-5-001: Parcels 063 [portions], 064, and 108 through 117), located in Wailuku, Maui, Hawaii (the “subject property”). Any exceptions to, or deletions from, this practice are described in Sections 1.2 and 1.3 of this report.

This Assessment has revealed no evidence of recognized environmental conditions, as defined by ASTM, in connection with the subject property, except for the following:

- **Onsite MECO Electrical Substation** - Three large, pad-mounted electrical transformers are located within a fenced-in MECO electrical substation on the northeast portion of the upper, western residential area at the subject property, next to the Wailuku Shaft 33 water well. No staining or other evidence of releases was observed on or around the transformers.

  According to MECO’s records, the transformers were purchased in 1948 and contain PCB concentrations ranging from 2.47 parts per million (ppm) to 34.8 ppm. These transformers contain less than 50 ppm PCBs and are, therefore, considered non-PCB units. However, there is a potential that the transformers formerly contained di-electric fluids with higher PCB concentrations (based on the ages of the transformers), with a potential for past PCB releases to impact the subject property.

  It is MECO’s policy to conduct a comprehensive Environmental Site Assessment (including soil testing) whenever they decommission one of their electrical substations. In addition, MECO is responsible for the cleanup and remediation of all releases from their transformers.

  This finding is considered a recognized environmental condition because there is a potential for past releases of PCB fluids from the MECO transformer substation to impact the subject property. However, MECO is responsible for the cleanup and remediation of all releases from their transformers.

This assessment has also revealed the following evidence of a historical recognized environmental condition, as defined by ASTM, in connection with the subject property:

- **Past Agricultural Use** - Agricultural chemicals such as pesticides and/or herbicides formerly used on agricultural crops at the subject property have the potential to impact the subject property. Bureau Veritas conducted multi-increment soil sampling with laboratory analyses for agricultural chemicals of concern on the agricultural portions of the subject property in 2011. Based on the results, agricultural chemicals were not detected at or above regulatory levels. The State of Hawaii Department of Health (DOH), Hazard Evaluation and Emergency Response (HEER) Office subsequently issued a No Further Action Determination letter for the subject property.

  This historical recognized environmental condition is not considered a current recognized environmental condition because the subject property has received a “No Further Action Determination” letter from the DOH HEER Office in regards to elevated agricultural chemicals in the soil.

In addition, this assessment has revealed the following environmental condition, which is not considered a recognized environmental condition, as defined by ASTM, in connection with the subject property:

- **Lead-Based Paint (LBP)** – Based on a 2008 Hazardous Materials Assessment report, the large, corrugated metal Quonset hut (former warehouse) located on the northeastern-most portion of the subject property (next to the Wailuku Shaft 33 water well) includes silver LBPs on the interior and exterior corrugated metal walls/ceiling. The loose and flaking LBP was reportedly removed and disposed; however, the intact LBPs were left in place.

  This finding is not considered a recognized environmental condition because LBP on buildings is not considered an ASTM issue. However, the remaining LBPs should be monitored over time, with loose and flaking LBP properly removed as necessary. If the structures are to be demolished, the building components covered with LBP should be sampled and analyzed for Toxicity Characteristic Leaching Procedure (TCLP) – Lead in order to asses disposal options

11.0 SIGNATURES

This report was prepared, under the responsible charge of the Environmental Professional noted below, by:

Bryan Starks
Staff Engineer
Health, Safety, and Environmental Services

Environmental Professional's Certification:

I declare that, to the best of my professional knowledge and belief, I meet the definition of Environmental Professional as defined in §312.10 of 40 CFR 312. I have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property. I have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

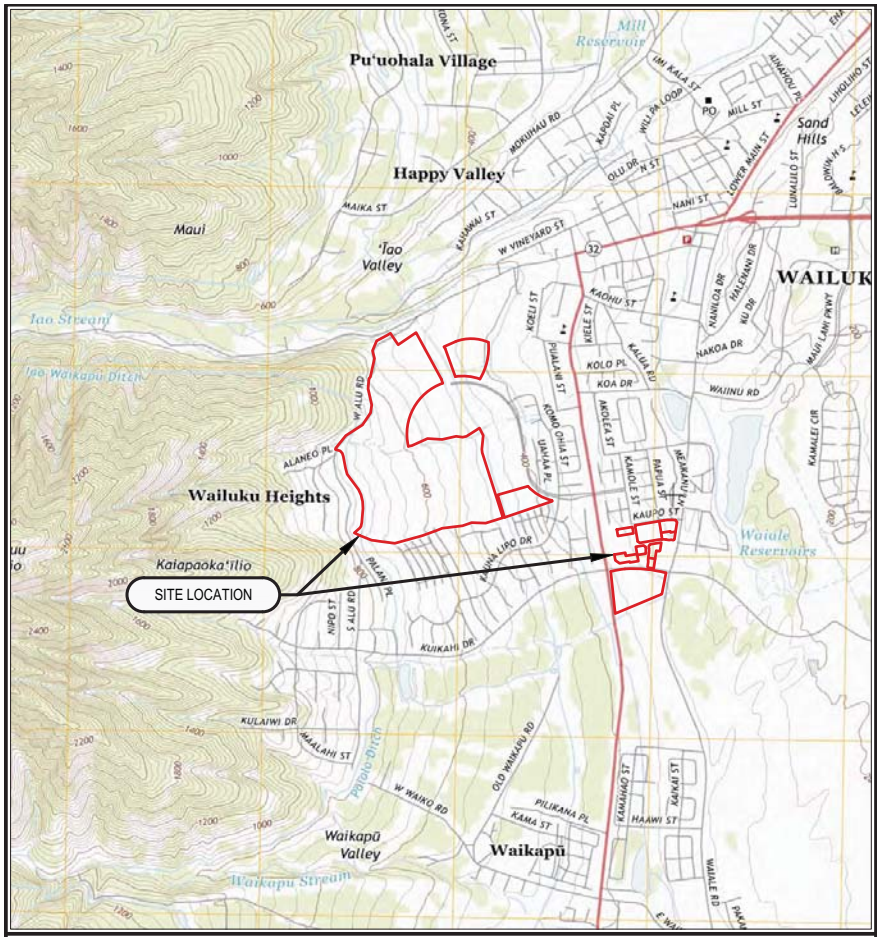
Tim Swartz
Senior Project Manager
Health, Safety, and Environmental Services

March 7, 2016

Phase I Environmental Site Assessment
160-Acre Kehalani Property
(TMKs: [2] 3-5-001: Parcels 063 [Portions], 064, and 108 through 117)
Wailuku, Maui, Hawaii

Bureau Veritas Project No. 17016-016027.01

FIGURES



QUADRANGLE LOCATION

Scale 1:24000

0 1/2 1 MILE

1000 0 1000 2000 3000 FEET

SOURCE OF MAP IS US TOPO 7.5 MINUTE QUADRANGLE MAP, WAILUKU (2013), HAWAII: U.S. GEOLOGICAL SURVEY

SITE LOCATION/BOUNDARIES APPROXIMATED

CHECK BY BS	SITE LOCATION MAP		FIGURE
DRAWN BY JL			
DATE 2/19/2016	160-ACRE KEHALANI PROPERTY		1
SCALE AS SHOWN	TMKs: (2) 3-5-001: PARCELS 063 (PORTION),		
CAD NO. 17.16.021.00A2	064, AND 108 THROUGH 117		
PRJ NO. 17016-016021.00	WAILUKU, MAUI, HAWAII		

LEGEND

PLANNED RESIDENTIAL DEVELOPMENT

PLANNED COMMERCIAL DEVELOPMENT

TOP INSET MAP SCALE: 1" = 1,400'

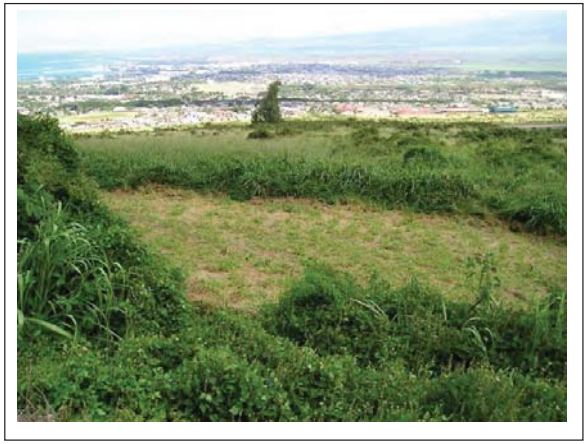
SCALE IN FEET

0 125 250 500

MAP DATA ©2015 GOOGLE

CHECK BY BS	SITE VICINITY MAP		FIGURE
DRAWN BY JL			
DATE 2/19/2016	160-ACRE KEHALANI PROPERTY		2
SCALE AS SHOWN	TMKs: (2) 3-5-001: PARCELS 063 (PORTION),		
CAD NO. 17.16.021.00b2	064, AND 108 THROUGH 117		
PRJ NO. 17016-016021.00	WAILUKU, MAUI, HAWAII		

PHOTOGRAPHS



Project No. 17016-016021.01	**Description**	Overview of upper, western residential area on subject property, from western boundary looking east-northeast	**Photo 1**
	Site Name	160-acre Kehalani Property (TMKs: [2] 3-5-001: Parcels 063 [portions], 064, and 108 through 117), Wailuku, Maui, Hawaii	**Photo Date** February 4, 2016
	Client	Redwood Capital Finance Company, LLC	

Project No. 17016-016021.01	**Description**	Overview of upper, western residential area on subject property, from central area looking east-southeast	**Photo 2**
	Site Name	160-acre Kehalani Property (TMKs: [2] 3-5-001: Parcels 063 [portions], 064, and 108 through 117), Wailuku, Maui, Hawaii	**Photo Date** February 4, 2016
	Client	Redwood Capital Finance Company, LLC	

Project No. 17016-016021.01	**Description**	New road (extension of Kehalani Mauka Parkway) near south end of upper, western residential area on subject property, looking north	**Photo 3**
	Site Name	160-acre Kehalani Property (TMKs: [2] 3-5-001: Parcels 063 [portions], 064, and 108 through 117), Wailuku, Maui, Hawaii	**Photo Date** February 4, 2016
	Client	Redwood Capital Finance Company, LLC	

Project No. 17016-016021.01	**Description**	Construction activities (including water well drilling) in central portion of upper, western residential area on subject property, looking northwest	**Photo 4**
	Site Name	160-acre Kehalani Property (TMKs: [2] 3-5-001: Parcels 063 [portions], 064, and 108 through 117), Wailuku, Maui, Hawaii	**Photo Date** February 4, 2016
	Client	Redwood Capital Finance Company, LLC	

Project No. 17016-016021.01	**Description**	New asphalt-paved road (Kehalani Mauka Parkway) on central portion of upper, western residential area on subject property, looking northeast	**Photo 5**
	Site Name	160-acre Kehalani Property (TMKs: [2] 3-5-001: Parcels 063 [portions], 064, and 108 through 117), Wailuku, Maui, Hawaii	**Photo Date** February 4, 2016
	Client	Redwood Capital Finance Company, LLC	

Project No. 17016-016021.01	**Description**	Irrigation canal extending along edge of northeast portion of upper, western residential area on subject property, looking northwest	**Photo 6**
	Site Name	160-acre Kehalani Property (TMKs: [2] 3-5-001: Parcels 063 [portions], 064, and 108 through 117), Wailuku, Maui, Hawaii	**Photo Date** February 4, 2016
	Client	Redwood Capital Finance Company, LLC	

Project No. 17016-016021.01	**Description**	Quonset hut over Wailuku Shaft 33 water well on northeast portion of upper, western residential area on subject property	**Photo 7**
	Site Name	160-acre Kehalani Property (TMKs: [2] 3-5-001: Parcels 063 [portions], 064, and 108 through 117), Wailuku, Maui, Hawaii	**Photo Date** February 4, 2016
	Client	Redwood Capital Finance Company, LLC	

Project No. 17016-016021.01	**Description**	Opening to the deep water well (with tracks for rail car) inside Quonset hut over Wailuku Shaft 33	**Photo 8**
	Site Name	160-acre Kehalani Property (TMKs: [2] 3-5-001: Parcels 063 [portions], 064, and 108 through 117), Wailuku, Maui, Hawaii	**Photo Date** February 4, 2016
	Client	Redwood Capital Finance Company, LLC	

Project No. 17016-016021.01	**Description**	Quonset hut (former warehouse) on northeast portion of upper, western residential area on subject property (lead-based paint on walls/ceiling)	**Photo 9**
	Site Name	160-acre Kehalani Property (TMKs: [2] 3-5-001: Parcels 063 [portions], 064, and 108 through 117), Wailuku, Maui, Hawaii	**Photo Date** February 4, 2016
	Client	Redwood Capital Finance Company, LLC	

Project No. 17016-016021.01	**Description**	MECO electrical substation (right) and three pole-mounted transformers (left) on northeast portion of subject property, looking southwest	**Photo 10**
	Site Name	160-acre Kehalani Property (TMKs: [2] 3-5-001: Parcels 063 [portions], 064, and 108 through 117), Wailuku, Maui, Hawaii	**Photo Date** February 4, 2016
	Client	Redwood Capital Finance Company, LLC	

Project No. 17016-016021.01	**Description**	Unit 4 portion of lower, eastern commercial portion of subject property (TMK: [2] 3-5-001: Parcel 063) at Kehalani Village Center, looking west	**Photo 11**
	Site Name	160-acre Kehalani Property (TMKs: [2] 3-5-001: Parcels 063 [portions], 064, and 108 through 117), Wailuku, Maui, Hawaii	**Photo Date** February 4, 2016
	Client	Redwood Capital Finance Company, LLC	

Project No. 17016-016021.01	**Description**	Propane tank at southeast corner of Unit 4 of subject property, used by various businesses at Kehalani Village Center, looking south	**Photo 12**
	Site Name	160-acre Kehalani Property (TMKs: [2] 3-5-001: Parcels 063 [portions], 064, and 108 through 117), Wailuku, Maui, Hawaii	**Photo Date** February 4, 2016
	Client	Redwood Capital Finance Company, LLC	

Project No. 17016-016021.01	**Description**	Overview of Units 6, 7 and 8 portions of subject property at Kehalani Village Center, looking northeast	**Photo 13**
	Site Name	160-acre Kehalani Property (TMKs: [2] 3-5-001: Parcels 063 [portions], 064, and 108 through 117), Wailuku, Maui, Hawaii	**Photo Date** February 4, 2016
	Client	Redwood Capital Finance Company, LLC	

Project No. 17016-016021.01	**Description**	Unit 5 portion of subject property at Kehalani Village Center, looking east-northeast	**Photo 14**
	Site Name	160-acre Kehalani Property (TMKs: [2] 3-5-001: Parcels 063 [portions], 064, and 108 through 117), Wailuku, Maui, Hawaii	**Photo Date** February 4, 2016
	Client	Redwood Capital Finance Company, LLC	

Project No. 17016-016021.01	**Description**	Commercial building (Foodland, American Savings Bank, Coffee Bean & Tea Leaf) on western portion of Kehalani Village Center, looking west	**Photo 15**
	Site Name	160-acre Kehalani Property (TMKs: [2] 3-5-001: Parcels 063 [portions], 064, and 108 through 117), Wailuku, Maui, Hawaii	**Photo Date** February 4, 2016
	Client	Redwood Capital Finance Company, LLC	

Project No. 17016-016021.01	**Description**	Aloha Gas station (UST site) on south-central portion of Kehalani Village Center, looking southwest	**Photo 16**
	Site Name	160-acre Kehalani Property (TMKs: [2] 3-5-001: Parcels 063 [portions], 064, and 108 through 117), Wailuku, Maui, Hawaii	**Photo Date** February 4, 2016
	Client	Redwood Capital Finance Company, LLC	

Project No. 17016-016021.01	**Description**	McDonalds restaurant on east-central portion of Kehalani Village Center, looking southeast	**Photo 17**
	Site Name	160-acre Kehalani Property (TMKs: [2] 3-5-001: Parcels 063 [portions], 064, and 108 through 117), Wailuku, Maui, Hawaii	**Photo Date** February 4, 2016
	Client	Redwood Capital Finance Company, LLC	

Project No. 17016-016021.01	**Description**	Office trailers at northeast corner of TMK: (2) 3-5-001: Parcel 064 on lower, eastern portion of subject property	**Photo 18**
	Site Name	160-acre Kehalani Property (TMKs: [2] 3-5-001: Parcels 063 [portions], 064, and 108 through 117), Wailuku, Maui, Hawaii	**Photo Date** February 4, 2016
	Client	Redwood Capital Finance Company, LLC	

Project No. 17016-016021.01	**Description**	Overview of undeveloped area at TMK: (2) 3-5-001: Parcel 064 on lower, eastern portion of subject property, from east entrance looking west	**Photo 19**
	Site Name	160-acre Kehalani Property (TMKs: [2] 3-5-001: Parcels 063 [portions], 064, and 108 through 117), Wailuku, Maui, Hawaii	**Photo Date** February 4, 2016
	Client	Redwood Capital Finance Company, LLC	

Project No. 17016-016021.01	**Description**	Cleared area near center of TMK: (2) 3-5-001: Parcel 064 on lower, eastern portion of subject property, looking northwest	**Photo 20**
	Site Name	160-acre Kehalani Property (TMKs: [2] 3-5-001: Parcels 063 [portions], 064, and 108 through 117), Wailuku, Maui, Hawaii	**Photo Date** February 4, 2016
	Client	Redwood Capital Finance Company, LLC	

APPENDIX A

RESUMES

Bryan Starks

Staff Engineer

B.S, Biological Engineering, 2010
University of Hawaii at Manoa, Honolulu, Hawaii

OSHA 40-Hour Hazardous Waste Operations and Emergency Response (HAZWOPER) Training, 2013

HAZWOPER Refresher Training (8-Hour), Annual

AHERA Asbestos Building Inspector, 2014

AHERA 40-Hour Contractor Supervisor, 2014

Thermo Scientific Niton XRF, 2014

Mr. Bryan Starks has over four years of experience in environmental consulting and industrial hygiene. His experience includes conducting Phase I Environmental Site Assessments (ESAs), Phase II ESAs including soil and groundwater sampling and underground storage tank (UST) closures.

Mr. Starks also has extensive experience conducting hazardous materials assessments for asbestos and lead-based paint (LBP). In the field of Indoor Air Quality (IAQ) Mr. Starks has conducted numerous fungal investigations, and assisted in mold remediation and water intrusion restoration projects. Additionally Mr. Starks has prepared Storm Water Pollution Prevention Plans (SWPPP) and Spill Prevention, Control and Counter-measures (SPCC) plans, and monitored asbestos and lead abatement projects.

Tim J. Swartz

Senior Project Manager

Associate of Science Degree (AS) in Occupational and Environmental Safety Management
Honolulu Community College, Honolulu, Hawaii

Undergraduate Studies in Psychology and Biology
University of Kansas, Lawrence, Kansas

Environmental Professional as defined in Section 312.10 of 40 CFR 312

Asbestos Hazard Emergency Response Act (AHERA) Building Inspector

AHERA Management Planner

State of Hawaii Department of Health (DOH) - Certified Asbestos Project Monitor

National Institute of Occupational Safety and Health (NIOSH) 582 Phase Contrast Microscopy/Asbestos Identification/AAR Participant

SCITEC Radiation Safety Training

OSHA 40-Hour Hazardous Waste, Health, and Safety Accreditation/Annual Update

Lead-Based Paint Inspector

Lead-Based Paint Abatement Worker Awareness Training Course

Tim Swartz has over 27 years of experience in the environmental and industrial hygiene fields. His background includes numerous Phase I environmental site assessments (ESAs) and management of large-scale Phase I ESA projects; soil and groundwater sampling; asbestos and lead paint assessments and management of large-scale asbestos and lead paint projects; air monitoring and project oversight for asbestos and lead paint abatement projects; and various air quality surveys.

Mr. Swartz has extensive project management experience and is familiar with standards and requirements of the American Society for Testing and Materials (ASTM) International standards for Phase I environmental site assessments (ESAs), and Asbestos Hazard Emergency Response Act (AHERA) standards for asbestos projects. He is also familiar with Environmental Protection Agency (EPA) regulations for asbestos building surveys and air monitoring projects; EPA and Department of Housing and Urban Development (HUD) guidelines for lead-based paint surveys and abatement; and Occupational Safety and Health Administration (OSHA) regulations for projects involving worker health and safety.

APPENDIX B

SOURCES AND REFERENCES

REFERENCES

Sources of Information

- ASTM International (ASTM), 2013. Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process. ASTM Practice E1527-13.
- ASTM, 2010. Standard Guide for Vapor Encroachment Screening on Property Involved in Real Estate Transactions. ASTM Practice E2600-10.

Persons/Agencies Contacted

- Mr. Brian Ige, Construction Manager at Dowling Company, Inc., phone (808) 270-0511, February 4, 2016
- Ms. Brittani Capps-Balinbin, Environmental Specialist with Maui Electrical Company, Ltd. (MECO), phone (808) 871-8461, February 16, 2016

Physical Setting

- Federal Emergency Management Agency (FEMA), Flood Insurance Rate Map (FIRM), 2011. FEMA/FIRM Map No. 150003 0319E, revised September 25, 2009.
- Foote, D.E. et al., 1972. Soil Survey of Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii, prepared by the U.S. Department of Agriculture (USDA), Soil Conservation Service, in cooperation with the University of Hawaii Agricultural Experiment Station, dated 1972.
- Mink, J.F. and L.S. Lau, 1990. Aquifer Identification and Classification for Oahu: Groundwater Protection Strategy for Maui (Technical Report No. 185), Water Resources Research Center at the University of Hawaii. February 1990.
- USDA, 2016. USDA Natural Resources Conservation Service Web Soil Survey Soil Map (http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx). Reviewed January 29, 2016.
- United States Fish and Wildlife Service (USFWS), 2015. USFWS National Wetland Map (http://www.fws.gov/wetlands/data/mapper.HTML). Reviewed February 10, 2016.

Federal, State and County Agencies

- Department of Land and Natural Resources (DLNR), 2006. Groundwater Well Index, State of Hawaii, DLNR, Commission on Water Resource Management. January 2006.
- Environmental Data Resources, Inc. (EDR), 2016. EDR Radius Map Report, prepared by EDR. February 4, 2016.
- Hawaii State Department of Health (HDOH), 2014. Hazard Evaluation & Emergency Response (HEER) Office Database. 2014.
- HDOH, 2015. Solid and Hazardous Waste Branch (SHWB), Underground Storage Tank (UST) Database and Leaking Underground Storage Tank (LUST) Databases. 2015.

REFERENCES
(Continued)

- Ownership records and Tax Map Key maps, prepared by the County of Maui Real Property Tax Assessment Office (various dates)
- United States Department of Housing and Urban Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing, 2012

Aerial Photographs

Sources: Environmental Data Resources, Inc. and Google Earth™

Date: 1950	Aerial Photograph: EDR Inquiry No. 4529586.9
Date: 1965	Aerial Photograph: EDR Inquiry No. 4529586.9
Date: 1976	Aerial Photograph: EDR Inquiry No. 4529586.9
Date: 2000	Aerial Photograph Source: Google Earth™
Date: 2010	Aerial Photograph Source: Google Earth™
Date: 2012	Aerial Photograph Source: Google Earth™
Date: 2013	Aerial Photograph Source: Google Earth™
Date: 2014	Aerial Photograph Source: Google Earth™

Topographic Maps

Sources: Hawaii State Archives in Honolulu, Hawaii, and Environmental Data Resources, Inc.

USGS Quadrangle: Wailuku, Hawaii **Scale: 1:24,000**

Year: 1922, 1955, 1983, 1997, and 2013

Previous Environmental Reports

- *Phase I Environmental Assessment*, 258.315-Acre Undeveloped Property (TMK Nos.: [2] 3-5-001: Parcels 67, 75, 77, 78, and 80), Planned Kehalani Residential Subdivision, Wailuku, Maui, Hawaii, conducted by Bureau Veritas (formerly Clayton Group Services, Inc.), Project No. 85-06214.00, dated March 16, 2006
- *Phase I Environmental Assessment*, 43-Acre Undeveloped Property (TMK Nos.: [2] 3-5-001: Parcels 63 and 64 and TMK No. [2] 3-5-020: Parcel 036), Planned Kehalani Residential Subdivision, Wailuku, Maui, Hawaii, conducted by Bureau Veritas (formerly Clayton Group Services, Inc.), Project No. 85-06214.00, dated March 16, 2006
- *Hazardous Materials Assessment Survey, Two Quonset Huts, Wailuku Shaft 33, Kehalani Mauka Subdivision, Wailuku, Maui, Hawaii*, conducted by Bureau Veritas, Project No. 17008-008018.00, dated February 22, 2008

REFERENCES
(Continued)

- *Multi-Increment Sampling Investigation Report, 210.5 Acres of Proposed Residential Use and 38.5 Acres of Proposed Non-Residential Use, Kehalani Development, Wailuku, Maui, Hawaii*, conducted by Bureau Veritas, Project No. 17009-009032.00, dated February 1, 2011
- *Phase I Environmental Assessment*, 182-Acre Kehalani Property (Tax Map Key [TMK] Numbers: [2] 3-5-001: Parcels 63 [Portion], 64, 67, and 80 and [2] 3-5-001: Parcel 36), Wailuku, Maui, Hawaii, conducted by Bureau Veritas, Project No. 17012-012038.00, dated March 16, 2012

APPENDIX C

USER QUESTIONNAIRE

ASTM PRACTICE E 1527-13 USER/CLIENT QUESTIONNAIRE
To be returned to Bureau Veritas with the authorized proposal

GENERAL INFORMATION

User/Client Name(s):	REDWOOD CAPITAL FINANCE COMPANY, LLC
Property Name and Address (Include known current and former address[es] and parcel no.):	refer to page 1 of this proposal (items 1-3)
Property Acreage:	refer to page 1 of this proposal (items 1-3)
Current Property Type (Designate property type and list current tenants [business name and type of operation]):	Residential: __ Commercial: __ Industrial: __ Other: x Land
Type of Property Transaction with respect to User (Designate one):	Purchase: __ Lease: __ Other (provide further information): X Financing
Reason Phase I is Required (Check all that apply):	*Landowner Liability Protections* (e.g. Innocent Landowner Defense): __ Evaluation of Business Risk: X Other (list): __ (Note: If no reason is given it is assumed that this assessment is being performed to satisfy one of the requirements for *Landowner Liability Protections* to *CERCLA* liability.
Site Owner/ Contact(s) (Name and phone number):	Brian Ige brian@dowlingco.com Tel. 808.244.1500

Please provide the above information as well as a site plan (ALTA Survey, if available) which clearly designates the boundaries of the subject property for purposes of this Phase I ESA. A list of other Helpful documents is included with the proposal.

ASTM PRACTICE E 1527-13 USER/CLIENT QUESTIONNAIRE (Continued)

Providing the following information (if available) to the *environmental professional* (Bureau Veritas) is one of the requirements to qualify for one of the *Landowner Liability Protections (LLPs)* offered under CERCLA. Missing or incomplete information could result in a determination that "*all appropriate inquiry*" is not complete. If further information is desired regarding these issues, Bureau Veritas recommends you consult with an Environmental Attorney.

REQUIRED INFORMATION

The citation at the end of each item (e.g., 40 CFR 312.XX) is the section of EPA's November 1, 2005 AAI Final Rule which discusses that item. The ASTM Standard requires that reasonably ascertainable recorded land title records that are filed under federal, tribal, state and local law should be reviewed to determine the presence of Environmental Liens and Activity and Use Limitations (AULs) that are currently recorded against the property. This should also include a review of Environmental Liens and AULs that are imposed by judicial authorities and recorded/filed in judicial records. The Standard recommends that the User retain a title company or title professional to undertake a review of recorded land title records. Furthermore, the User is to provide any actual knowledge on Environmental Liens and AULs, as well as other selected information regarding *recognized environmental conditions,* to the *environmental professional.*

1. **Environmental cleanup liens that are filed or recorded against the site (40 CFR 312.25).**
Given the above requirement, are you aware of any environmental cleanup liens against the *property* that are filed or recorded under federal, tribal, state or local law? (Check One)

No: X

Yes (If "Yes" provide further information): __

(Note: If you desire that Bureau Veritas retain a title company/title professional on your behalf to review reasonably ascertainable recorded land title records for the presence of environmental cleanup liens and AULs currently recorded against the property please designate such on the Proposal Acceptance Agreement)

2. **Activity and land use limitations (AULs) that are in place on the site or that have been filed or recorded in a registry (40 CFR 312.26).**
Given the above requirement, are you aware of any AULs, such as *engineering controls*, land use restrictions or *institutional controls* that are in place at the site and/or have been filed or recorded in a registry under federal, tribal, state or local law? (Check One)

No: X

Yes (If "Yes" provide further information): __

ASTM PRACTICE E 1527-13 USER/CLIENT QUESTIONNAIRE (Continued)

3. **Specialized knowledge or experience of the person seeking to qualify for the LLP (40 CFR 312.28).**
As the *user* of this *ESA* do you have any specialized knowledge or experience related to the *property* or nearby properties? For example, are you involved in the same line of business as the current or former *occupants* of the *property* or an adjoining *property* so that you would have specialized knowledge of the chemicals and processes used by this type of business? (Check One)

No: X

Yes (If "Yes" provide further information): __

4. **Relationship of the purchase price to the fair market value of the *property* if it were not contaminated (40 CFR 312.29).**
Does the purchase price being paid for this *property* reasonably reflect the fair market value of the *property*? If you conclude that there is a difference, have you considered whether the lower purchase price is because contamination is known or believed to be present at the *property*?

Yes: X

No (If "No" provide further information): __

Not Applicable (e.g., transaction is a lease): __

5. **Commonly known or *reasonably ascertainable* information about the *property* (40 CFR 312.30).**
Are you aware of commonly known or *reasonably ascertainable* information about the *property* that would help the *environmental professional* to identify conditions indicative of releases or threatened releases?

No: __

Yes (If "Yes" provide further information): X see prior assessment performed in 2012

For example, as *user*,
(a.) Do you know the past uses of the *property*?

No: X

Yes (If "Yes" provide further information): __

ASTM PRACTICE E 1527-13 USER/CLIENT QUESTIONNAIRE
(Continued)

(b.) Do you know of specific chemicals that are present or once were present at the *property*?

No: x

Yes (If "Yes" provide further information): __

(c.) Do you know of spills or other chemical releases that have taken place at the *property*?

No: x

Yes (If "Yes" provide further information): __

(d.) Do you know of any environmental cleanups that have taken place at the *property*?

No: x

Yes (If "Yes" provide further information): __

6. **The degree of obviousness of the presence or likely presence of contamination at the *property*, and the ability to detect the contamination by appropriate investigation (40 CFR 312.31).**
As the *user* of this *ESA*, based on your knowledge and experience related to the *property* are there any *obvious* indicators that point to the presence or likely presence of contamination at the *property*?

No: x

Yes (If "Yes" provide further information): __

7. **Proceedings involving the *property* (ASTM E 1527-05 § 10.9).**
Are you aware of any of the following:
(a.) Any pending, threatened, or past litigation relevant to hazardous substances or petroleum products in, on, or from the property?

No: x

Yes (If "Yes" provide further information): __

ASTM PRACTICE E 1527-13 USER/CLIENT QUESTIONNAIRE
(Continued)

(a.) Any pending, threatened, or past administrative proceedings relevant to hazardous substances or petroleum products in, on, or from the property?

No: x

Yes (If "Yes" provide further information): __

(b.) Any notices from any governmental entity regarding any possible violation of environmental laws or possible liability relating to hazardous substances or petroleum products?

No: x

Yes (If "Yes" provide further information): __

SIGNATURE

It is understood that the information presented in this form is an integral part of the Phase I ESA process and that Bureau Veritas will evaluate and rely on this information in the development of the final Phase I ESA report.

Questionnaire Prepared By:	Norma Cabrera
Print/Type Name:	Norma Cabrera
Title:	Authorized Signatory
Company:	Redwood Capital Finance Company, LLC
Date:	January 26, 2016

APPENDIX D

AERIAL PHOTOGRAPHS

Kehalani Property
11 KEHALANI VILLAGE DR
WAILUKU, HI 96793

Inquiry Number: 4529586.9
February 04, 2016

The EDR Aerial Photo Decade Package

6 Armstrong Road, 4th Floor
Shelton, Connecticut 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Aerial Photo Decade Package

Environmental Data Resources, Inc. (EDR) Aerial Photo Decade Package is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's professional researchers provide digitally reproduced historical aerial photographs, and when available, provide one photo per decade.

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Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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Date EDR Searched Historical Sources:
Aerial Photography February 04, 2016

Target Property:
11 KEHALANI VILLAGE DR
WAILUKU, HI 96793

Year	Scale	Details	Source
1950	Aerial Photograph. Scale: 1"=750'	Flight Date: September 28, 1950	EDR
1965	Aerial Photograph. Scale: 1"=500'	Flight Date: January 28, 1965	EDR
1965	Aerial Photograph. Scale: 1"=500'	Flight Date: January 28, 1965	EDR
1976	Aerial Photograph. Scale: 1"=1000'	Flight Date: December 20, 1976	EDR

INQUIRY #: 4529586.9
YEAR: 1950
= 750'
N
EDR

INQUIRY #: 4529586.9
YEAR: 1965
= 500'
N
EDR

INQUIRY #: 4529586.9
YEAR: 1965
= 500'
N
EDR

INQUIRY #: 4529586.9
YEAR: 1976
= 1000'
N
EDR

APPENDIX E

USGS TOPOGRAPHIC MAPS

Kehalani Property
11 KEHALANI VILLAGE DR
WAILUKU, HI 96793

Inquiry Number: 4529586.4
February 04, 2016

EDR Historical Topo Map Report

with QuadMatch™

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Historical Topo Map Report

02/04/16

Site Name:	Client Name:
Kehalani Property	Bureau Veritas North America, Ir
11 KEHALANI VILLAGE DR	841 Bishop Street Suite 1100
WAILUKU, HI 96793	Honolulu, HI 96813-0000
EDR Inquiry # 4529586.4	Contact: Bryan Starks

EDR Topographic Map Library has been searched by EDR and maps covering the target property location as provided by Bureau Veritas North America, Inc. were identified for the years listed below. EDR's Historical Topo Map Report is designed to assist professionals in evaluating potential liability on a target property resulting from past activities. EDRs Historical Topo Map Report includes a search of a collection of public and private color historical topographic maps, dating back to the late 1800s.

Search Results:		*Coordinates:*	
Site Name:	Kehalani Property	**Latitude:**	20.876029 20° 52' 34" North
Address:	11 KEHALANI VILLAGE DR	**Longitude:**	-156.505865 -156° 30' 21" West
City,State,Zip:	WAILUKU, HI 96793	**UTM Zone:**	Zone 4 North
P.O.#	NA	**UTM X Meters:**	759487.48
Project:	17016-016021	**UTM Y Meters:**	2310441.01
		Elevation:	361.90' above sea level

Maps Provided:

2013
1997
1983
1955

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Topo Sheet Thumbnails

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

2013 Source Sheets

Wailuku
2013
7.5-minute, 24000

1997 Source Sheets

Wailuku
1997
7.5-minute, 24000
Aerial Photo Revised 1997

1983 Source Sheets

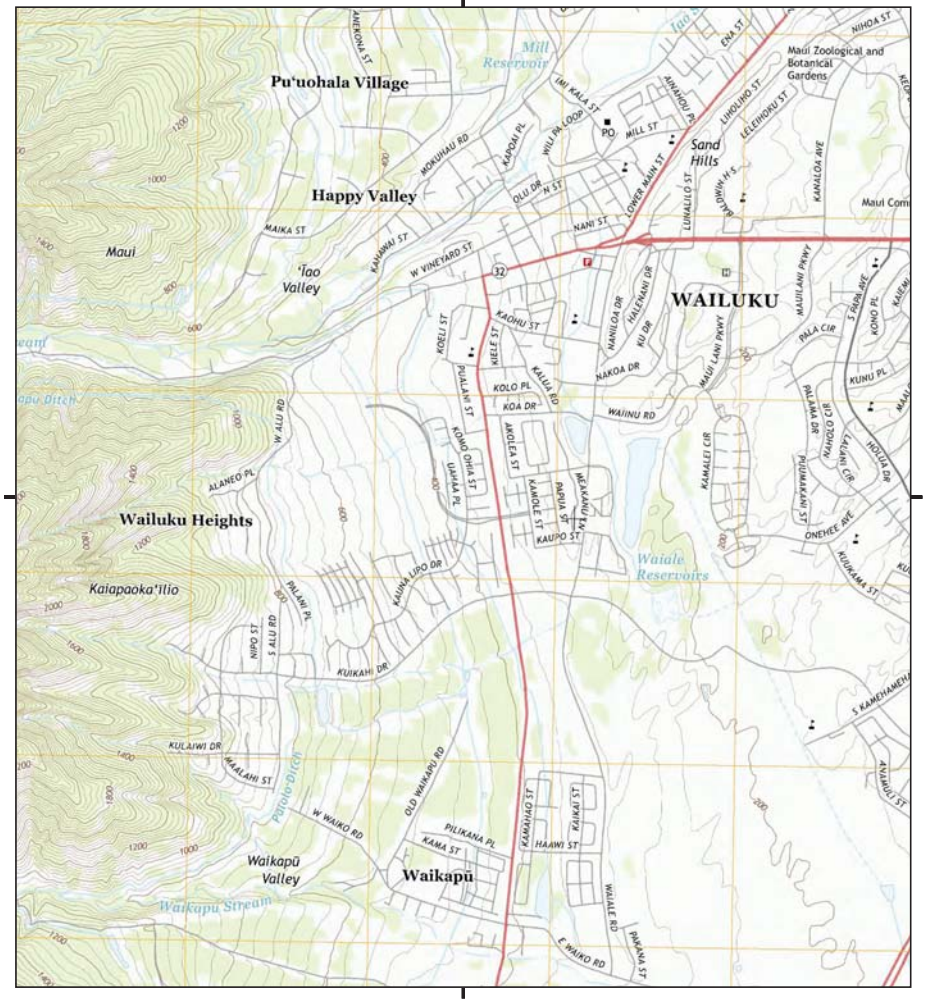
Wailuku
1983
7.5-minute, 24000
Aerial Photo Revised 1977
Edited 1983

1955 Source Sheets

Wailuku
1955
7.5-minute, 24000
Aerial Photo Revised 1950

Historical Topo Map

2013



This report includes information from the following map sheet(s).

Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

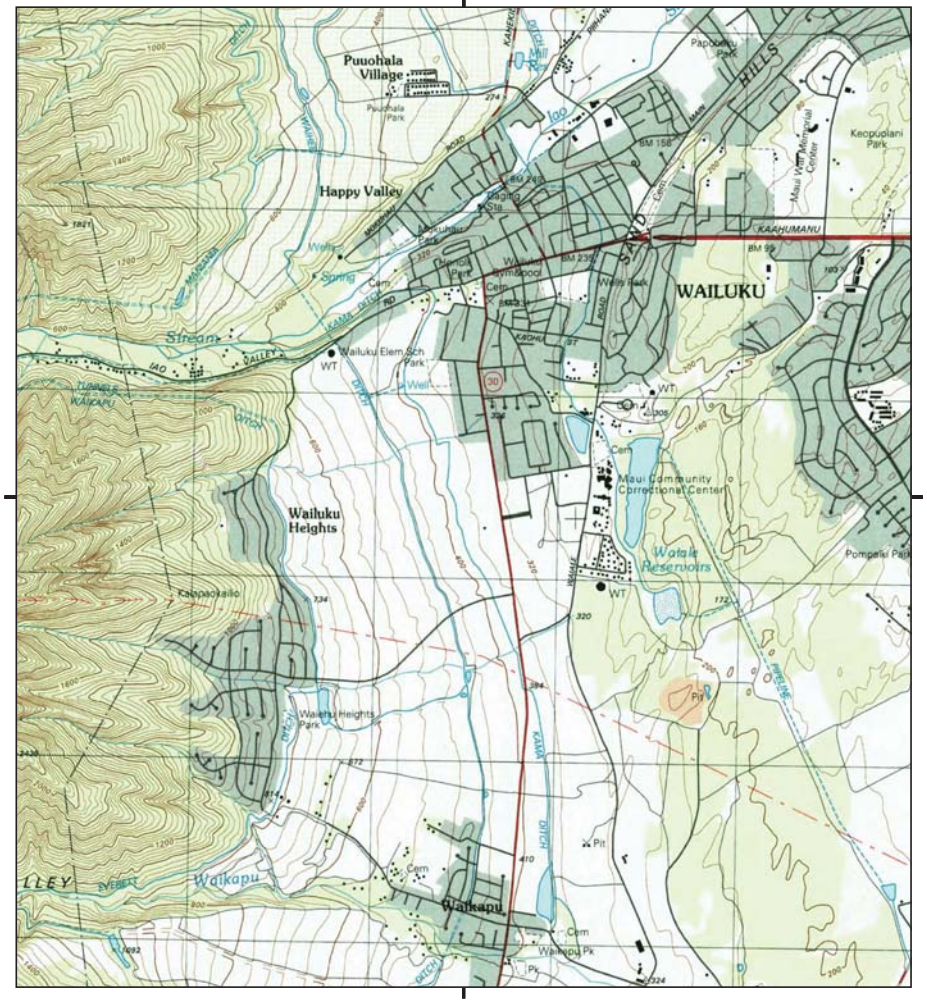
TP, Wailuku, 2013, 7.5-minute

SITE NAME: Kehalani Property
ADDRESS: 11 KEHALANI VILLAGE DR
WAILUKU, HI 96793
CLIENT: Bureau Veritas North America, Inc.

N

Historical Topo Map

1997



This report includes information from the following map sheet(s).

Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

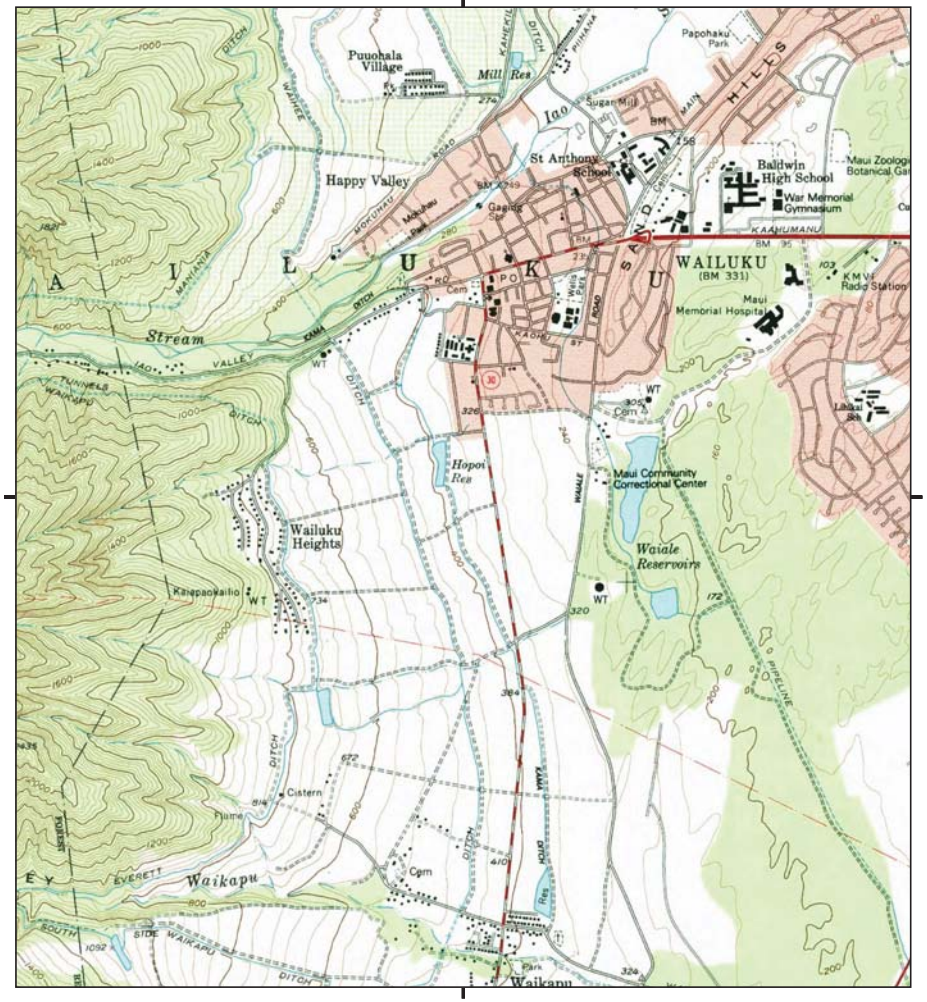
TP, Wailuku, 1997, 7.5-minute

SITE NAME: Kehalani Property
ADDRESS: 11 KEHALANI VILLAGE DR
WAILUKU, HI 96793
CLIENT: Bureau Veritas North America, Inc.

N

Historical Topo Map

1983



This report includes information from the following map sheet(s).

Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

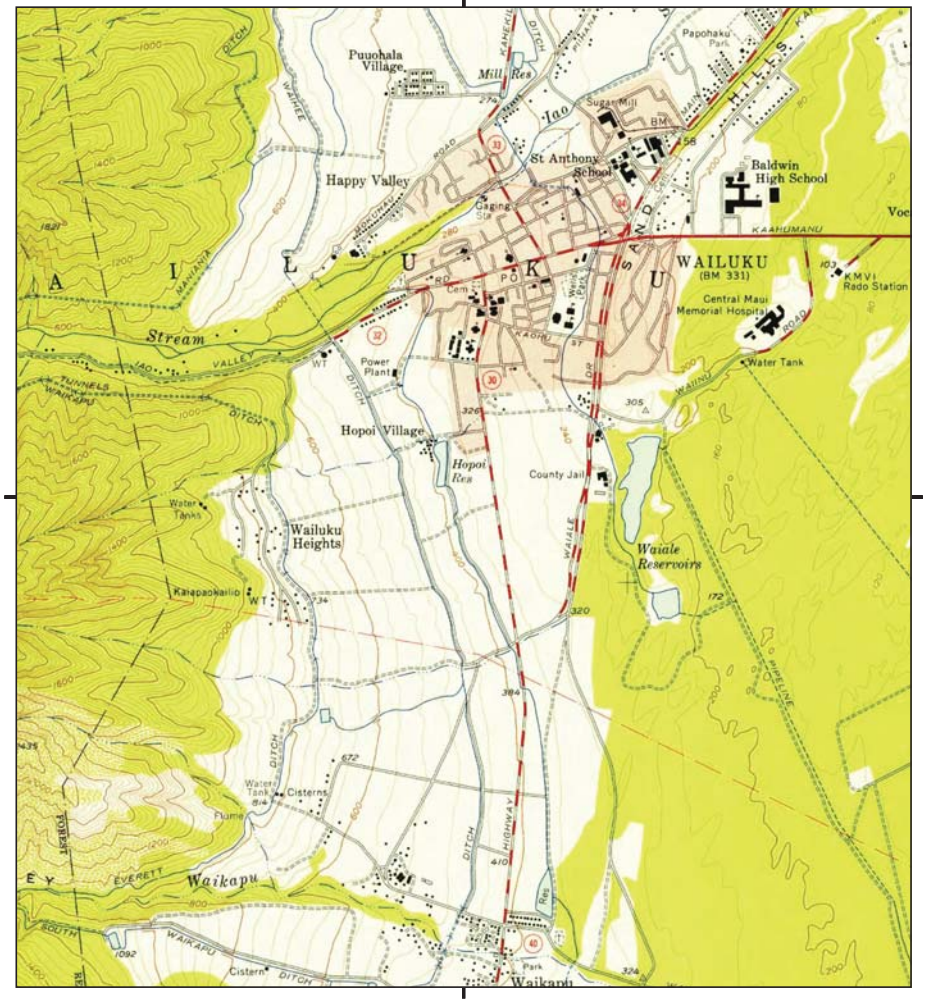
TP, Wailuku, 1983, 7.5-minute

SITE NAME: Kehalani Property
ADDRESS: 11 KEHALANI VILLAGE DR
WAILUKU, HI 96793
CLIENT: Bureau Veritas North America, Inc.

N

Historical Topo Map

1955



This report includes information from the following map sheet(s).

Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Wailuku, 1955, 7.5-minute

SITE NAME: Kehalani Property
ADDRESS: 11 KEHALANI VILLAGE DR
WAILUKU, HI 96793
CLIENT: Bureau Veritas North America, Inc.

N

APPENDIX F

FIRE INSURANCE MAPS

Kehalani Property
11 KEHALANI VILLAGE DR
WAILUKU, HI 96793

Inquiry Number: 4529586.3
February 04, 2016

Certified Sanborn® Map Report

6 Armstrong Road, 4th Floor
Shelton, Connecticut 06484
Toll Free: 800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

2/04/16

Site Name:
Kehalani Property
11 KEHALANI VILLAGE DR
WAILUKU, HI 96793

Client Name:
Bureau Veritas North America,
841 Bishop Street Suite 1100
Honolulu, HI 96813-0000

EDR Inquiry # 4529586.3

Contact: Bryan Starks

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The Sanborn Library is continually enhanced with newly identified map archives. This report accesses all maps in the collection as of the day this report was generated.

Certified Sanborn Results:

Site Name: Kehalani Property
Address: 11 KEHALANI VILLAGE DR
City, State, Zip: WAILUKU, HI 96793
Cross Street:
P.O. # NA
Project: 17016-016021
Certification # A94E-4690-870F

UNMAPPED PROPERTY

This report certifies that the complete holdings of the Sanborn Library, LLC collection have been searched based on client supplied target property information, and fire insurance maps covering the target property were not found.

Sanborn® Library search results
Certification # A94E-4690-870F

The Sanborn Library includes more than 1.2 million fire insurance maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow and others which track historical property usage in approximately 12,000 American cities and towns. Collections searched:

- ✔ Library of Congress
- ✔ University Publications of America
- ✔ EDR Private Collection

The Sanborn Library LLC Since 1866™

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APPENDIX G

CITY DIRECTORIES

Kehalani Property
11 KEHALANI VILLAGE DR
WAILUKU, HI 96793

Inquiry Number: 4529586.5
February 04, 2016

The EDR-City Directory Image Report

Environmental Data Resources Inc

6 Armstrong Road
Shelton, CT 06484
800.352.0050
www.edrnet.com

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City Directory Images

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EXECUTIVE SUMMARY

DESCRIPTION

Environmental Data Resources, Inc.'s (EDR) City Directory Report is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's City Directory Report includes a search of available city directory data at 5 year intervals.

RESEARCH SUMMARY

The following research sources were consulted in the preparation of this report. A check mark indicates where information was identified in the source and provided in this report.

Year	Target Street	Cross Street	Source
2013	☐	☑	Cole Information Services
2008	☐	☑	Cole Information Services
2003	☐	☐	Cole Information Services
1999	☐	☐	Cole Information Services
1995	☐	☐	Cole Information Services
1992	☐	☐	Cole Information Services

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FINDINGS

TARGET PROPERTY STREET

11 KEHALANI VILLAGE DR
WAILUKU, HI 96793

Year	CD Image	Source	
KEHALANI VILLAGE DR			
2013	-	Cole Information Services	Street not listed in Source
2008	-	Cole Information Services	Street not listed in Source
2003	-	Cole Information Services	Street not listed in Source
1999	-	Cole Information Services	Street not listed in Source
1995	-	Cole Information Services	Street not listed in Source
1992	-	Cole Information Services	Street not listed in Source

FINDINGS

CROSS STREETS

Year	*CD Image*	*Source*	
KAPALAIA PL			
2013	pg. A1	Cole Information Services	
2008	pg. A4	Cole Information Services	
2003	-	Cole Information Services	Target and Adjoining not listed in Source
1999	-	Cole Information Services	Target and Adjoining not listed in Source
1995	-	Cole Information Services	Target and Adjoining not listed in Source
1992	-	Cole Information Services	Target and Adjoining not listed in Source
KOMO OHIA ST			
2013	pg. A2	Cole Information Services	
2008	pg. A5	Cole Information Services	
2003	-	Cole Information Services	Target and Adjoining not listed in Source
1999	-	Cole Information Services	Target and Adjoining not listed in Source
1995	-	Cole Information Services	Target and Adjoining not listed in Source
1992	-	Cole Information Services	Target and Adjoining not listed in Source

City Directory Images

Target Street	Cross Street	Source
-	✔	Cole Information Services

KAPALAIA PL 2013

14	SUSAN KANAKURI-MURATA
18	PIETRO IPPOLITO
19	THOMAS WOLF
23	DAVID HOLMES
24	GIL RAMISCAL
28	HARRY MANUEL
29	BRENT WINTERFELD
33	RONALD HUMBER
34	THOMAS KEIRNERS
36	LAC HOILIEN
37	CONSTANTIN NOVOSELSKY
39	MICHAEL PALAZZOTTO
40	ARI SHAPIRO
68	SUZANNE GRUNOW

Target Street	Cross Street	Source
-	✔	Cole Information Services

KOMO OHIA ST 2013

463	DUKIE RACADIO
464	NOVIEH ABUT
467	OCCUPANT UNKNOWN
471	AUGUST KURODA
472	GINGER COON
477	TERENCE THOMAS
481	OCCUPANT UNKNOWN
485	WILLIAM ACASON
493	LINDSAY MATHIAS
497	JONATHON OLSON
501	ALEXANDER DIOSO
503	GARET TANAKA
507	BRUCE MCDONALD
508	OCCUPANT UNKNOWN
509	AL CANTORNA
511	RODDY DUMLAO
514	JAMES BUIKA
519	RAYNOR SHIMODA
526	THOMAS MCGINN
531	CLEMENT ANTONIO
535	JUDY ELLIS
538	RYAN SUZUKI
541	CARLOS URMENETA
542	EFREN TABBAY
547	KYOUNG LITTLE
552	OCCUPANT UNKNOWN
558	HENRY ACIDERA
559	CLAYTON MIRA
564	SIMONE POLAK
574	ROLLY PIANO
580	MARK VICKERS
581	SAMUEL MILLINGTON
583	SOTICO UBALDO
590	RHONDA RENY
593	DENNIS LANSING
594	JOSHUA PLUMLEY
597	ROSEMARY MURRAY
603	JOSEPH STAFFORD
604	MICHAEL BAUTISTA
609	KANOA HAAKE
610	ELIZABETH CAMPOS
615	ARTHUR PETERSEN
616	ERIC ARBOGAST
619	GLENN FUENTES
620	MARCK DAOANG
627	MARIO LOPEZ
628	SUNDRA ALLEN-NEMOTO
629	HARRIETTE ANZAI
635	LISA OWAN
640	LORENZO LICHT

Target Street	Cross Street	Source
-	✓	Cole Information Services

KOMO OHIA ST 2013 (Cont'd)

643	MIYOUNG YANG
644	OCCUPANT UNKNOWN
645	MICHAEL NATHAN
649	JOHN DEAN
650	OCCUPANT UNKNOWN
654	OCCUPANT UNKNOWN
660	OCCUPANT UNKNOWN
665	TEODORICO DAHILIG
668	JIMMY BACH
671	GLEN PASCUAL
672	YASUO NISHIDA
673	OCCUPANT UNKNOWN
678	OCCUPANT UNKNOWN
679	OCCUPANT UNKNOWN
682	JOHN KANOHOKULA
688	OCCUPANT UNKNOWN

Target Street	Cross Street	Source
-	✓	Cole Information Services

KAPALAIA PL 2008

10	ANTONIO ESTABILLO
14	MYLES MURATA
18	IL GIARDINO LLC
	PIETRO IPPOLITO
19	THOMAS WOLF
23	WAKON CHILDERS
24	GIL RAMISCAL
28	HARRY MANUEL
29	BRENT WINTERFELD
33	RONALD HUMBER
36	OCCUPANT UNKNOWN
39	MICHAEL PALAZZOTTO
40	PHILIP YUEN
43	OCCUPANT UNKNOWN

Target Street	Cross Street	Source
-	✔	Cole Information Services

KOMO OHIA ST 2008

463	RICHARD CHIASSON
467	VERA DALIA
471	OCCUPANT UNKNOWN
472	NAIM PEXTON
481	TIMOTHY HESS
493	DAVID CANNON
501	SANDRA DIOSO
503	GARET TANAKA
507	BRUCE MCDONALD
508	JOANNE IRITANI
509	AL CANTORNA
511	RODDY DUMLAO
519	RAYNOR SHIMODA
525	SUSAN MCLAUGHLIN
531	CLEMENT ANTONIO
532	OCCUPANT UNKNOWN
541	FELICITAS URMENETA
	HO OMAIKA I OHANA LLC
552	LORRAINE KOTAKE
558	HENRY ACIDERA
559	CLAYTON MIRA
564	OCCUPANT UNKNOWN
574	ROLLY PIANO
580	MARK VICKERS
581	MICHAEL GEERS
583	SOTICO UBALDO
590	RICHARD RENY
593	JEFF STRAHN
594	ALEX SUMIBCAY
596	CASHUNDRA GRAY
597	MICHAEL MURRAY
603	OCCUPANT UNKNOWN
609	KANOA HAAKE
610	ELIZABETH CAMPOS
615	OCCUPANT UNKNOWN
616	ERIC ARBOGAST
619	STEVE STORY
	STEVE STORY & ASSOCIATES
620	OCCUPANT UNKNOWN
627	OCCUPANT UNKNOWN
629	HARRIETTE ANZAI
635	LISA OWAN
640	OCCUPANT UNKNOWN
643	OCCUPANT UNKNOWN
645	TROY MEDEIROS
649	OCCUPANT UNKNOWN
650	RAMON BELTRAN
654	TERRENCE FUENTES
660	OCCUPANT UNKNOWN
665	TEODORICO DAHILIG

Target Street	Cross Street	Source
-	✔	Cole Information Services

KOMO OHIA ST 2008 (Cont'd)

668	JIMMY BACH
671	GLEN PASCUAL
672	YASUO NISHIDA
673	OCCUPANT UNKNOWN
678	OCCUPANT UNKNOWN
679	NOEL CARDONES
682	JOHN KANOHOKULA
688	JASPER RESPICIO

APPENDIX H

STATE OF HAWAII DEPARTMENT OF HEALTH, "NO FURTHER ACTION" LETTER

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

LORETTA J. FUDDY, A.C.S.W., M.P.H.
ACTING DIRECTOR OF HEALTH

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

In reply, please refer to:
File:EHA/HEER
2011-114MGC

March 1, 2011

John Rau, Senior Geologist
Bureau Veritas North America, Inc.
970 North Kalaheo Avenue, Suite C-316
Kailua, Hawaii 96734

Facility: Kehalani Development, Wailuku, HI

Subject: No Further Action Determination Letter Based on the Review of t he Multi-Incremental Sampling Investigation Report for the 210.5 Acres of Proposed Residential Use and 38.5 Acres of Non-Residential Use for Kehalani Development, Wailuku, Maui

Dear Mr. Rau:

The State of Hawaii, Department of Health (HDOH), Hazard Evaluation and Emergency Response (HEER) Office supports the No Further Action Determination for Kehalani Development based on the review of the "Multi-Incremental Sampling Investigation Report for the 210.5 Acres of Proposed Residential Use and 38.5 Acres of Non-Residential Use received on February 3, 2011.

The former agricultural property will be developed for residential, commercial and other uses. The 210.5 acre residential area consists of 12 contiguous residential lots and one non-contiguous commercial lot. The non-residential site will include five non-contiguous lots that comprise a total area of 38.5 acres. The non-residential site includes a school, a community center, and three parks.

For the residential property, 59 Decision Units (DUs) of 5000 square foot areas were randomly located and characterized throughout the 13 lots based on the ratio of individual lot area to the total area of the residential site. For the non-residential site, each of the five lots was considered as a separate DU. Multi-incremental soil samples collected from the DUs were analyzed for Total Arsenic (EPA Method 6010B), Dioxin (EPA Method 8290) and Organochlorine pesticides (EPA Method 8081).

Based on the result of the investigation, soil samples collected from both residential and non-residential sites show levels of total arsenic TEQ dioxins and organochlorine pesticides below DOH Final Tier I Environmental Action Levels (EALs) for unrestricted land use. The highest Total As concentration detected from soil samples collected from residential and non-residential sites is 13.3 mg/kg, below the default background value of 20 mg/kg. The highest reported level of TEQ dioxins is 122 ng/kg, below the HDOH action level of 240 ng/kg.

The HDOH HEER Office sent a letter to Department of Education regarding the presence of a possible quonset hut in the proposed location of the school site (Lot 3-A-2) based on the 2002 Phase I conducted by Clayton (now Bureau Veritas). The Quonset hut was considered by HDOH as a potential Recognized Environmental Concern (REC). As discussed and explained by Bureau Veritas who prepared the 2002 Phase I , the building mentioned in the report was in fact a wooden structure, not a quonset hut and not located within the proposed school site. In the February 3, 2001, investigation report, it was explained and clarified that the wooden structure was used for construction storage and was not considered to be an area of potentially significant contamination. A multi-increment soil sample collected from the proposed school site did not identify contaminants above levels for unrestricted land use. No further action is therefore warranted in regards to this issue.

Please be aware that if future information indicates that previously undisclosed contamination is identified at the site at a level that poses a threat to human health and the environment then HDOH could require additional investigation and cleanup to be performed.

If you need further information regarding this matter, please call Melody Calisay at 586-7577 or email her at melody.calisay@doh.hawaii.gov.

Sincerely,

Fenix Grange

Fenix Grange, Supervisor
Site Discovery and Remediation Section
Department of Health- HEER Office

BUREAU VERITAS

APPENDIX I

REGULATORY DATABASE REPORT

Kehalani Property
11 KEHALANI VILLAGE DR
WAILUKU, HI 96793

Inquiry Number: 4529586.2s
February 04, 2016

The EDR Radius Map™ Report with GeoCheck®

EDR® Environmental Data Resources Inc

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

FORM-LBC-ASH

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Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-13) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

11 KEHALANI VILLAGE DR
WAILUKU, HI 96793

COORDINATES

Latitude (North):	20.8760290 - 20˙ 52' 33.70''
Longitude (West):	156.5058650 - 156˙ 30' 21.11''
Universal Tranverse Mercator:	Zone 4
UTM X (Meters):	759491.6
UTM Y (Meters):	2310304.8
Elevation:	370 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	5941607 WAILUKU, HI
Version Date:	2013

MAPPED SITES SUMMARY

Target Property Address:
11 KEHALANI VILLAGE DR
WAILUKU, HI 96793

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
1	SITE 11 AT KEHALANI	SOUTHEAST CORNER OF	FINDS	Lower	708, 0.134, ESE
2	HONOAPIILANI HIGHWAY	HONOAPIILANI HIGHWAY	FINDS	Lower	1288, 0.244, NNE
3	KEHALANI VILLAGE CEN	NORTHEAST CORNER OF	FINDS	Lower	1740, 0.330, SE
4	HAWAIIAN CEMENT		US MINES	Lower	1789, 0.339, NNE
5		95 KINOHI LOA LOOP	HI SPILLS	Higher	1976, 0.374, SSW
6	MECO PAD-MOUNTED #16	1627 B MILL ST	HI SPILLS	Lower	1986, 0.376, East
7	MILO COURT PHASE II	OMAOMAO STREET	FINDS	Higher	1988, 0.377, NW
A8	MAUI COMMUNITY CORRE	600 WAIALE DR	HI UST, HI Financial Assurance	Lower	2298, 0.435, East
A9		600 WAIALE RD	EDR Hist Auto	Lower	2298, 0.435, East
A10	MAUI COMMUNITY CORRE	600 WAIALE ROAD	FINDS	Lower	2298, 0.435, East
B11	WAILUKU - WAILUKU AG		FINDS	Higher	2382, 0.451, NNW
B12	WAILUKU - WAILUKU AG		FINDS	Higher	2382, 0.451, NNW
13	WALGREENS #15115 AT	INTERSECTION OF WAIA	FINDS	Lower	2627, 0.498, SE
C14	MERCURY 1939 MAKAHAL	1939 MAKAHALA PL	HI SPILLS	Lower	2667, 0.505, NE
D15	MAUI MEMORIAL PARK,	485 WAIALE DR	HI UST	Lower	2686, 0.509, ENE
D16	MAUI MEMORIAL PARK,	485 WAIALE ROAD	FINDS	Lower	2686, 0.509, ENE
C17	MERCURY - 1934 MAKAH	1934 MAKAHALA PL	HI SPILLS	Lower	2708, 0.513, NE
18	WAILUKU ELEMENTARY S	355 SOUTH HIGH STREE	FINDS	Lower	2713, 0.514, North
D19		500 WAIALE RD	EDR Hist Auto	Lower	2716, 0.514, ENE
20	MECO POLE-MOUNT TRAN	POLE E-9, 251 KOELI	HI SPILLS	Lower	2903, 0.550, North
D21	OHANA O NAHINU TRUST	455 WAIALE RD	HI SPILLS	Lower	2947, 0.558, NE
22	SITE 20 AT KEHALANI	272 A'APUEO PARKWAY	FINDS	Lower	3186, 0.603, North
E23	WAIMALUHIA MAUI METH	115 WAIMALUHIA LANE	HI RGA HWS	Lower	3242, 0.614, ESE
E24	WAIMALUHIA MAUI METH	115 WAIMALUHIA LN	HI SHWS, HI CDL, HI SPILLS	Lower	3242, 0.614, ESE
E25	WAIMALUHIA MAUI METH	115 WAIMALUHIA LN	HI RGA HWS	Lower	3242, 0.614, ESE
26	HIGH STREET MISCELLA		HI UIC	Higher	3246, 0.615, NNW
F27	MAUI COUNTY WAILUKU	1827 KAOHU ST	RCRA-CESQG, FINDS	Lower	3266, 0.619, NE
F28	MAUI COUNTY WAILUKU	1827 KAOHU ST	HI UST	Lower	3266, 0.619, NE
F29	LANAI LANDFILL	1827 KAUHU ST.	HI RGA LF	Lower	3266, 0.619, NE
G30	I A O INTERMEDIATE S	1910 KAOHU ST	RCRA NonGen / NLR, CA HAZNET	Lower	3422, 0.648, NNE
G31	IAO MIDDLE SCHOOL	1910 KAOHU ST	FTTS, HIST FTTS	Lower	3422, 0.648, NNE
G32	I A O INTERMEDIATE S	1910 KAOHU STREET	FINDS	Lower	3422, 0.648, NNE
G33	IAO MIDDLE SCHOOL	1910 KAOHU ST	FTTS, HIST FTTS	Lower	3422, 0.648, NNE
H34	DEPARTMENT OF WATER,	200 S HIGH ST	HI SPILLS	Lower	3464, 0.656, North
H35	KULANIHAKOI GULCH ST	200 SOUTH HIGH STREE	FINDS	Lower	3464, 0.656, North
H36	CENTRAL MAUI LANDFIL	200 SOUTH HIGH ST.	HI RGA LF	Lower	3464, 0.656, North
H37	COUNTY OF MAUI - CIV	200 S HIGH ST	HI RGA LUST	Lower	3464, 0.656, North
H38	CENTRAL MAUI LANDFIL	200 SOUTH HIGH ST.	HI RGA LF	Lower	3464, 0.656, North
H39	COUNTY OF MAUI SMALL	KALANA O MAUI BLDG.	FINDS	Lower	3464, 0.656, North

MAPPED SITES SUMMARY

Target Property Address:
11 KEHALANI VILLAGE DR
WAILUKU, HI 96793

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
H40	WAIOHONU BRIDGE REPL	200 SOUTH HIGH STREE	FINDS	Lower	3464, 0.656, North
H41	COUNTY OF MAUI IT SE	200 S HIGH STREET	FINDS	Lower	3464, 0.656, North
H42	KAMEHAMEHA AVENUE RO	200 SOUTH HIGH STREE	ICIS, FINDS	Lower	3464, 0.656, North
H43	COUNTY OF MAUI - CI	200 S HIGH ST	HI RGA LUST	Lower	3464, 0.656, North
H44	COUNTY OF MAUI VINEY	200 S. HIGH STREET	FINDS	Lower	3464, 0.656, North
H45	NAHOLO CIRCLE DWS	200 S. HIGH ST.	HI UIC	Lower	3464, 0.656, North
H46	COUNTY OF MAUI - CIV	200 S HIGH ST	HI LUST, HI UST, HI Financial Assurance	Lower	3464, 0.656, North
H47	SAND ISLAND INDUSTRI	200 SOUTH HIGH STREE	FINDS	Lower	3464, 0.656, North
I48	ORGANIZATIONAL MAINT	260 S MARKET ST	HI RGA HWS	Lower	3571, 0.676, NNE
I49		260 SOUTH MARKET ST	HI RGA HWS	Lower	3571, 0.676, NNE
I50	ORGANIZATIONAL MAINT	260 S MARKET ST	HI SHWS	Lower	3571, 0.676, NNE
I51	IAO MIDDLE SCHOOL	260 SOUTH MARTKET ST	FINDS	Lower	3593, 0.680, NNE
J52	MAUI DISTRICT OFFICE	54 S HIGH ST	FINDS	Lower	3728, 0.706, North
H53	DOH/DISTRICT OFFICE	54 HIGH ST, ROOM 301	HI UST, HI Financial Assurance	Lower	3752, 0.711, North
54	MECO TRANSFORMERS 13	2404 MAIN ST	HI SPILLS	Higher	3767, 0.713, NNW
55	WAILUKU SHAFT 33 PUM	WEST MAIN STREET	FINDS	Higher	3796, 0.719, NW
J56	OHANA KAI VILLAGE -	9 HONOAPIILANI HIGHW	FINDS	Lower	3941, 0.746, North
K57	EVA WINONA PASCHOAL	318 NANILOA DR	HI UST	Lower	3979, 0.754, NE
K58	EVA WINONA PASCHOAL	318 NANILOA DRIVE	FINDS	Lower	3979, 0.754, NE
J59	POLICE MOTOR POOL	MAIN STREET & NORTH	FINDS	Lower	3982, 0.754, North
J60	POLICE MOTOR POOL	HIGH & MAIN ST	HI UST	Lower	3982, 0.754, North
L61	WAILUKU CENTRAL OFFI	60 S CHURCH ST	HI LUST, HI UST, HI Financial Assurance	Lower	4035, 0.764, NNE
62	KEHALANI UPPER LEVEL		FINDS	Higher	4042, 0.766, West
M63	HOAPILI HALE - MAUI	2145 MAIN STREET	FINDS	Lower	4066, 0.770, North
M64	HOAPILI HALE - MAUI	2145 MAIN ST.	HI RGA LUST	Lower	4066, 0.770, North
M65	HOAPILI HALE	2145 MAIN STREET	FINDS	Lower	4066, 0.770, North
M66	HOAPILI HALE - MAUI	2145 MAIN ST.	HI LUST, HI Financial Assurance	Lower	4066, 0.770, North
M67	HOAPILI HALE	2145 MAIN STREET	RCRA-CESQG	Lower	4066, 0.770, North
L68	WAILUKU CENTRAL OFFI	60 S CHURCH ST	HI RGA LUST	Lower	4143, 0.785, NNE
L69	WAILUKU CENTRAL OFFI	60 SOUTH CHURCH STRE	FINDS	Lower	4143, 0.785, NNE
L70	GTE HAWAIIAN TEL	60 S CHURCH ST	CA HAZNET	Lower	4143, 0.785, NNE
N71	THE KIHEI RECYCLING	2200 MAIN STREET	FINDS	Lower	4175, 0.791, North
N72	COUNTY OF MAUI	2200 MAIN STREET, SU	FINDS	Lower	4175, 0.791, North
O73	MAUI LANI 76 -MAKO'S	129 MAA ST	FINDS	Lower	4209, 0.797, SE
O74	MAUI LANI 76 -MAKO'S	129 MAA ST	HI UST, HI Financial Assurance	Lower	4209, 0.797, SE
L75	ALVIN'S UPTOWN CHEVR	2085 WEST MAIN ST	HI RGA HWS	Lower	4293, 0.813, NNE
L76	UPTOWN SERVICE	2085 MAIN ST	HI LUST, HI UST, HI Financial Assurance	Lower	4293, 0.813, NNE
L77	ALVIN'S UPTOWN CHEVR	2085 W MAIN ST	HI SHWS, HI SPILLS	Lower	4293, 0.813, NNE
L78		2085 MAIN ST	EDR Hist Auto	Lower	4293, 0.813, NNE

MAPPED SITES SUMMARY

Target Property Address:
11 KEHALANI VILLAGE DR
WAILUKU, HI 96793

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
L79	UPTOWN SERVICE INC	2085 MAIN ST	RCRA-CESQG, FINDS	Lower	4293, 0.813, NNE
L80	UPTOWN SERVICE	2085 MAIN ST	HI RGA LUST	Lower	4293, 0.813, NNE
L81	MAUI SHELL SERVICE	2086 MAIN STREET	HI RGA LUST	Lower	4323, 0.819, NNE
L82	MAUI SHELL SERVICE	2086 MAIN ST	HI RGA LUST	Lower	4323, 0.819, NNE
L83	MINIT STOP SHELL MAR	2086 MAIN ST	HI RGA LUST	Lower	4323, 0.819, NNE
L84	KUKUIULA WASTEWATER	2086 MAIN STREET	FINDS	Lower	4323, 0.819, NNE
L85	COURTHOUSE SHELL	2086 MAIN ST	HI RGA LUST	Lower	4323, 0.819, NNE
L86	SHELL OIL CO	2086 MAIN ST	RCRA-CESQG	Lower	4334, 0.821, NNE
L87	COURTHOUSE SHELL SS	2086 MAIN ST	HI LUST, HI UST, HI Financial Assurance	Lower	4334, 0.821, NNE
P88	MAIN STREET PROMENAD	2058 MAIN ST	HI SHWS	Lower	4389, 0.831, NNE
P89	MAIN STREET PROMENAD	2058 MAIN ST	HI RGA HWS	Lower	4389, 0.831, NNE
P90	WAIKAPU STREAM DRAIN	24 NORTH CHURCH STRE	FINDS	Lower	4414, 0.836, NNE
P91		2026 MAIN ST	EDR Hist Auto	Lower	4470, 0.847, NNE
P92	VALLEY ISLE MOTORS L	2026 MAIN ST	HI RGA HWS	Lower	4470, 0.847, NNE
P93	ROBERT JOSLIN	2026 MAIN ST	RCRA-CESQG, HI SHWS, HI LUST, HI UST, HI SPILLS	Lower	4470, 0.847, NNE
P94	VALLEY ISLE MOTORS,	2026 MAIN ST	HI RGA LUST	Lower	4470, 0.847, NNE
P95	VALLEY ISLE MOTORS L	2026 MAIN ST	FINDS	Lower	4470, 0.847, NNE
P96	VALLEY ISLE MOTORS,	2026 MAIN STREET	HI RGA LUST	Lower	4470, 0.847, NNE
P97	KULAMALU HILLTOP SUB	2005 MAIN STREET	FINDS	Lower	4494, 0.851, NNE
P98	KAMEHAMEHA SCHOOL MA	1997 MAIN STREET	FINDS	Lower	4524, 0.857, NNE
99	WAILUKU - MAUI LANI		FINDS	Lower	4532, 0.858, ESE
Q100		1990 MAIN ST	EDR Hist Auto	Lower	4577, 0.867, NNE
R101	MAUI SCRAP METAL CO.	1791 WAIINU RD.	RCRA NonGen / NLR	Lower	4630, 0.877, ENE
R102	MAUI SCRAP METAL CO.	1791 WAIINU RD.	FINDS	Lower	4630, 0.877, ENE
S103	MAALAEA TRIANGLE DEV	75 NORTH CHURCH STRE	FINDS	Lower	4652, 0.881, North
104		23 KIEKIENA PL	EDR Hist Cleaner	Lower	4653, 0.881, East
P105	1X ALULI TRUST ESTAT	31 N MARKET ST	CA HAZNET	Lower	4664, 0.883, NNE
Q106	MAUI AUTO DETAILING	1955 MAIN ST	HI UST	Lower	4670, 0.884, NNE
Q107	MAUI AUTO DETAILING	1955 MAIN STREET	FINDS	Lower	4670, 0.884, NNE
Q108	IMA HANADA TRUST	1960 MAIN ST	HI UST	Lower	4685, 0.887, NNE
Q109	IMA HANADA TRUST	1960 MAIN STREET	FINDS	Lower	4685, 0.887, NNE
Q110		1941 MAIN ST	EDR Hist Auto	Lower	4712, 0.892, NNE
T111	JD PAINTING	70 KANOA ST	RCRA-SQG, FINDS	Lower	4724, 0.895, NNE
Q112	LOKAHI PACIFIC	1935 MAIN ST	HI LUST, HI UST	Lower	4731, 0.896, NNE
Q113	LOKAHI PACIFIC	1935 MAIN ST	HI RGA LUST	Lower	4731, 0.896, NNE
Q114	CUTTER NISSAN	1935 MAIN ST	RCRA NonGen / NLR, FINDS	Lower	4731, 0.896, NNE
T115		1820 WELLS ST	EDR Hist Auto	Lower	4731, 0.896, NNE
S116		2102 VINEYARD ST	HI RGA HWS	Lower	4733, 0.896, North
S117	2102 VINEYARD ST.	2102 WEST VINEYARD S	FINDS	Lower	4733, 0.896, North

MAPPED SITES SUMMARY

Target Property Address:
11 KEHALANI VILLAGE DR
WAILUKU, HI 96793

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
S118	MAUI VINEYARD INN, U	2102 VINEYARD ST	HI RGA HWS	Lower	4733, 0.896, North
S119	2102 VINEYARD ST.	2102 VINEYARD ST	HI RGA LUST	Lower	4733, 0.896, North
Q120	PACIFIC AMUSEMENT CO	1942 MAIN ST	HI UST	Lower	4738, 0.897, NNE
Q121	PACIFIC AMUSEMENT CO	1942 MAIN STREET	FINDS	Lower	4738, 0.897, NNE
Q122	TAKITANI BUILDING	1940 MAIN ST, STE 13	HI UST	Lower	4744, 0.898, NNE
Q123	DICKS FUMIGATION SER	1940 MAIN ST	RCRA NonGen / NLR, FINDS	Lower	4744, 0.898, NNE
Q124	TAKITANI BUILDING	1940 MAIN STREET #13	FINDS	Lower	4744, 0.898, NNE
T125	BLUE & WHITE BUS LIN	60 KANOA ST	HI UST	Lower	4776, 0.905, NNE
T126	BLUE & WHITE BUS LIN	60 KANOA STREET	FINDS	Lower	4776, 0.905, NNE
S127	2102 VINEYARD ST.	2102 VINEYARD ST	HI SHWS, HI UST, HI Financial Assurance	Lower	4797, 0.909, North
U128	WAILUKU - MOKUHAU WE		FINDS	Lower	4861, 0.921, NNW
V129	LONGS DRUG STORE NO	1900 MAIN ST	FINDS	Lower	4868, 0.922, NNE
V130	LONGS DRUG STORE NO	1900 MAIN ST	RCRA-CESQG	Lower	4868, 0.922, NNE
U131	WAILUKU - MOKUHAU WE		FINDS	Lower	4883, 0.925, NNW
U132	WAILUKU - MOKUHAU WE		FINDS	Lower	4898, 0.928, NNW
W133	MAUI COUNTY WAILUKU	21 KINIPOPO ST	HI LUST, HI UST, HI SPILLS	Lower	4991, 0.945, NNE
W134	WAILUKU FIRE STATION	21 KINIPOPO STREET	FINDS	Lower	4991, 0.945, NNE
W135	WAILUKU FIRE STATION	21 KINIPOPO ST	HI RGA LUST	Lower	4991, 0.945, NNE
136	WAILUKU - MAUI LANI		FINDS	Lower	5029, 0.952, ESE
W137		1818 OIHANA ST	EDR Hist Auto	Lower	5106, 0.967, NNE
138		51 WAIALE RD	EDR Hist Auto	Lower	5282, 1.000, NNE
139	DOWN TO EARTH NATURA	1910 VINEYARD ST	HI UST	Lower	5508, 1.043, NNE
140	MAUI RECYCLING SRVC	105 WAIKO RD	RCRA NonGen / NLR, FINDS	Higher	5893, 1.116, SSW
X141	MAUI SANDTORCHES	46 TINGS DR	CERCLIS-NFRAP, RCRA NonGen / NLR, FINDS	Lower	5909, 1.119, NE
Y142	OGAWA SERVICE STATIO	327 N MARKET ST	HI LUST, HI UST	Lower	5925, 1.122, North
X143	REX TIRE & SUPPLY, D	1728 KAAHUMANU AVE	HI SHWS	Lower	5948, 1.127, NE
144	SAFEWAY STORE #3092	58 MAUI LANI PARKWAY	RCRA-CESQG, FINDS	Lower	6061, 1.148, NE
Y145	PAM FUJITA PROPERTY	346 N. MARKET ST	HI UST	Lower	6116, 1.158, North
Z146	GOMES CONSTRUCTION &	1790 MILL ST	HI SHWS, HI UST, RCRA NonGen / NLR, FINDS, HI...	Lower	6129, 1.161, NNE
Y147	GEORGE S./ JEAN FUNA	350 N MARKET ST	HI UST	Lower	6144, 1.164, North
X148	MAUI SANDTORCHES	46 TING DR	HI SHWS	Lower	6165, 1.168, NE
Z149	GENROLL EQUIPMENT SE	1760 MILL ST	RCRA NonGen / NLR, FINDS	Lower	6309, 1.195, NNE
AA150	CLINICAL LABORATORIE	221 MAHALANI ST	RCRA-SQG, FINDS	Lower	6541, 1.239, ENE
AA151	MAUI MEMORIAL MEDICA	221 MAHALANI STREET	HI UST, MLTS, HI Financial Assurance	Lower	6541, 1.239, ENE
152	WAILUKU SUGAR AGRICU	2015 HOLOWAI PL	HI SHWS, HI INST CONTROL	Lower	6556, 1.242, North
153	WAILUKU SUGAR COMPAN	250 IMI KALA ST	HI SHWS	Lower	6921, 1.311, NNE
154	MECO POLE-MOUNT TRAN	POLE E-9 AT AIAI ST	HI SHWS, HI SPILLS	Lower	7029, 1.331, East
155	MAUI COUNTY POLICE D	55 MAHALANI DR	HI LUST, HI UST, HI Financial Assurance	Lower	7240, 1.371, NE
AB156	HALE MAKUA NURSING H	1540 LOWER MAIN ST	HI LUST, HI UST	Lower	7284, 1.380, NNE

MAPPED SITES SUMMARY

Target Property Address:
11 KEHALANI VILLAGE DR
WAILUKU, HI 96793

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
AB157	MECO TRANSFORMER 335	1540 E MAIN ST	HI SHWS, HI SPILLS	Lower	7284, 1.380, NNE
158	RADIO STATION KMVI	100 MAHALANI RD	HI LUST, HI UST	Lower	7895, 1.495, ENE
159	MECO PAD-MOUNT TRANS	45 MOLEHULEHU PL	HI SHWS, HI INST CONTROL, HI SPILLS	Lower	9643, 1.826, ESE
160	MAUI COMMUNITY COLLE	310 KAAHUMANU AVE	RCRA-CESQG, HI SHWS, HI LUST, HI UST, FINDS, HI...	Lower	9804, 1.857, NE
161	122 WEST AHULIU WAY	122 W AHULIU WAY	HI SHWS, HI INST CONTROL	Lower	10527, 1.994, SSE

EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL..... National Priority List
Proposed NPL..... Proposed National Priority List Sites
NPL LIENS..... Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL..... National Priority List Deletions

Federal CERCLIS list

FEDERAL FACILITY..... Federal Facility Site Information listing
CERCLIS..... Comprehensive Environmental Response, Compensation, and Liability Information System

Federal RCRA CORRACTS facilities list

CORRACTS..... Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF..... RCRA - Treatment, Storage and Disposal

Federal RCRA generators list

RCRA-LQG..... RCRA - Large Quantity Generators

Federal institutional controls / engineering controls registries

LUCIS..... Land Use Control Information System
US ENG CONTROLS..... Engineering Controls Sites List
US INST CONTROL..... Sites with Institutional Controls

Federal ERNS list

ERNS..... Emergency Response Notification System

State and tribal landfill and/or solid waste disposal site lists

HI SWF/LF..... Permitted Landfills in the State of Hawaii

EXECUTIVE SUMMARY

State and tribal leaking storage tank lists

INDIAN LUST..... Leaking Underground Storage Tanks on Indian Land

State and tribal registered storage tank lists

FEMA UST..... Underground Storage Tank Listing
INDIAN UST..... Underground Storage Tanks on Indian Land

State and tribal institutional control / engineering control registries

HI ENG CONTROLS..... Engineering Control Sites

State and tribal voluntary cleanup sites

HI VCP..... Voluntary Response Program Sites
INDIAN VCP..... Voluntary Cleanup Priority Listing

State and tribal Brownfields sites

HI BROWNFIELDS..... Brownfields Sites

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS..... A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

INDIAN ODI..... Report on the Status of Open Dumps on Indian Lands
DEBRIS REGION 9..... Torres Martinez Reservation Illegal Dump Site Locations
ODI..... Open Dump Inventory

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL..... National Clandestine Laboratory Register
US CDL..... Clandestine Drug Labs

Local Land Records

LIENS 2..... CERCLA Lien Information

Records of Emergency Release Reports

HMIRS..... Hazardous Materials Information Reporting System
HI SPILLS 90..... SPILLS 90 data from FirstSearch

Other Ascertainable Records

FUDS..... Formerly Used Defense Sites
DOD..... Department of Defense Sites
SCRD DRYCLEANERS..... State Coalition for Remediation of Drycleaners Listing

US FIN ASSUR	Financial Assurance Information
EPA WATCH LIST	EPA WATCH LIST
2020 COR ACTION	2020 Corrective Action Program List
TSCA	Toxic Substances Control Act
TRIS	Toxic Chemical Release Inventory System
SSTS	Section 7 Tracking Systems
ROD	Records Of Decision
RMP	Risk Management Plans
RAATS	RCRA Administrative Action Tracking System
PRP	Potentially Responsible Parties
PADS	PCB Activity Database System
COAL ASH DOE	Steam-Electric Plant Operation Data
COAL ASH EPA	Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER	PCB Transformer Registration Database
RADINFO	Radiation Information Database
DOT OPS	Incident and Accident Data
CONSENT	Superfund (CERCLA) Consent Decrees
INDIAN RESERV	Indian Reservations
UMTRA	Uranium Mill Tailings Sites
LEAD SMELTERS	Lead Smelter Sites
US AIRS	Aerometric Information Retrieval System Facility Subsystem
HI AIRS	List of Permitted Facilities
HI DRYCLEANERS	Permitted Drycleaner Facility Listing

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP	EDR Proprietary Manufactured Gas Plants

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

STANDARD ENVIRONMENTAL RECORDS

Federal CERCLIS NFRAP site List

CERCLIS-NFRAP: Archived sites are sites that have been removed and archived from the inventory of CERCLIS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list this site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a

recommendation for listing at a later time. This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site.

A review of the CERCLIS-NFRAP list, as provided by EDR, and dated 10/25/2013 has revealed that there is 1 CERCLIS-NFRAP site within approximately 1.5 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
MAUI SANDTORCHES	***46 TINGS DR***	***NE 1 - 2 (1.119 mi.)***	***X141***	***105***

Federal RCRA generators list

RCRA-SQG: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

A review of the RCRA-SQG list, as provided by EDR, and dated 06/09/2015 has revealed that there are 2 RCRA-SQG sites within approximately 1.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
JD PAINTING	***70 KANOA ST***	***NNE 1/2 - 1 (0.895 mi.)***	***T111***	***86***
CLINICAL LABORATORIE	***221 MAHALANI ST***	***ENE 1 - 2 (1.239 mi.)***	***AA150***	***116***

RCRA-CESQG: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

A review of the RCRA-CESQG list, as provided by EDR, and dated 06/09/2015 has revealed that there are 7 RCRA-CESQG sites within approximately 1.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
MAUI COUNTY WAILUKU	***1827 KAOHU ST***	***NE 1/2 - 1 (0.619 mi.)***	***F27***	***24***
HOAPILI HALE	2145 MAIN STREET	N 1/2 - 1 (0.770 mi.)	M67	55
UPTOWN SERVICE INC	***2085 MAIN ST***	***NNE 1/2 - 1 (0.813 mi.)***	***L79***	***64***
SHELL OIL CO	2086 MAIN ST	NNE 1/2 - 1 (0.821 mi.)	L86	67
ROBERT JOSLIN	***2026 MAIN ST***	***NNE 1/2 - 1 (0.847 mi.)***	***P93***	***73***
LONGS DRUG STORE NO	1900 MAIN ST	NNE 1/2 - 1 (0.922 mi.)	V130	98
SAFEWAY STORE #3092	***58 MAUI LANI PARKWAY***	***NE 1 - 2 (1.148 mi.)***	***144***	***108***

State- and tribal - equivalent CERCLIS

HI SHWS: The State Hazardous Waste Sites records are the states' equivalent to CERCLIS. These sites may or may not already be listed on the federal CERCLIS list. Priority sites planned for cleanup using state

funds (state equivalent of Superfund) are identified along with sites where cleanup will be paid for by potentially responsible parties. The data come from the Department of Health.

A review of the HI SHWS list, as provided by EDR, and dated 12/02/2014 has revealed that there are 16 HI SHWS sites within approximately 2 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
WAIMALUHIA MAUI METH	***115 WAIMALUHIA LN***	***ESE 1/2 - 1 (0.614 mi.)***	***E24***	***22***
ORGANIZATIONAL MAINT	260 S MARKET ST	NNE 1/2 - 1 (0.676 mi.)	I50	46
ALVIN'S UPTOWN CHEVR	***2085 W MAIN ST***	***NNE 1/2 - 1 (0.813 mi.)***	***L77***	***62***
MAIN STREET PROMENAD	2058 MAIN ST	NNE 1/2 - 1 (0.831 mi.)	P88	72
ROBERT JOSLIN	***2026 MAIN ST***	***NNE 1/2 - 1 (0.847 mi.)***	***P93***	***73***
2102 VINEYARD ST.	***2102 VINEYARD ST***	***N 1/2 - 1 (0.909 mi.)***	***S127***	***96***
REX TIRE & SUPPLY, D	1728 KAAHUMANU AVE	NE 1 - 2 (1.127 mi.)	X143	107
GOMES CONSTRUCTION &	***1790 MILL ST***	***NNE 1 - 2 (1.161 mi.)***	***Z146***	***111***
MAUI SANDTORCHES	46 TING DR	NE 1 - 2 (1.168 mi.)	X148	114
WAILUKU SUGAR AGRICU	***2015 HOLOWAI PL***	***N 1 - 2 (1.242 mi.)***	***152***	***120***
WAILUKU SUGAR COMPAN	250 IMI KALA ST	NNE 1 - 2 (1.311 mi.)	153	121
MECO POLE-MOUNT TRAN	***POLE E-9 AT AIAI ST***	***E 1 - 2 (1.331 mi.)***	***154***	***122***
MECO TRANSFORMER 335	***1540 E MAIN ST***	***NNE 1 - 2 (1.380 mi.)***	***AB157***	***126***
MECO PAD-MOUNT TRANS	***45 MOLEHULEHU PL***	***ESE 1 - 2 (1.826 mi.)***	***159***	***128***
MAUI COMMUNITY COLLE	***310 KAAHUMANU AVE***	***NE 1 - 2 (1.857 mi.)***	***160***	***129***
122 WEST AHULIU WAY	***122 W AHULIU WAY***	***SSE 1 - 2 (1.994 mi.)***	***161***	***137***

State and tribal leaking storage tank lists

HI LUST: The Leaking Underground Storage Tank Incident Reports contain an inventory of reported leaking underground storage tank incidents. The data come from the Department of Health's Active Leaking Underground Storage Tank Log Listing.

A review of the HI LUST list, as provided by EDR, and dated 09/04/2015 has revealed that there are 12 HI LUST sites within approximately 1.5 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
COUNTY OF MAUI - CIV	***200 S HIGH ST***	***N 1/2 - 1 (0.656 mi.)***	***H46***	***44***
Release ID: 010053 Facility Id: 9-503420 Facility Status: Site Cleanup Completed (NFA)				
WAILUKU CENTRAL OFFI	***60 S CHURCH ST***	***NNE 1/2 - 1 (0.764 mi.)***	***L61***	***51***
Release ID: 980003 Facility Id: 9-500552 Facility Status: Site Cleanup Completed (NFA)				
HOAPILI HALE - MAUI	***2145 MAIN ST.***	***N 1/2 - 1 (0.770 mi.)***	***M66***	***54***
Release ID: 000001 Facility Id: 9-503536 Facility Status: Site Cleanup Completed (NFA)				
UPTOWN SERVICE	***2085 MAIN ST***	***NNE 1/2 - 1 (0.813 mi.)***	***L76***	***60***
Release ID: 990175 Facility Id: 9-501128 Facility Status: Site Cleanup Completed (NFA)				
COURTHOUSE SHELL SS	***2086 MAIN ST***	***NNE 1/2 - 1 (0.821 mi.)***	***L87***	***68***

Release ID: 920149 Release ID: 000056 Facility Id: 9-501008 Facility Status: Site Cleanup Completed (NFA)				
ROBERT JOSLIN	***2026 MAIN ST***	***NNE 1/2 - 1 (0.847 mi.)***	***P93***	***73***
Release ID: 900024 Release ID: 010004 Facility Id: 9-501588 Facility Status: Site Cleanup Completed (NFA)				
LOKAHI PACIFIC	***1935 MAIN ST***	***NNE 1/2 - 1 (0.896 mi.)***	***Q112***	***88***
Release ID: 980218 Release ID: 990141 Facility Id: 9-501603 Facility Status: Site Cleanup Completed (NFA)				
MAUI COUNTY WAILUKU	***21 KINIPOPO ST***	***NNE 1/2 - 1 (0.945 mi.)***	***W133***	***101***
Release ID: 930113 Facility Id: 9-502764 Facility Status: Site Cleanup Completed (NFA)				
OGAWA SERVICE STATIO	***327 N MARKET ST***	***N 1 - 2 (1.122 mi.)***	***Y142***	***107***
Release ID: 960046 Facility Id: 9-500398 Facility Status: Site Cleanup Completed (NFA)				
MAUI COUNTY POLICE D	***55 MAHALANI DR***	***NE 1 - 2 (1.371 mi.)***	***155***	***124***
Release ID: 990097 Facility Id: 9-501698 Facility Status: Site Cleanup Completed (NFA)				
HALE MAKUA NURSING H	***1540 LOWER MAIN ST***	***NNE 1 - 2 (1.380 mi.)***	***AB156***	***125***
Release ID: 930098 Facility Id: 9-502621 Facility Status: Site Cleanup Completed (NFA)				
RADIO STATION KMVI	***100 MAHALANI RD***	***ENE 1 - 2 (1.495 mi.)***	***158***	***127***
Release ID: 950085 Facility Id: 9-500844 Facility Status: Site Cleanup Completed (NFA)				

State and tribal registered storage tank lists

HI UST: The Underground Storage Tank database contains registered USTs. USTs are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA). The data come from the Department of Health's Listing of Underground Storage Tanks.

A review of the HI UST list, as provided by EDR, and dated 09/04/2015 has revealed that there are 26 HI UST sites within approximately 1.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
MAUI COMMUNITY CORRE	***600 WAIALE DR***	***E 1/4 - 1/2 (0.435 mi.)***	***A8***	***15***
Tank Status: Permanently Out of Use Facility Id: 9-501801 Date Closed: 10/20/1992				
MAUI MEMORIAL PARK,	485 WAIALE DR	ENE 1/2 - 1 (0.509 mi.)	D15	18

Tank Status: Permanently Out of Use Facility Id: 9-501570 Date Closed: 07/12/1991				
MAUI COUNTY WAILUKU Tank Status: Permanently Out of Use Facility Id: 9-501400 Date Closed: 02/22/1994	1827 KAOHU ST	NE 1/2 - 1 (0.619 mi.)	F28	26
COUNTY OF MAUI - CIV Tank Status: Permanently Out of Use Tank Status: Currently In Use Facility Id: 9-503420 Date Closed: 11/13/1998	***200 S HIGH ST***	***N 1/2 - 1 (0.656 mi.)***	***H46***	***44***
DOH/DISTRICT OFFICE Tank Status: Permanently Out of Use Tank Status: Permanently out of Use Facility Id: 9-500415 Date Closed: 01/30/1989 Date Closed: 09/21/2007	***54 HIGH ST, ROOM 301***	***N 1/2 - 1 (0.711 mi.)***	***H53***	***48***
EVA WINONA PASCHOAL Tank Status: Permanently Out of Use Facility Id: 9-502452 Date Closed: 01/30/1992	318 NANILOA DR	NE 1/2 - 1 (0.754 mi.)	K57	50
POLICE MOTOR POOL Tank Status: Permanently Out of Use Facility Id: 9-501790 Date Closed: 02/27/1987	HIGH & MAIN ST	N 1/2 - 1 (0.754 mi.)	J60	51
WAILUKU CENTRAL OFFI Tank Status: Currently In Use Tank Status: Permanently Out of Use Facility Id: 9-500552 Date Closed: 08/20/1996 Date Closed: 10/21/1999	***60 S CHURCH ST***	***NNE 1/2 - 1 (0.764 mi.)***	***L61***	***51***
MAUI LANI 76 -MAKO'S Tank Status: Currently In Use Tank Status: Currently in Use Facility Id: 9-503924	***129 MAA ST***	***SE 1/2 - 1 (0.797 mi.)***	***O74***	***59***
UPTOWN SERVICE Tank Status: Currently in Use Tank Status: Currently In Use Tank Status: Permanently Out of Use Facility Id: 9-501128 Date Closed: 06/04/1997	***2085 MAIN ST***	***NNE 1/2 - 1 (0.813 mi.)***	***L76***	***60***
COURTHOUSE SHELL SS Tank Status: Permanently Out of Use Facility Id: 9-501008 Date Closed: 01/05/2004 Date Closed: 06/30/1991 Date Closed: 09/01/1999	***2086 MAIN ST***	***NNE 1/2 - 1 (0.821 mi.)***	***L87***	***68***
ROBERT JOSLIN Tank Status: Permanently Out of Use Facility Id: 9-501588	***2026 MAIN ST***	***NNE 1/2 - 1 (0.847 mi.)***	***P93***	***73***

Date Closed: 05/10/1990 Date Closed: 01/01/1990 Date Closed: 10/01/2000				
MAUI AUTO DETAILING Tank Status: Permanently Out of Use Facility Id: 9-502203	1955 MAIN ST	NNE 1/2 - 1 (0.884 mi.)	Q106	83
IMA HANADA TRUST Tank Status: Permanently Out of Use Facility Id: 9-501268	1960 MAIN ST	NNE 1/2 - 1 (0.887 mi.)	Q108	84
LOKAHI PACIFIC Tank Status: Permanently Out of Use Facility Id: 9-501603 Date Closed: 03/18/1995 Date Closed: 07/29/1998	***1935 MAIN ST***	***NNE 1/2 - 1 (0.896 mi.)***	***Q112***	***88***
PACIFIC AMUSEMENT CO Tank Status: Permanently Out of Use Facility Id: 9-500409 Date Closed: 03/14/1990	1942 MAIN ST	NNE 1/2 - 1 (0.897 mi.)	Q120	92
TAKITANI BUILDING Tank Status: Permanently Out of Use Facility Id: 9-501913 Date Closed: 03/14/1990	1940 MAIN ST, STE 13	NNE 1/2 - 1 (0.898 mi.)	Q122	93
BLUE & WHITE BUS LIN Tank Status: Permanently Out of Use Facility Id: 9-501358	60 KANOA ST	NNE 1/2 - 1 (0.905 mi.)	T125	95
2102 VINEYARD ST. Tank Status: Permanently Out of Use Facility Id: 9-503115 Date Closed: 10/05/1995	***2102 VINEYARD ST***	***N 1/2 - 1 (0.909 mi.)***	***S127***	***96***
MAUI COUNTY WAILUKU Tank Status: Permanently Out of Use Facility Id: 9-502764 Date Closed: 06/01/1993	***21 KINIPOPO ST***	***NNE 1/2 - 1 (0.945 mi.)***	***W133***	***101***
DOWN TO EARTH NATURA Tank Status: Permanently Out of Use Facility Id: 9-502974 Date Closed: 07/24/1994	1910 VINEYARD ST	NNE 1 - 2 (1.043 mi.)	139	103
OGAWA SERVICE STATIO Tank Status: Permanently Out of Use Facility Id: 9-500398 Date Closed: 03/04/1996 Date Closed: 03/04/1995	***327 N MARKET ST***	***N 1 - 2 (1.122 mi.)***	***Y142***	***107***
PAM FUJITA PROPERTY Tank Status: Permanently Out of Use Facility Id: 9-503775 Date Closed: 04/16/2004	346 N. MARKET ST	N 1 - 2 (1.158 mi.)	Y145	110
GOMES CONSTRUCTION & Tank Status: Permanently Out of Use Facility Id: 9-500384 Date Closed: 02/01/1994	***1790 MILL ST***	***NNE 1 - 2 (1.161 mi.)***	***Z146***	***111***
GEORGE S./ JEAN FUNA	350 N MARKET ST	N 1 - 2 (1.164 mi.)	Y147	113

Tank Status: Permanently Out of Use
Facility Id: 9-503152
Date Closed: 02/08/1996
Date Closed: 01/01/1986

MAUI MEMORIAL MEDICA	***221 MAHALANI STREET***	***ENE 1 - 2 (1.239 mi.)***	***AA151***	***119***

Tank Status: Permanently Out of Use
Facility Id: 9-501581
Date Closed: 01/20/2000

State and tribal institutional control / engineering control registries

Voluntary Remediation Program and Brownfields sites with institutional controls in place.

A review of the HI INST CONTROL list, as provided by EDR, and dated 12/02/2014 has revealed that there is 1 HI INST CONTROL site within approximately 1.5 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
WAILUKU SUGAR AGRICU	***2015 HOLOWAI PL***	***N 1 - 2 (1.242 mi.)***	***152***	***120***

ADDITIONAL ENVIRONMENTAL RECORDS

Local Lists of Hazardous waste / Contaminated Sites

HI CDL: A listing of clandestine drug lab site locations.

A review of the HI CDL list, as provided by EDR, and dated 08/04/2010 has revealed that there is 1 HI CDL site within approximately 1 mile of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
WAIMALUHIA MAUI METH	***115 WAIMALUHIA LN***	***ESE 1/2 - 1 (0.614 mi.)***	***E24***	***22***

Cleanup Status: Completed / No Further Action Needed / Remediated

Records of Emergency Release Reports

HI SPILLS: Releases of hazardous substances to the environment reported to the Office of Hazard Evaluation and Emergency Response since 1988.

A review of the HI SPILLS list, as provided by EDR, and dated 12/02/2014 has revealed that there are 12 HI SPILLS sites within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
Not reported	95 KINOHI LOA LOOP	SSW 1/4 - 1/2 (0.374 mi.)	5	14
MECO TRANSFORMERS 13	2404 MAIN ST	NNW 1/2 - 1 (0.713 mi.)	54	49

Lower Elevation	Address	Direction / Distance	Map ID	Page
MECO PAD-MOUNTED #16	1627 B MILL ST	E 1/4 - 1/2 (0.376 mi.)	6	14

Lower Elevation	Address	Direction / Distance	Map ID	Page
MERCURY 1939 MAKAHAL	1939 MAKAHALA PL	NE 1/2 - 1 (0.505 mi.)	C14	17
MERCURY - 1934 MAKAH	1934 MAKAHALA PL	NE 1/2 - 1 (0.513 mi.)	C17	19
MECO POLE-MOUNT TRAN	POLE E-9, 251 KOELI	N 1/2 - 1 (0.550 mi.)	20	20
OHANA O NAHINU TRUST	455 WAIALE RD	NE 1/2 - 1 (0.558 mi.)	D21	21
WAIMALUHIA MAUI METH	***115 WAIMALUHIA LN***	***ESE 1/2 - 1 (0.614 mi.)***	***E24***	***22***
DEPARTMENT OF WATER,	200 S HIGH ST	N 1/2 - 1 (0.656 mi.)	H34	29
ALVIN'S UPTOWN CHEVR	***2085 W MAIN ST***	***NNE 1/2 - 1 (0.813 mi.)***	***L77***	***62***
ROBERT JOSLIN	***2026 MAIN ST***	***NNE 1/2 - 1 (0.847 mi.)***	***P93***	***73***
MAUI COUNTY WAILUKU	***21 KINIPOPO ST***	***NNE 1/2 - 1 (0.945 mi.)***	***W133***	***101***

Other Ascertainable Records

RCRA NonGen / NLR: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

A review of the RCRA NonGen / NLR list, as provided by EDR, and dated 06/09/2015 has revealed that there are 8 RCRA NonGen / NLR sites within approximately 1.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
MAUI RECYCLING SRVC	***105 WAIKO RD***	***SSW 1 - 2 (1.116 mi.)***	***140***	***104***

Lower Elevation	Address	Direction / Distance	Map ID	Page
I A O INTERMEDIATE S	***1910 KAOHU ST***	***NNE 1/2 - 1 (0.648 mi.)***	***G30***	***26***
MAUI SCRAP METAL CO.	1791 WAIINU RD.	ENE 1/2 - 1 (0.877 mi.)	R101	80
CUTTER NISSAN	***1935 MAIN ST***	***NNE 1/2 - 1 (0.896 mi.)***	***Q114***	***90***
DICKS FUMIGATION SER	***1940 MAIN ST***	***NNE 1/2 - 1 (0.898 mi.)***	***Q123***	***94***
MAUI SANDTORCHES	***46 TINGS DR***	***NE 1 - 2 (1.119 mi.)***	***X141***	***105***
GOMES CONSTRUCTION &	***1790 MILL ST***	***NNE 1 - 2 (1.161 mi.)***	***Z146***	***111***
GENROLL EQUIPMENT SE	***1760 MILL ST***	***NNE 1 - 2 (1.195 mi.)***	***Z149***	***115***

ICIS: The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

A review of the ICIS list, as provided by EDR, and dated 01/23/2015 has revealed that there is 1 ICIS site within approximately 1 mile of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
KAMEHAMEHA AVENUE RO	***200 SOUTH HIGH STREE***	***N 1/2 - 1 (0.656 mi.)***	***H42***	***32***

EXECUTIVE SUMMARY

FTTS: FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act) over the previous five years. To maintain currency, EDR contacts the Agency on a quarterly basis.

A review of the FTTS list, as provided by EDR, and dated 04/09/2009 has revealed that there are 2 FTTS sites within approximately 1 mile of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
IAO MIDDLE SCHOOL	***1910 KAOHU ST***	***NNE 1/2 - 1 (0.648 mi.)***	***G31***	***28***
IAO MIDDLE SCHOOL	***1910 KAOHU ST***	***NNE 1/2 - 1 (0.648 mi.)***	***G33***	***29***

HIST FTTS: A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

A review of the HIST FTTS list, as provided by EDR, and dated 10/19/2006 has revealed that there are 2 HIST FTTS sites within approximately 1 mile of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
IAO MIDDLE SCHOOL	***1910 KAOHU ST***	***NNE 1/2 - 1 (0.648 mi.)***	***G31***	***28***
IAO MIDDLE SCHOOL	***1910 KAOHU ST***	***NNE 1/2 - 1 (0.648 mi.)***	***G33***	***29***

US MINES: Mines Master Index File. The source of this database is the Dept. of Labor, Mine Safety and Health Administration.

A review of the US MINES list, as provided by EDR, and dated 08/18/2015 has revealed that there is 1 US MINES site within approximately 1.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
HAWAIIAN CEMENT		NNE 1/4 - 1/2 (0.339 mi.)	4	8

FINDS: The Facility Index System contains both facility information and "pointers" to other sources of information that contain more detail. These include: RCRIS; Permit Compliance System (PCS); Aerometric Information Retrieval System (AIRS); FATES (FIFRA [Federal Insecticide Fungicide Rodenticide Act] and TSCA Enforcement System, FTTS [FIFRA/TSCA Tracking System]; CERCLIS; DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes); Federal Underground Injection Control (FURS); Federal Reporting Data System (FRDS); Surface Impoundments (SIA); TSCA Chemicals in Commerce Information System (CICS); PADS; RCRA-J (medical waste transporters/disposers); TRIS; and TSCA. The source of this database is the U.S. EPA/NTIS.

A review of the FINDS list, as provided by EDR, and dated 07/20/2015 has revealed that there are 57 FINDS sites within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
MILO COURT PHASE II	OMAOMAO STREET	NW 1/4 - 1/2 (0.377 mi.)	7	15
WAILUKU - WAILUKU AG		NNW 1/4 - 1/2 (0.451 mi.)	B11	16
WAILUKU - WAILUKU AG		NNW 1/4 - 1/2 (0.451 mi.)	B12	17
WAILUKU SHAFT 33 PUM	WEST MAIN STREET	NW 1/2 - 1 (0.719 mi.)	55	49

EXECUTIVE SUMMARY

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
KEHALANI UPPER LEVEL		W 1/2 - 1 (0.766 mi.)	62	53

Lower Elevation	Address	Direction / Distance	Map ID	Page
SITE 11 AT KEHALANI	SOUTHEAST CORNER OF	ESE 1/8 - 1/4 (0.134 mi.)	1	7
HONOAPIILANI HIGHWAY	HONOAPIILANI HIGHWAY	NNE 1/8 - 1/4 (0.244 mi.)	2	7
KEHALANI VILLAGE CEN	NORTHEAST CORNER OF	SE 1/4 - 1/2 (0.330 mi.)	3	7
MAUI COMMUNITY CORRE	600 WAIALE ROAD	E 1/4 - 1/2 (0.435 mi.)	A10	16
WALGREENS #15115 AT	INTERSECTION OF WAIA	SE 1/4 - 1/2 (0.498 mi.)	13	17
MAUI MEMORIAL PARK,	485 WAIALE ROAD	ENE 1/2 - 1 (0.509 mi.)	D16	18
WAILUKU ELEMENTARY S	355 SOUTH HIGH STREE	N 1/2 - 1 (0.514 mi.)	18	19
SITE 20 AT KEHALANI	272 A'APUEO PARKWAY	N 1/2 - 1 (0.603 mi.)	22	21
MAUI COUNTY WAILUKU	***1827 KAOHU ST***	***NE 1/2 - 1 (0.619 mi.)***	***F27***	***24***
I A O INTERMEDIATE S	1910 KAOHU STREET	NNE 1/2 - 1 (0.648 mi.)	G32	28
KULANIHAKOI GULCH ST	200 SOUTH HIGH STREE	N 1/2 - 1 (0.656 mi.)	H35	30
COUNTY OF MAUI SMALL	KALANA O MAUI BLDG.	N 1/2 - 1 (0.656 mi.)	H39	31
WAIOHONU BRIDGE REPL	200 SOUTH HIGH STREE	N 1/2 - 1 (0.656 mi.)	H40	31
COUNTY OF MAUI IT SE	200 S HIGH STREET	N 1/2 - 1 (0.656 mi.)	H41	31
KAMEHAMEHA AVENUE RO	***200 SOUTH HIGH STREE***	***N 1/2 - 1 (0.656 mi.)***	***H42***	***32***
COUNTY OF MAUI VINEY	200 S. HIGH STREET	N 1/2 - 1 (0.656 mi.)	H44	43
SAND ISLAND INDUSTRI	200 SOUTH HIGH STREE	N 1/2 - 1 (0.656 mi.)	H47	45
IAO MIDDLE SCHOOL	260 SOUTH MARTKET ST	NNE 1/2 - 1 (0.680 mi.)	I51	47
MAUI DISTRICT OFFICE	54 S HIGH ST	N 1/2 - 1 (0.706 mi.)	J52	47
OHANA KAI VILLAGE -	9 HONOAPIILANI HIGHW	N 1/2 - 1 (0.746 mi.)	J56	50
EVA WINONA PASCHOAL	318 NANILOA DRIVE	NE 1/2 - 1 (0.754 mi.)	K58	50
POLICE MOTOR POOL	MAIN STREET & NORTH	N 1/2 - 1 (0.754 mi.)	J59	51
HOAPILI HALE - MAUI	2145 MAIN STREET	N 1/2 - 1 (0.770 mi.)	M63	53
HOAPILI HALE	2145 MAIN STREET	N 1/2 - 1 (0.770 mi.)	M65	54
WAILUKU CENTRAL OFFI	60 SOUTH CHURCH STRE	NNE 1/2 - 1 (0.785 mi.)	L69	57
THE KIHEI RECYCLING	2200 MAIN STREET	N 1/2 - 1 (0.791 mi.)	N71	58
COUNTY OF MAUI	2200 MAIN STREET, SU	N 1/2 - 1 (0.791 mi.)	N72	58
MAUI LANI 76 -MAKO'S	129 MAA ST	SE 1/2 - 1 (0.797 mi.)	O73	58
UPTOWN SERVICE INC	***2085 MAIN ST***	***NNE 1/2 - 1 (0.813 mi.)***	***L79***	***64***
KUKUIULA WASTEWATER	2086 MAIN STREET	NNE 1/2 - 1 (0.819 mi.)	L84	66
WAIKAPU STREAM DRAIN	24 NORTH CHURCH STRE	NNE 1/2 - 1 (0.836 mi.)	P90	73
VALLEY ISLE MOTORS L	2026 MAIN ST	NNE 1/2 - 1 (0.847 mi.)	P95	78
KULAMALU HILLTOP SUB	2005 MAIN STREET	NNE 1/2 - 1 (0.851 mi.)	P97	79
KAMEHAMEHA SCHOOL MA	1997 MAIN STREET	NNE 1/2 - 1 (0.857 mi.)	P98	79
WAILUKU - MAUI LANI		ESE 1/2 - 1 (0.858 mi.)	99	79
MAUI SCRAP METAL CO.	1791 WAIINU RD.	ENE 1/2 - 1 (0.877 mi.)	R102	82
MAALAEA TRIANGLE DEV	75 NORTH CHURCH STRE	N 1/2 - 1 (0.881 mi.)	S103	82
MAUI AUTO DETAILING	1955 MAIN STREET	NNE 1/2 - 1 (0.884 mi.)	Q107	84
IMA HANADA TRUST	1960 MAIN STREET	NNE 1/2 - 1 (0.887 mi.)	Q109	85
JD PAINTING	***70 KANOA ST***	***NNE 1/2 - 1 (0.895 mi.)***	***T111***	***86***
CUTTER NISSAN	***1935 MAIN ST***	***NNE 1/2 - 1 (0.896 mi.)***	***Q114***	***90***
2102 VINEYARD ST.	2102 WEST VINEYARD S	N 1/2 - 1 (0.896 mi.)	S117	92
PACIFIC AMUSEMENT CO	1942 MAIN STREET	NNE 1/2 - 1 (0.897 mi.)	Q121	93
DICKS FUMIGATION SER	***1940 MAIN ST***	***NNE 1/2 - 1 (0.898 mi.)***	***Q123***	***94***
TAKITANI BUILDING	1940 MAIN STREET #13	NNE 1/2 - 1 (0.898 mi.)	Q124	95
BLUE & WHITE BUS LIN	60 KANOA STREET	NNE 1/2 - 1 (0.905 mi.)	T126	96
WAILUKU - MOKUHAU WE		NNW 1/2 - 1 (0.921 mi.)	U128	97
LONGS DRUG STORE NO	1900 MAIN ST	NNE 1/2 - 1 (0.922 mi.)	V129	97
WAILUKU - MOKUHAU WE		NNW 1/2 - 1 (0.925 mi.)	U131	100
WAILUKU - MOKUHAU WE		NNW 1/2 - 1 (0.928 mi.)	U132	100
WAILUKU FIRE STATION	21 KINIPOPO STREET	NNE 1/2 - 1 (0.945 mi.)	W134	102
WAILUKU - MAUI LANI		ESE 1/2 - 1 (0.952 mi.)	136	102

HI Financial Assurance: A listing of financial assurance information for underground storage tank facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

A review of the HI Financial Assurance list, as provided by EDR, and dated 09/28/2015 has revealed that there are 9 HI Financial Assurance sites within approximately 1 mile of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
MAUI COMMUNITY CORRE Alt Facility ID: 9-501801 Tank Status: Permanently Out of Use	***600 WAIALE DR***	***E 1/4 - 1/2 (0.435 mi.)***	***A8***	***15***
COUNTY OF MAUI - CIV Alt Facility ID: 9-503420 Tank Status: Currently In Use Tank Status: Permanently Out of Use	***200 S HIGH ST***	***N 1/2 - 1 (0.656 mi.)***	***H46***	***44***
DOH/DISTRICT OFFICE Alt Facility ID: 9-500415 Tank Status: Permanently Out of Use Tank Status: Permanently out of Use	***54 HIGH ST, ROOM 301***	***N 1/2 - 1 (0.711 mi.)***	***H53***	***48***
WAILUKU CENTRAL OFFI Alt Facility ID: 9-500552 Tank Status: Currently In Use Tank Status: Permanently Out of Use	***60 S CHURCH ST***	***NNE 1/2 - 1 (0.764 mi.)***	***L61***	***51***
HOAPILI HALE - MAUI Alt Facility ID: 9-503536 Tank Status: Currently In Use Tank Status: Permanently Out of Use	***2145 MAIN ST.***	***N 1/2 - 1 (0.770 mi.)***	***M66***	***54***
MAUI LANI 76 -MAKO'S Alt Facility ID: 9-503924 Tank Status: Currently in Use Tank Status: Currently In Use	***129 MAA ST***	***SE 1/2 - 1 (0.797 mi.)***	***O74***	***59***
UPTOWN SERVICE Alt Facility ID: 9-501128 Tank Status: Currently in Use Tank Status: Permanently Out of Use Tank Status: Currently In Use	***2085 MAIN ST***	***NNE 1/2 - 1 (0.813 mi.)***	***L76***	***60***
COURTHOUSE SHELL SS Alt Facility ID: 9-501008 Tank Status: Permanently Out of Use	***2086 MAIN ST***	***NNE 1/2 - 1 (0.821 mi.)***	***L87***	***68***
2102 VINEYARD ST. Alt Facility ID: 9-503115 Tank Status: Permanently Out of Use	***2102 VINEYARD ST***	***N 1/2 - 1 (0.909 mi.)***	***S127***	***96***

CA HAZNET: The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000-1,000,000 annually, representing approximately 350,000-500,000 shipments. Data from non-California manifests & continuation sheets are not included at the present time. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, & disposal method. The source is the Department of Toxic Substance Control is the agency. This database begins with calendar year 1993.

A review of the CA HAZNET list, as provided by EDR, has revealed that there are 3 CA HAZNET sites

within approximately 1 mile of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
I A O INTERMEDIATE S GEPAID: HIP000114447	***1910 KAOHU ST***	***NNE 1/2 - 1 (0.648 mi.)***	***G30***	***26***
GTE HAWAIIAN TEL GEPAID: HIC981116044	60 S CHURCH ST	NNE 1/2 - 1 (0.785 mi.)	L70	57
1X ALULI TRUST ESTAT GEPAID: HIC020104006	31 N MARKET ST	NNE 1/2 - 1 (0.883 mi.)	P105	83

HI UIC: A listing of underground injection well locations.

A review of the HI UIC list, as provided by EDR, and dated 02/07/2013 has revealed that there are 2 HI UIC sites within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
HIGH STREET MISCELLA Facility Id/Lat Long Min Coord: 6- UIC Permit Number: UM-2158		NNW 1/2 - 1 (0.615 mi.)	26	23

Lower Elevation	Address	Direction / Distance	Map ID	Page
NAHOLO CIRCLE DWS Facility Id/Lat Long Min Coord: 6-5329.04.1 UIC Permit Number: UM-1516	200 S. HIGH ST.	N 1/2 - 1 (0.656 mi.)	H45	43

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR Hist Auto: EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

A review of the EDR Hist Auto list, as provided by EDR, has revealed that there are 9 EDR Hist Auto sites within approximately 1.125 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
Not reported	600 WAIALE RD	E 1/4 - 1/2 (0.435 mi.)	A9	16
Not reported	500 WAIALE RD	ENE 1/2 - 1 (0.514 mi.)	D19	20
Not reported	2085 MAIN ST	NNE 1/2 - 1 (0.813 mi.)	L78	63
Not reported	2026 MAIN ST	NNE 1/2 - 1 (0.847 mi.)	P91	73
Not reported	1990 MAIN ST	NNE 1/2 - 1 (0.867 mi.)	Q100	80
Not reported	1941 MAIN ST	NNE 1/2 - 1 (0.892 mi.)	Q110	85

Lower Elevation	Address	Direction / Distance	Map ID	Page
Not reported	1820 WELLS ST	NNE 1/2 - 1 (0.896 mi.)	T115	91
Not reported	1818 OIHANA ST	NNE 1/2 - 1 (0.967 mi.)	W137	103
Not reported	51 WAIALE RD	NNE 1 - 2 (1.000 mi.)	138	103

EDR Hist Cleaner: EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

A review of the EDR Hist Cleaner list, as provided by EDR, has revealed that there is 1 EDR Hist Cleaner site within approximately 1.125 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
Not reported	23 KIEKIENA PL	E 1/2 - 1 (0.881 mi.)	104	83

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

HI RGA HWS: The EDR Recovered Government Archive State Hazardous Waste database provides a list of SHWS incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Health in Hawaii.

A review of the HI RGA HWS list, as provided by EDR, has revealed that there are 9 HI RGA HWS sites within approximately 1 mile of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
WAIMALUHIA MAUI METH	115 WAIMALUHIA LANE	ESE 1/2 - 1 (0.614 mi.)	E23	21
WAIMALUHIA MAUI METH	115 WAIMALUHIA LN	ESE 1/2 - 1 (0.614 mi.)	E25	23
ORGANIZATIONAL MAINT	260 S MARKET ST	NNE 1/2 - 1 (0.676 mi.)	I48	45
Not reported	260 SOUTH MARKET ST	NNE 1/2 - 1 (0.676 mi.)	I49	46
ALVIN'S UPTOWN CHEVR	2085 WEST MAIN ST	NNE 1/2 - 1 (0.813 mi.)	L75	60
MAIN STREET PROMENAD	2058 MAIN ST	NNE 1/2 - 1 (0.831 mi.)	P89	72
VALLEY ISLE MOTORS L	2026 MAIN ST	NNE 1/2 - 1 (0.847 mi.)	P92	73
Not reported	2102 VINEYARD ST	N 1/2 - 1 (0.896 mi.)	S116	91
MAUI VINEYARD INN, U	2102 VINEYARD ST	N 1/2 - 1 (0.896 mi.)	S118	92

HI RGA LF: The EDR Recovered Government Archive Landfill database provides a list of landfills derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Health in Hawaii.

A review of the HI RGA LF list, as provided by EDR, has revealed that there are 3 HI RGA LF sites

within approximately 1 mile of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
LANAI LANDFILL	1827 KAUHU ST.	NE 1/2 - 1 (0.619 mi.)	F29	26
CENTRAL MAUI LANDFIL	200 SOUTH HIGH ST.	N 1/2 - 1 (0.656 mi.)	H36	30
CENTRAL MAUI LANDFIL	200 SOUTH HIGH ST.	N 1/2 - 1 (0.656 mi.)	H38	30

HI RGA LUST: The EDR Recovered Government Archive Leaking Underground Storage Tank database provides a list of LUST incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Health in Hawaii.

A review of the HI RGA LUST list, as provided by EDR, has revealed that there are 14 HI RGA LUST sites within approximately 1 mile of the target property.

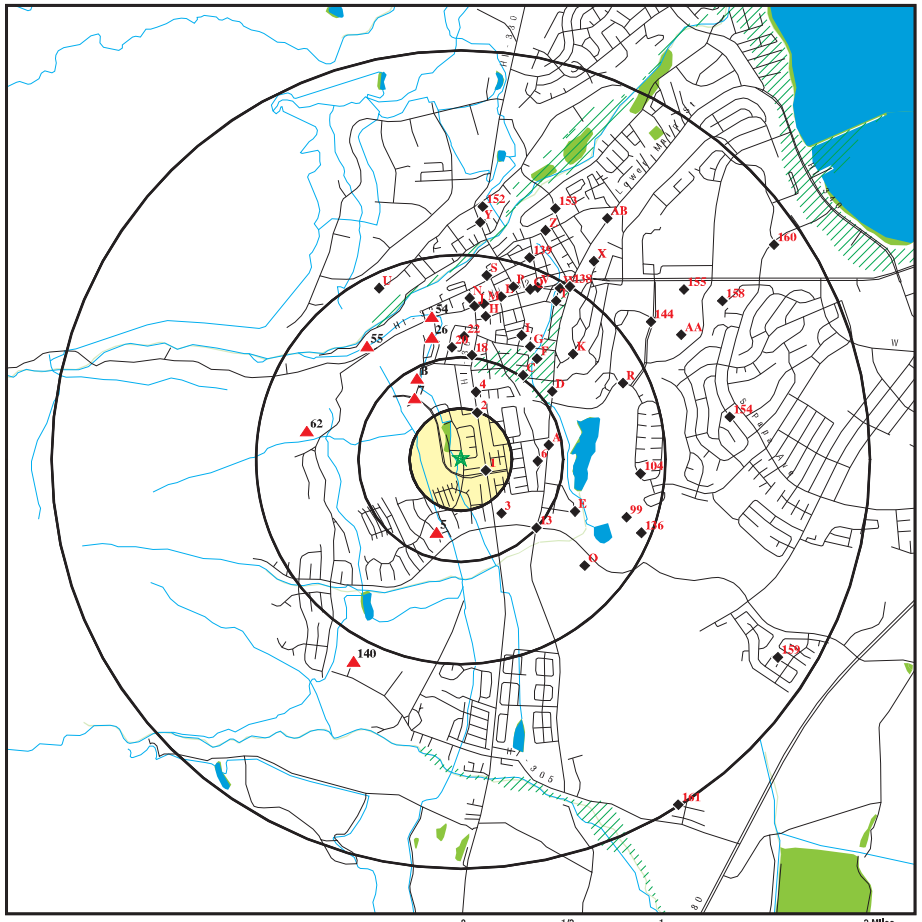
Lower Elevation	Address	Direction / Distance	Map ID	Page
COUNTY OF MAUI - CIV Facility ID: 9-503420	200 S HIGH ST	N 1/2 - 1 (0.656 mi.)	H37	30
COUNTY OF MAUI - CI Facility ID: 9-503420	200 S HIGH ST	N 1/2 - 1 (0.656 mi.)	H43	43
HOAPILI HALE - MAUI Facility ID: 9-503536	2145 MAIN ST.	N 1/2 - 1 (0.770 mi.)	M64	53
WAILUKU CENTRAL OFFI Facility ID: 9-500552	60 S CHURCH ST	NNE 1/2 - 1 (0.785 mi.)	L68	56
UPTOWN SERVICE Facility ID: 9-501128	2085 MAIN ST	NNE 1/2 - 1 (0.813 mi.)	L80	65
MAUI SHELL SERVICE Facility ID: 9-501008	2086 MAIN STREET	NNE 1/2 - 1 (0.819 mi.)	L81	66
MAUI SHELL SERVICE Facility ID: 9-501008	2086 MAIN ST	NNE 1/2 - 1 (0.819 mi.)	L82	66
MINIT STOP SHELL MAR Facility ID: 9-501008	2086 MAIN ST	NNE 1/2 - 1 (0.819 mi.)	L83	66
COURTHOUSE SHELL Facility ID: 9-501008	2086 MAIN ST	NNE 1/2 - 1 (0.819 mi.)	L85	67
VALLEY ISLE MOTORS, Facility ID: 9-501588	2026 MAIN ST	NNE 1/2 - 1 (0.847 mi.)	P94	78
VALLEY ISLE MOTORS, Facility ID: 9-501588	2026 MAIN STREET	NNE 1/2 - 1 (0.847 mi.)	P96	79
LOKAHI PACIFIC Facility ID: 9-501603	1935 MAIN ST	NNE 1/2 - 1 (0.896 mi.)	Q113	89
2102 VINEYARD ST. Facility ID: 9-503115	2102 VINEYARD ST	N 1/2 - 1 (0.896 mi.)	S119	92
WAILUKU FIRE STATION Facility ID: 9-502764	21 KINIPOPO ST	NNE 1/2 - 1 (0.945 mi.)	W135	102

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 9 records.

Site Name	Database(s)
VECTOR CONTROL BRANCH, MAUI	HI SHWS
A&B DUMP SITE	HI SHWS
WAIKAPU DUMP-MAUI COUNTY DUMP	HI SHWS
WAIALE ASH PILE	HI SHWS
WAIKAPU DUMP-MAUI COUNTY DUMP	CERCLIS-NFRAP
ALEXANDER & BALDWIN DUMP SITE	CERCLIS-NFRAP
VECTOR CONTROL BRANCH	CERCLIS-NFRAP, RCRA NonGen / NLR
ALOHA KEHALANI VILLAGE	HI UST, HI Financial Assurance
ALOHA KEHALANI VILLAGE	FINDS

OVERVIEW MAP - 4529586.2S



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- State Wetlands

0 1/2 1 2 Miles

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Kehalani Property ADDRESS: 11 KEHALANI VILLAGE DR WAILUKU HI 96793 LAT/LONG: 20.876029 / 156.505865	CLIENT: Bureau Veritas North America, Inc. CONTACT: Bryan Starks INQUIRY #: 4529586.2s DATE: February 04, 2016 8:36 am

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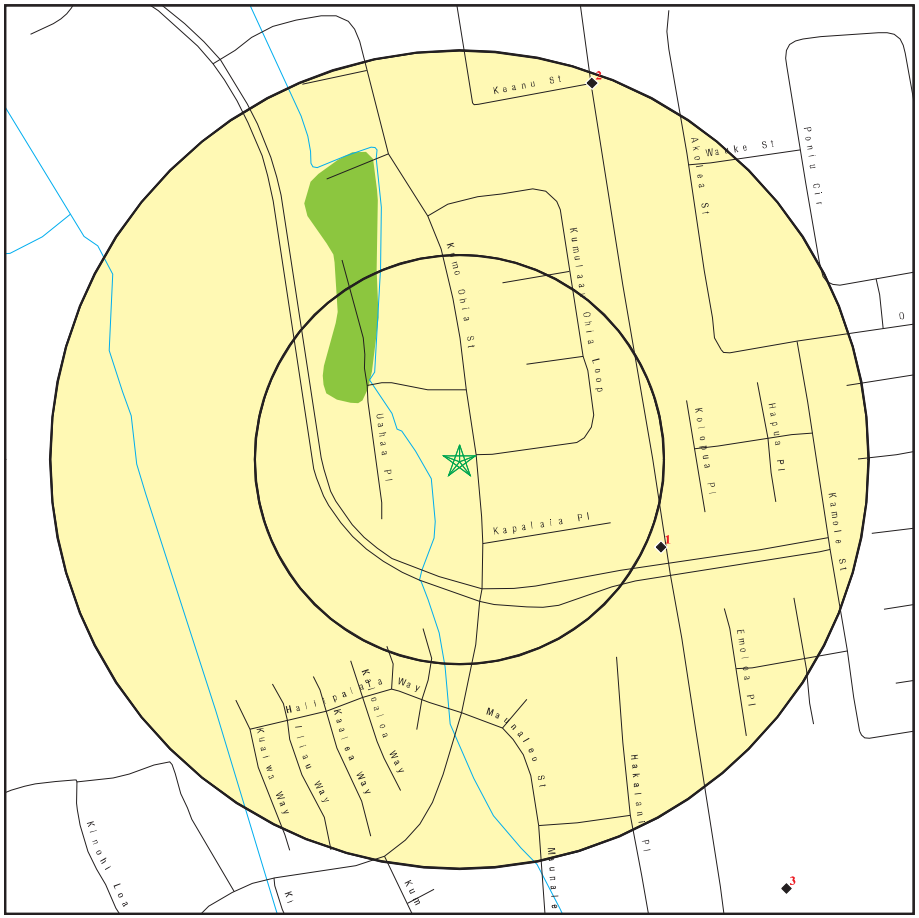
DETAIL MAP - 4529586.2S



0 1/16 1/8 1/4 Miles

- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- State Wetlands

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Kehalani Property ADDRESS: 11 KEHALANI VILLAGE DR WAILUKU HI 96793 LAT/LONG: 20.876029 / 156.505865	CLIENT: Bureau Veritas North America, Inc. CONTACT: Bryan Starks INQUIRY #: 4529586.2s DATE: February 04, 2016 8:37 am

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MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	2.000		0	0	0	0	0	0
Proposed NPL	2.000		0	0	0	0	0	0
NPL LIENS	1.000		0	0	0	0	NR	0
Federal Delisted NPL site list								
Delisted NPL	2.000		0	0	0	0	0	0
Federal CERCLIS list								
FEDERAL FACILITY	1.500		0	0	0	0	0	0
CERCLIS	1.500		0	0	0	0	0	0
Federal CERCLIS NFRAP site List								
CERCLIS-NFRAP	1.500		0	0	0	0	1	1
Federal RCRA CORRACTS facilities list								
CORRACTS	2.000		0	0	0	0	0	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	1.500		0	0	0	0	0	0
Federal RCRA generators list								
RCRA-LQG	1.250		0	0	0	0	0	0
RCRA-SQG	1.250		0	0	0	1	1	2
RCRA-CESQG	1.250		0	0	0	6	1	7
Federal institutional controls / engineering controls registries								
LUCIS	1.500		0	0	0	0	0	0
US ENG CONTROLS	1.500		0	0	0	0	0	0
US INST CONTROL	1.500		0	0	0	0	0	0
Federal ERNS list								
ERNS	1.000		0	0	0	0	NR	0
State- and tribal - equivalent CERCLIS								
HI SHWS	2.000		0	0	0	6	10	16
State and tribal landfill and/or solid waste disposal site lists								
HI SWF/LF	1.500		0	0	0	0	0	0
State and tribal leaking storage tank lists								
HI LUST	1.500		0	0	0	8	4	12
INDIAN LUST	1.500		0	0	0	0	0	0
State and tribal registered storage tank lists								
FEMA UST	1.250		0	0	0	0	0	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
HI UST	1.250		0	0	1	19	6	26
INDIAN UST	1.250		0	0	0	0	0	0
State and tribal institutional control / engineering control registries								
HI ENG CONTROLS	1.500		0	0	0	0	0	0
HI INST CONTROL	1.500		0	0	0	0	1	1
State and tribal voluntary cleanup sites								
HI VCP	1.500		0	0	0	0	0	0
INDIAN VCP	1.500		0	0	0	0	0	0
State and tribal Brownfields sites								
HI BROWNFIELDS	1.500		0	0	0	0	0	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	1.500		0	0	0	0	0	0
Local Lists of Landfill / Solid Waste Disposal Sites								
INDIAN ODI	1.500		0	0	0	0	0	0
DEBRIS REGION 9	1.500		0	0	0	0	0	0
ODI	1.500		0	0	0	0	0	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	1.000		0	0	0	0	NR	0
HI CDL	1.000		0	0	0	1	NR	1
US CDL	1.000		0	0	0	0	NR	0
Local Land Records								
LIENS 2	1.000		0	0	0	0	NR	0
Records of Emergency Release Reports								
HMIRS	1.000		0	0	0	0	NR	0
HI SPILLS	1.000		0	0	2	10	NR	12
HI SPILLS 90	1.000		0	0	0	0	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	1.250		0	0	0	4	4	8
FUDS	2.000		0	0	0	0	0	0
DOD	2.000		0	0	0	0	0	0
SCRD DRYCLEANERS	1.500		0	0	0	0	0	0
US FIN ASSUR	1.000		0	0	0	0	NR	0
EPA WATCH LIST	1.000		0	0	0	0	NR	0
2020 COR ACTION	1.250		0	0	0	0	0	0
TSCA	1.000		0	0	0	0	NR	0
TRIS	1.000		0	0	0	0	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
SSTS	1.000		0	0	0	0	NR	0
ROD	2.000		0	0	0	0	0	0
RMP	1.000		0	0	0	0	NR	0
RAATS	1.000		0	0	0	0	NR	0
PRP	1.000		0	0	0	0	NR	0
PADS	1.000		0	0	0	0	NR	0
ICIS	1.000		0	0	0	1	NR	1
FTTS	1.000		0	0	0	2	NR	2
MLTS	1.000		0	0	0	0	NR	0
COAL ASH DOE	1.000		0	0	0	0	NR	0
COAL ASH EPA	1.500		0	0	0	0	0	0
PCB TRANSFORMER	1.000		0	0	0	0	NR	0
RADINFO	1.000		0	0	0	0	NR	0
HIST FTTS	1.000		0	0	0	2	NR	2
DOT OPS	1.000		0	0	0	0	NR	0
CONSENT	2.000		0	0	0	0	0	0
INDIAN RESERV	2.000		0	0	0	0	0	0
UMTRA	1.500		0	0	0	0	0	0
LEAD SMELTERS	1.000		0	0	0	0	NR	0
US AIRS	1.000		0	0	0	0	NR	0
US MINES	1.250		0	0	1	0	0	1
FINDS	1.000		0	2	6	49	NR	57
HI AIRS	1.000		0	0	0	0	NR	0
HI DRYCLEANERS	1.250		0	0	0	0	0	0
HI Financial Assurance	1.000		0	0	1	8	NR	9
CA HAZNET	1.000		0	0	0	3	NR	3
HI UIC	1.000		0	0	0	2	NR	2
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	2.000		0	0	0	0	0	0
EDR Hist Auto	1.125		0	0	1	7	1	9
EDR Hist Cleaner	1.125		0	0	0	1	0	1
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
HI RGA HWS	1.000		0	0	0	9	NR	9
HI RGA LF	1.000		0	0	0	3	NR	3
HI RGA LUST	1.000		0	0	0	14	NR	14
- Totals --		0	0	2	12	156	29	199

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

1 ESE 1/8-1/4 0.134 mi. 708 ft. — **SITE 11 AT KEHALANI**, **SOUTHEAST CORNER OF KEHALANI**, **WAILUKU, HI 96793** — **FINDS** — **1009403802** / **N/A**

Relative: Lower

Actual: 330 ft.

FINDS:

Registry ID: 110024878033

Environmental Interest/Information System
US National Pollutant Discharge Elimination System (NPDES) module of the Compliance Information System (ICIS) tracks surface water permits issued under the Clean Water Act. Under NPDES, all facilities that discharge pollutants from any point source into waters of the United States are required to obtain a permit. The permit will likely contain limits on what can be discharged, impose monitoring and reporting requirements, and include other provisions to ensure that the discharge does not adversely affect water quality.

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2 NNE 1/8-1/4 0.244 mi. 1288 ft. — **HONOAPIILANI HIGHWAY RESURFACI**, **HONOAPIILANI HIGHWAY, RTE 30**, **WAILUKU, HI 96793** — **FINDS** — **1008919101** / **N/A**

Relative: Lower

Actual: 329 ft.

FINDS:

Registry ID: 110022911820

Environmental Interest/Information System
US National Pollutant Discharge Elimination System (NPDES) module of the Compliance Information System (ICIS) tracks surface water permits issued under the Clean Water Act. Under NPDES, all facilities that discharge pollutants from any point source into waters of the United States are required to obtain a permit. The permit will likely contain limits on what can be discharged, impose monitoring and reporting requirements, and include other provisions to ensure that the discharge does not adversely affect water quality.

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3 SE 1/4-1/2 0.330 mi. 1740 ft. — **KEHALANI VILLAGE CENTER FOODLAND**, **NORTHEAST CORNER OF HONOAPIILANI HWY. AND KUIKAHI**, **WAILUKU, HI 96793** — **FINDS** — **1016391085** / **N/A**

Relative: Lower

Actual: 335 ft.

FINDS:

Registry ID: 110055245015

Environmental Interest/Information System
US National Pollutant Discharge Elimination System (NPDES) module of the Compliance Information System (ICIS) tracks surface water permits issued under the Clean Water Act. Under NPDES, all facilities that discharge pollutants from any point source into waters of the United States are required to obtain a permit. The permit will likely contain

KEHALANI VILLAGE CENTER FOODLAND (Continued) — **1016391085**

limits on what can be discharged, impose monitoring and reporting requirements, and include other provisions to ensure that the discharge does not adversely affect water quality.

STATE MASTER

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4 NNE 1/4-1/2 0.339 mi. 1789 ft. — **HAWAIIAN CEMENT**, **MAUI (County), HI** — **US MINES** — **1016521967** / **N/A**

Relative: Lower

Actual: 324 ft.

US MINES:

Mine ID:	5100171
SIC code(s):	142900 000000 000000 000000 000000 000000
Entity name:	WAIKAPU QUARRY
Company:	HAWAIIAN CEMENT
Status:	1
Status date:	20041015
Operation Class:	non-Coal Mining
Number of shops:	0
Number of plants:	0
Latitude:	20 52 51
Longitude:	156 30 17

Violations Details:

Violation Number:	6435588
Date Issued:	12/15/2007
Mine Status:	Active
Status Date:	10/15/2004
Action Type:	104(a)
Date Abated:	12/15/2007
Citation/Order:	Citation
Sig and Sub Designation:	N
Proposed Penalty:	207.00
Paid Penalty:	207.00
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	207.00
Year:	2007

Violation Number:	6367329
Date Issued:	12/14/2004
Mine Status:	Active
Status Date:	10/15/2004
Action Type:	104(a)
Date Abated:	12/17/2004
Citation/Order:	Citation
Sig and Sub Designation:	N
Proposed Penalty:	60.00
Paid Penalty:	60.00
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	60.00
Year:	2004

HAWAIIAN CEMENT (Continued) **1016521967**

Violation Number: 6367334
Date Issued: 12/14/2004
Mine Status: Active
Status Date: 10/15/2004
Action Type: 104(a)
Date Abated: 12/17/2004
Citation/Order: Citation
Sig and Sub Designation: N
Proposed Penalty: 60.00
Paid Penalty: 60.00
Assessment Status code: Closed
Assess. Case Status code: Proposed
Assessment Amount: 60.00
Year: 2004

Violation Number: 6367333
Date Issued: 12/14/2004
Mine Status: Active
Status Date: 10/15/2004
Action Type: 104(a)
Date Abated: 12/17/2004
Citation/Order: Citation
Sig and Sub Designation: N
Proposed Penalty: 60.00
Paid Penalty: 60.00
Assessment Status code: Closed
Assess. Case Status code: Proposed
Assessment Amount: 60.00
Year: 2004

Violation Number: 6367327
Date Issued: 12/14/2004
Mine Status: Active
Status Date: 10/15/2004
Action Type: 104(a)
Date Abated: 12/17/2004
Citation/Order: Citation
Sig and Sub Designation: N
Proposed Penalty: 60.00
Paid Penalty: 60.00
Assessment Status code: Closed
Assess. Case Status code: Proposed
Assessment Amount: 60.00
Year: 2004

Violation Number: 6367328
Date Issued: 12/14/2004
Mine Status: Active
Status Date: 10/15/2004
Action Type: 104(a)
Date Abated: 12/17/2004
Citation/Order: Citation
Sig and Sub Designation: N
Proposed Penalty: 60.00
Paid Penalty: 60.00
Assessment Status code: Closed
Assess. Case Status code: Proposed

HAWAIIAN CEMENT (Continued) **1016521967**

Assessment Amount: 60.00
Year: 2004

Violation Number: 6367335
Date Issued: 12/14/2004
Mine Status: Active
Status Date: 10/15/2004
Action Type: 104(a)
Date Abated: 12/15/2004
Citation/Order: Citation
Sig and Sub Designation: N
Proposed Penalty: 60.00
Paid Penalty: 60.00
Assessment Status code: Closed
Assess. Case Status code: Proposed
Assessment Amount: 60.00
Year: 2004

Violation Number: 6367330
Date Issued: 12/14/2004
Mine Status: Active
Status Date: 10/15/2004
Action Type: 104(a)
Date Abated: 12/17/2004
Citation/Order: Citation
Sig and Sub Designation: N
Proposed Penalty: 60.00
Paid Penalty: 60.00
Assessment Status code: Closed
Assess. Case Status code: Proposed
Assessment Amount: 60.00
Year: 2004

Violation Number: 6367331
Date Issued: 12/14/2004
Mine Status: Active
Status Date: 10/15/2004
Action Type: 104(a)
Date Abated: 12/17/2004
Citation/Order: Citation
Sig and Sub Designation: N
Proposed Penalty: 60.00
Paid Penalty: 60.00
Assessment Status code: Closed
Assess. Case Status code: Proposed
Assessment Amount: 60.00
Year: 2004

Violation Number: 6367332
Date Issued: 12/14/2004
Mine Status: Active
Status Date: 10/15/2004
Action Type: 104(a)
Date Abated: 12/17/2004
Citation/Order: Citation
Sig and Sub Designation: N
Proposed Penalty: 60.00

HAWAIIAN CEMENT (Continued) **1016521967**

Paid Penalty: 60.00
Assessment Status code: Closed
Assess. Case Status code: Proposed
Assessment Amount: 60.00
Year: 2004

Violation Number: 8562996
Date Issued: 12/01/2011
Mine Status: Active
Status Date: 10/15/2004
Action Type: 104(a)
Date Abated: 12/02/2011
Citation/Order: Citation
Sig and Sub Designation: N
Proposed Penalty: 100.00
Paid Penalty: 100.00
Assessment Status code: Closed
Assess. Case Status code: Proposed
Assessment Amount: 100.00
Year: 2011

Violation Number: 8554033
Date Issued: 10/21/2009
Mine Status: Active
Status Date: 10/15/2004
Action Type: 104(a)
Date Abated: 10/21/2009
Citation/Order: Citation
Sig and Sub Designation: N
Proposed Penalty: 100.00
Paid Penalty: 100.00
Assessment Status code: Closed
Assess. Case Status code: Proposed
Assessment Amount: 100.00
Year: 2009

Violation Number: 6395644
Date Issued: 06/12/2007
Mine Status: Active
Status Date: 10/15/2004
Action Type: 104(a)
Date Abated: 06/14/2007
Citation/Order: Citation
Sig and Sub Designation: N
Proposed Penalty: 100.00
Paid Penalty: 100.00
Assessment Status code: Closed
Assess. Case Status code: Proposed
Assessment Amount: 100.00
Year: 2007

Violation Number: 6395642
Date Issued: 06/11/2007
Mine Status: Active
Status Date: 10/15/2004
Action Type: 104(a)
Date Abated: 06/13/2007

HAWAIIAN CEMENT (Continued) **1016521967**

Citation/Order: Citation
Sig and Sub Designation: N
Proposed Penalty: 100.00
Paid Penalty: 100.00
Assessment Status code: Closed
Assess. Case Status code: Proposed
Assessment Amount: 100.00
Year: 2007

Violation Number: 6395643
Date Issued: 06/11/2007
Mine Status: Active
Status Date: 10/15/2004
Action Type: 104(a)
Date Abated: 06/14/2007
Citation/Order: Citation
Sig and Sub Designation: N
Proposed Penalty: 100.00
Paid Penalty: 100.00
Assessment Status code: Closed
Assess. Case Status code: Proposed
Assessment Amount: 100.00
Year: 2007

Violation Number: 6392010
Date Issued: 05/17/2006
Mine Status: Active
Status Date: 10/15/2004
Action Type: 104(a)
Date Abated: 05/17/2006
Citation/Order: Citation
Sig and Sub Designation: N
Proposed Penalty: Not reported
Paid Penalty: Not reported
Assessment Status code: Not reported
Assess. Case Status code: Not reported
Assessment Amount: Not reported
Year: 2006

Violation Number: 6392009
Date Issued: 05/16/2006
Mine Status: Active
Status Date: 10/15/2004
Action Type: 104(a)
Date Abated: 05/17/2006
Citation/Order: Citation
Sig and Sub Designation: N
Proposed Penalty: 324.00
Paid Penalty: 324.00
Assessment Status code: Closed
Assess. Case Status code: Proposed
Assessment Amount: 324.00
Year: 2006

Violation Number: 6392008
Date Issued: 05/16/2006
Mine Status: Active

HAWAIIAN CEMENT (Continued) **1016521967**

Status Date:	10/15/2004
Action Type:	104(a)
Date Abated:	05/16/2006
Citation/Order:	Citation
Sig and Sub Designation:	N
Proposed Penalty:	324.00
Paid Penalty:	324.00
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	324.00
Year:	2006

Violation Number:	6392007
Date Issued:	05/16/2006
Mine Status:	Active
Status Date:	10/15/2004
Action Type:	104(a)
Date Abated:	05/17/2006
Citation/Order:	Citation
Sig and Sub Designation:	N
Proposed Penalty:	324.00
Paid Penalty:	324.00
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	324.00
Year:	2006

Violation Number:	6392793
Date Issued:	05/07/2007
Mine Status:	Active
Status Date:	10/15/2004
Action Type:	104(a)
Date Abated:	05/08/2007
Citation/Order:	Citation
Sig and Sub Designation:	N
Proposed Penalty:	687.00
Paid Penalty:	687.00
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	687.00
Year:	2007

HAWAIIAN CEMENT (Continued) **1016521967**

Click this hyperlink while viewing on your computer to access
25 additional US_MINES: record(s) in the EDR Site Report.

5
SSW
1/4-1/2
0.374 mi.
1976 ft.

95 KINOHI LOA LOOP
WAILUKU, HI 96793

HI SPILLS **S117391563**
N/A

Relative:
Higher

Actual:
481 ft.

HI SPILLS:

Island:	Maui
Supplemental Loc. Text:	Not reported
Case Number:	20141120-1423
HID Number:	Not reported
Facility Registry Id:	Not reported
Lead and Program:	HEER EP&R
ER:	None
Units:	MECO PAD-MOUNTED TRANSFORMER #22356 RELEASE
Substances:	Transformer Oil
Less Or Greater Than:	>
Numerical Quantity:	11
Units:	Gallons
Activity Type:	Response
Activity Lead:	Curtis Martin
Assignment End Date:	2014-12-02 00:00:00
Result:	SOSC NFA
File Under:	Not reported

6
East
1/4-1/2
0.376 mi.
1986 ft.

MECO PAD-MOUNTED #16664 TRANSFORMER RELEASE
1627 B MILL ST
WAILUKU, HI 96793

HI SPILLS **S111677004**
N/A

Relative:
Lower

Actual:
261 ft.

HI SPILLS:

Island:	Maui
Supplemental Loc. Text:	Not reported
Case Number:	20110620-0806
HID Number:	Not reported
Facility Registry Id:	Not reported
Lead and Program:	HEER EP&R
ER:	None
Units:	644 Meakanu Mercury
Substances:	Mercury
Less Or Greater Than:	Not reported
Numerical Quantity:	1
Units:	Pints
Activity Type:	Response
Activity Lead:	Liz Galvez
Assignment End Date:	Not reported
Result:	Not reported
File Under:	Not reported

Island:	Maui
Supplemental Loc. Text:	Not reported
Case Number:	20131002-0319

MECO PAD-MOUNTED #16664 TRANSFORMER RELEASE (Continued) **S111677004**

HID Number:	Not reported
Facility Registry Id:	Not reported
Lead and Program:	HEER EP&R
ER:	None
Units:	MECO pad-mounted #16664 transformer release
Substances:	Transformer Oil
Less Or Greater Than:	>
Numerical Quantity:	0
Units:	Unknown
Activity Type:	Response
Activity Lead:	Curtis Martin
Assignment End Date:	Not reported
Result:	Not reported
File Under:	Not reported

7
NW
1/4-1/2
0.377 mi.
1988 ft.

Relative:
Higher

Actual:
416 ft.

MILO COURT PHASE II **FINDS** **1017381159**
OMAOMAO STREET **N/A**
WAILUKU, HI 96793

FINDS:

Registry ID: 110062652990

Environmental Interest/Information System
US National Pollutant Discharge Elimination System (NPDES) module of the Compliance Information System (ICIS) tracks surface water permits issued under the Clean Water Act. Under NPDES, all facilities that discharge pollutants from any point source into waters of the United States are required to obtain a permit. The permit will likely contain limits on what can be discharged, impose monitoring and reporting requirements, and include other provisions to ensure that the discharge does not adversely affect water quality.

A8
East
1/4-1/2
0.435 mi.
2298 ft.

Relative:
Lower

Actual:
247 ft.

MAUI COMMUNITY CORRECTIONAL CENTER **HI UST** **U003222248**
600 WAIALE DR **HI Financial Assurance** **N/A**
WAILUKU, HI 96793

Site 1 of 3 in cluster A

UST:

Facility ID:	9-501801
Owner:	STATE PSD - MAUI COMMUNITY CORRECTIONAL CENTER
Owner Address:	600 WAIALE DRIVE
Owner City,St,Zip:	Wailuku, 96793 96793
Latitude:	Not reported
Longitude:	Not reported
Horizontal Reference Datum Name:	Not reported
Horizontal Collection Method Name:	Not reported
Tank ID:	R-1
Date Installed:	12/31/1959
Tank Status:	**Permanently Out of Use**
Date Closed:	10/20/1992

MAUI COMMUNITY CORRECTIONAL CENTER (Continued) **U003222248**

Tank Capacity:	550
Substance:	Gasoline

HI Financial Assurance:

Alt Facility ID:	9-501801
Tank Id:	R-1
Tank Status:	Permanently Out of Use
FRTYPE:	Letter of Credit
Expiration Date:	Not reported

A9
East
1/4-1/2
0.435 mi.
2298 ft.

Relative:
Lower

Actual:
247 ft.

EDR Hist Auto **1015567568**
600 WAIALE RD **N/A**
WAILUKU, HI 96793

Site 2 of 3 in cluster A

EDR Historical Auto Stations:

Name:	LAHAINA AUTO BODY
Year:	2002
Address:	600 WAIALE RD

A10
East
1/4-1/2
0.435 mi.
2298 ft.

Relative:
Lower

Actual:
247 ft.

MAUI COMMUNITY CORRECTIONAL CENTER **FINDS** **1015829092**
600 WAIALE ROAD **N/A**
WAILUKU, HI 96793

Site 3 of 3 in cluster A

FINDS:

Registry ID: 110046192687

Environmental Interest/Information System
STATE MASTER

B11
NNW
1/4-1/2
0.451 mi.
2382 ft.

Relative:
Higher

Actual:
393 ft.

WAILUKU - WAILUKU AG. SHAFT 33 CHLORINATOR **FINDS** **1016380663**
N/A
WAILUKU (DWS), HI 96761

Site 1 of 2 in cluster B

FINDS:

Registry ID: 110055125546

Environmental Interest/Information System
STATE MASTER

B12 NNW 1/4-1/2 0.451 mi. 2382 ft. — **WAILUKU - WAILUKU AG. SHAFT 33** — **FINDS** — **1016368670** / **N/A**

WAILUKU (DWS), HI 96761

Site 2 of 2 in cluster B

Relative: Higher

Actual: 393 ft.

FINDS:

Registry ID: 110046190368

Environmental Interest/Information System
STATE MASTER

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13 SE 1/4-1/2 0.498 mi. 2627 ft. — **WALGREENS #15115 AT MAUI LANI VILLAGE CENTER** — **FINDS** — **1016692553** / **N/A**

INTERSECTION OF WAIALE ROAD AND KUIKAHI DRIVE
WAILUKU, HI 96793

Relative: Lower

Actual: 313 ft.

FINDS:

Registry ID: 110054911752

Environmental Interest/Information System
US National Pollutant Discharge Elimination System (NPDES) module of the Compliance Information System (ICIS) tracks surface water permits issued under the Clean Water Act. Under NPDES, all facilities that discharge pollutants from any point source into waters of the United States are required to obtain a permit. The permit will likely contain limits on what can be discharged, impose monitoring and reporting requirements, and include other provisions to ensure that the discharge does not adversely affect water quality.

STATE MASTER

C14 NE 1/2-1 0.505 mi. 2667 ft. — **MERCURY 1939 MAKAHALA PLACE** — **HI SPILLS** — **S111677706** / **N/A**

1939 MAKAHALA PL
WAILUKU, HI 96793

Site 1 of 2 in cluster C

Relative: Lower

Actual: 242 ft.

HI SPILLS:

Island:	Maui
Supplemental Loc. Text:	1939 Makahala Place - Mercury
Case Number:	20100210-1751
HID Number:	Not reported
Facility Registry Id:	Not reported
Lead and Program:	HEER EP&R
ER:	None
Units:	Mercury 1939 Makahala Place
Substances:	Mercury
Less Or Greater Than:	Not reported
Numerical Quantity:	1
Units:	Pounds
Activity Type:	Response
Activity Lead:	Liz Galvez

MERCURY 1939 MAKAHALA PLACE (Continued) — **S111677706**

Assignment End Date:	2013-01-28 00:00:00
Result:	SOSC NFA
File Under:	Not reported

D15 ENE 1/2-1 0.509 mi. 2686 ft. — **MAUI MEMORIAL PARK, INC.** — **HI UST** — **U003222231** / **N/A**

485 WAIALE DR
WAILUKU, HI 96793

Site 1 of 4 in cluster D

Relative: Lower

Actual: 220 ft.

UST:

Facility ID:	9-501570
Owner:	MAUI FUNERAL TRUST
Owner Address:	P. O. BOX 1440
Owner City,St,Zip:	Wailuku, 96793 96793
Latitude:	Not reported
Longitude:	Not reported
Horizontal Reference Datum Name:	Not reported
Horizontal Collection Method Name:	Not reported
Tank ID:	R-1
Date Installed:	Not reported
Tank Status:	**Permanently Out of Use**
Date Closed:	07/12/1991
Tank Capacity:	1000
Substance:	Gasoline
Tank ID:	R-2
Date Installed:	Not reported
Tank Status:	**Permanently Out of Use**
Date Closed:	07/12/1991
Tank Capacity:	2500
Substance:	Gasoline

D16 ENE 1/2-1 0.509 mi. 2686 ft. — **MAUI MEMORIAL PARK, INC.** — **FINDS** — **1015843247** / **N/A**

485 WAIALE ROAD
WAILUKU, HI 96793

Site 2 of 4 in cluster D

Relative: Lower

Actual: 220 ft.

FINDS:

Registry ID: 110055402014

Environmental Interest/Information System
STATE MASTER

C17 NE 1/2-1 0.513 mi. 2708 ft. — **MERCURY - 1934 MAKAHALA PLACE**, **1934 MAKAHALA PL**, **WAILUKU, HI 96793** — **HI SPILLS** — **S115555450** / **N/A**

Site 2 of 2 in cluster C

Relative: Lower

Actual: 240 ft.

HI SPILLS:

Island:	Maui
Supplemental Loc. Text:	Not reported
Case Number:	20130123-1119
HID Number:	Not reported
Facility Registry Id:	Not reported
Lead and Program:	HEER EP&R
ER:	Off Scene
Units:	Mercury - 1934 Makahala Place
Substances:	Mercury
Less Or Greater Than:	Not reported
Numerical Quantity:	1
Units:	Pounds
Activity Type:	Response
Activity Lead:	Liz Galvez
Assignment End Date:	Not reported
Result:	Not reported
File Under:	Not reported

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18 North 1/2-1 0.514 mi. 2713 ft. — **WAILUKU ELEMENTARY SCHOOL**, **355 SOUTH HIGH STREET**, **WAILUKU, HI 96793** — **FINDS** — **1008313843** / **N/A**

Relative: Lower

Actual: 323 ft.

FINDS:

Registry ID: 110022014817

Environmental Interest/Information System

ICIS (Integrated Compliance Information System) is the Integrated Compliance Information System and provides a database that, when complete, will contain integrated Enforcement and Compliance information across most of EPA's programs. The vision for ICIS is to replace EPA's independent databases that contain Enforcement data with a single repository for that information. Currently, ICIS contains all Federal Administrative and Judicial enforcement actions. This information is maintained in ICIS by EPA in the Regional offices and it Headquarters. A future release of ICIS will replace the Permit Compliance System (PCS) which supports the NPDES and will integrate that information with Federal actions already in the system. ICIS also has the capability to track other activities occurring in the Region that support Compliance and Enforcement programs. These include; Incident Tracking, Compliance Assistance, and Compliance Monitoring.

D19 ENE 1/2-1 0.514 mi. 2716 ft. — **500 WAIALE RD**, **WAILUKU, HI 96793** — **EDR Hist Auto** — **1015522527** / **N/A**

Site 3 of 4 in cluster D

Relative: Lower

Actual: 222 ft.

EDR Historical Auto Stations:

Name:	DONS REPAIR
Year:	2003
Address:	500 WAIALE RD
Name:	DONS REPAIR
Year:	2008
Address:	500 WAIALE RD
Name:	DONS REPAIR
Year:	2009
Address:	500 WAIALE RD
Name:	DONS REPAIR
Year:	2011
Address:	500 WAIALE RD
Name:	DONS REPAIR
Year:	2012
Address:	500 WAIALE RD

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20 North 1/2-1 0.550 mi. 2903 ft. — **MECO POLE-MOUNT TRANSFORMER NO. 8156**, **POLE E-9, 251 KOELI ST**, **WAILUKU, HI 96793** — **HI SPILLS** — **S111677657** / **N/A**

Relative: Lower

Actual: 358 ft.

HI SPILLS:

Island:	Maui
Supplemental Loc. Text:	MECO Pole-Mount Transformer No. 8156 (Pole E-9)
Case Number:	20100909-0922
HID Number:	Not reported
Facility Registry Id:	Not reported
Lead and Program:	HEER EP&R
ER:	None
Units:	MECO POLE MOUNTED TRANSFORMER #8156 RELEASE
Substances:	Transformer Oil
Less Or Greater Than:	>
Numerical Quantity:	5
Units:	Gallons
Activity Type:	Response
Activity Lead:	Curtis Martin
Assignment End Date:	2010-08-06 00:00:00
Result:	SOSC NFA
File Under:	Maui Electric Co., Inc.

D21 NE 1/2-1 0.558 mi. 2947 ft. — **OHANA O NAHINU TRUST DRUMS** — **HI SPILLS** — **S106819426** / **N/A**
455 WAIALE RD
WAILUKU, HI 96793

Site 4 of 4 in cluster D

Relative: Lower
Actual: 234 ft.

HI SPILLS:

Island:	Maui
Supplemental Loc. Text:	Not reported
Case Number:	19990831-0830
HID Number:	Not reported
Facility Registry Id:	Not reported
Lead and Program:	HEER EP&R
ER:	Site Visit
Units:	Ohana O Nahinu Trust Drums
Substances:	Waste Oil
Less Or Greater Than:	Not reported
Numerical Quantity:	Not reported
Units:	Not reported
Activity Type:	Response
Activity Lead:	Mike Cripps
Assignment End Date:	Not reported
Result:	SOSC NFA
File Under:	Not reported

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22 North 1/2-1 0.603 mi. 3186 ft. — **SITE 20 AT KEHALANI** — **FINDS** — **1008171875** / **N/A**
272 A'APUEO PARKWAY
WAILUKU, HI 96793

Relative: Lower
Actual: 350 ft.

FINDS:

Registry ID: 110020725107

Environmental Interest/Information System
US National Pollutant Discharge Elimination System (NPDES) module of the Compliance Information System (ICIS) tracks surface water permits issued under the Clean Water Act. Under NPDES, all facilities that discharge pollutants from any point source into waters of the United States are required to obtain a permit. The permit will likely contain limits on what can be discharged, impose monitoring and reporting requirements, and include other provisions to ensure that the discharge does not adversely affect water quality.

E23 ESE 1/2-1 0.614 mi. 3242 ft. — **WAIMALUHIA MAUI METH / DRUG LAB ACT 170** — **HI RGA HWS** — **S116400669** / **N/A**
115 WAIMALUHIA LANE
WAILUKU, HI

Site 1 of 3 in cluster E

Relative: Lower
Actual: 240 ft.

RGA HWS:

2008 WAIMALUHIA MAUI METH / DRUG LAB ACT 170 115 WAIMALUHIA LANE

E24 ESE 1/2-1 0.614 mi. 3242 ft. — **WAIMALUHIA MAUI METH / DRUG LAB ACT 170** — **HI SHWS, HI CDL, HI SPILLS** — **S108859869** / **N/A**
115 WAIMALUHIA LN
WAILUKU, HI 96793

Site 2 of 3 in cluster E

Relative: Lower
Actual: 240 ft.

SHWS:

Organization:	Not reported
Supplemental Location:	Not reported
Island:	Maui
Environmental Interest:	Waimaluhia Maui Meth / Drug Lab Act 170
HID Number:	Not reported
Facility Registry Identifier:	Not reported
Lead Agency:	HEER
Program:	State
Project Manager:	Anna Fernandez
Hazard Priority:	NFA
Potential Hazards And Controls:	No Hazard
Organization:	Not reported
Island:	Maui
Supplemental Location Text:	Not reported
SDAR Environmental Interest Name:	Waimaluhia Maui Meth / Drug Lab Act 170
HID Number:	Not reported
Facility Registry Identifier:	Not reported
Lead Agency:	HEER
Progran Name:	State
Potential Hazard And Controls:	No Hazard
Priority:	NFA
Assessment:	Response Necessary
Response:	Response Complete
Nature of Contamination:	Found: Methamphetamine in interior of the unit
Nature of Residual Contamination:	Cleaned up to Residential Use
Use Restrictions:	No Hazard Present For Unrestricted Residential Use
Engineering Control:	Not reported
Description of Restrictions:	Not reported
Institutional Control:	Not reported
Within Designated Areawide Contamination:	Not reported
Site Closure Type:	No Further Action Letter - Unrestricted Residential Use
Document Date:	05/07/2007
Document Number:	2007-304-AF
Document Subject:	No Further Action Determination
Project Manager:	Anna Fernandez
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

CDL:

Date Notified:	7/5/2007
Cleanup Status:	Completed / No Further Action Needed / Remediated

HI SPILLS:

Island:	Maui
Supplemental Loc. Text:	Not reported
Case Number:	20070305-0950
HID Number:	Not reported
Facility Registry Id:	Not reported
Lead and Program:	HEER EP&R
ER:	Site Visit
Units:	Waimaluhia Maui Meth
Substances:	Acetone, Red Phosphorous, Methyl Ethyl Ketone, propane, alkalai, meth oil

WAIMALUHIA MAUI METH / DRUG LAB ACT 170 (Continued) **S108859869**

Less Or Greater Than:	Not reported
Numerical Quantity:	0.5
Units:	Gallons
Activity Type:	Response
Activity Lead:	Anna Fernandez
Assignment End Date:	2007-04-01 00:00:00
Result:	Refer to SDAR
File Under:	County of Maui, Police Department
Island:	Maui
Supplemental Loc. Text:	Not reported
Case Number:	20070305-0950
HID Number:	Not reported
Facility Registry Id:	Not reported
Lead and Program:	HEER EP&R
ER:	Site Visit
Units:	Waimaluhia Maui Meth
Substances:	Acetone, Red Phosphorous, Methyl Ethyl Ketone, propane, alkalai, meth oil
Less Or Greater Than:	Not reported
Numerical Quantity:	0.5
Units:	Gallons
Activity Type:	Response
Activity Lead:	Terry Corpus
Assignment End Date:	2007-03-12 00:00:00
Result:	SOSC NFA
File Under:	County of Maui, Police Department

E25 ESE 1/2-1 0.614 mi. 3242 ft. **WAIMALUHIA MAUI METH / DRUG LAB ACT 170** **HI RGA HWS** **S116400670**
115 WAIMALUHIA LN **N/A**
WAILUKU, HI

Site 3 of 3 in cluster E

Relative: Lower

Actual: 240 ft.

RGA HWS:

2012	WAIMALUHIA MAUI METH / DRUG LAB ACT 170	115 WAIMALUHIA LN
2009	WAIMALUHIA MAUI METH / DRUG LAB ACT 170	115 WAIMALUHIA LN

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26 NNW 1/2-1 0.615 mi. 3246 ft. **HIGH STREET MISCELLANEOUS DRAINAGE IMPROVEMENTS** **HI UIC** **S109953304**
N/A
, HI

Relative: Higher

Actual: 397 ft.

UIC:

UIC Permit Number:	UM-2158
Facility Id/Lat Long Minute Coordinates:	6-
Central Latitude Of The Site:	20 53 05
Central Longitude Of The Site:	156 30 29
Flow In Gallons Per Day:	Not reported
Total Number Of Inj. Well(S) On Permit:	Not reported
Island:	Maui
Location In Relation To UIC Line:	Not reported
Facility Type:	DW
Subclass:	C
Facility Operator, Not Contract Opr:	Not reported
Operator Address:	Not reported
Facility Owner:	Not reported

HIGH STREET MISCELLANEOUS DRAINAGE IMPROVEMENTS (Continued) **S109953304**

Owner Address:	Not reported
Tax Map Key Number:	2:
Owner Of Land Property On Leasehold:	Not reported
Consultant Serving The Application:	Not reported
Receipt Of Initial Application:	Not reported
Public Notice Date:	Not reported
Approval-To-Construct Issuance Date:	Not reported
Exemption Issuance Date:	Not reported
1st Issuance Of Permit:	Not reported
Last Issuance Of Permit:	Not reported
Type:	Not reported
Permit Expiration Date:	Not reported
Date When File Is Closed:	Not reported
UIC Project Geologist:	Not reported
Remarks:	Not reported

F27 NE 1/2-1 0.619 mi. 3266 ft. **MAUI COUNTY WAILUKU BASEYARD** **RCRA-CESQG** **1004688823**
1827 KAOHU ST **FINDS** **HID981982895**
WAILUKU, HI 96793

Site 1 of 3 in cluster F

Relative: Lower

Actual: 226 ft.

RCRA-CESQG:

Date form received by agency:	04/16/1987
Facility name:	MAUI CITY OF
Facility address:	1827 KAOHU ST WAILUKU, HI 96793
EPA ID:	HID981982895
Mailing address:	KAOHU ST WAILUKU, HI 96793
Contact:	ENVIRONMENTAL MANAGER
Contact address:	1827 KAOHU ST WAILUKU, HI 96793
Contact country:	US
Contact telephone:	(808) 244-4061
Contact email:	Not reported
EPA Region:	09
Classification:	Conditionally Exempt Small Quantity Generator
Description:	Handler: generates 100 kg or less of hazardous waste per calendar month, and accumulates 1000 kg or less of hazardous waste at any time; or generates 1 kg or less of acutely hazardous waste per calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste; or generates 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste

Owner/Operator Summary:

Owner/operator name:	NOT REQUIRED
Owner/operator address:	NOT REQUIRED NOT REQUIRED, ME 99999

MAUI COUNTY WAILUKU BASEYARD (Continued) **1004688823**

Owner/operator country: Not reported
Owner/operator telephone: (415) 555-1212
Legal status: Municipal
Owner/Operator Type: Operator
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Owner/operator name: MAUI CITY OF
Owner/operator address: NOT REQUIRED
NOT REQUIRED, ME 99999
Owner/operator country: Not reported
Owner/operator telephone: (415) 555-1212
Legal status: Municipal
Owner/Operator Type: Owner
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Violation Status: No violations found

FINDS:

Registry ID: 110005725849

Environmental Interest/Information System
RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

STATE MASTER

F28 **MAUI COUNTY WAILUKU BASE YARD** **HI UST** **U001236748**
NE **1827 KAOHU ST** **N/A**
1/2-1 **WAILUKU, HI 96793**
0.619 mi.
3266 ft. **Site 2 of 3 in cluster F**

Relative:
Lower

Actual:
226 ft.

UST:
Facility ID: 9-501400
Owner: COUNTY OF MAUI
Owner Address: 100 S HIGH ST
Owner City,St,Zip: Wailuku, 96793 96793
Latitude: Not reported
Longitude: Not reported
Horizontal Reference Datum Name: Not reported
Horizontal Collection Method Name: Not reported

Tank ID: R-1
Date Installed: 01/01/1964
Tank Status: Permanently Out of Use
Date Closed: 02/22/1994
Tank Capacity: 2000
Substance: Gasoline

Tank ID: R-2
Date Installed: 01/01/1964
Tank Status: Permanently Out of Use
Date Closed: 02/22/1994
Tank Capacity: 1000
Substance: Diesel

F29 **LANAI LANDFILL** **HI RGA LF** **S116404729**
NE **1827 KAUHU ST.** **N/A**
1/2-1 **WAILUKU, HI**
0.619 mi.
3266 ft. **Site 3 of 3 in cluster F**

Relative:
Lower

Actual:
226 ft.

RGA LF:
1998 LANAI LANDFILL 1827 KAUHU ST.

G30 **I A O INTERMEDIATE SCHOOL** **RCRA NonGen / NLR** **1012178194**
NNE **1910 KAOHU ST** **CA HAZNET** **HIP000114447**
1/2-1 **WAILUKU, HI 96793**
0.648 mi.
3422 ft. **Site 1 of 4 in cluster G**

Relative:
Lower

Actual:
238 ft.

RCRA NonGen / NLR:
Date form received by agency: 08/18/2009
Facility name: I A O INTERMEDIATE SCHOOL
Facility address: 1910 KAOHU ST
WAILUKU, HI 96793
EPA ID: HIP000114447
Contact: RODNEY TOBA
Contact address: P O BOX 1030
WAILUKU, HI 96793
Contact country: US

I A O INTERMEDIATE SCHOOL (Continued) **1012178194**

Contact telephone: (808) 877-3305
Contact email: Not reported
EPA Region: 09
Classification: Non-Generator
Description: Handler: Non-Generators do not presently generate hazardous waste

Owner/Operator Summary:
Owner/operator name: STATE OF H I D A G S
Owner/operator address: P O BOX 1030
WAILUKU, HI 96793
Owner/operator country: Not reported
Owner/operator telephone: (808) 877-3305
Legal status: State
Owner/Operator Type: Owner
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Historical Generators:
Date form received by agency: 04/04/2002
Site name: I A O INTERMEDIATE SCHOOL
Classification: Conditionally Exempt Small Quantity Generator

. Waste code: D000
. Waste name: Not Defined

. Waste code: D008
. Waste name: LEAD

Violation Status: No violations found

HAZNET:
envid: 1012178194
Year: 2002
GEPAID: HIP000114447
Contact: RODNEY TOBA
Telephone: 8088773305
Mailing Name: Not reported
Mailing Address: PO BOX 1030
Mailing City,St,Zip: WAILUKU, HI 96793

I A O INTERMEDIATE SCHOOL (Continued) **1012178194**

Gen County: Not reported
TSD EPA ID: CAT000646117
TSD County: Not reported
Waste Category: Other inorganic solid waste
Disposal Method: Disposal, Other
Tons: 0.05
Cat Decode: Other inorganic solid waste
Method Decode: Disposal, Other
Facility County: 99

G31 **IAO MIDDLE SCHOOL** **FTTS** **1009516154**
NNE **1910 KAOHU ST** **HIST FTTS** **N/A**
1/2-1 **WAILUKU, HI 96793**
0.648 mi.
3422 ft. **Site 2 of 4 in cluster G**

Relative:
Lower

Actual:
238 ft.

FTTS INSP:
Inspection Number: 19950222T05HI 1
Region: 09
Inspection Date: 02/22/95
Inspector: RLOPES
Violation occurred: No
Investigation Type: AHERA, Enforcement, State Conducted
Investigation Reason: Neutral Scheme, State
Legislation Code: TSCA
Facility Function: User

HIST FTTS INSP:
Inspection Number: 19950222T05HI 1
Region: 09
Inspection Date: Not reported
Inspector: RLOPES
Violation occurred: No
Investigation Type: AHERA, Enforcement, State Conducted
Investigation Reason: Neutral Scheme, State
Legislation Code: TSCA
Facility Function: User

G32 **I A O INTERMEDIATE SCHOOL** **FINDS** **1004464722**
NNE **1910 KAOHU STREET** **N/A**
1/2-1 **WAILUKU, HI 96793**
0.648 mi.
3422 ft. **Site 3 of 4 in cluster G**

Relative:
Lower

Actual:
238 ft.

FINDS:

Registry ID: 110013387628

Environmental Interest/Information System
NCDB (National Compliance Data Base) supports implementation of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) and the Toxic Substances Control Act (TSCA). The system tracks inspections in regions and states with cooperative agreements, enforcement actions, and settlements.

I A O INTERMEDIATE SCHOOL (Continued) **1004464722**

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

G33 **IAO MIDDLE SCHOOL** **FTTS** **1007281721**
NNE **1910 KAOHU ST** **HIST FTTS** **N/A**
1/2-1 **WAILUKU, HI 96793**
0.648 mi.
3422 ft. **Site 4 of 4 in cluster G**

Relative:
Lower

Actual:
238 ft.

FTTS INSP:

Inspection Number:	199505109499 1
Region:	01
Inspection Date:	05/10/95
Inspector:	MILETTE
Violation occurred:	No
Investigation Type:	Section 6 PCB Federal Conducted
Investigation Reason:	Neutral Scheme, Region
Legislation Code:	TSCA
Facility Function:	Permitted Disposer - Incinerator

HIST FTTS INSP:

Inspection Number:	199505109499 1
Region:	01
Inspection Date:	Not reported
Inspector:	MILETTE
Violation occurred:	No
Investigation Type:	Section 6 PCB Federal Conducted
Investigation Reason:	Neutral Scheme, Region
Legislation Code:	TSCA
Facility Function:	Permitted Disposer - Incinerator

H34 **DEPARTMENT OF WATER, MAIN OFFICE** **HI SPILLS** **S105265165**
North **200 S HIGH ST** **N/A**
1/2-1 **WAILUKU, HI 96793**
0.656 mi.
3464 ft. **Site 1 of 15 in cluster H**

Relative:
Lower

Actual:
319 ft.

HI SPILLS:

Island:	Maui
Supplemental Loc. Text:	Not reported
Case Number:	19940729-21
HID Number:	Not reported
Facility Registry Id:	110010037600
Lead and Program:	HEER EP&R
ER:	Not reported
Units:	WAILUKI PUBLIC WORKS
Substances:	SEE INCIDENT DESCRIPTION
Less Or Greater Than:	Not reported
Numerical Quantity:	Not reported

DEPARTMENT OF WATER, MAIN OFFICE (Continued) **S105265165**

Units:	Not reported
Activity Type:	Response
Activity Lead:	Not reported
Assignment End Date:	Not reported
Result:	SOSC NFA
File Under:	County of Maui, Department of Water Supply

H35 **KULANIHAKOI GULCH STREAM MOUTH OPENING** **FINDS** **1015951959**
North **200 SOUTH HIGH STREET** **N/A**
1/2-1 **WAILUKU, HI 96793**
0.656 mi.
3464 ft. **Site 2 of 15 in cluster H**

Relative:
Lower

Actual:
319 ft.

FINDS:

Registry ID: 110046169034

Environmental Interest/Information System
STATE MASTER

H36 **CENTRAL MAUI LANDFILL PHASE I** **HI RGA LF** **S116404631**
North **200 SOUTH HIGH ST.** **N/A**
1/2-1 **WAILUKU, HI**
0.656 mi.
3464 ft. **Site 3 of 15 in cluster H**

Relative:
Lower

Actual:
319 ft.

RGA LF:

1998	CENTRAL MAUI LANDFILL PHASE I	200 SOUTH HIGH ST.

H37 **COUNTY OF MAUI - CIVIL DEFENSE** **HI RGA LUST** **S116401216**
North **200 S HIGH ST** **N/A**
1/2-1 **WAILUKU, HI**
0.656 mi.
3464 ft. **Site 4 of 15 in cluster H**

Relative:
Lower

Actual:
319 ft.

RGA LUST:

2012	COUNTY OF MAUI - CIVIL DEFENSE	200 S HIGH ST
2011	COUNTY OF MAUI - CIVIL DEFENSE	200 S HIGH ST
2010	COUNTY OF MAUI - CIVIL DEFENSE	200 S HIGH ST
2009	COUNTY OF MAUI - CIVIL DEFENSE	200 S HIGH ST

H38 **CENTRAL MAUI LANDFILL PHASE 1** **HI RGA LF** **S116404630**
North **200 SOUTH HIGH ST.** **N/A**
1/2-1 **WAILUKU, HI**
0.656 mi.
3464 ft. **Site 5 of 15 in cluster H**

Relative:
Lower

Actual:
319 ft.

RGA LF:

1998	CENTRAL MAUI LANDFILL PHASE 1	200 SOUTH HIGH ST.

H39 **COUNTY OF MAUI SMALL MS4** **FINDS** **1016871595**
North **KALANA O MAUI BLDG. 4TH FLR., 200 S. HIGH ST.** **N/A**
1/2-1 **WAILUKU, HI 96793**
0.656 mi.
3464 ft. **Site 6 of 15 in cluster H**

Relative:
Lower

Actual:
319 ft.

FINDS:

Registry ID: 110059707544

Environmental Interest/Information System
US National Pollutant Discharge Elimination System (NPDES) module of the Compliance Information System (ICIS) tracks surface water permits issued under the Clean Water Act. Under NPDES, all facilities that discharge pollutants from any point source into waters of the United States are required to obtain a permit. The permit will likely contain limits on what can be discharged, impose monitoring and reporting requirements, and include other provisions to ensure that the discharge does not adversely affect water quality.

H40 **WAIOHONU BRIDGE REPLACEMENT** **FINDS** **1015951081**
North **200 SOUTH HIGH STREET** **N/A**
1/2-1 **WAILUKU, HI 96793**
0.656 mi.
3464 ft. **Site 7 of 15 in cluster H**

Relative:
Lower

Actual:
319 ft.

FINDS:

Registry ID: 110046157029

Environmental Interest/Information System
STATE MASTER

H41 **COUNTY OF MAUI IT SERVICES** **FINDS** **1015930463**
North **200 S HIGH STREET** **N/A**
1/2-1 **WAILUKU, HI 96793**
0.656 mi.
3464 ft. **Site 8 of 15 in cluster H**

Relative:
Lower

Actual:
319 ft.

FINDS:

Registry ID: 110056143686

Environmental Interest/Information System
US National Pollutant Discharge Elimination System (NPDES) module of the Compliance Information System (ICIS) tracks surface water permits issued under the Clean Water Act. Under NPDES, all facilities that discharge pollutants from any point source into waters of the United States are required to obtain a permit. The permit will likely contain limits on what can be discharged, impose monitoring and reporting requirements, and include other provisions to ensure that the discharge does not adversely affect water quality.

STATE MASTER

ICIS (Integrated Compliance Information System) is the Integrated

COUNTY OF MAUI IT SERVICES (Continued) **1015930463**

Compliance Information System and provides a database that, when complete, will contain integrated Enforcement and Compliance information across most of EPA's programs. The vision for ICIS is to replace EPA's independent databases that contain Enforcement data with a single repository for that information. Currently, ICIS contains all Federal Administrative and Judicial enforcement actions. This information is maintained in ICIS by EPA in the Regional offices and it Headquarters. A future release of ICIS will replace the Permit Compliance System (PCS) which supports the NPDES and will integrate that information with Federal actions already in the system. ICIS also has the capability to track other activities occurring in the Region that support Compliance and Enforcement programs. These include; Incident Tracking, Compliance Assistance, and Compliance Monitoring.

H42 **KAMEHAMEHA AVENUE ROADWAY IMPROVEMENTS, JOB NO. 08-18** **ICIS** **1012304177**
North **200 SOUTH HIGH STREET** **FINDS** **N/A**
1/2-1 **WAILUKU, HI 96793**
0.656 mi.
3464 ft. **Site 9 of 15 in cluster H**

Relative:
Lower

Actual:
319 ft.

ICIS:

Enforcement Action ID:	09-1997-0180
FRS ID:	110010037600
Program ID:	FRS 110010037600
Action Name:	COUNTY OF MAUI
Full Address:	200 SOUTH HIGH STREET 200 S HIGH ST WAILUKU HI 96793-2155
State:	Hawaii
Facility Name:	COUNTY OF MAUI - CIVIL DEFENSE
Facility Address:	200 SOUTH HIGH STREET WAILUKU, HI 96793-2155
Enforcement Action Type:	CWA 309A AO For Compliance
Facility County:	MAUI
EPA Region #:	9

Enforcement Action ID:	09-1997-0180
FRS ID:	110010037600
Program ID:	HI-EHW 9624
Action Name:	COUNTY OF MAUI
Full Address:	200 SOUTH HIGH STREET 200 S HIGH ST WAILUKU HI 96793-2155
State:	Hawaii
Facility Name:	COUNTY OF MAUI - CIVIL DEFENSE
Facility Address:	200 SOUTH HIGH STREET WAILUKU, HI 96793-2155
Enforcement Action Type:	CWA 309A AO For Compliance
Facility County:	MAUI
EPA Region #:	9

Enforcement Action ID:	09-1997-0180
FRS ID:	110010037600
Program ID:	HI-EHW 10007
Action Name:	COUNTY OF MAUI
Full Address:	200 SOUTH HIGH STREET 200 S HIGH ST WAILUKU HI 96793-2155
State:	Hawaii
Facility Name:	COUNTY OF MAUI - CIVIL DEFENSE
Facility Address:	200 SOUTH HIGH STREET WAILUKU, HI 96793-2155
Enforcement Action Type:	CWA 309A AO For Compliance

KAMEHAMEHA AVENUE ROADWAY IMPROVEMENTS, JOB NO. 08-18 (Continued) **1012304177**

Facility County: MAUI
EPA Region #: 9

Enforcement Action ID: 09-1997-0180
FRS ID: 110010037600
Program ID: HI-EHW 13102
Action Name: COUNTY OF MAUI
Full Address: 200 SOUTH HIGH STREET 200 S HIGH ST WAILUKU HI 96793-2155
State: Hawaii
Facility Name: COUNTY OF MAUI - CIVIL DEFENSE
Facility Address: 200 SOUTH HIGH STREET
WAILUKU, HI 96793-2155
Enforcement Action Type: CWA 309A AO For Compliance
Facility County: MAUI
EPA Region #: 9

Enforcement Action ID: 09-1997-0180
FRS ID: 110010037600
Program ID: HI-EHW 13103
Action Name: COUNTY OF MAUI
Full Address: 200 SOUTH HIGH STREET 200 S HIGH ST WAILUKU HI 96793-2155
State: Hawaii
Facility Name: COUNTY OF MAUI - CIVIL DEFENSE
Facility Address: 200 SOUTH HIGH STREET
WAILUKU, HI 96793-2155
Enforcement Action Type: CWA 309A AO For Compliance
Facility County: MAUI
EPA Region #: 9

Enforcement Action ID: 09-1997-0180
FRS ID: 110010037600
Program ID: HI-EHW 13692
Action Name: COUNTY OF MAUI
Full Address: 200 SOUTH HIGH STREET 200 S HIGH ST WAILUKU HI 96793-2155
State: Hawaii
Facility Name: COUNTY OF MAUI - CIVIL DEFENSE
Facility Address: 200 SOUTH HIGH STREET
WAILUKU, HI 96793-2155
Enforcement Action Type: CWA 309A AO For Compliance
Facility County: MAUI
EPA Region #: 9

Enforcement Action ID: 09-1997-0180
FRS ID: 110010037600
Program ID: HI-EHW 14120
Action Name: COUNTY OF MAUI
Full Address: 200 SOUTH HIGH STREET 200 S HIGH ST WAILUKU HI 96793-2155
State: Hawaii
Facility Name: COUNTY OF MAUI - CIVIL DEFENSE
Facility Address: 200 SOUTH HIGH STREET
WAILUKU, HI 96793-2155
Enforcement Action Type: CWA 309A AO For Compliance
Facility County: MAUI
EPA Region #: 9

Enforcement Action ID: 09-1997-0180
FRS ID: 110010037600

KAMEHAMEHA AVENUE ROADWAY IMPROVEMENTS, JOB NO. 08-18 (Continued) **1012304177**

Program ID: HI-EHW 14184
Action Name: COUNTY OF MAUI
Full Address: 200 SOUTH HIGH STREET 200 S HIGH ST WAILUKU HI 96793-2155
State: Hawaii
Facility Name: COUNTY OF MAUI - CIVIL DEFENSE
Facility Address: 200 SOUTH HIGH STREET
WAILUKU, HI 96793-2155
Enforcement Action Type: CWA 309A AO For Compliance
Facility County: MAUI
EPA Region #: 9

Enforcement Action ID: 09-1997-0180
FRS ID: 110010037600
Program ID: HI-EHW 1759
Action Name: COUNTY OF MAUI
Full Address: 200 SOUTH HIGH STREET 200 S HIGH ST WAILUKU HI 96793-2155
State: Hawaii
Facility Name: COUNTY OF MAUI - CIVIL DEFENSE
Facility Address: 200 SOUTH HIGH STREET
WAILUKU, HI 96793-2155
Enforcement Action Type: CWA 309A AO For Compliance
Facility County: MAUI
EPA Region #: 9

Enforcement Action ID: 09-1997-0180
FRS ID: 110010037600
Program ID: HI-EHW 1763
Action Name: COUNTY OF MAUI
Full Address: 200 SOUTH HIGH STREET 200 S HIGH ST WAILUKU HI 96793-2155
State: Hawaii
Facility Name: COUNTY OF MAUI - CIVIL DEFENSE
Facility Address: 200 SOUTH HIGH STREET
WAILUKU, HI 96793-2155
Enforcement Action Type: CWA 309A AO For Compliance
Facility County: MAUI
EPA Region #: 9

Enforcement Action ID: 09-1997-0180
FRS ID: 110010037600
Program ID: HI-EHW 2809
Action Name: COUNTY OF MAUI
Full Address: 200 SOUTH HIGH STREET 200 S HIGH ST WAILUKU HI 96793-2155
State: Hawaii
Facility Name: COUNTY OF MAUI - CIVIL DEFENSE
Facility Address: 200 SOUTH HIGH STREET
WAILUKU, HI 96793-2155
Enforcement Action Type: CWA 309A AO For Compliance
Facility County: MAUI
EPA Region #: 9

Enforcement Action ID: 09-1997-0180
FRS ID: 110010037600
Program ID: HI-EHW 4561
Action Name: COUNTY OF MAUI
Full Address: 200 SOUTH HIGH STREET 200 S HIGH ST WAILUKU HI 96793-2155
State: Hawaii
Facility Name: COUNTY OF MAUI - CIVIL DEFENSE

KAMEHAMEHA AVENUE ROADWAY IMPROVEMENTS, JOB NO. 08-18 (Continued) **1012304177**

Facility Address: 200 SOUTH HIGH STREET
WAILUKU, HI 96793-2155
Enforcement Action Type: CWA 309A AO For Compliance
Facility County: MAUI
EPA Region #: 9

Enforcement Action ID: 09-1997-0180
FRS ID: 110010037600
Program ID: HI-EHW 4581
Action Name: COUNTY OF MAUI
Full Address: 200 SOUTH HIGH STREET 200 S HIGH ST WAILUKU HI 96793-2155
State: Hawaii
Facility Name: COUNTY OF MAUI - CIVIL DEFENSE
Facility Address: 200 SOUTH HIGH STREET
WAILUKU, HI 96793-2155
Enforcement Action Type: CWA 309A AO For Compliance
Facility County: MAUI
EPA Region #: 9

Enforcement Action ID: 09-1997-0180
FRS ID: 110010037600
Program ID: HI-EHW 5437
Action Name: COUNTY OF MAUI
Full Address: 200 SOUTH HIGH STREET 200 S HIGH ST WAILUKU HI 96793-2155
State: Hawaii
Facility Name: COUNTY OF MAUI - CIVIL DEFENSE
Facility Address: 200 SOUTH HIGH STREET
WAILUKU, HI 96793-2155
Enforcement Action Type: CWA 309A AO For Compliance
Facility County: MAUI
EPA Region #: 9

Enforcement Action ID: 09-1997-0180
FRS ID: 110010037600
Program ID: HI-EHW 5477
Action Name: COUNTY OF MAUI
Full Address: 200 SOUTH HIGH STREET 200 S HIGH ST WAILUKU HI 96793-2155
State: Hawaii
Facility Name: COUNTY OF MAUI - CIVIL DEFENSE
Facility Address: 200 SOUTH HIGH STREET
WAILUKU, HI 96793-2155
Enforcement Action Type: CWA 309A AO For Compliance
Facility County: MAUI
EPA Region #: 9

Enforcement Action ID: 09-1997-0180
FRS ID: 110010037600
Program ID: HI-EHW 5763
Action Name: COUNTY OF MAUI
Full Address: 200 SOUTH HIGH STREET 200 S HIGH ST WAILUKU HI 96793-2155
State: Hawaii
Facility Name: COUNTY OF MAUI - CIVIL DEFENSE
Facility Address: 200 SOUTH HIGH STREET
WAILUKU, HI 96793-2155
Enforcement Action Type: CWA 309A AO For Compliance
Facility County: MAUI
EPA Region #: 9

KAMEHAMEHA AVENUE ROADWAY IMPROVEMENTS, JOB NO. 08-18 (Continued) **1012304177**

Enforcement Action ID: 09-1997-0180
FRS ID: 110010037600
Program ID: HI-EHW 5766
Action Name: COUNTY OF MAUI
Full Address: 200 SOUTH HIGH STREET 200 S HIGH ST WAILUKU HI 96793-2155
State: Hawaii
Facility Name: COUNTY OF MAUI - CIVIL DEFENSE
Facility Address: 200 SOUTH HIGH STREET
WAILUKU, HI 96793-2155
Enforcement Action Type: CWA 309A AO For Compliance
Facility County: MAUI
EPA Region #: 9

Enforcement Action ID: 09-1997-0180
FRS ID: 110010037600
Program ID: HI-EHW 5813
Action Name: COUNTY OF MAUI
Full Address: 200 SOUTH HIGH STREET 200 S HIGH ST WAILUKU HI 96793-2155
State: Hawaii
Facility Name: COUNTY OF MAUI - CIVIL DEFENSE
Facility Address: 200 SOUTH HIGH STREET
WAILUKU, HI 96793-2155
Enforcement Action Type: CWA 309A AO For Compliance
Facility County: MAUI
EPA Region #: 9

Enforcement Action ID: 09-1997-0180
FRS ID: 110010037600
Program ID: HI-EHW 6007
Action Name: COUNTY OF MAUI
Full Address: 200 SOUTH HIGH STREET 200 S HIGH ST WAILUKU HI 96793-2155
State: Hawaii
Facility Name: COUNTY OF MAUI - CIVIL DEFENSE
Facility Address: 200 SOUTH HIGH STREET
WAILUKU, HI 96793-2155
Enforcement Action Type: CWA 309A AO For Compliance
Facility County: MAUI
EPA Region #: 9

Enforcement Action ID: 09-1997-0180
FRS ID: 110010037600
Program ID: HI-EHW 6076
Action Name: COUNTY OF MAUI
Full Address: 200 SOUTH HIGH STREET 200 S HIGH ST WAILUKU HI 96793-2155
State: Hawaii
Facility Name: COUNTY OF MAUI - CIVIL DEFENSE
Facility Address: 200 SOUTH HIGH STREET
WAILUKU, HI 96793-2155
Enforcement Action Type: CWA 309A AO For Compliance
Facility County: MAUI
EPA Region #: 9

Enforcement Action ID: 09-1997-0180
FRS ID: 110010037600
Program ID: HI-EHW 6349
Action Name: COUNTY OF MAUI
Full Address: 200 SOUTH HIGH STREET 200 S HIGH ST WAILUKU HI 96793-2155

KAMEHAMEHA AVENUE ROADWAY IMPROVEMENTS, JOB NO. 08-18 (Continued) **1012304177**

State: Hawaii
Facility Name: COUNTY OF MAUI - CIVIL DEFENSE
Facility Address: 200 SOUTH HIGH STREET
WAILUKU, HI 96793-2155
Enforcement Action Type: CWA 309A AO For Compliance
Facility County: MAUI
EPA Region #: 9

Enforcement Action ID: 09-1997-0180
FRS ID: 110010037600
Program ID: HI-EHW 6830
Action Name: COUNTY OF MAUI
Full Address: 200 SOUTH HIGH STREET 200 S HIGH ST WAILUKU HI 96793-2155
State: Hawaii
Facility Name: COUNTY OF MAUI - CIVIL DEFENSE
Facility Address: 200 SOUTH HIGH STREET
WAILUKU, HI 96793-2155
Enforcement Action Type: CWA 309A AO For Compliance
Facility County: MAUI
EPA Region #: 9

Enforcement Action ID: 09-1997-0180
FRS ID: 110010037600
Program ID: HI-EHW 7305
Action Name: COUNTY OF MAUI
Full Address: 200 SOUTH HIGH STREET 200 S HIGH ST WAILUKU HI 96793-2155
State: Hawaii
Facility Name: COUNTY OF MAUI - CIVIL DEFENSE
Facility Address: 200 SOUTH HIGH STREET
WAILUKU, HI 96793-2155
Enforcement Action Type: CWA 309A AO For Compliance
Facility County: MAUI
EPA Region #: 9

Enforcement Action ID: 09-1997-0180
FRS ID: 110010037600
Program ID: HI-EHW 7631
Action Name: COUNTY OF MAUI
Full Address: 200 SOUTH HIGH STREET 200 S HIGH ST WAILUKU HI 96793-2155
State: Hawaii
Facility Name: COUNTY OF MAUI - CIVIL DEFENSE
Facility Address: 200 SOUTH HIGH STREET
WAILUKU, HI 96793-2155
Enforcement Action Type: CWA 309A AO For Compliance
Facility County: MAUI
EPA Region #: 9

Enforcement Action ID: 09-1997-0180
FRS ID: 110010037600
Program ID: HI-EHW 7857
Action Name: COUNTY OF MAUI
Full Address: 200 SOUTH HIGH STREET 200 S HIGH ST WAILUKU HI 96793-2155
State: Hawaii
Facility Name: COUNTY OF MAUI - CIVIL DEFENSE
Facility Address: 200 SOUTH HIGH STREET
WAILUKU, HI 96793-2155
Enforcement Action Type: CWA 309A AO For Compliance

KAMEHAMEHA AVENUE ROADWAY IMPROVEMENTS, JOB NO. 08-18 (Continued) **1012304177**

Facility County: MAUI
EPA Region #: 9

Enforcement Action ID: 09-1997-0180
FRS ID: 110010037600
Program ID: HI-EHW 8019
Action Name: COUNTY OF MAUI
Full Address: 200 SOUTH HIGH STREET 200 S HIGH ST WAILUKU HI 96793-2155
State: Hawaii
Facility Name: COUNTY OF MAUI - CIVIL DEFENSE
Facility Address: 200 SOUTH HIGH STREET
WAILUKU, HI 96793-2155
Enforcement Action Type: CWA 309A AO For Compliance
Facility County: MAUI
EPA Region #: 9

Enforcement Action ID: 09-1997-0180
FRS ID: 110010037600
Program ID: HI-EHW 8972
Action Name: COUNTY OF MAUI
Full Address: 200 SOUTH HIGH STREET 200 S HIGH ST WAILUKU HI 96793-2155
State: Hawaii
Facility Name: COUNTY OF MAUI - CIVIL DEFENSE
Facility Address: 200 SOUTH HIGH STREET
WAILUKU, HI 96793-2155
Enforcement Action Type: CWA 309A AO For Compliance
Facility County: MAUI
EPA Region #: 9

Enforcement Action ID: 09-1997-0180
FRS ID: 110010037600
Program ID: HI-EHW 10004
Action Name: COUNTY OF MAUI
Full Address: 200 SOUTH HIGH STREET 200 S HIGH ST WAILUKU HI 96793-2155
State: Hawaii
Facility Name: COUNTY OF MAUI - CIVIL DEFENSE
Facility Address: 200 SOUTH HIGH STREET
WAILUKU, HI 96793-2155
Enforcement Action Type: CWA 309A AO For Compliance
Facility County: MAUI
EPA Region #: 9

Program ID: FRS 110010037600
Facility Name: COUNTY OF MAUI - CIVIL DEFENSE
Address: 200 SOUTH HIGH STREET
Tribal Indicator: N
Fed Facility: No
NAIC Code: Not reported
SIC Code: 4952

Program ID: HI-EHW 10004
Facility Name: COUNTY OF MAUI - CIVIL DEFENSE
Address: 200 SOUTH HIGH STREET
Tribal Indicator: N
Fed Facility: No
NAIC Code: Not reported

KAMEHAMEHA AVENUE ROADWAY IMPROVEMENTS, JOB NO. 08-18 (Continued) **1012304177**

SIC Code: 4952

Program ID: HI-EHW 10007
Facility Name: COUNTY OF MAUI - CIVIL DEFENSE
Address: 200 SOUTH HIGH STREET
Tribal Indicator: N
Fed Facility: No
NAIC Code: Not reported
SIC Code: 4952

Program ID: HI-EHW 13102
Facility Name: COUNTY OF MAUI - CIVIL DEFENSE
Address: 200 SOUTH HIGH STREET
Tribal Indicator: N
Fed Facility: No
NAIC Code: Not reported
SIC Code: 4952

Program ID: HI-EHW 13103
Facility Name: COUNTY OF MAUI - CIVIL DEFENSE
Address: 200 SOUTH HIGH STREET
Tribal Indicator: N
Fed Facility: No
NAIC Code: Not reported
SIC Code: 4952

Program ID: HI-EHW 13692
Facility Name: COUNTY OF MAUI - CIVIL DEFENSE
Address: 200 SOUTH HIGH STREET
Tribal Indicator: N
Fed Facility: No
NAIC Code: Not reported
SIC Code: 4952

Program ID: HI-EHW 14120
Facility Name: COUNTY OF MAUI - CIVIL DEFENSE
Address: 200 SOUTH HIGH STREET
Tribal Indicator: N
Fed Facility: No
NAIC Code: Not reported
SIC Code: 4952

Program ID: HI-EHW 14184
Facility Name: COUNTY OF MAUI - CIVIL DEFENSE
Address: 200 SOUTH HIGH STREET
Tribal Indicator: N
Fed Facility: No
NAIC Code: Not reported
SIC Code: 4952

Program ID: HI-EHW 1759
Facility Name: COUNTY OF MAUI - CIVIL DEFENSE
Address: 200 SOUTH HIGH STREET
Tribal Indicator: N
Fed Facility: No
NAIC Code: Not reported
SIC Code: 4952

KAMEHAMEHA AVENUE ROADWAY IMPROVEMENTS, JOB NO. 08-18 (Continued) **1012304177**

Program ID: HI-EHW 1763
Facility Name: COUNTY OF MAUI - CIVIL DEFENSE
Address: 200 SOUTH HIGH STREET
Tribal Indicator: N
Fed Facility: No
NAIC Code: Not reported
SIC Code: 4952

Program ID: HI-EHW 2809
Facility Name: COUNTY OF MAUI - CIVIL DEFENSE
Address: 200 SOUTH HIGH STREET
Tribal Indicator: N
Fed Facility: No
NAIC Code: Not reported
SIC Code: 4952

Program ID: HI-EHW 4561
Facility Name: COUNTY OF MAUI - CIVIL DEFENSE
Address: 200 SOUTH HIGH STREET
Tribal Indicator: N
Fed Facility: No
NAIC Code: Not reported
SIC Code: 4952

Program ID: HI-EHW 4581
Facility Name: COUNTY OF MAUI - CIVIL DEFENSE
Address: 200 SOUTH HIGH STREET
Tribal Indicator: N
Fed Facility: No
NAIC Code: Not reported
SIC Code: 4952

Program ID: HI-EHW 5437
Facility Name: COUNTY OF MAUI - CIVIL DEFENSE
Address: 200 SOUTH HIGH STREET
Tribal Indicator: N
Fed Facility: No
NAIC Code: Not reported
SIC Code: 4952

Program ID: HI-EHW 5477
Facility Name: COUNTY OF MAUI - CIVIL DEFENSE
Address: 200 SOUTH HIGH STREET
Tribal Indicator: N
Fed Facility: No
NAIC Code: Not reported
SIC Code: 4952

Program ID: HI-EHW 5763
Facility Name: COUNTY OF MAUI - CIVIL DEFENSE
Address: 200 SOUTH HIGH STREET
Tribal Indicator: N
Fed Facility: No
NAIC Code: Not reported
SIC Code: 4952

Program ID: HI-EHW 5766

KAMEHAMEHA AVENUE ROADWAY IMPROVEMENTS, JOB NO. 08-18 (Continued) **1012304177**

Facility Name: COUNTY OF MAUI - CIVIL DEFENSE
Address: 200 SOUTH HIGH STREET
Tribal Indicator: N
Fed Facility: No
NAIC Code: Not reported
SIC Code: 4952

Program ID: HI-EHW 5813
Facility Name: COUNTY OF MAUI - CIVIL DEFENSE
Address: 200 SOUTH HIGH STREET
Tribal Indicator: N
Fed Facility: No
NAIC Code: Not reported
SIC Code: 4952

Program ID: HI-EHW 6007
Facility Name: COUNTY OF MAUI - CIVIL DEFENSE
Address: 200 SOUTH HIGH STREET
Tribal Indicator: N
Fed Facility: No
NAIC Code: Not reported
SIC Code: 4952

Program ID: HI-EHW 6076
Facility Name: COUNTY OF MAUI - CIVIL DEFENSE
Address: 200 SOUTH HIGH STREET
Tribal Indicator: N
Fed Facility: No
NAIC Code: Not reported
SIC Code: 4952

Program ID: HI-EHW 6349
Facility Name: COUNTY OF MAUI - CIVIL DEFENSE
Address: 200 SOUTH HIGH STREET
Tribal Indicator: N
Fed Facility: No
NAIC Code: Not reported
SIC Code: 4952

Program ID: HI-EHW 6830
Facility Name: COUNTY OF MAUI - CIVIL DEFENSE
Address: 200 SOUTH HIGH STREET
Tribal Indicator: N
Fed Facility: No
NAIC Code: Not reported
SIC Code: 4952

Program ID: HI-EHW 7305
Facility Name: COUNTY OF MAUI - CIVIL DEFENSE
Address: 200 SOUTH HIGH STREET
Tribal Indicator: N
Fed Facility: No
NAIC Code: Not reported
SIC Code: 4952

Program ID: HI-EHW 7631
Facility Name: COUNTY OF MAUI - CIVIL DEFENSE

KAMEHAMEHA AVENUE ROADWAY IMPROVEMENTS, JOB NO. 08-18 (Continued) **1012304177**

Address: 200 SOUTH HIGH STREET
Tribal Indicator: N
Fed Facility: No
NAIC Code: Not reported
SIC Code: 4952

Program ID: HI-EHW 7857
Facility Name: COUNTY OF MAUI - CIVIL DEFENSE
Address: 200 SOUTH HIGH STREET
Tribal Indicator: N
Fed Facility: No
NAIC Code: Not reported
SIC Code: 4952

Program ID: HI-EHW 8019
Facility Name: COUNTY OF MAUI - CIVIL DEFENSE
Address: 200 SOUTH HIGH STREET
Tribal Indicator: N
Fed Facility: No
NAIC Code: Not reported
SIC Code: 4952

Program ID: HI-EHW 8972
Facility Name: COUNTY OF MAUI - CIVIL DEFENSE
Address: 200 SOUTH HIGH STREET
Tribal Indicator: N
Fed Facility: No
NAIC Code: Not reported
SIC Code: 4952

Program ID: HI-EHW 9624
Facility Name: COUNTY OF MAUI - CIVIL DEFENSE
Address: 200 SOUTH HIGH STREET
Tribal Indicator: N
Fed Facility: No
NAIC Code: Not reported
SIC Code: 4952

FINDS:

Registry ID: 110040079027

Environmental Interest/Information System
US National Pollutant Discharge Elimination System (NPDES) module of the Compliance Information System (ICIS) tracks surface water permits issued under the Clean Water Act. Under NPDES, all facilities that discharge pollutants from any point source into waters of the United States are required to obtain a permit. The permit will likely contain limits on what can be discharged, impose monitoring and reporting requirements, and include other provisions to ensure that the discharge does not adversely affect water quality.

STATE MASTER

H43 **COUNTY OF MAUI - CIVIL DEFENSE** **HI RGA LUST** **S116401215**
North **200 S HIGH ST** **N/A**
1/2-1 **WAILUKU, HI**
0.656 mi.
3464 ft. **Site 10 of 15 in cluster H**

Relative:
Lower

Actual:
319 ft.

RGA LUST:

2008	COUNTY OF MAUI	- CIVIL DEFENSE	200 S HIGH ST
2007	COUNTY OF MAUI	- CIVIL DEFENSE	200 S HIGH ST
2006	COUNTY OF MAUI	- CIVIL DEFENSE	200 S HIGH ST
2005	COUNTY OF MAUI	- CIVIL DEFENSE	200 S HIGH ST

H44 **COUNTY OF MAUI VINEYARD STREET WATER LINE REPLACEMENT** **FINDS** **1014696931**
North **200 S. HIGH STREET** **N/A**
1/2-1 **WAILUKU, HI 96793**
0.656 mi.
3464 ft. **Site 11 of 15 in cluster H**

Relative:
Lower

Actual:
319 ft.

FINDS:

Registry ID: 110041252505

Environmental Interest/Information System
US National Pollutant Discharge Elimination System (NPDES) module of the Compliance Information System (ICIS) tracks surface water permits issued under the Clean Water Act. Under NPDES, all facilities that discharge pollutants from any point source into waters of the United States are required to obtain a permit. The permit will likely contain limits on what can be discharged, impose monitoring and reporting requirements, and include other provisions to ensure that the discharge does not adversely affect water quality.

H45 **NAHOLO CIRCLE DWS** **HI UIC** **U003711775**
North **200 S. HIGH ST.** **N/A**
1/2-1 **WAILUKU, HI 96793**
0.656 mi.
3464 ft. **Site 12 of 15 in cluster H**

Relative:
Lower

Actual:
319 ft.

UIC:

UIC Permit Number:	UM-1516
Facility Id/Lat Long Minute Coordinates:	6-5329.04.1
Central Latitude Of The Site:	20 53 04
Central Longitude Of The Site:	156 29 25
Flow In Gallons Per Day:	Not reported
Total Number Of Inj. Well(S) On Permit:	1
Island:	Maui
Location In Relation To UIC Line:	Not reported
Facility Type:	DW
Subclass:	C
Facility Operator, Not Contract Opr:	County of Hawaii - DPW & WM
Operator Address:	200 S. High St., Wailuku, HI 96793
Facility Owner:	County of Hawaii
Owner Address:	200 S. High St., Wailuku, HI 96793
Tax Map Key Number:	2:3-8-41:
Owner Of Land Property On Leasehold:	none
Consultant Serving The Application:	County of Maui - DPW & WM
Receipt Of Initial Application:	4/3/1989
Public Notice Date:	Not reported

NAHOLO CIRCLE DWS (Continued) **U003711775**

Approval-To-Construct Issuance Date:	7/11/1989
Exemption Issuance Date:	Not reported
1st Issuance Of Permit:	5/15/2000
Last Issuance Of Permit:	Not reported
Type:	Not reported
Permit Expiration Date:	8/15/2003
Date When File Is Closed:	Not reported
UIC Project Geologist:	CH
Remarks:	Not reported

H46 **COUNTY OF MAUI - CIVIL DEFENSE** **HI LUST** **U004192790**
North **200 S HIGH ST** **HI UST** **N/A**
1/2-1 **WAILUKU, HI 96793** **HI Financial Assurance**
0.656 mi.
3464 ft. **Site 13 of 15 in cluster H**

Relative:
Lower

Actual:
319 ft.

LUST:

Facility ID:	9-503420
Facility Status:	Site Cleanup Completed (NFA)
Facility Status Date:	10/15/2001
Release ID:	010053
Project Officer:	Shunsheng Fu

UST:

Facility ID:	9-503420
Owner:	County of Maui - Civil Defense
Owner Address:	Not reported
Owner City,St,Zip:	Wailuku, 96793 96793
Latitude:	20.885690
Longitude:	-156.503865
Horizontal Reference Datum Name:	NAD83
Horizontal Collection Method Name:	Map
Tank ID:	M-2
Date Installed:	11/01/1998
Tank Status:	**Currently In Use**
Date Closed:	Not reported
Tank Capacity:	2000
Substance:	Diesel
Tank ID:	R-M-1
Date Installed:	06/01/1973
Tank Status:	**Permanently Out of Use**
Date Closed:	11/13/1998
Tank Capacity:	1700
Substance:	Diesel

HI Financial Assurance:

Alt Facility ID:	9-503420
Tank Id:	M-2
Tank Status:	Currently In Use
FRTYPE:	Other
Expiration Date:	Not reported
Alt Facility ID:	9-503420
Tank Id:	R-M-1

COUNTY OF MAUI - CIVIL DEFENSE (Continued) **U004192790**

Tank Status: Permanently Out of Use
FRTYPE: Other
Expiration Date: Not reported

Alt Facility ID: 9-503420
Tank Id: R-M-1
Tank Status: Permanently Out of Use
FRTYPE: Self Insured
Expiration Date: 07/18/2013

Alt Facility ID: 9-503420
Tank Id: M-2
Tank Status: Currently In Use
FRTYPE: Self Insured
Expiration Date: 07/18/2013

H47 **SAND ISLAND INDUSTRIAL PARK SUBDIVISION** **FINDS** **1006719521**
North **200 SOUTH HIGH STREET** **N/A**
1/2-1 **WAILUKU, HI 96793**
0.656 mi.
3464 ft. **Site 14 of 15 in cluster H**

Relative:
Lower

Actual:
319 ft.

FINDS:

Registry ID: 110046170647

Environmental Interest/Information System
STATE MASTER

I48 **ORGANIZATIONAL MAINTENANCE SHOP #3 (OMS #3)** **HI RGA HWS** **S116400397**
NNE **260 S MARKET ST** **N/A**
1/2-1 **WAILUKU, HI**
0.676 mi.
3571 ft. **Site 1 of 4 in cluster I**

Relative:
Lower

Actual:
256 ft.

RGA HWS:

2012	ORGANIZATIONAL MAINTENANCE SHOP #3 (OMS #3)	260 S MARKET ST
2009	ORGANIZATIONAL MAINTENANCE SHOP #3 (OMS #3)	260 S MARKET ST
2008	ORGANIZATIONAL MAINTENANCE SHOP #3 (OMS #3)	260 S MARKET ST
2006	ORGANIZATIONAL MAINTENANCE SHOP #3 (OMS #3)	260 S MARKET ST
2005	ORGANIZATIONAL MAINTENANCE SHOP #3 (OMS #3)	260 S MARKET ST

I49 **HI RGA HWS** **S116399336**
NNE **260 SOUTH MARKET ST** **N/A**
1/2-1 **WAILUKU, HI**
0.676 mi.
3571 ft. **Site 2 of 4 in cluster I**

Relative:
Lower

Actual:
256 ft.

RGA HWS:

2000	TLAZZARO	260 SOUTH MARKET ST

I50 **ORGANIZATIONAL MAINTENANCE SHOP #3 (OMS #3)** **HI SHWS** **1006818976**
NNE **260 S MARKET ST** **N/A**
1/2-1 **WAILUKU, HI 96793**
0.676 mi.
3571 ft. **Site 3 of 4 in cluster I**

Relative:
Lower

Actual:
256 ft.

SHWS:

Organization:	Not reported
Supplemental Location:	Not reported
Island:	Maui
Environmental Interest:	Organizational Maintenance Shop #3 (OMS #3)
HID Number:	Not reported
Facility Registry Identifier:	110013767352
Lead Agency:	Not reported
Program:	Hawaii Air National Guard
Project Manager:	Unassigned
Hazard Priority:	Low
Potential Hazards And Controls:	Hazard Undetermined
Organization:	Not reported
Island:	Maui
Supplemental Location Text:	Not reported
SDAR Environmental Interest Name:	Organizational Maintenance Shop #3 (OMS #3)
HID Number:	Not reported
Facility Registry Identifier:	110013767352
Lead Agency:	Not reported
Progran Name:	Hawaii Air National Guard
Potential Hazard And Controls:	Hazard Undetermined
Priority:	Low
Assessment:	Assessment Ongoing
Response:	Not reported
Nature of Contamination:	Not reported
Nature of Residual Contamination:	Not reported
Use Restrictions:	Undetermined
Engineering Control:	Not reported
Description of Restrictions:	Not reported
Institutional Control:	Not reported
Within Designated Areawide Contamination:	Not reported
Site Closure Type:	Not reported
Document Date:	Not reported
Document Number:	Not reported
Document Subject:	Not reported
Project Manager:	Unassigned
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

I51 NNE 1/2-1 0.680 mi. 3593 ft. | **IAO MIDDLE SCHOOL** | **FINDS** | **1015914219** | **N/A**
260 SOUTH MARTKET STREET
WAILUKU, HI 96793

Site 4 of 4 in cluster I

Relative: Lower

Actual: 253 ft.

FINDS:

Registry ID: 110044866516

Environmental Interest/Information System
ICIS (Integrated Compliance Information System) is the Integrated Compliance Information System and provides a database that, when complete, will contain integrated Enforcement and Compliance information across most of EPA's programs. The vision for ICIS is to replace EPA's independent databases that contain Enforcement data with a single repository for that information. Currently, ICIS contains all Federal Administrative and Judicial enforcement actions. This information is maintained in ICIS by EPA in the Regional offices and it Headquarters. A future release of ICIS will replace the Permit Compliance System (PCS) which supports the NPDES and will integrate that information with Federal actions already in the system. ICIS also has the capability to track other activities occurring in the Region that support Compliance and Enforcement programs. These include; Incident Tracking, Compliance Assistance, and Compliance Monitoring.

J52 North 1/2-1 0.706 mi. 3728 ft. | **MAUI DISTRICT OFFICE** | **FINDS** | **1016056880** | **N/A**
54 S HIGH ST
WAILUKU, HI 96793

Site 1 of 4 in cluster J

Relative: Lower

Actual: 337 ft.

FINDS:

Registry ID: 110011913956

Environmental Interest/Information System
NCDB (National Compliance Data Base) supports implementation of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) and the Toxic Substances Control Act (TSCA). The system tracks inspections in regions and states with cooperative agreements, enforcement actions, and settlements.

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

STATE MASTER

ICIS (Integrated Compliance Information System) is the Integrated Compliance Information System and provides a database that, when complete, will contain integrated Enforcement and Compliance information across most of EPA's programs. The vision for ICIS is to replace EPA's independent databases that contain Enforcement data with a single repository for that information. Currently, ICIS contains all Federal Administrative and Judicial enforcement actions. This

MAUI DISTRICT OFFICE (Continued) **1016056880**

information is maintained in ICIS by EPA in the Regional offices and it Headquarters. A future release of ICIS will replace the Permit Compliance System (PCS) which supports the NPDES and will integrate that information with Federal actions already in the system. ICIS also has the capability to track other activities occurring in the Region that support Compliance and Enforcement programs. These include; Incident Tracking, Compliance Assistance, and Compliance Monitoring.

H53 North 1/2-1 0.711 mi. 3752 ft. | **DOH/DISTRICT OFFICE** | **HI UST** | **U003222190**
54 HIGH ST, ROOM 301 | **HI Financial Assurance** | **N/A**
WAILUKU, HI 96793

Site 15 of 15 in cluster H

Relative: Lower

Actual: 321 ft.

UST:

Facility ID:	9-500415
Owner:	STATE Of HAWAII - DAGS
Owner Address:	P.O. BOX 1030
Owner City,St,Zip:	Wailuku, 96793 96793
Latitude:	20.886202
Longitude:	-156.503982
Horizontal Reference Datum Name:	NAD83
Horizontal Collection Method Name:	GPS
Tank ID:	R-1
Date Installed:	01/21/1968
Tank Status:	**Permanently Out of Use**
Date Closed:	01/30/1989
Tank Capacity:	3000
Substance:	Gasoline
Tank ID:	R-2
Date Installed:	01/21/1968
Tank Status:	**Permanently Out of Use**
Date Closed:	01/30/1989
Tank Capacity:	300
Substance:	Used Oil
Tank ID:	r-87
Date Installed:	01/03/1989
Tank Status:	**Permanently out of Use**
Date Closed:	09/21/2007
Tank Capacity:	4000
Substance:	Gasoline

HI Financial Assurance:

Alt Facility ID:	9-500415
Tank Id:	R-1
Tank Status:	Permanently Out of Use
FRTYPE:	Other
Expiration Date:	Not reported
Alt Facility ID:	9-500415
Tank Id:	R-2

DOH/DISTRICT OFFICE (Continued) **U003222190**

Tank Status: Permanently Out of Use
FRTYPE: Other
Expiration Date: Not reported

Alt Facility ID: 9-500415
Tank Id: r-87
Tank Status: Permanently out of Use
FRTYPE: Other
Expiration Date: Not reported

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54 NNW 1/2-1 0.713 mi. 3767 ft. **MECO TRANSFORMERS 13198 AND 13199** **HI SPILLS** **S108859779**
2404 MAIN ST **N/A**
KAHULUI, HI

Relative: Higher

Actual: 404 ft.

HI SPILLS:
Island: Maui
Supplemental Loc. Text: Not reported
Case Number: 20070320-1318
HID Number: Not reported
Facility Registry Id: Not reported
Lead and Program: HEER EP&R
ER: No -
Units: MECO Transformers 13198 and 13199
Substances: Mineral Oil
Less Or Greater Than: <
Numerical Quantity: 1
Units: Gallons
Activity Type: Response
Activity Lead: Anna Fernandez
Assignment End Date: 2007-04-04 00:00:00
Result: SOSC NFA
File Under: Maui Electric Co., Inc.

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55 NW 1/2-1 0.719 mi. 3796 ft. **WAILUKU SHAFT 33 PUMP STATION** **FINDS** **1017430745**
WEST MAIN STREET **N/A**
WAILUKU, HI 96793

Relative: Higher

Actual: 453 ft.

FINDS:

Registry ID: 110000709154

Environmental Interest/Information System
US EPA Risk Management Plan (RMP) database stores the risk management plans reported by companies that handle, manufacture, use, or store certain flammable or toxic substances, as required under section 112(r) of the Clean Air Act (CAA).

J56 North 1/2-1 0.746 mi. 3941 ft. **OHANA KAI VILLAGE - RETENTION BASIN GRADING** **FINDS** **1014696878**
9 HONOAPIILANI HIGHWAY **N/A**
WAILUKU, HI 96793

Site 2 of 4 in cluster J

Relative: Lower

Actual: 338 ft.

FINDS:

Registry ID: 110041244418

Environmental Interest/Information System
US National Pollutant Discharge Elimination System (NPDES) module of the Compliance Information System (ICIS) tracks surface water permits issued under the Clean Water Act. Under NPDES, all facilities that discharge pollutants from any point source into waters of the United States are required to obtain a permit. The permit will likely contain limits on what can be discharged, impose monitoring and reporting requirements, and include other provisions to ensure that the discharge does not adversely affect water quality.

K57 NE 1/2-1 0.754 mi. 3979 ft. **EVA WINONA PASCHOAL** **HI UST** **U001236838**
318 NANILOA DR **N/A**
WAILUKU, HI 96793

Site 1 of 2 in cluster K

Relative: Lower

Actual: 270 ft.

UST:
Facility ID: 9-502452
Owner: EVA WINONA PASCHOAL
Owner Address: 318 NANILOA DRIVE
Owner City,St,Zip: Wailuku, 96793 96793
Latitude: Not reported
Longitude: Not reported
Horizontal Reference Datum Name: Not reported
Horizontal Collection Method Name: Not reported

Tank ID: R-1
Date Installed: Not reported
Tank Status: Permanently Out of Use
Date Closed: 01/30/1992
Tank Capacity: 500
Substance: Gasoline

K58 NE 1/2-1 0.754 mi. 3979 ft. **EVA WINONA PASCHOAL** **FINDS** **1015876403**
318 NANILOA DRIVE **N/A**
WAILUKU, HI 96793

Site 2 of 2 in cluster K

Relative: Lower

Actual: 270 ft.

FINDS:

Registry ID: 110055387200

Environmental Interest/Information System
STATE MASTER

J59 North 1/2-1 0.754 mi. 3982 ft. — **POLICE MOTOR POOL**, **MAIN STREET & NORTH HIGH STREET**, **WAILUKU, HI 96793** — **FINDS** — **1016403803** / **N/A**

Site 3 of 4 in cluster J

Relative: Lower
Actual: 335 ft.

FINDS:

Registry ID: 110055380966

Environmental Interest/Information System
STATE MASTER

J60 North 1/2-1 0.754 mi. 3982 ft. — **POLICE MOTOR POOL**, **HIGH & MAIN ST**, **WAILUKU, HI 96793** — **HI UST** — **U001237439** / **N/A**

Site 4 of 4 in cluster J

Relative: Lower
Actual: 335 ft.

UST:

Facility ID:	9-501790
Owner:	COUNTY OF MAUI - POLICE DEPT
Owner Address:	55 MAHALANI ST
Owner City,St,Zip:	Wailuku, 96793 96793
Latitude:	Not reported
Longitude:	Not reported
Horizontal Reference Datum Name:	Not reported
Horizontal Collection Method Name:	Not reported
Tank ID:	R-1
Date Installed:	05/02/2046
Tank Status:	**Permanently Out of Use**
Date Closed:	02/27/1987
Tank Capacity:	2000
Substance:	Gasoline
Tank ID:	R-2
Date Installed:	05/02/2046
Tank Status:	**Permanently Out of Use**
Date Closed:	02/27/1987
Tank Capacity:	2000
Substance:	Gasoline

L61 NNE 1/2-1 0.764 mi. 4035 ft. — **WAILUKU CENTRAL OFFICE**, **60 S CHURCH ST**, **WAILUKU, HI 96793** — **HI LUST**, **HI UST**, **HI Financial Assurance** — **U003222200** / **N/A**

Site 1 of 17 in cluster L

Relative: Lower
Actual: 300 ft.

LUST:

Facility ID:	9-500552
Facility Status:	Site Cleanup Completed (NFA)
Facility Status Date:	10/17/1997
Release ID:	980003
Project Officer:	Renato Maniulit

WAILUKU CENTRAL OFFICE (Continued) — **U003222200**

UST:

Facility ID:	9-500552
Owner:	Hawaiian Telcom
Owner Address:	P.O. Box 2200
Owner City,St,Zip:	Wailuku, 96793 96793
Latitude:	20.886605
Longitude:	-156.503189
Horizontal Reference Datum Name:	NAD83
Horizontal Collection Method Name:	Map
Tank ID:	R-M-1
Date Installed:	05/08/1971
Tank Status:	**Permanently Out of Use**
Date Closed:	08/20/1996
Tank Capacity:	1000
Substance:	Diesel
Tank ID:	R-M-2
Date Installed:	09/03/1996
Tank Status:	**Permanently Out of Use**
Date Closed:	10/21/1999
Tank Capacity:	1000
Substance:	Diesel
Tank ID:	m-1
Date Installed:	11/01/1999
Tank Status:	**Currently In Use**
Date Closed:	Not reported
Tank Capacity:	2500
Substance:	Diesel

HI Financial Assurance:

Alt Facility ID:	9-500552
Tank Id:	m-1
Tank Status:	Currently In Use
FRTYPE:	Other
Expiration Date:	Not reported
Alt Facility ID:	9-500552
Tank Id:	R-M-1
Tank Status:	Permanently Out of Use
FRTYPE:	Other
Expiration Date:	Not reported
Alt Facility ID:	9-500552
Tank Id:	R-M-2
Tank Status:	Permanently Out of Use
FRTYPE:	Other
Expiration Date:	Not reported
Alt Facility ID:	9-500552
Tank Id:	m-1
Tank Status:	Currently In Use
FRTYPE:	Insurance

WAILUKU CENTRAL OFFICE (Continued) **U003222200**

Expiration Date: 05/02/2015

Alt Facility ID: 9-500552
Tank Id: R-M-1
Tank Status: Permanently Out of Use
FRTYPE: Insurance
Expiration Date: 05/02/2015

Alt Facility ID: 9-500552
Tank Id: R-M-2
Tank Status: Permanently Out of Use
FRTYPE: Insurance
Expiration Date: 05/02/2015

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62 West 1/2-1 0.766 mi. 4042 ft. **KEHALANI UPPER LEVEL WATER SYSTEM** **FINDS** **1016380571** **N/A**

MAUI (County), HI

Relative: Higher

Actual: 903 ft.

FINDS:

Registry ID: 110055124413

Environmental Interest/Information System
STATE MASTER

M63 North 1/2-1 0.770 mi. 4066 ft. **HOAPILI HALE - MAUI JUDICIARY BUILDING** **FINDS** **1015828110** **N/A**

2145 MAIN STREET
WAILUKU, HI 96793

Site 1 of 5 in cluster M

Relative: Lower

Actual: 319 ft.

FINDS:

Registry ID: 110055390189

Environmental Interest/Information System
STATE MASTER

M64 North 1/2-1 0.770 mi. 4066 ft. **HOAPILI HALE - MAUI JUDICIARY BUILDING** **HI RGA LUST** **S116402071** **N/A**

2145 MAIN ST.
WAILUKU, HI

Site 2 of 5 in cluster M

Relative: Lower

Actual: 319 ft.

RGA LUST:

2012	HOAPILI HALE - MAUI JUDICIARY BUILDING	2145 MAIN ST.
2011	HOAPILI HALE - MAUI JUDICIARY BUILDING	2145 MAIN ST.
2010	HOAPILI HALE - MAUI JUDICIARY BUILDING	2145 MAIN ST.
2009	HOAPILI HALE - MAUI JUDICIARY BUILDING	2145 MAIN ST.
2008	HOAPILI HALE - MAUI JUDICIARY BUILDING	2145 MAIN ST.
2007	HOAPILI HALE - MAUI JUDICIARY BUILDING	2145 MAIN ST.

HOAPILI HALE - MAUI JUDICIARY BUILDING (Continued) **S116402071**

2006	HOAPILI HALE - MAUI JUDICIARY BUILDING	2145 MAIN ST.
2005	HOAPILI HALE - MAUI JUDICIARY BUILDING	2145 MAIN ST.

M65 North 1/2-1 0.770 mi. 4066 ft. **HOAPILI HALE** **FINDS** **1017373243** **N/A**

2145 MAIN STREET
WAILUKU, HI 96793

Site 3 of 5 in cluster M

Relative: Lower

Actual: 319 ft.

FINDS:

Registry ID: 110061056413

Environmental Interest/Information System
RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

M66 North 1/2-1 0.770 mi. 4066 ft. **HOAPILI HALE - MAUI JUDICIARY BUILDING** **HI LUST** **U003711776**
HI Financial Assurance **N/A**

2145 MAIN ST.
WAILUKU, HI 96793

Site 4 of 5 in cluster M

Relative: Lower

Actual: 319 ft.

LUST:
Facility ID: 9-503536
Facility Status: Site Cleanup Completed (NFA)
Facility Status Date: 02/25/2003
Release ID: 000001
Project Officer: Shunsheng Fu

HI Financial Assurance:
Alt Facility ID: 9-503536
Tank Id: M-2
Tank Status: Currently In Use
FRTYPE: Other
Expiration Date: Not reported

Alt Facility ID: 9-503536
Tank Id: R-1
Tank Status: Permanently Out of Use
FRTYPE: Other
Expiration Date: Not reported

M67 North 1/2-1 0.770 mi. 4066 ft. **HOAPILI HALE** **RCRA-CESQG** **1016956271**
2145 MAIN STREET **HIR000142430**
WAILUKU, HI 96793

Site 5 of 5 in cluster M

Relative: Lower

Actual: 319 ft.

RCRA-CESQG:

Date form received by agency:	08/12/2014
Facility name:	HOAPILI HALE
Facility address:	2145 MAIN STREET WAILUKU, HI 96793
EPA ID:	HIR000142430
Mailing address:	MAIN STREET WAILUKU, HI 96793
Contact:	STEVEN A MORAR
Contact address:	MAIN STREET SUITE 137 WAILUKU, HI 96793
Contact country:	US
Contact telephone:	(808) 244-2731
Contact email:	STEVEN.A.MORAR@COURTS.HAWAII.GOV
EPA Region:	09
Classification:	Conditionally Exempt Small Quantity Generator
Description:	Handler: generates 100 kg or less of hazardous waste per calendar month, and accumulates 1000 kg or less of hazardous waste at any time; or generates 1 kg or less of acutely hazardous waste per calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste; or generates 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste

Owner/Operator Summary:

Owner/operator name:	HI JUDICIARY
Owner/operator address:	Not reported Not reported
Owner/operator country:	US
Owner/operator telephone:	Not reported
Legal status:	State
Owner/Operator Type:	Operator
Owner/Op start date:	03/07/1986
Owner/Op end date:	Not reported
Owner/operator name:	HI DAGS
Owner/operator address:	P.O. BOX 119 HONOLULU, 96810
Owner/operator country:	US
Owner/operator telephone:	(808) 586-0400
Legal status:	State
Owner/Operator Type:	Owner
Owner/Op start date:	03/07/1986
Owner/Op end date:	Not reported

HOAPILI HALE (Continued) **1016956271**

Handler Activities Summary:

U.S. importer of hazardous waste:	No
Mixed waste (haz. and radioactive):	No
Recycler of hazardous waste:	No
Transporter of hazardous waste:	No
Treater, storer or disposer of HW:	No
Underground injection activity:	No
On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No
Used oil transfer facility:	No
Used oil transporter:	No

. Waste code: D008
. Waste name: LEAD

. Waste code: D009
. Waste name: MERCURY

Violation Status: No violations found

L68 NNE 1/2-1 0.785 mi. 4143 ft. **WAILUKU CENTRAL OFFICE** **HI RGA LUST** **S116404452**
60 S CHURCH ST **N/A**
WAILUKU, HI

Site 2 of 17 in cluster L

Relative: Lower

Actual: 295 ft.

RGA LUST:

2012	WAILUKU CENTRAL OFFICE	60 S CHURCH ST
2011	WAILUKU CENTRAL OFFICE	60 S CHURCH ST
2010	WAILUKU CENTRAL OFFICE	60 S CHURCH ST
2009	WAILUKU CENTRAL OFFICE	60 S CHURCH ST
2008	WAILUKU CENTRAL OFFICE	60 S CHURCH ST
2007	WAILUKU CENTRAL OFFICE	60 S CHURCH ST
2006	WAILUKU CENTRAL OFFICE	60 S CHURCH ST
2005	WAILUKU CENTRAL OFFICE	60 S CHURCH ST
2004	WAILUKU CENTRAL OFFICE	60 S CHURCH ST
2003	WAILUKU CENTRAL OFFICE	60 S CHURCH ST
2002	WAILUKU CENTRAL OFFICE	60 S CHURCH ST
2001	WAILUKU CENTRAL OFFICE	60 S CHURCH ST
2000	WAILUKU CENTRAL OFFICE	60 S CHURCH ST
1999	WAILUKU CENTRAL OFFICE	60 S CHURCH ST
1998	WAILUKU CENTRAL OFFICE	60 S CHURCH ST

L69 NNE 1/2-1 0.785 mi. 4143 ft. — **WAILUKU CENTRAL OFFICE**, **60 SOUTH CHURCH STREET**, **WAILUKU, HI 96793** — **FINDS** — **1016404015**, **N/A**

Site 3 of 17 in cluster L

Relative: Lower
Actual: 295 ft.

FINDS:

Registry ID: 110055383525

Environmental Interest/Information System
STATE MASTER

L70 NNE 1/2-1 0.785 mi. 4143 ft. — **GTE HAWAIIAN TEL**, **60 S CHURCH ST**, **WAILUKU, HI 96793** — **CA HAZNET** — **S113183404**, **N/A**

Site 4 of 17 in cluster L

Relative: Lower
Actual: 295 ft.

HAZNET:

envid:	S113183404
Year:	2001
GEPAID:	HIC981116044
Contact:	HARLAN HASHIMOTO/ADMINISTRATOR
Telephone:	8085462562
Mailing Name:	Not reported
Mailing Address:	PO BOX 2200
Mailing City,St,Zip:	HONOLULU, HI 968410000
Gen County:	Not reported
TSD EPA ID:	CAT000646117
TSD County:	Not reported
Waste Category:	Liquids with polychloronated biphenyls >= 50 Mg./L
Disposal Method:	Not reported
Tons:	0.07
Cat Decode:	Liquids with polychloronated biphenyls >= 50 Mg./L
Method Decode:	Not reported
Facility County:	99

envid:	S113183404
Year:	1998
GEPAID:	HIC981116044
Contact:	GTE HAWAIIAN TEL
Telephone:	0000000000
Mailing Name:	Not reported
Mailing Address:	PO BOX 2200
Mailing City,St,Zip:	HONOLULU, HI 968410000
Gen County:	Not reported
TSD EPA ID:	CAD059494310
TSD County:	Not reported
Waste Category:	Off-specification, aged or surplus organics
Disposal Method:	Disposal, Other
Tons:	.1000
Cat Decode:	Off-specification, aged or surplus organics
Method Decode:	Disposal, Other
Facility County:	99

N71 North 1/2-1 0.791 mi. 4175 ft. — **THE KIHEI RECYCLING AND REDEMPTION CENTER AT SOUTH MAUI COMM**, **2200 MAIN STREET**, **WAILUKU, HI 96793** — **FINDS** — **1015796671**, **N/A**

Site 1 of 2 in cluster N

Relative: Lower
Actual: 333 ft.

FINDS:

Registry ID: 110055382697

Environmental Interest/Information System
STATE MASTER

N72 North 1/2-1 0.791 mi. 4175 ft. — **COUNTY OF MAUI**, **2200 MAIN STREET, SUITE 100**, **WAILUKU, HI 96814** — **FINDS** — **1016698170**, **N/A**

Site 2 of 2 in cluster N

Relative: Lower
Actual: 333 ft.

FINDS:

Registry ID: 110056348867

Environmental Interest/Information System
US National Pollutant Discharge Elimination System (NPDES) module of the Compliance Information System (ICIS) tracks surface water permits issued under the Clean Water Act. Under NPDES, all facilities that discharge pollutants from any point source into waters of the United States are required to obtain a permit. The permit will likely contain limits on what can be discharged, impose monitoring and reporting requirements, and include other provisions to ensure that the discharge does not adversely affect water quality.

O73 SE 1/2-1 0.797 mi. 4209 ft. — **MAUI LANI 76 -MAKO'S**, **129 MAA ST**, **KAHULUI, HI 96732** — **FINDS** — **1015940141**, **N/A**

Site 1 of 2 in cluster O

Relative: Lower
Actual: 247 ft.

FINDS:

Registry ID: 110055401943

Environmental Interest/Information System
STATE MASTER

O74 SE 1/2-1 0.797 mi. 4209 ft. — **MAUI LANI 76 -MAKO'S**, **129 MAA ST**, **KAHULUI, HI 96732** — **HI UST** / **HI Financial Assurance** — **U004197585** / **N/A**

Site 2 of 2 in cluster O

Relative: Lower
Actual: 247 ft.

UST:

Facility ID:	9-503924
Owner:	Mid Pac Petroleum LLC
Owner Address:	1100 Alakea St., 8th Floor
Owner City,St,Zip:	Kahului, 96732 96732
Latitude:	Not reported
Longitude:	Not reported
Horizontal Reference Datum Name:	Not reported
Horizontal Collection Method Name:	Not reported
Tank ID:	1
Date Installed:	02/13/2013
Tank Status:	**Currently in Use**
Date Closed:	Not reported
Tank Capacity:	12000
Substance:	Gasoline
Tank ID:	2a
Date Installed:	02/13/2013
Tank Status:	**Currently In Use**
Date Closed:	Not reported
Tank Capacity:	7000
Substance:	Gasoline
Tank ID:	2b
Date Installed:	02/13/2013
Tank Status:	**Currently In Use**
Date Closed:	Not reported
Tank Capacity:	5000
Substance:	Diesel

HI Financial Assurance:

Alt Facility ID:	9-503924
Tank Id:	1
Tank Status:	Currently in Use
FRTYPE:	Insurance
Expiration Date:	03/31/2015
Alt Facility ID:	9-503924
Tank Id:	2a
Tank Status:	Currently In Use
FRTYPE:	Insurance
Expiration Date:	03/31/2015
Alt Facility ID:	9-503924
Tank Id:	2b
Tank Status:	Currently In Use
FRTYPE:	Insurance
Expiration Date:	03/31/2015

L75 NNE 1/2-1 0.813 mi. 4293 ft. — **ALVIN'S UPTOWN CHEVRON SERVICE STATION**, **2085 WEST MAIN ST**, **WAILUKU, HI** — **HI RGA HWS** — **S116399552** / **N/A**

Site 5 of 17 in cluster L

Relative: Lower
Actual: 293 ft.

RGA HWS:

2012	ALVIN'S UPTOWN CHEVRON SERVICE STATION	2085 WEST MAIN ST
2009	ALVIN'S UPTOWN CHEVRON SERVICE STATION	2085 WEST MAIN ST
2008	ALVIN'S UPTOWN CHEVRON SERVICE STATION	2085 WEST MAIN ST
2006	ALVIN'S UPTOWN CHEVRON SERVICE STATION	2085 WEST MAIN ST
2005	ALVIN'S UPTOWN CHEVRON SERVICE STATION	2085 WEST MAIN ST

L76 NNE 1/2-1 0.813 mi. 4293 ft. — **UPTOWN SERVICE**, **2085 MAIN ST**, **WAILUKU, HI 96793** — **HI LUST**, **HI UST**, **HI Financial Assurance** — **1000344105** / **N/A**

Site 6 of 17 in cluster L

Relative: Lower
Actual: 293 ft.

LUST:

Facility ID:	9-501128
Facility Status:	Site Cleanup Completed (NFA)
Facility Status Date:	01/04/2002
Release ID:	990175
Project Officer:	Richard Takaba

UST:

Facility ID:	9-501128
Owner:	ALVIN MAKIMOTO
Owner Address:	UPTOWN SERVICE2085 MAIN ST
Owner City,St,Zip:	Wailuku, 96793 96793
Latitude:	20.887264
Longitude:	-156.502780
Horizontal Reference Datum Name:	NAD83
Horizontal Collection Method Name:	GPS
Tank ID:	1
Date Installed:	07/19/1983
Tank Status:	**Currently In Use**
Date Closed:	Not reported
Tank Capacity:	10000
Substance:	Gasoline
Tank ID:	2
Date Installed:	07/18/1977
Tank Status:	**Currently in Use**
Date Closed:	Not reported
Tank Capacity:	6000
Substance:	Gasoline
Tank ID:	3
Date Installed:	07/19/1983
Tank Status:	**Currently in Use**
Date Closed:	Not reported
Tank Capacity:	10000
Substance:	Gasoline

UPTOWN SERVICE (Continued) **1000344105**

Tank ID: 4
Date Installed: 07/19/1983
Tank Status: Currently in Use
Date Closed: Not reported
Tank Capacity: 10000
Substance: Gasoline

Tank ID: R-5
Date Installed: 12/01/1982
Tank Status: Permanently Out of Use
Date Closed: 06/04/1997
Tank Capacity: 1000
Substance: Used Oil

HI Financial Assurance:
Alt Facility ID: 9-501128
Tank Id: 3
Tank Status: Currently in Use
FRTYPE: Not reported
Expiration Date: Not reported

Alt Facility ID: 9-501128
Tank Id: R-5
Tank Status: Permanently Out of Use
FRTYPE: Not reported
Expiration Date: Not reported

Alt Facility ID: 9-501128
Tank Id: 4
Tank Status: Currently in Use
FRTYPE: Not reported
Expiration Date: Not reported

Alt Facility ID: 9-501128
Tank Id: 2
Tank Status: Currently in Use
FRTYPE: Not reported
Expiration Date: Not reported

Alt Facility ID: 9-501128
Tank Id: 1
Tank Status: Currently In Use
FRTYPE: Not reported
Expiration Date: Not reported

Alt Facility ID: 9-501128
Tank Id: 2
Tank Status: Currently in Use
FRTYPE: Insurance
Expiration Date: 12/15/2015

Alt Facility ID: 9-501128
Tank Id: 1
Tank Status: Currently In Use
FRTYPE: Insurance
Expiration Date: 12/15/2015

UPTOWN SERVICE (Continued) **1000344105**

Alt Facility ID: 9-501128
Tank Id: 4
Tank Status: Currently in Use
FRTYPE: Insurance
Expiration Date: 12/15/2015

Alt Facility ID: 9-501128
Tank Id: R-5
Tank Status: Permanently Out of Use
FRTYPE: Insurance
Expiration Date: 12/15/2015

Alt Facility ID: 9-501128
Tank Id: 3
Tank Status: Currently in Use
FRTYPE: Insurance
Expiration Date: 12/15/2015

L77 **ALVIN'S UPTOWN CHEVRON SERVICE STATION** **HI SHWS** **S117391420**
NNE **2085 W MAIN ST** **HI SPILLS** **N/A**
1/2-1 **WAILUKU, HI 96793**
0.813 mi.
4293 ft. **Site 7 of 17 in cluster L**

Relative:
Lower

Actual:
293 ft.

SHWS:
Organization: Not reported
Supplemental Location: Not reported
Island: Maui
Environmental Interest: Hydraulic Hoist and Sand-and-Grease Trap Removal
HID Number: Not reported
Facility Registry Identifier: 110006399922
Lead Agency: HEER
Program: State
Project Manager: Diane England
Hazard Priority: NFA
Potential Hazards And Controls: Hazard Undetermined
Organization: Not reported
Island: Maui
Supplemental Location Text: Not reported
SDAR Environmental Interest Name: Hydraulic Hoist and Sand-and-Grease Trap Removal
HID Number: Not reported
Facility Registry Identifier: 110006399922
Lead Agency: HEER
Progran Name: State
Potential Hazard And Controls: Hazard Undetermined
Priority: NFA
Assessment: Response Necessary
Response: Response Complete
Nature of Contamination: Not reported
Nature of Residual Contamination: Petroleum impacted soil
Use Restrictions: Undetermined
Engineering Control: Not reported
Description of Restrictions: Not reported
Institutional Control: Not reported
Within Designated Areawide Contamination: Not reported
Site Closure Type: No Further Action Letter - Unrestricted Residential Use
Document Date: 04/28/2005
Document Number: 2005-185-DE

ALVIN'S UPTOWN CHEVRON SERVICE STATION (Continued) **S117391420**

Document Subject: No Further Action Determination for Release No. 20031119-0831
Project Manager: Diane England
Contact Information: (808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

HI SPILLS:

Island:	Maui
Supplemental Loc. Text:	Not reported
Case Number:	20031119-0831
HID Number:	Not reported
Facility Registry Id:	110006399922
Lead and Program:	HEER EP&R
ER:	Not reported
Units:	Hydraulic Hoist Removal
Substances:	Petroleum Hydrocarbon
Less Or Greater Than:	Not reported
Numerical Quantity:	Not reported
Units:	Not reported
Activity Type:	Response
Activity Lead:	Marsha Graf
Assignment End Date:	2005-04-18 00:00:00
Result:	Refer to ISST
File Under:	Chevron Products Company

L78 **EDR Hist Auto** **1015316823**
NNE **2085 MAIN ST** **N/A**
1/2-1 **WAILUKU, HI 96793**
0.813 mi.
4293 ft. **Site 8 of 17 in cluster L**

Relative: Lower

Actual: 293 ft.

EDR Historical Auto Stations:

Name:	UPTOWN CHEVRON SERVICE INCORPORATED
Year:	1999
Address:	2085 MAIN ST
Name:	UPTOWN CHEVRON SERVICE INC
Year:	2001
Address:	2085 MAIN ST
Name:	UPTOWN CHEVRON SERVICE INC
Year:	2002
Address:	2085 MAIN ST
Name:	UPTOWN FOOD MART & CAR WASH
Year:	2008
Address:	2085 MAIN ST
Name:	UPTOWN CHEVRON FOOD MART & CAR
Year:	2010
Address:	2085 MAIN ST
Name:	CHEVRON
Year:	2011
Address:	2085 MAIN ST
Name:	CHEVRON
Year:	2012
Address:	2085 MAIN ST

L79 **UPTOWN SERVICE INC** **RCRA-CESQG** **1004688826**
NNE **2085 MAIN ST** **FINDS** **HID981983539**
1/2-1 **WAILUKU, HI 96793**
0.813 mi.
4293 ft. **Site 9 of 17 in cluster L**

Relative: Lower

Actual: 293 ft.

RCRA-CESQG:

Date form received by agency:	05/01/1987
Facility name:	UPTOWN SERVICE INC
Facility address:	2085 MAIN ST WAILUKU, HI 96793
EPA ID:	HID981983539
Contact:	ENVIRONMENTAL MANAGER
Contact address:	2085 MAIN ST WAILUKU MAUI, HI 96793
Contact country:	US
Contact telephone:	(808) 244-0869
Contact email:	Not reported
EPA Region:	09
Classification:	Conditionally Exempt Small Quantity Generator
Description:	Handler: generates 100 kg or less of hazardous waste per calendar month, and accumulates 1000 kg or less of hazardous waste at any time; or generates 1 kg or less of acutely hazardous waste per calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste; or generates 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste

Owner/Operator Summary:

Owner/operator name:	CHEVRON
Owner/operator address:	NOT REQUIRED NOT REQUIRED, ME 99999
Owner/operator country:	Not reported
Owner/operator telephone:	(415) 555-1212
Legal status:	Private
Owner/Operator Type:	Owner
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported
Owner/operator name:	NOT REQUIRED
Owner/operator address:	NOT REQUIRED NOT REQUIRED, ME 99999
Owner/operator country:	Not reported
Owner/operator telephone:	(415) 555-1212
Legal status:	Private
Owner/Operator Type:	Operator
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No

UPTOWN SERVICE INC (Continued) **1004688826**

Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Violation Status: No violations found

FINDS:

Registry ID: 110006399922

Environmental Interest/Information System
RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

STATE MASTER

L80 **UPTOWN SERVICE** **HI RGA LUST** **S116404237**
NNE **2085 MAIN ST** **N/A**
1/2-1 **WAILUKU, HI**
0.813 mi.
4293 ft. **Site 10 of 17 in cluster L**

Relative: Lower

Actual: 293 ft.

RGA LUST:

2012	UPTOWN SERVICE	2085 MAIN ST
2011	UPTOWN SERVICE	2085 MAIN ST
2010	UPTOWN SERVICE	2085 MAIN ST
2009	UPTOWN SERVICE	2085 MAIN ST
2008	UPTOWN SERVICE	2085 MAIN ST
2007	UPTOWN SERVICE	2085 MAIN ST
2006	UPTOWN SERVICE	2085 MAIN ST
2005	UPTOWN SERVICE	2085 MAIN ST
2004	UPTOWN SERVICE	2085 MAIN ST
2003	UPTOWN SERVICE	2085 MAIN ST
2002	UPTOWN SERVICE	2085 MAIN ST
2001	UPTOWN SERVICE	2085 MAIN ST
2000	UPTOWN SERVICE	2085 MAIN ST
1999	UPTOWN SERVICE	2085 MAIN ST

L81 **MAUI SHELL SERVICE** **HI RGA LUST** **S116402776**
NNE **2086 MAIN STREET** **N/A**
1/2-1 **WAILUKU, HI**
0.819 mi.
4323 ft. **Site 11 of 17 in cluster L**

Relative: Lower

Actual: 295 ft.

RGA LUST:

1995	MAUI SHELL SERVICE	2086 MAIN STREET
1993	MAUI SHELL SERVICE	2086 MAIN STREET

L82 **MAUI SHELL SERVICE** **HI RGA LUST** **S116402777**
NNE **2086 MAIN ST** **N/A**
1/2-1 **WAILUKU, HI**
0.819 mi.
4323 ft. **Site 12 of 17 in cluster L**

Relative: Lower

Actual: 295 ft.

RGA LUST:

1997	MAUI SHELL SERVICE	2086 MAIN ST

L83 **MINIT STOP SHELL MART** **HI RGA LUST** **S116402915**
NNE **2086 MAIN ST** **N/A**
1/2-1 **WAILUKU, HI**
0.819 mi.
4323 ft. **Site 13 of 17 in cluster L**

Relative: Lower

Actual: 295 ft.

RGA LUST:

2001	MINIT STOP SHELL MART	2086 MAIN ST
2000	MINIT STOP SHELL MART	2086 MAIN ST
1999	MINIT STOP SHELL MART	2086 MAIN ST
1998	MINIT STOP SHELL MART	2086 MAIN ST

L84 **KUKUIULA WASTEWATER TREATMENT PLANT** **FINDS** **1016056969**
NNE **2086 MAIN STREET** **N/A**
1/2-1 **WAILUKU, HI 96793**
0.819 mi.
4323 ft. **Site 14 of 17 in cluster L**

Relative: Lower

Actual: 295 ft.

FINDS:

Registry ID: 110013766683

Environmental Interest/Information System
RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

STATE MASTER

L85 NNE 1/2-1 0.819 mi. 4323 ft. — **COURTHOUSE SHELL** — **HI RGA LUST** — **S116401218** / **N/A**

2086 MAIN ST
WAILUKU, HI

Site 15 of 17 in cluster L

Relative: Lower
Actual: 295 ft.

RGA LUST:

2012	COURTHOUSE SHELL	2086 MAIN ST
2011	COURTHOUSE SHELL	2086 MAIN ST
2010	COURTHOUSE SHELL	2086 MAIN ST
2009	COURTHOUSE SHELL	2086 MAIN ST
2008	COURTHOUSE SHELL	2086 MAIN ST
2007	COURTHOUSE SHELL	2086 MAIN ST
2006	COURTHOUSE SHELL	2086 MAIN ST
2005	COURTHOUSE SHELL	2086 MAIN ST
2004	COURTHOUSE SHELL	2086 MAIN ST
2003	COURTHOUSE SHELL	2086 MAIN ST
2002	COURTHOUSE SHELL	2086 MAIN ST

L86 NNE 1/2-1 0.821 mi. 4334 ft. — **SHELL OIL CO** — **RCRA-CESQG** — **1004688855** / **HID982445421**

2086 MAIN ST
WAILUKU, HI 96793

Site 16 of 17 in cluster L

Relative: Lower
Actual: 296 ft.

RCRA-CESQG:

Date form received by agency:	08/15/1993
Facility name:	SHELL OIL CO
Facility address:	2086 MAIN ST WAILUKU, HI 96793
EPA ID:	HID982445421
Mailing address:	P O BOX 4848 ANAHEIM, CA 92803
Contact:	SONDRA BIENVENU
Contact address:	2086 MAIN ST WAILUKU, HI 96793
Contact country:	US
Contact telephone:	(713) 241-2258
Contact email:	Not reported
EPA Region:	09
Classification:	Conditionally Exempt Small Quantity Generator
Description:	Handler: generates 100 kg or less of hazardous waste per calendar month, and accumulates 1000 kg or less of hazardous waste at any time; or generates 1 kg or less of acutely hazardous waste per calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste; or generates 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste

Owner/Operator Summary:

Owner/operator name:	SHELL OIL CO
Owner/operator address:	NOT REQUIRED NOT REQUIRED, ME 99999

SHELL OIL CO (Continued) — **1004688855**

Owner/operator country:	Not reported
Owner/operator telephone:	(415) 555-1212
Legal status:	Private
Owner/Operator Type:	Owner
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported
Owner/operator name:	NOT REQUIRED
Owner/operator address:	NOT REQUIRED NOT REQUIRED, ME 99999
Owner/operator country:	Not reported
Owner/operator telephone:	(415) 555-1212
Legal status:	Private
Owner/Operator Type:	Operator
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Handler Activities Summary:

U.S. importer of hazardous waste:	No
Mixed waste (haz. and radioactive):	No
Recycler of hazardous waste:	No
Transporter of hazardous waste:	No
Treater, storer or disposer of HW:	No
Underground injection activity:	No
On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No
Used oil transfer facility:	No
Used oil transporter:	No

Violation Status: No violations found

L87 NNE 1/2-1 0.821 mi. 4334 ft. — **COURTHOUSE SHELL SS** — **HI LUST** — **U001236712** / **HI UST** — **N/A** / **HI Financial Assurance**

2086 MAIN ST
WAILUKU, HI 96793

Site 17 of 17 in cluster L

Relative: Lower
Actual: 296 ft.

LUST:

Facility ID:	9-501008
Facility Status:	Site Cleanup Completed (NFA)
Facility Status Date:	08/31/1995
Release ID:	920149
Project Officer:	Jose Ruiz
Facility ID:	9-501008
Facility Status:	Site Cleanup Completed (NFA)
Facility Status Date:	02/29/2000
Release ID:	000056
Project Officer:	Jose Ruiz

UST:

Facility ID:	9-501008
Owner:	EQUILON ENTERPRISES, LLC DBA SHELL OIL PRODUCTS US

COURTHOUSE SHELL SS (Continued) **U001236712**

Owner Address: 2555 13TH AVE, SW
Owner City,St,Zip: Wailuku, 96793 96793
Latitude: 20.887597
Longitude: -156.502870
Horizontal Reference Datum Name: NAD83
Horizontal Collection Method Name: Address Matching

Tank ID: R-4
Date Installed: 06/30/1991
Tank Status: Permanently Out of Use
Date Closed: 09/01/1999
Tank Capacity: 550
Substance: Used Oil

Tank ID: R-5
Date Installed: 04/18/1962
Tank Status: Permanently Out of Use
Date Closed: 06/30/1991
Tank Capacity: 550
Substance: Used Oil

Tank ID: R-6
Date Installed: Not reported
Tank Status: Permanently Out of Use
Date Closed: 06/30/1991
Tank Capacity: 4000
Substance: Gasoline

Tank ID: R-7
Date Installed: Not reported
Tank Status: Permanently Out of Use
Date Closed: 06/30/1991
Tank Capacity: 4000
Substance: Gasoline

Tank ID: R-8
Date Installed: Not reported
Tank Status: Permanently Out of Use
Date Closed: 06/30/1991
Tank Capacity: 4000
Substance: Gasoline

Tank ID: r-87
Date Installed: 08/31/1979
Tank Status: Permanently Out of Use
Date Closed: 01/05/2004
Tank Capacity: 8000
Substance: Gasoline

Tank ID: r-89
Date Installed: 08/31/1979

COURTHOUSE SHELL SS (Continued) **U001236712**

Tank Status: Permanently Out of Use
Date Closed: 01/05/2004
Tank Capacity: 8000
Substance: Gasoline

Tank ID: r-92
Date Installed: 08/31/1979
Tank Status: Permanently Out of Use
Date Closed: 01/05/2004
Tank Capacity: 8000
Substance: Gasoline

HI Financial Assurance:
Alt Facility ID: 9-501008
Tank Id: R-8
Tank Status: Permanently Out of Use
FRTYPE: Insurance
Expiration Date: Not reported

Alt Facility ID: 9-501008
Tank Id: r-92
Tank Status: Permanently Out of Use
FRTYPE: Insurance
Expiration Date: Not reported

Alt Facility ID: 9-501008
Tank Id: r-89
Tank Status: Permanently Out of Use
FRTYPE: Other
Expiration Date: Not reported

Alt Facility ID: 9-501008
Tank Id: r-89
Tank Status: Permanently Out of Use
FRTYPE: Insurance
Expiration Date: Not reported

Alt Facility ID: 9-501008
Tank Id: r-87
Tank Status: Permanently Out of Use
FRTYPE: Other
Expiration Date: Not reported

Alt Facility ID: 9-501008
Tank Id: r-92
Tank Status: Permanently Out of Use
FRTYPE: Other
Expiration Date: Not reported

Alt Facility ID: 9-501008
Tank Id: R-8
Tank Status: Permanently Out of Use
FRTYPE: Other
Expiration Date: Not reported

Alt Facility ID: 9-501008

COURTHOUSE SHELL SS (Continued) **U001236712**

Tank Id: R-7
Tank Status: Permanently Out of Use
FRTYPE: Insurance
Expiration Date: Not reported

Alt Facility ID: 9-501008
Tank Id: R-6
Tank Status: Permanently Out of Use
FRTYPE: Other
Expiration Date: Not reported

Alt Facility ID: 9-501008
Tank Id: R-6
Tank Status: Permanently Out of Use
FRTYPE: Insurance
Expiration Date: Not reported

Alt Facility ID: 9-501008
Tank Id: R-5
Tank Status: Permanently Out of Use
FRTYPE: Other
Expiration Date: Not reported

Alt Facility ID: 9-501008
Tank Id: R-5
Tank Status: Permanently Out of Use
FRTYPE: Insurance
Expiration Date: Not reported

Alt Facility ID: 9-501008
Tank Id: R-4
Tank Status: Permanently Out of Use
FRTYPE: Other
Expiration Date: Not reported

Alt Facility ID: 9-501008
Tank Id: R-4
Tank Status: Permanently Out of Use
FRTYPE: Insurance
Expiration Date: Not reported

Alt Facility ID: 9-501008
Tank Id: r-87
Tank Status: Permanently Out of Use
FRTYPE: Insurance
Expiration Date: Not reported

Alt Facility ID: 9-501008
Tank Id: R-7
Tank Status: Permanently Out of Use
FRTYPE: Other
Expiration Date: Not reported

P88 **MAIN STREET PROMENADE PROJECT (DEMOLITION PHASE 1B)** **HI SHWS** **S106818881**
NNE **2058 MAIN ST** **N/A**
1/2-1 **WAILUKU, HI**
0.831 mi.
4389 ft. **Site 1 of 12 in cluster P**

Relative:
Lower

Actual:
289 ft.

SHWS:

Organization:	Not reported
Supplemental Location:	Not reported
Island:	Maui
Environmental Interest:	Main Street Promenade Project (Demolition Phase 1B)
HID Number:	Not reported
Facility Registry Identifier:	Not reported
Lead Agency:	Not reported
Program:	State
Project Manager:	Mike Cripps
Hazard Priority:	NFA
Potential Hazards And Controls:	Hazard Undetermined
Organization:	Not reported
Island:	Maui
Supplemental Location Text:	Not reported
SDAR Environmental Interest Name:	Main Street Promenade Project (Demolition Phase 1B)
HID Number:	Not reported
Facility Registry Identifier:	Not reported
Lead Agency:	Not reported
Progran Name:	State
Potential Hazard And Controls:	Hazard Undetermined
Priority:	NFA
Assessment:	Assessment Ongoing
Response:	Not reported
Nature of Contamination:	Not reported
Nature of Residual Contamination:	Not reported
Use Restrictions:	Undetermined
Engineering Control:	Not reported
Description of Restrictions:	Not reported
Institutional Control:	Not reported
Within Designated Areawide Contamination:	Not reported
Site Closure Type:	No Further Action - Type Undetermined
Document Date:	09/01/2000
Document Number:	Not reported
Document Subject:	Not reported
Project Manager:	Mike Cripps
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

P89 **MAIN STREET PROMENADE PROJECT (DEMOLITION PHASE 1B)** **HI RGA HWS** **S116400270**
NNE **2058 MAIN ST** **N/A**
1/2-1 **WAILUKU, HI**
0.831 mi.
4389 ft. **Site 2 of 12 in cluster P**

Relative:
Lower

Actual:
289 ft.

RGA HWS:

2012 MAIN STREET PROMENADE PROJECT (DEMOLITION PHASE 1B) 2058 MAIN ST
2009 MAIN STREET PROMENADE PROJECT (DEMOLITION PHASE 1B) 2058 MAIN ST
2008 MAIN STREET PROMENADE PROJECT (DEMOLITION PHASE 1B) 2058 MAIN ST
2006 MAIN STREET PROMENADE PROJECT (DEMOLITION PHASE 1B) 2058 MAIN ST
2005 MAIN STREET PROMENADE PROJECT (DEMOLITION PHASE 1B) 2058

MAIN STREET PROMENADE PROJECT (DEMOLITION PHASE 1B) (Continued) **S116400270**

MAIN ST

P90 NNE 1/2-1 0.836 mi. 4414 ft. **WAIKAPU STREAM DRAINAGE OUTLET (1)** **FINDS** **1016403933**
24 NORTH CHURCH STREET **N/A**
WAILUKU, HI 96793

Site 3 of 12 in cluster P

Relative: Lower
Actual: 301 ft.

FINDS:

Registry ID: 110055382580

Environmental Interest/Information System
STATE MASTER

P91 NNE 1/2-1 0.847 mi. 4470 ft. **EDR Hist Auto** **1015308983**
2026 MAIN ST **N/A**
WAILUKU, HI 96793

Site 4 of 12 in cluster P

Relative: Lower
Actual: 281 ft.

EDR Historical Auto Stations:
Name: VALLEY ISLE MOTORS LIMITED
Year: 2007
Address: 2026 MAIN ST

P92 NNE 1/2-1 0.847 mi. 4470 ft. **VALLEY ISLE MOTORS LUST** **HI RGA HWS** **S116400640**
2026 MAIN ST **N/A**
WAILUKU, HI

Site 5 of 12 in cluster P

Relative: Lower
Actual: 281 ft.

RGA HWS:

2012	VALLEY ISLE MOTORS LUST	2026 MAIN ST
2009	VALLEY ISLE MOTORS LUST	2026 MAIN ST
2008	VALLEY ISLE MOTORS LUST	2026 MAIN ST
2006	VALLEY ISLE MOTORS LUST	2026 MAIN ST
2005	VALLEY ISLE MOTORS LUST	2026 MAIN ST

P93 NNE 1/2-1 0.847 mi. 4470 ft. **ROBERT JOSLIN** **RCRA-CESQG** **1000601460**
2026 MAIN ST **HI SHWS** **HID984466896**
WAILUKU, HI 96793 **HI LUST**
HI UST
HI SPILLS

Site 6 of 12 in cluster P

Relative: Lower
Actual: 281 ft.

RCRA-CESQG:
Date form received by agency: 04/27/2001
Facility name: ROBERT JOSLIN
Facility address: 2026 MAIN ST
WAILUKU, HI 96793
EPA ID: HID984466896
Contact: ROBERT JOSLIN
Contact address: 2026 MAIN ST
WAILUKU, HI 96793

ROBERT JOSLIN (Continued) **1000601460**

Contact country: US
Contact telephone: (808) 244-3980
Contact email: Not reported
EPA Region: 09
Land type: Private
Classification: Conditionally Exempt Small Quantity Generator
Description: Handler: generates 100 kg or less of hazardous waste per calendar month, and accumulates 1000 kg or less of hazardous waste at any time; or generates 1 kg or less of acutely hazardous waste per calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste; or generates 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste

Owner/Operator Summary:
Owner/operator name: ROBERT JOSLIN
Owner/operator address: 2026 MAIN ST
WAILUKU, HI 96793
Owner/operator country: Not reported
Owner/operator telephone: (808) 244-3980
Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

. Waste code: D000
. Waste name: Not Defined

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D008

ROBERT JOSLIN (Continued) **1000601460**

. Waste name: LEAD

. Waste code: D018
. Waste name: BENZENE

Violation Status: No violations found

Evaluation Action Summary:
Evaluation date: 01/19/1996
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

SHWS:
Organization: Not reported
Supplemental Location: Not reported
Island: Maui
Environmental Interest: Valley Isle Motors Leaking UST
HID Number: Not reported
Facility Registry Identifier: 110005727516
Lead Agency: SHWB
Program: State
Project Manager: Melody Calisay
Hazard Priority: NFA
Potential Hazards And Controls: No Hazard
Organization: Not reported
Island: Maui
Supplemental Location Text: Not reported
SDAR Environmental Interest Name: Valley Isle Motors Leaking UST
HID Number: Not reported
Facility Registry Identifier: 110005727516
Lead Agency: SHWB
Progran Name: State
Potential Hazard And Controls: No Hazard
Priority: NFA
Assessment: Response Necessary
Response: Response Complete
Nature of Contamination: Found: Petroleum in soil
Nature of Residual Contamination: None
Use Restrictions: No Hazard Present for Unrestricted Residential Use
Engineering Control: Not reported
Description of Restrictions: Not reported
Institutional Control: Not reported
Within Designated Areawide Contamination: Not reported
Site Closure Type: No Further Action Letter - Unrestricted Residential Use
Document Date: 05/15/2003
Document Number: Not reported
Document Subject: Former Valley Isle Motors
Project Manager: Melody Calisay
Contact Information: (808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

LUST:
Facility ID: 9-501588
Facility Status: Site Cleanup Completed (NFA)
Facility Status Date: 05/15/2003
Release ID: 900024

ROBERT JOSLIN (Continued) **1000601460**

Project Officer: Shunsheng Fu

Facility ID: 9-501588
Facility Status: Site Cleanup Completed (NFA)
Facility Status Date: 05/15/2003
Release ID: 010004
Project Officer: Shunsheng Fu

UST:
Facility ID: 9-501588
Owner: VALLEY ISLE MOTORS, LTD.
Owner Address: 2026 MAIN St
Owner City,St,Zip: Wailuku, 96793 96793
Latitude: 20.887813
Longitude: -156.502035
Horizontal Reference Datum Name: NAD83
Horizontal Collection Method Name: Address Matching

Tank ID: R-1
Date Installed: 04/22/1966
Tank Status: Permanently Out of Use
Date Closed: 05/10/1990
Tank Capacity: 1000
Substance: Used Oil

Tank ID: R-2
Date Installed: 04/22/1966
Tank Status: Permanently Out of Use
Date Closed: 05/10/1990
Tank Capacity: 1000
Substance: Used Oil

Tank ID: R-3
Date Installed: Not reported
Tank Status: Permanently Out of Use
Date Closed: 05/10/1990
Tank Capacity: 1000
Substance: Used Oil

Tank ID: R-4
Date Installed: Not reported
Tank Status: Permanently Out of Use
Date Closed: 01/01/1990
Tank Capacity: 1000
Substance: Gasoline

Tank ID: R-7
Date Installed: Not reported
Tank Status: Permanently Out of Use
Date Closed: 10/01/2000
Tank Capacity: 300
Substance: Used Oil

ROBERT JOSLIN (Continued) **1000601460**

Tank ID: R-8
Date Installed: Not reported
Tank Status: Permanently Out of Use
Date Closed: 01/01/1990
Tank Capacity: 300
Substance: Kerosene

Tank ID: r-5
Date Installed: Not reported
Tank Status: Permanently Out of Use
Date Closed: 01/01/1990
Tank Capacity: 1000
Substance: Gasoline

Tank ID: r-6
Date Installed: Not reported
Tank Status: Permanently Out of Use
Date Closed: 01/01/1990
Tank Capacity: 1000
Substance: Gasoline

HI SPILLS:
Island: Maui
Supplemental Loc. Text: Not reported
Case Number: 19990804-1500
HID Number: Not reported
Facility Registry Id: 110005727516
Lead and Program: HEER EP&R
ER: No
Units: Valley Isle Motors LUST
Substances: Oil
Less Or Greater Than: Not reported
Numerical Quantity: Not reported
Units: Not reported
Activity Type: Response
Activity Lead: Bill Perry
Assignment End Date: Not reported
Result: Refer to ISST
File Under: Valley Isle Motors

Island: Maui
Supplemental Loc. Text: Not reported
Case Number: 19990805-1343
HID Number: Not reported
Facility Registry Id: 110005727516
Lead and Program: HEER EP&R
ER: No
Units: Former Valley Isle Motors LUST
Substances: Not reported
Less Or Greater Than: Not reported
Numerical Quantity: Not reported
Units: Not reported
Activity Type: Response
Activity Lead: Terry Corpus
Assignment End Date: Not reported

ROBERT JOSLIN (Continued) **1000601460**

Result: Refer to ISST
File Under: Valley Isle Motors

P94 **VALLEY ISLE MOTORS, LTD.** **HI RGA LUST** **S116404382**
NNE **2026 MAIN ST** **N/A**
1/2-1 **WAILUKU, HI**
0.847 mi.
4470 ft. **Site 7 of 12 in cluster P**

Relative: Lower

Actual: 281 ft.

RGA LUST:

2012	VALLEY ISLE MOTORS, LTD.	2026 MAIN ST
2011	VALLEY ISLE MOTORS, LTD.	2026 MAIN ST
2010	VALLEY ISLE MOTORS, LTD.	2026 MAIN ST
2009	VALLEY ISLE MOTORS, LTD.	2026 MAIN ST
2008	VALLEY ISLE MOTORS, LTD.	2026 MAIN ST
2007	VALLEY ISLE MOTORS, LTD.	2026 MAIN ST
2006	VALLEY ISLE MOTORS, LTD.	2026 MAIN ST
2005	VALLEY ISLE MOTORS, LTD.	2026 MAIN ST
2004	VALLEY ISLE MOTORS, LTD.	2026 MAIN ST
2003	VALLEY ISLE MOTORS, LTD.	2026 MAIN ST
2002	VALLEY ISLE MOTORS, LTD.	2026 MAIN ST
2001	VALLEY ISLE MOTORS, LTD.	2026 MAIN ST
2000	VALLEY ISLE MOTORS, LTD.	2026 MAIN ST
1999	VALLEY ISLE MOTORS, LTD.	2026 MAIN ST
1998	VALLEY ISLE MOTORS, LTD.	2026 MAIN ST
1997	VALLEY ISLE MOTORS, LTD.	2026 MAIN ST

P95 **VALLEY ISLE MOTORS LTD** **FINDS** **1016051741**
NNE **2026 MAIN ST** **N/A**
1/2-1 **WAILUKU, HI 96793**
0.847 mi.
4470 ft. **Site 8 of 12 in cluster P**

Relative: Lower

Actual: 281 ft.

FINDS:

Registry ID: 110005727516

Environmental Interest/Information System
RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

STATE MASTER

P96 NNE 1/2-1 0.847 mi. 4470 ft. — **VALLEY ISLE MOTORS, LTD.** — **HI RGA LUST** — **S116404381 / N/A**
2026 MAIN STREET
WAILUKU, HI

Site 9 of 12 in cluster P

Relative: Lower — **Actual: 281 ft.**

RGA LUST:

1995	VALLEY ISLE MOTORS, LTD.	2026 MAIN STREET
1993	VALLEY ISLE MOTORS, LTD.	2026 MAIN STREET

P97 NNE 1/2-1 0.851 mi. 4494 ft. — **KULAMALU HILLTOP SUBDIVISION** — **FINDS** — **1016992773 / N/A**
2005 MAIN STREET
WAILUKU, HI 96793

Site 10 of 12 in cluster P

Relative: Lower — **Actual: 277 ft.**

FINDS:

Registry ID: 110028076720

Environmental Interest/Information System
STATE MASTER

P98 NNE 1/2-1 0.857 mi. 4524 ft. — **KAMEHAMEHA SCHOOL MAUI CAMPUS DRIVEWAY** — **FINDS** — **1015965290 / N/A**
1997 MAIN STREET
WAILUKU, HI 96793

Site 11 of 12 in cluster P

Relative: Lower — **Actual: 275 ft.**

FINDS:

Registry ID: 110055399215

Environmental Interest/Information System
STATE MASTER

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99 ESE 1/2-1 0.858 mi. 4532 ft. — **WAILUKU - MAUI LANI WELLS 7** — **FINDS** — **1016368656 / N/A**
WAILUKU (DWS), HI 96761

Relative: Lower — **Actual: 192 ft.**

FINDS:

Registry ID: 110046190171

Environmental Interest/Information System
STATE MASTER

Q100 NNE 1/2-1 0.867 mi. 4577 ft. — **EDR Hist Auto** — **1015298405 / N/A**
1990 MAIN ST
WAILUKU, HI 96793

Site 1 of 14 in cluster Q

Relative: Lower — **Actual: 273 ft.**

EDR Historical Auto Stations:

Name:	ALDENS AUTOMOTIVE SERVICE
Year:	2007
Address:	1990 MAIN ST
Name:	ALDENS AUTOMOTIVE SERVICE
Year:	2008
Address:	1990 MAIN ST
Name:	ALDENS AUTOMOTIVE SERVICE
Year:	2009
Address:	1990 MAIN ST

R101 ENE 1/2-1 0.877 mi. 4630 ft. — **MAUI SCRAP METAL CO.** — **RCRA NonGen / NLR** — **1000245009 / HID056783624**
1791 WAIINU RD.
WAILUKU, HI 96793

Site 1 of 2 in cluster R

Relative: Lower — **Actual: 211 ft.**

RCRA NonGen / NLR:

Date form received by agency:	07/23/1991
Facility name:	MAUI SCRAP METAL CO.
Facility address:	1791 WAIINU RD. WAILUKU, HI 96793
EPA ID:	HID056783624
Mailing address:	PO BOX 1172 WAILUKU, HI 96793
Contact:	Not reported
Contact address:	Not reported Not reported
Contact country:	Not reported
Contact telephone:	Not reported
Contact email:	Not reported
EPA Region:	09
Land type:	Facility is not located on Indian land. Additional information is not known.
Classification:	Non-Generator
Description:	Handler: Non-Generators do not presently generate hazardous waste

Owner/Operator Summary:

Owner/operator name:	MAUI SCRAP METAL CO. INC.
Owner/operator address:	PO BOX 1172 WAILUKU, HI 96793
Owner/operator country:	Not reported
Owner/operator telephone:	(808) 244-0317
Legal status:	Private
Owner/Operator Type:	Owner
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported
Owner/operator name:	MAUI SCRAP METAL CO. INC.
Owner/operator address:	PO BOX 1172 CITY NOT REPORTED, HI 99999
Owner/operator country:	Not reported

MAUI SCRAP METAL CO. (Continued) **1000245009**

Owner/operator telephone: (808) 244-0317
Legal status: Private
Owner/Operator Type: Operator
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Historical Generators:
Date form received by agency: 08/18/1980
Site name: MAUI SCRAP METAL CO.
Classification: Not a generator, verified

Facility Has Received Notices of Violations:
Regulation violated: FR - 262.10-12.A
Area of violation: Generators - General
Date violation determined: 03/05/1986
Date achieved compliance: 01/19/1996
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 06/19/1986
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: EPA
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Evaluation Action Summary:
Evaluation date: 01/10/2005
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 12/19/2003
Evaluation: FOLLOW-UP INSPECTION
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

MAUI SCRAP METAL CO. (Continued) **1000245009**

Evaluation date: 01/19/1996
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 03/05/1986
Evaluation: FOCUSED COMPLIANCE INSPECTION
Area of violation: Generators - General
Date achieved compliance: 01/19/1996
Evaluation lead agency: State

Evaluation date: 03/05/1986
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

R102
ENE
1/2-1
0.877 mi.
4630 ft.

MAUI SCRAP METAL CO. **FINDS** **1016110512**
1791 WAIINU RD. **N/A**
WAILUKU, HI 96793

Site 2 of 2 in cluster R

Relative:
Lower

Actual:
211 ft.

FINDS:

Registry ID: 110005723066

Environmental Interest/Information System
RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

S103
North
1/2-1
0.881 mi.
4652 ft.

MAALAEA TRIANGLE DEVELOPMENT PROJECT/MAALAEA HARBOR DRAINAGE **FINDS** **1016405442**
75 NORTH CHURCH STREET **N/A**
WAILUKU, HI 96793

Site 1 of 6 in cluster S

Relative:
Lower

Actual:
306 ft.

FINDS:

Registry ID: 110055400971

Environmental Interest/Information System
STATE MASTER

104 East 1/2-1 0.881 mi. 4653 ft. — **23 KIEKIENA PL, KAHULUI, HI 96732** — **EDR Hist Cleaner** — **1015022806 / N/A**

Relative: Lower — **Actual: 167 ft.**

EDR Historical Cleaners:
- Name: LILI LAUNDRY
- Year: 2009
- Address: 23 KIEKIENA PL

P105 NNE 1/2-1 0.883 mi. 4664 ft. — **1X ALULI TRUST ESTATE, 31 N MARKET ST, WAILUKU, HI 96793** — **CA HAZNET** — **S113183265 / N/A**

Site 12 of 12 in cluster P

Relative: Lower — **Actual: 283 ft.**

HAZNET:

envid:	S113183265
Year:	2002
GEPAID:	HIC020104006
Contact:	JEFF
Telephone:	8085721166
Mailing Name:	Not reported
Mailing Address:	31 N MARKET ST
Mailing City,St,Zip:	WAILUKU, HI 967930000
Gen County:	Not reported
TSD EPA ID:	CAT000646117
TSD County:	Not reported
Waste Category:	Tank bottom waste
Disposal Method:	Transfer Station
Tons:	0.12
Cat Decode:	Tank bottom waste
Method Decode:	Transfer Station
Facility County:	99

Q106 NNE 1/2-1 0.884 mi. 4670 ft. — **MAUI AUTO DETAILING, 1955 MAIN ST, WAILUKU, HI 96793** — **HI UST** — **U001236825 / N/A**

Site 2 of 14 in cluster Q

Relative: Lower — **Actual: 259 ft.**

UST:

Facility ID:	9-502203
Owner:	MARGERET T. QUESNEL
Owner Address:	7413 W. 83RD ST
Owner City,St,Zip:	Wailuku, 96793 96793
Latitude:	Not reported
Longitude:	Not reported
Horizontal Reference Datum Name:	Not reported
Horizontal Collection Method Name:	Not reported
Tank ID:	R-001
Date Installed:	Not reported
Tank Status:	**Permanently Out of Use**
Date Closed:	Not reported
Tank Capacity:	400
Substance:	Other

MAUI AUTO DETAILING (Continued) — **U001236825**

Tank ID:	R-002
Date Installed:	Not reported
Tank Status:	**Permanently Out of Use**
Date Closed:	Not reported
Tank Capacity:	1000
Substance:	Other

Q107 NNE 1/2-1 0.884 mi. 4670 ft. — **MAUI AUTO DETAILING, 1955 MAIN STREET, WAILUKU, HI 96793** — **FINDS** — **1015813295 / N/A**

Site 3 of 14 in cluster Q

Relative: Lower — **Actual: 259 ft.**

FINDS:

Registry ID: 110055401881

Environmental Interest/Information System
STATE MASTER

Q108 NNE 1/2-1 0.887 mi. 4685 ft. — **IMA HANADA TRUST, 1960 MAIN ST, WAILUKU, HI 96793** — **HI UST** — **U001236722 / N/A**

Site 4 of 14 in cluster Q

Relative: Lower — **Actual: 261 ft.**

UST:

Facility ID:	9-501268
Owner:	IMA HANADA TRUST
Owner Address:	1960 MAIN ST
Owner City,St,Zip:	Wailuku, 96793 96793
Latitude:	Not reported
Longitude:	Not reported
Horizontal Reference Datum Name:	Not reported
Horizontal Collection Method Name:	Not reported
Tank ID:	P-1
Date Installed:	Not reported
Tank Status:	**Permanently Out of Use**
Date Closed:	Not reported
Tank Capacity:	Not reported
Substance:	Other
Tank ID:	P-2
Date Installed:	Not reported
Tank Status:	**Permanently Out of Use**
Date Closed:	Not reported
Tank Capacity:	Not reported
Substance:	Other
Tank ID:	P-3
Date Installed:	Not reported
Tank Status:	**Permanently Out of Use**

IMA HANADA TRUST (Continued) **U001236722**

Date Closed: Not reported
Tank Capacity: Not reported
Substance: Other

Tank ID: P-4
Date Installed: Not reported
Tank Status: Permanently Out of Use
Date Closed: Not reported
Tank Capacity: Not reported
Substance: Other

Tank ID: P-5
Date Installed: Not reported
Tank Status: Permanently Out of Use
Date Closed: Not reported
Tank Capacity: Not reported
Substance: Other

Q109 **IMA HANADA TRUST** **FINDS** **1015933072**
NNE **1960 MAIN STREET** **N/A**
1/2-1 **WAILUKU, HI 96793**
0.887 mi.
4685 ft. **Site 5 of 14 in cluster Q**

Relative: Lower

Actual: 261 ft.

FINDS:

Registry ID: 110046154111

Environmental Interest/Information System
STATE MASTER

Q110 **EDR Hist Auto** **1015294831**
NNE **1941 MAIN ST** **N/A**
1/2-1 **WAILUKU, HI 96793**
0.892 mi.
4712 ft. **Site 6 of 14 in cluster Q**

Relative: Lower

Actual: 254 ft.

EDR Historical Auto Stations:
Name: MAGNUM AUTO BODY & PAINT SHOP
Year: 2002
Address: 1941 MAIN ST

T111 **JD PAINTING** **RCRA-SQG** **1006806719**
NNE **70 KANOA ST** **FINDS** **HIR000135111**
1/2-1 **WAILUKU, HI 96793**
0.895 mi.
4724 ft. **Site 1 of 4 in cluster T**

Relative: Lower

Actual: 214 ft.

RCRA-SQG:
Date form received by agency: 03/10/2003
Facility name: JD PAINTING
Facility address: 70 KANOA ST
WAILUKU, HI 96793
EPA ID: HIR000135111
Mailing address: KANOA ST
WAILUKU, HI 96793
Contact: MERRICK S IKEDA
Contact address: KANOA ST
WAILUKU, HI 96793
Contact country: US
Contact telephone: (808) 242-9731
Contact email: Not reported
EPA Region: 09
Land type: Private
Classification: Small Small Quantity Generator
Description: Handler: generates more than 100 and less than 1000 kg of hazardous waste during any calendar month and accumulates less than 6000 kg of hazardous waste at any time; or generates 100 kg or less of hazardous waste during any calendar month, and accumulates more than 1000 kg of hazardous waste at any time

Owner/Operator Summary:
Owner/operator name: DOMINGUEZ LLC NO. J AND NO. L
Owner/operator address: Not reported
Not reported
Owner/operator country: US
Owner/operator telephone: Not reported
Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: 07/12/1999
Owner/Op end date: Not reported

Owner/operator name: JD PAINTING AND DECORATING INC
Owner/operator address: Not reported
Not reported
Owner/operator country: US
Owner/operator telephone: Not reported
Legal status: Private
Owner/Operator Type: Operator
Owner/Op start date: 07/16/1999
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No

JD PAINTING (Continued) **1006806719**

Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: F003
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NONHALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS, AND A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F005
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE, CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

Facility Has Received Notices of Violations:
Regulation violated: Not reported
Area of violation: State Statute or Regulation
Date violation determined: 08/19/2004
Date achieved compliance: 03/22/2006
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 06/23/2005
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Evaluation Action Summary:
Evaluation date: 03/02/2006
Evaluation: NOT A SIGNIFICANT NON-COMPLIER
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 03/22/2005

JD PAINTING (Continued) **1006806719**

Evaluation: SIGNIFICANT NON-COMPLIER
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 08/19/2004
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: State Statute or Regulation
Date achieved compliance: 03/22/2006
Evaluation lead agency: State

FINDS:

Registry ID: 110014374989

Environmental Interest/Information System
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STATE MASTER

Q112 **LOKAHI PACIFIC** **HI LUST** **U003402930**
NNE **1935 MAIN ST** **HI UST** **N/A**
1/2-1 **WAILUKU, HI 96793**
0.896 mi.
4731 ft. **Site 7 of 14 in cluster Q**

Relative:
Lower

Actual:
253 ft.

LUST:
Facility ID: 9-501603
Facility Status: Site Cleanup Completed (NFA)
Facility Status Date: 02/29/2000
Release ID: 980218
Project Officer: Jose Ruiz

Facility ID: 9-501603
Facility Status: Site Cleanup Completed (NFA)
Facility Status Date: 02/29/2000
Release ID: 990141
Project Officer: Jose Ruiz

UST:
Facility ID: 9-501603
Owner: LOKAHI PACIFIC
Owner Address: 840 ALUA ST, RM 203
Owner City,St,Zip: Wailuku, 96793 96793
Latitude: 20.887930
Longitude: -156.500481
Horizontal Reference Datum Name: NAD83
Horizontal Collection Method Name: Address Matching

Tank ID: R-1
Date Installed: Not reported
Tank Status: **Permanently Out of Use**

LOKAHI PACIFIC (Continued) **U003402930**

Date Closed: 03/18/1995
Tank Capacity: 1000
Substance: Gasoline

Tank ID: R-2
Date Installed: Not reported
Tank Status: Permanently Out of Use
Date Closed: 03/18/1995
Tank Capacity: 500
Substance: Gasoline

Tank ID: R-3
Date Installed: Not reported
Tank Status: Permanently Out of Use
Date Closed: 03/18/1995
Tank Capacity: 1000
Substance: Gasoline

Tank ID: R-4
Date Installed: Not reported
Tank Status: Permanently Out of Use
Date Closed: 07/29/1998
Tank Capacity: 560
Substance: Diesel

Q113 **LOKAHI PACIFIC** **HI RGA LUST** **S116402671**
NNE **1935 MAIN ST** **N/A**
1/2-1 **WAILUKU, HI**
0.896 mi.
4731 ft. **Site 8 of 14 in cluster Q**

Relative: Lower

Actual: 253 ft.

RGA LUST:

2012	LOKAHI PACIFIC	1935 MAIN ST
2011	LOKAHI PACIFIC	1935 MAIN ST
2010	LOKAHI PACIFIC	1935 MAIN ST
2009	LOKAHI PACIFIC	1935 MAIN ST
2008	LOKAHI PACIFIC	1935 MAIN ST
2007	LOKAHI PACIFIC	1935 MAIN ST
2006	LOKAHI PACIFIC	1935 MAIN ST
2005	LOKAHI PACIFIC	1935 MAIN ST
2004	LOKAHI PACIFIC	1935 MAIN ST
2003	LOKAHI PACIFIC	1935 MAIN ST
2002	LOKAHI PACIFIC	1935 MAIN ST
2001	LOKAHI PACIFIC	1935 MAIN ST
2000	LOKAHI PACIFIC	1935 MAIN ST
1999	LOKAHI PACIFIC	1935 MAIN ST

Q114 **CUTTER NISSAN** **RCRA NonGen / NLR** **1000401589**
NNE **1935 MAIN ST** **FINDS** **HID981637986**
1/2-1 **WAILUKU, HI 96793**
0.896 mi.
4731 ft. **Site 9 of 14 in cluster Q**

Relative: Lower

Actual: 253 ft.

RCRA NonGen / NLR:
Date form received by agency: 01/16/1987
Facility name: CUTTER NISSAN
Facility address: 1935 MAIN ST
WAILUKU, HI 96793
EPA ID: HID981637986
Mailing address: MAIN ST
WAILUKU, HI 96793
Contact: ENVIRONMENTAL MANAGER
Contact address: 1935 MAIN ST
WAILUKU, HI 96793
Contact country: US
Contact telephone: (808) 244-7433
Contact email: Not reported
EPA Region: 09
Land type: Facility is not located on Indian land. Additional information is not known.
Classification: Non-Generator
Description: Handler: Non-Generators do not presently generate hazardous waste

Owner/Operator Summary:
Owner/operator name: CORPORATION
Owner/operator address: NOT REQUIRED
NOT REQUIRED, ME 99999
Owner/operator country: Not reported
Owner/operator telephone: (415) 555-1212
Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Owner/operator name: NOT REQUIRED
Owner/operator address: NOT REQUIRED
NOT REQUIRED, ME 99999
Owner/operator country: Not reported
Owner/operator telephone: (415) 555-1212
Legal status: Private
Owner/Operator Type: Operator
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No

CUTTER NISSAN (Continued) **1000401589**

Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Violation Status: No violations found

Evaluation Action Summary:
Evaluation date: 01/19/1996
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

FINDS:

Registry ID: 110005724298

Environmental Interest/Information System
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STATE MASTER

T115 **EDR Hist Auto** **1015281572**
NNE **1820 WELLS ST** **N/A**
1/2-1 **WAILUKU, HI 96793**
0.896 mi.
4731 ft. **Site 2 of 4 in cluster T**

Relative:
Lower

Actual:
214 ft.

EDR Historical Auto Stations:
Name: UNITED AUTO PARTS
Year: 2011
Address: 1820 WELLS ST

Name: UNITED AUTO PARTS
Year: 2012
Address: 1820 WELLS ST

S116 **HI RGA HWS** **S116399317**
North **2102 VINEYARD ST** **N/A**
1/2-1 **WAILUKU, HI**
0.896 mi.
4733 ft. **Site 2 of 6 in cluster S**

Relative:
Lower

Actual:
303 ft.

RGA HWS:

2000	TLAZZARO	2102 VINEYARD ST

S117 **2102 VINEYARD ST.** **FINDS** **1016403859**
North **2102 WEST VINEYARD STREET** **N/A**
1/2-1 **WAILUKU, HI 96793**
0.896 mi.
4733 ft. **Site 3 of 6 in cluster S**

Relative:
Lower

Actual:
303 ft.

FINDS:

Registry ID: 110055381616

Environmental Interest/Information System
STATE MASTER

S118 **MAUI VINEYARD INN, UST CLOSURE** **HI RGA HWS** **S116400294**
North **2102 VINEYARD ST** **N/A**
1/2-1 **WAILUKU, HI**
0.896 mi.
4733 ft. **Site 4 of 6 in cluster S**

Relative:
Lower

Actual:
303 ft.

RGA HWS:

2012	MAUI VINEYARD INN, UST CLOSURE	2102 VINEYARD ST
2009	MAUI VINEYARD INN, UST CLOSURE	2102 VINEYARD ST
2008	MAUI VINEYARD INN, UST CLOSURE	2102 VINEYARD ST
2006	MAUI VINEYARD INN, UST CLOSURE	2102 VINEYARD ST
2005	MAUI VINEYARD INN, UST CLOSURE	2102 VINEYARD ST

S119 **2102 VINEYARD ST.** **HI RGA LUST** **S116400723**
North **2102 VINEYARD ST** **N/A**
1/2-1 **WAILUKU, HI**
0.896 mi.
4733 ft. **Site 5 of 6 in cluster S**

Relative:
Lower

Actual:
303 ft.

RGA LUST:

2006	2102 VINEYARD ST.	2102 VINEYARD ST
2005	2102 VINEYARD ST.	2102 VINEYARD ST
2004	2102 VINEYARD ST.	2102 VINEYARD ST
2003	2102 VINEYARD ST.	2102 VINEYARD ST
2002	2102 VINEYARD ST.	2102 VINEYARD ST
2001	2102 VINEYARD ST.	2102 VINEYARD ST
2000	2102 VINEYARD ST.	2102 VINEYARD ST
1999	2102 VINEYARD ST.	2102 VINEYARD ST
1998	2102 VINEYARD ST.	2102 VINEYARD ST
1997	2102 VINEYARD ST.	2102 VINEYARD ST

Q120 **PACIFIC AMUSEMENT CO., LTD.** **HI UST** **U003541878**
NNE **1942 MAIN ST** **N/A**
1/2-1 **WAILUKU, HI 96793**
0.897 mi.
4738 ft. **Site 10 of 14 in cluster Q**

Relative:
Lower

Actual:
256 ft.

UST:
Facility ID: 9-500409
Owner: KURISU & FERGUS
Owner Address: 1000 BISHOP ST, SUITE 310
Owner City,St,Zip: Wailuku, 96793 96793
Latitude: Not reported
Longitude: Not reported
Horizontal Reference Datum Name: Not reported

PACIFIC AMUSEMENT CO., LTD. (Continued) **U003541878**

Horizontal Collection Method Name: Not reported

Tank ID: R-1
Date Installed: 04/21/2041
Tank Status: **Permanently Out of Use**
Date Closed: 03/14/1990
Tank Capacity: 550
Substance: Gasoline

Q121 NNE 1/2-1 0.897 mi. 4738 ft. **PACIFIC AMUSEMENT CO., LTD.** **FINDS** **1015797779**
1942 MAIN STREET **N/A**
WAILUKU, HI 96793

Site 11 of 14 in cluster Q

Relative: Lower

Actual: 256 ft.

FINDS:

Registry ID: 110055405075

Environmental Interest/Information System
STATE MASTER

Q122 NNE 1/2-1 0.898 mi. 4744 ft. **TAKITANI BUILDING** **HI UST** **U001236821**
1940 MAIN ST, STE 1355 **N/A**
WAILUKU, HI 96793

Site 12 of 14 in cluster Q

Relative: Lower

Actual: 255 ft.

UST:
Facility ID: 9-501913
Owner: KURISU & FERGUS
Owner Address: 1000 BISHOP ST, SUITE 310
Owner City,St,Zip: Wailuku, 96793 96793
Latitude: Not reported
Longitude: Not reported
Horizontal Reference Datum Name: Not reported
Horizontal Collection Method Name: Not reported

Tank ID: R-001
Date Installed: Not reported
Tank Status: **Permanently Out of Use**
Date Closed: 03/14/1990
Tank Capacity: Not reported
Substance: Gasoline

Q123 NNE 1/2-1 0.898 mi. 4744 ft. **DICKS FUMIGATION SERVICE INC** **RCRA NonGen / NLR** **1000272237**
1940 MAIN ST **FINDS** **HID077662575**
WAILUKU, HI 96793

Site 13 of 14 in cluster Q

Relative: Lower

Actual: 255 ft.

RCRA NonGen / NLR:
Date form received by agency: 12/10/1993
Facility name: DICKS FUMIGATION SERVICE INC
Facility address: 1940 MAIN ST
WAILUKU, HI 96793
EPA ID: HID077662575
Contact: ENVIRONMENTAL MANAGER
Contact address: 1940 MAIN ST
WAILUKU MAUI, HI 96793
Contact country: US
Contact telephone: (808) 244-7496
Contact email: Not reported
EPA Region: 09
Classification: Non-Generator
Description: Handler: Non-Generators do not presently generate hazardous waste

Owner/Operator Summary:
Owner/operator name: NOT REQUIRED
Owner/operator address: NOT REQUIRED
NOT REQUIRED, ME 99999
Owner/operator country: Not reported
Owner/operator telephone: (415) 555-1212
Legal status: Private
Owner/Operator Type: Operator
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Owner/operator name: K TAKITANI ENTERPRISES
Owner/operator address: NOT REQUIRED
NOT REQUIRED, ME 99999
Owner/operator country: Not reported
Owner/operator telephone: (415) 555-1212
Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No

DICKS FUMIGATION SERVICE INC (Continued) **1000272237**

Used oil transporter: No

Violation Status: No violations found

FINDS:

Registry ID: 110006399799

Environmental Interest/Information System
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Q124 NNE 1/2-1 0.898 mi. 4744 ft. — **TAKITANI BUILDING** — **FINDS** — **1015965434** / **N/A**
1940 MAIN STREET #1355
WAILUKU, HI 96793

Site 14 of 14 in cluster Q

Relative: Lower
Actual: 255 ft.

FINDS:

Registry ID: 110046165886

Environmental Interest/Information System
STATE MASTER

T125 NNE 1/2-1 0.905 mi. 4776 ft. — **BLUE & WHITE BUS LINE, LTD.** — **HI UST** — **U001236745** / **N/A**
60 KANOA ST
WAILUKU, HI 96793

Site 3 of 4 in cluster T

Relative: Lower
Actual: 214 ft.

UST:

Facility ID:	9-501358
Owner:	BLUE & WHITE BUS LINE, LTD.
Owner Address:	140 KAULAWAHINE St
Owner City,St,Zip:	Wailuku, 96793 96793
Latitude:	Not reported
Longitude:	Not reported
Horizontal Reference Datum Name:	Not reported
Horizontal Collection Method Name:	Not reported
Tank ID:	1
Date Installed:	Not reported
Tank Status:	**Permanently Out of Use**
Date Closed:	Not reported
Tank Capacity:	Not reported
Substance:	Gasoline

T126 NNE 1/2-1 0.905 mi. 4776 ft. — **BLUE & WHITE BUS LINE, LTD.** — **FINDS** — **1015843587** / **N/A**
60 KANOA STREET
WAILUKU, HI 96793

Site 4 of 4 in cluster T

Relative: Lower
Actual: 214 ft.

FINDS:

Registry ID: 110055382009

Environmental Interest/Information System
STATE MASTER

S127 North 1/2-1 0.909 mi. 4797 ft. — **2102 VINEYARD ST.** — **HI SHWS** — **U003222271** / **N/A**
2102 VINEYARD ST — **HI UST**
WAILUKU, HI 96793 — **HI Financial Assurance**

Site 6 of 6 in cluster S

Relative: Lower
Actual: 299 ft.

SHWS:

Organization:	Not reported
Supplemental Location:	Not reported
Island:	Maui
Environmental Interest:	Vineyard Street Tank Closure
HID Number:	Not reported
Facility Registry Identifier:	110013766656
Lead Agency:	HEER
Program:	State
Project Manager:	Paul Chong
Hazard Priority:	NFA
Potential Hazards And Controls:	No Hazard
Organization:	Not reported
Island:	Maui
Supplemental Location Text:	Not reported
SDAR Environmental Interest Name:	Vineyard Street Tank Closure
HID Number:	Not reported
Facility Registry Identifier:	110013766656
Lead Agency:	HEER
Progran Name:	State
Potential Hazard And Controls:	No Hazard
Priority:	NFA
Assessment:	Response Necessary
Response:	Response Complete
Nature of Contamination:	Not reported
Nature of Residual Contamination:	Petroleum in soil
Use Restrictions:	No Hazard Present For Unrestricted Residential Use
Engineering Control:	Not reported
Description of Restrictions:	Not reported
Institutional Control:	Not reported
Within Designated Areawide Contamination:	Not reported
Site Closure Type:	No Further Action Letter - Unrestricted Residential Use
Document Date:	04/01/2011
Document Number:	2011-196-PC
Document Subject:	No Further Action Determination for Removal of Underground Fuel Tank located at 2102 Vineyard St, da
Project Manager:	Paul Chong
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

2102 VINEYARD ST. (Continued) **U003222271**

UST:

Facility ID:	9-503115
Owner:	RALPH KATO
Owner Address:	1063 LOWER MAIN ST
Owner City,St,Zip:	Wailuku, 96793 96793
Latitude:	Not reported
Longitude:	Not reported
Horizontal Reference Datum Name:	Not reported
Horizontal Collection Method Name:	Not reported
Tank ID:	R-1
Date Installed:	Not reported
Tank Status:	**Permanently Out of Use**
Date Closed:	10/05/1995
Tank Capacity:	550
Substance:	Diesel

HI Financial Assurance:

Alt Facility ID:	9-503115
Tank Id:	R-1
Tank Status:	Permanently Out of Use
FRTYPE:	Insurance
Expiration Date:	Not reported

U128 **WAILUKU - MOKUHAU WELL 1** **FINDS** **1016368658**
NNW **N/A**
1/2-1 **WAILUKU (DWS), HI 96761**
0.921 mi.
4861 ft. **Site 1 of 3 in cluster U**

Relative:
Lower

Actual:
354 ft.

FINDS:

Registry ID: 110046190199

Environmental Interest/Information System
STATE MASTER

V129 **LONGS DRUG STORE NO 4496** **FINDS** **1014697284**
NNE **1900 MAIN ST** **N/A**
1/2-1 **WAILUKU, HI 96793**
0.922 mi.
4868 ft. **Site 1 of 2 in cluster V**

Relative:
Lower

Actual:
244 ft.

FINDS:

Registry ID: 110043230349

Environmental Interest/Information System
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LONGS DRUG STORE NO 4496 (Continued) **1014697284**

STATE MASTER

V130 **LONGS DRUG STORE NO 4496** **RCRA-CESQG** **1014389659**
NNE **1900 MAIN ST** **HIR000140061**
1/2-1 **WAILUKU, HI 96793**
0.922 mi.
4868 ft. **Site 2 of 2 in cluster V**

Relative:
Lower

Actual:
244 ft.

RCRA-CESQG:

Date form received by agency:	10/05/2012
Facility name:	LONGS DRUG STORE NO 4496
Facility address:	1900 MAIN ST #4 WAILUKU, HI 96793
EPA ID:	HIR000140061
Mailing address:	ONE CVS DRIVE WOONSOCKET, RI 02895
Contact:	WENDY L BRANT
Contact address:	ONE CVS DRIVE WOONSOCKET, RI 02895
Contact country:	US
Contact telephone:	(401) 765-1500
Contact email:	WENDY.BRANT@CVSCAREMARK.COM
EPA Region:	09
Classification:	Conditionally Exempt Small Quantity Generator
Description:	Handler: generates 100 kg or less of hazardous waste per calendar month, and accumulates 1000 kg or less of hazardous waste at any time; or generates 1 kg or less of acutely hazardous waste per calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste; or generates 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste

Owner/Operator Summary:

Owner/operator name:	1900 LLC
Owner/operator address:	81 MAKAWAO AVE #106 PUKALANI, HI 96768
Owner/operator country:	US
Owner/operator telephone:	(808) 572-2590
Legal status:	Private
Owner/Operator Type:	Owner
Owner/Op start date:	10/22/2008
Owner/Op end date:	Not reported
Owner/operator name:	LONGS DRUG STORES CALIFORNIA, L.L.C
Owner/operator address:	Not reported Not reported
Owner/operator country:	US
Owner/operator telephone:	Not reported

LONGS DRUG STORE NO 4496 (Continued) **1014389659**

Legal status: Private
Owner/Operator Type: Operator
Owner/Op start date: 10/22/2008
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

. Waste code: D006
. Waste name: CADMIUM

. Waste code: D007
. Waste name: CHROMIUM

. Waste code: D009
. Waste name: MERCURY

. Waste code: D010
. Waste name: SELENIUM

. Waste code: P001
. Waste name: 2H-1-BENZOPYRAN-2-ONE, 4-HYDROXY-3-(3-OXO-1-PHENYLBUTYL)-, & SALTS, WHEN PRESENT AT CONCENTRATIONS GREATER THAN 0.3% (OR) WARFARIN, & SALTS, WHEN PRESENT AT CONCENTRATIONS GREATER THAN 0.3%

. Waste code: P042
. Waste name: 1,2-BENZENEDIOL, 4-[1-HYDROXY-2-(METHYLAMINO)ETHYL]-, (R)- (OR) EPINEPHRINE

. Waste code: P075
. Waste name: NICOTINE, & SALTS (OR) PYRIDINE, 3-(1-METHYL-2-PYRROLIDINYL)-,(S)-, & SALTS

. Waste code: P081
. Waste name: 1,2,3-PROPANETRIOL, TRINITRATE (R) (OR) NITROGLYCERINE (R)

LONGS DRUG STORE NO 4496 (Continued) **1014389659**

Historical Generators:
Date form received by agency: 11/01/2010
Site name: LONGS DRUG STORE NO 4496
Classification: Conditionally Exempt Small Quantity Generator

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

. Waste code: D011
. Waste name: SILVER

. Waste code: P001
. Waste name: 2H-1-BENZOPYRAN-2-ONE, 4-HYDROXY-3-(3-OXO-1-PHENYLBUTYL)-, & SALTS, WHEN PRESENT AT CONCENTRATIONS GREATER THAN 0.3% (OR) WARFARIN, & SALTS, WHEN PRESENT AT CONCENTRATIONS GREATER THAN 0.3%

. Waste code: P042
. Waste name: 1,2-BENZENEDIOL, 4-[1-HYDROXY-2-(METHYLAMINO)ETHYL]-, (R)- (OR) EPINEPHRINE

. Waste code: P075
. Waste name: NICOTINE, & SALTS (OR) PYRIDINE, 3-(1-METHYL-2-PYRROLIDINYL)-,(S)-, & SALTS

. Waste code: P081
. Waste name: 1,2,3-PROPANETRIOL, TRINITRATE (R) (OR) NITROGLYCERINE (R)

Violation Status: No violations found

U131 **WAILUKU - MOKUHAU WELL 2** **FINDS** **1016404012**
NNW **N/A**
1/2-1 **WAILUKU (DWS), HI 96761**
0.925 mi.
4883 ft. **Site 2 of 3 in cluster U**

Relative:
Lower

Actual:
356 ft.

FINDS:

Registry ID: 110055383482

Environmental Interest/Information System
STATE MASTER

U132 **WAILUKU - MOKUHAU WELL 3** **FINDS** **1016368659**
NNW **N/A**
1/2-1 **WAILUKU (DWS), HI 96761**
0.928 mi.
4898 ft. **Site 3 of 3 in cluster U**

Relative:
Lower

Actual:
355 ft.

FINDS:

Registry ID: 110046190215

Environmental Interest/Information System

WAILUKU - MOKUHAU WELL 3 (Continued) **1016368659**

STATE MASTER

W133
NNE
1/2-1
0.945 mi.
4991 ft.

MAUI COUNTY WAILUKU FIRE STATION **HI LUST** **U003155131**
21 KINIPOPO ST **HI UST** **N/A**
WAILUKU, HI 96793 **HI SPILLS**

Site 1 of 4 in cluster W

Relative:
Lower

Actual:
234 ft.

LUST:

Facility ID:	9-502764
Facility Status:	Site Cleanup Completed (NFA)
Facility Status Date:	11/08/2001
Release ID:	930113
Project Officer:	Jose Ruiz

UST:

Facility ID:	9-502764
Owner:	COUNTY OF MAUI - FIRE PREVENTION BUREAU
Owner Address:	21 KINIPOPO ST
Owner City,St,Zip:	Wailuku, 96793 96793
Latitude:	20.888057
Longitude:	-156.498757
Horizontal Reference Datum Name:	NAD83
Horizontal Collection Method Name:	Address Matching
Tank ID:	R-1
Date Installed:	Not reported
Tank Status:	**Permanently Out of Use**
Date Closed:	06/01/1993
Tank Capacity:	Not reported
Substance:	Not Listed

HI SPILLS:

Island:	Maui
Supplemental Loc. Text:	Not reported
Case Number:	20100429-0940
HID Number:	Not reported
Facility Registry Id:	Not reported
Lead and Program:	HEER EP&R
ER:	None
Units:	Mercury Disposal
Substances:	Mercury
Less Or Greater Than:	Not reported
Numerical Quantity:	1
Units:	Pounds
Activity Type:	Response
Activity Lead:	Liz Galvez
Assignment End Date:	2010-04-29 00:00:00
Result:	SOSC NFA
File Under:	Not reported

W134
NNE
1/2-1
0.945 mi.
4991 ft.

WAILUKU FIRE STATION **FINDS** **1015894733**
21 KINIPOPO STREET **N/A**
WAILUKU, HI 96793

Site 2 of 4 in cluster W

Relative:
Lower

Actual:
234 ft.

FINDS:

Registry ID: 110055383543

Environmental Interest/Information System
STATE MASTER

W135
NNE
1/2-1
0.945 mi.
4991 ft.

WAILUKU FIRE STATION **HI RGA LUST** **S116404453**
21 KINIPOPO ST **N/A**
WAILUKU, HI

Site 3 of 4 in cluster W

Relative:
Lower

Actual:
234 ft.

RGA LUST:

2012	WAILUKU FIRE STATION	21 KINIPOPO ST
2011	WAILUKU FIRE STATION	21 KINIPOPO ST
2010	WAILUKU FIRE STATION	21 KINIPOPO ST
2009	WAILUKU FIRE STATION	21 KINIPOPO ST
2008	WAILUKU FIRE STATION	21 KINIPOPO ST
2007	WAILUKU FIRE STATION	21 KINIPOPO ST
2006	WAILUKU FIRE STATION	21 KINIPOPO ST
2005	WAILUKU FIRE STATION	21 KINIPOPO ST
2004	WAILUKU FIRE STATION	21 KINIPOPO ST
2003	WAILUKU FIRE STATION	21 KINIPOPO ST
2002	WAILUKU FIRE STATION	21 KINIPOPO ST
2001	WAILUKU FIRE STATION	21 KINIPOPO ST
2000	WAILUKU FIRE STATION	21 KINIPOPO ST
1999	WAILUKU FIRE STATION	21 KINIPOPO ST
1998	WAILUKU FIRE STATION	21 KINIPOPO ST
1997	WAILUKU FIRE STATION	21 KINIPOPO ST
1995	WAILUKU FIRE STATION	21 KINIPOPO ST

136
ESE
1/2-1
0.952 mi.
5029 ft.

WAILUKU - MAUI LANI WELLS 6 **FINDS** **1016368655**
N/A
WAILUKU (DWS), HI 96761

Relative:
Lower

Actual:
172 ft.

FINDS:

Registry ID: 110046190162

Environmental Interest/Information System
STATE MASTER

W137
NNE
1/2-1
0.967 mi.
5106 ft.

1818 OIHANA ST
WAILUKU, HI 96793

EDR Hist Auto **1015281134** **N/A**

Site 4 of 4 in cluster W

Relative: Lower
Actual: 217 ft.

EDR Historical Auto Stations:

Name:	LIC AUTO RECONDITIONING
Year:	2006
Address:	1818 OIHANA ST
Name:	LIC AUTO RECONDITIONING
Year:	2010
Address:	1818 OIHANA ST

138
NNE
> 1
1.000 mi.
5282 ft.

51 WAIALE RD
WAILUKU, HI 96793

EDR Hist Auto **1015530312** **N/A**

Relative: Lower
Actual: 210 ft.

EDR Historical Auto Stations:

Name:	HASHI RADIATOR SERVICE
Year:	2003
Address:	51 WAIALE RD

139
NNE
> 1
1.043 mi.
5508 ft.

DOWN TO EARTH NATURAL FOODSTORE
1910 VINEYARD ST
WAILUKU, HI 96793

HI UST **U003222268** **N/A**

Relative: Lower
Actual: 240 ft.

UST:

Facility ID:	9-502974
Owner:	DOWN TO EARTH NATURAL FOODSTORE
Owner Address:	1910 VINEYARD ST
Owner City,St,Zip:	Wailuku, 96793 96793
Latitude:	Not reported
Longitude:	Not reported
Horizontal Reference Datum Name:	Not reported
Horizontal Collection Method Name:	Not reported
Tank ID:	R-1
Date Installed:	Not reported
Tank Status:	**Permanently Out of Use**
Date Closed:	07/24/1994
Tank Capacity:	2000
Substance:	Gasoline
Tank ID:	R-2
Date Installed:	Not reported
Tank Status:	**Permanently Out of Use**
Date Closed:	07/24/1994
Tank Capacity:	2000
Substance:	Gasoline

140
SSW
> 1
1.116 mi.
5893 ft.

MAUI RECYCLING SRVC INC
105 WAIKO RD
WAILUKU, HI 96793

RCRA NonGen / NLR **1001024234**
FINDS **HIR000000349**

Relative: Higher
Actual: 724 ft.

RCRA NonGen / NLR:

Date form received by agency:	09/06/1995
Facility name:	MAUI RECYCLING SRVC INC
Facility address:	105 WAIKO RD WAILUKU, HI 96793
EPA ID:	HIR000000349
Contact:	JOHN EVARTS
Contact address:	PO BOX 1596 MAKAWAO, HI 96768
Contact country:	US
Contact telephone:	(808) 878-3496
Contact email:	Not reported
EPA Region:	09
Classification:	Non-Generator
Description:	Handler: Non-Generators do not presently generate hazardous waste

Owner/Operator Summary:

Owner/operator name:	MAUI RECYCLING SRVC INC
Owner/operator address:	PO BOX 1596 MAKAWAO, HI 96768
Owner/operator country:	Not reported
Owner/operator telephone:	(808) 878-3496
Legal status:	Private
Owner/Operator Type:	Owner
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Handler Activities Summary:

U.S. importer of hazardous waste:	No
Mixed waste (haz. and radioactive):	No
Recycler of hazardous waste:	No
Transporter of hazardous waste:	No
Treater, storer or disposer of HW:	No
Underground injection activity:	No
On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No
Used oil transfer facility:	No
Used oil transporter:	Yes

Violation Status: No violations found

FINDS:

Registry ID: 110005729275

Environmental Interest/Information System
RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of

MAUI RECYCLING SRVC INC (Continued) **1001024234**

events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

STATE MASTER

X141 NE > 1 1.119 mi. 5909 ft. | **MAUI SANDTORCHES** | **CERCLIS-NFRAP** | **1000245007**
46 TINGS DR | **RCRA NonGen / NLR** | **HID077670842**
WAILUKU, HI 96793 | **FINDS**

Relative: Lower

Actual: 231 ft.

Site 1 of 3 in cluster X

CERCLIS-NFRAP:
Site ID: 0902848
Federal Facility: Not a Federal Facility
NPL Status: Not on the NPL
Non NPL Status: NFRAP-Site does not qualify for the NPL based on existing information

CERCLIS-NFRAP Site Contact Details:
Contact Sequence ID: 13037389.00000
Person ID: 9000059.00000

CERCLIS-NFRAP Assessment History:
Action: DISCOVERY
Date Started: / /
Date Completed: 07/01/80
Priority Level: Not reported

Action: ARCHIVE SITE
Date Started: / /
Date Completed: 09/01/84
Priority Level: Not reported

Action: PRELIMINARY ASSESSMENT
Date Started: 08/01/84
Date Completed: 09/01/84
Priority Level: NFRAP-Site does not qualify for the NPL based on existing information

RCRA NonGen / NLR:
Date form received by agency: 07/30/1980
Facility name: MAUI SANDTORCHES
Facility address: 46 TINGS DR
WAILUKU, HI 96793
EPA ID: HID077670842
Mailing address: 46 TINGS DRIVE
WAILUKU MAUI, HI 96793
Contact: ENVIRONMENTAL MANAGER
Contact address: 46 TINGS DR
WAILUKU, HI 96793
Contact country: US
Contact telephone: (808) 244-7541
Contact email: Not reported
EPA Region: 09
Classification: Non-Generator

MAUI SANDTORCHES (Continued) **1000245007**

Description: Handler: Non-Generators do not presently generate hazardous waste

Owner/Operator Summary:
Owner/operator name: JACQUELINE CARLIN
Owner/operator address: NOT REQUIRED
NOT REQUIRED, ME 99999
Owner/operator country: Not reported
Owner/operator telephone: (415) 555-1212
Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Owner/operator name: NOT REQUIRED
Owner/operator address: NOT REQUIRED
NOT REQUIRED, ME 99999
Owner/operator country: Not reported
Owner/operator telephone: (415) 555-1212
Legal status: Private
Owner/Operator Type: Operator
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Violation Status: No violations found

FINDS:

Registry ID: 110005723217

Environmental Interest/Information System
RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

Y142 **OGAWA SERVICE STATION** **HI LUST** **U003222184**
North **327 N MARKET ST** **HI UST** **N/A**
> 1 **WAILUKU, HI 96793**
1.122 mi.
5925 ft. **Site 1 of 3 in cluster Y**

Relative:
Lower

Actual:
237 ft.

LUST:

Facility ID:	9-500398
Facility Status:	Site Cleanup Completed (NFA)
Facility Status Date:	08/19/1996
Release ID:	960046
Project Officer:	Jose Ruiz

UST:

Facility ID:	9-500398
Owner:	MASASHI OGAWA
Owner Address:	327 N MARKET ST
Owner City,St,Zip:	Wailuku, 96793 96793
Latitude:	20.892254
Longitude:	-156.504253
Horizontal Reference Datum Name:	NAD83
Horizontal Collection Method Name:	Address Matching
Tank ID:	R-001
Date Installed:	07/27/1956
Tank Status:	**Permanently Out of Use**
Date Closed:	03/04/1995
Tank Capacity:	1000
Substance:	Gasoline
Tank ID:	R-002
Date Installed:	07/27/1956
Tank Status:	**Permanently Out of Use**
Date Closed:	03/04/1996
Tank Capacity:	1000
Substance:	Gasoline
Tank ID:	R-003
Date Installed:	07/27/1977
Tank Status:	**Permanently Out of Use**
Date Closed:	03/04/1996
Tank Capacity:	5000
Substance:	Gasoline

X143 **REX TIRE & SUPPLY, DIESEL** **HI SHWS** **S106820230**
NE **1728 KAAHUMANU AVE** **N/A**
> 1 **KAHULUI, HI 96732**
1.127 mi.
5948 ft. **Site 2 of 3 in cluster X**

Relative:
Lower

Actual:
212 ft.

SHWS:

Organization:	Not reported
Supplemental Location:	Not reported
Island:	Maui
Environmental Interest:	Rex Tire Diesel
HID Number:	Not reported
Facility Registry Identifier:	110013778386

REX TIRE & SUPPLY, DIESEL (Continued) **S106820230**

Lead Agency:	HEER
Program:	State
Project Manager:	Eric Sadoyama
Hazard Priority:	NFA
Potential Hazards And Controls:	No Hazard
Organization:	Not reported
Island:	Maui
Supplemental Location Text:	Not reported
SDAR Environmental Interest Name:	Rex Tire Diesel
HID Number:	Not reported
Facility Registry Identifier:	110013778386
Lead Agency:	HEER
Progran Name:	State
Potential Hazard And Controls:	No Hazard
Priority:	NFA
Assessment:	Response Necessary
Response:	Response Complete
Nature of Contamination:	Found: Diesel fuel in soil
Nature of Residual Contamination:	Diesel fuel
Use Restrictions:	No Hazard Present for Unrestricted Residential Use
Engineering Control:	Not reported
Description of Restrictions:	Not reported
Institutional Control:	Not reported
Within Designated Areawide Contamination:	Not reported
Site Closure Type:	No Further Action Letter - Unrestricted Residential Use
Document Date:	03/14/2006
Document Number:	2006-149-ES
Document Subject:	No further action determination for 1991 diesel release from heating oil UST
Project Manager:	Eric Sadoyama
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

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144 **SAFEWAY STORE #3092** **RCRA-CESQG** **1017770197**
NE **58 MAUI LANI PARKWAY** **FINDS** **HIR000142927**
> 1 **WAILUKU, HI 96793**
1.148 mi.
6061 ft.

Relative:
Lower

Actual:
113 ft.

RCRA-CESQG:

Date form received by agency:	09/08/2014
Facility name:	SAFEWAY STORE #3092
Facility address:	58 MAUI LANI PARKWAY WAILUKU, HI 96793
EPA ID:	HIR000142927
Mailing address:	5918 STONERIDGE MALL ROAD PLEASANTON, CA 94588
Contact:	KEITH B POWERS
Contact address:	5918 STONERIDGE MALL ROAD PLEASANTON, CA 94588
Contact country:	US
Contact telephone:	925-226-5655
Contact email:	KEITH.POWERS@SAFEWAY.COM
EPA Region:	09
Classification:	Conditionally Exempt Small Quantity Generator
Description:	Handler: generates 100 kg or less of hazardous waste per calendar month, and accumulates 1000 kg or less of hazardous waste at any time; or generates 1 kg or less of acutely hazardous waste per calendar month, and accumulates at any time: 1 kg or less of acutely hazardous

SAFEWAY STORE #3092 (Continued) **1017770197**

waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste; or generates 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste

Owner/Operator Summary:
Owner/operator name: HRT REALTY LLC
Owner/operator address: 3660 WAIALAE AVENUE STE 400
HONOLULU, 96816
Owner/operator country: US
Owner/operator telephone: 808-924-1000
Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: 07/01/2003
Owner/Op end date: Not reported

Owner/operator name: SAFEWAY
Owner/operator address: Not reported
Not reported
Owner/operator country: US
Owner/operator telephone: Not reported
Legal status: Private
Owner/Operator Type: Operator
Owner/Op start date: 09/19/2013
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

. Waste code: P075

SAFEWAY STORE #3092 (Continued) **1017770197**

. Waste name: NICOTINE, & SALTS (OR) PYRIDINE, 3-(1-METHYL-2-PYRROLIDINYL)-,(S)-, & SALTS

Violation Status: No violations found

FINDS:

Registry ID: 110063759678

Environmental Interest/Information System
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Y145 **PAM FUJITA PROPERTY** **HI UST** **U003967142**
North **346 N. MARKET ST** **N/A**
> 1 **WAILUKU, HI 96793**
1.158 mi.
6116 ft. **Site 2 of 3 in cluster Y**

Relative:
Lower

Actual:
230 ft.

UST:
Facility ID: 9-503775
Owner: Pam Fujita property
Owner Address: 3370 Emekona Place
Owner City,St,Zip: Wailuku, 96793 96793
Latitude: Not reported
Longitude: Not reported
Horizontal Reference Datum Name: Not reported
Horizontal Collection Method Name: Not reported

Tank ID: r-1
Date Installed: Not reported
Tank Status: **Permanently Out of Use**
Date Closed: 04/16/2004
Tank Capacity: 550
Substance: Gasoline

Tank ID: r-2
Date Installed: Not reported
Tank Status: **Permanently Out of Use**
Date Closed: 04/16/2004
Tank Capacity: 550
Substance: Gasoline

Z146 NNE > 1 1.161 mi. 6129 ft. | **GOMES CONSTRUCTION & REPAIRS INC**
1790 MILL ST
WAILUKU, HI 96793
Site 1 of 2 in cluster Z

HI SHWS **1000220754**
HI UST **HID982027682**
RCRA NonGen / NLR
FINDS
HI Financial Assurance

Relative: Lower
Actual: 209 ft.

SHWS:

Organization:	Not reported
Supplemental Location:	Not reported
Island:	Maui
Environmental Interest:	Gomes Construction - 1790 Mill Street, Wailuku, Maui
HID Number:	Not reported
Facility Registry Identifier:	Not reported
Lead Agency:	HEER
Program:	State
Project Manager:	Clarence Callahan
Hazard Priority:	NFA
Potential Hazards And Controls:	No Hazard
Organization:	Not reported
Island:	Maui
Supplemental Location Text:	Not reported
SDAR Environmental Interest Name:	Gomes Construction - 1790 Mill Street, Wailuku, Maui
HID Number:	Not reported
Facility Registry Identifier:	Not reported
Lead Agency:	HEER
Progran Name:	State
Potential Hazard And Controls:	No Hazard
Priority:	NFA
Assessment:	Assessment Ongoing
Response:	Response Complete
Nature of Contamination:	Not reported
Nature of Residual Contamination:	Petroleum contaminated soil
Use Restrictions:	No Hazard Present For Unrestricted Residential Use
Engineering Control:	Not reported
Description of Restrictions:	Not reported
Institutional Control:	Not reported
Within Designated Areawide Contamination:	Not reported
Site Closure Type:	No Further Action - Type Undetermined
Document Date:	08/24/2005
Document Number:	Not reported
Document Subject:	Not reported
Project Manager:	Clarence Callahan
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

UST:

Facility ID:	9-500384
Owner:	GOMES CONSTRUCTION & REPAIRS INC
Owner Address:	1790 MILL
Owner City,St,Zip:	Wailuku, 96793 96793
Latitude:	Not reported
Longitude:	Not reported
Horizontal Reference Datum Name:	Not reported
Horizontal Collection Method Name:	Not reported
Tank ID:	R-1
Date Installed:	04/10/1968
Tank Status:	**Permanently Out of Use**
Date Closed:	02/01/1994
Tank Capacity:	550

GOMES CONSTRUCTION & REPAIRS INC (Continued) **1000220754**

Substance: Gasoline

RCRA NonGen / NLR:

Date form received by agency:	08/24/1987
Facility name:	GOMES CONST & REPAIRS INC
Facility address:	1790 MILL ST WAILUKU, HI 96793
EPA ID:	HID982027682
Contact:	ENVIRONMENTAL MANAGER
Contact address:	1790 MILL ST WAILUKU MILL, HI 96793
Contact country:	US
Contact telephone:	(808) 244-4083
Contact email:	Not reported
EPA Region:	09
Land type:	Other land type
Classification:	Non-Generator
Description:	Handler: Non-Generators do not presently generate hazardous waste

Owner/Operator Summary:

Owner/operator name:	GOMES CONST JACK GOMES
Owner/operator address:	NOT REQUIRED NOT REQUIRED, ME 99999
Owner/operator country:	Not reported
Owner/operator telephone:	(415) 555-1212
Legal status:	Private
Owner/Operator Type:	Owner
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported
Owner/operator name:	NOT REQUIRED
Owner/operator address:	NOT REQUIRED NOT REQUIRED, ME 99999
Owner/operator country:	Not reported
Owner/operator telephone:	(415) 555-1212
Legal status:	Private
Owner/Operator Type:	Operator
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Handler Activities Summary:

U.S. importer of hazardous waste:	No
Mixed waste (haz. and radioactive):	No
Recycler of hazardous waste:	No
Transporter of hazardous waste:	No
Treater, storer or disposer of HW:	No
Underground injection activity:	No
On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No
Used oil transfer facility:	No
Used oil transporter:	No

GOMES CONSTRUCTION & REPAIRS INC (Continued) **1000220754**

Violation Status: No violations found

Evaluation Action Summary:
Evaluation date: 01/17/1996
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 05/19/1992
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

FINDS:

Registry ID: 110006399940

Environmental Interest/Information System
RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

STATE MASTER

HI Financial Assurance:
Alt Facility ID: 9-500384
Tank Id: R-1
Tank Status: Permanently Out of Use
FRTYPE: Self Insured
Expiration Date: Not reported

Y147 **GEORGE S./ JEAN FUNAI** **HI UST** **U003222272**
North **350 N MARKET ST** **N/A**
> 1 **WAILUKU, HI 96793**
1.164 mi.
6144 ft. **Site 3 of 3 in cluster Y**

Relative:
Lower

Actual:
229 ft.

UST:
Facility ID: 9-503152
Owner: GEORGE S./ JEAN FUNAI
Owner Address: c/o Bryan Funai900 Eha St. Suite 108
Owner City,St,Zip: Wailuku, 96793 96793
Latitude: Not reported
Longitude: Not reported
Horizontal Reference Datum Name: Not reported
Horizontal Collection Method Name: Not reported

Tank ID: R-1
Date Installed: 01/01/1953
Tank Status: **Permanently Out of Use**
Date Closed: 02/08/1996

GEORGE S./ JEAN FUNAI (Continued) **U003222272**

Tank Capacity: 1000
Substance: Gasoline

Tank ID: R-2
Date Installed: 01/01/1953
Tank Status: **Permanently Out of Use**
Date Closed: 01/01/1986
Tank Capacity: 1000
Substance: Gasoline

X148 **MAUI SANDTORCHES** **HI SHWS** **S106819015**
NE **46 TING DR** **N/A**
> 1 **WAILUKU, HI 96793**
1.168 mi.
6165 ft. **Site 3 of 3 in cluster X**

Relative:
Lower

Actual:
243 ft.

SHWS:
Organization: Not reported
Supplemental Location: Not reported
Island: Maui
Environmental Interest: Maui Sandtorches
HID Number: HID077670842
Facility Registry Identifier: 110005723217
Lead Agency: Not reported
Program: State
Project Manager: Unassigned
Hazard Priority: NFA
Potential Hazards And Controls: Hazard Undetermined
Organization: Not reported
Island: Maui
Supplemental Location Text: Not reported
SDAR Environmental Interest Name: Maui Sandtorches
HID Number: HID077670842
Facility Registry Identifier: 110005723217
Lead Agency: Not reported
Progran Name: State
Potential Hazard And Controls: Hazard Undetermined
Priority: NFA
Assessment: Response Necessary
Response: Response Complete
Nature of Contamination: Not reported
Nature of Residual Contamination: Not reported
Use Restrictions: Undetermined
Engineering Control: Not reported
Description of Restrictions: Not reported
Institutional Control: Not reported
Within Designated Areawide Contamination: Not reported
Site Closure Type: No Further Action - Type Undetermined
Document Date: 04/15/1996
Document Number: Not reported
Document Subject: Not reported
Project Manager: Unassigned
Contact Information: (808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

Z149 NNE > 1 1.195 mi. 6309 ft. **GENROLL EQUIPMENT SERVICES** **RCRA NonGen / NLR** **1000367387**
1760 MILL ST **FINDS** **HID981657166**
WAILUKU, HI 96793

Site 2 of 2 in cluster Z

Relative: Lower

Actual: 206 ft.

RCRA NonGen / NLR:

Date form received by agency:	09/25/1986
Facility name:	GENROLL EQUIPMENT SERVICES
Facility address:	1760 MILL ST WAILUKU, HI 96793
EPA ID:	HID981657166
Mailing address:	MILL ST WAILUKU, HI 96793
Contact:	ENVIRONMENTAL MANAGER
Contact address:	1760 MILL ST WAILUKU, HI 96793
Contact country:	US
Contact telephone:	(808) 244-5581
Contact email:	Not reported
EPA Region:	09
Land type:	Facility is not located on Indian land. Additional information is not known.
Classification:	Non-Generator
Description:	Handler: Non-Generators do not presently generate hazardous waste

Owner/Operator Summary:

Owner/operator name:	FUKU CONSTRUCTION
Owner/operator address:	NOT REQUIRED NOT REQUIRED, ME 99999
Owner/operator country:	Not reported
Owner/operator telephone:	(415) 555-1212
Legal status:	Private
Owner/Operator Type:	Owner
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Owner/operator name:	NOT REQUIRED
Owner/operator address:	NOT REQUIRED NOT REQUIRED, ME 99999
Owner/operator country:	Not reported
Owner/operator telephone:	(415) 555-1212
Legal status:	Private
Owner/Operator Type:	Operator
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Handler Activities Summary:

U.S. importer of hazardous waste:	No
Mixed waste (haz. and radioactive):	No
Recycler of hazardous waste:	No
Transporter of hazardous waste:	No
Treater, storer or disposer of HW:	No
Underground injection activity:	No
On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No

GENROLL EQUIPMENT SERVICES (Continued) **1000367387**

Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No
Used oil transfer facility:	No
Used oil transporter:	No

Violation Status: No violations found

Evaluation Action Summary:

Evaluation date:	01/17/1996
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	Not reported
Date achieved compliance:	Not reported
Evaluation lead agency:	State

FINDS:

Registry ID: 110005725055

Environmental Interest/Information System
RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

AA150 ENE > 1 1.239 mi. 6541 ft. **CLINICAL LABORATORIES OF HAWAII** **RCRA-SQG** **1004689041**
221 MAHALANI ST **FINDS** **HIR000097352**
WAILUKU, HI 96793

Site 1 of 2 in cluster AA

Relative: Lower

Actual: 152 ft.

RCRA-SQG:

Date form received by agency:	12/26/2008
Facility name:	CLINICAL LABORATORIES OF HAWAII
Facility address:	221 MAHALANI ST 2ND FLOOR, HISTOLOGY WAILUKU, HI 96793
EPA ID:	HIR000097352
Contact:	ANTHONY MARTIN
Contact address:	221 MAHALANI ST WAILUKU, HI 96793
Contact country:	US
Contact telephone:	(808) 242-2064
Contact email:	Not reported
EPA Region:	09
Classification:	Small Small Quantity Generator
Description:	Handler: generates more than 100 and less than 1000 kg of hazardous waste during any calendar month and accumulates less than 6000 kg of hazardous waste at any time; or generates 100 kg or less of hazardous waste during any calendar month, and accumulates more than 1000 kg of hazardous waste at any time

Owner/Operator Summary:

Owner/operator name:	SONIC HAWAII HOLDING, INC
Owner/operator address:	221 MAHALANI ST

CLINICAL LABORATORIES OF HAWAII (Continued) **1004689041**

WAILUKU, HI 96793
Owner/operator country: US
Owner/operator telephone: Not reported
Legal status: Private
Owner/Operator Type: Operator
Owner/Op start date: 09/02/2008
Owner/Op end date: Not reported

Owner/operator name: SONIC HAWAII HOLDING, INC
Owner/operator address: 221 MAHALANI ST
WAILUKU, HI 96793
Owner/operator country: US
Owner/operator telephone: Not reported
Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: 09/02/2008
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

. Waste code: D009
. Waste name: MERCURY

. Waste code: D040
. Waste name: TRICHLORETHYLENE

. Waste code: F003
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NONHALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS, AND A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT

CLINICAL LABORATORIES OF HAWAII (Continued) **1004689041**

MIXTURES.

Historical Generators:
Date form received by agency: 05/25/2001
Site name: CLINICAL LABS OF HAWAII
Classification: Conditionally Exempt Small Quantity Generator

. Waste code: D000
. Waste name: Not Defined

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

. Waste code: D003
. Waste name: REACTIVE WASTE

. Waste code: D009
. Waste name: MERCURY

Violation Status: No violations found

FINDS:

Registry ID: 110013767263

Environmental Interest/Information System
RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

STATE MASTER

ICIS (Integrated Compliance Information System) is the Integrated Compliance Information System and provides a database that, when complete, will contain integrated Enforcement and Compliance information across most of EPA's programs. The vision for ICIS is to replace EPA's independent databases that contain Enforcement data with a single repository for that information. Currently, ICIS contains all Federal Administrative and Judicial enforcement actions. This information is maintained in ICIS by EPA in the Regional offices and it Headquarters. A future release of ICIS will replace the Permit Compliance System (PCS) which supports the NPDES and will integrate that information with Federal actions already in the system. ICIS also has the capability to track other activities occurring in the Region that support Compliance and Enforcement programs. These include; Incident Tracking, Compliance Assistance, and Compliance Monitoring.

AA151 ENE > 1 1.239 mi. 6541 ft. — **MAUI MEMORIAL MEDICAL CENTER**, **221 MAHALANI STREET**, **WAILUKU, HI 96793** — **HI UST**, **MLTS**, **HI Financial Assurance** — **1000489324**, **N/A**

Site 2 of 2 in cluster AA

Relative: Lower

Actual: 152 ft.

UST:

Facility ID:	9-501581
Owner:	STATE DOH - MAUI MEMORIAL HOSPITAL
Owner Address:	221 MAHALANI St
Owner City,St,Zip:	Wailuku, 96793 96793
Latitude:	20.883999
Longitude:	-156.489151
Horizontal Reference Datum Name:	NAD83
Horizontal Collection Method Name:	GPS
Tank ID:	P-1
Date Installed:	04/10/1952
Tank Status:	**Permanently Out of Use**
Date Closed:	Not reported
Tank Capacity:	2600
Substance:	Other
Tank ID:	P-2
Date Installed:	04/10/1952
Tank Status:	**Permanently Out of Use**
Date Closed:	Not reported
Tank Capacity:	300
Substance:	Gasoline
Tank ID:	R-M-4
Date Installed:	06/30/1981
Tank Status:	**Permanently Out of Use**
Date Closed:	01/20/2000
Tank Capacity:	1000
Substance:	Diesel

MLTS:

License Number:	53-13519-01
First License Date:	04/23/91
License Date:	11/25/14
Lic. Expiration Date:	08/31/21
Contact Name:	RONALD FRICK
Contact Phone:	808-373-7009
Institution Code:	13519
Department/Bldg:	Not reported
States Allowing Use:	Not reported
Store Material Use:	No
Redistribution Use:	No
Incinerate Use:	No
Burial Use:	No
Last Inspection Date:	09/15/14
Next Inspection Date:	09/15/17
Licensee Contact:	Not reported
Inspector Name:	PHILIP MANLY

MAUI MEMORIAL MEDICAL CENTER (Continued) — **1000489324**

HI Financial Assurance:

Alt Facility ID:	9-501581
Tank Id:	P-1
Tank Status:	Permanently Out of Use
FRTYPE:	State Fund
Expiration Date:	Not reported
Alt Facility ID:	9-501581
Tank Id:	P-2
Tank Status:	Permanently Out of Use
FRTYPE:	State Fund
Expiration Date:	Not reported
Alt Facility ID:	9-501581
Tank Id:	R-M-4
Tank Status:	Permanently Out of Use
FRTYPE:	State Fund
Expiration Date:	Not reported

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152 North > 1 1.242 mi. 6556 ft. — **WAILUKU SUGAR AGRICULTURAL DEPARTMENT PESTICIDE MIXING**, **2015 HOLOWAI PL**, **WAILUKU, HI 96793** — **HI SHWS**, **HI INST CONTROL** — **S113230524**, **N/A**

Relative: Lower

Actual: 217 ft.

SHWS:

Organization:	Not reported
Supplemental Location:	Kahekili Terrace
Island:	Maui
Environmental Interest:	Wailuku Sugar Agricultural Department Pesticide Mixing
HID Number:	Not reported
Facility Registry Identifier:	Not reported
Lead Agency:	HEER
Program:	Site Discovery
Project Manager:	Unassigned
Hazard Priority:	Medium
Potential Hazards And Controls:	Hazard Managed With Controls
Organization:	Not reported
Island:	Maui
Supplemental Location Text:	Kahekili Terrace
SDAR Environmental Interest Name:	Wailuku Sugar Agricultural Department Pesticide Mixing
HID Number:	Not reported
Facility Registry Identifier:	Not reported
Lead Agency:	HEER
Progran Name:	Site Discovery
Potential Hazard And Controls:	Hazard Managed With Controls
Priority:	Medium
Assessment:	Assessment Ongoing
Response:	Not reported
Nature of Contamination:	Found: Arsenic, lead and dioxin in soil.
Nature of Residual Contamination:	Not reported
Use Restrictions:	Controls Required to Manage Contamination
Engineering Control:	Not reported
Description of Restrictions:	Not reported
Institutional Control:	Government - Hawaii Dept. of Health Letter Issued
Within Designated Areawide Contamination:	Not reported
Site Closure Type:	Not reported

WAILUKU SUGAR AGRICULTURAL DEPARTMENT PESTICIDE MIXING (Continued) **S113230524**

Document Date:	Not reported
Document Number:	Not reported
Document Subject:	Not reported
Project Manager:	Unassigned
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

INST CONTROL:

Potential hazards and controls:	Hazard Managed With Controls
Supplemental Location:	Kahekili Terrace
Zip Suffix:	Not reported
Island:	Maui
Institutional Control:	Government - Hawaii Dept. of Health Letter Issued

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153 NNE > 1 1.311 mi. 6921 ft. **WAILUKU SUGAR COMPANY PESTICIDE MIXING AREA** **HI SHWS** **S110061652**
250 IMI KALA ST **N/A**
WAILUKU, HI 96793

Relative: Lower

Actual: 183 ft.

SHWS:

Organization:	Not reported
Supplemental Location:	Not reported
Island:	Maui
Environmental Interest:	Maui Disposal
HID Number:	Not reported
Facility Registry Identifier:	Not reported
Lead Agency:	HEER
Program:	State
Project Manager:	Cal Miyahara
Hazard Priority:	NFA
Potential Hazards And Controls:	No Hazard
Organization:	Not reported
Island:	Maui
Supplemental Location Text:	Not reported
SDAR Environmental Interest Name:	Maui Disposal
HID Number:	Not reported
Facility Registry Identifier:	Not reported
Lead Agency:	HEER
Progran Name:	State
Potential Hazard And Controls:	No Hazard
Priority:	NFA
Assessment:	Response Necessary
Response:	Response Complete
Nature of Contamination:	Found: TPH-O exceeds residential use levels in surface soils.
Nature of Residual Contamination:	Two of four DUs had minimal concentrations (563 and 767 mg/kg) of Petroleum Hydrocarbon as motor oil exceeding residential use EALs of 500 mg/kg for gross contamination. However, there were no signs of soil staining or petroleum odor.
Use Restrictions:	No Hazard Present For Unrestricted Residential Use
Engineering Control:	Not reported
Description of Restrictions:	Not reported
Institutional Control:	Not reported
Within Designated Areawide Contamination:	Not reported
Site Closure Type:	No Further Action Letter - Unrestricted Residential Use
Document Date:	07/21/2011
Document Number:	2011-412-CMM
Document Subject:	Removal Action Report, Maui Disposal - Wailuku Post Office Former

WAILUKU SUGAR COMPANY PESTICIDE MIXING AREA (Continued) **S110061652**

	Parking Lot, 250 Imi Kala St, Wail
Project Manager:	Cal Miyahara
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814
Organization:	Not reported
Supplemental Location:	Not reported
Island:	Maui
Environmental Interest:	Wailuku Sugar Company Pesticide Mixing Area
HID Number:	Not reported
Facility Registry Identifier:	Not reported
Lead Agency:	HEER
Program:	Site Discovery
Project Manager:	Cal Miyahara
Hazard Priority:	NFA
Potential Hazards And Controls:	No Hazard
Organization:	Not reported
Island:	Maui
Supplemental Location Text:	Not reported
SDAR Environmental Interest Name:	Wailuku Sugar Company Pesticide Mixing Area
HID Number:	Not reported
Facility Registry Identifier:	Not reported
Lead Agency:	HEER
Progran Name:	Site Discovery
Potential Hazard And Controls:	No Hazard
Priority:	NFA
Assessment:	Response Necessary
Response:	Response Complete
Nature of Contamination:	Presumed: possible arsenic, organochlorine release in vicinity of former PMA
Nature of Residual Contamination:	Soils do not pose a threat to human health or the environment based on three factors: the low concentrations relative to our unrestricted action levels, the small area impacted and the presence of clean soils above and below the impacted soils.
Use Restrictions:	No Hazard Present For Unrestricted Residential Use
Engineering Control:	Not reported
Description of Restrictions:	Not reported
Institutional Control:	Not reported
Within Designated Areawide Contamination:	Not reported
Site Closure Type:	No Further Action Letter - Unrestricted Residential Use
Document Date:	03/06/2013
Document Number:	2013-128-CMM
Document Subject:	No Further Action Determination for Pesticides and Metals Contamination at the Wailuku Sugar Company
Project Manager:	Cal Miyahara
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

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154 East > 1 1.331 mi. 7029 ft. **MECO POLE-MOUNT TRANSFORMER NO. 6748** **HI SHWS** **S108859777**
POLE E-9 AT AIAI ST **HI SPILLS** **N/A**
KAHULUI, HI 96732

Relative: Lower

Actual: 121 ft.

SHWS:

Organization:	Not reported
Supplemental Location:	Not reported
Island:	Maui
Environmental Interest:	MECO Pole-Mount Transformer no. 6748
HID Number:	Not reported

MECO POLE-MOUNT TRANSFORMER NO. 6748 (Continued) **S108859777**

Facility Registry Identifier: Not reported
Lead Agency: HEER
Program: State
Project Manager: Amelia Hicks
Hazard Priority: NFA
Potential Hazards And Controls: No Hazard
Organization: Not reported
Island: Maui
Supplemental Location Text: Not reported
SDAR Environmental Interest Name: MECO Pole-Mount Transformer no. 6748
HID Number: Not reported
Facility Registry Identifier: Not reported
Lead Agency: HEER
Progran Name: State
Potential Hazard And Controls: No Hazard
Priority: NFA
Assessment: Response Necessary
Response: Response Complete
Nature of Contamination: Not reported
Nature of Residual Contamination: PCB detected at <0.2 mg/kg; TPH detected at 1,290 mg/kg
Use Restrictions: No Hazard Present For Unrestricted Residential Use
Engineering Control: No Engineering Control Required
Description of Restrictions: Not reported
Institutional Control: Not reported
Within Designated Areawide Contamination: Not reported
Site Closure Type: No Further Action Letter - Unrestricted Residential Use
Document Date: 05/10/2012
Document Number: 2012-290-AH
Document Subject: No Further Action Determination for MECO Pad-Mount Transformer No. 15683 (Incident ID 20091125-1412)
Project Manager: Amelia Hicks
Contact Information: (808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

Organization: Not reported
Supplemental Location: Not reported
Island: Maui
Environmental Interest: MECO Pole-Mount Transformer No. 6930
HID Number: Not reported
Facility Registry Identifier: Not reported
Lead Agency: HEER
Program: State
Project Manager: Richard Palmer
Hazard Priority: Low
Potential Hazards And Controls: Hazard Undetermined
Organization: Not reported
Island: Maui
Supplemental Location Text: Not reported
SDAR Environmental Interest Name: MECO Pole-Mount Transformer No. 6930
HID Number: Not reported
Facility Registry Identifier: Not reported
Lead Agency: HEER
Progran Name: State
Potential Hazard And Controls: Hazard Undetermined
Priority: Low
Assessment: Assessment Ongoing
Response: Not reported
Nature of Contamination: Found: < 25 gallon mineral oil leak from a non-PCB pole-mounted

MECO POLE-MOUNT TRANSFORMER NO. 6748 (Continued) **S108859777**

transformer. Awaiting lab test results.
Nature of Residual Contamination: Not reported
Use Restrictions: Undetermined
Engineering Control: Not reported
Description of Restrictions: Not reported
Institutional Control: Not reported
Within Designated Areawide Contamination: Not reported
Site Closure Type: Not reported
Document Date: Not reported
Document Number: Not reported
Document Subject: Not reported
Project Manager: Richard Palmer
Contact Information: (808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

HI SPILLS:
Island: Maui
Supplemental Loc. Text: Not reported
Case Number: 20070108-1225
HID Number: Not reported
Facility Registry Id: Not reported
Lead and Program: HEER EP&R
ER: No -
Units: MECO Pole-Mount Transformer No. 6930 Release
Substances: Mineral Oil
Less Or Greater Than: <
Numerical Quantity: 25
Units: Gallons
Activity Type: Response
Activity Lead: Liz Galvez
Assignment End Date: 2007-01-12 00:00:00
Result: Refer to SDAR
File Under: Maui Electric Co., Inc.

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155 **MAUI COUNTY POLICE DEPARATMENT** **HI LUST** **U003402931**
NE **55 MAHALANI DR** **HI UST** **N/A**
> 1 **KAHULUI, HI 96732** **HI Financial Assurance**
1.371 mi.
7240 ft.

Relative:
Lower

Actual:
79 ft.

LUST:
Facility ID: 9-501698
Facility Status: Site Cleanup Completed (NFA)
Facility Status Date: 03/19/2002
Release ID: 990097
Project Officer: Shaobin Li

UST:
Facility ID: 9-501698
Owner: COUNTY OF MAUI - POLICE DEPT
Owner Address: 55 MAHALANI ST
Owner City,St,Zip: Kahului, 96732 96732
Latitude: 20.888040
Longitude: -156.488597
Horizontal Reference Datum Name: NAD83
Horizontal Collection Method Name: GPS

Tank ID: R-16

MAUI COUNTY POLICE DEPARATMENT (Continued) **U003402931**

Date Installed: 01/01/1987
Tank Status: Permanently Out of Use
Date Closed: 12/18/1998
Tank Capacity: 2000
Substance: Diesel

Tank ID: R-17
Date Installed: 01/01/1987
Tank Status: Permanently Out of Use
Date Closed: 12/21/1998
Tank Capacity: 5000
Substance: Gasoline

Tank ID: R-18
Date Installed: 01/01/1987
Tank Status: Permanently Out of Use
Date Closed: 12/17/1998
Tank Capacity: 500
Substance: Used Oil

HI Financial Assurance:
Alt Facility ID: 9-501698
Tank Id: R-16
Tank Status: Permanently Out of Use
FRTYPE: Self Insured
Expiration Date: Not reported

Alt Facility ID: 9-501698
Tank Id: R-17
Tank Status: Permanently Out of Use
FRTYPE: Self Insured
Expiration Date: Not reported

Alt Facility ID: 9-501698
Tank Id: R-18
Tank Status: Permanently Out of Use
FRTYPE: Self Insured
Expiration Date: Not reported

AB156 **HALE MAKUA NURSING HOME - WAILUK** **HI LUST** **U003222260**
NNE **1540 LOWER MAIN ST** **HI UST** **N/A**
> 1 **WAILUKU, HI 96793**
1.380 mi.
7284 ft. **Site 1 of 2 in cluster AB**

Relative: Lower

Actual: 181 ft.

LUST:
Facility ID: 9-502621
Facility Status: Site Cleanup Completed (NFA)
Facility Status Date: 10/20/1997
Release ID: 930098
Project Officer: Jose Ruiz

UST:
Facility ID: 9-502621
Owner: HALE MAKUA

HALE MAKUA NURSING HOME - WAILUK (Continued) **U003222260**

Owner Address: 472 KAULANA ST
Owner City,St,Zip: Wailuku, 96793 96793
Latitude: 20.893135
Longitude: -156.494916
Horizontal Reference Datum Name: NAD83
Horizontal Collection Method Name: Address Matching

Tank ID: R-1
Date Installed: 01/01/1966
Tank Status: Permanently Out of Use
Date Closed: 11/06/1992
Tank Capacity: 1000
Substance: Diesel

Tank ID: R-2
Date Installed: 01/01/1966
Tank Status: Permanently Out of Use
Date Closed: 11/06/1992
Tank Capacity: 500
Substance: Diesel

Tank ID: R-3
Date Installed: 01/01/1966
Tank Status: Permanently Out of Use
Date Closed: 11/06/1992
Tank Capacity: 500
Substance: Diesel

Tank ID: R-4
Date Installed: 01/01/1967
Tank Status: Permanently Out of Use
Date Closed: 11/06/1992
Tank Capacity: 500
Substance: Diesel

AB157 **MECO TRANSFORMER 3358** **HI SHWS** **S110061657**
NNE **1540 E MAIN ST** **HI SPILLS** **N/A**
> 1 **WAILUKU, HI 96793**
1.380 mi.
7284 ft. **Site 2 of 2 in cluster AB**

Relative: Lower

Actual: 181 ft.

SHWS:
Organization: Not reported
Supplemental Location: Hale Makua
Island: Maui
Environmental Interest: MECO Transformer 3358 Self Implementing PCB Cleanup
HID Number: Not reported
Facility Registry Identifier: Not reported
Lead Agency: HEER
Program: State
Project Manager: Paul Chong
Hazard Priority: NFA
Potential Hazards And Controls: No Hazard
Organization: Not reported
Island: Maui

MECO TRANSFORMER 3358 (Continued) **S110061657**

Supplemental Location Text:	Hale Makua
SDAR Environmental Interest Name:	MECO Transformer 3358 Self Implementing PCB Cleanup
HID Number:	Not reported
Facility Registry Identifier:	Not reported
Lead Agency:	HEER
Progran Name:	State
Potential Hazard And Controls:	No Hazard
Priority:	NFA
Assessment:	Response Necessary
Response:	Self Implementing TSCA Cleanup
Nature of Contamination:	Found: PCBs in soil
Nature of Residual Contamination:	Confirmation samples were collected beneath the excavated area and all samples were below HDOH environmental action levels for unrestricted use.
Use Restrictions:	No Hazard Present For Unrestricted Residential Use
Engineering Control:	Not reported
Description of Restrictions:	Not reported
Institutional Control:	Not reported
Within Designated Areawide Contamination:	Not reported
Site Closure Type:	No Further Action Letter - Unrestricted Residential Use
Document Date:	01/27/2011
Document Number:	2011-043-PC
Document Subject:	Pad Mount Transformer 3358 PCB Release
Project Manager:	Paul Chong
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

HI SPILLS:

Island:	Maui
Supplemental Loc. Text:	Hale Makua
Case Number:	20080714-1258
HID Number:	Not reported
Facility Registry Id:	Not reported
Lead and Program:	HEER EP&R
ER:	None
Units:	MECO Pad-Mount Transformer no. 3358
Substances:	Oil Lubricating
Less Or Greater Than:	Not reported
Numerical Quantity:	3
Units:	Gallons
Activity Type:	Response
Activity Lead:	Liz Galvez
Assignment End Date:	Not reported
Result:	Not reported
File Under:	Maui Electric Co., Inc.

158
ENE
> 1
1.495 mi.
7895 ft.

RADIO STATION KMVI **HI LUST** **U003541884**
100 MAHALANI RD **HI UST** **N/A**
WAILUKU, HI 96793

Relative:
Lower

Actual:
93 ft.

LUST:

Facility ID:	9-500844
Facility Status:	Site Cleanup Completed (NFA)
Facility Status Date:	06/01/1995
Release ID:	950085
Project Officer:	Roger Brewer

RADIO STATION KMVI (Continued) **U003541884**

UST:

Facility ID:	9-500844
Owner:	U.S. FEDERAL EMERGENCY MANAGEMENT AGENCY
Owner Address:	500 C St SW
Owner City,St,Zip:	Wailuku, 96793 96793
Latitude:	20.886407
Longitude:	-156.487342
Horizontal Reference Datum Name:	NAD83
Horizontal Collection Method Name:	Address Matching
Tank ID:	R-1
Date Installed:	01/01/1973
Tank Status:	**Permanently Out of Use**
Date Closed:	04/04/1994
Tank Capacity:	1000
Substance:	Diesel
Tank ID:	R-2
Date Installed:	01/01/1973
Tank Status:	**Permanently Out of Use**
Date Closed:	04/04/1994
Tank Capacity:	750
Substance:	Diesel

159
ESE
> 1
1.826 mi.
9643 ft.

MECO PAD-MOUNT TRANSFORMER NO. 21813 **HI SHWS** **S113230487**
45 MOLEHULEHU PL **HI INST CONTROL** **N/A**
KAHULUI, HI 96732 **HI SPILLS**

Relative:
Lower

Actual:
148 ft.

SHWS:

Organization:	Not reported
Supplemental Location:	Not reported
Island:	Maui
Environmental Interest:	MECO Pad-Mount Transformer No. 21813
HID Number:	Not reported
Facility Registry Identifier:	Not reported
Lead Agency:	HEER
Program:	State
Project Manager:	Amelia Hicks
Hazard Priority:	NFA
Potential Hazards And Controls:	No Hazard
Organization:	Not reported
Island:	Maui
Supplemental Location Text:	Not reported
SDAR Environmental Interest Name:	MECO Pad-Mount Transformer No. 21813
HID Number:	Not reported
Facility Registry Identifier:	Not reported
Lead Agency:	HEER
Progran Name:	State
Potential Hazard And Controls:	No Hazard
Priority:	NFA
Assessment:	Response Necessary
Response:	Response Complete
Nature of Contamination:	Not reported
Nature of Residual Contamination:	Below HDOH EALs; TPH (<50 mg/kg), PCB (<0.5 mg/kg)

MECO PAD-MOUNT TRANSFORMER NO. 21813 (Continued) **S113230487**

Use Restrictions:	No Hazard Present For Unrestricted Residential Use
Engineering Control:	No Engineering Control Required
Description of Restrictions:	Not reported
Institutional Control:	Government - Hawaii Dept. of Health Letter Issued
Within Designated Areawide Contamination:	Not reported
Site Closure Type:	No Further Action Letter - Unrestricted Residential Use
Document Date:	04/23/2012
Document Number:	2012-254-AH
Document Subject:	No Further Action Determination for MECO Pad-Mount Transformer No. 8052 based upon review of Low Ris
Project Manager:	Amelia Hicks
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

INST CONTROL:

Potential hazards and controls:	No Hazard
Supplemental Location:	Not reported
Zip Suffix:	Not reported
Island:	Maui
Institutional Control:	Government - Hawaii Dept. of Health Letter Issued

HI SPILLS:

Island:	Maui
Supplemental Loc. Text:	Not reported
Case Number:	20070619-0800
HID Number:	Not reported
Facility Registry Id:	Not reported
Lead and Program:	HEER EP&R
ER:	None
Units:	MECO Pad-Mount Transformer no. 21813
Substances:	Oil Lubricating
Less Or Greater Than:	Not reported
Numerical Quantity:	30
Units:	Gallons
Activity Type:	Response
Activity Lead:	Liz Galvez
Assignment End Date:	Not reported
Result:	Refer to SDAR
File Under:	MECO-Kahului Baseyard

160
NE
> 1
1.857 mi.
9804 ft.

Relative:
Lower

Actual:
32 ft.

MAUI COMMUNITY COLLEGE
310 KAAHUMANU AVE
KAHULUI, HI 96732

RCRA-CESQG **1000244815**
HI SHWS **HID981975170**
HI LUST
HI UST
FINDS
HI Financial Assurance
CA HAZNET

RCRA-CESQG:

Date form received by agency:	05/19/2000
Facility name:	MAUI COMMUNITY COLLEGE
Facility address:	310 KAAHUMANU AVE KAHULUI, HI 96732
EPA ID:	HID981975170
Contact:	DAVID TAMANAHA
Contact address:	310 KAAHUMANU AVE KAHULUI, HI 96732
Contact country:	US

MAUI COMMUNITY COLLEGE (Continued) **1000244815**

Contact telephone:	(808) 984-3253
Contact email:	Not reported
EPA Region:	09
Land type:	State
Classification:	Conditionally Exempt Small Quantity Generator
Description:	Handler: generates 100 kg or less of hazardous waste per calendar month, and accumulates 1000 kg or less of hazardous waste at any time; or generates 1 kg or less of acutely hazardous waste per calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste; or generates 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste

Owner/Operator Summary:

Owner/operator name:	UNIVERSITY OF HAWAII
Owner/operator address:	2040 EAST WEST ROAD HONOLULU, HI 96822
Owner/operator country:	Not reported
Owner/operator telephone:	(808) 956-3198
Legal status:	State
Owner/Operator Type:	Owner
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported
Owner/operator name:	NOT REQUIRED
Owner/operator address:	NOT REQUIRED NOT REQUIRED, ME 99999
Owner/operator country:	Not reported
Owner/operator telephone:	(415) 555-1212
Legal status:	State
Owner/Operator Type:	Operator
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Handler Activities Summary:

U.S. importer of hazardous waste:	No
Mixed waste (haz. and radioactive):	No
Recycler of hazardous waste:	No
Transporter of hazardous waste:	No
Treater, storer or disposer of HW:	No
Underground injection activity:	No
On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No
Used oil transfer facility:	No

MAUI COMMUNITY COLLEGE (Continued) **1000244815**

Used oil transporter: No

. Waste code: D000
. Waste name: Not Defined

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

. Waste code: D003
. Waste name: REACTIVE WASTE

. Waste code: P012
. Waste name: ARSENIC OXIDE AS2O3 (OR) ARSENIC TRIOXIDE

. Waste code: P098
. Waste name: POTASSIUM CYANIDE (OR) POTASSIUM CYANIDE K(CN)

. Waste code: P106
. Waste name: SODIUM CYANIDE (OR) SODIUM CYANIDE NA(CN)

. Waste code: U012
. Waste name: ANILINE (I,T) (OR) BENZENAMINE (I,T)

. Waste code: U019
. Waste name: BENZENE (I,T)

. Waste code: U044
. Waste name: CHLOROFORM (OR) METHANE, TRICHLORO-

. Waste code: U170
. Waste name: P-NITROPHENOL (I,T) (OR) PHENOL, 4-NITRO-

. Waste code: U201
. Waste name: 1,3-BENZENEDIOL (OR) RESORCINOL

. Waste code: U211
. Waste name: CARBON TETRACHLORIDE (OR) METHANE, TETRACHLORO-

. Waste code: U223
. Waste name: BENZENE, 1,3-DIISOCYANATOMETHYL- (R,T) (OR) TOLUENE DIISOCYANATE (R,T)

. Waste code: U239
. Waste name: BENZENE, DIMETHYL- (I,T) (OR) XYLENE (I)

Facility Has Received Notices of Violations:
Regulation violated: F - 262.50-60
Area of violation: Generators - General
Date violation determined: 03/19/1999
Date achieved compliance: 06/26/2001
Violation lead agency: State
Enforcement action: Not reported
Enforcement action date: Not reported
Enf. disposition status: Not reported
Enf. disp. status date: Not reported

MAUI COMMUNITY COLLEGE (Continued) **1000244815**

Enforcement lead agency: Not reported
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: F - 270
Area of violation: TSD - General
Date violation determined: 03/19/1999
Date achieved compliance: 06/26/2001
Violation lead agency: State
Enforcement action: Not reported
Enforcement action date: Not reported
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: Not reported
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: F - 262.10-12.A
Area of violation: Generators - General
Date violation determined: 03/19/1999
Date achieved compliance: 06/26/2001
Violation lead agency: State
Enforcement action: Not reported
Enforcement action date: Not reported
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: Not reported
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: F - 262.50-60
Area of violation: Generators - General
Date violation determined: 10/21/1998
Date achieved compliance: 06/26/2001
Violation lead agency: State
Enforcement action: Not reported
Enforcement action date: Not reported
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: Not reported
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: F - 262.10-12.A
Area of violation: Generators - General
Date violation determined: 10/21/1998
Date achieved compliance: 06/26/2001
Violation lead agency: State
Enforcement action: Not reported
Enforcement action date: Not reported
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: Not reported

MAUI COMMUNITY COLLEGE (Continued) **1000244815**

Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: F - 270
Area of violation: TSD - General
Date violation determined: 10/21/1998
Date achieved compliance: 06/26/2001
Violation lead agency: State
Enforcement action: Not reported
Enforcement action date: Not reported
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: Not reported
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Evaluation Action Summary:
Evaluation date: 08/27/2003
Evaluation: CASE DEVELOPMENT INSPECTION
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 06/26/2001
Evaluation: NOT A SIGNIFICANT NON-COMPLIER
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 01/18/2000
Evaluation: SIGNIFICANT NON-COMPLIER
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 10/21/1998
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: TSD - General
Date achieved compliance: 06/26/2001
Evaluation lead agency: State

Evaluation date: 10/21/1998
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Generators - General
Date achieved compliance: 06/26/2001
Evaluation lead agency: State

Evaluation date: 05/12/1992
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

SHWS:
Organization: Not reported

MAUI COMMUNITY COLLEGE (Continued) **1000244815**

Supplemental Location: Automotive Technology Building
Island: Maui
Environmental Interest: MCC-Lead Contamination from Washing Operations
HID Number: Not reported
Facility Registry Identifier: 110013767593
Lead Agency: Not reported
Program: State
Project Manager: Richard Palmer
Hazard Priority: NFA
Potential Hazards And Controls: Hazard Undetermined
Organization: Not reported
Island: Maui
Supplemental Location Text: Automotive Technology Building
SDAR Environmental Interest Name: MCC-Lead Contamination from Washing Operations
HID Number: Not reported
Facility Registry Identifier: 110013767593
Lead Agency: Not reported
Progran Name: State
Potential Hazard And Controls: Hazard Undetermined
Priority: NFA
Assessment: Assessment Ongoing
Response: Not reported
Nature of Contamination: Not reported
Nature of Residual Contamination: Not reported
Use Restrictions: Undetermined
Engineering Control: Not reported
Description of Restrictions: Not reported
Institutional Control: Not reported
Within Designated Areawide Contamination: Not reported
Site Closure Type: No Further Action - Type Undetermined
Document Date: 04/04/2003
Document Number: Not reported
Document Subject: Not reported
Project Manager: Richard Palmer
Contact Information: (808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

LUST:
Facility ID: 9-502687
Facility Status: Site Cleanup Completed (NFA)
Facility Status Date: 05/06/2005
Release ID: 990071
Project Officer: Chad Pritchard

UST:
Facility ID: 9-502687
Owner: STATE U.H. - MAUI COMMUNITY COLLEGE
Owner Address: 310 KAAHUMANU AVE
Owner City,St,Zip: Kahului, 96732 96732
Latitude: 20.889787
Longitude: -156.477150
Horizontal Reference Datum Name: NAD83
Horizontal Collection Method Name: GPS

Tank ID: R-1
Date Installed: 06/30/1980
Tank Status: Permanently Out of Use

MAUI COMMUNITY COLLEGE (Continued) **1000244815**

Date Closed: 11/19/1998
Tank Capacity: 300
Substance: Used Oil

Tank ID: R-2
Date Installed: Not reported
Tank Status: Permanently Out of Use
Date Closed: 06/09/1998
Tank Capacity: 750
Substance: Gasoline

FINDS:

Registry ID: 110005725750

Environmental Interest/Information System
US National Pollutant Discharge Elimination System (NPDES) module of the Compliance Information System (ICIS) tracks surface water permits issued under the Clean Water Act. Under NPDES, all facilities that discharge pollutants from any point source into waters of the United States are required to obtain a permit. The permit will likely contain limits on what can be discharged, impose monitoring and reporting requirements, and include other provisions to ensure that the discharge does not adversely affect water quality.

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

STATE MASTER

HI Financial Assurance:
Alt Facility ID: 9-502687
Tank Id: R-1
Tank Status: Permanently Out of Use
FRTYPE: Insurance
Expiration Date: Not reported

Alt Facility ID: 9-502687
Tank Id: R-2
Tank Status: Permanently Out of Use
FRTYPE: Insurance
Expiration Date: Not reported

HAZNET:
envid: 1000244815
Year: 2003
GEPAID: HID981975170
Contact: DAVID TAMANAHA
Telephone: 8089843253
Mailing Name: Not reported

MAUI COMMUNITY COLLEGE (Continued) **1000244815**

Mailing Address: 310 KAAHUMANU AVE
Mailing City,St,Zip: KAHULUI, HI 96732
Gen County: Not reported
TSD EPA ID: CAD059494310
TSD County: Not reported
Waste Category: Laboratory waste chemicals
Disposal Method: Transfer Station
Tons: 0
Cat Decode: Laboratory waste chemicals
Method Decode: Transfer Station
Facility County: 99

envid: 1000244815
Year: 2003
GEPAID: HID981975170
Contact: DAVID TAMANAHA
Telephone: 8089843253
Mailing Name: Not reported
Mailing Address: 310 KAAHUMANU AVE
Mailing City,St,Zip: KAHULUI, HI 96732
Gen County: Not reported
TSD EPA ID: CAD059494310
TSD County: Not reported
Waste Category: Unspecified solvent mixture
Disposal Method: Disposal, Other
Tons: 0.15
Cat Decode: Unspecified solvent mixture
Method Decode: Disposal, Other
Facility County: 99

envid: 1000244815
Year: 2003
GEPAID: HID981975170
Contact: DAVID TAMANAHA
Telephone: 8089843253
Mailing Name: Not reported
Mailing Address: 310 KAAHUMANU AVE
Mailing City,St,Zip: KAHULUI, HI 96732
Gen County: Not reported
TSD EPA ID: CAD059494310
TSD County: Not reported
Waste Category: Paint sludge
Disposal Method: Transfer Station
Tons: 0.1
Cat Decode: Paint sludge
Method Decode: Transfer Station
Facility County: 99

envid: 1000244815
Year: 2001
GEPAID: HID981975170
Contact: DAVID TAMANAHA
Telephone: 8089843253
Mailing Name: Not reported
Mailing Address: 310 KAAHUMANU AVE
Mailing City,St,Zip: KAHULUI, HI 96732
Gen County: Not reported

MAUI COMMUNITY COLLEGE (Continued) **1000244815**

TSD EPA ID: CAT000646117
TSD County: Not reported
Waste Category: Polychlorinated biphenyls and material containing PCBs
Disposal Method: Disposal, Land Fill
Tons: 0.49
Cat Decode: Polychlorinated biphenyls and material containing PCBs
Method Decode: Disposal, Land Fill
Facility County: 99

envid: 1000244815
Year: 2000
GEPAID: HID981975170
Contact: DAVID TAMANAHA
Telephone: 8089843253
Mailing Name: Not reported
Mailing Address: 310 KAAHUMANU AVE
Mailing City,St,Zip: KAHULUI, HI 96732
Gen County: Not reported
TSD EPA ID: CAD088504881
TSD County: Not reported
Waste Category: Not reported
Disposal Method: Transfer Station
Tons: 0.01
Cat Decode: Not reported
Method Decode: Transfer Station
Facility County: 99

Click this hyperlink while viewing on your computer to access additional CA_HAZNET: detail in the EDR Site Report.

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161 SSE > 1 1.994 mi. 10527 ft. **122 WEST AHULIU WAY** **HI SHWS** **S117391416**
122 W AHULIU WAY **HI INST CONTROL** **N/A**
WAILUKU, HI 96793

Relative: Lower
Actual: 231 ft.

SHWS:
Organization: Not reported
Supplemental Location: Not reported
Island: Maui
Environmental Interest: 122 West Ahuliu Way
HID Number: Not reported
Facility Registry Identifier: Not reported
Lead Agency: HEER
Program: State
Project Manager: Jordan Nakayama
Hazard Priority: NFA
Potential Hazards And Controls: Hazard Managed With Controls
Organization: Not reported
Island: Maui
Supplemental Location Text: Not reported
SDAR Environmental Interest Name: 122 West Ahuliu Way
HID Number: Not reported
Facility Registry Identifier: Not reported
Lead Agency: HEER
Progran Name: State
Potential Hazard And Controls: Hazard Managed With Controls
Priority: NFA

122 WEST AHULIU WAY (Continued) **S117391416**

Assessment: Response Necessary
Response: Response Complete
Nature of Contamination: Found: Oil stained soil.
Nature of Residual Contamination: Not reported
Use Restrictions: Controls Required to Manage Contamination
Engineering Control: Not reported
Description of Restrictions: Not reported
Institutional Control: Government - Hawaii Dept. of Health Letter Issued
Within Designated Areawide Contamination: Not reported
Site Closure Type: No Further Action Letter - Restricted Use
Document Date: 08/19/2014
Document Number: 2014-390-JQN
Document Subject: Interim No Further Action determination dated July 3, 2014, 122 West Ahuliu Way, Wailuku, Hawaii
Project Manager: Jordan Nakayama
Contact Information: (808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

INST CONTROL:
Potential hazards and controls: Hazard Managed With Controls
Supplemental Location: Not reported
Zip Suffix: Not reported
Island: Maui
Institutional Control: Government - Hawaii Dept. of Health Letter Issued

Count: 9 records. ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
KAHULUI	1003879111	WAIKAPU DUMP-MAUI COUNTY DUMP	CENTRAL MAUI	96732	CERCLIS-NFRAP
KAHULUI	S106820852	VECTOR CONTROL BRANCH, MAUI	54 HIGH ST, 641 MUA ST, KAHALE	96793	HI SHWS
KAHULUI	1006820345	A&B DUMP SITE	W PAPA AVE	96732	HI SHWS
KAHULUI	1004654729	ALEXANDER & BALDWIN DUMP SITE	WEST PAPA AVENUE	96732	CERCLIS-NFRAP
KAHULUI	1006819647	WAIKAPU DUMP-MAUI COUNTY DUMP	WAIKAPU RD	96732	HI SHWS
WAILUKU	1015733377	VECTOR CONTROL BRANCH	54 HIGH ST	96793	CERCLIS-NFRAP, RCRA NonGen / NI
WAILUKU	1016404224	ALOHA KEHALANI VILLAGE	2565 KEHALANI VILLAGE DRIVE	96793	FINDS
WAILUKU	U004196893	ALOHA KEHALANI VILLAGE	2565 KEHALANI VILLAGE DRIVE	96793	HI UST, HI Financial Assurance
WAILUKU	1006819707	WAIALE ASH PILE	MAHALANI ST	96793	HI SHWS

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List
National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 10/30/2015
Date Data Arrived at EDR: 11/07/2015
Date Made Active in Reports: 01/04/2016
Number of Days to Update: 58

Source: EPA
Telephone: N/A
Last EDR Contact: 01/26/2016
Next Scheduled EDR Contact: 04/18/2016
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites
A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 10/30/2015
Date Data Arrived at EDR: 11/07/2015
Date Made Active in Reports: 01/04/2016
Number of Days to Update: 58

Source: EPA
Telephone: N/A
Last EDR Contact: 01/26/2016
Next Scheduled EDR Contact: 04/18/2016
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens
Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

Federal Delisted NPL site list

Delisted NPL: National Priority List Deletions
The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 10/30/2015
Date Data Arrived at EDR: 11/07/2015
Date Made Active in Reports: 01/04/2016
Number of Days to Update: 58

Source: EPA
Telephone: N/A
Last EDR Contact: 01/26/2016
Next Scheduled EDR Contact: 04/18/2016
Data Release Frequency: Quarterly

Federal CERCLIS list

FEDERAL FACILITY: Federal Facility Site Information listing
A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 03/26/2015
Date Data Arrived at EDR: 04/08/2015
Date Made Active in Reports: 06/11/2015
Number of Days to Update: 64

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 01/06/2016
Next Scheduled EDR Contact: 04/18/2016
Data Release Frequency: Varies

CERCLIS: Comprehensive Environmental Response, Compensation, and Liability Information System
CERCLIS contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 10/25/2013
Date Data Arrived at EDR: 11/11/2013
Date Made Active in Reports: 02/13/2014
Number of Days to Update: 94

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 11/23/2015
Next Scheduled EDR Contact: 03/07/2016
Data Release Frequency: Quarterly

Federal CERCLIS NFRAP site List

CERCLIS-NFRAP: CERCLIS No Further Remedial Action Planned
Archived sites are sites that have been removed and archived from the inventory of CERCLIS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list this site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site.

Date of Government Version: 10/25/2013
Date Data Arrived at EDR: 11/11/2013
Date Made Active in Reports: 02/13/2014
Number of Days to Update: 94

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 11/23/2015
Next Scheduled EDR Contact: 03/07/2016
Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report
CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 06/09/2015
Date Data Arrived at EDR: 06/26/2015
Date Made Active in Reports: 09/16/2015
Number of Days to Update: 82

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 12/18/2015
Next Scheduled EDR Contact: 04/11/2016
Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Treatment, Storage and Disposal
RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 06/09/2015
Date Data Arrived at EDR: 06/26/2015
Date Made Active in Reports: 09/16/2015
Number of Days to Update: 82

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 12/18/2015
Next Scheduled EDR Contact: 04/11/2016
Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators
RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 06/09/2015
Date Data Arrived at EDR: 06/26/2015
Date Made Active in Reports: 09/16/2015
Number of Days to Update: 82

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 12/18/2015
Next Scheduled EDR Contact: 04/11/2016
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators
RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 06/09/2015
Date Data Arrived at EDR: 06/26/2015
Date Made Active in Reports: 09/16/2015
Number of Days to Update: 82

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 12/18/2015
Next Scheduled EDR Contact: 04/11/2016
Data Release Frequency: Quarterly

RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generators
RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 06/09/2015
Date Data Arrived at EDR: 06/26/2015
Date Made Active in Reports: 09/16/2015
Number of Days to Update: 82

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 12/18/2015
Next Scheduled EDR Contact: 04/11/2016
Data Release Frequency: Varies

Federal institutional controls / engineering controls registries

LUCIS: Land Use Control Information System
LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 05/28/2015
Date Data Arrived at EDR: 05/29/2015
Date Made Active in Reports: 06/11/2015
Number of Days to Update: 13
Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 11/13/2015
Next Scheduled EDR Contact: 02/29/2016
Data Release Frequency: Varies

US ENG CONTROLS: Engineering Controls Sites List
A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 09/10/2015
Date Data Arrived at EDR: 09/11/2015
Date Made Active in Reports: 11/03/2015
Number of Days to Update: 53
Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 11/24/2015
Next Scheduled EDR Contact: 03/14/2016
Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls
A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 09/10/2015
Date Data Arrived at EDR: 09/11/2015
Date Made Active in Reports: 11/03/2015
Number of Days to Update: 53
Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 11/24/2015
Next Scheduled EDR Contact: 03/14/2016
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System
Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 06/22/2015
Date Data Arrived at EDR: 06/26/2015
Date Made Active in Reports: 09/16/2015
Number of Days to Update: 82
Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 12/29/2015
Next Scheduled EDR Contact: 04/11/2016
Data Release Frequency: Annually

State- and tribal - equivalent CERCLIS

SHWS: Sites List
Facilities, sites or areas in which the Office of Hazard Evaluation and Emergency Response has an interest, has investigated or may investigate under HRS 128D (includes CERCLIS sites).

Date of Government Version: 12/02/2014
Date Data Arrived at EDR: 12/22/2014
Date Made Active in Reports: 01/27/2015
Number of Days to Update: 36
Source: Department of Health
Telephone: 808-586-4249
Last EDR Contact: 01/26/2016
Next Scheduled EDR Contact: 03/07/2016
Data Release Frequency: Semi-Annually

State and tribal landfill and/or solid waste disposal site lists

SWF/LF: Permitted Landfills in the State of Hawaii
Solid Waste Facilities/Landfill Sites. SWF/LF type records typically contain an inventory of solid waste disposal facilities or landfills in a particular state. Depending on the state, these may be active or inactive facilities or open dumps that failed to meet RCRA Subtitle D Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 09/17/2012
Date Data Arrived at EDR: 04/03/2013
Date Made Active in Reports: 05/10/2013
Number of Days to Update: 37
Source: Department of Health
Telephone: 808-586-4245
Last EDR Contact: 10/02/2015
Next Scheduled EDR Contact: 01/11/2016
Data Release Frequency: Varies

State and tribal leaking storage tank lists

LUST: Leaking Underground Storage Tank Database
Leaking Underground Storage Tank Incident Reports. LUST records contain an inventory of reported leaking underground storage tank incidents. Not all states maintain these records, and the information stored varies by state.

Date of Government Version: 09/04/2015
Date Data Arrived at EDR: 09/25/2015
Date Made Active in Reports: 11/06/2015
Number of Days to Update: 42
Source: Department of Health
Telephone: 808-586-4228
Last EDR Contact: 12/04/2015
Next Scheduled EDR Contact: 03/14/2016
Data Release Frequency: Semi-Annually

INDIAN LUST R5: Leaking Underground Storage Tanks on Indian Land
Leaking underground storage tanks located on Indian Land in Michigan, Minnesota and Wisconsin.

Date of Government Version: 11/04/2015
Date Data Arrived at EDR: 11/13/2015
Date Made Active in Reports: 01/04/2016
Number of Days to Update: 52
Source: EPA, Region 5
Telephone: 312-886-7439
Last EDR Contact: 01/25/2016
Next Scheduled EDR Contact: 05/09/2016
Data Release Frequency: Varies

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 10/27/2015
Date Data Arrived at EDR: 10/29/2015
Date Made Active in Reports: 01/04/2016
Number of Days to Update: 67
Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 01/26/2016
Next Scheduled EDR Contact: 05/09/2016
Data Release Frequency: Varies

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 05/13/2015
Date Data Arrived at EDR: 08/03/2015
Date Made Active in Reports: 10/13/2015
Number of Days to Update: 71
Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 01/25/2016
Next Scheduled EDR Contact: 05/09/2016
Data Release Frequency: Varies

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 03/30/2015
Date Data Arrived at EDR: 04/28/2015
Date Made Active in Reports: 06/22/2015
Number of Days to Update: 55
Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 01/25/2016
Next Scheduled EDR Contact: 05/09/2016
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 04/30/2015
Date Data Arrived at EDR: 05/05/2015
Date Made Active in Reports: 06/22/2015
Number of Days to Update: 48
Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 01/25/2016
Next Scheduled EDR Contact: 05/09/2016
Data Release Frequency: Quarterly

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 01/08/2015
Date Data Arrived at EDR: 01/08/2015
Date Made Active in Reports: 02/09/2015
Number of Days to Update: 32
Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 01/27/2016
Next Scheduled EDR Contact: 05/09/2016
Data Release Frequency: Quarterly

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 07/21/2015
Date Data Arrived at EDR: 07/29/2015
Date Made Active in Reports: 10/13/2015
Number of Days to Update: 76
Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 01/25/2016
Next Scheduled EDR Contact: 05/09/2016
Data Release Frequency: Quarterly

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 11/24/2015
Date Data Arrived at EDR: 12/01/2015
Date Made Active in Reports: 01/04/2016
Number of Days to Update: 34
Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 01/25/2016
Next Scheduled EDR Contact: 05/09/2016
Data Release Frequency: Semi-Annually

State and tribal registered storage tank lists

FEMA UST: Underground Storage Tank Listing
A listing of all FEMA owned underground storage tanks.

Date of Government Version: 01/01/2010
Date Data Arrived at EDR: 02/16/2010
Date Made Active in Reports: 04/12/2010
Number of Days to Update: 55
Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 01/08/2016
Next Scheduled EDR Contact: 04/25/2016
Data Release Frequency: Varies

UST: Underground Storage Tank Database
Registered Underground Storage Tanks. UST's are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA) and must be registered with the state department responsible for administering the UST program. Available information varies by state program.

Date of Government Version: 09/04/2015
Date Data Arrived at EDR: 09/25/2015
Date Made Active in Reports: 11/06/2015
Number of Days to Update: 42
Source: Department of Health
Telephone: 808-586-4228
Last EDR Contact: 12/04/2015
Next Scheduled EDR Contact: 03/14/2016
Data Release Frequency: Semi-Annually

INDIAN UST R10: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 07/21/2015
Date Data Arrived at EDR: 07/29/2015
Date Made Active in Reports: 10/13/2015
Number of Days to Update: 76
Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 01/25/2016
Next Scheduled EDR Contact: 05/09/2016
Data Release Frequency: Quarterly

INDIAN UST R1: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 10/20/2015
Date Data Arrived at EDR: 10/29/2015
Date Made Active in Reports: 01/04/2016
Number of Days to Update: 67
Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 01/26/2016
Next Scheduled EDR Contact: 05/09/2016
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 11/24/2015
Date Data Arrived at EDR: 12/01/2015
Date Made Active in Reports: 01/04/2016
Number of Days to Update: 34
Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 01/25/2016
Next Scheduled EDR Contact: 05/09/2016
Data Release Frequency: Semi-Annually

INDIAN UST R5: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 11/05/2015
Date Data Arrived at EDR: 11/13/2015
Date Made Active in Reports: 01/04/2016
Number of Days to Update: 52
Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 01/25/2016
Next Scheduled EDR Contact: 05/09/2016
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 05/13/2015
Date Data Arrived at EDR: 08/03/2015
Date Made Active in Reports: 10/13/2015
Number of Days to Update: 71
Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 01/25/2016
Next Scheduled EDR Contact: 05/09/2016
Data Release Frequency: Semi-Annually

INDIAN UST R7: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 09/23/2014
Date Data Arrived at EDR: 11/25/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 65
Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 01/25/2016
Next Scheduled EDR Contact: 05/09/2016
Data Release Frequency: Varies

INDIAN UST R9: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 12/14/2014
Date Data Arrived at EDR: 02/13/2015
Date Made Active in Reports: 03/13/2015
Number of Days to Update: 28

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 01/27/2016
Next Scheduled EDR Contact: 05/09/2016
Data Release Frequency: Quarterly

INDIAN UST R8: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 07/28/2015
Date Data Arrived at EDR: 08/14/2015
Date Made Active in Reports: 10/13/2015
Number of Days to Update: 60

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 01/25/2016
Next Scheduled EDR Contact: 05/09/2016
Data Release Frequency: Quarterly

State and tribal institutional control / engineering control registries

ENG CONTROLS: Engineering Control Sites
A listing of sites with engineering controls in place.

Date of Government Version: 12/02/2014
Date Data Arrived at EDR: 12/22/2014
Date Made Active in Reports: 01/27/2015
Number of Days to Update: 36

Source: Department of Health
Telephone: 404-586-4249
Last EDR Contact: 01/26/2016
Next Scheduled EDR Contact: 03/07/2016
Data Release Frequency: Varies

INST CONTROL: Sites with Institutional Controls
Voluntary Remediation Program and Brownfields sites with institutional controls in place.

Date of Government Version: 12/02/2014
Date Data Arrived at EDR: 12/22/2014
Date Made Active in Reports: 01/27/2015
Number of Days to Update: 36

Source: Department of Health
Telephone: 808-586-4249
Last EDR Contact: 01/26/2016
Next Scheduled EDR Contact: 03/07/2016
Data Release Frequency: Varies

State and tribal voluntary cleanup sites

VCP: Voluntary Response Program Sites
Sites participating in the Voluntary Response Program. The purpose of the VRP is to streamline the cleanup process in a way that will encourage prospective developers, lenders, and purchasers to voluntarily cleanup properties.

Date of Government Version: 12/02/2014
Date Data Arrived at EDR: 12/22/2014
Date Made Active in Reports: 01/27/2015
Number of Days to Update: 36

Source: Department of Health
Telephone: 808-586-4249
Last EDR Contact: 01/26/2016
Next Scheduled EDR Contact: 03/07/2016
Data Release Frequency: Varies

INDIAN VCP R1: Voluntary Cleanup Priority Listing
A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 09/29/2014
Date Data Arrived at EDR: 10/01/2014
Date Made Active in Reports: 11/06/2014
Number of Days to Update: 36

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 12/28/2015
Next Scheduled EDR Contact: 04/11/2016
Data Release Frequency: Varies

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng
A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

State and tribal Brownfields sites

BROWNFIELDS: Brownfields Sites
With certain legal exclusions and additions, the term 'brownfield site' means real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant.

Date of Government Version: 12/02/2014
Date Data Arrived at EDR: 12/22/2014
Date Made Active in Reports: 01/27/2015
Number of Days to Update: 36

Source: Department of Health
Telephone: 808-586-4249
Last EDR Contact: 01/26/2016
Next Scheduled EDR Contact: 03/07/2016
Data Release Frequency: Varies

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites
Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 09/21/2015
Date Data Arrived at EDR: 09/23/2015
Date Made Active in Reports: 01/04/2016
Number of Days to Update: 103

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 12/21/2015
Next Scheduled EDR Contact: 04/04/2016
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands
Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 02/01/2016
Next Scheduled EDR Contact: 05/16/2016
Data Release Frequency: Varies

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations
A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 01/25/2016
Next Scheduled EDR Contact: 05/09/2016
Data Release Frequency: No Update Planned

ODI: Open Dump Inventory
An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39
Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL: National Clandestine Laboratory Register
A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 08/12/2015
Date Data Arrived at EDR: 09/04/2015
Date Made Active in Reports: 11/03/2015
Number of Days to Update: 60
Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 08/31/2015
Next Scheduled EDR Contact: 12/14/2015
Data Release Frequency: No Update Planned

CDL: Clandestine Drug Lab Listing
A listing of clandestine drug lab site locations.

Date of Government Version: 08/04/2010
Date Data Arrived at EDR: 09/10/2010
Date Made Active in Reports: 10/22/2010
Number of Days to Update: 42
Source: Department of Health
Telephone: 808-586-4249
Last EDR Contact: 11/24/2015
Next Scheduled EDR Contact: 03/14/2016
Data Release Frequency: Varies

US CDL: Clandestine Drug Labs
A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 08/12/2015
Date Data Arrived at EDR: 09/04/2015
Date Made Active in Reports: 11/03/2015
Number of Days to Update: 60
Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 11/25/2015
Next Scheduled EDR Contact: 03/14/2016
Data Release Frequency: Quarterly

Local Land Records

LIENS 2: CERCLA Lien Information
A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 02/18/2014
Date Data Arrived at EDR: 03/18/2014
Date Made Active in Reports: 04/24/2014
Number of Days to Update: 37
Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 01/25/2016
Next Scheduled EDR Contact: 05/09/2016
Data Release Frequency: Varies

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System
Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 06/24/2015
Date Data Arrived at EDR: 06/26/2015
Date Made Active in Reports: 09/02/2015
Number of Days to Update: 68
Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 12/30/2015
Next Scheduled EDR Contact: 04/11/2016
Data Release Frequency: Annually

SPILLS: Release Notifications
Releases of hazardous substances to the environment reported to the Office of Hazard Evaluation and Emergency Response since 1988.

Date of Government Version: 12/02/2014
Date Data Arrived at EDR: 12/22/2014
Date Made Active in Reports: 01/28/2015
Number of Days to Update: 37
Source: Department of Health
Telephone: 808-586-4249
Last EDR Contact: 01/26/2016
Next Scheduled EDR Contact: 03/07/2016
Data Release Frequency: Varies

SPILLS 90: SPILLS90 data from FirstSearch
Spills 90 includes those spill and release records available exclusively from FirstSearch databases. Typically, they may include chemical, oil and/or hazardous substance spills recorded after 1990. Duplicate records that are already included in EDR incident and release records are not included in Spills 90.

Date of Government Version: 03/10/2012
Date Data Arrived at EDR: 01/03/2013
Date Made Active in Reports: 02/11/2013
Number of Days to Update: 39
Source: FirstSearch
Telephone: N/A
Last EDR Contact: 01/03/2013
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Other Ascertainable Records

RCRA NonGen / NLR: RCRA - Non Generators / No Longer Regulated
RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 06/09/2015
Date Data Arrived at EDR: 06/26/2015
Date Made Active in Reports: 09/16/2015
Number of Days to Update: 82
Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 12/18/2015
Next Scheduled EDR Contact: 04/11/2016
Data Release Frequency: Varies

FUDS: Formerly Used Defense Sites
The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 01/31/2015
Date Data Arrived at EDR: 07/08/2015
Date Made Active in Reports: 10/13/2015
Number of Days to Update: 97
Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 12/11/2015
Next Scheduled EDR Contact: 03/21/2016
Data Release Frequency: Varies

DOD: Department of Defense Sites
This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 01/15/2016
Next Scheduled EDR Contact: 04/25/2016
Data Release Frequency: Semi-Annually

FEDLAND: Federal and Indian Lands
Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 02/06/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 339

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 01/15/2016
Next Scheduled EDR Contact: 04/25/2016
Data Release Frequency: N/A

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing
The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 03/07/2011
Date Data Arrived at EDR: 03/09/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 54

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 11/19/2015
Next Scheduled EDR Contact: 02/29/2016
Data Release Frequency: Varies

US FIN ASSUR: Financial Assurance Information
All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 09/01/2015
Date Data Arrived at EDR: 09/03/2015
Date Made Active in Reports: 11/03/2015
Number of Days to Update: 61

Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 11/13/2015
Next Scheduled EDR Contact: 02/29/2016
Data Release Frequency: Quarterly

EPA WATCH LIST: EPA WATCH LIST
EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 08/30/2013
Date Data Arrived at EDR: 03/21/2014
Date Made Active in Reports: 06/17/2014
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: 617-520-3000
Last EDR Contact: 11/10/2015
Next Scheduled EDR Contact: 02/22/2016
Data Release Frequency: Quarterly

2020 COR ACTION: 2020 Corrective Action Program List
The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 04/22/2013
Date Data Arrived at EDR: 03/03/2015
Date Made Active in Reports: 03/09/2015
Number of Days to Update: 6

Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 11/13/2015
Next Scheduled EDR Contact: 02/22/2016
Data Release Frequency: Varies

TSCA: Toxic Substances Control Act
Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2012
Date Data Arrived at EDR: 01/15/2015
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 14

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 12/23/2015
Next Scheduled EDR Contact: 04/04/2016
Data Release Frequency: Every 4 Years

TRIS: Toxic Chemical Release Inventory System
Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2013
Date Data Arrived at EDR: 02/12/2015
Date Made Active in Reports: 06/02/2015
Number of Days to Update: 110

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 11/24/2015
Next Scheduled EDR Contact: 03/07/2016
Data Release Frequency: Annually

SSTS: Section 7 Tracking Systems
Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 12/10/2010
Date Made Active in Reports: 02/25/2011
Number of Days to Update: 77

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 01/25/2016
Next Scheduled EDR Contact: 05/09/2016
Data Release Frequency: Annually

ROD: Records Of Decision
Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 11/25/2013
Date Data Arrived at EDR: 12/12/2013
Date Made Active in Reports: 02/24/2014
Number of Days to Update: 74

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 12/11/2015
Next Scheduled EDR Contact: 03/21/2016
Data Release Frequency: Annually

RMP: Risk Management Plans

When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

Date of Government Version: 08/01/2015
Date Data Arrived at EDR: 08/26/2015
Date Made Active in Reports: 11/03/2015
Number of Days to Update: 69

Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 01/25/2016
Next Scheduled EDR Contact: 05/09/2016
Data Release Frequency: Varies

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

PRP: Potentially Responsible Parties

A listing of verified Potentially Responsible Parties

Date of Government Version: 10/25/2013
Date Data Arrived at EDR: 10/17/2014
Date Made Active in Reports: 10/20/2014
Number of Days to Update: 3

Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 11/13/2015
Next Scheduled EDR Contact: 02/22/2016
Data Release Frequency: Quarterly

PADS: PCB Activity Database System

PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 07/01/2014
Date Data Arrived at EDR: 10/15/2014
Date Made Active in Reports: 11/17/2014
Number of Days to Update: 33

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 01/12/2016
Next Scheduled EDR Contact: 04/25/2016
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System

The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 01/23/2015
Date Data Arrived at EDR: 02/06/2015
Date Made Active in Reports: 03/09/2015
Number of Days to Update: 31

Source: Environmental Protection Agency
Telephone: 202-564-5088
Last EDR Contact: 01/08/2016
Next Scheduled EDR Contact: 04/25/2016
Data Release Frequency: Quarterly

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 11/18/2015
Next Scheduled EDR Contact: 03/07/2016
Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 11/18/2015
Next Scheduled EDR Contact: 03/07/2016
Data Release Frequency: Quarterly

MLTS: Material Licensing Tracking System

MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 06/26/2015
Date Data Arrived at EDR: 07/10/2015
Date Made Active in Reports: 10/13/2015
Number of Days to Update: 95

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 12/07/2015
Next Scheduled EDR Contact: 03/21/2016
Data Release Frequency: Quarterly

COAL ASH DOE: Steam-Electric Plant Operation Data

A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 08/07/2009
Date Made Active in Reports: 10/22/2009
Number of Days to Update: 76

Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 01/13/2016
Next Scheduled EDR Contact: 04/25/2016
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List

A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 07/01/2014
Date Data Arrived at EDR: 09/10/2014
Date Made Active in Reports: 10/20/2014
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 12/11/2015
Next Scheduled EDR Contact: 03/21/2016
Data Release Frequency: Varies

PCB TRANSFORMER: PCB Transformer Registration Database

The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 02/01/2011
Date Data Arrived at EDR: 10/19/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 83

Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 01/29/2016
Next Scheduled EDR Contact: 05/09/2016
Data Release Frequency: Varies

RADINFO: Radiation Information Database

The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 07/07/2015
Date Data Arrived at EDR: 07/09/2015
Date Made Active in Reports: 09/16/2015
Number of Days to Update: 69

Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 01/07/2016
Next Scheduled EDR Contact: 04/18/2016
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing
A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing
A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

DOT OPS: Incident and Accident Data
Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 07/31/2012
Date Data Arrived at EDR: 08/07/2012
Date Made Active in Reports: 09/18/2012
Number of Days to Update: 42

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 02/03/2016
Next Scheduled EDR Contact: 05/16/2016
Data Release Frequency: Varies

CONSENT: Superfund (CERCLA) Consent Decrees
Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 04/17/2015
Date Made Active in Reports: 06/02/2015
Number of Days to Update: 46

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 12/23/2015
Next Scheduled EDR Contact: 04/11/2016
Data Release Frequency: Varies

BRS: Biennial Reporting System
The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2013
Date Data Arrived at EDR: 02/24/2015
Date Made Active in Reports: 09/30/2015
Number of Days to Update: 218

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 11/24/2015
Next Scheduled EDR Contact: 03/07/2016
Data Release Frequency: Biennially

INDIAN RESERV: Indian Reservations
This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 12/08/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 34

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 01/15/2016
Next Scheduled EDR Contact: 04/25/2016
Data Release Frequency: Semi-Annually

UMTRA: Uranium Mill Tailings Sites
Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 09/14/2010
Date Data Arrived at EDR: 10/07/2011
Date Made Active in Reports: 03/01/2012
Number of Days to Update: 146

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 11/19/2015
Next Scheduled EDR Contact: 03/07/2016
Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites
A listing of former lead smelter site locations.

Date of Government Version: 11/25/2014
Date Data Arrived at EDR: 11/26/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 64

Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 01/26/2016
Next Scheduled EDR Contact: 04/18/2016
Data Release Frequency: Varies

LEAD SMELTER 2: Lead Smelter Sites
A list of several hundred sites in the U.S. where secondary lead smelting was done from 1931and 1964. These sites may pose a threat to public health through ingestion or inhalation of contaminated soil or dust

Date of Government Version: 04/05/2001
Date Data Arrived at EDR: 10/27/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 36

Source: American Journal of Public Health
Telephone: 703-305-6451
Last EDR Contact: 12/02/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

US AIRS (AFS): Aerometric Information Retrieval System Facility Subsystem (AFS)
The database is a sub-system of Aerometric Information Retrieval System (AIRS). AFS contains compliance data on air pollution point sources regulated by the U.S. EPA and/or state and local air regulatory agencies. This information comes from source reports by various stationary sources of air pollution, such as electric power plants, steel mills, factories, and universities, and provides information about the air pollutants they produce. Action, air program, air program pollutant, and general level plant data. It is used to track emissions and compliance data from industrial plants.

Date of Government Version: 10/20/2015
Date Data Arrived at EDR: 10/27/2015
Date Made Active in Reports: 01/04/2016
Number of Days to Update: 69

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 12/22/2015
Next Scheduled EDR Contact: 04/11/2016
Data Release Frequency: Annually

US AIRS MINOR: Air Facility System Data
A listing of minor source facilities.

Date of Government Version: 10/20/2015
Date Data Arrived at EDR: 10/27/2015
Date Made Active in Reports: 01/04/2016
Number of Days to Update: 69

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 12/22/2015
Next Scheduled EDR Contact: 04/11/2016
Data Release Frequency: Annually

US MINES: Mines Master Index File
Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 08/18/2015
Date Data Arrived at EDR: 09/01/2015
Date Made Active in Reports: 01/04/2016
Number of Days to Update: 125
Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 12/03/2015
Next Scheduled EDR Contact: 03/14/2016
Data Release Frequency: Semi-Annually

US MINES 2: Ferrous and Nonferrous Metal Mines Database Listing
This map layer includes ferrous (ferrous metal mines are facilities that extract ferrous metals, such as iron ore or molybdenum) and nonferrous (Nonferrous metal mines are facilities that extract nonferrous metals, such as gold, silver, copper, zinc, and lead) metal mines in the United States.

Date of Government Version: 12/05/2005
Date Data Arrived at EDR: 02/29/2008
Date Made Active in Reports: 04/18/2008
Number of Days to Update: 49
Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 12/04/2015
Next Scheduled EDR Contact: 03/14/2016
Data Release Frequency: Varies

US MINES 3: Active Mines & Mineral Plants Database Listing
Active Mines and Mineral Processing Plant operations for commodities monitored by the Minerals Information Team of the USGS.

Date of Government Version: 04/14/2011
Date Data Arrived at EDR: 06/08/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 97
Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 12/04/2015
Next Scheduled EDR Contact: 03/14/2016
Data Release Frequency: Varies

FINDS: Facility Index System/Facility Registry System
Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 07/20/2015
Date Data Arrived at EDR: 09/09/2015
Date Made Active in Reports: 11/03/2015
Number of Days to Update: 55
Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 12/10/2015
Next Scheduled EDR Contact: 03/21/2016
Data Release Frequency: Quarterly

AIRS: List of Permitted Facilities
A listing of permitted facilities in the state.

Date of Government Version: 10/06/2015
Date Data Arrived at EDR: 10/08/2015
Date Made Active in Reports: 11/06/2015
Number of Days to Update: 29
Source: Department of Health
Telephone: 808-586-4200
Last EDR Contact: 01/04/2016
Next Scheduled EDR Contact: 04/18/2016
Data Release Frequency: Varies

DRYCLEANERS: Permitted Drycleaner Facility Listing
A listing of permitted drycleaner facilities in the state.

Date of Government Version: 10/05/2015
Date Data Arrived at EDR: 10/08/2015
Date Made Active in Reports: 11/16/2015
Number of Days to Update: 39
Source: Department of Health
Telephone: 808-586-4200
Last EDR Contact: 01/04/2016
Next Scheduled EDR Contact: 04/18/2016
Data Release Frequency: Varies

Financial Assurance: Financial Assurance Information Listing
A listing of financial assurance information for underground storage tank facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 09/28/2015
Date Data Arrived at EDR: 09/29/2015
Date Made Active in Reports: 11/06/2015
Number of Days to Update: 38
Source: Department of Health
Telephone: 808-586-4226
Last EDR Contact: 12/23/2015
Next Scheduled EDR Contact: 03/28/2016
Data Release Frequency: Varies

UIC: Underground Injection Wells Listing
A listing of underground injection well locations.

Date of Government Version: 02/07/2013
Date Data Arrived at EDR: 02/12/2013
Date Made Active in Reports: 04/09/2013
Number of Days to Update: 56
Source: Department of Health
Telephone: 808-586-4258
Last EDR Contact: 11/24/2015
Next Scheduled EDR Contact: 03/14/2016
Data Release Frequency: Varies

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP: EDR Proprietary Manufactured Gas Plants
The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A
Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR Hist Auto: EDR Exclusive Historic Gas Stations
EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A
Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR Hist Cleaner: EDR Exclusive Historic Dry Cleaners
EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA HWS: Recovered Government Archive State Hazardous Waste Facilities List
The EDR Recovered Government Archive State Hazardous Waste database provides a list of SHWS incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Health in Hawaii.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/08/2014
Number of Days to Update: 191

Source: Department of Health
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

RGA LF: Recovered Government Archive Solid Waste Facilities List
The EDR Recovered Government Archive Landfill database provides a list of landfills derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Health in Hawaii.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/17/2014
Number of Days to Update: 200

Source: Department of Health
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

RGA LUST: Recovered Government Archive Leaking Underground Storage Tank
The EDR Recovered Government Archive Leaking Underground Storage Tank database provides a list of LUST incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Health in Hawaii.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/03/2014
Number of Days to Update: 186

Source: Department of Health
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

Oil/Gas Pipelines
Source: PennWell Corporation
Petroleum Bundle (Crude Oil, Refined Products, Petrochemicals, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)) N = Natural Gas Bundle (Natural Gas, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)). This map includes information copyrighted by PennWell Corporation. This information is provided on a best effort basis and PennWell Corporation does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of PennWell.

Electric Power Transmission Line Data
Source: PennWell Corporation
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Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 2003 & 2011 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetlands Inventory
Source: Office of Planning
Telephone: 808-587-2895

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

STREET AND ADDRESS INFORMATION

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GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

KEHALANI PROPERTY
11 KEHALANI VILLAGE DR
WAILUKU, HI 96793

TARGET PROPERTY COORDINATES

Latitude (North):	20.876029 - 20˚ 52' 33.70''
Longitude (West):	156.505865 - 156˚ 30' 21.11''
Universal Tranverse Mercator:	Zone 4
UTM X (Meters):	759491.6
UTM Y (Meters):	2310304.8
Elevation:	370 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	5941607 WAILUKU, HI
Version Date:	2013

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principal investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

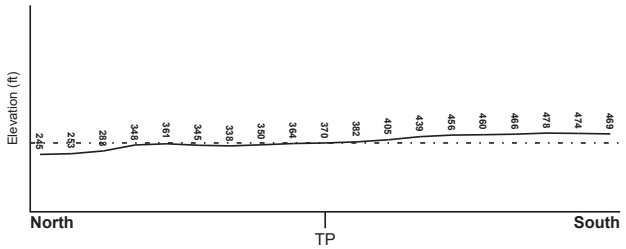
TOPOGRAPHIC INFORMATION

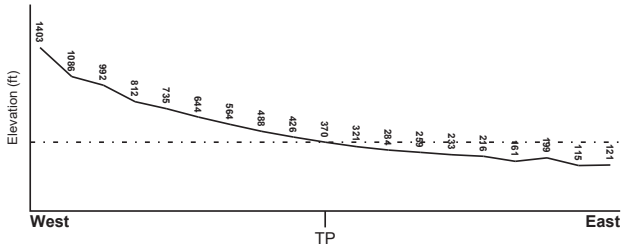
Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General ENE

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES





Target Property Elevation: 370 ft.

0 1/2 1 Miles

Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Target Property County	FEMA Flood Electronic Data
MAUI, HI	YES - refer to the Overview Map and Detail Map

Flood Plain Panel at Target Property: 1500030190D - FEMA Q3 Flood data

Additional Panels in search area: 1500030170B - FEMA Q3 Flood data

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
NOT AVAILABLE	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

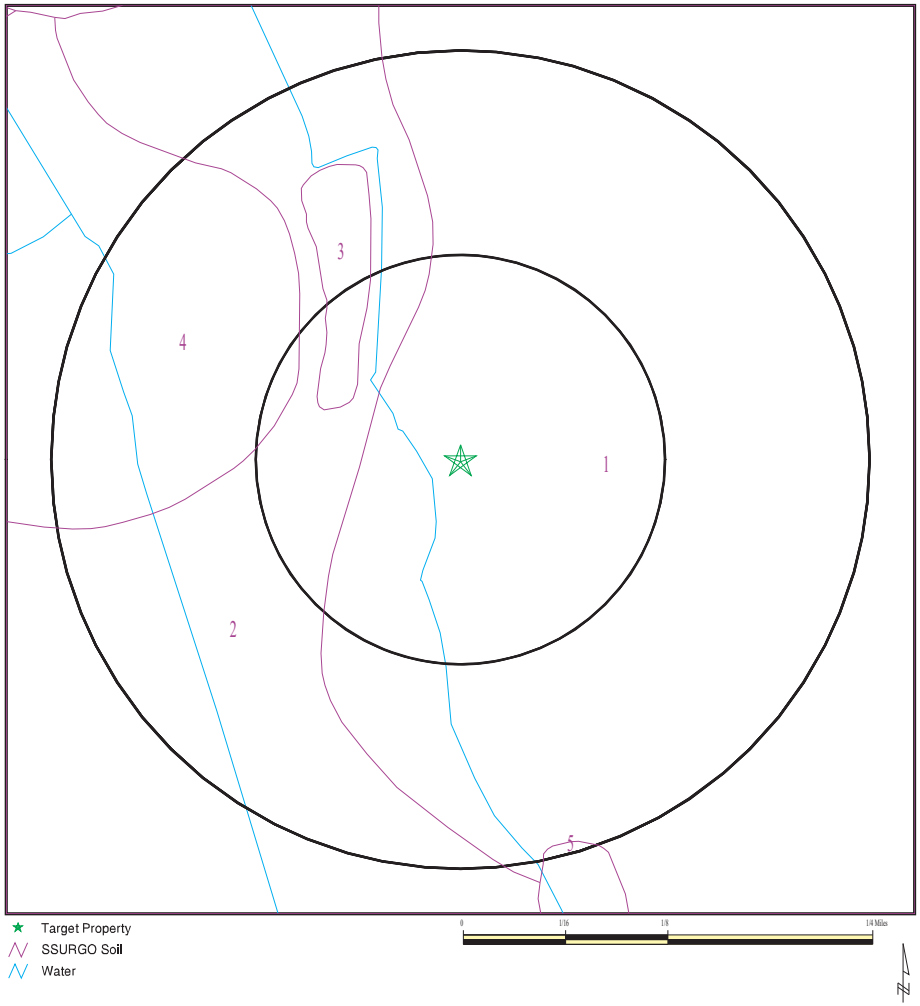
Era: -
System: -
Series: -
Code: N/A *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: -

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 4529586.2s



★ Target Property
SSURGO Soil
Water

SITE NAME: Kehalani Property ADDRESS: 11 KEHALANI VILLAGE DR WAILUKU HI 96793 LAT/LONG: 20.876029 / 156.505865	CLIENT: Bureau Veritas North America, Inc. CONTACT: Bryan Starks INQUIRY #: 4529586.2s DATE: February 04, 2016 8:37 am

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GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: lao

Soil Surface Texture: clay

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information

	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		Soil Reaction (pH)
1	0 inches	14 inches	clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	ML-K (proposed)	Max: 14.11 Min: 1.41	Max: 7.3 Min: 6.6
2	14 inches	48 inches	clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	ML-K (proposed)	Max: 4.23 Min: 1.41	Max: 7.3 Min: 6.6
3	48 inches	59 inches	silty clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	ML-K (proposed)	Max: 14.11 Min: 1.41	Max: 7.3 Min: 6.6

Soil Map ID: 2

Soil Component Name: Iao

Soil Surface Texture: clay

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information

	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	14 inches	clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	ML-K (proposed)	Max: 14.11 Min: 1.41	Max: 7.3 Min: 6.6
2	14 inches	48 inches	clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	ML-K (proposed)	Max: 4.23 Min: 1.41	Max: 7.3 Min: 6.6
3	48 inches	59 inches	silty clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	ML-K (proposed)	Max: 14.11 Min: 1.41	Max: 7.3 Min: 6.6

Soil Map ID: 3

Soil Component Name: Water > 40 acres

Soil Surface Texture: clay

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class:

Hydric Status: Unknown

Corrosion Potential - Uncoated Steel: Not Reported

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

No Layer Information available.

Soil Map ID: 4

Soil Component Name: Iao

Soil Surface Texture: cobbly silty clay

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information

	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	14 inches	cobbly silty clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	ML-K (proposed)	Max: 14.11 Min: 1.41	Max: 7.3 Min: 6.6
2	14 inches	48 inches	clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	ML-K (proposed)	Max: 4.23 Min: 1.41	Max: 7.3 Min: 6.6
3	48 inches	59 inches	silty clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	ML-K (proposed)	Max: 14.11 Min: 1.41	Max: 7.3 Min: 6.6

Soil Map ID: 5

Soil Component Name: Iao

Soil Surface Texture: cobbly silty clay

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information

	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	14 inches	cobbly silty clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	ML-K (proposed)	Max: 14.11 Min: 1.41	Max: 7.3 Min: 6.6
2	14 inches	48 inches	clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	ML-K (proposed)	Max: 4.23 Min: 1.41	Max: 7.3 Min: 6.6
3	48 inches	59 inches	silty clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	ML-K (proposed)	Max: 14.11 Min: 1.41	Max: 7.3 Min: 6.6

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A1	USGS40000269100	1/4 - 1/2 Mile NNW
A2	USGS40000269101	1/4 - 1/2 Mile NNW
A3	USGS40000269102	1/4 - 1/2 Mile NNW
B8	USGS40000269114	1/2 - 1 Mile NW
C11	USGS40000269112	1/2 - 1 Mile NW
D16	USGS40000269087	1/2 - 1 Mile ENE
E18	USGS40000269149	1/2 - 1 Mile NNW
E22	USGS40000269148	1/2 - 1 Mile NNW
E25	USGS40000269152	1/2 - 1 Mile NNW
E27	USGS40000269154	1/2 - 1 Mile NNW
F28	USGS40000269052	1/2 - 1 Mile South

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
E23	HI0000212	1/2 - 1 Mile NNW

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

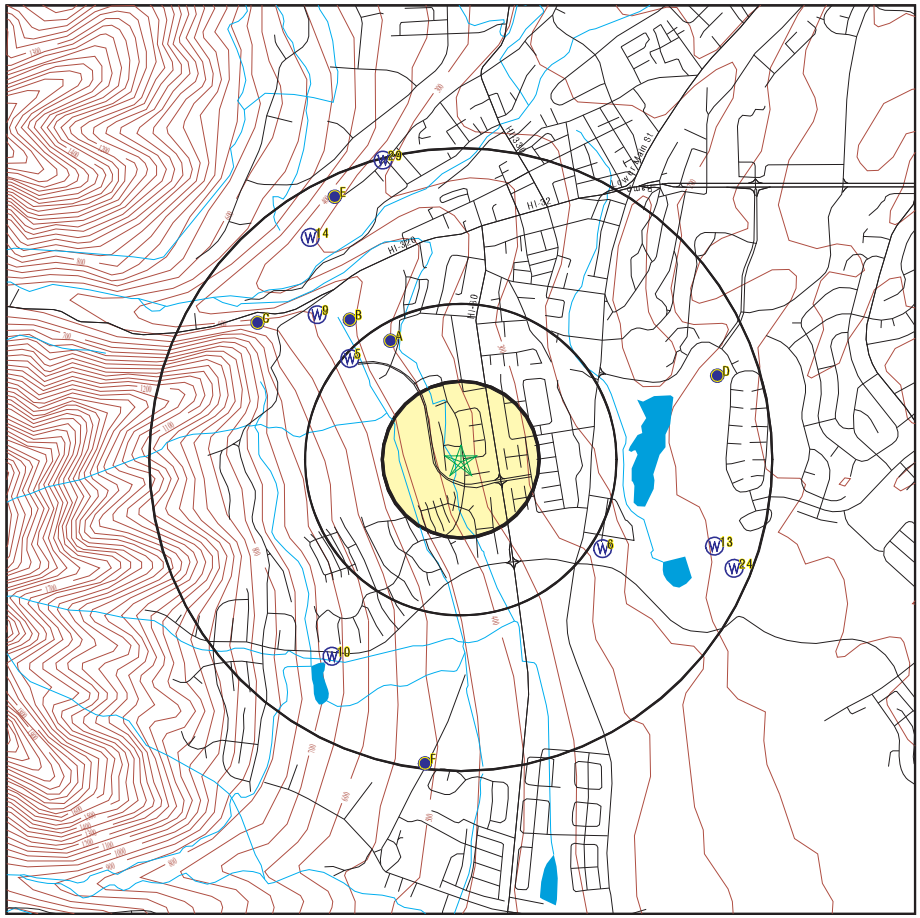
MAP ID	WELL ID	LOCATION FROM TP
A4	HI9000000003470	1/4 - 1/2 Mile NNW
5	HI9000000003357	1/4 - 1/2 Mile NW
6	HI9000000003354	1/2 - 1 Mile ESE
B7	HI9000000003468	1/2 - 1 Mile NW
9	HI9000000003356	1/2 - 1 Mile NW
10	HI9000000003355	1/2 - 1 Mile SSW
C12	HI9000000003478	1/2 - 1 Mile NW
13	HI9000000003353	1/2 - 1 Mile ESE
14	HI9000000003466	1/2 - 1 Mile NW
D15	HI9000000003462	1/2 - 1 Mile ENE
D17	HI9000000003348	1/2 - 1 Mile ENE
E19	HI9000000003474	1/2 - 1 Mile NNW
E20	HI9000000003475	1/2 - 1 Mile NNW
E21	HI9000000003476	1/2 - 1 Mile NNW
24	HI9000000003352	1/2 - 1 Mile ESE

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
E26	HI9000000003473	1/2 - 1 Mile NNW
29	HI9000000003471	1/2 - 1 Mile NNW
F30	HI9000000003304	1/2 - 1 Mile South

PHYSICAL SETTING SOURCE MAP - 4529586.2s



- County Boundary
- Major Roads
- Contour Lines
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons
- Groundwater Flow Direction
- GI Indeterminate Groundwater Flow at Location
- GV Groundwater Flow Varies at Location

SITE NAME: Kehalani Property	CLIENT: Bureau Veritas North America, Inc.
ADDRESS: 11 KEHALANI VILLAGE DR	CONTACT: Bryan Starks
WAILUKU HI 96793	INQUIRY #: 4529586.2s
LAT/LONG: 20.876029 / 156.505865	DATE: February 04, 2016 8:37 am

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Map ID Direction Distance Elevation	Database	EDR ID Number
A1 **NNW** **1/4 - 1/2 Mile** **Higher**	**FED USGS**	**USGS40000269100**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-205305156304401		
Monloc name:	6-5330-05 Shaft 33, well 1, Maui, HI		
Monloc type:	Well		
Monloc desc:	well closest to portal(vs 2/3);v. well 310 ft deep		
Huc code:	20020000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	20.8815145
Longitude:	-156.5094	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	401.51
Vert measure units:	feet	Vertacc measure val:	.01
Vert accmeasure units:	feet		
Vertcollection method:	Level or other surveying method		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19460101	Welldepth:	Not Reported
Welldepth units:	Not Reported	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 64

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
2004-08-18		9.13			
Note: A nearby site that taps the same aquifer was being pumped.					
2004-07-12		9.54			
Note: A nearby site that taps the same aquifer was being pumped.					
2004-05-13		9.51			
Note: A nearby site that taps the same aquifer was being pumped.					
2004-04-02		9.24			
Note: A nearby site that taps the same aquifer was being pumped.					
2004-02-10		8.89			
Note: A nearby site that taps the same aquifer was being pumped.					
2004-01-07		7.41			
Note: A nearby site that taps the same aquifer was being pumped.					
2003-11-13		8.15			
Note: A nearby site that taps the same aquifer was being pumped.					
2002-10-01		7.86			
Note: A nearby site that taps the same aquifer was being pumped.					
2002-08-20		10.34			
Note: A nearby site that taps the same aquifer was being pumped.					
2002-07-02		8.71			
Note: A nearby site that taps the same aquifer was being pumped.					
2002-05-14		9.19			
Note: A nearby site that taps the same aquifer was being pumped.					
2002-04-02		9.19			
Note: A nearby site that taps the same aquifer was being pumped.					

Ground-water levels, continued.

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
2002-02-21		9.11			
Note: A nearby site that taps the same aquifer was being pumped.					
2002-01-08		8.66			
Note: A nearby site that taps the same aquifer was being pumped.					
2001-12-03		8.09			
Note: A nearby site that taps the same aquifer was being pumped.					
2001-10-16		7.83			
Note: A nearby site that taps the same aquifer was being pumped.					
2001-08-21		7.97			
Note: A nearby site that taps the same aquifer was being pumped.					
2001-07-17		7.97			
Note: A nearby site that taps the same aquifer was being pumped.					
2001-05-17		8.21			
Note: A nearby site that taps the same aquifer was being pumped.					
2001-04-03		8.49			
Note: A nearby site that taps the same aquifer was being pumped.					
2001-03-13		8.67			
Note: A nearby site that taps the same aquifer was being pumped.					
2001-01-09		8.87			
Note: A nearby site that taps the same aquifer was being pumped.					
2000-12-08		8.77			
Note: A nearby site that taps the same aquifer was being pumped.					
2000-10-03		8.51			
Note: A nearby site that taps the same aquifer was being pumped.					
2000-08-24		8.51			
2000-07-06		8.90			
Note: A nearby site that taps the same aquifer was being pumped.					
2000-05-23		9.45			
Note: The site was being pumped.					
2000-04-04		9.89			
2000-02-24		10.90			
Note: A nearby site that taps the same aquifer was being pumped.					
2000-01-20		11.97	2000-01-05		12.85
1999-12-10		15.17	1999-12-03		15.04
1999-10-05		14.25	1999-08-26		13.19
1999-08-24		13.19	1999-07-01		9.55
1999-05-18		10.29	1999-03-30		10.85
1999-03-05		11.05	1999-01-05		10.83
1998-12-01		12.00			
Note: The site had been pumped recently.					
1998-12-01		10.33	1998-09-29		10.46
1998-08-11		10.51	1998-06-19		10.44
1998-04-03		10.68	1998-02-24		11.05
1998-01-07		11.22	1997-11-17		11.05
1997-09-25		11.57	1997-08-12		15.68
1997-06-12		16.35	1997-04-24		16.28
1997-04-22		16.33	1997-03-20		15.98
1997-01-30		15.09	1996-12-02		9.60
1996-10-21		9.21	1996-09-09		9.55
1996-07-22		10.14	1996-06-10		10.71
1996-04-02		11.55	1996-02-29		11.21

Map ID Direction Distance Elevation	Database	EDR ID Number
A2 **NNW** **1/4 - 1/2 Mile** **Higher**	**FED USGS**	**USGS40000269101**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-205305156304402		
Monloc name:	6-5330-05 Shaft 33, well 2, Maui, HI		
Monloc type:	Well		
Monloc desc:	middle well; see seq. no. 01 and 03		
Huc code:	20020000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	20.8815145
Longitude:	-156.5094	Sourcemap scale:	Not Reported
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	401.51
Vert measure units:	feet	Vertacc measure val:	.01
Vert accmeasure units:	feet		
Vertcollection method:	Level or other surveying method		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	Not Reported	Welldepth:	310
Welldepth units:	ft	Wellholedepth:	310
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 0

A3 **NNW** **1/4 - 1/2 Mile** **Higher**	**FED USGS**	**USGS40000269102**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-205305156304403		
Monloc name:	6-5330-05 Shaft 33, well 3, Maui, HI		
Monloc type:	Well		
Monloc desc:	well furthest from portal; see seq. no. 01 and 02		
Huc code:	20020000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	20.8815145
Longitude:	-156.5094	Sourcemap scale:	Not Reported
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	401.51
Vert measure units:	feet	Vertacc measure val:	.01
Vert accmeasure units:	feet		
Vertcollection method:	Level or other surveying method		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		

Aquifer type:	Not Reported		
Construction date:	Not Reported	Welldepth:	310
Welldepth units:	ft	Wellholedepth:	310
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 7

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1975-02-19		19.34	1974-04-29		23.42
1974-04-08		23.45	1974-04-02		23.43
1974-04-01		23.31	1974-02-28		22.56
1973-03-29		22.90			

A4 **NNW** **1/4 - 1/2 Mile** **Higher**	**HI WELLS**	**HI9000000003470**

Wid:	6-5330-005	Island:	Maui
Well name:	Wailuku Shaft 33	Old name:	Not Reported
Yr drilled:	1946		
Driller:	Not Reported		
Quad map:	5		
Long83dd:	-156.509211		
Lat83dd:	20.881781		
Gps:	-1	Utm:	0
Owner user:	Department of Water Supply Maui, MDWS		
Land owner:	RCFC Kehalani, LLC		
Pump insta:	Not Reported		
Old number:	33-SH	Well type:	SHF
Casing dia:	23	Ground el:	30
Well depth:	310		
Solid case:	Not Reported	Perf case:	310
Use:	MUN - County		
Use year:	Not Reported		
Init head:	26	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	3368
Test ddown:	Not Reported	Test chlor:	115
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	13500		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	TW		
Pump yr:	1947		
Draft yr:	Not Reported	Bot hole:	-280
Bot solid:	Not Reported	Bot perf:	-280
Spec capac:	Not Reported		
Pump mgd:	19.44		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(2) 3-5-001:089
Aqui code:	60102		
Latest hd:	Not Reported	Wcr:	26-SEP-49
Pir:	9/26/1949		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000003470

Map ID Direction Distance Elevation	Database	EDR ID Number
5 **NW** **1/4 - 1/2 Mile** **Higher**	**HI WELLS**	**HI9000000003357**

Wid:	6-5230-004	Island:	Maui
Well name:	Wailuku 1	Old name:	Not Reported
Yr drilled:	2012		
Driller:	Alpha, Inc.		
Quad map:	0		
Long83dd:	-156.511367		
Lat83dd:	20.880744		
Gps:	0	Utm:	0
Owner user:	Department of Water Supply Maui, MDWS		
Land owner:	RCFC Kehalani, LLC		
Pump insta:	Not Reported		
Old number:	Not Reported	Well type:	ROT
Casing dia:	18.75	Ground el:	480
Well depth:	582		
Solid case:	474.1	Perf case:	108.9
Use:	UNU - Unused		
Use year:	Not Reported		
Init head:	8	Init head2:	8
Init head3:	8.5		
Init cl:	75		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	69.9	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	QTao		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-102
Bot solid:	5.9	Bot perf:	371.1
Spec capac:	540		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(2) 3-5-001:100
Aqui code:	60102		
Latest hd:	Not Reported	Wcr:	25-JUL-13
Pir:	Not Reported		
Surveyor:	Ronald Fukumoto (Fukumoto Engineering, Inc.)		
T:	246000	Site id:	HI9000000003357

6 **ESE** **1/2 - 1 Mile** **Lower**	**HI WELLS**	**HI9000000003354**

Wid:	6-5230-001	Island:	Maui
Well name:	Ka Hale A Ke Ola	Old name:	Not Reported
Yr drilled:	1997		
Driller:	Wailani Drilling Services Inc		
Quad map:	5		
Long83dd:	-156.498819		
Lat83dd:	20.871875		
Gps:	0	Utm:	-1
Owner user:	Ka Hale O Ke Ola		
Land owner:	County of Maui		

Pump insta:	Not Reported		
Old number:	Not Reported	Well type:	ROT
Casing dia:	10	Ground el:	249
Well depth:	300		
Solid case:	280	Perf case:	300
Use:	IRR - Landscape/Water Features		
Use year:	Not Reported		
Init head:	4.09	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	30		
Test date:	9/19/1997	Test gpm:	270
Test ddown:	0.04	Test chlor:	30
Test temp:	22.8	Test unit:	C
Pump gpm:	230		
Draft mgy:	72	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	THO		
Pump yr:	1998		
Draft yr:	Not Reported	Bot hole:	-51
Bot solid:	-21	Bot perf:	-41
Spec capac:	Not Reported		
Pump mgd:	.331		
Draft mgd:	Not Reported	Pump elev:	-19
Pump depth:	268	Tmk:	(2) 3-8-046:033
Aqui code:	60102		
Latest hd:	Not Reported	Wcr:	19-SEP-97
Pir:	2/27/2002		
Surveyor:	Edgardo Valera		
T:	894722	Site id:	HI9000000003354

B7 **NW** **1/2 - 1 Mile** **Higher**	**HI WELLS**	**HI9000000003468**

Wid:	6-5330-003	Island:	Maui
Well name:	Field 63	Old name:	Not Reported
Yr drilled:	1945		
Driller:	W. Mullin		
Quad map:	5		
Long83dd:	-156.511389		
Lat83dd:	20.8825		
Gps:	0	Utm:	-1
Owner user:	Wailuku Sugar		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	112-TH	Well type:	ROT
Casing dia:	1	Ground el:	457
Well depth:	477		
Solid case:	Not Reported	Perf case:	Not Reported
Use:	OBS - Observation		
Use year:	Not Reported		
Init head:	30.6	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	Not Reported

Test ddown:	2.5	Test chlor:	15
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	TW		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-20
Bot solid:	Not Reported	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	Not Reported
Aqui code:	60102		
Latest hd:	Not Reported	Wcr:	01-JAN-45
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000003468

B8
NW
1/2 - 1 Mile
Higher

FED USGS **USGS40000269114**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-205309156305101		
Monloc name:	6-5330-03 Test Hole T-112, Maui, HI		
Monloc type:	Well: Test hole not completed as a well		
Monloc desc:	Not Reported		
Huc code:	20020000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	20.8826255
Longitude:	-156.5113445	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	457.07
Vert measure units:	feet	Vertacc measure val:	.01
Vert accmeasure units:	feet		
Vertcollection method:	Level or other surveying method		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19450101	Welldepth:	477
Welldepth units:	ft	Wellholedepth:	477
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 0

9
NW
1/2 - 1 Mile
Higher

HI WELLS **HI9000000003356**

Wid:	6-5230-003	Island:	Maui
Well name:	Iao Tank Site	Old name:	Not Reported
Yr drilled:	2005		
Driller:	Michael Robertson (Wailani Drilling Services Inc)		
Quad map:	5		
Long83dd:	-156.512989		
Lat83dd:	20.882785		
Gps:	-1	Utm:	0
Owner user:	Department of Water Supply Maui, MDWS		
Land owner:	County of Maui		
Pump insta:	Beylik Drilling & Pump Service Inc.		
Old number:	Not Reported	Well type:	ROT
Casing dia:	20	Ground el:	506
Well depth:	608		
Solid case:	500	Perf case:	608
Use:	MUN - County		
Use year:	Not Reported		
Init head:	8.63	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	20		
Test date:	8/15/2005	Test gpm:	1400
Test ddown:	3.1	Test chlor:	25
Test temp:	70.3	Test unit:	F
Pump gpm:	1400		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	TW		
Pump yr:	2011		
Draft yr:	Not Reported	Bot hole:	-102
Bot solid:	6	Bot perf:	-102
Spec capac:	Not Reported		
Pump mgd:	2.016		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(2) 3-5-001:021
Aqui code:	60102		
Latest hd:	Not Reported	Wcr:	05-APR-06
Pir:	11/9/2011		
Surveyor:	Ken Nomura		
T:	100000	Site id:	HI9000000003356

10
SSW
1/2 - 1 Mile
Higher

HI WELLS **HI9000000003355**

Wid:	6-5230-002	Island:	Maui
Well name:	Iao Deep Monitor	Old name:	Not Reported
Yr drilled:	2006		
Driller:	Blaise Clay (Water Resources International, Inc.)		
Quad map:	5		
Long83dd:	-156.512255		
Lat83dd:	20.866855		
Gps:	-1	Utm:	0
Owner user:	Commission on Water Resource Management, CWRM		
Land owner:	County of Maui		

Pump insta:	Not Reported		
Old number:	Not Reported	Well type:	ROT
Casing dia:	8	Ground el:	682
Well depth:	1800		
Solid case:	703	Perf case:	Not Reported
Use:	OBS - Deep (through transition zone)		
Use year:	Not Reported		
Init head:	13.93	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	TW		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-1118
Bot solid:	-21	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(2) 3-5-002:003
Aqui code:	60102		
Latest hd:	Not Reported	Wcr:	27-JUN-06
Pir:	Not Reported		
Surveyor:	Reed Ariyoshi (Warren S. Unemori Engineering)		
T:	Not Reported	Site id:	HI9000000003355

C11
NW
1/2 - 1 Mile
Higher

FED USGS **USGS40000269112**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-205308156310701		
Monloc name:	6-5331-01 T-102, Maui, HI		
Monloc type:	Well: Test hole not completed as a well		
Monloc desc:	Not Reported		
Huc code:	20020000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	20.8823478
Longitude:	-156.5157888	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	453.90
Vert measure units:	feet	Vertacc measure val:	.01
Vert accmeasure units:	feet		
Vertcollection method:	Level or other surveying method		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		

Aquifer type:	Not Reported		
Construction date:	19400101	Welldepth:	475
Welldepth units:	ft	Wellholedepth:	475
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 0

C12
NW
1/2 - 1 Mile
Higher

HI WELLS **HI9000000003478**

Wid:	6-5331-001	Island:	Maui
Well name:	Iao Valley TH	Old name:	Not Reported
Yr drilled:	1940		
Driller:	JV Crews		
Quad map:	5		
Long83dd:	-156.516111		
Lat83dd:	20.8825		
Gps:	0	Utm:	-1
Owner user:	Wailuku Sugar		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	Not Reported	Well type:	Not Reported
Casing dia:	1	Ground el:	454
Well depth:	475		
Solid case:	465	Perf case:	Not Reported
Use:	OBS - Observation		
Use year:	Not Reported		
Init head:	32.9	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	TW		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-21
Bot solid:	-11	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	Not Reported
Aqui code:	60102		
Latest hd:	Not Reported	Wcr:	01-JAN-40
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000003478

13
ESE
1/2 - 1 Mile
Lower

HI WELLS **HI9000000003353**

Wid:	6-5229-006	Island:	Maui
Well name:	Maui Lani 7	Old name:	Not Reported
Yr drilled:	2006		
Driller:	Valley Well Drilling, LLC		
Quad map:	5		
Long83dd:	-156.493266		
Lat83dd:	20.871991		
Gps:	-1	Utm:	0
Owner user:	Maui Lani Partners		
Land owner:	Maui Lani Partners		
Pump insta:	Not Reported		
Old number:	Not Reported	Well type:	ROT
Casing dia:	14	Ground el:	Not Reported
Well depth:	223		
Solid case:	181	Perf case:	211
Use:	MUN - County		
Use year:	Not Reported		
Init head:	4.5	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	22		
Test date:	5/12/2006	Test gpm:	550
Test ddown:	0.9	Test chlor:	39
Test temp:	72.5	Test unit:	F
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	TK		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	Not Reported
Bot solid:	Not Reported	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(2) 3-8-007:153
Aqui code:	60301		
Latest hd:	Not Reported	Wcr:	26-JUL-06
Pir:	Not Reported		
Surveyor:	Darren Unemori		
T:	Not Reported	Site id:	HI9000000003353

14
NW
1/2 - 1 Mile
Lower

HI WELLS **HI9000000003466**

Wid:	6-5330-001	Island:	Maui
Well name:	Iao Tunnel	Old name:	Not Reported
Yr drilled:	1900		
Driller:	Not Reported		
Quad map:	5		
Long83dd:	-156.513333		
Lat83dd:	20.886389		
Gps:	0	Utm:	-1
Owner user:	Wailuku Sugar		
Land owner:	Not Reported		

Pump insta:	Not Reported		
Old number:	9-TU	Well type:	TUN
Casing dia:	Not Reported	Ground el:	440
Well depth:	0		
Solid case:	Not Reported	Perf case:	Not Reported
Use:	IRR - Irrigation (non-domestic, non-agriculture)		
Use year:	Not Reported		
Init head:	440	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	50	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	RA		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	Not Reported
Bot solid:	Not Reported	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	Not Reported
Aqui code:	60102		
Latest hd:	Not Reported	Wcr:	02-JAN-00
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000003466

D15
ENE
1/2 - 1 Mile
Lower

HI WELLS **HI9000000003462**

Wid:	6-5329-018	Island:	Maui
Well name:	Waiale Obs	Old name:	Not Reported
Yr drilled:	1977		
Driller:	Continental Drilling Hawaii, Inc		
Quad map:	5		
Long83dd:	-156.493333		
Lat83dd:	20.880278		
Gps:	0	Utm:	-1
Owner user:	Astoria International Inc.		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	Not Reported	Well type:	ROT
Casing dia:	2	Ground el:	191
Well depth:	450		
Solid case:	Not Reported	Perf case:	Not Reported
Use:	OBS - Observation		
Use year:	Not Reported		
Init head:	Not Reported	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	Not Reported

Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	Not Reported		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-259
Bot solid:	Not Reported	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	Not Reported
Aqui code:	60102		
Latest hd:	Not Reported	Wcr:	01-JAN-77
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000003462

D16
ENE **FED USGS** **USGS40000269087**
1/2 - 1 Mile
Lower

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-205301156294601		
Monloc name:	6-5329.07 -18		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20020000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	20.8804033
Longitude:	-156.4932896	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	192.45
Vert measure units:	feet	Vertacc measure val:	.1
Vert accmeasure units:	feet		
Vertcollection method:	Level or other surveying method		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19770301	Welldepth:	450
Welldepth units:	ft	Wellholedepth:	450
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1978-02-17	3.77	

D17
ENE **HI WELLS** **HI9000000003348**
1/2 - 1 Mile
Lower

Wid:	6-5229-001	Island:	Maui
Well name:	Waiale Prototype	Old name:	Not Reported
Yr drilled:	1978		
Driller:	Roscoe Moss Hawaii Inc		
Quad map:	5		
Long83dd:	-156.492778		
Lat83dd:	20.879167		
Gps:	0	Utm:	-1
Owner user:	Astoria International Inc.		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	Not Reported	Well type:	PER
Casing dia:	20	Ground el:	136
Well depth:	441		
Solid case:	Not Reported	Perf case:	Not Reported
Use:	ABN - Lost		
Use year:	Not Reported		
Init head:	Not Reported	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	Not Reported		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-305
Bot solid:	Not Reported	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	Not Reported
Aqui code:	60102		
Latest hd:	Not Reported	Wcr:	01-JAN-78
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000003348

E18
NNW **FED USGS** **USGS40000269149**
1/2 - 1 Mile
Lower

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-205329156305502		
Monloc name:	6-5330-09 Mokuhau Pump 2, Maui, HI		
Monloc type:	Well		
Monloc desc:	former local well no. W15A		
Huc code:	20020000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	20.8880556
Longitude:	-156.5120278	Sourcemap scale:	24000

Horiz Acc measure:	.5	Horiz Acc measure units:	seconds
Horiz Collection method:	Global positioning system (GPS), uncorrected		
Horiz coord refsys:	NAD83	Vert measure val:	353.2
Vert measure units:	feet	Vertacc measure val:	.1
Vert accmeasure units:	feet		
Vertcollection method:	Level or other surveying method		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Hawaii volcanic-rock aquifers		
Formation type:	Wailuku Volcanic Series, Lava Flows		
Aquifer type:	Not Reported		
Construction date:	19530501	Welldepth:	600
Welldepth units:	ft	Wellholedepth:	600
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 52

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
2004-08-18		6.93			
Note: A nearby site that taps the same aquifer was being pumped.					
2004-07-12		6.28			
Note: A nearby site that taps the same aquifer was being pumped.					
2004-05-13		7.08			
Note: A nearby site that taps the same aquifer was being pumped.					
2004-04-02		9.33			
Note: A nearby site that taps the same aquifer was being pumped.					
2004-02-10		8.69			
Note: A nearby site that taps the same aquifer was being pumped.					
2004-01-05		7.62			
Note: A nearby site that taps the same aquifer was being pumped.					
2003-11-13		8.19			
Note: The site had been pumped recently.					
2003-10-02		6.13			
Note: A nearby site that taps the same aquifer was being pumped.					
2003-08-19		5.60			
Note: A nearby site that taps the same aquifer was being pumped.					
2003-07-10		7.6			
Note: A nearby site that taps the same aquifer was being pumped.					
2003-05-14		7.30			
Note: A nearby site that taps the same aquifer was being pumped.					
2003-03-31		8.32			
Note: A nearby site that taps the same aquifer was being pumped.					
2003-02-11		9.21			
Note: Other conditions existed that would affect the measured water level.					
2003-01-07		9.91			
Note: Other conditions existed that would affect the measured water level.					
2002-11-19		7.10			
Note: Other conditions existed that would affect the measured water level.					
2002-10-01		6.68			
Note: A nearby site that taps the same aquifer was being pumped.					
2002-08-20		4.30			
Note: A nearby site that taps the same aquifer was being pumped.					
2002-07-02		8.11			
Note: A nearby site that taps the same aquifer was being pumped.					
2002-05-14		8.82			
Note: A nearby site that taps the same aquifer was being pumped.					
2002-04-02		10.73			
2002-02-21		9.50			
Note: A nearby site that taps the same aquifer was being pumped.					

Ground-water levels, continued.

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
2002-01-08		10.61			
Note: A nearby site that taps the same aquifer was being pumped.					
2001-12-04		9.84			
Note: A nearby site that taps the same aquifer had been pumped recently.					
2001-10-16		6.61			
Note: A nearby site that taps the same aquifer was being pumped.					
2001-08-21		5.74			
Note: A nearby site that taps the same aquifer was being pumped.					
2001-07-03		4.22			
Note: A nearby site that taps the same aquifer was being pumped.					
2001-05-15		7.26			
Note: A nearby site that taps the same aquifer was being pumped.					
2001-01-09		7.43			
Note: A nearby site that taps the same aquifer was being pumped.					
2000-12-07		7.39			
Note: A nearby site that taps the same aquifer was being pumped.					
2000-10-03		6.24			
Note: A nearby site that taps the same aquifer was being pumped.					
2000-08-24		6.42			
Note: A nearby site that taps the same aquifer was being pumped.					
2000-07-06		6.59			
2000-05-16		5.82			
Note: A nearby site that taps the same aquifer was being pumped.					
2000-04-04		8.61	2000-02-16		9.31
2000-01-04		7.89	1999-11-22		4.74
1999-10-01		3.97	1999-08-24		3.88
1999-07-30		4.62	1999-07-30		4.69
1999-07-01		4.75	1999-05-18		10.34
1999-03-30		11.50	1999-03-05		12.03
1999-01-05		12.04	1998-12-01		11.16
1998-09-29		9.12	1998-08-11		9.25
1998-06-19		9.53	1998-04-03		9.86
1998-01-07		10.07			

E19
NNW
1/2 - 1 Mile
Lower

HI WELLS **HI900000003474**

Wid:	6-5330-009	Island:	Maui
Well name:	Mokuhau 1	Old name:	Not Reported
Yr drilled:	1953		
Driller:	Samson/Smock		
Quad map:	5		
Long83dd:	-156.512222		
Lat83dd:	20.888056		
Gps:	-1	Utm:	0
Owner user:	Department of Water Supply Maui, MDWS		
Land owner:	Department of Water Supply Maui, MDWS		
Pump insta:	Not Reported		
Old number:	15-A	Well type:	PER
Casing dia:	18	Ground el:	353
Well depth:	600		
Solid case:	411	Perf case:	Not Reported
Use:	MUN - County		
Use year:	Not Reported		
Init head:	23.3	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	16		
Test date:	Not Reported	Test gpm:	4584

Test ddown:	2.3	Test chlor:	15
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	2800		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	TW		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-247
Bot solid:	-58	Bot perf:	Not Reported
Spec capac:	1993		
Pump mgd:	4		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(2) 3-3-002:024
Aqui code:	60102		
Latest hd:	Not Reported	Wcr:	01-JAN-53
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000003474

E20
NNW
1/2 - 1 Mile
Lower

HI WELLS **HI9000000003475**

Wid:	6-5330-010	Island:	Maui
Well name:	Mokuhau 2	Old name:	Not Reported
Yr drilled:	1953		
Driller:	Samson/Smock		
Quad map:	5		
Long83dd:	-156.512222		
Lat83dd:	20.888056		
Gps:	-1	Utm:	0
Owner user:	Department of Water Supply Maui, MDWS		
Land owner:	County of Maui		
Pump insta:	Not Reported		
Old number:	15-B	Well type:	Not Reported
Casing dia:	18	Ground el:	353
Well depth:	600		
Solid case:	422	Perf case:	Not Reported
Use:	MUN - County		
Use year:	Not Reported		
Init head:	21.5	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	16		
Test date:	Not Reported	Test gpm:	4584
Test ddown:	2.4	Test chlor:	15
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	2800		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	TW		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-247
Bot solid:	-69	Bot perf:	Not Reported
Spec capac:	1910		

Pump mgd:	4		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(2) 3-3-002:024
Aqui code:	60102		
Latest hd:	Not Reported	Wcr:	01-JAN-53
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000003475

E21
NNW
1/2 - 1 Mile
Lower

HI WELLS **HI9000000003476**

Wid:	6-5330-011	Island:	Maui
Well name:	Mokuhau 3	Old name:	Not Reported
Yr drilled:	1967		
Driller:	Layne International		
Quad map:	5		
Long83dd:	-156.511667		
Lat83dd:	20.888333		
Gps:	-1	Utm:	0
Owner user:	Department of Water Supply Maui, MDWS		
Land owner:	County of Maui		
Pump insta:	Not Reported		
Old number:	15-F	Well type:	ROT
Casing dia:	18	Ground el:	354
Well depth:	605		
Solid case:	Not Reported	Perf case:	Not Reported
Use:	MUN - County		
Use year:	Not Reported		
Init head:	Not Reported	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	30		
Test date:	Not Reported	Test gpm:	4584
Test ddown:	13.4	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	4250		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	TW		
Pump yr:	1997		
Draft yr:	Not Reported	Bot hole:	-251
Bot solid:	Not Reported	Bot perf:	Not Reported
Spec capac:	342		
Pump mgd:	6.12		
Draft mgd:	Not Reported	Pump elev:	-7
Pump depth:	361	Tmk:	(2) 3-3-002:024
Aqui code:	60102		
Latest hd:	Not Reported	Wcr:	01-JAN-67
Pir:	10/10/2011		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000003476

Map ID Direction Distance Elevation	Database	EDR ID Number
E22 **NNW** **1/2 - 1 Mile** **Higher**	**FED USGS**	**USGS40000269148**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-205329156305501		
Monloc name:	6-5330-10 Mokuhau Pump 1, Maui, HI		
Monloc type:	Well		
Monloc desc:	former local well no. W15B		
Huc code:	20020000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	20.8881806
Longitude:	-156.5124555	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	353.20
Vert measure units:	feet	Vertacc measure val:	.01
Vert accmeasure units:	feet		
Vertcollection method:	Level or other surveying method		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19530627	Welldepth:	600
Welldepth units:	ft	Wellholedepth:	600
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 0

E23 **NNW** **1/2 - 1 Mile** **Higher**	**FRDS PWS**	**HI0000212**	

Epa region:	09	State:	HI
Pwsid:	HI0000212		
Pwsname:	WAILUKU		
City served:	WAILUKU	State served:	HI
Zip served:	Not Reported	Fips county:	Not Reported
Status:	Active	Pop srvd:	68054
Pwssvcconn:	20016	Source:	Surface_water
Pws type:	CWS	Owner:	Local_Govt
Contact:	TAYLOR, DAVID		
Contactor gname:	TAYLOR, DAVID		
Contact phone:	808-270-7816	Contact address1:	DEPT. OF WATER SUPPLY, COUNTY OF MAUI
Contact address2:	200 SOUTH HIGH STREET	Contact city:	WAILUKU
Contact state:	HI	Contact zip:	96793-2155
Activity code:	A		

Facid:	1080		
Facname:	IAO DITCH WTP		
Facility type:	Treatment_plant	Activity code:	A
Treatment obj:	disinfection	Treatment process:	chlorination (frds-1.5)

Treatment obj:	particulate removal	Treatment process:	filtration, ultrafiltration
Facid:	1084		
Facname:	KANOA WELL 2		
Facility type:	Treatment_plant	Activity code:	A
Treatment obj:	disinfection	Treatment process:	chlorination (frds-1.5)
Facid:	123		
Facname:	WAIHEE WELLS 1,2,3 CHLORINATOR		
Facility type:	Treatment_plant	Activity code:	A
Treatment obj:	organics removal	Treatment process:	gaseous chlorination, pre
Facid:	125		
Facname:	NORTH WAIHEE WELL & KANOA WELL CHLORINAT		
Facility type:	Treatment_plant	Activity code:	A
Treatment obj:	disinfection	Treatment process:	hypochlorination, post
Facid:	126		
Facname:	NORTH WAIHEE WELL #2		
Facility type:	Treatment_plant	Activity code:	A
Treatment obj:	disinfection	Treatment process:	hypochlorination, post
Facid:	127		
Facname:	MOKUHAU WELLS 1, 3 CHLORINATOR		
Facility type:	Treatment_plant	Activity code:	A
Treatment obj:	organics removal	Treatment process:	gaseous chlorination, pre
Facid:	128		
Facname:	MOKUHAU WELL 1, 2		
Facility type:	Treatment_plant	Activity code:	A
Treatment obj:	organics removal	Treatment process:	gaseous chlorination, pre
Facid:	129		
Facname:	IAO TUNNEL UV		
Facility type:	Treatment_plant	Activity code:	A
Treatment obj:	disinfection	Treatment process:	chlorination (frds-1.5)
Treatment obj:	particulate removal	Treatment process:	filtration, ultrafiltration
Facid:	130		
Facname:	KEPANIWAI WELL CHLORINATOR		
Facility type:	Treatment_plant	Activity code:	A
Treatment obj:	organics removal	Treatment process:	gaseous chlorination, pre
Facid:	131		
Facname:	WAIEHU HEIGHTS WELLS 1, 2 CHLORINATOR		
Facility type:	Treatment_plant	Activity code:	A
Treatment obj:	disinfection	Treatment process:	hypochlorination, post
Facid:	132		
Facname:	WAIEHU HEIGHTS 2		
Facility type:	Treatment_plant	Activity code:	A
Treatment obj:	disinfection	Treatment process:	hypochlorination, post
Facid:	133		
Facname:	WAIHEE 1		
Facility type:	Treatment_plant	Activity code:	A
Treatment obj:	organics removal	Treatment process:	gaseous chlorination, pre

Facid:	134		
Facname:	WAIHEE 2		
Facility type:	Treatment_plant	Activity code:	A
Treatment obj:	organics removal	Treatment process:	gaseous chlorination, pre

Facid:	937		
Facname:	WAILUKU AG. SHAFT 33 CHLORINATOR		
Facility type:	Treatment_plant	Activity code:	A
Treatment obj:	disinfection	Treatment process:	chlorination (frds-1.5)

Location Information:

Name:	WAILUKU		
Pwstypcd:	CWS	Primsrccd:	SW
Popserved:	68976		
Add1:	DEPT. OF WATER SUPPLY, COUNTY OF MAUI		
Add2:	200 SOUTH HIGH STREET		
City:	WAILUKU	State:	HI
Zip:	96793-2155	Phone:	808-270-7816
Cityserv:	WAILUKU	Cntyserv:	Not Reported
Stateserv:	HI	Zipserv:	Not Reported

Enforcement Information:

Violation id:	10229	Orig cd:	S
Enf fy:	2011	Enf act date:	06/09/2011
Enf act detail:	St Violation/Reminder Notice	Enf act cat:	Informal

Enforcement Information:

Violation id:	10229	Orig cd:	S
Enf fy:	2012	Enf act date:	11/14/2011
Enf act detail:	St Compliance achieved	Enf act cat:	Resolving

Enforcement Information:

Violation id:	10229	Orig cd:	S
Enf fy:	2011	Enf act date:	06/30/2011
Enf act detail:	St Public Notif received	Enf act cat:	Informal

Enforcement Information:

Violation id:	10226	Orig cd:	S
Enf fy:	2012	Enf act date:	11/16/2011
Enf act detail:	St Compliance achieved	Enf act cat:	Resolving

Enforcement Information:

Violation id:	10226	Orig cd:	S
Enf fy:	2011	Enf act date:	06/30/2011
Enf act detail:	St Public Notif received	Enf act cat:	Informal

Enforcement Information:

Violation id:	10226	Orig cd:	S
Enf fy:	2011	Enf act date:	05/23/2011
Enf act detail:	St Violation/Reminder Notice	Enf act cat:	Informal

Enforcement Information:

Violation id:	10224	Orig cd:	S
Enf fy:	2011	Enf act date:	05/23/2011
Enf act detail:	St Violation/Reminder Notice	Enf act cat:	Informal

Enforcement Information:

Violation id:	10224	Orig cd:	S
Enf fy:	2011	Enf act date:	06/30/2011
Enf act detail:	St Public Notif received	Enf act cat:	Informal

Enforcement Information:

Violation id:	10224	Orig cd:	S
Enf fy:	2012	Enf act date:	11/16/2011
Enf act detail:	St Compliance achieved	Enf act cat:	Resolving

Enforcement Information:

Violation id:	10222	Orig cd:	S
Enf fy:	2012	Enf act date:	11/16/2011
Enf act detail:	St Compliance achieved	Enf act cat:	Resolving

Enforcement Information:

Violation id:	10222	Orig cd:	S
Enf fy:	2011	Enf act date:	05/23/2011
Enf act detail:	St Violation/Reminder Notice	Enf act cat:	Informal

Enforcement Information:

Violation id:	10222	Orig cd:	S
Enf fy:	2011	Enf act date:	06/30/2011
Enf act detail:	St Public Notif received	Enf act cat:	Informal

Enforcement Information:

Violation id:	10218	Orig cd:	S
Enf fy:	2011	Enf act date:	05/23/2011
Enf act detail:	St Violation/Reminder Notice	Enf act cat:	Informal

Enforcement Information:

Violation id:	10218	Orig cd:	S
Enf fy:	2011	Enf act date:	06/30/2011
Enf act detail:	St Public Notif received	Enf act cat:	Informal

Enforcement Information:

Violation id:	10218	Orig cd:	S
Enf fy:	2012	Enf act date:	11/16/2011
Enf act detail:	St Compliance achieved	Enf act cat:	Resolving

Enforcement Information:

Violation id:	10217	Orig cd:	S
Enf fy:	2011	Enf act date:	05/23/2011
Enf act detail:	St Violation/Reminder Notice	Enf act cat:	Informal

Enforcement Information:

Violation id:	10217	Orig cd:	S
Enf fy:	2011	Enf act date:	06/30/2011
Enf act detail:	St Public Notif received	Enf act cat:	Informal

Enforcement Information:

Violation id:	10217	Orig cd:	S
Enf fy:	2012	Enf act date:	11/16/2011
Enf act detail:	St Compliance achieved	Enf act cat:	Resolving

Enforcement Information:
Violation id: 10216 Orig cd: S
Enf fy: 2012 Enf act date: 11/16/2011
Enf act detail: St Compliance achieved Enf act cat: Resolving

Enforcement Information:
Violation id: 10216 Orig cd: S
Enf fy: 2011 Enf act date: 06/30/2011
Enf act detail: St Public Notif received Enf act cat: Informal

Enforcement Information:
Violation id: 10216 Orig cd: S
Enf fy: 2011 Enf act date: 05/23/2011
Enf act detail: St Violation/Reminder Notice Enf act cat: Informal

Enforcement Information:
Violation id: 10215 Orig cd: S
Enf fy: 2011 Enf act date: 06/30/2011
Enf act detail: St Public Notif received Enf act cat: Informal

Enforcement Information:
Violation id: 10215 Orig cd: S
Enf fy: 2012 Enf act date: 11/16/2011
Enf act detail: St Compliance achieved Enf act cat: Resolving

Enforcement Information:
Violation id: 10215 Orig cd: S
Enf fy: 2011 Enf act date: 05/23/2011
Enf act detail: St Violation/Reminder Notice Enf act cat: Informal

Enforcement Information:
Violation id: 10214 Orig cd: S
Enf fy: 2012 Enf act date: 11/16/2011
Enf act detail: St Compliance achieved Enf act cat: Resolving

Enforcement Information:
Violation id: 10214 Orig cd: S
Enf fy: 2011 Enf act date: 05/23/2011
Enf act detail: St Violation/Reminder Notice Enf act cat: Informal

Enforcement Information:
Violation id: 10214 Orig cd: S
Enf fy: 2011 Enf act date: 06/30/2011
Enf act detail: St Public Notif received Enf act cat: Informal

Enforcement Information:
Violation id: 10213 Orig cd: S
Enf fy: 2012 Enf act date: 11/16/2011
Enf act detail: St Compliance achieved Enf act cat: Resolving

Enforcement Information:
Violation id: 10213 Orig cd: S
Enf fy: 2011 Enf act date: 06/30/2011
Enf act detail: St Public Notif received Enf act cat: Informal

Enforcement Information:
Violation id: 10213 Orig cd: S
Enf fy: 2011 Enf act date: 05/23/2011
Enf act detail: St Violation/Reminder Notice Enf act cat: Informal

Enforcement Information:
Violation id: 10212 Orig cd: S
Enf fy: 2012 Enf act date: 11/16/2011
Enf act detail: St Compliance achieved Enf act cat: Resolving

Enforcement Information:
Violation id: 10212 Orig cd: S
Enf fy: 2011 Enf act date: 05/23/2011
Enf act detail: St Violation/Reminder Notice Enf act cat: Informal

Enforcement Information:
Violation id: 10212 Orig cd: S
Enf fy: 2011 Enf act date: 06/30/2011
Enf act detail: St Public Notif received Enf act cat: Informal

Enforcement Information:
Violation id: 10211 Orig cd: S
Enf fy: 2012 Enf act date: 11/16/2011
Enf act detail: St Compliance achieved Enf act cat: Resolving

Enforcement Information:
Violation id: 10211 Orig cd: S
Enf fy: 2011 Enf act date: 06/30/2011
Enf act detail: St Public Notif received Enf act cat: Informal

Enforcement Information:
Violation id: 10211 Orig cd: S
Enf fy: 2011 Enf act date: 05/23/2011
Enf act detail: St Violation/Reminder Notice Enf act cat: Informal

Enforcement Information:
Violation id: 10210 Orig cd: S
Enf fy: 2011 Enf act date: 06/30/2011
Enf act detail: St Public Notif received Enf act cat: Informal

Enforcement Information:
Violation id: 10210 Orig cd: S
Enf fy: 2012 Enf act date: 11/16/2011
Enf act detail: St Compliance achieved Enf act cat: Resolving

Enforcement Information:
Violation id: 10210 Orig cd: S
Enf fy: 2011 Enf act date: 05/23/2011
Enf act detail: St Violation/Reminder Notice Enf act cat: Informal

Enforcement Information:
Violation id: 10202 Orig cd: S
Enf fy: 2010 Enf act date: 06/27/2010
Enf act detail: St Public Notif received Enf act cat: Informal

Enforcement Information:
Violation id: 10202 Orig cd: S
Enf fy: 2010 Enf act date: 05/07/2010
Enf act detail: St Compliance achieved Enf act cat: Resolving

Enforcement Information:
Violation id: 10202 Orig cd: S
Enf fy: 2010 Enf act date: 04/28/2010
Enf act detail: St Violation/Reminder Notice Enf act cat: Informal

Enforcement Information:
Violation id: 10201 Orig cd: S
Enf fy: 2001 Enf act date: 10/16/2000
Enf act detail: St Violation/Reminder Notice Enf act cat: Informal

Enforcement Information:
Violation id: 10201 Orig cd: S
Enf fy: 2001 Enf act date: 10/16/2000
Enf act detail: St Public Notif requested Enf act cat: Informal

Enforcement Information:
Violation id: 10201 Orig cd: S
Enf fy: 2001 Enf act date: 10/19/2000
Enf act detail: St Public Notif issued Enf act cat: Informal

Enforcement Information:
Violation id: 10101 Orig cd: S
Enf fy: 2001 Enf act date: 10/19/2000
Enf act detail: St Public Notif issued Enf act cat: Informal

Enforcement Information:
Violation id: 10101 Orig cd: S
Enf fy: 2001 Enf act date: 10/16/2000
Enf act detail: St Public Notif requested Enf act cat: Informal

Enforcement Information:
Violation id: 10101 Orig cd: S
Enf fy: 2001 Enf act date: 10/16/2000
Enf act detail: St Violation/Reminder Notice Enf act cat: Informal

Violations Information:
Violoation id: 10229 Orig cd: S
State: HI Viol fy: 2010
Contamcd: 1040
Contamnm: Nitrate
Viol code: 03
Viol name: Monitoring, Regular
Rule code: 331
Rule name: Nitrates
Violmeasur: Not Reported Unitmeasur: Not Reported
State mcl: Not Reported Cmpbdt: 01/01/2010
Cmpedt: 12/31/2010

Violations Information:
Violoation id: 10226 Orig cd: S
State: HI Viol fy: 2008
Contamcd: 2063
Contamnm: 2,3,7,8-TCDD
Viol code: 03
Viol name: Monitoring, Regular
Rule code: 320
Rule name: SOC
Violmeasur: Not Reported Unitmeasur: Not Reported

State mcl: Not Reported Cmpbdt: 01/01/2008
Cmpedt: 12/31/2010

Violations Information:
Violoation id: 10224 Orig cd: S
State: HI Viol fy: 2008
Contamcd: 2032
Contamnm: Diquat
Viol code: 03
Viol name: Monitoring, Regular
Rule code: 320
Rule name: SOC
Violmeasur: Not Reported Unitmeasur: Not Reported
State mcl: Not Reported Cmpbdt: 01/01/2008
Cmpedt: 12/31/2010

Violations Information:
Violoation id: 10222 Orig cd: S
State: HI Viol fy: 2008
Contamcd: 2033
Contamnm: Endothall
Viol code: 03
Viol name: Monitoring, Regular
Rule code: 320
Rule name: SOC
Violmeasur: Not Reported Unitmeasur: Not Reported
State mcl: Not Reported Cmpbdt: 01/01/2008
Cmpedt: 12/31/2010

Violations Information:
Violoation id: 10218 Orig cd: S
State: HI Viol fy: 2008
Contamcd: 2306
Contamnm: Benzo(a)pyrene
Viol code: 03
Viol name: Monitoring, Regular
Rule code: 320
Rule name: SOC
Violmeasur: Not Reported Unitmeasur: Not Reported
State mcl: Not Reported Cmpbdt: 01/01/2008
Cmpedt: 12/31/2010

Violations Information:
Violoation id: 10217 Orig cd: S
State: HI Viol fy: 2008
Contamcd: 2039
Contamnm: Di(2-ethylhexyl) phthalate
Viol code: 03
Viol name: Monitoring, Regular
Rule code: 320
Rule name: SOC
Violmeasur: Not Reported Unitmeasur: Not Reported
State mcl: Not Reported Cmpbdt: 01/01/2008
Cmpedt: 12/31/2010

Violations Information:
Violoation id: 10216 Orig cd: S
State: HI Viol fy: 2008
Contamcd: 2035
Contamnm: Di(2-ethylhexyl) adipate
Viol code: 03
Viol name: Monitoring, Regular
Rule code: 320
Rule name: SOC
Violmeasur: Not Reported Unitmeasur: Not Reported
State mcl: Not Reported Cmpbdt: 01/01/2008
Cmpedt: 12/31/2010

Violations Information:
Violoation id: 10215 Orig cd: S
State: HI Viol fy: 2008
Contamcd: 2326
Contamnm: Pentachlorophenol
Viol code: 03
Viol name: Monitoring, Regular
Rule code: 320
Rule name: SOC
Violmeasur: Not Reported Unitmeasur: Not Reported
State mcl: Not Reported Cmpbdt: 01/01/2008
Cmpedt: 12/31/2010

Violations Information:
Violoation id: 10214 Orig cd: S
State: HI Viol fy: 2008
Contamcd: 2110
Contamnm: 2,4,5-TP
Viol code: 03
Viol name: Monitoring, Regular
Rule code: 320
Rule name: SOC
Violmeasur: Not Reported Unitmeasur: Not Reported
State mcl: Not Reported Cmpbdt: 01/01/2008
Cmpedt: 12/31/2010

Violations Information:
Violoation id: 10213 Orig cd: S
State: HI Viol fy: 2008
Contamcd: 2105
Contamnm: 2,4-D
Viol code: 03
Viol name: Monitoring, Regular
Rule code: 320
Rule name: SOC
Violmeasur: Not Reported Unitmeasur: Not Reported
State mcl: Not Reported Cmpbdt: 01/01/2008
Cmpedt: 12/31/2010

Violations Information:
Violoation id: 10212 Orig cd: S
State: HI Viol fy: 2008
Contamcd: 2041
Contamnm: Dinoseb
Viol code: 03
Viol name: Monitoring, Regular
Rule code: 320
Rule name: SOC
Violmeasur: Not Reported Unitmeasur: Not Reported

State mcl: Not Reported Cmpbdt: 01/01/2008
Cmpedt: 12/31/2010

Violations Information:
Violoation id: 10211 Orig cd: S
State: HI Viol fy: 2008
Contamcd: 2040
Contamnm: Picloram
Viol code: 03
Viol name: Monitoring, Regular
Rule code: 320
Rule name: SOC
Violmeasur: Not Reported Unitmeasur: Not Reported
State mcl: Not Reported Cmpbdt: 01/01/2008
Cmpedt: 12/31/2010

Violations Information:
Violoation id: 10210 Orig cd: S
State: HI Viol fy: 2008
Contamcd: 2031
Contamnm: Dalapon
Viol code: 03
Viol name: Monitoring, Regular
Rule code: 320
Rule name: SOC
Violmeasur: Not Reported Unitmeasur: Not Reported
State mcl: Not Reported Cmpbdt: 01/01/2008
Cmpedt: 12/31/2010

Violations Information:
Violoation id: 10202 Orig cd: S
State: HI Viol fy: 2008
Contamcd: 1024
Contamnm: CYANIDE
Viol code: 03
Viol name: Monitoring, Regular
Rule code: 333
Rule name: Other IOC
Violmeasur: Not Reported Unitmeasur: Not Reported
State mcl: Not Reported Cmpbdt: 01/01/2008
Cmpedt: 12/31/2010

Violations Information:
Violoation id: 10201 Orig cd: S
State: HI Viol fy: 2000
Contamcd: 3100
Contamnm: Coliform (TCR)
Viol code: 21
Viol name: MCL, Acute (TCR)
Rule code: 110
Rule name: TCR
Violmeasur: Not Reported Unitmeasur: Not Reported
State mcl: Not Reported Cmpbdt: 10/01/2000
Cmpedt: 10/31/2000

Violations Information:

Violoation id:	10101	Orig cd:	S
State:	HI	Viol fy:	2000
Contamcd:	3100		
Contamnm:	Coliform (TCR)		
Viol code:	22		
Viol name:	MCL, Monthly (TCR)		
Rule code:	110		
Rule name:	TCR		
Violmeasur:	Not Reported	Unitmeasur:	Not Reported
State mcl:	Not Reported	Cmpbdt:	10/01/2000
Cmpedt:	10/31/2000		

PWS ID:	HI0000212		
Date Initiated:	Not Reported	Date Deactivated:	Not Reported
PWS Name:	DWS WAILUKU WAILUKU, MAUI, HI 96793		

Addressee / Facility: System Owner/Responsible Party
MR. DAVID CRADDOCK, DIRECTOR
DEPARTMENT OF WATER SUPPLY
P.O. BOX 1109
WAILUKU, HI 96793

Addressee / Facility: Laboratory
MS. CARI CERIZO
DEPARTMENT OF WATER SUPPLY
614 PALAPALA DRIVE
KAHULUI, MAUI, HI 96732

Facility Latitude:	20 53 12.0000	Facility Longitude:	156 32 14.0000
Facility Latitude:	20 53 29.0000	Facility Longitude:	156 30 55.0000
Facility Latitude:	20 54 40.0000	Facility Longitude:	156 31 1.0000
Facility Latitude:	20 54 40.0000	Facility Longitude:	156 31 2.0000
Facility Latitude:	20 54 44.0000	Facility Longitude:	156 31 4.0000
Facility Latitude:	20 54 32.0000	Facility Longitude:	156 30 44.0000
Facility Latitude:	20 54 30.0000	Facility Longitude:	156 30 44.0000
Facility Latitude:	20 53 9.0000	Facility Longitude:	156 32 30.0000
Facility Latitude:	20 53 30.0000	Facility Longitude:	156 30 54.0000
City Served:	WAILUKU		
Treatment Class:	Treated	Population:	41691

Violations information not reported.

ENFORCEMENT INFORMATION:

Truedate:	03/31/2009	Pwsid:	HI0000212
Pwsname:	WAILUKU		
Retpopsrvd:	52200	Pwstypecod:	C
Vioid:	10101	Contaminant:	COLIFORM (TCR)
Viol. Type:	MCL, Monthly (TCR)		
Complperbe:	10/1/2000 0:00:00		
Complperen:	10/31/2000 0:00:00	Enfdate:	10/16/2000 0:00:00
Enf action:	State Violation/Reminder Notice		
Violmeasur:	Not Reported		

Truedate:	03/31/2009	Pwsid:	HI0000212
Pwsname:	WAILUKU		
Retpopsrvd:	52200	Pwstypecod:	C
Vioid:	10101	Contaminant:	COLIFORM (TCR)
Viol. Type:	MCL, Monthly (TCR)		
Complperbe:	10/1/2000 0:00:00		
Complperen:	10/31/2000 0:00:00	Enfdate:	10/16/2000 0:00:00
Enf action:	State Public Notif Requested		
Violmeasur:	Not Reported		

Truedate:	03/31/2009	Pwsid:	HI0000212
Pwsname:	WAILUKU		
Retpopsrvd:	52200	Pwstypecod:	C
Vioid:	10101	Contaminant:	COLIFORM (TCR)
Viol. Type:	MCL, Monthly (TCR)		
Complperbe:	10/1/2000 0:00:00		
Complperen:	10/31/2000 0:00:00	Enfdate:	10/19/2000 0:00:00
Enf action:	State Public Notif Issued		
Violmeasur:	Not Reported		

Truedate:	03/31/2009	Pwsid:	HI0000212
Pwsname:	WAILUKU		
Retpopsrvd:	52200	Pwstypecod:	C
Vioid:	10201	Contaminant:	COLIFORM (TCR)
Viol. Type:	MCL, Acute (TCR)		
Complperbe:	10/1/2000 0:00:00		
Complperen:	10/31/2000 0:00:00	Enfdate:	10/16/2000 0:00:00
Enf action:	State Violation/Reminder Notice		
Violmeasur:	Not Reported		

Truedate:	03/31/2009	Pwsid:	HI0000212
Pwsname:	WAILUKU		
Retpopsrvd:	52200	Pwstypecod:	C
Vioid:	10201	Contaminant:	COLIFORM (TCR)
Viol. Type:	MCL, Acute (TCR)		
Complperbe:	10/1/2000 0:00:00		
Complperen:	10/31/2000 0:00:00	Enfdate:	10/16/2000 0:00:00
Enf action:	State Public Notif Requested		
Violmeasur:	Not Reported		

Truedate:	03/31/2009	Pwsid:	HI0000212
Pwsname:	WAILUKU		
Retpopsrvd:	52200	Pwstypecod:	C
Vioid:	10201	Contaminant:	COLIFORM (TCR)
Viol. Type:	MCL, Acute (TCR)		
Complperbe:	10/1/2000 0:00:00		
Complperen:	10/31/2000 0:00:00	Enfdate:	10/19/2000 0:00:00
Enf action:	State Public Notif Issued		
Violmeasur:	Not Reported		

System Name:	WAILUKU		
Violation Type:	MCL, Monthly (TCR)		
Contaminant:	COLIFORM (TCR)		
Compliance Period:	10/01/00 - 10/31/00		
Violation ID:	10101		
Enforcement Date:	10/16/00	Enf. Action:	State Public Notif Requested

ENFORCEMENT INFORMATION:

System Name: WAILUKU
Violation Type: MCL, Monthly (TCR)
Contaminant: COLIFORM (TCR)
Compliance Period: 10/01/00 - 10/31/00
Violation ID: 10101
Enforcement Date: 10/16/00 Enf. Action: State Violation/Reminder Notice

System Name: WAILUKU
Violation Type: MCL, Monthly (TCR)
Contaminant: COLIFORM (TCR)
Compliance Period: 10/1/2000 0:00:00 - 10/31/2000 0:00:00
Violation ID: 10101
Enforcement Date: 10/19/2000 0:00:00 Enf. Action: State Public Notif Issued

System Name: WAILUKU
Violation Type: MCL, Monthly (TCR)
Contaminant: COLIFORM (TCR)
Compliance Period: 10/1/2000 0:00:00 - 10/31/2000 0:00:00
Violation ID: 10101
Enforcement Date: 10/16/2000 0:00:00 Enf. Action: State Public Notif Requested

System Name: WAILUKU
Violation Type: MCL, Monthly (TCR)
Contaminant: COLIFORM (TCR)
Compliance Period: 10/1/2000 0:00:00 - 10/31/2000 0:00:00
Violation ID: 10101
Enforcement Date: 10/16/2000 0:00:00 Enf. Action: State Violation/Reminder Notice

System Name: WAILUKU
Violation Type: MCL, Monthly (TCR)
Contaminant: COLIFORM (TCR)
Compliance Period: 10/01/00 - 10/31/00
Violation ID: 10101
Enforcement Date: 10/19/00 Enf. Action: State Public Notif Issued

System Name: WAILUKU
Violation Type: MCL, Acute (TCR)
Contaminant: COLIFORM (TCR)
Compliance Period: 10/1/2000 0:00:00 - 10/31/2000 0:00:00
Violation ID: 10201
Enforcement Date: 10/16/2000 0:00:00 Enf. Action: State Public Notif Requested

System Name: WAILUKU
Violation Type: MCL, Acute (TCR)
Contaminant: COLIFORM (TCR)
Compliance Period: 10/1/2000 0:00:00 - 10/31/2000 0:00:00
Violation ID: 10201
Enforcement Date: 10/16/2000 0:00:00 Enf. Action: State Violation/Reminder Notice

System Name: WAILUKU
Violation Type: MCL, Acute (TCR)
Contaminant: COLIFORM (TCR)
Compliance Period: 10/1/2000 0:00:00 - 10/31/2000 0:00:00
Violation ID: 10201
Enforcement Date: 10/19/2000 0:00:00 Enf. Action: State Public Notif Issued

System Name: WAILUKU
Violation Type: MCL, Acute (TCR)
Contaminant: COLIFORM (TCR)
Compliance Period: 10/01/00 - 10/31/00
Violation ID: 10201
Enforcement Date: 10/16/00 Enf. Action: State Public Notif Requested

ENFORCEMENT INFORMATION:

System Name: WAILUKU
Violation Type: MCL, Acute (TCR)
Contaminant: COLIFORM (TCR)
Compliance Period: 10/01/00 - 10/31/00
Violation ID: 10201
Enforcement Date: 10/16/00 Enf. Action: State Violation/Reminder Notice

System Name: WAILUKU
Violation Type: MCL, Acute (TCR)
Contaminant: COLIFORM (TCR)
Compliance Period: 10/01/00 - 10/31/00
Violation ID: 10201
Enforcement Date: 10/19/00 Enf. Action: State Public Notif Issued

CONTACT INFORMATION:

Name: WAILUKU Population: 52200
Contact: ENG, JEFFREY Phone: 808-270-7816

Address: Department of Water Supply
Address 2: 200 South High Street
WAILUKU, HI 96793

24
ESE
1/2 - 1 Mile
Lower

HI WELLS **HI9000000003352**

Wid: 6-5229-005 Island: Maui
Well name: Maui Lani 6 Old name: Not Reported
Yr drilled: 2006
Driller: Valley Well Drilling, LLC
Quad map: 5
Long83dd: -156.492296
Lat83dd: 20.870958
Gps: -1 Utm: 0
Owner user: Maui Lani Partners
Land owner: Maui Lani Partners
Pump insta: Not Reported
Old number: Not Reported Well type: ROT
Casing dia: 14 Ground el: 179
Well depth: 220
Solid case: 175 Perf case: 205
Use: MUN - County
Use year: Not Reported
Init head: 4.35 Init head2: Not Reported
Init head3: Not Reported
Init cl: 45
Test date: 3/30/2006 Test gpm: 550
Test ddown: 5.65 Test chlor: 45
Test temp: 72.8 Test unit: F
Pump gpm: 0
Draft mgy: Not Reported Head feet: Not Reported
Max chlor: Not Reported Min chlor: Not Reported
Geology: TK
Pump yr: 0
Draft yr: Not Reported Bot hole: -41
Bot solid: -4 Bot perf: -26
Spec capac: Not Reported

Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(2) 3-8-007:153
Aqui code:	60301		
Latest hd:	Not Reported	Wcr:	30-DEC-99
Pir:	Not Reported		
Surveyor:	Darren Unemori		
T:	35400	Site id:	HI9000000003352

E25
NNW
1/2 - 1 Mile
Higher

FED USGS **USGS40000269152**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-205330156305401		
Monloc name:	6-5330-11 Mokuhau Pump 3, Maui, HI		
Monloc type:	Well		
Monloc desc:	former local no. W15F		
Huc code:	20020000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	20.8884583
Longitude:	-156.5121778	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	354
Vert measure units:	feet	Vertacc measure val:	1
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19670101	Welldepth:	580
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

E26
NNW
1/2 - 1 Mile
Lower

HI WELLS **HI9000000003473**

Wid:	6-5330-008	Island:	Maui
Well name:	Mokuhau TH 3	Old name:	Not Reported
Yr drilled:	1952		
Driller:	Mark Vaught (East Maui Irrigation Co., Ltd.)		
Quad map:	5		
Long83dd:	-156.511944		
Lat83dd:	20.888611		
Gps:	0	Utm:	-1
Owner user:	Not Reported		
Land owner:	Hilaria Taborado		

Pump insta:	Not Reported		
Old number:	15-E TH	Well type:	ROT
Casing dia:	1	Ground el:	364
Well depth:	466		
Solid case:	364	Perf case:	Not Reported
Use:	OBS - Observation		
Use year:	Not Reported		
Init head:	Not Reported	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	TW		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-102
Bot solid:	0	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(2) 3-3-017:068
Aqui code:	60102		
Latest hd:	Not Reported	Wcr:	01-JAN-52
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000003473

E27
NNW
1/2 - 1 Mile
Higher

FED USGS **USGS40000269154**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-205331156305301		
Monloc name:	6-5330-08 W15E		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20020000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	20.8887361
Longitude:	-156.5119	Sourcemap scale:	24000
Horiz Acc measure:	5	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	364.00
Vert measure units:	feet	Vertacc measure val:	5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		

Aquifer type:	Not Reported		
Construction date:	19520101	Welldepth:	466
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

F28
South
1/2 - 1 Mile
Higher

FED USGS **USGS40000269052**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-205154156303801		
Monloc name:	6-5130-02 Waikapu 2, Maui, HI		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20020000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	20.8620556
Longitude:	-156.5075	Sourcemap scale:	24000
Horiz Acc measure:	.5	Horiz Acc measure units:	seconds
Horiz Collection method:	Global positioning system (GPS), uncorrected		
Horiz coord refsys:	NAD83	Vert measure val:	517.97
Vert measure units:	feet	Vertacc measure val:	.01
Vert accmeasure units:	feet		
Vertcollection method:	Level or other surveying method		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Hawaii volcanic-rock aquifers		
Formation type:	Wailuku Volcanic Series, Lava Flows		
Aquifer type:	Unconfined single aquifer		
Construction date:	19740701	Welldepth:	1020
Welldepth units:	ft	Wellholedepth:	1020
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 163

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
2004-04-02		11.18	2004-02-10		11.02
2004-01-05		10.96	2003-11-13		10.70
2003-10-02		10.93	2003-08-19		11.15
2003-07-10		11.12			
Note: Other conditions existed that would affect the measured water level.					
2003-05-14		11.21			
Note: Other conditions existed that would affect the measured water level.					
2003-03-31		11.34			
Note: Other conditions existed that would affect the measured water level.					
2003-02-11		11.15			
Note: Other conditions existed that would affect the measured water level.					
2003-01-07		11.18			
Note: Other conditions existed that would affect the measured water level.					
2002-11-19		11.14			
Note: Other conditions existed that would affect the measured water level.					
2002-10-01		10.23			
Note: Other conditions existed that would affect the measured water level.					
2002-08-20		11.20			
Note: Other conditions existed that would affect the measured water level.					

Ground-water levels, continued.

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
2002-07-02		11.31			
Note: Other conditions existed that would affect the measured water level.					
2002-05-14		11.48			
Note: Other conditions existed that would affect the measured water level.					
2002-04-02		11.55			
Note: Other conditions existed that would affect the measured water level.					
2002-02-21		11.50			
Note: Other conditions existed that would affect the measured water level.					
2002-01-08		11.53			
Note: Other conditions existed that would affect the measured water level.					
2001-12-04		11.28			
Note: Other conditions existed that would affect the measured water level.					
2001-10-16		11.08	2001-08-21		11.14
2001-07-03		11.10	2001-05-15		11.16
2001-04-03		11.11	2001-03-08		11.18
2001-01-09		11.43	2000-12-07		11.45
2000-10-03		11.38	2000-08-24		11.30
2000-07-06		11.41	2000-05-16		11.58
2000-04-04		11.73	2000-02-24		12.19
2000-01-04		12.66	1999-11-22		12.53
1999-10-01		12.48	1999-08-24		12.11
1999-07-02		11.76	1999-05-19		12.08
1999-05-19		12.08	1999-03-30		12.33
1999-03-09		12.21	1999-01-05		12.38
1998-12-01		12.06	1998-09-29		12.11
1998-09-29		12.11	1998-08-24		12.11
1998-07-02		12.12	1998-05-26		12.20
1998-04-01		12.18	1998-02-23		12.36
1998-01-05		12.51	1997-11-25		12.30
1997-10-01		12.52	1997-08-25		12.84
1997-08-06		12.97	1997-06-30		12.89
1997-05-27		12.92	1997-04-01		12.99
1997-02-24		12.85	1997-01-03		12.43
1996-11-25		11.94	1996-10-01		11.88
1996-08-26		12.13	1996-07-01		12.12
1996-05-28		12.20	1996-04-04		12.50
1996-03-07		12.41	1996-01-17		12.34
1995-10-02		12.41	1995-08-24		12.53
1995-07-12		12.53	1995-05-16		12.70
1995-01-18		13.01	1994-11-15		13.09
1994-08-18		12.92	1994-06-21		12.55
1994-05-05		12.72	1994-03-17		12.62
1994-01-20		12.61	1993-12-10		12.56
1993-11-08		12.55	1993-08-27		12.66
1993-07-07		12.76	1993-05-10		12.83
1993-04-01		12.84	1993-02-16		12.83
1992-12-29		13.02	1992-11-10		12.97
1992-09-15		13.03	1992-08-05		12.98
1992-06-24		12.96	1992-04-23		12.87
1992-02-28		13.10	1992-01-30		13.04
1991-12-05		13.27	1991-10-17		13.27
1991-09-06		13.57	1991-07-08		13.52
1991-05-28		13.52	1991-04-12		13.65
1991-03-05		13.73	1991-01-28		13.83
1990-12-11		13.78	1990-10-29		13.75

Ground-water levels, continued.

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1990-08-22		13.79	1990-06-27		13.89
1990-05-31		13.94	1990-04-20		13.93
1990-03-15		14.05	1990-01-31		14.08
1989-11-28		14.12	1989-10-31		14.05
1989-08-24		13.87	1989-07-25		13.83
1989-05-23		13.84	1989-05-02		13.93
1989-03-08		13.94	1989-01-18		13.88
1988-12-14		13.96	1988-10-13		13.80
1988-09-14		13.90	1988-07-22		13.98
1988-05-20		14.23	1988-04-19		14.27
1988-02-24		14.29	1988-01-12		14.39
1987-11-30		14.40	1987-10-14		14.41
1987-08-28		14.77	1987-07-15		15.03
1987-05-21		14.79	1987-04-10		14.69
1987-02-27		14.51	1987-01-16		14.26
1986-11-28		14.12	1986-10-14		13.96
1986-08-14		14.27	1986-07-09		14.38
1986-05-28		14.31	1986-04-21		13.98
1986-02-28		13.74	1986-01-13		13.57
1985-11-27		13.73	1985-10-23		13.56
1985-09-18		13.56	1985-08-30		13.58
1985-07-09		13.59	1985-05-20		13.51
1985-04-08		13.48	1985-02-20		13.55
1985-01-16		13.53	1984-11-23		13.63
1984-10-16		13.80	1984-08-29		14.07
1984-07-05		14.20	1984-05-23		14.15
1984-04-10		14.05	1984-02-27		13.83
1984-01-17		13.81	1983-12-07		13.79
1983-10-17		13.97			

29
NNW
1/2 - 1 Mile
Lower

HI WELLS **HI9000000003471**

Wid:	6-5330-006	Island:	Maui
Well name:	Mokuhau TH 1	Old name:	Not Reported
Yr drilled:	1950		
Driller:	Mark Vaught (East Maui Irrigation Co., Ltd.)		
Quad map:	5		
Long83dd:	-156.509722		
Lat83dd:	20.89		
Gps:	0	Utm:	-1
Owner user:	Not Reported		
Land owner:	Igarta, Bernard Trust		
Pump insta:	Not Reported		
Old number:	15-C TH	Well type:	ROT
Casing dia:	1	Ground el:	310
Well depth:	431		
Solid case:	391	Perf case:	431
Use:	OBS - Observation		
Use year:	Not Reported		
Init head:	27.3	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	280		
Test date:	Not Reported	Test gpm:	Not Reported

Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	TW		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-121
Bot solid:	-81	Bot perf:	-121
Spec capac:	Not Reported		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(2) 3-4-035:023
Aqui code:	60102		
Latest hd:	Not Reported	Wcr:	01-JAN-50
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000003471

F30
South
1/2 - 1 Mile
Higher

HI WELLS **HI9000000003304**

Wid:	6-5130-002	Island:	Maui
Well name:	Waikapu 2	Old name:	Not Reported
Yr drilled:	1974		
Driller:	Roscoe Moss Hawaii Inc		
Quad map:	5		
Long83dd:	-156.507778		
Lat83dd:	20.861667		
Gps:	0	Utm:	-1
Owner user:	Land Division Oahu, DLNR-LD		
Land owner:	State of Hawaii		
Pump insta:	Not Reported		
Old number:	Not Reported	Well type:	PER
Casing dia:	20	Ground el:	518
Well depth:	1020		
Solid case:	520	Perf case:	570
Use:	UNU - Unused		
Use year:	Not Reported		
Init head:	10.3	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	13		
Test date:	7/9/1974	Test gpm:	500
Test ddown:	73	Test chlor:	50
Test temp:	21	Test unit:	C
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	PA		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-502
Bot solid:	-2	Bot perf:	-52
Spec capac:	7		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(2) 3-5-004:023
Aqui code:	60102		
Latest hd:	Not Reported	Wcr:	01-JUL-74
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000003304

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

Federal EPA Radon Zone for MAUI County: 3

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for Zip Code: 96793

Number of sites tested: 11

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	0.291 pCi/L	100%	0%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	Not Reported	Not Reported	Not Reported	Not Reported

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

HYDROLOGIC INFORMATION

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 2003 & 2011 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetlands Inventory
Source: Office of Planning
Telephone: 808-587-2895

HYDROGEOLOGIC INFORMATION

AQUIFLOW[R] Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Service, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

Well Index Database
Source: Commission on Water Resource Management
Telephone: 808-587-0214
CWRM maintains a Well Index Database to track specific information pertaining to the construction and installation of production wells in Hawaii

OTHER STATE DATABASE INFORMATION

RADON

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary faultlines, prepared in 1975 by the United State Geological Survey

PHYSICAL SETTING SOURCE RECORDS SEARCHED

STREET AND ADDRESS INFORMATION

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APPENDIX J

MAUI ELECTRIC CORRESPONDENCE

Maui Electric Company, Ltd.• 210 West Kamehameha Avenue•P. O. Box 398•Kahului, Maui, HI 96733•(808) 871-8461

Maui Electric

TSC 2.5.1 (MECO)
Due Diligence Inquiries
February 16, 2016

Bryan Starks
Bureau Veritas North America, Inc.
841 Bishop Street, Suite 1100, Honolulu, Hawaii 96813

Bryan Starks:

Re: Transformer Information: Transformers located within Maui Electric Substation #22 TMK 235001089 (Wailuku, HI)

In response to your inquiry, we provide the following information regarding Maui Electric Company, Ltd. transformers:

Type	TSF No.	Address	Date Purchased	Serial No.	PCB Status
Pole Top	15208	TMK 235001089	December 1996	96A461610	Non PCB
Pole Top	15192	TMK 235001089	December 1996	96A461490	Non PCB
Pole Top	15193	TMK 235001089	December 1996	96A461491	Non PCB
Substation Class Padmount	1370	TMK 235001089	1948	3937424	34.8 ppm *
Substation Class Padmount	1371	TMK 235001089	1948	3937426	2.47 ppm *
Substation Class Padmount	1372	TMK 235001089	1948	3937425	4.08 ppm *
*Sampled on 12/10/13. Reference MECO Report # 1312092					

Pursuant to the Toxic Substances Control Act (TSCA), the U.S. Environmental Protection Agency (EPA) promulgated a prohibition against distribution in commerce of PCBs in 1979. Accordingly, Maui Electric does not consider units purchased after 1979 to contain PCBs. Maui Electric numbers transformers when it receives them from the manufacturer. Our transformers numbered above 7777 are considered non-PCB since they were purchased after 1979.

It should be noted that Maui Electric's transformer purchases have always specified mineral oil, rather than PCBs, as the insulating material. Although Maui Electric has always specified mineral oil, it is possible that incidental contamination of older transformers may have occurred in the manufacturing process prior to the 1979 prohibition. Furthermore, EPA regulations require that all untested mineral oil transformers (such as those utilized in Maui Electric's distribution system) manufactured prior to July 1, 1979 must be considered to contain between 50 and 500 parts per million PCBs. Maui Electric would like to emphasize our transformers are in compliance with the Toxic Substances Control Act and all applicable related regulations. All leaking transformers are replaced when discovered and any associated soil affected by PCBs is remediated (at our expense) in accordance with all applicable EPA and State Department of Health guidelines. In addition, all older transformers that fail in the field are tested and disposed of accordingly.

It is important to understand that EPA rules regarding PCBs allow their continued use (at any concentration) in transformers for the remainder of the transformers' useful lives subject to certain conditions. These rules do not require testing of the transformers while they are in use and in good working order.

Please note that this location information is based on the information provided in your request. If you have further questions, please contact me by phone at 808-872-3548.

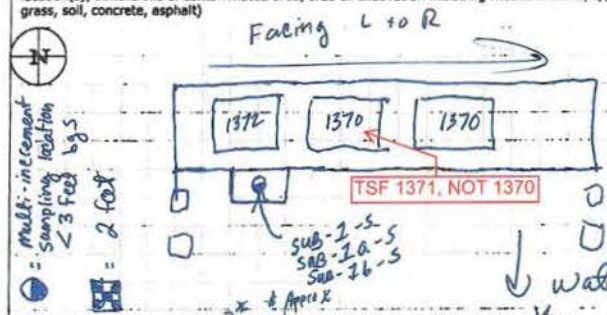
Sincerely,

Brittani Capps-Balinbin
Environmental Specialist

4/19/12

Sample Collection Form Date:

1. Project Site Name:
2. Project Site Address: SUB 22 Wailuku
3. Company: (Check one) ☐ HECO ☒ MECO ☐ HELCO
4. Samples Collected/Form Completed By (Phone No.): B. Capps-Balinbin (808 7958)
5. Brief Summary of Incident or Purpose of Sampling: SUB #22 surface sample to see if TSF 1372 impacted soil
Names of Participating Field Personnel:
1) R. Kaya
2) R. Reese
3)
6. Sampling Equipment Used: (e.g., disposable scoops, etc.) SS scoop
7. Photographs: ☒ Yes ☐ No
8. Sketch of site - Include scale, direction of north, permanent landmark (i.e., building, light pole, hydrant), sample location(s), dimensions of contaminated area, area of excavation including measurements, type of ground cover (i.e., grass, soil, concrete, asphalt)



9. Scale 0.25 inches (each box) = 2 feet
10. Weather: ☐ Sunny ☐ Partly Cloudy ☒ Overcast ☐ Rain Temp.: 80 °F

11. Sample Information	15. Sample Information	19. Sample Information
Sample No. SUB-1-S	Sample No. SUB-1a-S	Sample No. SUB-1b-S
Date: 4/19/12 Time: 1230	Date: 4/19/12 Time: 1230	Date: 4/19/12 Time: 1230
Location/Source: DU1	Location/Source: DU1 Drip	Location/Source: DU1 Trip
Depth Collected: Surface	Depth Collected:	Depth Collected:
Depth Units: ☐ Feet ☐ Inches	Depth Units: ☐ Feet ☐ Inches	Depth Units: ☐ Feet ☐ Inches
Sample Type ☐ Grab ☒ Multi-Increment ☐ Wipe	Sample Type ☐ Grab ☒ Multi-Increment ☐ Wipe	Sample Type ☐ Grab ☒ Multi-Increment ☐ Wipe
12. Physical Properties	16. Physical Properties	20. Physical Properties
Color:	Color:	Color:
Moisture: ☐ Dry ☒ Moist ☐ Wet	Moisture: ☐ Dry ☒ Moist ☐ Wet	Moisture: ☐ Dry ☒ Moist ☐ Wet
Odor: ☐ Yes ☒ No	Odor: ☐ Yes ☒ No	Odor: ☐ Yes ☒ No
Describe	Describe	Describe
13. Matrix: ☐ Asphalt ☐ Gravel ☒ Soil ☐	17. Matrix: ☐ Asphalt ☐ Gravel ☒ Soil ☐	21. Matrix: ☐ Asphalt ☐ Gravel ☒ Soil ☐
14. Soil Type: ☐ Gravel ☐ Sand ☒ Silt ☐ Clay ☐ Rock	18. Soil Type: ☐ Gravel ☐ Sand ☒ Silt ☐ Clay ☐ Rock	22. Soil Type: ☐ Gravel ☐ Sand ☒ Silt ☐ Clay ☐ Rock

23. Comments and Other Information:
a. Type of sample container: ☒ 1-gallon plastic Ziploc bag (MI samples only) ☐ ___oz. glass jar ☐ Other
b. Was groundwater encountered? ☐ Yes ☒ No If yes, at what depth? Sheen/Free Product on GW? ☐ Yes ☐ No
c. Backfill material (i.e., placed flowfill to one foot below grade, and finished with topsoil to grade):

Note: 1) After sample drop-off, fax form and copy of chain of custody to the Environmental Dept. (543-4511).
2) Upon completion of project, forward original documentation to the Environmental Dept. (HPO-JW).

Form Revision Date: November 19, 2008

12000636

Hawaiian Electric Company, Inc.

Environmental Chemistry Laboratory
Sample Analysis Report

Project/Site: Substation 22
Sample Classification: TPH
Submitter: MECOT&D

Report Date: 26-Apr-2012
Received by Lab: 20-Apr-2012

Sample Results in This Report:

Field ID	Lab Sample ID	Date Collected	Location
SUB-1-S	12002188	04/19/2012	TSF 1372
SUB-1a-S	12002189	04/19/2012	TSF 1372
SUB-1b-S	12002190	04/19/2012	TSF 1372

ANALYSIS RESULTS

TPH by SW 846 Methods 3550B and 8015M; PCBs by SW 846 Methods 3550 and 8082.
Results are reported on a dry weight basis.

Field ID:	Location	Analyte	Result	Units	Analysis Date	Analyst
SUB-1-S	TSF 1372	PCB	All Aroclors <0.20	mg/Kg	4/25/12	slui
SUB-1-S	TSF 1372	TPH-TSF Oil (C12-C28)	78	mg/Kg	4/24/12	sito
SUB-1a-S	TSF 1372	PCB	All Aroclors <0.20	mg/Kg	4/25/12	slui
SUB-1a-S	TSF 1372	TPH-TSF Oil (C12-C28)	71	mg/Kg	4/24/12	sito
SUB-1b-S	TSF 1372	PCB	All Aroclors <0.20	mg/Kg	4/25/12	slui
SUB-1b-S	TSF 1372	TPH-TSF Oil (C12-C28)	67	mg/Kg	4/24/12	sito

Approved by: _____
Douglas Rinehart
Supervisor, Environmental Chemistry Lab

HECO Environmental Chemistry Laboratory
P.O Box 2750, Honolulu, HI 96840-0001 E-mail: Chem Lab@heco.com

HECO ENVIRONMENTAL CHEMISTRY LABORATORY
Sample Analysis Quality Report

Batch # **12000636**

Parameter (*)	Units	Spike/ Blank Amount	Recovered Amount	Recovery Range Min.	Max.
1242 - Soil (LCS)	mg/Kg	1.00	0.80	0.70	1.20
1242 - Soil (MS)	mg/Kg	1.00	0.73	0.70	1.20
TPH -TSF Oil (LCS-Soil)	mg/Kg	5,000	5,360	3,500	6,000
TPH-TSF Oil (MS)	mg/Kg	5,000	5,023	3,500	6,000
TPH Soil Surrogate Range	%	100	108 – 120	70	120
PCB Surrogate Range	%	100	89.4 – 98.0	70	130

*MS = Matrix Spike LC = Lab Control LCS = Lab Control Sample LS = Lab Spike

Hawaiian Electric Co., Inc.

CHAIN OF CUSTODY/ANALYSIS REQUEST

Lab Batch No. 12000626 (lab use only)

Submitter Company (circle one) HECO MECO HELCO Other:	Receiving Laboratory: HECO Environmental Chemistry Laboratory
Submitter's Plant or Dept: T&D	Send Analysis Report to:
Project Name: Substation 22	B. Capps-Balinbin, W. Hall, V. Kong, D. Martin
Project Site:	
Contact for Additional Info & Phone Number: 268-7958	
Date Results Needed: NOTE: if high priority, provide justification here: *Charge capital removal E0017551	
PLEASE LIST A DATE	STD TAT

SAMPLES SUBMITTED

Leave Blank Lab Use Only	Field Sample I.D.	Collected Time	Collected Date	Sample Location or Source	Type *	Name of Sampler	Sampling Method**	Analyses Requested
12002188	SUB-1-S	1230	4/19/12	TSF 1372	SO	B.Capps-Balinbin	M	TPH(t), PCB
2189	SUB-1a-S	↓	↓	↓	↓	↓	↓	↓
2190	SUB-1b-S	↓	↓	↓	↓	↓	↓	↓
								* Taken from small area, OK to Composite if not enough soil

* Type: Water (W) Fuel (F) Transformer Oil (T) Oil, non-TSF (O) Liquid (L) Soil (SO) Sludge (SL) Solid (SD) Wipe (P)

** Method: Grab (G) Composite (C) Multi-increment (M)

Relinquished by (Sampler): B. Capps-Balinbin	Date 4/19/12	Time 1330	Received by: Aloha Cargo	
Relinquished by: ALOHA AIR CARGO	Date 4/20/12	Time 0830	Received by: D.S. RINEHART	
Relinquished by:	Date	Time	Received by:	
Relinquished by:	Date	Time	Received by:	

Comments/Added Information/Special Handling Instructions:

Lab Use Only. Receipt condition. intact

Field analyses - Temp: pH: Date/Time of Analysis: Conductivity: Arrival Temp: 4.9°C

version 7/21/2008

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687 - 0364 5250 FREIGHT 687 OGG 0364 5250

Shipper: MAUI ELECTRIC CO 42937
ATTN: ACCOUNTS PAYABLE
HONOLULU, HI 96840
808, 532-5800

Consignee: HAWAIIAN ELECTRIC CO., INC. 41683
ATTN: ACCOUNTS PAYABLE
HONOLULU, HI 96840
808, 5434297

Aloha Air Cargo

ALOHA AIR CARGO
P.O. BOX 30910
HONOLULU, HI 96820

It is agreed that the goods described herein are accepted in apparent good order and condition (except as noted) for carriage SUBJECT TO THE CONDITIONS OF CONTRACT ON THE REVERSE HEREOF. THE ATTENTION OF SHIPPERS IS DRAWN TO THE NOTICE CONCERNING CARRIERS LIMITATION OF LIABILITY. Shipper may increase such limitation of liability by declaring a higher value for carriage and paying a supplemental charge if required.

Accounting Information
GENERAL FREIGHT

Origin		Currency	
	OGG		USD
Destination	HNL	Charge Code	PX
Handling Information: ATTN/DOUG RINEHART		Declared Value for Carriage / Declared Value for Customs	0

Pieces	Gross Weight	Nature of Goods	Chargeable Weight	Rate/Charge	Total	Length	Width	Height	Dim Weight
1		SOIL SAMPLES/CHILL				12	9	10	6

1 13 13 6

	Prepaid	Collect
Fee		
Weight Charge	30.00	
Valuation Charge	0.00	
Tax	2.09	
Total Other Charges Due Agent	0.00	
Total Other Charges Due Carrier	3.38	
Total	35.47	

Other Charges			
FSC Fee	3.12	SSC Fee	0.00
DOC Fees	0.00	DG Fee	0.00
Oth Fees	0.00	P/U Fee	0.00
DEL Fees	0.00	TSC Fees	0.26

The shipper certifies that the particulars on the face hereof are correct, and that the shipment does not contain dangerous goods and that all ITEMS ARE ACCEPTED AT SHIPPER'S RISK

The consignee certifies that the shipment is received in good order except where noted below

Signature of Issuing Carrier or its Agent: E DOANE 0788

WB Date: 19-APR-12

WB Time: 1402

D.S. RINEHART 4/20/12 0830

BUREAU VERITAS

For the benefit of business and people

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APPENDIX J

INTERVIEW QUESTIONNAIRE(S)

BUREAU VERITAS

Owner Representative/Property Manager Questionnaire

*Please explain all 'yes' answers and mark N/A if you do not know the answer or it doesn't apply

Name	Ryan Churchill
Title	Vice President
Company	Pacific Rim Land
How long have you been associated with the site?	3 years
What is the address of the site?	Off of Honoapiilani Hwy
Who is the owner of the property?	Co-tenants, Endurance Investors LLC and Association of Wai Hui LP
When were the buildings onsite (if any) constructed?	N/A
Do you know the previous use of the site?	Sugar crops
What companies supply utilities to the subject property? Gas Electricity Water Sewer	N/A
What company picks up trash and how often?	N/A
Do you know if any environmental work has been done at the property? If so, please describe.	None known
Do you know if any hazardous materials are currently or previously stored onsite or if hazardous waste was generated onsite? If so, please provide details.	None known
Do you know of any underground storage tanks previously associated with this site? If so, please provide details in next column:	How many? Capacity? Contents? Construction Material?

Bureau Veritas North America, Inc.
1665 Scenic Avenue, Ste. 200
Costa Mesa, California 92626

Main: (714) 431-4100
Fax: (714) 825-0685
www.us.bureauveritas.com

	When were they installed? If removed, when were they removed and by what company? Were soil samples collected? Was an agency there to witness?
Do you know of any aboveground storage tanks associated with this site, past or present? If so, please provide details in next column:	How many? Location? Capacity? Contents? Construction Material? When were they installed? When were they removed?
Do you know of any sumps, clarifiers, or grease interceptors associated with this site, past or present? If so, please provide details in next column:	Time frame located onsite (when installed/removed)? Location? What used for? Capacity? Who serviced and how often? What company removed? Were soil samples collected? Was there regulatory agency oversight of removal?
Do you know of any septic systems currently or formerly located onsite? If so, please provide details in next column:	Time frame located onsite? Location? Removal procedures if any?
Do you know of any in-ground hydraulic equipment associated with this site, past or present? If so, please provide details in next column:	How many? Location? Time frame located onsite (when installed/removed)? What company removed them?

	Were samples collected from soil? Was there local agency oversight of removal?
Are you aware of any wells ever onsite (for example: Irrigation, groundwater, groundwater monitoring, soil vapor extraction)? If so, please provide details in next column:	When installed? How many? Where located? Currently operating? Abandoned? If so, when? And was it in accordance with agency? Which one?

Are you aware of any of the following?

Any pending, threatened, or past litigation relevant to hazardous substances or petroleum products in, on, or from the property.

Any pending, threatened or past administrative proceedings relevant to hazardous substances or petroleum products in, on, or from the property.

Any notices from any governmental entity regarding any possible violation of environmental laws or possible liability relating to hazardous substances or petroleum products.

If you answered yes to any of the above three questions, will you please provide an explanation:

APPENDIX K

REGULATORY DATABASE REPORT

ERIS
ENVIRONMENTAL RISK INFORMATION SERVICES

DATABASE REPORT

Project Property:	*Wailuku Maui* *Honoapiilani Highway and Kuikahi Drive* *Wailuku HI 96793*
Project No:	*25018-018132.00*
Report Type:	*Database Report*
Order No:	*20181030092*
Requested by:	*Bureau Veritas North America, Inc.*
Date Completed:	*October 31, 2018*

Environmental Risk Information Services
A division of Glacier Media Inc.
P: 1.866.517.5204
E: info@erisinfo.com

www.erisinfo.com

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Executive Summary

Property Information:

Project Property: *Wailuku Maui*
Honoapiilani Highway and Kuikahi Drive Wailuku HI 96793

Project No: *25018-018132.00*

Coordinates:

Latitude:	*20.864541*
Longitude:	*-156.504359*
UTM Northing:	*2,309,171.14*
UTM Easting:	*759,664.02*
UTM Zone:	*UTM Zone 04Q*

Elevation: *438 FT*

Order Information:

Order No:	*20181030092*
Date Requested:	*October 30, 2018*
Requested by:	*Bureau Veritas North America, Inc.*
Report Type:	*Database Report*

Historicals/Products:

Aerial Photographs	*Historical Aerials (Boundaries)*
City Directory Search	*CD - 2 Street Search*
ERIS Xplorer	*ERIS Xplorer*
Excel Add-On	*Excel Add-On*
Fire Insurance Maps	*US Fire Insurance Maps*
Physical Setting Report (PSR)	*PSR*
Topographic Map	*Topographic Maps*

Executive Summary: Report Summary

Database	Searched	Search Radius	Project Property	Within 0.12mi	.125mi to 0.25mi	0.25mi to 0.50mi	0.50mi to 1.00mi	Total
Standard Environmental Records								
Federal								
NPL	Y	1	0	0	0	0	0	0
PROPOSED NPL	Y	1	0	0	0	0	0	0
DELETED NPL	Y	.5	0	0	0	0	-	0
SEMS	Y	.5	0	0	0	0	-	0
ODI	Y	.5	0	0	0	0	-	0
SEMS ARCHIVE	Y	.5	0	0	0	0	-	0
CERCLIS	Y	.5	0	0	0	0	-	0
IODI	Y	.5	0	0	0	0	-	0
CERCLIS NFRAP	Y	.5	0	0	0	0	-	0
CERCLIS LIENS	Y	PO	0	-	-	-	-	0
RCRA CORRACTS	Y	1	0	0	0	0	0	0
RCRA TSD	Y	.5	0	0	0	0	-	0
RCRA LQG	Y	.25	0	0	0	-	-	0
RCRA SQG	Y	.25	0	0	0	-	-	0
RCRA CESQG	Y	.25	0	0	0	-	-	0
RCRA NON GEN	Y	.25	0	0	0	-	-	0
FED ENG	Y	.5	0	0	0	0	-	0
FED INST	Y	.5	0	0	0	0	-	0
ERNS 1982 TO 1986	Y	PO	0	-	-	-	-	0
ERNS 1987 TO 1989	Y	PO	0	-	-	-	-	0
ERNS	Y	PO	0	-	-	-	-	0
FED BROWNFIELDS	Y	.5	0	0	0	0	-	0
FEMA UST	Y	.25	0	0	0	-	-	0
SEMS LIEN	Y	PO	0	-	-	-	-	0
SUPERFUND ROD	Y	1	0	0	0	0	0	0
State								
SHWS	Y	1	0	0	0	1	4	5

Database	Searched	Search Radius	Project Property	Within 0.12mi	.125mi to 0.25mi	0.25mi to 0.50mi	0.50mi to 1.00mi	Total
DELISTED SHWS	Y	1	0	0	0	0	0	0
SWF/LF	Y	.5	0	0	0	1	-	1
LUST	Y	.5	0	0	0	0	-	0
DELISTED LUST	Y	.5	0	0	0	0	-	0
UST	Y	.25	0	0	0	-	-	0
DTNK	Y	.25	0	0	1	-	-	1
ENG	Y	.5	0	0	0	0	-	0
INST	Y	.5	0	0	0	0	-	0
VCP	Y	.5	0	0	0	0	-	0
BROWNFIELDS	Y	.5	0	0	0	0	-	0
Tribal								
INDIAN LUST	Y	.5	0	0	0	0	-	0
INDIAN UST	Y	.25	0	0	0	-	-	0
DELISTED ILST	Y	.5	0	0	0	0	-	0
DELISTED IUST	Y	.25	0	0	0	-	-	0
County	***No County standard environmental record sources available for this State.***							
Additional Environmental Records								
Federal								
FINDS/FRS	Y	PO	0	-	-	-	-	0
TRIS	Y	PO	0	-	-	-	-	0
HMIRS	Y	.125	0	0	-	-	-	0
NCDL	Y	PO	0	-	-	-	-	0
TSCA	Y	.125	0	0	-	-	-	0
HIST TSCA	Y	.125	0	0	-	-	-	0
FTTS ADMIN	Y	PO	0	-	-	-	-	0
FTTS INSP	Y	PO	0	-	-	-	-	0
PRP	Y	PO	0	-	-	-	-	0
SCRD DRYCLEANER	Y	.5	0	0	0	0	-	0
ICIS	Y	PO	0	-	-	-	-	0
FED DRYCLEANERS	Y	.25	0	0	0	-	-	0
DELISTED FED DRY	Y	.25	0	0	0	-	-	0
FUDS	Y	1	0	0	0	0	0	0
MLTS	Y	PO	0	-	-	-	-	0
HIST MLTS	Y	PO	0	-	-	-	-	0
MINES	Y	.25	0	0	0	-	-	0
ALT FUELS	Y	.25	0	0	1	-	-	1
SSTS	Y	.25	0	0	0	-	-	0
PCB	Y	.5	0	0	0	0	-	0
State								

Database	Searched	Search Radius	Project Property	Within 0.12mi	.125mi to 0.25mi	0.25mi to 0.50mi	0.50mi to 1.00mi	Total
SPILLS	Y	.125	0	0	-	-	-	0
DRYCLEANERS	Y	.25	0	0	0	-	-	0
DELISTED DRYCLEANERS	Y	.25	0	0	0	-	-	0
Tribal	***No Tribal additional environmental record sources available for this State.***							
County	***No County additional environmental record sources available for this State.***							
	Total:		0	0	2	2	4	8

**** PO – Property Only***
**** 'Property and adjoining properties' database search radii are set at 0.25 miles.***

Executive Summary: Site Report Summary - Project Property

Map Key	DB	Company/Site Name	Address	Direction	Distance (mi/ft)	Elev Diff (ft)	Page Number

No records found in the selected databases for the project property.

Executive Summary: Site Report Summary - Surrounding Properties

Map Key	DB	Company/Site Name	Address	Direction	Distance (mi/ft)	Elev Diff (ft)	Page Number
1	ALT FUELS	Foodland	370 Kehalani Village Dr Wailuku HI 96793	N	0.20 / 1,066.33	-93	16
2	DTNK	Aloha Kehalani Village	2565 Kehalani Village Drive Wailuku HI 96793	NNE	0.23 / 1,239.11	-120	16
3	SWF/LF	Waikapu Landfill	Waikapu HI	ESE	0.39 / 2,043.15	-119	16
4	SHWS	Waimaluhia Maui Meth / Drug Lab Act 170	115 Waimaluhia Ln Unit 202 Wailuku HI 96793	NE	0.45 / 2,359.97	-194	17
5	SHWS	Hawaii Land & Farming Company, Inc.	Wailuku HI 96732	NNE	0.53 / 2,808.34	-179	18
6	SHWS	Kehalani Development	Wailuku HI	NNW	0.59 / 3,098.63	67	19
7	SHWS	Maalaea 710 Acre and 906 Acre Site	Maalaea HI	SW	0.88 / 4,631.96	279	20
8	SHWS	Waiale Ash Pile	Mahalani St Wailuku HI 96793	NNE	0.95 / 5,015.46	-241	21

Executive Summary: Summary by Data Source

Standard

State

SHWS - HEER Sites of Interest

A search of the SHWS database, dated Sep 27, 2018 has found that there are 5 SHWS site(s) within approximately 1.00 miles of the project property.

Equal/Higher Elevation	Address	Direction	Distance (mi/ft)	Map Key
Kehalani Development	Wailuku HI	NNW	0.59 / 3,098.63	6
Maalaea 710 Acre and 906 Acre Site	Maalaea HI	SW	0.88 / 4,631.96	7

Lower Elevation	Address	Direction	Distance (mi/ft)	Map Key
Waimaluhia Maui Meth / Drug Lab Act 170	115 Waimaluhia Ln Unit 202 Wailuku HI 96793	NE	0.45 / 2,359.97	4
Hawaii Land & Farming Company, Inc.	Wailuku HI 96732	NNE	0.53 / 2,808.34	5
Waiale Ash Pile	Mahalani St Wailuku HI 96793	NNE	0.95 / 5,015.46	8

SWF/LF - Landfill sites on the Hawaii Islands

A search of the SWF/LF database, dated Mar 28, 2017 has found that there are 1 SWF/LF site(s) within approximately 0.50 miles of the project property.

Lower Elevation	Address	Direction	Distance (mi/ft)	Map Key
Waikapu Landfill	Waikapu HI	ESE	0.39 / 2,043.15	3

DTNK - Delisted Sotrage Tank

A search of the DTNK database, dated Aug 31, 2018 has found that there are 1 DTNK site(s) within approximately 0.25 miles of the project property.

Lower Elevation	Address	Direction	Distance (mi/ft)	Map Key
Aloha Kehalani Village	2565 Kehalani Village Drive Wailuku HI 96793	NNE	0.23 / 1,239.11	2

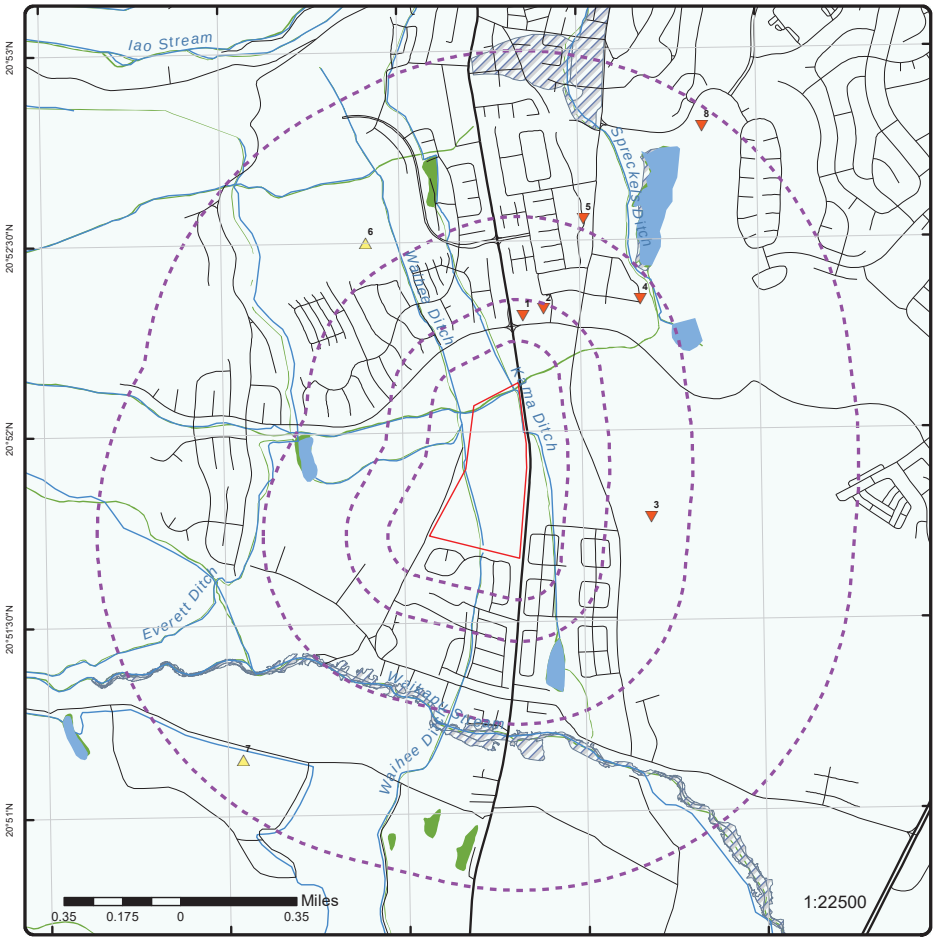
Non Standard

Federal

ALT FUELS - Alternative Fueling Stations

A search of the ALT FUELS database, dated Oct 16, 2018 has found that there are 1 ALT FUELS site(s) within approximately 0.25 miles of the project property.

Lower Elevation	Address	Direction	Distance (mi/ft)	Map Key
Foodland	370 Kehalani Village Dr Wailuku HI 96793	N	0.20 / 1,066.33	1



Map : 1 Mile Radius

Order No: 20181030092

Address: Honoapiilani Highway and Kuikahi Drive, Wailuku, HI, 96793

Project Property	Rails	State Boundary	FWS Special Designation Areas
Buffer Outline	Major Highways	National Priority List Sites	State Brownfield Sites
Eris Sites with Higher Elevation	Major Highways Ramps	National Wetland	State Brownfield Areas
Eris Sites with Same Elevation	Major Roads	Indian Reserve Land	State Superfund Areas:Dept. of Defense
Eris Sites with Lower Elevation	Major Roads Ramps	Historic Fill	State Superfund Areas:NPL
Eris Sites with Unknown Elevation	Secondary Roads	100 Year Flood Zone	WQARF Areas
County Boundary	Secondary Roads Ramps	500 Year Flood Zone	Federal Lands: Dept. of Defense (owned/administered areas)
	Local Roads and Ramps		

Source: © 2016 ESRI

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Map : 0.5 Mile Radius

Order No: 20181030092

Address: Honoapiilani Highway and Kuikahi Drive, Wailuku, HI, 96793

Project Property	Rails	State Boundary	FWS Special Designation Areas
Buffer Outline	Major Highways	National Priority List Sites	State Brownfield Sites
Eris Sites with Higher Elevation	Major Highways Ramps	National Wetland	State Brownfield Areas
Eris Sites with Same Elevation	Major Roads	Indian Reserve Land	State Superfund Areas:Dept. of Defense
Eris Sites with Lower Elevation	Major Roads Ramps	Historic Fill	State Superfund Areas:NPL
Eris Sites with Unknown Elevation	Secondary Roads	100 Year Flood Zone	WQARF Areas
County Boundary	Secondary Roads Ramps	500 Year Flood Zone	Federal Lands: Dept. of Defense (owned/administered areas)
	Local Roads and Ramps		

Source: © 2016 ESRI

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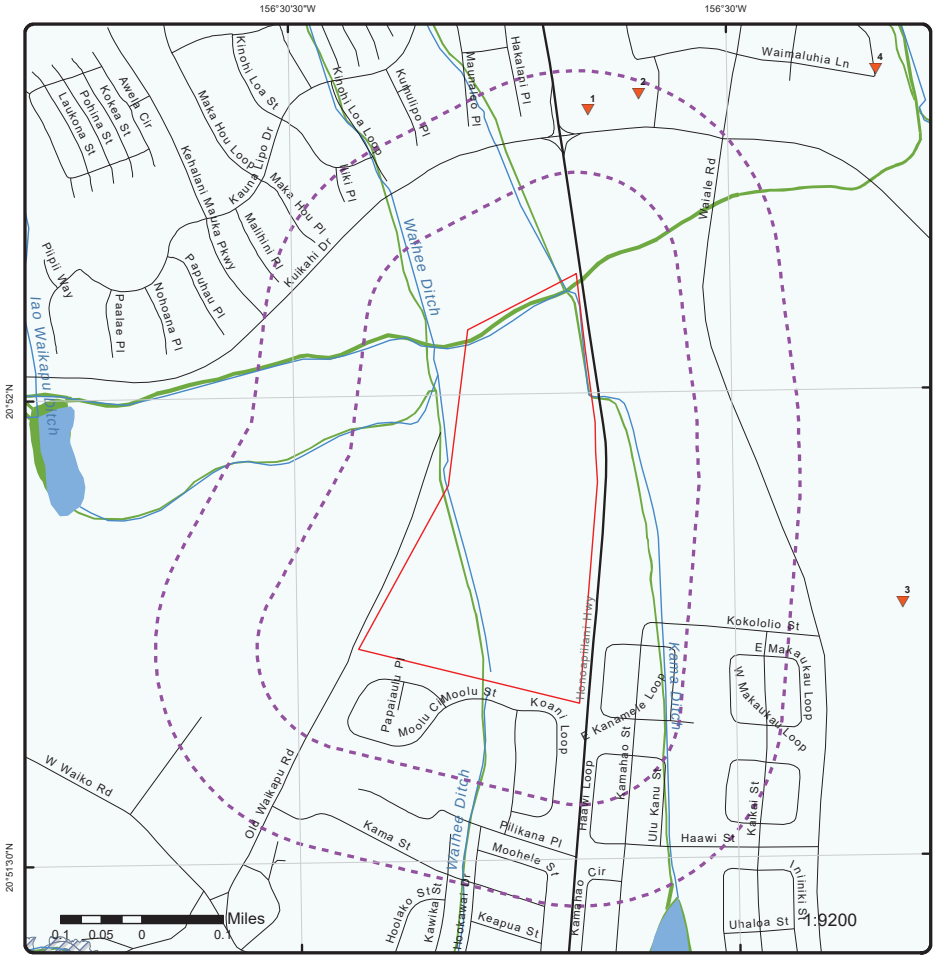

Map : 0.25 Mile Radius

Order No: 20181030092

Address: Honoapiilani Highway and Kuikahi Drive, Wailuku, HI, 96793

Project Property	Rails	State Boundary	FWS Special Designation Areas
Buffer Outline	Major Highways	National Priority List Sites	State Brownfield Sites
Eris Sites with Higher Elevation	Major Highways Ramps	National Wetland	State Brownfield Areas
Eris Sites with Same Elevation	Major Roads	Indian Reserve Land	State Superfund Areas:Dept. of Defense
Eris Sites with Lower Elevation	Major Roads Ramps	Historic Fill	State Superfund Areas:NPL
Eris Sites with Unknown Elevation	Secondary Roads	100 Year Flood Zone	WQARF Areas
County Boundary	Secondary Roads Ramps	500 Year Flood Zone	Federal Lands: Dept. of Defense (owned/administered areas)
	Local Roads and Ramps		

Source: © 2016 ESRI

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Aerial (2017)

Order No: 20181030092

Address: Honoapiilani Highway and Kuikahi Drive, Wailuku, HI, 96793

Source: ESRI World Imagery

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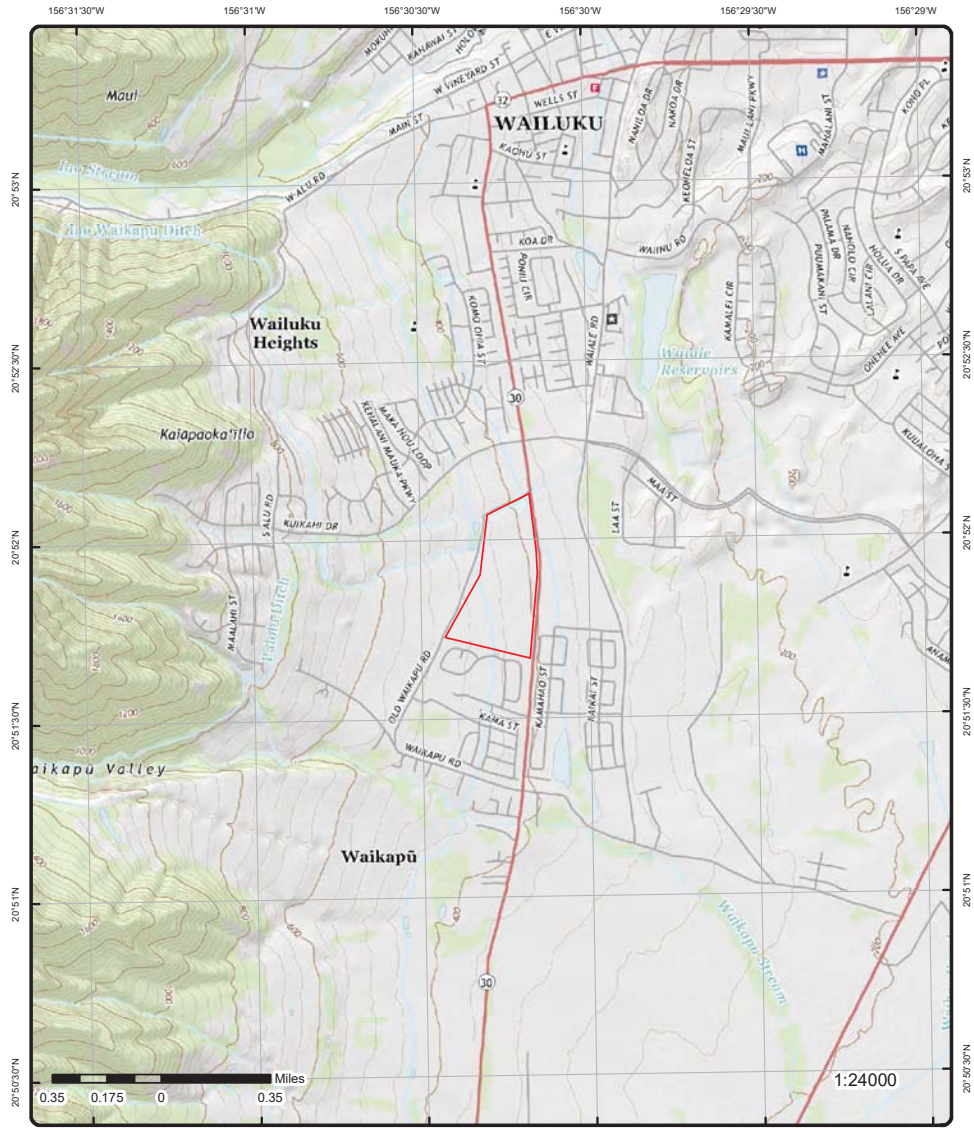

Topographic Map (2017)

Order No: 20181030092

Address: Honoapiilani Highway and Kuikahi Drive, Wailuku, HI, 96793

Quadrangle(s): Wailuku, HI

Source: USGS Topographic Map

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Detail Report

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
1	1 of 1	N	0.20 / 1,066.33	345.73 / -93	**Foodland** **370 Kehalani Village Dr** **Wailuku HI 96793**	ALT FUELS

ID:	65922	**Dt Last Confirmed:**	2018-03-08
Fuel Type Code:	ELEC: Electric	**Expected Date:**	
Status:	Open: The station is open.	**Updated at:**	2018-03-08 17:27:07 UTC
Open Date:	2015-01-01	**Station Phone:**	808-244-4460 855-885-9571
Federal Agency ID:		**NG Vehicle Class:**	
Federal Agency:		**BD Blends:**	
Fed Agency Name:		**NG Fill Type Code:**	
Owner Type Desc:	Privately owned	**NG PSI:**	
Latitude:	20.872862		
Longitude:	-156.502414		
Geocode Status Desc:	The location is from a real GPS readout at the station.		
Intersection Directions:			
LPG Primary Desc:			
Hydrogen Status Link:			
LPG Primary:			
E85 Blender Pump:			
E85 Blender Pump Desc:			
NG Fill Type Desc:			
NG V Class Desc:			
Hydrogen is Retail:			

2	1 of 1	NNE	0.23 / 1,239.11	318.36 / -120	**Aloha Kehalani Village** **2565 Kehalani Village Drive** **Wailuku HI 96793**	DTNK

Facility ID:	9-503929
Latitude:	
Longitude:	
Locater Method:	
Hor Collection Method:	
Original Source:	UST
Record Date:	01-AUG-2017

3	1 of 1	ESE	0.39 / 2,043.15	319.00 / -119	**Waikapu Landfill** **Waikapu HI**	SWF/LF

TMK:	238007092	**Island:**	Maui
Status:		**Latitude:**	20.862845
Facility Type:	Neighbor Island Inactive LFs	**Longitude:**	-156.496890

--Details--

Application No:		**Lining:**	Unlikely
Existing Prmt No:		**Impact Pot Catgry:**	Low
Permit No:		**Usgs Quad:**	Wailuku
ID:	142	**Nad 83 Utm Zn 4 X:**	760444.336873
Application Type:		**Nad 83 Utm Zn 4 Y:**	2308998.41500
Applctn Recved:		**Undrgrnd Inj Cont:**	Makai
Type:		**USDA Soil Code:**	PZUE
Island Code:	6	**Issuance Date:**	

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB

Sector:	01	**Expiration Date:**	
System:	02	**Operator:**	County of Maui
Type A:	116	**Open Date:**	1970
Type B:	121	**Close Date:**	August 1992
Stat A:	22211	**Area:**	30.04
Stat B:	21113	**Current Owner:**	Unknown
Med An Rain Mm:	500	**Previous Owner:**	Unknown
Med An Rain Inch:	19.685	**Mn Wls Wi 1 Ml:**	0
Capped:	Capped with 2 feet of soil - crusher waste.	**Closest Well No:**	5330-05
LST Navigate:		**Closest Wl Name:**	Wailuku Shaft 33
Cmbo Island Filter:	ALL	**Closest Wl Miles:**	1.5
Comments:	First lease was signed January 4, 1971, but according to an EPA survey from 1986 filled in by Ed Kagehiro, Chief, Waste Division at the time, the first waste was dumped on the site in 1970. Closure was completed by August 1992. Approximately 30.04 acres and is in an agricultural district (Operations Plan for Waikapu Landfill. The operations plan states that the "area method" landfill would be used for the operation Access to landfill was from Waiko Road 2 Miles east from Honoapiilani Highway, Waikapu, Hawaii, 96793 Its served around 84000 people in 1986 Closed before federal regiulations. Capped with 2 feet of soil - crusher waste.	**Waste Type:**	Municipal
Map Location Quality:	TMK	**Waste Category:**	Municipal

4	1 of 1	NE	0.45 / 2,359.97	244.52 / -194	**Waimaluhia Maui Meth / Drug Lab Act 170** **115 Waimaluhia Ln Unit 202** **Wailuku HI 96793**	SHWS

HID No:		**Lead Agency:**	HEER
Fac Registry ID:		**Project Manager:**	Anna Fernandez
Assessment:	Response Necessary	**Document Date:**	5/7/2007 1:16:34 AM
Response:	Response Complete	**Document No:**	2007-304-AF
Resp Act Complete:	5/7/2007 1:16:34 AM	**Island:**	Maui
Potential Haz/Ctrls:	No Hazard	**Loc State USPS Cd:**	HI
Date Issued:		**Loc Zip Suffix:**	
Priority:	NFA	**Latitude:**	20.876447
Engineer Control:		**Longitude:**	-156.498333
Institutional Control:			
Supplemental Location:			
Within Design. Area Contam.:			
SDAR Enviro Interest Name:	Waimaluhia Maui Meth / Drug Lab Act 170		
Program Full Name:	State		
Use Restrictions:	No Hazard Present For Unrestricted Residential Use		
Site Closure Document:	No Further Action Letter - Unrestricted Residential Use		
Contact Information:	(808) 586-4249 2385 Waimano Home Rd, Pearl City, HI 96782		
Nature of Contamination:	Found: Methamphetamine in interior of the unit		
Nature of Residual Contam.:	Cleaned up to Residential Use		
Description of Restrictions:			
Doc Subject:	No Further Action Determination		

Geographic Information

Coordinate for Mapping:	Additional coordinates.
Latitude:	20.873025

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB

Longitude: -156.498347
Comments:

Coordinate for Mapping: Yes
Latitude: 20.876447
Longitude: -156.498333
Comments: XTRA_ADD: PrimaryTemp LOCATION_1: Addresses were geocoded in ArcGIS using basemap Streetmap_SOH_

TMK Information

TMK: 238046021
Acres from TMK: 11.42516985
Description of Portion:

5	1 of 1	NNE	0.53 / 2,808.34	259.12 / -179	Hawaii Land & Farming Company, Inc. Wailuku HI 96732	SHWS

HID No:
Fac Registry ID:
Assessment: Response Necessary
Response: Response Ongoing
Resp Act Complete: 3/15/2004 1:13:22 AM
Potential Haz/Ctrls: Hazard Managed With Controls
Date Issued: 3/15/2004 1:13:22 AM
Priority: NFA
Engineer Control: Engineering Control Required
Lead Agency: HEER
Project Manager: Mark Sutterfield
Document Date: 3/15/2004 1:13:22 AM
Document No: 2004-096-MS
Island: Maui
Loc State USPS Cd: HI
Loc Zip Suffix:
Latitude: 20.87594
Longitude: -156.499869
Institutional Control: Government - Hawaii Dept. of Health Letter Issued
Supplemental Location:
Within Design. Area Contam.:
SDAR Enviro Interest Name: Hawaii Land & Farming Company, Inc.
Program Full Name: State
Use Restrictions: Controls Required to Manage Contamination
Site Closure Document: No Further Action Letter - Restricted Use
Contact Information: (808) 586-4249 2385 Waimano Home Rd, Pearl City, HI 96782
Nature of Contamination: Found: Arsenic in soil
Nature of Residual Contam.:
Description of Restrictions: Prohibit Any Activity That May Disturb the Integrity of the Capping System
Doc Subject: Letter form Keith saying no health risk if Site is capped with 18-24 inches of clean fill

Geographic Information

Coordinate for Mapping: Additional coordinates.
Latitude: 20.878671
Longitude: -156.511194
Comments:

Coordinate for Mapping: Additional coordinates.
Latitude: 20.872671
Longitude: -156.503984
Comments: XTRA_ADD: W of Honoapiilani Hwy, TMK: 235001067 (March LOCATION_1: Honoapiilani Hwy & Kehalani

Coordinate for Mapping: Additional coordinates.
Latitude: 20.876209
Longitude: -156.458365
Comments:

Coordinate for Mapping: Additional coordinates.
Latitude: 20.875518
Longitude: -156.50015
Comments:

Coordinate for Mapping: Yes
Latitude: 20.87594
Longitude: -156.499869

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB

Comments: XTRA_ADD: PrimaryTemp W of intersection, TMK: 235001066 LOCATION_1: Waiale Rd & Waimaluhia

TMK Information

TMK: 235001067
Acres from TMK: 1.17224436
Description of Portion: Module 20

TMK: 235001066
Acres from TMK: 11.12119398
Description of Portion: Module C6/10

6	1 of 1	NNW	0.59 / 3,098.63	505.81 / 67	Kehalani Development Wailuku HI	SHWS

HID No:
Fac Registry ID:
Assessment: Response Not Necessary
Response:
Resp Act Complete: 2/28/2011 2:16:06 AM
Potential Haz/Ctrls: No Hazard
Date Issued:
Priority: NFA
Engineer Control:
Lead Agency: HEER
Project Manager: Melody Calisay
Document Date: 2/28/2011 2:16:06 AM
Document No: 2011-114-MGC
Island: Maui
Loc State USPS Cd: HI
Loc Zip Suffix:
Latitude: 20.875
Longitude: -156.51
Institutional Control:
Supplemental Location:
Within Design. Area Contam.:
SDAR Enviro Interest Name: Kehalani Development
Program Full Name: State
Use Restrictions: No Hazard Present For Unrestricted Residential Use
Site Closure Document: No Action Letter
Contact Information: (808) 586-4249 2385 Waimano Home Rd, Pearl City, HI 96782
Nature of Contamination: Found: No contaminants.
Nature of Residual Contam.:
Description of Restrictions:
Doc Subject: No Further Action Determination Letter for Kehalani Development Project, Wailuku, Maui

Geographic Information

Coordinate for Mapping: Yes
Latitude: 20.875
Longitude: -156.51
Comments:

TMK Information

TMK: 235001067
Acres from TMK: 1.17224436
Description of Portion:

TMK: 235001080
Acres from TMK: 13.06919528
Description of Portion:

TMK: 235001063
Acres from TMK: 19.37207034
Description of Portion:

TMK: 235001075
Acres from TMK: 25.37321531
Description of Portion:

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
7	1 of 1	SW	0.88 / 4,631.96	717.41 / 279	Maalaea 710 Acre and 906 Acre Site Maalaea HI	SHWS

HID No:		**Lead Agency:**	HEER
Fac Registry ID:		**Project Manager:**	Laura Young
Assessment:	Response Not Necessary	**Document Date:**	5/22/2008 12:56:03 AM
Response:		**Document No:**	
Resp Act Complete:	5/22/2008 12:56:03 AM	**Island:**	Maui
Potential Haz/Ctrls:	No Hazard	**Loc State USPS Cd:**	HI
Date Issued:		**Loc Zip Suffix:**	
Priority:	NFA	**Latitude:**	20.852452
Engineer Control:		**Longitude:**	-156.516071
Institutional Control:			
Supplemental Location:			
Within Design. Area Contam.:			

SDAR Enviro Interest Name: Maalaea 710 Acre and 906 Acre Site
Program Full Name: State
Use Restrictions: No Hazard Present For Unrestricted Residential Use
Site Closure Document: None - Phase I Only
Contact Information: (808) 586-4249 2385 Waimano Home Rd, Pearl City, HI 96782
Nature of Contamination: Presumed: Pesticide.
Nature of Residual Contam.:
Description of Restrictions:
Doc Subject: Water Treatment Sites Maalaea 710-Acre and 906-Acre Sites Wailuku, Maui HI

Geographic Information

Coordinate for Mapping: Additional coordinates.
Latitude: 20.840552
Longitude: -156.49962
Comments:

Coordinate for Mapping: Additional coordinates.
Latitude: 20.825172
Longitude: -156.500652
Comments:

Coordinate for Mapping: Additional coordinates.
Latitude: 20.846027
Longitude: -156.508481
Comments:

Coordinate for Mapping: Yes
Latitude: 20.852452
Longitude: -156.516071
Comments:

TMK Information

TMK: 236002001
Acres from TMK: 281.36088115
Description of Portion: 906 Acre Site

TMK: 236002003
Acres from TMK: 547.61039754
Description of Portion: 906 Acre Site

TMK: 236004003
Acres from TMK: 744.31659513
Description of Portion: 710 Acre Site

TMK: 236004006
Acres from TMK: 63.00069322
Description of Portion: 710 Acre Site

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
8	1 of 1	NNE	0.95 / 5,015.46	197.12 / -241	Waiale Ash Pile Mahalani St Wailuku HI 96793	SHWS

HID No:		**Lead Agency:**	HEER
Fac Registry ID:	110013775575	**Project Manager:**	Anna Fernandez
Assessment:	Response Necessary	**Document Date:**	
Response:	Response Ongoing	**Document No:**	
Resp Act Complete:		**Island:**	Maui
Potential Haz/Ctrls:	Hazard Present	**Loc State USPS Cd:**	HI
Date Issued:		**Loc Zip Suffix:**	
Priority:	Low	**Latitude:**	20.879899
Engineer Control:		**Longitude:**	-156.494286
Institutional Control:			
Supplemental Location:			
Within Design. Area Contam.:			

SDAR Enviro Interest Name: Waiale Ash Pile
Program Full Name: State
Use Restrictions: Controls Required to Manage Contamination
Site Closure Document:
Contact Information: (808) 586-4249 2385 Waimano Home Rd, Pearl City, HI 96782
Nature of Contamination: Presumed: TPH, metals, pesticides, heterogenous mixture associated with landfills in soil
Nature of Residual Contam.:
Description of Restrictions:
Doc Subject:

Geographic Information

Coordinate for Mapping: Yes
Latitude: 20.879899
Longitude: -156.494286
Comments: XTRA_ADD: PrimaryTemp E of intersection, TMK: 238007131 LOCATION_1: Waiinu Rd & Mahalani St

Coordinate for Mapping: Additional coordinates.
Latitude: 20.880134
Longitude: -156.494346
Comments:

TMK Information

TMK: 238007145
Acres from TMK: 6.8490738
Description of Portion: TMK location based on plotted location in ArcGIS, base map mautmk. TMK owner Maui Lani Partners. Primary.

Unplottable Summary

Total: 10 Unplottable sites

DB	Company Name/Site Name	Address	City	Zip	ERIS ID
FINDS/FRS	KEHALANI - SITE 10	WESTERLY SIDE OF HONOAPILILANI	WAILUKU HI	96793	815140309
FINDS/FRS	MEADOW GOLD DAIRIES	HONOAPIILANI HWY	HONOLULU HI	96814	815135654
FINDS/FRS	WAIKAPU & SANDALWOOD GOLF COUR	WEST OF HONOAPIILANI HIGHWAY	WAILUKU HI	96793	815132566
FINDS/FRS	MAUI BLOCKS	WAIKAPU-OFF HONOAPIILANI HWY	WAILUKU HI	96793	815141789
FINDS/FRS	KEHALANI COMMERCIAL CENTER	BOUNDED BY HONOAPIILANI HWY, KUIKAHI DR., KAUPO S	WAILUKU HI	96793	815140310
HMIRS		HONOAPLLANI HWY	MAALAEA HI		818104975
LUST	HAWAIIAN CEMENT - WAIKAPU QUARRY	HONOAPIILANI HWY ***Facility ID:*** 9-502529 ***Event ID | Latest Status | Status Date:*** 950015 | Site Cleanup Completed (NFA) | 5/16/1995	Wailuku HI	96793	821090079
SPILLS	Wailuku Irrigation Reservoir #74	Honoapiilani Hwy ***Case No:*** 20001211-1635	Wailuku HI	96793	822913881
SPILLS	Honoapiilani Highway - Field 747 - sugar fields	Field 747 Honoapiilani Highway ***Case No:*** 20100609-1609	Waikapu HI		822916576
UST	MAUI BLOCKS	WAIKAPU-OFF HONOAPIILANI HWY ***Facility ID:*** 9-500399 ***Tank ID | Tank Status Desc | Date Closed:*** R-1 | Permanently Out of Use | 11/12/1993	Wailuku HI	96793	821091509

Unplottable Report

Site: ***KEHALANI - SITE 10***
WESTERLY SIDE OF HONOAPILILANI WAILUKU HI 96793 FINDS/FRS

Registry ID:	110022910992
FIPS Code:	HI009
Program Acronyms:	NPDES
HUC Code:	
Site Type Name:	STATIONARY
Location Description:	
Supplemental Location:	NORTHERLY SIDE OF KUIKA
Create Date:	24-OCT-2005 17:26:10
Update Date:	11-JAN-2016 15:21:31
Interest Types:	ICIS-NPDES NON-MAJOR, STORM WATER CONSTRUCTION
SIC Codes:	
SIC Code Descriptions:	
NAICS Codes:	
NAICS Code Descriptions:	
Conveyor:	
Federal Facility Code:	
Federal Agency Name:	
Tribal Land Code:	
Tribal Land Name:	
Congressional Dist No.:	
Census Block Code:	
EPA Region Code:	09
County Name:	MAUI
US/Mexico Border Ind:	
Latitude:	
Longitude:	
Reference Point:	
Coord Collection Method:	
Accuracy Value:	
Datum:	NAD83
Source:	
Facility Detail Rprt URL:	http://ofmpub.epa.gov/enviro/fii_query_detail.disp_program_facility?p_registry_id=110022910992

Site: ***MEADOW GOLD DAIRIES***
HONOAPIILANI HWY HONOLULU HI 96814 FINDS/FRS

Registry ID:	110020734703
FIPS Code:	HI003
Program Acronyms:	NPDES
HUC Code:	
Site Type Name:	STATIONARY
Location Description:	(CLOSED)
Supplemental Location:	
Create Date:	01-MAR-2005 15:53:38
Update Date:	11-JAN-2016 14:47:02
Interest Types:	ICIS-NPDES NON-MAJOR
SIC Codes:	9999
SIC Code Descriptions:	NONCLASSIFIABLE ESTABLISHMENTS
NAICS Codes:	
NAICS Code Descriptions:	
Conveyor:	
Federal Facility Code:	
Federal Agency Name:	
Tribal Land Code:	
Tribal Land Name:	
Congressional Dist No.:	

Census Block Code:
EPA Region Code: 09
County Name: HONOLULU
US/Mexico Border Ind:
Latitude:
Longitude:
Reference Point:
Coord Collection Method:
Accuracy Value:
Datum: NAD83
Source:
Facility Detail Rprt URL: http://ofmpub.epa.gov/enviro/fii_query_detail.disp_program_facility?p_registry_id=110020734703

Site: **WAIKAPU & SANDALWOOD GOLF COUR**
WEST OF HONOAPIILANI HIGHWAY WAILUKU HI 96793 FINDS/FRS

Registry ID: 110022912428
FIPS Code: 15009
Program Acronyms: HI-EHW, NPDES
HUC Code:
Site Type Name: STATIONARY
Location Description:
Supplemental Location:
Create Date: 24-OCT-2005 17:26:44
Update Date: 11-JAN-2016 12:52:21
Interest Types: ICIS-NPDES NON-MAJOR, STATE MASTER
SIC Codes:
SIC Code Descriptions:
NAICS Codes:
NAICS Code Descriptions:
Conveyor:
Federal Facility Code:
Federal Agency Name:
Tribal Land Code:
Tribal Land Name:
Congressional Dist No.:
Census Block Code:
EPA Region Code: 09
County Name: MAUI
US/Mexico Border Ind:
Latitude:
Longitude:
Reference Point:
Coord Collection Method:
Accuracy Value:
Datum: NAD83
Source:
Facility Detail Rprt URL: http://ofmpub.epa.gov/enviro/fii_query_detail.disp_program_facility?p_registry_id=110022912428

Site: **MAUI BLOCKS**
WAIKAPU-OFF HONOAPIILANI HWY WAILUKU HI 96793 FINDS/FRS

Registry ID: 110046188264
FIPS Code:
Program Acronyms: HI-EHW
HUC Code:
Site Type Name: STATIONARY
Location Description:
Supplemental Location:
Create Date: 25-JUL-2012 10:03:28
Update Date: 27-OCT-2015 16:08:08
Interest Types: STATE MASTER
SIC Codes:
SIC Code Descriptions:
NAICS Codes:
NAICS Code Descriptions:
Conveyor:

Federal Facility Code:
Federal Agency Name:
Tribal Land Code:
Tribal Land Name:
Congressional Dist No.:
Census Block Code:
EPA Region Code: 09
County Name: MAUI COUNTY
US/Mexico Border Ind:
Latitude:
Longitude:
Reference Point:
Coord Collection Method:
Accuracy Value:
Datum: NAD83
Source:
Facility Detail Rprt URL: http://ofmpub.epa.gov/enviro/fii_query_detail.disp_program_facility?p_registry_id=110046188264

Site: **KEHALANI COMMERCIAL CENTER**
BOUNDED BY HONOAPIILANI HWY, KUIKAHI DR., KAUPO S WAILUKU HI 96793 FINDS/FRS

Registry ID: 110044254384
FIPS Code: 15009
Program Acronyms: NPDES
HUC Code:
Site Type Name: STATIONARY
Location Description:
Supplemental Location:
Create Date: 28-NOV-2011 13:00:23
Update Date: 03-MAY-2015 09:58:58
Interest Types: ICIS-NPDES NON-MAJOR, STORM WATER CONSTRUCTION
SIC Codes:
SIC Code Descriptions:
NAICS Codes:
NAICS Code Descriptions:
Conveyor:
Federal Facility Code:
Federal Agency Name:
Tribal Land Code:
Tribal Land Name:
Congressional Dist No.:
Census Block Code:
EPA Region Code: 09
County Name: MAUI
US/Mexico Border Ind:
Latitude:
Longitude:
Reference Point:
Coord Collection Method:
Accuracy Value:
Datum: NAD83
Source:
Facility Detail Rprt URL: http://ofmpub.epa.gov/enviro/fii_query_detail.disp_program_facility?p_registry_id=110044254384

Site:
HONOAPLLANI HWY MAALAEA HI HMIRS

Incident County: MAUI

HMIR Incident Reports

Report No:	I-1999081028	**Fed DOT Agency Nm:**	
Report Type:	A hazardous material incident	**Fed DOT Report No:**	
Date of Incident:	07/14/1999	**Report Submit Src:**	Paper
Time of Incident:	1245	**Inc Multiple Rows:**	No
Haz Class Code:	3	**Inc Non US State:**	

Hazardous Class:	FLAMMABLE - COMBUSTIBLE LIQUID	**Mode Transport:**	Highway
Commodity Short Nm:	GAS OIL	**Transport Phase:**	IN TRANSIT
Commodity Long Nm:	GAS OIL	**Incident Occrrnce:**	
Trade Name:	CHEVRON HS DIESEL	**Mat Ship Approval?:**	No
ID No:	UN1202	**Mat Ship Approv No:**	
Haz Waste Ind:	No	**Undecl Hazmat Ship?:**	No
Haz Waste EPA No:		**Packaging Type:**	Cargo Tank Motor Vehicle (CTMV)
HMIS Tox Inhalation?:	No	**Packing Group:**	
TIH Hazard Zone:		**Carrier Reporter:**	MAUI OIL CO INC
Qty Released:	200	**CR Street Name:**	16 HOBRON AVE STE 202
Unit of Measure:	LGA	**CR City:**	KAHULUI
What Failed:	103;	**CR State:**	HI
What Failed Desc:	Basic Material;	**CR Postal Code:**	96732-2103
How Failed Code:	301;	**CR Non US State:**	
How Failed Desc:	Abraded;	**CR Fed DOT ID:**	1791195
Failure Cause Code:	531; 537	**CR Hazmat Reg ID:**	
Failure Cause Desc:	Rollover Accident; Vehicular Crash or Accident Damage	**CR Country:**	US
Ident. Markings:		**Shipper Name:**	CHEVRON U.S.A. INC.
Cont1 Pkging Type:		**Shipper Street Name:**	100 HOBRON AVE
Cont1 Const Mat:		**Shipper City:**	KAHULUI
Cont1 Head Type:		**Shipper State:**	HI
Cont1 Pkg Capacity:	4500	**Shipper Postal:**	96732-2119
C1 Capacity UOM:	LGA	**Shipper Non US St:**	
Cont1 Pkg Amt:		**Shipper Country:**	US
C1 Pkg Amt UOM:		**Shipper Waybill:**	
Cont1 Pkg Number:	1	**Ship Hazmat Reg ID:**	
C1 Pkg NO Failed:	1	**Origin City:**	KAHULUI
Cont1 Pkg Mnfctr:	BEAL TRAILERS	**Origin State:**	HAWAII
Cont1 Pkg Mnfct Dt:		**Origin Postal:**	96732
Cont1 Pkg Serial NO:	T20523	**Origin Non US St:**	
C1 Pkg Last Test Dt:	6/1/1998 12:00:00 AM	**Origin Country:**	US
C1 Test Const Mat:		**Destination City:**	KAHULUI
C1 Pkg Dsign Pres.:		**Destination State:**	HAWAII
C1 Dsign Press UOM:		**Destination Postal:**	96732
C1 Pkg Shell Thick:		**Destination Non US:**	
C1 Shell Thick UOM:		**Destination Country:**	US
C1 Head Thickness:		**Cont2 Package Type:**	
C1 Head Thick UOM:		**Cont2 Const Mat:**	
C1 Pkg Srvc Pres.:		**Cont2 Pkg Capacity:**	
C1 Srvc Press UOM:		**Cont2 Capacity UOM:**	
C1 Valve/Device Fail?:	No	**Cont2 Pkg Amount:**	
C1 Device Type:		**Cont2 Pkg Amt UOM:**	
C1 Device Mnfctr:		**Cont2 Pkg No:**	
C1 Device Model:		**Cont2 Pkg No Failed:**	
NRC No:	492444		
RAM Pkg Category:		**Haz NonHosp Public:**	0
RAM Pkg Cert.:	FALSE	**Haz NonHosp Old:**	0
RAM Pkg Cert. NBR:		**Tot Haz Non Hosp Inj:**	0
RAM Nuclide S:		**Total Hazmat Injuries:**	0
RAM Transport Index:		**Evacuation Indicator:**	No
RAM UOM:		**Public Evacuated:**	0
RAM Activity Rpted:		**Employees Evac:**	0
RAM UOM Rpted:		**Total Evacuated:**	0
RAM Activity:		**Total Evacuation Hrs:**	0
RAM Activity UOM:		**Major Artery Closed:**	No
RAM Mat Safety:		**Mjr Artery Hrs Closed:**	0
Spillage Result:	Yes	**Material Involved:**	Yes
Fire Result:	No	**Estimated Speed:**	40
Explosion Result:	No	**Weather Conditions:**	
Water Sewer Result:	No	**Vehicle Overturn:**	No
Gas Dispersion:	No	**Vehicle Left Roadway:**	No
Environment Damage:	No	**Passenger Aircraft:**	No
No Release Result:	No	**Cargo Baggage:**	
Fire EMS Report:	No	**Ship Non Transport:**	No
Fire EMS EMS Report:		**Ship Air First Flight:**	No
Police Report:	No	**Ship Air Subflight:**	No
Police Report No:		**Ship Init Transport:**	No
In House Cleanup:	No	**Ship Phase Transfer:**	No
Other Cleanup:	No	**Contact Name:**	HERB HOSVIER

Damage > 500:	Yes	**Contact Title:**	VICE PRESIDENT
Material Loss:	2500	**Contact Business:**	
Carrier Damage:	50000	**Contact Street:**	
Property Damage:	100000	**Contact City:**	
Response Cost:	0	**Contact State:**	
Remediation Cost:	500	**Contact Postal:**	
Damage Old Form:	0	**Contact Non US St:**	
Total Damages Amt:	153000	**Contact Country:**	US
Hazmat Fatality:	No	**Inc. Report Prepared:**	
Haz Fatal Employees:	0	**HMIS Serious Incidnt:**	Yes
Haz Fatal Respndrs:	0	**HMIS Serious Fatality:**	No
Haz Fatal Gen Public:	0	**HMIS Serious Injury:**	No
Tot Hazmat Fatalities:	0	**HMIS Flight Plan:**	No
Non Hazmat Fatality:	No	**HMIS Serious Evacs:**	No
Non Hazmat Fatals:	0	**HMIS Major Artery:**	No
Hazmat Injury:	No	**HMIS Bulk Release:**	Yes
Haz Hospital Empl:	0	**HMIS Marine Pollutnt:**	No
Haz Hospital Resp:	0	**HMIS Radioactive:**	No
Haz Hosp Gen Public:	0	**HMIS Gen Pkg Type:**	OHMIR.Ref_Container.descr_txt
Haz Hosp Old Form:	0	**HMIS Container Code:**	MC306
Total Haz Hosp Inj:	0	**HMIS Container Desc:**	Cargo tanks
Haz Non Hosp Empl:	0	**HMIS Bulk Incident:**	Yes
Haz Non Hosp Resp:	0	**Undeclared Shipment:**	No

Description of Events: WHILE TRAVELING SOUTH ON HONOAPLLANI HWY GOING BY MAALAEA TRIANGLE CAR UP AHEAD SLOWED SO I WENT AND APPLIED MY BRAKED WITH MY RIGHT LEG THEN WITH BOTH LEGS THEN I KNEW WAS NOT GOING TO BE ABLE TO STOP IN TIME. I PULLED TRK 6 INTO GUARD RAIL THEN SIDE SWIPE JEEP CAR AND VAN BEFORE TURNING OVER.

Recommend Actions Taken:

Site: ***HAWAIIAN CEMENT - WAIKAPU QUARRY***
HONOAPIILANI HWY Wailuku HI 96793 LUST

Facility ID: 9-502529
Project Officer: Roger Brewer

LUST Status Information

Event ID: 950015
Latest Status: Site Cleanup Completed (NFA)
Status Date: 5/16/1995

Site: ***Wailuku Irrigation Reservoir #74***
Honoapiilani Hwy Wailuku HI 96793 SPILLS

HID No:		**Coord Need:**	No
Fac. Registry ID:		**Organization:**	
NRC Inc. ID:	550663	**Suppl Loc.:**	
Case No:	20001211-1635	**Loc Island:**	Maui
Lead And Progr:	HEER EP&R		
EPR Envir. Interest:	Wailuku Irrigation Reservoir #74		

Spill Information

Activity Typ:	Response	**Substances:**	Unknown
Activity Rslt:	SOSC NFA	**Less/Greater than:**	
Activity End Dt:		**Numeric Qty:**	3
Activity Lead:	Bill Perry	**Units:**	Drums

Site: ***Honoapiilani Highway - Field 747 - sugar fields***
Field 747 Honoapiilani Highway Waikapu HI SPILLS

HID No:		**Coord Need:**	None
Fac. Registry ID:		**Organization:**	
NRC Inc. ID:	943435	**Suppl Loc.:**	Honoapiilani Highway - Field 747 - Waikapu
Case No:	20100609-1609	**Loc Island:**	Maui
Lead And Progr:	HEER EP&R		
EPR Envir. Interest:	Hazardous waste dumping		

Spill Information

Activity Typ:	Response	***Substances:***	water-based paints
Activity Rslt:		***Less/Greater than:***	
Activity End Dt:		***Numeric Qty:***	0
Activity Lead:	TC	***Units:***	

Activity Typ:	Response	***Substances:***	oil-based paints
Activity Rslt:		***Less/Greater than:***	
Activity End Dt:		***Numeric Qty:***	
Activity Lead:	TC	***Units:***	

Site: ***MAUI BLOCKS***
WAIKAPU-OFF HONOAPIILANI HWY Wailuku HI 96793 UST

Facility ID:	9-500399	***Horiz. Ref. Datum:***	
Latitude:		***Horiz. Coll. Method:***	
Longitude:			

Organization and Tank Information

Tank ID:	R-1	***Org. Address:***	P.O. BOX 985
Tank Status Desc:	Permanently Out of Use	***Org. Formal Name:***	MAUI BLOCKS AKA R&M SERVICE CO., INC
Installed Date:	4/30/1974	***Org. City:***	Wailuku
Date Closed:	11/12/1993	***Org. State:***	HI
Tank Capacity:	1000	***Org. Zip Code:***	96793
Substance Desc:	Gasoline		

Appendix: Database Descriptions

Environmental Risk Information Services (ERIS) can search the following databases. The extent of historical information varies with each database and current information is determined by what is publicly available to ERIS at the time of update. ERIS updates databases as set out in ASTM Standard E1527-13, Section 8.1.8 Sources of Standard Source Information:

"Government information from nongovernmental sources may be considered current if the source updates the information at least every 90 days, or, for information that is updated less frequently than quarterly by the government agency, within 90 days of the date the government agency makes the information available to the public."

Standard Environmental Record Sources

Federal

National Priority List: NPL
National Priorities List (Superfund)-NPL: EPA's (United States Environmental Protection Agency) list of the most serious uncontrolled or abandoned hazardous waste sites identified for possible long-term remedial action under the Superfund program. The NPL, which EPA is required to update at least once a year, is based primarily on the score a site receives from EPA's Hazard Ranking System. A site must be on the NPL to receive money from the Superfund Trust Fund for remedial action.
Government Publication Date: Jul 3, 2018

National Priority List - Proposed: PROPOSED NPL
Includes sites proposed (by the EPA, the state, or concerned citizens) for addition to the NPL due to contamination by hazardous waste and identified by the Environmental Protection Agency (EPA) as a candidate for cleanup because it poses a risk to human health and/or the environment.
Government Publication Date: Jul 3, 2018

Deleted NPL: DELETED NPL
The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.
Government Publication Date: Jul 3, 2018

SEMS List 8R Active Site Inventory: SEMS
The Superfund Program has deployed the Superfund Enterprise Management System (SEMS), which integrates multiple legacy systems into a comprehensive tracking and reporting tool. This inventory contains active sites evaluated by the Superfund program that are either proposed to be or are on the National Priorities List (NPL) as well as sites that are in the screening and assessment phase for possible inclusion on the NPL. The Active Site Inventory Report displays site and location information at active SEMS sites. An active site is one at which site assessment, removal, remedial, enforcement, cost recovery, or oversight activities are being planned or conducted.
Government Publication Date: Aug 13, 2018

Inventory of Open Dumps, June 1985: ODI
The Resource Conservation and Recovery Act (RCRA) provides for publication of an inventory of open dumps. The Act defines "open dumps" as facilities which do not comply with EPA's "Criteria for Classification of Solid Waste Disposal Facilities and Practices" (40 CFR 257).
Government Publication Date: Jun 1985

SEMS List 8R Archive Sites: SEMS ARCHIVE
The Superfund Enterprise Management System (SEMS) Archived Site Inventory displays site and location information at sites archived from SEMS. An archived site is one at which EPA has determined that assessment has been completed and no further remedial action is planned under the Superfund program at this time.
Government Publication Date: Aug 13, 2018

Comprehensive Environmental Response, Compensation and Liability Information System - CERCLIS: CERCLIS

Superfund is a program administered by the United States Environmental Protection Agency (EPA) to locate, investigate, and clean up the worst hazardous waste sites throughout the United States. CERCLIS is a database of potential and confirmed hazardous waste sites at which the EPA Superfund program has some involvement. It contains sites that are either proposed to be or are on the National Priorities List (NPL) as well as sites that are in the screening and assessment phase for possible inclusion on the NPL. The EPA administers the Superfund program in cooperation with individual states and tribal governments; this database is made available by the EPA.

Government Publication Date: Oct 25, 2013

EPA Report on the Status of Open Dumps on Indian Lands: IODI

Public Law 103-399, The Indian Lands Open Dump Cleanup Act of 1994, enacted October 22, 1994, identified congressional concerns that solid waste open dump sites located on American Indian or Alaska Native (AI/AN) lands threaten the health and safety of residents of those lands and contiguous areas. The purpose of the Act is to identify the location of open dumps on Indian lands, assess the relative health and environment hazards posed by those sites, and provide financial and technical assistance to Indian tribal governments to close such dumps in compliance with Federal standards and regulations or standards promulgated by Indian Tribal governments or Alaska Native entities.

Government Publication Date: Dec 31, 1998

CERCLIS - No Further Remedial Action Planned: CERCLIS NFRAP

An archived site is one at which EPA has determined that assessment has been completed and no further remedial action is planned under the Superfund program at this time. The Archive designation means that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list this site on the National Priorities List (NPL). This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site.

Government Publication Date: Oct 25, 2013

CERCLIS Liens: CERCLIS LIENS

A Federal Superfund lien exists at any property where EPA has incurred Superfund costs to address contamination ("Superfund site") and has provided notice of liability to the property owner. A Federal CERCLA ("Superfund") lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. This database is made available by the United States Environmental Protection Agency (EPA).

Government Publication Date: Jan 30, 2014

RCRA CORRACTS-Corrective Action: RCRA CORRACTS

RCRA Info is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. At these sites, the Corrective Action Program ensures that cleanups occur. EPA and state regulators work with facilities and communities to design remedies based on the contamination, geology, and anticipated use unique to each site.

Government Publication Date: Aug 2, 2018

RCRA non-CORRACTS TSD Facilities: RCRA TSD

RCRA Info is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. This database includes Non-Corrective Action sites listed as treatment, storage and/or disposal facilities of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA).

Government Publication Date: Aug 2, 2018

RCRA Generator List: RCRA LQG

RCRA Info is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. RCRA Info replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System (RCRIS) and the Biennial Reporting System (BRS). A hazardous waste generator is any person or site whose processes and actions create hazardous waste (see 40 CFR 260.10). Large Quantity Generators (LQGs) generate 1,000 kilograms per month or more of hazardous waste or more than one kilogram per month of acutely hazardous waste.

Government Publication Date: Aug 2, 2018

RCRA Small Quantity Generators List: RCRA SQG

RCRA Info is the EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. RCRA Info replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System (RCRIS) and the Biennial Reporting System (BRS). A hazardous waste generator is any person or site whose processes and actions create hazardous waste (see 40 CFR 260.10). Small Quantity Generators (SQGs) generate more than 100 kilograms, but less than 1,000 kilograms, of hazardous waste per month.

Government Publication Date: Aug 2, 2018

RCRA Conditionally Exempt Small Quantity Generators List: RCRA CESQG

RCRA Info is the EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. RCRA Info replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System (RCRIS) and the Biennial Reporting System (BRS). A hazardous waste generator is any person or site whose processes and actions create hazardous waste (see 40 CFR 260.10). Conditionally Exempt Small Quantity Generators (CESQG) generate 100 kilograms or less per month of hazardous waste or one kilogram or less per month of acutely hazardous waste.

Government Publication Date: Aug 2, 2018

RCRA Non-Generators: RCRA NON GEN

RCRA Info is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. RCRA Info replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System (RCRIS) and the Biennial Reporting System (BRS). A hazardous waste generator is any person or site whose processes and actions create hazardous waste (see 40 CFR 260.10). Non-Generators do not presently generate hazardous waste.

Government Publication Date: Aug 2, 2018

Federal Engineering Controls-ECs: FED ENG

Engineering controls (ECs) encompass a variety of engineered and constructed physical barriers (e.g., soil capping, sub-surface venting systems, mitigation barriers, fences) to contain and/or prevent exposure to contamination on a property. This database is made available by the United States Environmental Protection Agency (EPA).

Government Publication Date: Jan 20, 2016

Federal Institutional Controls- ICs: FED INST

Institutional controls are non-engineered instruments, such as administrative and legal controls, that help minimize the potential for human exposure to contamination and/or protect the integrity of the remedy. Although it is EPA's (United States Environmental Protection Agency) expectation that treatment or engineering controls will be used to address principal threat wastes and that groundwater will be returned to its beneficial use whenever practicable, ICs play an important role in site remedies because they reduce exposure to contamination by limiting land or resource use and guide human behavior at a site.

Government Publication Date: Jan 20, 2016

Emergency Response Notification System: ERNS 1982 TO 1986

Database of oil and hazardous substances spill reports controlled by the National Response Center. The primary function of the National Response Center is to serve as the sole national point of contact for reporting oil, chemical, radiological, biological, and etiological discharges into the environment anywhere in the United States and its territories.

Government Publication Date: 1982-1986

Emergency Response Notification System: ERNS 1987 TO 1989

Database of oil and hazardous substances spill reports controlled by the National Response Center. The primary function of the National Response Center is to serve as the sole national point of contact for reporting oil, chemical, radiological, biological, and etiological discharges into the environment anywhere in the United States and its territories.

Government Publication Date: 1987-1989

Emergency Response Notification System: ERNS

Database of oil and hazardous substances spill reports controlled by the National Response Center. The primary function of the National Response Center is to serve as the sole national point of contact for reporting oil, chemical, radiological, biological, and etiological discharges into the environment anywhere in the United States and its territories. This database is made available by the United States Environmental Protection Agency (EPA).

Government Publication Date: Feb 12, 2018

The Assessment, Cleanup and Redevelopment Exchange System (ACRES) Brownfield Database: FED BROWNFIELDS

Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties protects the environment, reduces blight, and takes development pressures off greenspaces and working lands. This database is made available by the United States Environmental Protection Agency (EPA).

Government Publication Date: Feb 20, 2018

FEMA Underground Storage Tank Listing: FEMA UST

The Federal Emergency Management Agency (FEMA) of the Department of Homeland Security maintains a list of FEMA owned underground storage tanks.

Government Publication Date: Dec 31, 2017

LIEN on Property: SEMS LIEN

The EPA Superfund Enterprise Management System (SEMS) provides LIEN information on properties under the EPA Superfund Program.

Government Publication Date: Aug 13, 2018

Superfund Decision Documents: SUPERFUND ROD

This database contains a listing of decision documents for Superfund sites. Decision documents serve to provide the reasoning for the choice of (or) changes to a Superfund Site cleanup plan. The decision documents include Records of Decision (ROD), ROD Amendments, Explanations of Significant Differences (ESD), along with other associated memos and files. This information is maintained and made available by the US EPA (Environmental Protection Agency).

Government Publication Date: Aug 13, 2018

State

HEER Sites of Interest: SHWS

A listing of facilities, sites or areas in which Hazard Evaluation and Emergency Response (HEER) Office has an interest, has investigated or may investigate under HRS 128D (including CERCLIS sites). This list includes all sites for which the SDAR section has an environmental interest, including military sites and older, inactive sites that have insufficient available information to make regulatory determinations about closure. This list has been made available by Hawaii Department of Health HEER Office. This database is state equivalent CERCLIS.

Government Publication Date: Sep 27, 2018

Delisted HEER Sites of Interest: DELISTED SHWS

This database contains a list of Hazard Evaluation and Emergency Response sites that were removed from the Hawaii Department of Health's Hazard Evaluation and Emergency Response (HEER) Office.

Government Publication Date: Sep 27, 2018

Landfill sites on the Hawaii Islands: SWF/LF

A list of active and inactive Solid Waste Facilities, Landfills & Transfer Stations on Hawaii Islands. This list has been made available by Hawaii Department of Health Solid and Hazardous Waste Branch.

Government Publication Date: Mar 28, 2017

Leaking Underground Storage Tanks: LUST

A list of Leaking Underground Storage Tanks in the state of Hawaii. This list has been made available by Hawaii Department of Health Solid and Hazardous Waste Branch.

Government Publication Date: Aug 31, 2018

Delisted Leaking Underground Storage Tanks: DELISTED LUST

This database contains a list of closed Leaking Underground Storage Tanks that were removed from the Hawaii Department of Health Solid and Hazardous Waste Branch.

Government Publication Date: Aug 31, 2018

Underground Storage Tanks: UST

A list of registered Underground Storage Tanks in the state of Hawaii. This list has been made available by Hawaii Department of Health Solid and Hazardous Waste Branch.

Government Publication Date: Aug 31, 2018

Delisted Sotrage Tank: DTNK

This database contains a list of registered Underground Storage Tanks in the state of Hawaii that were removed from the Hawaii Department of Health Solid and Hazardous Waste Branch storage tank database.

Government Publication Date: Aug 31, 2018

Facilities with Engineering Controls: ENG

A list of sites having Engineering Controls registered with Hazard Evaluation and Emergency Response (HEER) Office. This list has been made available by Hawaii Department of Health HEER Office.

Government Publication Date: Sep 27, 2018

Facilities with Institutional Controls: INST

A list of sites having Institutional Controls registered with Hazard Evaluation and Emergency Response (HEER) Office. This list has been made available by Hawaii Department of Health HEER Office.

Government Publication Date: Sep 27, 2018

Voluntary Response Program List: VCP

A list of sites registered under Voluntary Response Program with Hazard Evaluation and Emergency Response (HEER) Office. This list has been made available by Hawaii Department of Health HEER Office.

Government Publication Date: Sep 27, 2018

Brownfields Sites: BROWNFIELDS

A list of brownfields sites registered with Hazard Evaluation and Emergency Response (HEER) Office in the state of Hawaii. This list has been made available by Hawaii Department of Health HEER Office.

Government Publication Date: Sep 27, 2018

Tribal

Leaking Underground Storage Tanks (LUSTs) on Indian Lands: INDIAN LUST

LUSTs on Tribal/Indian Lands in Region 9, which includes Hawaii. There are no LUST records in Hawaii at this time.

Government Publication Date: Dec 31, 2017

Underground Storage Tanks (USTs) on Indian Lands: INDIAN UST

USTs on Tribal/Indian Lands in Region 9, which includes Hawaii. There are no UST records in Hawaii at this time.

Government Publication Date: Dec 31, 2017

Delisted Tribal Leaking Storage Tanks: DELISTED ILST

Leaking Underground Storage Tank facilities which have been removed from the Regional Tribal LUST lists made available by the EPA.

Government Publication Date: Oct 14, 2017

Delisted Tribal Underground Storage Tanks: DELISTED IUST

Underground Storage Tank facilities which have been removed from the Regional Tribal UST lists made available by the EPA.

Government Publication Date: Oct 14, 2017

County

No County standard environmental record sources available for this State.

Additional Environmental Record Sources

Federal

Facility Registry Service/Facility Index: FINDS/FRS

The US Environmental Protection Agency (EPA)'s Facility Registry System (FRS) is a centrally managed database that identifies facilities, sites or places subject to environmental regulations or of environmental interest. FRS creates high-quality, accurate, and authoritative facility identification records through rigorous verification and management procedures that incorporate information from program national systems, state master facility records, data collected from EPA's Central Data Exchange registrations and data management personnel.

Government Publication Date: Apr 17, 2018

Toxics Release Inventory (TRI) Program: TRIS

The EPA's Toxics Release Inventory (TRI) is a database containing data on disposal or other releases of over 650 toxic chemicals from thousands of U.S. facilities and information about how facilities manage those chemicals through recycling, energy recovery, and treatment. One of TRI's primary purposes is to inform communities about toxic chemical releases to the environment.

Government Publication Date: Dec 31, 2016

Hazardous Materials Information Reporting System: HMIRS

US DOT - Department of Transportation Pipeline and Hazardous Materials Safety Administration (PHMSA) Incidents Reports Database taken from Hazmat Intelligence Portal, U.S. Department of Transportation.

Government Publication Date: May 23, 2018

National Clandestine Drug Labs: NCDL

The U.S. Department of Justice ("the Department") provides this data as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy.

Government Publication Date: Jul 18, 2018

Toxic Substances Control Act: TSCA

The Environmental Protection Agency (EPA) is amending the Toxic Substances Control Act (TSCA) section 8(a) Inventory Update Reporting (IUR) rule and changing its name to the Chemical Data Reporting (CDR) rule.

The CDR enables EPA to collect and publish information on the manufacturing, processing, and use of commercial chemical substances and mixtures (referred to hereafter as chemical substances) on the TSCA Chemical Substance Inventory (TSCA Inventory). This includes current information on chemical substance production volumes, manufacturing sites, and how the chemical substances are used. This information helps the Agency determine whether people or the environment are potentially exposed to reported chemical substances. EPA publishes submitted CDR data that is not Confidential Business Information (CBI).

Government Publication Date: Jun 30, 2017

Hist TSCA: HIST TSCA

The Environmental Protection Agency (EPA) is amending the Toxic Substances Control Act (TSCA) section 8(a) Inventory Update Reporting (IUR) rule and changing its name to the Chemical Data Reporting (CDR) rule.

The 2006 IUR data summary report includes information about chemicals manufactured or imported in quantities of 25,000 pounds or more at a single site during calendar year 2005. In addition to the basic manufacturing information collected in previous reporting cycles, the 2006 cycle is the first time EPA collected information to characterize exposure during manufacturing, processing and use of organic chemicals. The 2006 cycle also is the first time manufacturers of inorganic chemicals were required to report basic manufacturing information.

Government Publication Date: Dec 31, 2006

FTTS Administrative Case Listing: FTTS ADMIN

An administrative case listing from the Federal Insecticide, Fungicide, & Rodenticide Act (FIFRA) and Toxic Substances Control Act (TSCA), together known as FTTS. This database was obtained from the Environmental Protection Agency's (EPA) National Compliance Database (NCDB). The FTTS and NCDB was shut down in 2006.

Government Publication Date: Jan 19, 2007

FTTS Inspection Case Listing: FTTS INSP

An inspection case listing from the Federal Insecticide, Fungicide, & Rodenticide Act (FIFRA) and Toxic Substances Control Act (TSCA), together known as FTTS. This database was obtained from the Environmental Protection Agency's (EPA) National Compliance Database (NCDB). The FTTS and NCDB was shut down in 2006.

Government Publication Date: Jan 19, 2007

Potentially Responsible Parties List: PRP

Early in the cleanup process, the Environmental Protection Agency (EPA) conducts a search to find the potentially responsible parties (PRPs). EPA looks for evidence to determine liability by matching wastes found at the site with parties that may have contributed wastes to the site.

Government Publication Date: Jul 17, 2018

State Coalition for Remediation of Drycleaners Listing: SCRD DRYCLEANER

The State Coalition for Remediation of Drycleaners (SCRD) was established in 1998, with support from the U.S. Environmental Protection Agency (EPA) Office of Superfund Remediation and Technology Innovation. Coalition members are states with mandated programs and funding for drycleaner site remediation. Current members are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Government Publication Date: Nov 08, 2017

Integrated Compliance Information System (ICIS): ICIS

The Integrated Compliance Information System (ICIS) is a system that provides information for the Federal Enforcement and Compliance (FE&C) and the National Pollutant Discharge Elimination System (NPDES) programs. The FE&C component supports the Environmental Protection Agency's (EPA) Civil Enforcement and Compliance program activities. These activities include Compliance Assistance, Compliance Monitoring and Enforcement. The NPDES program supports tracking of NPDES permits, limits, discharge monitoring data and other program reports.

Government Publication Date: Nov 18, 2016

Drycleaner Facilities: FED DRYCLEANERS

A list of drycleaner facilities from the Integrated Compliance Information System (ICIS). The Environmental Protection Agency (EPA) tracks facilities that possess NAIC and SIC codes that classify businesses as drycleaner establishments.

Government Publication Date: May 29, 2018

Delisted Drycleaner Facilities: DELISTED FED DRY

List of sites removed from the list of Drycleaner Facilities (sites in the EPA's Integrated Compliance Information System (ICIS) with NAIC or SIC codes identifying the business as a drycleaner establishment).

Government Publication Date: May 29, 2018

Formerly Used Defense Sites: FUDS

Formerly Used Defense Sites (FUDS) are properties that were formerly owned by, leased to, or otherwise possessed by and under the jurisdiction of the Secretary of Defense prior to October 1986, where the Department of Defense (DoD) is responsible for an environmental restoration. This list is published by the U.S. Army Corps of Engineers.

Government Publication Date: Nov 22, 2016

Material Licensing Tracking System (MLTS): MLTS

A list of sites that store radioactive material subject to the Nuclear Regulatory Commission (NRC) licensing requirements. This list is maintained by the NRC. As of September 2016, the NRC no longer releases location information for sites. Site locations were last received in July 2016.

Government Publication Date: Jun 30, 2017

Historic Material Licensing Tracking System (MLTS) sites: HIST MLTS

A historic list of sites that have inactive licenses and/or removed from the Material Licensing Tracking System (MLTS). In some cases, a site is removed from the MLTS when the state becomes an "Agreement State". An Agreement State is a State that has signed an agreement with the Nuclear Regulatory Commission (NRC) authorizing the State to regulate certain uses of radioactive materials within the State.

Government Publication Date: Jan 31, 2010

Mines Master Index File: MINES

The Master Index File (MIF) contains mine identification numbers issued by the Department of Labor Mine Safety and Health Administration (MSHA) for mines active or opened since 1971. Note that addresses may or may not correspond with the physical location of the mine itself.

Government Publication Date: Jan 30, 2018

Alternative Fueling Stations: ALT FUELS

List of alternative fueling stations made available by the US Department of Energy's Office of Energy Efficiency & Renewable Energy. Includes Biodiesel stations, Ethanol (E85) stations, Liquefied Petroleum Gas (Propane) stations, Ethanol (E85) stations, Natural Gas stations, Hydrogen stations, and Electric Vehicle Supply Equipment (EVSE). The National Renewable Energy Laboratory (NREL) obtains information about new stations from trade media, Clean Cities coordinators, a Submit New Station form on the Station Locator website, and through collaborating with infrastructure equipment and fuel providers, original equipment manufacturers (OEMs), and industry groups.

Government Publication Date: Oct 16, 2018

Registered Pesticide Establishments: SSTS

List of active EPA-registered foreign and domestic pesticide-producing and device-producing establishments based on data from the Section Seven Tracking System (SSTS). The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Section 7 requires that facilities producing pesticides, active ingredients, or devices be registered. The list of establishments is made available by the EPA.

Government Publication Date: Mar 1, 2018

Polychlorinated Biphenyl (PCB) Notifiers: PCB

Facilities included in the national list of facilities that have notified the United States Environmental Protection Agency (EPA) of Polychlorinated Biphenyl (PCB) activities. Any company or person storing, transporting or disposing of PCBs or conducting PCB research and development must notify the EPA and receive an identification number.

Government Publication Date: Nov 30, 2017

State

HEER Emergency Response Listing: SPILLS

A list of all releases reported historically and managed by the Emergency Preparedness and Response section of Hazard Evaluation and Emergency Response (HEER) Office. This list has been made available by Hawaii Department of Health HEER Office.

Government Publication Date: Mar 16, 2017

Drycleaning Facilities: DRYCLEANERS

A list of permitted drycleaner facilities (active and closed) in the state of Hawaii; made available by the Department of Health.

Government Publication Date: Sep 4, 2018

Delisted Drycleaners: DELISTED DRYCLEANERS

List of sites removed the list of permitted drycleaners made available by the Hawaii Department of Health.

Government Publication Date: Sep 4, 2018

Tribal

No Tribal additional environmental record sources available for this State.

County

No County additional environmental record sources available for this State.

Definitions

Database Descriptions: This section provides a detailed explanation for each database including: source, information available, time coverage, and acronyms used. They are listed in alphabetic order.

Detail Report: This is the section of the report which provides the most detail for each individual record. Records are summarized by location, starting with the project property followed by records in closest proximity.

Distance: The distance value is the distance between plotted points, not necessarily the distance between the sites' boundaries. All values are an approximation.

Direction: The direction value is the compass direction of the site in respect to the project property and/or center point of the report.

Elevation: The elevation value is taken from the location at which the records for the site address have been plotted. All values are an approximation. Source: Google Elevation API.

Executive Summary: This portion of the report is divided into 3 sections:

'Report Summary'- Displays a chart indicating how many records fall on the project property and, within the report search radii.

'Site Report Summary'-Project Property'- This section lists all the records which fall on the project property. For more details, see the 'Detail Report' section.

'Site Report Summary-Surrounding Properties'- This section summarizes all records on adjacent properties, listing them in order of proximity from the project property. For more details, see the 'Detail Report' section.

Map Key: The map key number is assigned according to closest proximity from the project property. Map Key numbers always start at #1. The project property will always have a map key of '1' if records are available. If there is a number in brackets beside the main number, this will indicate the number of records on that specific property. If there is no number in brackets, there is only one record for that property.

The symbol and colour used indicates 'elevation': the red inverted triangle will dictate 'ERIS Sites with Lower Elevation', the yellow triangle will dictate 'ERIS Sites with Higher Elevation' and the orange square will dictate 'ERIS Sites with Same Elevation.'

Unplottables: These are records that could not be mapped due to various reasons, including limited geographic information. These records may or may not be in your study area, and are included as reference.

ECONOMIC AND FISCAL IMPACTS REPORT

APPENDIX

J

Report to

DDC LLC

Covering the

ECONOMIC AND FISCAL IMPACTS OF THE PROPOSED PU'UNANI HOMESTEAD

Wailuku, Maui, Hawaii

As of August 20, 2019

JOHN CHILD & COMPANY
APPRAISERS & CONSULTANTS

JOHN CHILD & COMPANY
APPRAISERS & CONSULTANTS

October 16, 2019

Karen Char, MAI, CRE
Paul D. Cool, MAI, CRE
Shelly H. Tanaka, MAI, AI-GRS
Masayo K. Allen, Esq.

Mr. Everett R. Dowling
DDC LLC
2005 Main Street
Wailuku, Hawaii 96793

Dear Mr. Dowling:

Re: Economic and Fiscal Impacts of the Proposed Pu'unani Homestead

At your request, John Child & Company has estimated the economic and fiscal impacts of the proposed Pu'unani Homestead. This letter summarizes the study background, objective, intended use and user, effective date, scope of work, and the economic and fiscal impacts presented in the accompanying report.

STUDY BACKGROUND

DDC LLC and Department of Hawaiian Home Lands (DHHL) are working together to develop the Pu'unani Homestead. The site is identified as a portion of tax map key (2) 3-5-002:002 and includes approximately 48.230 acres that is currently in the State Land Use Agricultural district and County Agricultural zoning district. However, DHHL can use its authority under the Hawaiian Homes Commission Act, 1920, to use the lands not subject to county zoning requirements. The project is proposed as the Pu'unani Homestead with 137 turnkey homes and 24 vacant lots that will be accessed from Honoapiilani Highway (State land). In addition, DHHL funds (State funds) will be used to finance the development.

Because the subdivision will require intersections with Honoapiilani Highway (State land) and DHHL (State) funds will be used, the State requires an environmental assessment. In this regard, you have asked us to assist you.

PU'UNANI HOMESTEAD

Pu'unani Homestead will include 161 improved single-family and vacant residential lots. 137 lots to be sold as turnkey homes and 24 vacant lots to be awarded to lessees. DHHL currently has a waitlist of 3,838 beneficiaries for a residential homestead on Maui. The salable properties are expected to have strong demand and be sold to beneficiaries.

Subdivision Design

The 161 lots will have a minimum lot area of 7,500sf. The salable lots will include 137 turnkey homes and 24 vacant residential lots which will be awarded to lessees by DHHL.

733 Bishop Street, Suite 2500 • Honolulu, Hawaii 96813
T 808.533.2951 • F 808.523.7672 • email: info@johnchild.com

The proposed unit mix of the turnkey homes is described as follows:

Model name	Home type	No. of homes	Home size (ƒ)	Total
Plumeria	3BD/2BA	15	1,088	16,320
Kamani	3BD/2BA	20	1,193	23,860
Maile	3BD/2BA	28	1,462	40,936
Lawaia	3BD/2.5BA	18	1,280	23,040
Wailele	4BD/2.5BA	32	1,646	52,672
Pikake	4BD/3BA	24	1,674	40,176
Total		137		197,004
Average			1,438	

Development Schedule

Planning, design and construction of the subdivision and homes are projected to take five years.

Direct and Indirect Construction Costs

The direct and indirect construction costs for the on- and off-site improvements (land development) are projected to average $123,600 per lot and total about $19,900,000.

The direct and indirect construction costs for the turnkey homes are projected to average about $226/ƒ of living area. The average home is 1,438ƒ. Therefore, the average cost of the turnkey houses is projected to be about $326,000.

The homes on the 24 vacant lots will constructed by the lessees.

Impact Fees

Traditional subdivisions are required to pay impact and assessment fees to the State of Hawaii and Maui. However, DHHL has historically requested and received exemptions for all of the fees, except DOE assessment fees, Maui wastewater assessment fee, and water system development fee, shown as follows:

Description	Fee
State of Hawaii	
DOE assessment fees	$870,000
County of Maui	
Wastewater assessment fee	$282,000
Water system development fee	1,972,000
Park assessment in-lieu fee [1]	-
	$2,254,000

[1] DHHL exemption.

Sale Prices

The projected sale prices of the six models range from $308,000 to $412,000. The average sale price is about $359,300, shown as follows:

Model name	Sale price	No. of homes	Total
Plumeria	$308,000	15	$4,620,000
Kamani	322,000	20	6,440,000
Maile	348,000	28	9,744,000
Lawaia	338,000	18	6,084,000
Wailele	388,930	32	12,445,760
Pikake	412,000	24	9,888,000
Total		137	$49,221,760
Average	$359,300		

STUDY OBJECTIVE

The objective of our assistance is to estimate the economic and fiscal impacts of the proposed Pu'unani Homestead to the County of Maui and State of Hawaii in terms of:

- Projected direct, indirect and induced expenditures from land development and building construction

- Projected employment income

- Net fiscal impacts to the State of Hawaii
- Net fiscal impacts to the County of Maui.

INTENDED USE AND USER

The intended use of our assistance is to provide projections of economic and fiscal impacts that can be used in the Environmental Assessment being prepared by Munekiyo Hiraga.

As a result, our assistance is intended for insertion in the Environmental Assessment for Pu'unani Homestead. In accepting this report, DDC LLC specifically agrees that our assistance is not intended for any other purpose or users and is not to be relied upon by any third parties for any purpose, whatsoever.

EFFECTIVE DATE OF REPORT

The effective date of this report is August 20, 2019.

SCOPE OF WORK

The scope of work to complete this assignment is outlined as follows:

1. Obtained the proposed Pu'unani Homestead subdivision plan, on- and off-site, building construction and other costs, impact fees, and phasing.
2. Reviewed the "Hawaii State Input-Output Study: 2012 Benchmark Report" prepared by the State of Hawaii Department of Business, Economic Development & Tourism (DBEDT).
3. Projected the direct, indirect and induced expenditures from land development and building construction.
4. Projected jobs and employment income.
5. Estimated the net fiscal impacts of the Pu'unani Homestead to the State of Hawaii and the County of Maui.

SIGNIFICANT REPORT ASSUMPTIONS AND STUDY CONDITIONS

The economic and fiscal impacts of the Pu'unani Homestead are based on the following assumptions and study conditions:

1. The estimated construction costs, sales price, project phasing and absorption assumptions were provided by the Client. If the actual development cost and sales prices are significantly different from the assumptions, the economic and fiscal impacts could change.

2. The Pu'unani Homestead Project consists of 161 subdivided residential lots. 137 turn-key homes will be sold and 24 vacant lots will be awarded to lessees. The analysis assumes the 24 vacant lots will be immediately improved by the lessees. The cost of the 24 homes is estimated based on the average construction cost of the turn-key homes.

3. The buyers in Pu'unani Homestead are assumed to be existing Maui residents.

4. The economic and fiscal impacts are estimated in 2019 dollars using 2012 multipliers prepared by DBEDT.

The complete study assumptions and conditions are included in Section I of the accompanying report.

ESTIMATED ECONOMIC AND FISCAL IMPACTS

The proposed Pu'unani Homestead will have positive economic and fiscal impacts to the State of Hawaii and Maui during and after construction.

Because the residents are expected to be existing residents on Maui, incremental expenditures associated with utilization of roadways, schools, parks, and State and County services are projected to be negligible. The client and DHHL intend to request exemptions of fees that have historically been granted for DHHL properties. However, a school impact fee is budgeted to be paid to DOE.

Projected Direct, Indirect and Induced Expenditures from Land Development and Building Construction

Pu'unani Homestead will include 161 residential lots improved with a single-family residence. The direct and indirect and induced expenditures total $147,120,000 over the five-year construction period, shown as follows:

	Lot development	Building construction	Total
Projected output (expenditures):			
Direct expenditures	$19,900,000	52,400,000	72,300,000
Indirect and induced expenditures	20,610,000	54,210,000	74,820,000
Total	$40,510,000	106,610,000	147,120,000 [1]

[1] Discrepancy with Addendum 1 due to rounding.

Projected New Jobs and Employment Income

During the construction period, 634 jobs, including full-time and part-time wage and salary jobs, would be created. These jobs are projected to result in additional employment income of about $45,500,000, shown as follows:

	Construction Period		
	Lot development	Building construction	Total
Projected new jobs: [1]			
Construction/maintenance jobs	106	279	385
Other jobs	72	177	249
Total	178	456	634
Projected employment income:			
Construction/maintenance earnings	$7,200,000	19,000,000	26,200,000
Other earnings	5,300,000	14,000,000	19,300,000
Total	$12,500,000	33,000,000	45,500,000 [2]

[1] Includes proprietors' jobs and full-time and part-time wage and salary jobs. About 106 full-time and part-time construction jobs are projected during the site development period and another 279 one-time construction jobs will be created when homes are constructed.
[2] Discrepancy with Addendum 3 due to rounding.

FISCAL IMPACTS TO STATE OF HAWAII

The fiscal impacts to the State of Hawaii include revenue from taxes and impact fees and costs associated with additional services, if any, to be provided.

Revenues

The development will result in increased general excise and income tax revenues to the State of Hawaii. Based on the anticipated land and building construction expenditures, State tax revenues are projected to increase by about $8.93 million as a result of the new construction.

The State would also receive revenue from the Department of Education (DOE) school impact fees. These fees are payable at the time building permits for the homes are obtained. Based on the client's budget, the DOE could receive school impact fees of about $870,000.

Altogether, the development is projected to generate an additional $9.8 million in tax revenues and impact fees for the State.

Expenditures

The developer will incur all of the costs of the subdivision. The State will not build any new roads or schools.

Net Fiscal Impact

Lot development and home construction at the Pu'unani Homestead Project is projected to generate about $9.8 million in additional revenues to the State with no anticipated expenditures, as follows:

Net Fiscal Impact to State of Hawaii

	Construction period impacts
Revenues:	
Tax revenues [1]	$8,930,000
DOE school impact fee	870,000
Total	9,800,000
Expenditures	-
Net fiscal impact	$9,800,000

[1] Includes general excise taxes, individual and corporate income taxes, and other business taxes.

FISCAL IMPACTS TO COUNTY OF MAUI

The fiscal impacts to the County of Maui include revenue from any impact fees and the additional property taxes the property will generate and the cost, if any, to provide any additional services.

Revenues

The County would receive revenue from wastewater assessment and water system development fees. The client has budgeted assessment and development fees totaling about $2,254,000.

The Hawaiian Homes Commission Act provides a seven-year property tax exemption to DHHL lessees. Therefore, the development will generate additional property tax revenues in the eighth year after each home is constructed.

After all the homes are constructed, the tax assessed value per property is projected based on the average home sale price of about $359,000 less homeowner exemption of $200,000. Without including any other exemptions that may be available, the net taxable value would average about $159,000. The net taxable value multiplied by the current homeowner tax rate of $2.90 per $1,000 for the 161 homes could result in increased real property tax revenues of about $74,000 annually, as follows:

	Property taxes
Average sale price	$359,000
Less homeowner exemption	200,000
Net taxable value	159,000
Homeowner tax rate	$2.90/1,000
Real property tax per property	461
Number of properties	x 161
Annual tax, rounded	$74,000

The development is projected to generate an additional $2,328,000 in tax revenues and impact fees for the County.

Expenditures

The Pu'unani Homestead will be served by existing infrastructure and will not require expansion of any public services or facilities. Students in the Pu'unani Homestead will be attending nearby Pu'u Kukui Elementary School, Maui Waena Intermediate School and Maui High School. The homestead will be serviced by nearby police and fire stations and existing parks and recreation facilities. No expenditures are required.

Net Fiscal Impact

The net fiscal impact to the County of Maui is summarized as follows:

Net Fiscal Impact to the County of Maui

	Construction period impacts	Long-term annual impacts
Revenues:		
Wastewater assessment fee	$282,000	-
Water system development fee	1,972,000	-
Net increase in real property taxes		74,000
Park assessment fee	-	-
Total	2,254,000	74,000
Expenditures	-	-
Net fiscal impact	$2,254,000	$74,000

* * * * *

We appreciate having the opportunity to assist you on this interesting assignment. Please contact us if you have any questions.

Sincerely,

JOHN CHILD & COMPANY, INC.

Karen Char, MAI, CRE
President
Certified General Appraiser License No. 184
State of Hawaii
Expires December 31, 2019

Masayo K. Allen, Esq.
Appraiser
Certified General Appraiser License No. 1350
State of Hawaii
Expires December 31, 2019

I - STUDY BACKGROUND

This section presents the background, study objective and intended use and user, effective date of the report, scope of work and significant assumptions, and study conditions.

STUDY BACKGROUND

DDC LLC and Department of Hawaiian Home Lands (DHHL) are working together to develop the Pu'unani Homestead. The site is identified as a portion of tax map key (2) 3-5-002:002 and includes approximately 48.230 acres that is currently in the State Land Use Agricultural district and County Agricultural zoning district. However, DHHL can use its authority under the Hawaiian Homes Commission Act, 1920, to use the lands not subject to county zoning requirements. The project is proposed as the Pu'unani Homestead with 137 turnkey homes and 24 vacant lots that will be accessed from Honoapiilani Highway (State land). In addition, DHHL funds (State funds) will be used to finance the development.

Because the subdivision will require intersections with Honoapiilani Highway (State land) and DHHL (State) funds will be used, the State requires an environmental assessment. In this regard, you have asked us to assist you.

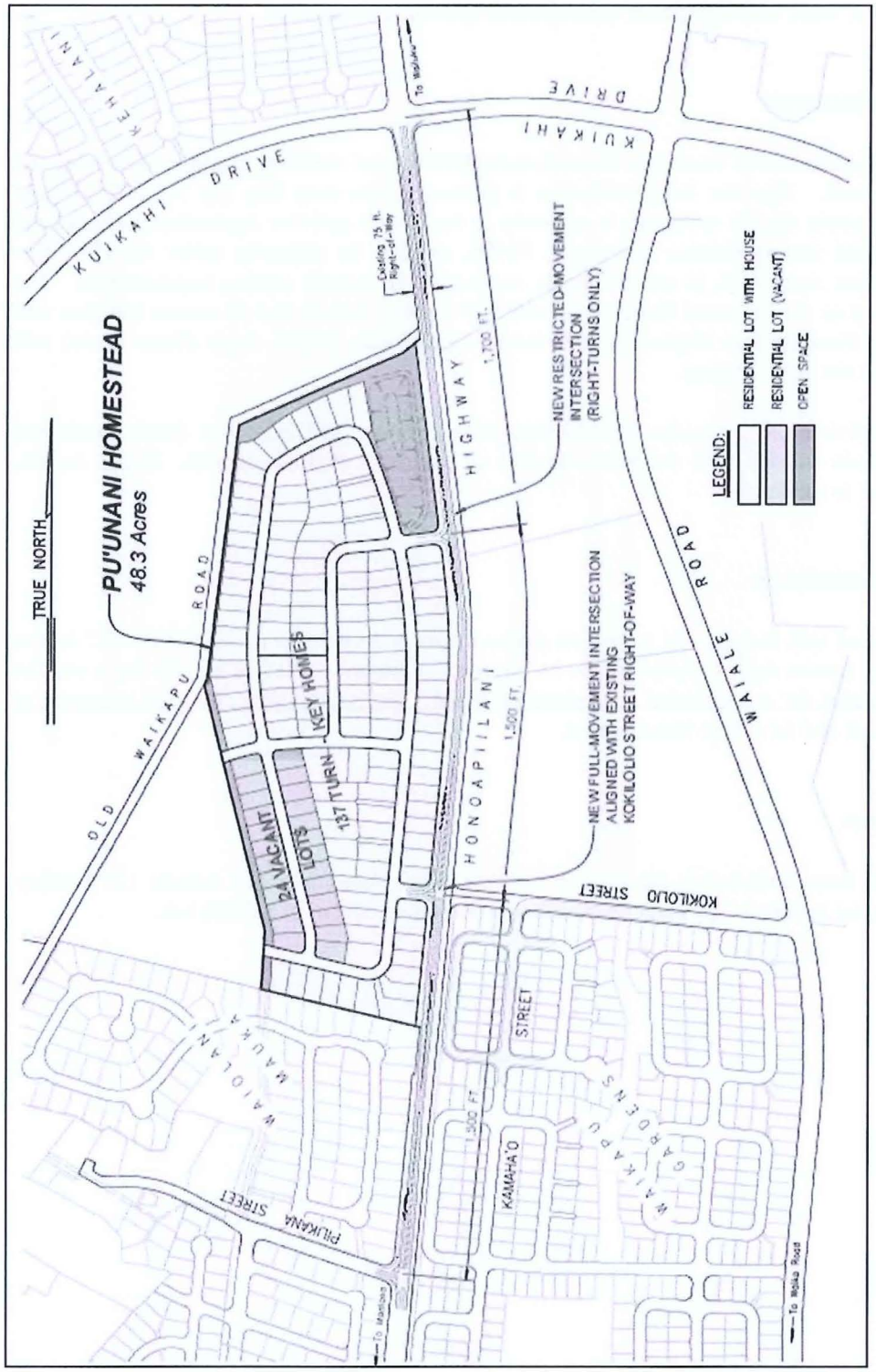
PU'UNANI HOMESTEAD

Pu'unani Homestead will include 161 improved single-family and vacant residential lots. 137 lots to be sold as turnkey homes and 24 vacant lots to be awarded to lessees. DHHL currently has a waitlist of 3,838 beneficiaries for a residential homestead on Maui. The salable properties are expected to have strong demand and be sold to beneficiaries.

Subdivision Design

The 161 lots will have a minimum lot area of 7,500ƒ. The salable lots will include 137 turnkey homes and 24 vacant residential lots will be awarded to lessees, as shown in Exhibit I-A.

SITE MAP



Source: DDC LLC.

The proposed unit mix of the turnkey homes is described as follows:

Model name	Home type	No. of homes	Home size (ƒ)	Total
Plumeria	3BD/2BA	15	1,088	16,320
Kamani	3BD/2BA	20	1,193	23,860
Maile	3BD/2BA	28	1,462	40,936
Lawaia	3BD/2.5BA	18	1,280	23,040
Wailele	4BD/2.5BA	32	1,646	52,672
Pikake	4BD/3BA	24	1,674	40,176
Total		137		197,004
Average			1,438	

Development Schedule

Planning, design and construction of the subdivision and homes are projected to take five years.

Direct and Indirect Construction Costs

The direct and indirect construction costs for the on- and off-site improvements (land development) are projected to average $123,600 per lot and total about $19,900,000.

The direct and indirect construction costs for the turnkey homes are projected to average about $226/ƒ of living area. The average home is 1,438ƒ. Therefore, the average cost of the turnkey houses is projected to be about $326,000.

The homes on the 24 vacant lots will constructed by the lessees.

Impact Fees

Traditional subdivisions are required to pay impact and assessment fees to the State of Hawaii and Maui. However, DHHL has historically requested and received exemptions for all of the fees, except DOE assessment fees, Maui wastewater assessment fee, and water system development fee, shown as follows:

The developer has budgeted impact and other fees as follows:

Description	Fee
State of Hawaii	
DOE assessment fees	$870,000
County of Maui	
Wastewater assessment fee	$282,000
Water system development fee	1,972,000
Park assessment in-lieu fee [1]	-
	$2,254,000

[1] DHHL exemption.

Sale Prices

The projected sale prices of the six models range from $308,000 to $412,000. The average sale price is about $359,300, shown as follows:

Model name	Sale price	No. of homes	Total
Plumeria	$308,000	15	$4,620,000
Kamani	322,000	20	6,440,000
Maile	348,000	28	9,744,000
Lawaia	338,000	18	6,084,000
Wailele	388,930	32	12,445,760
Pikake	412,000	24	9,888,000
Total		137	$49,221,760
Average	$359,300		

STUDY OBJECTIVE

The objective of our assistance is to estimate the economic and fiscal impacts of the proposed Pu'unani Homestead to the County of Maui and State of Hawaii in terms of:

- Projected direct, indirect and induced expenditures from land development and building construction
- Projected employment income
- Net fiscal impacts to the State of Hawaii
- Net fiscal impacts to the County of Maui.

INTENDED USE AND USER

The intended use of our assistance is to provide projections of economic and fiscal impacts that can be used in the Environmental Assessment being prepared by Munekiyo Hiraga.

As a result, our assistance is intended for insertion in the Environmental Assessment for Pu'unani Homestead. In accepting this report, DDC LLC specifically agrees that our assistance is not intended for any other purpose or users and is not to be relied upon by any third parties for any purpose, whatsoever.

EFFECTIVE DATE OF REPORT

The effective date of this report is August 20, 2019.

SCOPE OF WORK

The scope of work to complete this assignment is outlined as follows:

1. Obtained the proposed Pu'unani Homestead subdivision plan, on- and off-site, building construction and other costs, impact fees, and phasing.
2. Reviewed the "Hawaii State Input-Output Study: 2012 Benchmark Report" prepared by the State of Hawaii Department of Business, Economic Development & Tourism (DBEDT).
3. Projected the direct, indirect and induced expenditures from land development and building construction.
4. Projected jobs and employment income.
5. Estimated the net fiscal impacts of the Pu'unani Homestead to the State of Hawaii and the County of Maui.

SIGNIFICANT REPORT ASSUMPTIONS AND STUDY CONDITIONS

The economic and fiscal impacts of the Pu'unani Homestead are based on the following assumptions and study conditions:

1. The estimated construction costs, sales price, project phasing and absorption assumptions were provided by the Client. If the actual development cost and sales prices are significantly different from the assumptions, the economic and fiscal impacts could change.

2. The Pu'unani Homestead Project consists of 161 subdivided residential lots. 137 turn-key homes will be sold and 24 vacant lots will be awarded to lessees. The analysis assumes the 24 vacant lots will be immediately improved by the lessees. The cost of the 24 homes is estimated based on the average construction cost of the turn-key homes.

3. The buyers in Pu'unani Homestead are assumed to be existing Maui residents.

4. The economic and fiscal impacts are estimated in 2019 dollars using 2012 multipliers prepared by DBEDT.

Property Description

A legal description of the property that is the subject of this report was not reviewed.

The appraiser is familiar with the Wailuku neighborhood and site of the Pu'unani Homestead. However, the site was not specifically visited for this assignment.

Basis of Analyses, Opinions, and Conclusions

The analyses, opinions, and conclusions of this report rely on data and information provided by others. The information is believed to be reliable; however, no responsibility is assumed for the accuracy of information provided by others.

The analyses, opinions, and conclusions assume:

1. No hidden or unapparent surface or subsurface conditions of the property, structures, soils, subsoils, geological formations, ground water, or drainage conditions exist that would render the property more or less valuable.

2. Existing improvements comply with all applicable public and private zoning codes, regulations and covenants, unless stated otherwise.

3. The client has provided us with all significant, relevant information covering the subject of this report.

No responsibility is assumed for matters legal in nature affecting the property or its title, which is assumed to be good and merchantable.

Properties in Hawaii typically include a reservation in favor of the State of Hawaii of all mineral and metallic mines. Our analyses, opinions, and conclusions assume these reservations do not have an impact on the value or use of the property.

Any drawings, maps, photographs, and similar exhibits accompanying this report are included to assist the reader in visualizing the property. No responsibility is assumed for the accuracy of these exhibits.

Hazardous Substances

The existence of hazardous substances (actual, alleged or threatened discharge, disposal, seepage, migration, release, growth, infestation, spread or escape of mold(s), mildew(s), fungi and/or spores or any materials, goods or products containing, harboring or nurturing these substances) that could be present on the property, or other environmental conditions that could impact the property, were not brought to the attention of the appraisers nor observed during the site visit.

The appraisers are not trained or qualified to detect hazardous substances or conditions even if these hazards, or evidence of potential presence of these hazards, are visible on the property.

This report assumes no hazardous substance or condition exists that would impact the analyses, opinions or conclusions. If a hazardous substance or condition exists, it could have a negative effect on the value of the property.

Archaeological or Historically Significant Conditions

The existence of archaeological or historically significant conditions that could be present on the property were not identified nor observed during the site visit. The appraisers are not trained or qualified to recognize archaeological or historically significant conditions, even if these conditions are visible on the property.

This report assumes no archaeological or historically significant condition exists that would impact the analyses, opinions or conclusions. If an archeological or historically significant condition exists, it could impact the value of the property.

Endangered Species

The presence of flora and/or fauna on the property qualified for protection under the Endangered Species Act of 1973 was not identified. The appraisers are not trained or qualified to recognize endangered flora or fauna, even if visible on the property.

This report assumes no endangered species are present on the property. The presence of endangered species could impact the value of the property.

Terms of Assignment

We have no obligation to update our report because of events and transactions occurring subsequent to the effective date of the report.

Neither our fees nor payment were contingent upon the results of the report.

Use of Report

This report is valid only if presented in whole, with original photographs and exhibits, if any, and the official seal of John Child & Company embossed on the letter of transmittal and certification.

This report or any portion of this report may not be reproduced or published without the prior written consent of John Child & Company, and then only with proper qualification.

The contents of this report or portions of this report, the identity of the appraisers or any reference to John Child & Company, the Appraisal Institute, the Counselors of Real Estate, or the American Society of Appraisers, or to their respective designations may not be disseminated to the public through advertising media, public relations media, news media, sales media, or any other public means of communication.

Limitation on Liability

John Child & Company shall not be liable to Client or to any third party (including without limitation lenders and other persons to whom Client may show this report for the purposes of obtaining credit, insurance or any other benefit or promise) in the event that the use or value of the subject property is or becomes different from the use or value estimates, analyses, opinions or conclusions in this report unless it is established by clear and convincing evidence that John Child & Company acted in bad faith or willfully and recklessly failed to exercise an appropriate standard of care in the community while performing this assignment. In any event, John Child & Company's liability to Client or to any third party shall be limited to the amount of the fees to complete this assignment.

This report may not be shown to any third party without our consent and without receiving a written acknowledgement from any person to whom it is shown that such person has read, understands and agrees to be bound by the limitation of liability in this paragraph.

This section evaluates the economic impacts of Pu'unani Homestead to the State of Hawaii and County of Maui.

OUTPUT IMPACTS

Output impacts measure the dollar change in the output of the State's economy and represent total expenditures, or sales. The Pu'unani Homestead will generate direct, indirect and induced output impacts (expenditures) in Hawaii and, particularly, Maui County.

Direct Construction Expenditures

The direct impact of the development is measured by the total construction expenditures.

Site work, landscaping and offsite improvement costs to develop the 161 lots are budgeted at about $19.9 million before financing costs and impact fees. The direct construction costs will be incurred over an approximately 18-month construction period, and the indirect site development costs will be incurred over approximately four years.

The Pu'unani Homestead consists of 161 salable lots that will be developed with 137 turn-key homes and 24 vacant lots. The 24 vacant lots will be improved by the lessees. The cost is based on the average construction costs of the proposed salable turnkey homes of about $326,000 per dwelling. Home construction is estimated at about $52 million. The total construction expenditures resulting from the project are estimated to be about $72 million.

Indirect and Induced Expenditures

The direct construction expenditures will create additional expenditures in other industries as suppliers of construction materials and equipment are required to purchase goods and services from other vendors in the State. These latter expenditures are an indirect effect.

Based on multipliers reported by DBEDT, every $1 in construction spending generates another $0.45 in sales in other industries. Therefore, the $72 million in direct construction expenditures are projected to create another $32 million in sales in other industries.

In addition, the direct and indirect expenditures induce further productive activity through consumption expenditures. These induced expenditures are projected to total about $43 million. The indirect and induced expenditures are projected to total about $75 million, as shown in Addendum 1.

EMPLOYMENT IMPACTS

The development will generate short-term (one-time) construction jobs and long-term employment. According to DBEDT, about 5.3 full-time and part-time jobs are created for every $1.0 million in new construction. These jobs include onsite laborers, operatives and craftsmen, as well as professional, managerial, sales and clerical workers who may be employed elsewhere in the State. Based on the budgeted construction costs to develop the 161 lots, about 106 full-time and part-time construction jobs will be created within the site development period. [1]

Additional construction jobs will be created as the individual homes are built. Based on the typical construction cost per dwelling, a total of 279 construction jobs would be created, for a total of 385 jobs.

Labor earnings from these jobs will ripple through the economy and increase employment in other sectors. Based on DBEDT's employment multipliers, a total of 249 new jobs in other sectors are projected, as shown in Addendum 2.

INCOME IMPACTS

Income impacts measure the effect of the development on household income consisting of wages, salaries, proprietors' (self-employment) income, and fringe benefits.

The new construction is projected to generate labor earnings of about $46 million, including $26 million for the construction industry alone. Based on the projected employment, the average income per full-time and part-time employee (including benefits) would be about $68,000, as shown in Addendum 3.

[1] DBEDT does not distinguish between full-time and part-time jobs.

SUMMARY OF ECONOMIC IMPACTS

The economic impacts from the site development and home construction period are summarized as follows:

Economic Impacts to State of Hawaii and County of Maui

	Construction Period			
	Lot development	Building construction	Total	
Projected output (expenditures):				
Direct expenditures	$19,900,000	52,400,000	72,300,000	
Indirect and induced expenditures	20,610,000	54,210,000	74,820,000	
Total	$40,510,000	106,610,000	147,120,000	[1]
Projected new jobs: [2]				
Construction/maintenance jobs	106	279	385	
Other jobs	72	177	249	
Total	178	456	634	
Projected employment income:				
Construction/maintenance earnings	$7,200,000	19,000,000	26,200,000	
Other earnings	5,300,000	14,000,000	19,300,000	
Total	$12,500,000	33,000,000	45,500,000	[3]

[1] Discrepancy with Addendum 1 due to rounding

[2] Includes proprietors' jobs and full-time and part-time wage and salary jobs. About 106 full-time and part-time construction jobs are projected during the site development period and another 279 one-time construction jobs will be created when homes are constructed.

[3] Discrepancy with Addendum 3 due to rounding.

This section evaluates the fiscal impacts of the proposed Pu'unani Homestead by projecting the revenues and expenditures and net fiscal impacts to the State of Hawaii and County of Maui.

FISCAL IMPACTS TO STATE OF HAWAII

The fiscal impacts to the State of Hawaii include revenue from taxes and impact fees and costs associated with additional services, if any, to be provided.

Revenues

The development will result in increased general excise and income tax revenues to the State of Hawaii. Based on the anticipated land and building construction expenditures, State tax revenues are projected to increase by about $8.9 million as a result of the new construction, as shown in Addendum 4.

The State would receive revenue from the Department of Education (DOE) school impact fees. These fees are payable at the time building permits for the homes are obtained. Based on the client's budget, the DOE could receive school impact fees of about $870,000.

The State would not receive revenue from Department of Transportation (DOT) traffic impact fees because DHHL has historically received a waiver of this fee.

The development is projected to generate an additional $9.8 million in tax revenues and impact fees for the State.

Expenditures

The developer will incur all of the costs of the subdivision. The State will not build any new roads or schools.

Net Fiscal Impact

Lot development and home construction at the Pu'unani Homestead Project is projected to generate about $9.8 million in additional revenues to the State with no anticipated expenditures, as follows:

Net Fiscal Impact to State of Hawaii

	Construction period impacts
Revenues:	
Tax revenues [1]	$8,930,000
DOE school impact fee	870,000
Total	9,800,000
Expenditures	-
Net fiscal impact	$9,800,000

[1] Includes general excise taxes, individual and corporate income taxes, and other business taxes.

FISCAL IMPACTS TO COUNTY OF MAUI

The fiscal impacts to the County of Maui include revenue from any impact fees and the additional property taxes the property will generate and the cost, if any, to provide any additional services.

Revenues

The County would receive revenue from wastewater assessment and water system development fees. The client has budgeted assessment and development fees totaling about $2,254,000.

The Hawaiian Homes Commission Act provides a seven-year property tax exemption to DHHL lessees. Therefore, the development will generate additional property tax revenues in the eighth year after each home is constructed.

After all the homes are constructed, the tax assessed value per property is projected based on the average home sale price of about $359,000 less homeowner exemption of $200,000. Without including any other exemptions that may be available, the net taxable value would average about $159,000. The net taxable value multiplied by the current homeowner tax rate of $2.90 per $1,000 for the 161 homes could result in increased real property tax revenues of about $74,000 annually, shown as follows:

	Property taxes
Average sale price	$359,000
Less homeowner exemption	200,000
Net taxable value	159,000
Homeowner tax rate	$2.90/1,000
Real property tax per property	461
Number of properties	x 161
Annual tax, rounded	$74,000

Expenditures

The Pu'unani Homestead will be served by existing infrastructure and will not require expansion of any public services or facilities. Students in the Pu'unani Homestead will be attending nearby Pu'u Kukui Elementary School, Maui Waena Intermediate School and Maui High School. The homestead will be serviced by nearby police and fire stations and existing parks and recreation facilities. No expenditures are required.

Net Fiscal Impact

The net fiscal impact to the County of Maui is summarized as follows:

Net Fiscal Impact to the County of Maui

	Construction period impacts	Long-term annual impacts
Revenues:		
Wastewater assessment fee	$282,000	-
Water system development fee	1,972,000	-
Net increase in real property taxes	-	74,000
Park assessment fee	-	-
Total	2,254,000	74,000
Expenditures	-	-
Net fiscal impact	$2,254,000	$74,000

CERTIFICATION

We certify, to the best of our knowledge and belief:

- Reported statements of fact are true and correct.
- Reported analyses, opinions, and conclusions are limited only by the reported assumptions and limiting conditions and are our unbiased professional analyses, opinions, and conclusions.
- We have no present or prospective interest in the property that is the subject of this report, and we have no personal interest or bias with respect to the parties involved.
- Within the past three years, we have not provided real estate appraisal and/or appraisal review services relating to an ownership interest in the property that is the subject of this report and have informed the client prior to acceptance of this assignment.
- Our engagement was not contingent upon developing or reporting predetermined results.
- Our compensation is not contingent on the reporting of a predetermined value or direction in value that favors the cause of the client, the amount of the value estimate, the attainment of a stipulated result, or the occurrence of a subsequent event and is not contingent on an action or event resulting from the analyses, opinions or conclusions in, or use of, this report.
- The reported analysis, opinions, and conclusions were developed, and the report has been prepared, in conformity with the requirements of the Code of Ethics and Standards of Professional Appraisal Practice of the Appraisal Institute, and the Appraisal Foundation's Uniform Standards of Professional Appraisal Practice (USPAP).
- The use of this report is subject to the requirements of the Appraisal Institute relating to review by its duly authorized representatives, and to the requirements relating to review by duly authorized representatives of the State of Hawaii, Counselors of Real Estate, and the American Society of Appraisers.
- As of the date of this report, Karen Char, MAI has completed the continuing education program for Designated Members of the Appraisal Institute.
- As of the date of this report, Masayo K. Allen has completed the Standards and Ethics Education Requirements for Candidates of the Appraisal Institute.
- ASA has a mandatory recertification program. Karen Char, ASA is currently certified under this program.
- Karen Char is familiar with the Wailuku neighborhood and site of Pu'unani Homestead. However, the site was not specifically visited for this assignment. Masayo K. Allen did not visit the real estate for the purpose of this assignment.
- No one other than the undersigned prepared the analysis, opinions, and conclusions in this report.

JOHN CHILD & COMPANY, INC.

Karen Char, MAI, CRE, ASA
President
Certified General Appraiser License No. 184
State of Hawaii
Expires December 31, 2019

Masayo K. Allen, Esq.
Appraiser
Certified General Appraiser License No. 1350
State of Hawaii
Expires December 31, 2019

ECONOMIC IMPACTS OF CONSTRUCTION
In 2019 Dollars Using 2012 Multipliers

SITE IMPROVEMENTS

Year	Construction expenditures	Type I output multiplier	Direct & indirect impacts	Direct construction expenditures	Indirect impact only	Type II output multiplier	Direct output impact	Total	Indirect output impact	Induced output impact
1	$909,757	1.45	1,315,672	909,757	405,915	2.03	909,757	1,850,000	410,000	530,000
2	3,976,989	1.45	5,751,444	3,976,989	1,774,454	2.03	3,976,989	8,090,000	1,770,000	2,340,000
3	12,095,417	1.45	17,492,154	12,095,417	5,396,737	2.03	12,095,417	24,610,000	5,400,000	7,110,000
4	2,894,947	1.45	4,186,615	2,894,947	1,291,668	2.03	2,894,947	5,890,000	1,290,000	1,710,000
5	41,945	1.45	60,660	41,945	18,715	2.03	41,945	90,000	20,000	30,000
Total	$19,919,054		28,806,545	19,919,054	8,887,490		19,900,000	40,530,000	8,890,000	11,720,000

HOME CONSTRUCTION

Year	Construction expenditures	Type I output multiplier	Direct & indirect impacts	Direct construction expenditures	Indirect impact only	Type II output multiplier	Direct output impact	Total	Indirect output impact	Induced output impact
1	$665,393	1.45	962,278	665,393	296,885	2.03	665,393	1,350,000	300,000	380,000
2	406,343	1.45	587,645	406,343	181,302	2.03	406,343	830,000	180,000	240,000
3	9,484,468	1.45	13,716,251	9,484,468	4,231,783	2.03	9,484,468	19,300,000	4,230,000	5,590,000
4	27,411,093	1.45	39,641,383	27,411,093	12,230,290	2.03	27,411,093	55,770,000	12,230,000	16,130,000
5	14,435,219	1.45	20,875,929	14,435,219	6,440,710	2.03	14,435,219	29,370,000	6,440,000	8,490,000
Total	$52,402,516		75,783,487	52,402,516	23,380,972		52,400,000	106,620,000	23,380,000	30,830,000

TOTAL SITE IMPROVEMENTS AND HOME CONSTRUCTION

Year	Construction expenditures	Type I output multiplier	Direct & indirect impacts	Direct construction expenditures	Indirect impact only	Type II output multiplier	Direct output impact	Total	Indirect output impact	Induced output impact
1	$1,575,150	1.45	2,277,950	1,575,150	702,801	2.03	1,575,150	3,200,000	700,000	920,000
2	4,383,332	1.45	6,339,089	4,383,332	1,955,757	2.03	4,383,332	8,920,000	1,960,000	2,580,000
3	21,579,885	1.45	31,208,405	21,579,885	9,628,520	2.03	21,579,885	43,910,000	9,630,000	12,700,000
4	30,306,040	1.45	43,827,999	30,306,040	13,521,959	2.03	30,306,040	61,660,000	13,520,000	17,830,000
5	14,477,163	1.45	20,936,589	14,477,163	6,459,425	2.03	14,477,163	29,460,000	6,460,000	8,520,000
Total	$72,321,570		104,590,032	72,321,570	32,268,462		72,300,000	147,150,000	32,270,000	42,550,000

Source: John Child & Company, based on Developer's Project Budget and Cashflow.

EMPLOYMENT IMPACTS OF CONSTRUCTION
In 2019 Dollars Using 2012 Multipliers

SITE IMPROVEMENTS

Year	Direct construction expenditures (mils $ 2019)	Employment coefficient	Direct employment impact	Type I employment multiplier	Indirect impact	Type II employment multiplier	Induced impact	Total	Implied household income per job [1]
1	$0.91	5.3	4.85	6.33	0.91	9.58	2.96	8.72	68,135.31
2	3.98	5.3	21.19	6.10	3.06	9.25	12.54	36.79	68,135.23
3	12.10	5.3	64.44	5.88	6.64	8.93	36.94	108.03	68,135.24
4	2.89	5.3	15.42	5.67	0.98	8.62	8.57	24.97	68,135.26
5	0.04	5.3	0.22	5.67	0.01	8.62	0.12	0.36	
	$19.92		106.12		11.60		61.13	178.86	

HOME CONSTRUCTION

Year	Direct construction expenditures (mils $ 2019)	Employment coefficient	Direct employment impact	Type I employment multiplier	Indirect impact	Type II employment multiplier	Induced impact	Total	Implied household income per job [1]
1	$0.67	5.3	3.54	6.33	0.66	9.58	2.17	6.37	68,135.33
2	0.41	5.3	2.16	6.10	0.31	9.25	1.28	3.76	68,135.46
3	9.48	5.3	50.53	5.88	5.21	8.93	28.97	84.71	68,135.24
4	27.41	5.3	146.04	5.67	9.26	8.62	81.10	236.40	68,135.24
5	14.44	5.3	76.91	5.67	4.87	8.62	42.71	124.49	68,135.24
	$52.40		279.18		20.32		156.23	455.73	

TOTAL SITE IMPROVEMENTS AND HOME CONSTRUCTION

Year	Direct construction expenditures (mils $ 2019)	Employment coefficient	Direct employment impact	Type I employment multiplier	Indirect impact	Type II employment multiplier	Induced impact	Total	Implied household income per job [1]
1	$1.58	5.3	8.39	6.33	1.57	9.58	5.13	15.09	68,135.20
2	$4.38	5.3	23.35	6.10	3.37	9.25	13.82	40.55	68,135.25
3	$21.58	5.3	114.97	5.88	11.86	8.93	65.91	192.74	68,135.24
4	$30.31	5.3	161.46	5.67	10.23	8.62	89.67	261.36	68,135.24
5	$14.48	5.3	77.13	5.67	4.89	8.62	42.84	124.85	68,135.24
	$72.32		385.30		31.92		217.36	634.59	

[1] Bureau of Labor Statistics estimates 68% of costs are for salaries and wages. 32% for fringe benefits.

Source: John Child & Company, based on Developer's Project Budget and Cashflow.

EARNINGS IMPACTS OF CONSTRUCTION
In 2019 Dollars Using 2012 Multipliers

SITE IMPROVEMENTS

Year	Direct construction expenditures	Income coefficient	Direct income impacts	Type I income multiplier	Indirect income impacts	Type II income multiplier	Induced income impacts	Total
1	$909,757	0.36	330,242	0.47	100,061	0.63	139,697	570,000
2	3,976,989	0.36	1,443,647	0.47	437,415	0.63	618,938	2,500,000
3	12,095,417	0.36	4,390,636	0.47	1,330,333	0.63	1,889,031	7,610,000
4	2,894,947	0.36	1,050,866	0.47	318,405	0.63	450,729	1,820,000
5	41,945	0.36	15,226	0.47	4,613	0.63	10,161	30,000
	$19,919,054		7,230,617		2,190,828		3,108,555	12,530,000

HOME CONSTRUCTION

Year	Direct construction expenditures	Income coefficient	Direct income impacts	Type I income multiplier	Indirect income impacts	Type II income multiplier	Induced income impacts	Total
1	$665,393	0.36	241,538	0.47	73,184	0.63	105,278	420,000
2	406,343	0.36	147,503	0.47	44,692	0.63	67,805	260,000
3	9,484,468	0.36	3,442,862	0.47	1,043,164	0.63	1,483,974	5,970,000
4	27,411,093	0.36	9,950,227	0.47	3,014,851	0.63	4,284,922	17,250,000
5	14,435,219	0.36	5,239,984	0.47	1,587,680	0.63	2,252,336	9,080,000
	$52,402,516		19,022,114		5,763,571		8,194,315	32,980,000

TOTAL SITE IMPROVEMENTS AND HOME CONSTRUCTION

Year	Direct construction expenditures	Income coefficient	Direct income impacts	Type I income multiplier	Indirect income impacts	Type II income multiplier	Induced income impacts	Total
1	$1,575,150	0.36	571,779	0.47	173,246	0.63	244,975	990,000
2	4,383,332	0.36	1,591,150	0.47	482,107	0.63	686,743	2,760,000
3	21,579,885	0.36	7,833,498	0.47	2,373,497	0.63	3,373,005	13,580,000
4	30,306,040	0.36	11,001,092	0.47	3,333,257	0.63	4,735,651	19,070,000
5	14,477,163	0.36	5,255,210	0.47	1,592,293	0.63	2,262,497	9,110,000
	$72,321,570		26,252,729		7,954,401		11,302,870	45,510,000

Source: John Child & Company, based on Developer's Project Budget and Cashflow.

FISCAL IMPACTS TO STATE OF HAWAII
In 2019 Dollars Using 2012 Multipliers

SITE IMPROVEMENTS

Year	Direct construction expenditures	Tax coef	Direct tax impacts	Type I tax multiplier	Indirect tax impacts	Type II tax multiplier	Induced tax impacts	Total
1	$909,757	0.0731	66,470	0.0945	$19,526	0.12	24,004	110,000
2	3,976,989	0.0731	290,575	0.0945	85,357	0.12	114,068	490,000
3	12,095,417	0.0731	883,740	0.0945	259,601	0.12	346,659	1,490,000
4	2,894,947	0.0731	211,516	0.0945	62,134	0.12	86,350	360,000
5	$41,945	0.0731	3,065	0.0945	900	0.12	6,035	10,000
	$19,919,054		1,455,366		427,519		577,115	2,460,000

HOME CONSTRUCTION

Year	Direct construction expenditures	Tax coef	Direct tax impacts	Type I tax multiplier	Indirect tax impacts	Type II tax multiplier	Induced tax impacts	Total
1	$665,393	0.0731	$48,616	0.0945	$14,281	0.12	17,103	80,000
2	406,343	0.0731	29,689	0.0945	8,721	0.12	11,590	50,000
3	9,484,468	0.0731	692,973	0.0945	203,564	0.12	273,463	1,170,000
4	27,411,093	0.0731	2,002,764	0.0945	588,320	0.12	798,916	3,390,000
5	14,435,219	0.0731	1,054,695	0.0945	309,820	0.12	415,485	1,780,000
	$52,402,516		3,828,737		1,124,707		1,516,556	6,470,000

TOTAL SITE IMPROVEMENTS AND HOME CONSTRUCTION

Year	Direct construction expenditures	Tax coef	Direct tax impacts	Type I tax multiplier	Indirect tax impacts	Type II tax multiplier	Induced tax impacts	Total
1	$1,575,150	0.0731	115,087	0.0945	$33,807	0.12	41,106	190,000
2	4,383,332	0.0731	320,264	0.0945	94,079	0.12	125,657	540,000
3	21,579,885	0.0731	1,576,713	0.0945	463,165	0.12	630,122	2,670,000
4	30,306,040	0.0731	2,214,280	0.0945	650,454	0.12	875,266	3,740,000
5	14,477,163	0.0731	1,057,759	0.0945	310,721	0.12	421,520	1,790,000
	$72,321,570		5,284,103		1,552,226		2,093,671	8,930,000

Source: John Child & Company, based on Developer's Project Budget and Cashflow.

SCOPE OF PROFESSIONAL SERVICES

Background

John Child & Company is a professional corporation that specializes in real estate appraisal and consulting and business valuation. It is the only company in Hawaii with expertise and professional designations in both real estate appraisals and business valuations.

John Child & Company was established by John F. Child, Jr. in 1937. The Company was the first firm to specialize in market research in Hawaii. Since 1937, the Company has provided critical knowledge of real estate market conditions and trends gained from the strength of its market research. As a result, its clients have confidence that John Child & Company real estate appraisal and business valuation assignments are based on competent analysis and careful documentation, and its consulting assignments focus on the key issues and provide sound alternatives.

The Company's professional team members' past and current local, regional, and national leadership positions in their professional organizations help to establish and promote the highest standards of professional practice and ethics for the industry.

Real Estate Appraisal and Consulting

The Company's real estate consulting and appraisal practice includes a range of specialized services covering real estate in Hawaii and the Pacific area. Professional services include:

- Valuation of real estate
- Litigation support
- Arbitration
- Market rent analysis
- Highest and best use studies
- Market and financial feasibility analyses
- Economic and fiscal impact assessments
- Purchase price allocation.

Its assignments include all types of real estate interests such as fee simple, leasehold, leased fee, and other partial rights and fractional interests. Its assignments cover a variety of land uses and property types such as:

- Office buildings and commercial property
- Industrial property
- Telecommunications facilities
- Hotels and resort properties
- Agricultural, conservation, and vacant land
- Conservation easements
- Shopping centers and retail facilities
- Residential developments (single family, multifamily, and condominium)

- Master-planned and mixed-use projects
- Golf courses
- Healthcare facilities
- Redevelopment projects
- Special-purpose property
- Timeshare properties.

Business Valuation

The Company's business valuation practice focuses on the valuation of closely-held businesses, including controlling and minority interests in corporations, partnerships, limited liability companies, and family limited partnerships. Its business valuation practice provides assistance in:

- Estate planning
- Tax reporting
- Mergers, acquisitions, and sales
- Stock transfers and redemptions
- Financial reporting
- Internal accounting
- Litigation support.

REPRESENTATIVE ASSIGNMENTS

The Company has provided real estate appraisal and consulting and business valuations for more than 80 years.

Real Estate Appraisal and Consulting

The Company's real estate appraisal and consulting practice covers a variety of properties and property interests. Real estate interests include fee simple, leasehold, leased fee, and other partial rights and fractional interests. Representative projects are listed as follows:

Redevelopment

Aloha Tower
Honolulu Waterfront Master Development Plan
Kakaako Redevelopment Plan
Kakaako Waterfront Park
Kapalama Development Complex
Pawaa Redevelopment Masterplan
Puck's Alley/Moiliili Gateway

Resorts

Hualalai
Ka'anapali North Beach
Kapalua
Kauai Lagoons
Ka'upulehu
Kiahuna Plantation
Ko Olina
Makena
Manini'owali
Mauna Kea
Princeville
Turtle Bay
Waikoloa Beach Resort
Wailea Resort

Hotels

Embassy Suites Ka'anapali
Four Seasons Resort Hualalai
Halekulani Hotel
Hilton Hawaiian Village
Hotel Hana Maui
Hyatt Regency Maui
Hyatt Regency Waikiki
Kahala Hilton
Kea Lani Hotel
Koa Kea Hotel
King Kamehameha Kona Beach Hotel
Kona Village
Maui Marriott
Maui Prince
Princeville Hotel
Sheraton Kauai Resort
Sheraton Waikiki
W Hotel
Wailea Beach Resort
Waikiki Resort Hotel

Shopping Centers

Ala Moana
Aloha Tower Marketplace
Coconut Grove
Downtown Kihei (proposed)
Ewa Pointe Marketplace
Hawaii Kai Shopping Center
Hawaii Kai Towne Center
Kahala Mall Center
Kamehameha Shopping Center
Keauhou Shopping Center
Keeaumoku Shopping Center
King's Village
Koko Marina
Kukui Mall
Lanihau Center
Mililani
Nimitz Business Center
Pearl City
Pearl City Shops
Pearl Kai Center
Piilani Shopping Center
Princeville
Royal Hawaiian
Wailea Shopping Village
Windward City
Windward Mall

Golf Courses

Asahi Kanko Olomana Course
Dunes at Maui Lani
Hawaii Country Club
Hawaii Kai Golf Course
Ka'anapali
Kauai Lagoons (Kiele and Lagoons)
Ko Olina
Mid-Pac Country Club
Pearl Country Club
Princeville (Makai and Prince)
Sandalwood Golf Course
Silversword Golf Course
Waikapu Country Club
Waikele Golf Course
Waikoloa (Kings)
Waikoloa Village (two proposed)
Wailea (Blue, Emerald, and Gold)

Office Buildings

1164 Bishop
Aina Haina Professional Building
Ala Moana Building
Ala Moana Pacific Center
Amfac Towers
ANA Kalakaua Center
Arcade Building
C. Brewer Building
Castle Professional Center
Commerce Tower
Davies Pacific Center
Financial Plaza of the Pacific
Grosvenor Center
Harbor Court
Hawaii National Bank
Hawaiian Life Building
HMSA Building
James Campbell Building
Kailua Professional Center I and II
Leilehua Building
Pan Am Building
Waialae Building
Waikiki Bank of Hawaii Building
Waikiki Trade Center

Industrial Properties

Airport Industrial Subdivision
Airport Trade Center
Barbers Point
Bougainville
Bougainville Commercial Center
Campbell Industrial Park
Ewa Drum & Varona Village
Halawa Center
Halawa Industrial Subdivision
Hawaii Business Center
Honokohau Harbor
Iwilei & Iwilei Business Center
Kalaeloa
Kapolei Business Park
Kona Industrial Subdivision
La Tour Plaza
Lihue Industrial Park
Makalapua Business Center
Manana
Mapunapuna
Mill Town
Panasonic/Technics Center
Pier 38 Domestic Commercial
Fishing Village
Sand Island Business Park
Waiau
Waikele Storage Park
Waipahu
Waipio Business Center

Residential

Discovery Bay
Ewa by Gentry
Harbor Court
Honolulu Park Place
Imperial Plaza
Kalele Kai
Kamaole Heights
Kamehame Ridge
Ko Olina Fairways
Lahaina Residential
Makakilo
Maui Eldorado
Mawaena Kai
Mililani
Napili Kai
Nauru Tower
One Archer Lane
Royal Capitol Plaza
Royal Kuhio
The Kahala Beach
The Kalia, Inc.
Uplands at Mauna Kea
Victoria Tower
Village Park
Vineyard Court
Wailea Golf Vistas
Wailea Pualani Estate
Yacht Harbor Tower

Healthcare

Adventist Health
Arcadia Retirement Residence
Castle Medical Center
Clinical Laboratories of Hawaii
Diagnostic Laboratories Services
Hale Mahaolu
Hawaii Health Care Systems Corporation
Kahuku Medical Center
Kapiolani Medical Center for Women and Children
Kauai Care Center
Pali Momi Medical Center
Palolo Chinese Home
Ponds at Punalu'u
Queen's Health Systems
Regency at Hualalai
Roselani Place
St. Francis Healthcare Systems
Straub Hospital & Clinic
Wilcox

Agricultural, Conservation, and Conservation Easements

Campbell Palehua and Kahe Ranch
Dunbar Ranch
Galbraith Trust Lands
Hana Ranch
Honouliuli Forest Reserve
Kainalu Ranch
Kalauao Valley
Kanepuu Conservation Easement
Kaupo Ranch Wai'u and Nu'u Lands
Kealia Pond
Kona Forest Unit Access
Kuamo'o Point
Kukaiau Ranch Conservation Easement
Lipoa Point
Maka'alae Conservation Easement
May's Landing
McCandless Ranch Conservation Easement
Moanalua Valley
Palmyra Atoll
Paradise Park
Ponoholo Ranch
Pupukea Property Conservation Easement
Pu'u O Hoku Ranch
Turtle Bay
Ulupalakua Ranch Conservation Easements
Waikapuna
Waimea Valley
Wao Kele O Puna

Special Purpose

- Cemeteries/Memorial Parks
- Chinese Cultural Plaza
- Churches
- Convents
- Condominium and Residential
- Lease-to-Fee Conversions
- Hawaii Newspaper Agency Building
- Hawaiian Home Land Claims
- Kapaa Land Fill
- Kaumalapau Harbor
- NAS Barbers Point Electrical Distribution System
- Oahu Club
- Outrigger Canoe Club
- Quarries
- Schools
- State of Hawaii Airports
- Telecommunications sites
- Tokai University
- Visitor attractions
- Wedding chapels

Business Valuation

The Company's business valuation practice focuses on closely-held businesses in Hawaii. Business valuation assignments typically estimate the market value of controlling and minority interests in closely-held corporations, limited liability companies, and partnerships.

These assignments are prepared to assist in estate planning and estate and gift tax reporting to the Internal Revenue Service, litigation, mergers, stock repurchase/redemptions, and acquisitions.

Valuations of closely-held businesses include:

Corporations

- Aala Produce, Inc.
- Advanced Fresh Concepts Food Service
- Dowling Company, Inc.
- Finance Investment, Ltd.
- Gay & Robinson, Inc.
- Industrial Investors, Inc.
- Jas W. Glover Holding Company, Ltd.
- K. Inouye Properties, Inc.
- Loyalty Development Company, Inc.
- Loyalty Enterprises, Ltd.
- Palani Ranch Company, Inc.
- Ponoholo Ranch Limited
  - Royal Phoenix Corporation
- Sen Plex Corporation
- SSFM Engineers

Limited Partnerships and Limited Liability Companies

- Aaron Properties Partners of Hilo
- Baruch Bakar and Beth-El
- BFFP Incorporated
- Caroline J. Robinson LLC
- CGB Partners
- Fernandez Properties
- Hawaii Aina Management
- Honolulu Open Medical Imaging, LLC
- J.L.P. Robinson LLC
- K.J.L. Associates
- KSM Associates LLC
- KVH Partners
- Kaha Kai LLC
- Kamali'i Family Limited Partnership
- Lanihau Properties LLC
- Leong Brothers
- Livingston Family Limited Partnership
- Loyalty Associates
- Loyalty Investments
- Maui Quest, LLC
- MLB Inc.
- Pawaa Court LLC
- Pohaku Koloa
- Robinson Kunia Land LLC
- Royal Phoenix
- SCF Limited Partnership
- Second City
- Taihook Associates
- Taira Family Limited Partnership
- The Mark A. Robinson Trusts

CLIENTS

The Company provides professional services to a range of clients representing private, non-profit, and public interests. Selected clients in private industry, non-profit organizations, and public agencies are listed.

PRIVATE INDUSTRY

Attorneys

Alston Hunt Floyd & Ing
Ashford & Wriston
Bays Lung Rose & Holma
Bendet Fidell
Cades Schutte
Carsmith Ball
Case & Lynch
Case Lombardi & Pettit
Chun Kerr LLP
Cox Wooten Lerner
Crockett & Nakamura
Damon Key Leong Kupchack Hastert
Ekimoto & Morris
Goodsill Anderson Quinn & Stifel
Huilin Dong, Attorney at Law
Imanaka & Asato
Ing Horikawa, Jorgensen & Endo
Joy Miyasaki
Kobayashi Sugita & Goda
Law Offices of Thomas Watts
MacDonald Rudy O'Neill & Yamauchi
McCorriston Miller Mukai McKinnon
Ning, Lily & Jones
Oshia Chuh Fong & Chung
Price Okamoto Himeno & Lum
Rush Moore
Schneider Tanaka Radovich Andrew & Tanaka
Settle Law
Starn O'Toole Marcus & Fisher
Tom Petrus & Miller, LLLC
Torkildson Katz Moore Hetherington & Harris
Tsugawa Biehl Lau & Muzzi
Van Buren & Shimizu, LP
Wagner Choi Verbrugge
Watanabe Ing LLP

Banks/Lenders

American Savings Bank
Bank of Hawaii
Central Pacific Bank
Citibank, N.A.
First Hawaiian Bank
Hawaii National Bank
The Chuo Mitsui Trust & Banking Co., Ltd.
The Industrial Bank of Japan, Ltd.
The Long-Term Credit Bank of Japan, Ltd.
Wells Fargo Bank

Closely Held Corporations/Limited Partnerships/Family Trusts

Baruch Bakar and Beth-el Associate
BFFP Incorporated
Caroline J. Robinson LLC
Gay & Robinson
Hawaii Aina Management Co. LL
Jas. W. Glover Holding Company, Ltd.
J.L.P. Robinson LLC
Kaha Kai LLC
Kamalii Family Limited Partnership
K.J.L. Associates
KVH Partners and CGB Partners
Knudsen Trusts
Lanihau Properties, LLC
Leong Brothers
Livingston Family Limited Partnership
Loyalty Development
Loyalty Investments
Maui Quest LLC
MLB, Inc.
Norman & Amy Hirohata-Goto LLC
Nua Family Limited Partnership
Palani Ranch
Pawaa Court LLC
Pohaku Koloa LLC

Closely Held Corporations/Limited Partnerships/Family Trusts, Continued

Ponoholo Ranch, Limited
Royal Phoenix Corporation
SCF Limited Partnership
Second City Property Management Inc.
Sen Plex Corp.
Sheridan Ing Marital Trust
Taira Family Limited Partnership
The Mark A. Robinson Trusts
WBL, Inc.

Developers/Landowners

A&B Properties, Inc.
Aloha Tower Associates
Bedford Properties, Inc.
(fka Kaiser National Housing Corporation Development Company)
Cuzco Development U.S.A. LLC
Dowling Company, Inc.
Elleair Hawaii, Inc.
Finance Realty
Gentry Companies
Hana Ranch Partners
Hanalei Land Company
Haseko (Hawaii), Inc.
Hemmeter/Tokyu Waterfront Joint Venture
James Campbell Company
Kaneohe Ranch
Kapolei Property Development, LLC
Krausz Properties
McCandless Land & Cattle Company
MW Group, Ltd.
Niu Pia Farms
Pauahi Management Corp.
Queen Emma Land Company
Sam Koo Pacific, LLC
Tesoro Hawaii Corporation
Ulupalakua Ranch Inc.

Resort Operators/Owners

Alpha U.S.A., Inc.
Kapalua Land Company, Ltd.
Kaupulehu Makai Venture (Hualalai Resort)
Namalu LLC (Makena Resort)
Princeville Development Company
Shinwa International
Turtle Bay Resort
Wailea Resort Company, Inc.

Retailers

7-Eleven (Hawaii), Inc.
Kyotaru International
McDonald's Restaurants of Hawaii
Safeway, Inc.
Sears Holding Corporation

Trust Companies and Trusts

Bank of Hawaii Trust Department
First Hawaiian Trust
Hawaiian Trust Co., Ltd.
Knudsen Trusts
Lili'uokalani Trust
Mark A. Robinson Trusts

NON-PROFIT ORGANIZATIONS

Adventist Health
Bobby Benson Center
Castle Medical Center
Chaminade College
Hawaii Health Systems Corporation
Hawaii Opera Theatre
Hawaii Pacific Health
Hawaii Pacific University
Honolulu Community Action Program, Inc. (HCAP)
Iolani School
Japan Association of Real Estate Appraisers

NON-PROFIT ORGANIZATIONS, Continued

Kahuku Medical Center
Kamehameha Schools
KCAA Pre-Schools of Hawaii
Manoa Valley Theatre
Maui Coastal Land Trust
National Tropical Botanical Garden
Pacific Buddhist Academy
Punahou School
Queen's Health Systems
Segull Schools, Inc.
The Fathers of the Sacred Hearts
The Sisters of the Sacred Hearts
St. Francis Healthcare Systems of Hawaii
The Nature Conservancy
The Trust for Public Land
Young Women's Christian Association (YWCA)

PUBLIC AGENCIES

Bank Regulatory Agencies

Federal Depository Insurance Corporation (FDIC)
Federal Home Loan Bank Board (FHLBB)

City & County of Honolulu

Honolulu Authority for Rapid Transportation
Honolulu Public Transit Authority
Department of Housing and Community Development
Department of Design and Construction
Department of the Corporation Counsel

County of Hawaii

Department of Finance
Department of Public Works

County of Kauai

Department of Water

Federal Agencies

Internal Revenue Service
National Business Center, Appraisal Services Directorate
U.S. Attorney General
U.S. Department of Agriculture, Forest Service
U.S. Department of Agriculture, Natural Resource Conservation Service
U.S. Department of the Army
U.S. Department of the Navy
U.S. Department of Interior, Fish & Wildlife Service

Utilities

Aloha Solar Energy Fund
Citizens Utilities Company - Kauai Electric
D.R. Fortress
Eurus Energy America Corporation
Hawaiian Electric Industries (HEI, Inc.)
Pacific Resources, Inc.

State of Hawaii

Attorney General
Department of Hawaiian Home Lands
Department of Land & Natural Resources
Department of Transportation
Hawaii Community Development Authority
Hawaii Housing Finance and Development Corporation
Office of Hawaiian Affairs

PROFESSIONAL TEAM QUALIFICATIONS

The professional team has a wide range of real estate experience gained through a variety of field experience, professional accomplishments, training, and education. Team members have earned their reputation for quality work and professional service.

Professional Designations

Team members hold designations earned from the major professional organizations. Team members have earned the MAI designation from the Appraisal Institute, the CRE (Counselor of Real Estate) from The Counselors of Real Estate, and ASA (Accredited Senior Appraiser) from the American Society of Appraisers.

State Certification

Members of the professional team are Certified General Appraisers under the State of Hawaii license and certification program.

Other Qualifications and Training

Professional team members are qualified as expert witnesses in the courts of Hawaii; actively participate in and serve as arbitrators and review appraisers; and continue to attend courses, seminars and workshops to strengthen their own specialized appraisal skills and education.

Professional Team Members

Professional team members include:

- Karen Char, MAI, CRE, ASA, President
- Paul D. Cool, MAI, CRE, Vice President
- Shelly H. Tanaka, MAI, AI-GRS, Vice President
- Masayo Allen, Esq. (MAI Candidate)

The education and professional experiences of team members are outlined in their accompanying resumes.

QUALIFICATIONS OF JOHN CHILD & COMPANY

KAREN CHAR, MAI, CRE, ASA
President

As President of John Child & Company, Karen is responsible for developing and managing the Company's professional practice that includes real estate appraisal and consulting and business valuation. She specializes in complex real estate and business valuation assignments.

Karen originally joined the Company in 1973 and has over 40 years of professional experience. She has served in elected and appointed national and international leadership positions in the Counselors of Real Estate and the Appraisal Institute. In 2010 she received the prestigious James Felt Creative Counseling Award from The Counselors of Real Estate.

Education

- Master of Business Administration, University of Hawaii, 1972
- Bachelor of Business Administration, University of Hawaii, 1970
- Punahou School, 1967
- Successfully completed various courses, workshops, and seminars sponsored by the Appraisal Institute and The Counselors of Real Estate

Professional Associations

- Member, The Counselors of Real Estate (CRE designation)
  - 2010 James Felt Creative Counseling Award
  - Chief Delegate to the Pan Pacific Congress of Real Estate Appraisers, Valuers, and Counselors: New Zealand, 2000; Singapore, 1998; Sydney, 1996; Yokohama, 1994; Speaker: New Zealand, 1988 and Korea, 1990
  - Member, National Board of Governors, 1995 - 2000
  - National Vice President, 1997
  - Vice Chair, National Ethics & Professional Practice Committee, 1995; Member, 1993 - 1998 and 2000 - 2002
  - Member, National Finance Committee, 1995 - 1997
  - Member, International Task Force (fka International Activities Committee), 1992 - 1999
  - Member, National Communications Committee, 1993 - 1995, 2001; National Public Relations, 1998 - 2001, Technology Committee, 2001
  - Chair, Honolulu Convention Committee, 1992

- Member, Appraisal Institute (MAI designation)
  - Member (representing Region VII, Arizona, Hawaii, Southern California, and Southern Nevada), National Appellate Division (serves as National Ethics Appeal Board), 1997 - 1999
  - Vice Chair, National Admissions Committee of the General Appraisal Board, 1991
  - Governing Councilor, 1986 - 1988
  - Vice Chair, National Bylaws Committee, 1986 - 1989
  - Vice Chair, Organizing Committee, Pan Pacific Congress of Real Estate Appraisers, Valuers and Counselors, Honolulu, 1986
  - Member, National Bylaws Committee, 1985
  - Member, National Admissions Committee, 1982 – 1990
  - Chairman, National Evaluation Report Subcommittee, 1982

- Member, Appraisal Institute, (continued)
  - President, 1986; Vice President, 1985; Secretary, 1984; Honolulu Chapter No. 15
  - Grader, National Board of Examiners, 1982 - 1983
  - Admissions Chairman, Southwest Region, 1983

- Accredited Senior Appraiser, American Society of Appraisers, (ASA designation, specializing in business valuation)
- Member, Aloha Chapter of Lambda Alpha International, an Honorary Land Economics Society

Other Real Estate and Charitable Associations and Community Activities

- Nonlawyer Member, Magistrate Judge Merit Selection Panel, District of Hawaii, 2018
- Director, Board of Directors, Hawaii Women's Legal Foundation, 2002 to present
- Vice President and Director, Board of Directors, Hawaii Opera Theatre, 2004 to present
- Author, "Creative Counseling: Preserving the Hawaii Opera Theatre" *Real Estate Issues,* Volume 36, November 1, 2011; 41-45
- President, Hawaii Chapter of the National Association of Office and Industrial Properties (NAIOP Hawaii), 1998
  - Member, Board of Directors, 1996 - 1998
  - Chair, Leasehold Issues Committee, 1996 - 1997
  - Responsible for writing NAIOP's reports as follows:
    - *Ground Lease Renegotiation Issues and Practical Alternatives*, September, 1996
    - *Lease Rent Arbitration and USPAP*, January, 1997

Professional Experience

- President and Chief Executive Officer, John Child & Company, Inc., 1984 to present
- Senior Manager, Peat, Marwick, Mitchell & Co. (now known as KPMG Peat Marwick), 1979 - 1984
- Appraiser, John Child & Company, Inc., 1973 - 1978

Professional Designations

- The Appraisal Institute conducts a voluntary program of continuing education for its designated members. Members who meet the standards of this program are awarded periodic educational certification. Karen Char, MAI is certified under this program.

- The American Society of Appraisers conducts a mandatory program of recertification through continuing education and/or participation in professional activities every five years. Karen Char, ASA, is certified under this program.

State Certification

- Certified General Appraiser, State of Hawaii, License Number CGA-184, expiring December 31, 2019.

Court Testimony

- Qualified as an expert witness in the valuation of real property and closely-held businesses in the Courts of the State of Hawaii.

QUALIFICATIONS OF JOHN CHILD & COMPANY

MASAYO K. ALLEN, ESQ. (MAI CANDIDATE)
Appraiser

Masayo values real property on the Hawaiian Islands. Her appraisals include commercial, residential, industrial and agricultural properties, conservation and right-of-way easements, and fiscal and economic impact studies. Masayo's valuation estimates are used for estate planning and gifting decisions, acquisitions and mergers, tax reporting, purchase price allocations, and in litigation, arbitration and mediation negotiations.

Education

- Master of Science in Real Estate, University of San Diego, San Diego 2015
- Appraisal Institute courses between 2015 and 2018:
  - Basic Appraisal Principles
  - Basic Appraisal Procedures
  - 15-Hour National USPAP
  - Supervisory Appraiser/Trainee Appraiser
  - Advanced Residential Applications and Case Studies
  - Real Estate Finance, Statistics, and Valuation Modeling
  - General Appraiser Site Valuation and Cost Approach
  - General Appraiser Sales Comparison Approach
  - General Appraiser Income Approach/Part I
  - General Appraiser Income Approach/Part II
  - General Appraiser Market Analysis and Highest & Best Use
  - General Appraiser Report Writing and Case Studies
  - 7-Hour National USPAP Update Course
  - Quantitative Analysis
  - General Demonstration Report Writing
  - Advanced Income Capitalization
  - Advanced Market Analysis and Highest & Best Use
  - Advanced Concepts and Case Studies
  - Business Practices and Ethics
  - General Dèmonstration Report-Capstone
  - Condemnation Appraising: Principles & Applications
- Juris Doctor, Loyola Law School, Los Angeles, 2000
- Bachelor of Arts, Business Economics, University of California, Los Angeles, 1996

Professional Associations

- Appraisal Institute
  - Hawaii Chapter, 2019 - Present
  - Northern California Chapter, 2015 - 2019
    - Co-Chair, East Bay Branch, 2018
  - San Diego Chapter, 2014 – 2019
- Hawaii State Bar Association (2013 - Present)
- The State Bar of California (2001 - Present)

Professional Experience

- Appraiser, John Child & Company, Inc., Hawaii (2019 - Present)
- Appraiser, Valbridge Property Advisors, Northern California (2017 - 2019)
- Research Analyst, Valbridge Property Advisors, Northern California (2015 - 2017)
- Intern, Jones, Roach & Caringella, San Diego (2015)
- Senior Associate Attorney, Anderson, McPharlin & Conners LLP, Los Angeles (2007-2013)
- Associate Attorney, Garrett & Tully, APC, (2002 - 2007)

Professional Designation

Masayo Allen is a candidate for the MAI designation with an estimated completion date of January 2020.

State Certifications

- Certified General Appraiser, State of Hawaii, License Number CGA-1350, expiring December 31, 2019.
- Certified General Appraiser, State of California, License Number AG-3003579, expiring February 18, 2020.

TRAFFIC IMPACT ANALYSIS REPORT

APPENDIX

K

TRAFFIC IMPACT ANALYSIS REPORT
PUUNANI HOMESTEAD PROJECT
WAILUKU, MAUI, HAWAII

FINAL DRAFT

January 16, 2020

Prepared for:

DDC LLC
2005 Main Street
Wailuku, Hawaii 96793

Austin, Tsutsumi & Associates, Inc.
Civil Engineers • Surveyors
501 Sumner Street, Suite 521
Honolulu, Hawaii 96817-5031
Telephone: (808) 533-3646
Facsimile: (808) 526-1267
E-mail: atahnl@atahawaii.com
Honolulu • Wailuku • Hilo, Hawaii

TRAFFIC IMPACT ANALYSIS REPORT

PUUNANI HOMESTEAD PROJECT

Wailuku, Maui, Hawaii

FINAL DRAFT

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Civil Engineers • Surveyors
Honolulu • Wailuku • Hilo, Hawaii

January 16, 2020

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AUSTIN, TSUTSUMI & ASSOCIATES, INC. CIVIL ENGINEERS • SURVEYORS
CONTINUING THE ENGINEERING PRACTICE FOUNDED BY H. A. R. AUSTIN IN 1934

TERRANCE S. ARASHIRO, P.E.
ADRIENNE W.L.H. WONG, P.E., LEED AP
DEANNA M.R. HAYASHI, P.E.
PAUL K. ARITA P.E.
ERIK S. KANESHIRO, L.P.L.S., LEED AP
MATT K. NAKAMOTO, P.E.
GARRETT K. TOKUOKA, P.E.

PUUNANI HOMESTEAD
TRAFFIC IMPACT ANALYSIS REPORT

Wailuku, Maui, Hawaii

1. INTRODUCTION

This report documents the findings of a traffic study conducted by Austin, Tsutsumi & Associates, Inc. (ATA) to evaluate the potential traffic impacts resulting from the proposed Department of Hawaiian Home Lands (DHHL) Puunani Homestead development (hereinafter referred to as the "Project") located in Wailuku, Maui, Hawaii.

1.1 Location

The Project is located in Wailuku on the island of Maui on a vacant parcel of land more specifically identified as TMK: (2) 3-5-002:002 (por.). The Project will be bounded by Honoapiilani Highway to the east and the Waiolani residential subdivision to the south. See Figure 1.1 for Project location.

1.2 Project Description

The Project proposes to develop 137 turn-key homes and 24 vacant residential lots, for a total of 161 single-family dwelling units for DHHL beneficiaries. Accessory dwelling units or ohana units will not be permitted. Access to the site will occur via two (2) new driveways off of Honoapiilani Highway. The southern access will provide primary access with permitted left-turns along the eastbound and northbound approaches. The northern access will provide secondary access limited to right-in, right-out (RIRO) access only.

Representatives from ATA and the Puunani Homestead Project team met with the State of Hawaii Department of Transportation (HDOT) on October 23, 2019 and the County of Maui Department of Public Works (DPW) on December 12, 2019 to provide an overview of the Project. Project land use, conclusions and recommendations presented in this TIAR are consistent with what was presented at both meetings with HDOT and DPW.

REPLY TO:
501 SUMNER STREET, SUITE 521 • HONOLULU, HAWAII 96817-5031
PHONE (808) 533-3646 • FAX (808) 526-1267
EMAIL : atahnl@atahawaii.com

OFFICES IN:
HONOLULU, HAWAII
WAILUKU, MAUI, HAWAII
HILO, HAWAII

PUUNANI HOMESTEAD PROJECT
TIAR

AustinTsutsumi & ASSOCIATES, INC.
Engineers & Surveyors

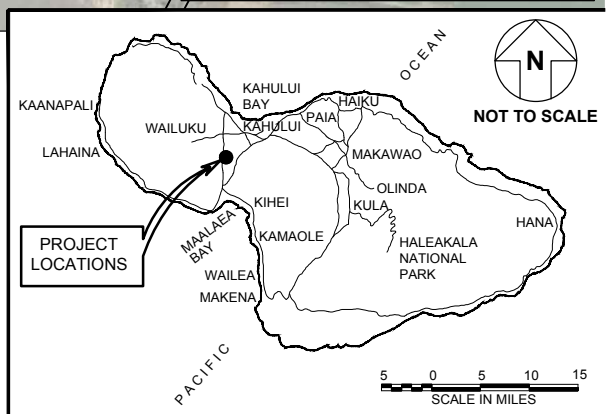
NOT TO SCALE

MAIKA ST.
MOKUHAU RD.
KAHAWAI ST.
MAIN ST.
IAO VALLEY RD.
KAAHUMANU AVE.
MAUI MEMORIAL HOSPITAL
MAHALANI ST.
KAOHU ST.
OLULOA DR.
WAIALE RD.
WAIINU RD.
ONEHEE AVE.
OLOMEA ST.
PUU KUKUI ELEMENTARY SCHOOL
KEHE LANI PKWY.
KAUPO ST.
KEHALANI VILLAGE CENTER DWY.
MOLOKAI HEMA ST.
LONO AVE.
PAPA AVE.
KUIKAHI DR.
MAUI LANI PKWY.
MAUI LANI VILLAGE CENTER
DUNES AT MAUI LANI GOLF COURSE
KAMEHAMEHA AVE.
HONOAPIILANI HWY.
KOKILOLIO ST.
ANAMULI ST.
PILIKANA ST.
HAAWI ST.
NOKEKULA LP.
PROJECT SITE
WAIKO RD.
KUIHELANI HWY.
MANEA PL.
OHANA HANA LP.
WAIKO RD.

NOTE:
THIS DRAWING IS FOR ILLUSTRATIVE PURPOSES ONLY. DO NOT USE FOR CONSTRUCTION.

STUDY INTERSECTIONS

1. WAIALE RD. & KAOHU ST. & OLULOA DR.
2. WAIALE RD. & WAIINU RD.
3. WAIALE RD. & OLOMEA ST.
4. WAIALE RD. & KAUPO ST.
5. WAIALE RD. & KUIKAHI DR. & MAUI LANI PKWY.
6. MAUI LANI PKWY. & KAMEHAMEHA AVE.
7. WAIALE RD. & KOKILOLIO ST.
8. WAIALE RD. & HAAWI ST.
9. WAIALE RD. & NOKEKULA LP.
10. WAIALE RD. & OHANA HANA LP.
11. WAIALE RD. & WAIKO RD.
12. HONOAPIILANI HWY. & WAIKO RD.
13. HONOAPIILANI HWY. & PILIKANA ST.
14. HONOAPIILANI HWY. & KUIKAHI DR.
15. HONOAPIILANI HWY. & KEHALANI PKWY.
16. KUIKAHI DR. & KEHALANI VILLAGE CENTER DWY.

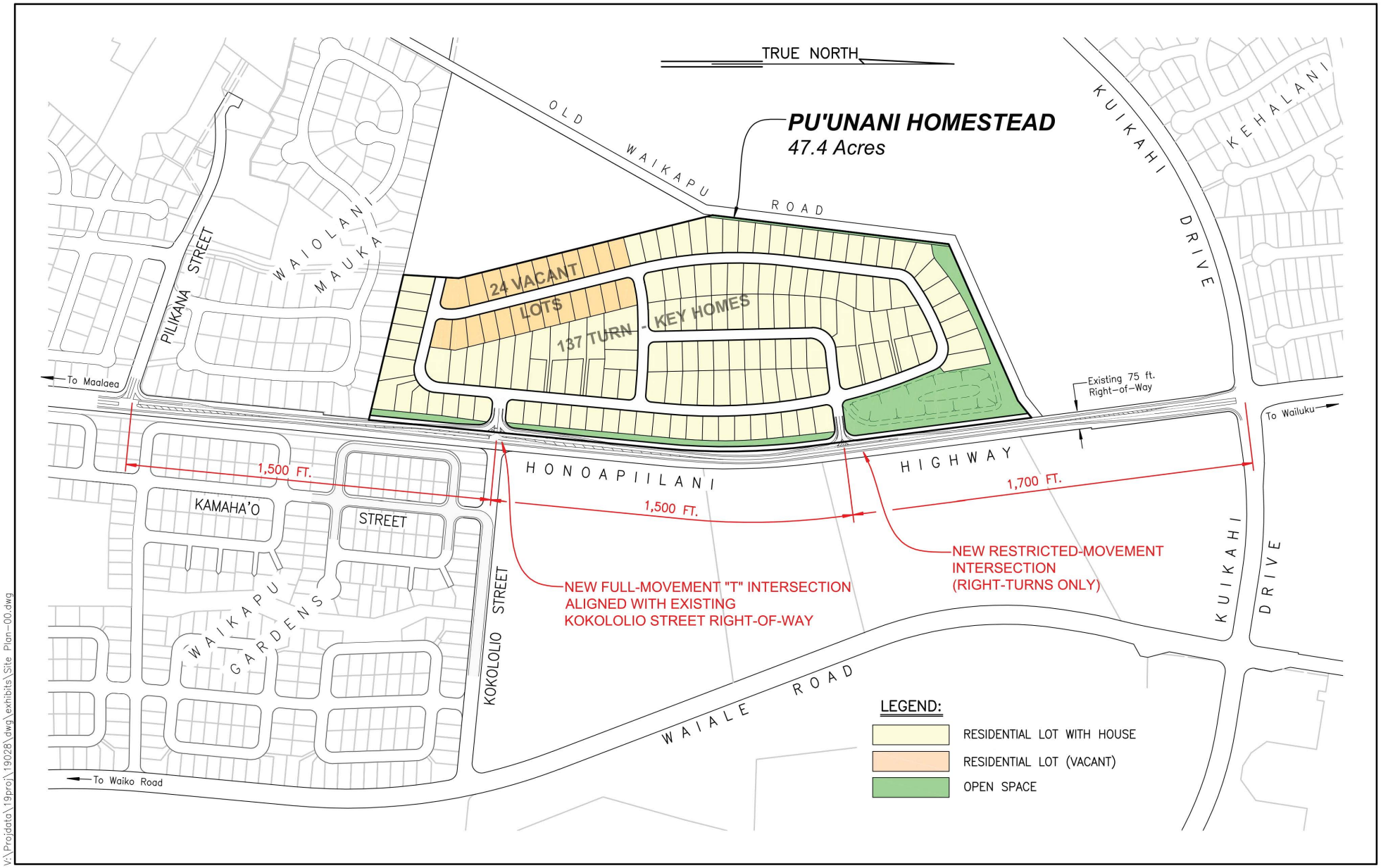


ISLAND OF MAUI
LOCATION MAP

FIGURE 1.1

LOCATION MAP

Austin Tsutsumi & Associates, Inc.
Engineers & Surveyors



V:\Projdata\19proj\19028\dwg\exhibits\Site Plan-00.dwg

2. METHODOLOGY

This study will address the following:

- Assess existing traffic operating conditions during the weekday AM and PM peak hours of traffic within the study area.
- Traffic Projections for Base Year 2024 (without the Project).
- Estimate the vehicular trips that will be generated by the Project.
- Traffic projections for the Project for Future Year 2024 (with Project).
- Recommendations for roadway improvements or other mitigative measures, as appropriate, to reduce or eliminate the adverse impacts resulting from traffic generated by the Project.

2.1 Intersection Methodology

Level of Service (LOS) is a qualitative measure used to describe the conditions of traffic flow at intersections, with values ranging from free-flow conditions at LOS A to congested conditions at LOS F. The Highway Capacity Manual (HCM), 6th Edition, includes methods for calculating volume to capacity ratios, delays, and corresponding Levels of Service that were utilized in this study. See Appendix B for Level of Service Criteria.

Analyses for the study intersections were performed using the traffic analysis software Synchro, which is able to prepare reports based on the methodologies described in the HCM. These reports contain control delay results as based on intersection lane geometry, signal timing, and hourly traffic volumes. Based on the vehicular delay at each intersection, a LOS is assigned to each approach and intersection movement as a qualitative measure of performance. These results, as confirmed or refined by field observations, constitute the technical analysis that will form the basis of the recommendations outlined in this report.

3. EXISTING TRAFFIC CONDITIONS

3.1 Roadway Network

The following are brief descriptions of the existing roadways studied within the vicinity of the Project:

Honoapiilani Highway is a north-south, two-way, two-lane, undivided arterial highway with posted speed limits ranging between 30 miles per hour (mph) and 45 mph. Honoapiilani Highway begins as the continuation of South High Street near Kahookele Street and continues southward through Waikapu, Maalaea, and wraps around the "Pali" to West Maui. Right turn channelization is provided at all of its major intersections within the study area.

Kuikahi Drive is an east-west, two-way, two-lane, undivided collector roadway with posted speed limits ranging between 25 mph and 30 mph. Kuikahi Drive begins approximately 1.2 miles west of Honoapiilani Highway within the Wailuku Heights development and extends eastward past Honoapiilani Highway, terminating near The Church of Jesus Christ of Latter Day Saints, where Kuikahi Drive becomes Maui Lani Parkway.

Maui Lani Parkway is an east-west, two-way, two-lane, divided roadway which provides connection for the Waiale area to regional roadways. Maui Lani Parkway begins to the east at it's T-intersection with Kuihelani Highway and terminates to the west at its intersection with Waiale Road, where it transitions into Kuikahi Drive.

Waiale Road is a north-south, two-way, two-lane, undivided collector roadway with a posted speed limit of 20 mph in the Project study area. To the north, Waiale Road serves as the southern connection to Lower Main Street and extends past the Maui Community Correctional Center, Kehalani Village Center and various residential subdivisions, eventually terminating at a T-intersection with East Waiko Road.

East Waiko Road is an east-west, two-way, two-lane, undivided collector roadway with a posted speed limit of 20 mph in the Project study area. East Waiko Road extends westward from Kuihelani Highway to Honoapiilani Highway where it continues as West Waiko Road within the Waikapu residential neighborhood.

Kehalani Parkway is an east-west, two-way, four-lane, divided collector roadway with posted speed limits ranging between 20 mph and 30 mph on either side of Honoapiilani Highway. Kehalani Parkway extends east of Honoapiilani Highway from the lower Kehalani residential subdivision at Kamole Street and continues in the mauka direction, curving north past Puu Kukui Elementary School in the upper Kehalani residential subdivisions.

Nokekula Loop, Haawi Street & Kokololio Street are east-west, two-way, two-lane, undivided local roadway to the west of Waiale Road with a posted speed limit of 20 mph. These three roads service the Waikapu Gardens Phase I residential neighborhood

Ohana Hana Loop is an east-west, two-way, two-lane, undivided local roadway to the west of Waiale Road with a posted speed limit of 20 mph. Ohana Hana Loop extends from Waiale Road and services the Waikapu Gardens Phase II residential neighborhood.

Kaohu Street is an east-west, two-way, two-lane, undivided local roadway on the northern side of the Project Site that extends from High Street to the west and ends at Waiale Road to the east, before turning into Oluloa Drive, to serve a residential subdivision. Kaohu Street provides access to various residential homes, various businesses and the Maui County Building.

Olomea Street is an east-west, two-way, two-lane, undivided local roadway that services the Kehalani residential subdivision consisting of various single family and multi-family dwellings.

Kaupo Street is an east-west, two-way, two-lane, undivided local roadway that services the Kehalani residential subdivision consisting of various single family and multi-family dwellings. Kaupo Street also provides northerly access to the Kehalani Village Center.

Kamehamea Avenue is generally a north-south, two-way, two lane undivided roadway which provides connectivity between the Wailuku and Kahului areas. Kamehameha Ave begins to the north with its intersection with Hana Highway near the Kanaha Pond, extends westward and then curves southward where it currently terminates near the Pomaikai Elementary School.

3.2 Existing Traffic Volumes

Intersection analysis within the study area was performed on the following intersections due to their proximity to the Project. Turning movement volumes were collected at each of the following Study Intersections on the dates noted:

- Honoapiilani Highway/Kehalani Parkway (Signalized) - *May 10, 2018*
- Honoapiilani Highway/Kuikahi Drive (Signalized) - *March 13, 2019*
- Honoapiilani Highway/Pilikana Street (Signalized) - *May 10, 2018*
- Kuikahi Drive/Kehalani Village Center Driveway (Unsignalized) - *April 9, 2019*
- Waiale Road/Kuikahi Drive & Maui Lani Parkway (Signalized) - *March 13, 2019*
- Maui Lani Parkway/Kamehameha Avenue (Unsignalized) - *March 13, 2019*
- Waiale Road/Kaupo Street (Unsignalized) - *April 9, 2019*
- Waiale Road/Olomea Street (Unsignalized) - *March 14, 2019*
- Waiale Road/Waiinu Road (Unsignalized) - *March 14, 2019*
- Waiale Road/Kaohu Street & Oluloa Drive (Unsignalized) - *April 9, 2019*
- Honoapiilani Highway/Waiko Road (Signalized) - *May 10, 2018*
- Waiale Road/Waiko Road (Unsignalized) - *April 4, 2019*
- Waiale Road/Ohana Hana Loop (Unsignalized) - *April 4, 2019*
- Waiale Road/Nokekula Loop (Unsignalized) - *April 4, 2019*
- Waiale Road/Haawi Street (Unsignalized) - *April 4, 2019*
- Waiale Road/Kokololio Street (Unsignalized) - *April 4, 2019*

Based on the traffic count data, the weekday AM peak hour of traffic was determined to occur between 7:00 AM and 8:00 AM, while the weekday PM peak hour of traffic was determined to occur between 4:00 PM and 5:00 PM. The traffic count data is provided in Appendix A for the existing intersections studied.

3.3 Existing Traffic Conditions Analysis and Observations

Waiale Road/Kaohu Street/Oluloa Drive is a four-way stop intersection with shared left-turn/through/right-turn lanes along Waiale Road and the westbound approach along Oluloa Drive. An exclusive left-turn lane and shared through/right-turn lane is provided along the eastbound approach on Kaohu Street.

Traffic was generally observed to progress unimpeded along Waiale Road during the AM peak hour, except between 7:30-7:50 AM, where southbound traffic on Waiale Road could queue back near to Wells Street. More critically, northbound traffic on Waiale Road was observed to slowly progress through the intersection. For a brief 5-10 minute period starting from 7:30 AM, northbound traffic spilled back at varying lengths from this four-way stop to the Waiale Road/Waiinu Road intersection, causing congestion that stretched back towards Kuikahi Drive. Operationally, the northbound and southbound approaches along Waiale Road operate at or over-capacity conditions with LOS F during the AM peak hour. Congestion and queuing along Waiale Road generally dissipated around 7:50-7:55 AM. During the PM peak hour, the southbound approach also operates at LOS F and overcapacity conditions and the northbound left-turn/through movement operates at LOS E during the PM peak hour.

Various constraints limit options to implement mitigative measures to curb congestive conditions at this intersection and along Waiale Road. Based on the Four-Hour signal warrant in the Federal Highway Administration (FHWA) Manual on Uniform Traffic Control Devices (MUTCD) 2009 Edition, a signal is warranted based on existing traffic volumes. However, installation of a traffic signal system will be challenging given the existing alignment of the roadway, right-of-way constraints and skewed approach for Oluloa Drive. The lane striping along Waiale Road is currently adjacent to the westernmost limits of the County's right-of-way. Some undeveloped right-of-way is available on the easternmost limits of the County's right-of-way, so Waiale Road may need to be realigned to fit a traffic signal system at this intersection. Waiale Road may also require widening to provide exclusive left-turn lanes, given the relatively high volume of through traffic to reduce blocking of through vehicles by queued left-turn vehicles. A roundabout is likely infeasible due to the existing right-of-way constraints as well as the skewed approach from Oluloa Drive that inhibits perpendicular intersection approaches necessary for roundabouts. Mitigation to remove stop control along the Waiale Road approach (creating a two-way stop controlled intersection) will also be negatively impacted by the skewed approach from Oluloa Drive, making it difficult for vehicles along Oluloa Drive to detect approaching free flowing northbound vehicles along Waiale Road. Right-of-way acquisition may be needed to provide more space for the options of a traffic signal, roundabout, widening improvements and/or the realignments of Waiale Road and Oluloa Drive to provide perpendicular intersection approach angles.

Waiale Road/Waiinu Road is an unsignalized T-intersection that is stop-controlled on the westbound Waiinu Road approach. In both the AM and PM peak hours the westbound shared left-turn/through lane operates at LOS F and overcapacity conditions with lengthy delays.

As noted above, northbound congestion can spill back into this intersection from the Waiale Road/Kaohu Street/Oluloa Drive four-way stop intersection during portions of the AM peak hour, causing congestion that stretches back towards Kuikahi Drive. Northbound congestion is further impacted at this intersection due to a heavy northbound right-turn movement as turning vehicles slow in anticipation of the turn, also slowing all vehicles in the single-lane northbound approach.

Some northbound vehicles along Waiale Road also stopped within the through travel lane to allow southbound left-turn and westbound left-turn vehicles (ranging from 1-6 vehicles at a time) to turn onto or off of Waiale Road, which contributed to the lengthy platoons along Waiale Road. During the PM peak hour, traffic along Waiale Road operated smoothly, but queues continued to be observed along the westbound leg of Waiinu Road. Queues along the westbound approach was variable throughout the peak period, and depended on gaps in traffic and the occurrence of northbound and southbound Waiale Road vehicles stopping within the through lane to allow westbound vehicles from Waiinu Road to turn onto Waiale Road.

The need for roadway widening and/or traffic control mitigations at this intersection were previously identified by the County, however the design and timeline of completion of any improvements are currently unknown.

Waiale Road/Olomea Street is an unsignalized intersection which is stop-controlled on the eastbound Olomea Street approach. The driveway for the Maui Community Correctional facility is slightly offset to the south of the Olomea Street intersection. This driveway was considered to be the westbound approach. During the AM and PM peak hours of traffic, the eastbound left-turn/through movement operates at LOS F and overcapacity conditions. During the AM peak hour, due to northbound congestion along Waiale Road, some northbound vehicles along Waiale Road were observed to stop within the through travel lane to allow eastbound left-turn vehicles to turn onto Waiale Road, which contributed to the northbound congestion. Based on a signal warrant, a signal is warranted with existing conditions. However, as a temporary mitigative measure, a median refuge lane may help reduce eastbound left-turn vehicle delays by allowing vehicles to turn onto Waiale Road with a two-stage approach; turning left into the refuge lane after finding gaps in southbound traffic, then merging into the Waiale Road through lane after finding gaps in northbound traffic.

Waiale Road/Kaupo Street is an unsignalized T-intersection with exclusive left-turn and right-turn lanes along the Kaupo Street approach and shared northbound through/left-turn and shared southbound through/right-turn lanes along Waiale Road. Eastbound left-turn movements operate at LOS F during the AM peak hour and LOS F with overcapacity conditions during the PM peak hour. Similar to the Waiale Road/Olomea Street intersection, observations indicated that some northbound vehicles along Waiale Road stopped within the through travel lane to allow eastbound left-turn vehicles to turn onto Waiale Road, which contributed to the northbound congestion spilling back to Kuikahi Drive during the AM peak hour. An exclusive northbound left-turn lane and/or a median refuge lane may be considered to improve operations at this intersection and reduce vehicle spill back into Kuikahi Drive. A signal is not warranted with existing conditions.

Waiale Road/Kuikahi Drive/Maui Lani Parkway is a signalized intersection with exclusive left-turn lanes on all approaches and an exclusive right-turn lane on the westbound approach. All movements at this intersection currently operate at LOS C or better during the AM and PM peak hours of traffic. However, for about 20-30 minutes during the AM peak hour, vehicles were observed to queue beyond the length of the eastbound left-turn storage lane to the Kehalani Village Drive or as far as Honoapiilani Highway. These queues occur at variable lengths and are dependent on existing northbound queues that spill back from Waiale Road into the Waiale Road/Kuikahi Drive intersection, which limits full progression for eastbound left-turning vehicles.

Kamehameha Avenue/Maui Lani Parkway is a four-way stop controlled intersection with exclusive left-turn lanes on both approaches on Kamehameha Avenue and is located 700 feet

northeast of Pomaikai Elementary School. Each approach includes flashing beacons with stop signs, and marked crosswalks are provided on the southwest leg of Kamehameha Avenue and the northwest leg of Maui Lani Parkway.

The eastbound approach and the southbound through/right-turn movement operates at LOS F during the AM peak hour, and the eastbound approach, westbound approach, and the southbound through/right-turn movement operates at LOS F with overcapacity conditions during the PM peak hour of traffic. This is primarily due to relatively high volumes of regional traffic between the Waikapu-Wailuku-Kahului regions. Queues were inconsistent and varied in length throughout the peak hours, with a short period of extensive southbound queuing during the AM peak hour and periodic eastbound queuing during the AM and PM peak hours of traffic.

Waiale Road @ Kokololio Street, Haawi Street, Nokekula Loop, and Ohana Hana Loop are unsignalized T-intersections servicing the Waikapu Gardens Phase I and II developments. All movements at these intersections currently operate at LOS B or better with no significant delays during the AM and PM peak hours of traffic.

Waiale Road/Waiko Road is an unsignalized T-intersection with shared lanes on all approaches and the southbound approach stop-controlled. All movements at this intersection currently operate at LOS D or better with no significant delays or queues during the peak hours of traffic.

Honoapiilani Highway/Waiko Road is a signalized intersection with exclusive left-turn lanes on the northbound and southbound approaches, and exclusive right-turn lanes on the eastbound and southbound approaches. All movements at this intersection currently operate at LOS C or better with no significant delays or queuing during the AM and PM peak hours of traffic.

Honoapiilani Highway/Pilikana Street is a signalized intersection with an exclusive left-turn lane on the northbound approach and a channelized right-turn lane on the southbound approach. All movements at this intersection operate at LOS D or higher for both peak hours.

Honoapiilani Highway/Kuikahi Drive is a signalized intersection with exclusive left-turn and right-turn lanes on all approaches. The channelized northbound right-turn movement also includes an exclusive eastbound acceleration lane. All movements at this intersection currently operate at LOS D or better during both AM and PM peak hours.

Honoapiilani Highway/Kehalani Parkway is a signalized intersection with exclusive left-turn and right-turn lanes on all approaches. The channelized northbound and southbound right-turn movements also include exclusive eastbound and westbound receiving lanes, respectively. All movements at this intersection currently operate at LOS D or better during the AM and PM peak hours of traffic. For a portion of the AM peak hour, the eastbound left-turn movement operates with queues that extend to or beyond the existing left-turn storage lane and some vehicles may require two cycle lengths to clear the intersection. Heavy traffic during a short period of time is reflective of typical school traffic conditions, as these queuing conditions were observed to last about 30 minutes during the AM peak hour, generally between 7:15-7:45 AM and primarily stem from traffic generated by the Puu Kukui Elementary School.

In addition, northbound traffic queues along Honoapiilani Highway were observed to primarily stem from Wailuku Elementary School. At Aupuni Street, northbound traffic queued back to Kehalani Parkway for about 5-10 minutes during the AM peak hour due to a police officer directing traffic at Aupuni Street to service Wailuku Elementary School traffic in the morning.

The police officer is observed to stop mainline northbound and southbound traffic for as much as 30-40 seconds at a time, creating lengthy mainline queues. This impacted the vehicular progression through the Honoapiilani Highway/Kehalani Parkway intersection.

Kuikahi Drive/Kehalani Village Center Access is an unsignalized T-intersection with exclusive left-turns in the eastbound and southbound directions. All movements at this intersection currently operate at LOS D or better during the AM and PM peak hours of traffic with the exception of the southbound left-turn movement which operates at LOS E during the PM peak hour of traffic.

Figure 3.1 illustrates the existing lane configuration, existing traffic volumes, and LOS for each study intersection. Table 3.1 summarizes the existing LOS at the study intersections. LOS worksheets are provided in Appendix C. Signal warrants are provided in Appendix D.

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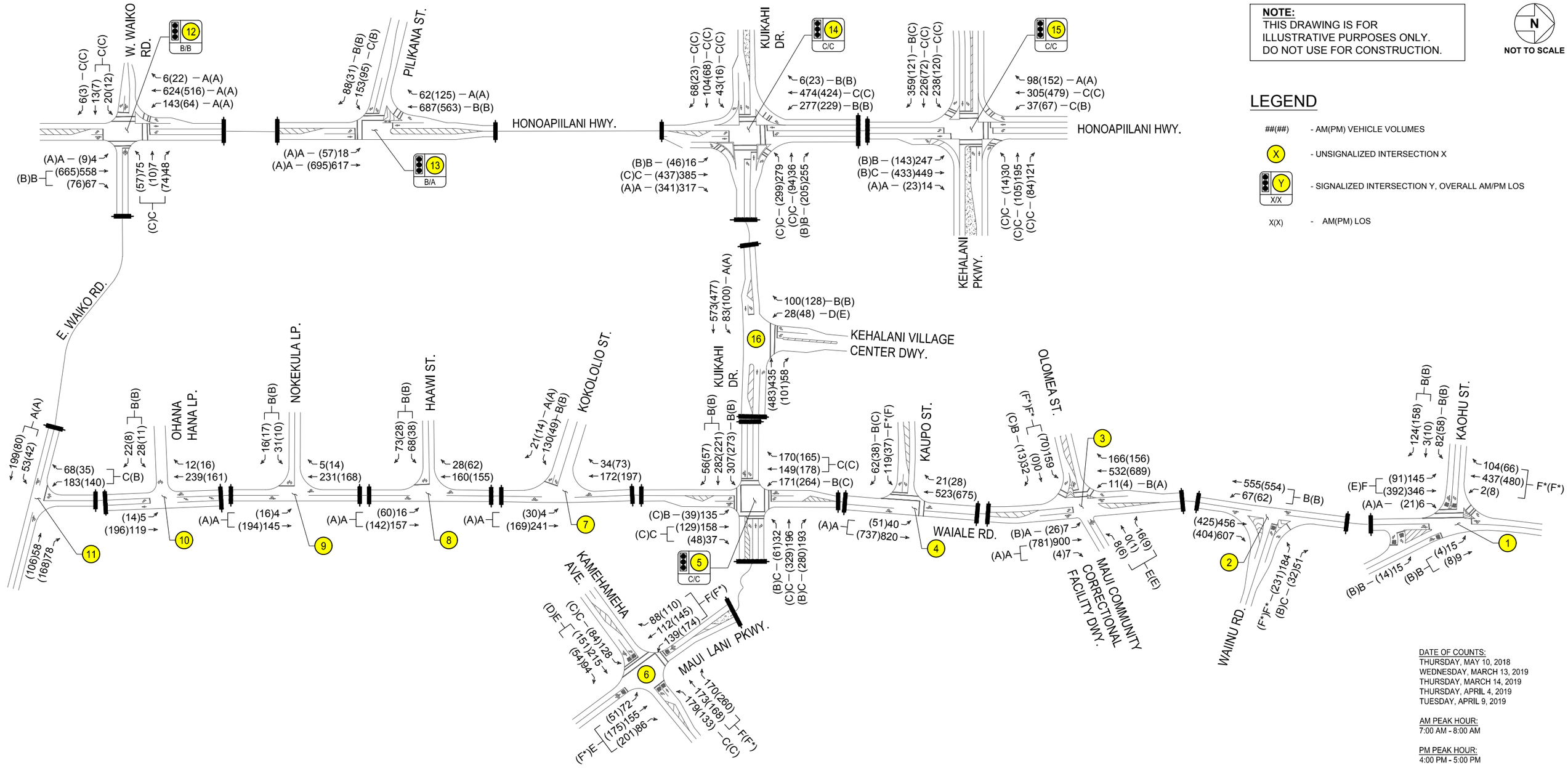
N
NOT TO SCALE

LEGEND

##(##)	- AM(PM) VEHICLE VOLUMES
X	- UNSIGNALIZED INTERSECTION X
Y / X/X	- SIGNALIZED INTERSECTION Y, OVERALL AM/PM LOS
X(X)	- AM(PM) LOS



DATE OF COUNTS:
THURSDAY, MAY 10, 2018
WEDNESDAY, MARCH 13, 2019
THURSDAY, MARCH 14, 2019
THURSDAY, APRIL 4, 2019
TUESDAY, APRIL 9, 2019

AM PEAK HOUR:
7:00 AM - 8:00 AM

PM PEAK HOUR:
4:00 PM - 5:00 PM

FIGURE 3.1

EXISTING CONDITIONS

Table 3.1 : Existing Conditions Level of Service Summary

Intersection	Existing Conditions					
	AM			PM		
	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS
1: Waiale Rd & Kaohu St/Oluloa Dr						
NB LT/TH	54.8	0.97	F	49.9	0.95	E
NB RT	8.6	0.01	A	8.7	0.04	A
EB LT	13.4	0.21	B	12.6	0.15	B
EB TH/RT	12.7	0.28	B	13.9	0.37	B
WB LT/TH/RT	12.9	0.10	B	12.6	0.07	B
SB LT/TH/RT	76.9	1.04	F*	84.2	1.06	F*
Overall	55.8	-	F	56.7	-	F
2: Waiale Rd & Waiinu Rd						
WB LT	563.7	2.02	F*	496.1	1.92	F*
WB RT	16.4	0.15	C	13.7	0.08	B
SB LT	11.8	0.12	B	10.2	0.09	B
Overall	54.9	-	-	67.7	-	-
3: Waiale Rd & Olomea St/Maui Community Correctional Facility Driveway						
NB LT	9.3	0.01	A	10.1	0.04	B
EB LT/TH	887.0	2.66	F*	330.3	1.29	F*
EB RT	13.6	0.08	B	15.3	0.04	C
WB LT/TH/RT	38.6	0.20	E	42.6	0.15	E
SB LT	10.3	0.02	B	9.6	0.01	A
Overall	77.6	-	-	13.8	-	-
4: Waiale Rd & Kaupo St						
NB LT	8.8	0.04	A	9.6	0.07	A
EB LT	205.9	1.16	F*	72.7	0.44	F
EB RT	13.1	0.13	B	15.0	0.10	C
Overall	16.2	-	-	2.4	-	-
5: Waiale Rd & Kuikahi Dr/Maui Lani Pkwy						
NB LT	19.1	0.44	B	23.4	0.16	C
NB TH/RT	24.1	0.55	C	30.5	0.70	C
EB LT	17.0	0.70	B	16.7	0.66	B
EB TH/RT	18.0	0.57	B	16.8	0.46	B
WB LT	21.5	0.11	C	17.7	0.15	B
WB TH	28.3	0.70	C	27.4	0.80	C
WB RT	23.1	0.11	C	19.9	0.15	B
SB LT	17.9	0.43	B	21.0	0.64	C
SB TH/RT	27.7	0.79	C	24.8	0.73	C
Overall	21.5	-	C	22.3	-	C
6: Kamehameha Ave & Maui Lani Pkwy						
NB LT	18.8	0.38	C	17.8	0.28	C
NB TH/RT	47.5	0.86	E	27.4	0.64	D
EB LT/TH/RT	58.4	0.92	F	118.7	1.19	F*
WB LT/TH/RT	48.3	0.85	E	108.4	1.18	F*
SB LT	23.2	0.53	C	19.3	0.41	C
SB TH/RT	58.1	0.92	F	109.5	1.19	F*
Overall	47.2	-	E	90.1	-	F
7: Waiale Rd & Kokololio St						
NB LT	7.7	0.00	A	7.9	0.03	A
EB LT	13.9	0.26	B	12.8	0.10	B
EB RT	9.4	0.03	A	9.7	0.02	A
Overall	3.4	-	-	1.9	-	-
8: Waiale Rd & Haawi St						
NB LT	7.7	0.01	A	7.8	0.05	A
EB LT/RT	11.5	0.22	B	11.7	0.12	B
Overall	3.5	-	-	2.6	-	-
9: Waiale Rd & Nokekula Lp						
NB LT	7.8	0.00	A	7.7	0.01	A
EB LT/RT	11.1	0.08	B	10.3	0.04	B
Overall	1.3	-	-	1.0	-	-

* Denotes overcapacity condition, v/c ≥ 1.

Table 3.1: Existing Conditions Level of Service Summary Cont'd

Intersection	Existing Conditions					
	AM			PM		
	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS
10: Waiale Rd & Ohana Hana Loop						
NB LT	7.8	0.00	A	7.6	0.01	A
EB LT/RT	10.6	0.08	B	10.2	0.03	B
Overall	1.3	-	-	0.7	-	-
11: E Waiko Rd & Waiale Rd						
EB LT	7.6	0.04	A	8.0	0.04	A
SB LT/RT	15.3	0.44	C	13.2	0.30	B
Overall	6.6	-	-	4.6	-	-
12: Honoapiilani Hwy & W Waiko Rd/E Waiko Rd						
NB LT	7.0	0.01	A	5.4	0.02	A
NB TH/RT	12.1	0.70	B	11.5	0.74	B
EB LT/TH	22.9	0.12	C	26.3	0.08	C
EB RT	22.4	0.01	C	25.9	0.01	C
WB LT/TH/RT	24.7	0.44	C	28.6	0.49	C
SB LT	7.7	0.34	A	7.7	0.18	A
SB TH	8.3	0.60	A	6.7	0.47	A
SB RT	4.6	0.00	A	4.3	0.01	A
Overall	11.3	-	B	11.0	-	B
13: Honoapiilani Hwy & Pilikana St						
NB LT	8.2	0.06	A	7.2	0.15	A
NB TH	5.7	0.57	A	6.0	0.66	A
EB LT	22.4	0.63	C	18.6	0.44	B
EB RT	18.3	0.06	B	16.4	0.00	B
SB TH	11.6	0.79	B	11.5	0.75	B
SB RT	6.2	0.05	A	7.2	0.11	A
Overall	10.2	-	B	9.1	-	A
14: Honoapiilani Highway & Kuikahi Drive						
NB LT	18.9	0.06	B	17.4	0.14	B
NB TH	29.2	0.75	C	28.9	0.77	C
NB RT	0.0	0.00	A	0.0	0.00	A
EB LT	28.2	0.13	C	30.9	0.06	C
EB TH	32.3	0.43	C	33.4	0.30	C
EB RT	29.0	0.04	C	29.1	0.01	C
WB LT	23.4	0.62	C	24.7	0.62	C
WB TH	22.4	0.08	C	22.6	0.19	C
WB RT	15.3	0.13	B	15.9	0.11	B
SB LT	17.4	0.70	B	17.8	0.65	B
SB TH	20.5	0.66	C	21.2	0.61	C
SB RT	11.6	0.01	B	13.9	0.02	B
Overall	23.2	-	C	23.7	-	C
15: Honoapiilani Hwy & Kehalani Pkwy						
NB LT	17.7	0.63	B	14.2	0.43	B
NB TH	25.6	0.76	C	18.8	0.64	B
NB RT	0.0	0.00	A	0.0	0.00	A
EB LT	31.8	0.82	C	20.4	0.36	C
EB TH	21.0	0.43	C	21.6	0.18	C
EB RT	19.3	0.20	B	21.0	0.08	C
WB LT	25.5	0.10	C	23.6	0.04	C
WB TH	32.1	0.76	C	26.3	0.38	C
WB RT	27.3	0.07	C	24.6	0.04	C
SB LT	20.3	0.15	C	13.2	0.19	B
SB TH	30.2	0.72	C	22.5	0.75	C
SB RT	0.0	0.00	A	0.0	0.00	A
Overall	26.1	-	C	20.3	-	C
16: Kuikahi Dr & Kehalani Village Center Dr						
EB LT	8.8	0.09	A	9.3	0.12	A
SB LT	31.1	0.18	D	36.9	0.32	E
SB RT	12.5	0.19	B	13.8	0.25	B
Overall	2.2	-	-	3.3	-	-

* Denotes overcapacity condition, v/c ≥ 1.

4. BASE YEAR 2024 TRAFFIC CONDITIONS

4.1 Defacto Growth Rate

Projections for Base Year 2024 traffic were based upon existing traffic counts performed by ATA, the Maui Regional Travel Demand Model (MRTDM) growth for forecast years of 2024 and 2035, and nearby developments in the immediate vicinity of the Project. The resulting growth rate along study roadways was approximately 1.9 percent per year.

4.2 Traffic Forecasts for Known Developments

By Year 2024, the following developments shown in Figure 4.1 and Table 4.1 may be constructed. Appendix E shows the general trip distribution/assignment percentages associated with each development either based on existing traffic patterns or their respective Project TIAR's. The Kehalani Village Center and Maui Lani Village Center are currently constructed. The associated growth in occupancy for these two centers is described below.

Wailuku Apartments – Proposed 324 multi-family dwelling units upon 14.4 acres of undeveloped land bound by Kuikahi Drive to the north, the proposed Emmanuel Lutheran Pre-School to the south, Waiale Road to the east, and Honoapiilani Highway to the west. Vehicular access is anticipated to be provided by two new project accesses; one along Kuikahi Drive directly across the Kehalani Village Center driveway and one along Waiale Road.

- **Emmanuel Lutheran Pre-School** – Proposed relocation of Emmanuel Lutheran Church Maui church and school facilities to a currently unoccupied lot bound by the proposed Wailuku Apartments to the north, proposed Waikapu Ventures Affordable Housing to the south, Waiale Road to the east, and Honoapiilani Highway to the west. At full build-out this development envisions a new preschool, K-8 school and buildings for church/office related functions, dependent on funding. In December 2018, State Land Use Commission (LUC) approved a 10-year time extension for developers with a condition to obtain funding and build a multi-purpose building for the preschool/church activities within six (6) years. This TIAR assumes the preschool, with its current 30-student enrollment, will be completed by Year 2024. All remaining components of the development are anticipated to occur beyond Year 2024.

- **Waikapu Light Industrial Project** - Proposed 8.5-acre industrial development along Waiko Road. Forecast traffic growth generated by this development was obtained from the Project's TIAR dated April 2013 and was added to the roadway network.

- **Waiale Business Park** – Formerly known as "Waiko Light Industrial Subdivision", this industrial park along Waiko Road will include approximately 102,414 SF of commercial space and 215,195 SF of light industrial uses. Forecast traffic growth was based on the latest land use breakdown and was added to the roadway network.

- **Kehalani Village Center** – Infill development of the existing retail center in the Kehalani subdivision currently occupied by Longs Drugs, Foodland, Foodland Gas, American Savings Bank, Coffee Bean Tea & Leaf, McDonalds and Fabmac Homes. It is anticipated that the Kehalani Village Center will be expanded with infill commercial

space and 56 multi-family dwelling units. The forecast AM and PM peak hour trips for the remaining development were estimated based on current forecasts and were added to the roadway network.

- **Maui Lani Village Center** – Expansion of the existing retail center in the Maui Lani subdivision currently occupied by Walgreen and a mix of various commercial, office, residential and warehouse uses. Based on the historic growth of this site, approximately 19,700 SF of commercial, 62,400 SF of office and 75,500 SF of warehouse space may be completed by year 2024. The forecast AM and PM peak hour trips were generated based on the cumulative ITE Trip generation and added to the roadway network.

- **Waiale Elua** – Proposed 70-unit single-family residential subdivision and a neighborhood park, currently being constructed. It will be located adjacent to the Valley Isle Fellowship Church along Waiale Road. One access will be provided along Waiale Road. The forecast AM and PM peak hour trips were obtained from the Project's TIAR dated 2015 and was added to the roadway network.

- **Kehalani Mauka** – Expansion of the existing residential subdivision located north of Kuikahi Drive, west of Honoapiilani Highway and east of Wailuku Heights. Kehalani Mauka is partially developed with residential homes and the Puu Kukui Elementary School. Based on the latest projections, approximately 304 single-family homes and 54 multi-family units may be completed by year 2024. The Kehalani Mauka Parkway Loop is also anticipated to be completed by year 2024.

- **Waikapu Country Town** – This future development is currently going through the entitlement process to obtain permits for construction. For purposes of this TIAR, it is assumed that permit approval and infrastructure construction will be complete by Year 2024 and the initial phase that includes 150 single-family residential units (identified in the project EIS) will be constructed and occupied.

- **Ag Subdivision Lots** – Proposed five (5) Ag lots, adjacent and to the west of the Project site. Build-out and occupancy is unknown, but for purposes of this TIAR, was assumed to be occupied by Year 2024. Ohana units will be permitted and access to the site will occur temporarily by the existing dirt road easement just north of the Waiolani Subdivision. Permanent access will occur via the future Project South Access.

- **Waikapu Ventures Affordable Housing** – Proposed residential subdivision with 68 single-family units and 12 multi-family units on land bound by Emmanuel Lutheran Pre-School to the north, Waiale Elua to the south, Waiale Road to the east, and Honoapiilani Highway to the west. The forecast AM and PM peak hour trips were obtained from the Project's TIAR dated 2018 and added to the roadway network.

- **Heritage at Maui Lani** – Proposed residential subdivision with 25 single-family homes, currently being constructed on lands adjacent and to the north of Pomaikai Elementary School. Access will be provided along Kamehameha Avenue.

  Maui Lani Parkways Phase 3 – Proposed additional 74 single-family units to the existing Maui Lani Parkways Phase 1 and 2 residential subdivision bound by Maui Lani Parkway to the south and The Dunes at Maui Lani Golf Course to the north.

Table 4.1: Total Trips Generated by Known Developments in Project Vicinity [1]

Known Development	Land Use	Units	AM Peak Hour			PM Peak Hour		
			Enter	Exit	Total	Enter	Exit	Total
Wailuku Apartments	Multi-Family Residential	324 MF units	36	103	139	90	51	141
Waikapu Light Industrial Project	Industrial Park	8.5 Acres	74	15	89	21	79	100
Waiale Business Park	Retail/Light Industrial	102,414 SF ret 215,195 SF ind	187	79	266	183	253	436
Kehalani Village Center [2]	Commercial, Residential	100,000 SF 56 MF units	37	41	78	133	138	271
Maui Lani Village Center (formerly VMX) [3]	Commercial, Office, Warehouse	157,500 SF	64	14	78	63	116	179
Waiale Elua	Single-Family Residential	70 SF units	15	44	59	49	28	77
Kehalani Mauka [4]	Single-Family, Multi-Family Residential	304 SF units 54 MF units	72	223	295	208	123	331
Waikapu Country Town [5]	Single-Family Residential	150 SF units	28	84	112	95	56	150
Ag Subdivision Lots	Single-Family Residential	10 SF units	3	9	12	8	4	12
Waikapu Ventures Affordable Housing	Single-Family, Multi-Family Residential	68 SF units 12 MF units	17	51	68	54	32	86
Heritage at Maui Lani	Single-Family	25 SF units	6	17	23	17	10	27
Emmanuel Lutheran Pre-School	Daycare	30 Students	15	14	29	12	14	26
Maui Lani Parkways Phase 3	Single-Family	74 SF units	14	43	57	48	28	76

Note:

1. Table 4.1 shows trips generated by known developments in the vicinity of the Project. Not all traffic generated by these developments travel through the study area of this TIAR, since some traffic will be routed to various roadways and intersections that were not included in this TIAR. See Appendix E for more detailed assessment of trip distribution/assignment patterns.
2. Kehalani Village Center is already partially completed with Longs Drugs, Foodland, Foodland Gas and McDonalds. Trips shown accounts for the additional 100,000 SF of commercial space and multi-family low-rise units anticipated to be completed by Year 2024. ITE recommended 34% pass-by reduction applied to new retail.
3. Maui Lani Village Center projections are based on historic growth rate. Majority of expansion attributed to lower trip generating office and warehouse land uses.
4. Kehalani Mauka projections based on latest assumptions for growth.
5. Initial residential phase as identified in the Waikapu Country Town Final EIS dated December 2016, assumed to be completed by Year 2024.

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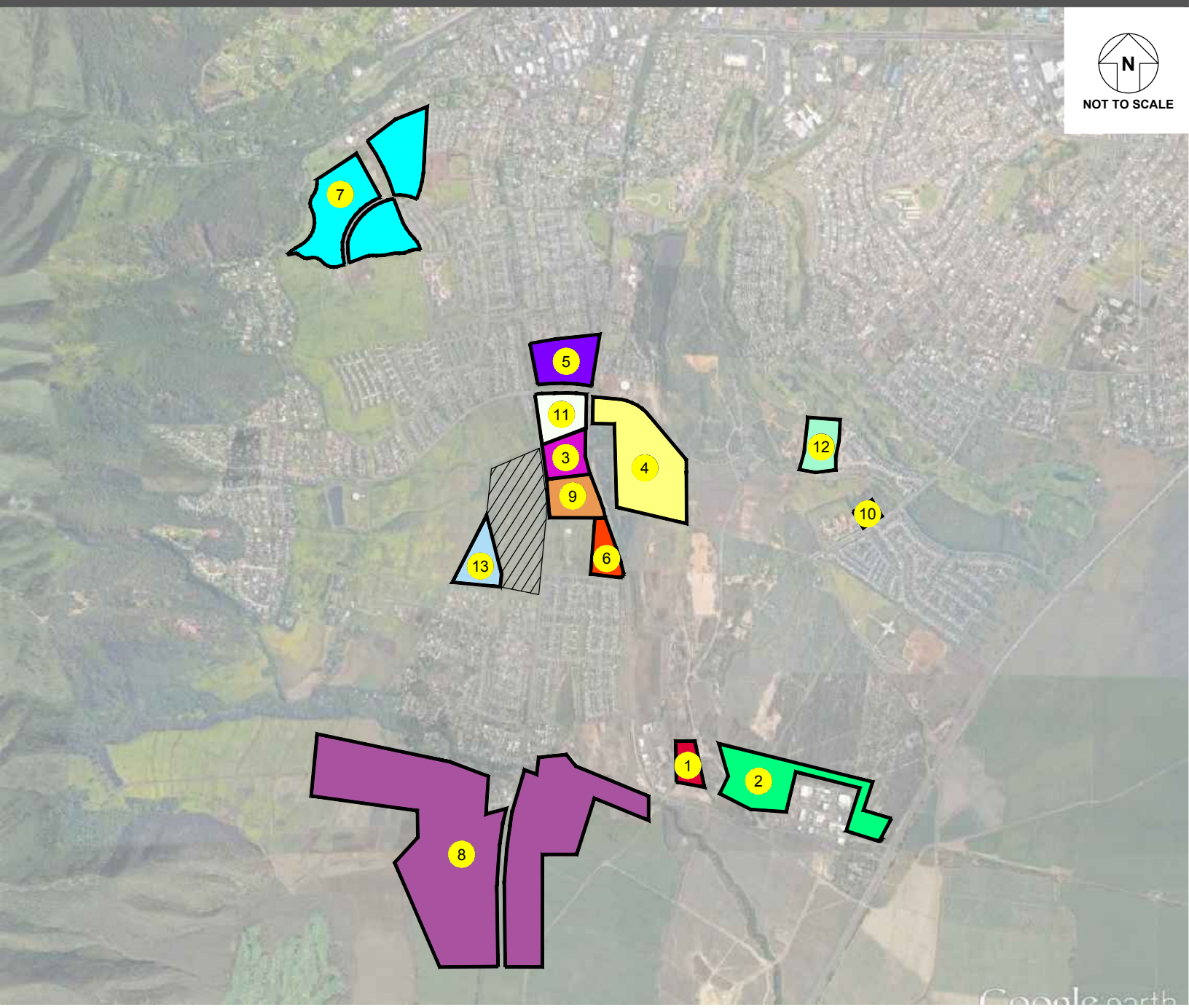

LEGEND

- PROJECT AREA
- 1 WAIKAPU LIGHT INDUSTRIAL
- 2 WAIALE BUSINESS PARK
- 3 EMMANUEL LUTHERAN SCHOOL
- 4 MAUI LANI VILLAGE CENTER
- 5 KEHALANI VILLAGE CENTER
- 6 WAIALE ELUA
- 7 KEHALANI MAUKA
- 8 WAIKAPU COUNTRY TOWN
- 9 WAIKAPU VENTURES AFFORDABLE HOUSING
- 10 MAUI LANI LOT 11
- 11 WAILUKU APARTMENTS
- 12 MAUI LANI PARKWAYS PH. 3
- 13 AG SUBDIVISION LOTS

FIGURE 4.1

BACKGROUND DEVELOPMENTS IN PROJECT VICINITY

4.3 Planned Roadway Projects

At the Maui Lani Parkway/Kamehameha Avenue intersection, a single-lane roundabout is planned to be constructed by the County and was included in this TIAR.

The Waiale Road Extension and Waiko Road Improvements are planned roadway improvements to be constructed in the future. However, since they are unlikely to be built by Year 2024 given their current status, these roadway improvements were not included in this TIAR.

Traffic along Waiale Road will continue to be congested during the AM peak hour of traffic from existing commuter and school traffic. As noted in the latest Statewide Transportation Improvement Program (STIP), the County is planning to install a signal or roundabout at the Waiale Road/Waiinu Road intersection which could help the flow of traffic through the corridor. However, since it's unknown when this improvement will be constructed, it was not included in this TIAR. At various stages of occupancy of the Wailuku Apartments project, the signal timing at the Waiale Road/Kuikahi Drive intersection will be optimized to accommodate traffic increases on the southern end. The County could also consider providing median refuge lanes at various intersections along Waiale Road to assist side street left-turners get onto Waiale Road.

4.4 Base Year 2024 Analysis

With additional traffic generated by nearby developments and defacto growth in the study area, delay and LOS of turning movements at various intersections throughout the network are anticipated to worsen from existing conditions.

At the Waiale Road/Kaohu Street intersection, the northbound left-turn/through movement and the southbound approach will operate at LOS F and overcapacity conditions. As previously discussed in Section 3.3, signal warrant was met at this intersection for Existing conditions, but due to right-of-way and alignment constraints, a signal may be difficult to implement.

The westbound shared left-turn/through approach at Waiale Road/Waiinu Road is anticipated to operate at LOS F and overcapacity conditions for both peak hours as in existing conditions. As previously stated, improvements to the Waiale Road/Waiinu Road intersections are planned to occur, but the traffic control type, widening and timeline of this improvement is unknown.

Signal warrants were met for existing conditions at the Waiale Road/Olomea Street intersection, however no improvements are planned for this intersection. As a result, the intersection will continue to operate with overcapacity conditions on the eastbound left-turn/through movement with Base Year conditions. As stated in Section 3.3, a median refuge lane may help reduce eastbound left-turn vehicle delays by allowing vehicles to turn onto Waiale Road with a two-stage approach; turning left into the refuge lane after finding gaps in southbound traffic, then merging into the Waiale Road through lane after finding gaps in northbound traffic.

At the Waiale Road/Kaupo Street intersection, the eastbound left-turn movement is anticipated to continue operating at LOS F and overcapacity conditions during the AM peak hour, and the PM peak hour will worsen from existing conditions to become overcapacity during the PM peak hour as well. A signal would not be warranted based on projected Base Year volumes.

With the roundabout installed at the Kamehameha Avenue/Maui Lani Parkway intersection, all movements are anticipated to operate at LOS D or higher for both peak hours.

At the Waiale Road/E Waiko Road intersection, the southbound shared left-turn/right-turn movement is anticipated to operate at LOS F during the AM peak hour. A signal is anticipated to be warranted with projected Base Year volumes. However, if the southbound Waiale Road approach is provided with separate left-turn and right-turn lanes, the four-hour warrant would fall short by 1 hour, making a signal not warranted.

At the Honoapiilani Highway/Kehalani Parkway intersection, the eastbound left-turn movement will operate at LOS E conditions during the AM peak hour. As noted in Section 3.3, heavy traffic during a short period of time is reflective of typical school traffic conditions, as these queuing conditions were observed to last about 30 minutes during the AM peak hour and primarily stem from traffic generated by the Puu Kukui Elementary School. There are currently no identified or planned roadway improvements likely to occur at this intersection.

With build-out of the Wailuku Apartments project, the Kuikahi Drive/Kehalani Village Center Driveway intersection will add a fourth leg to service Wailuku Apartments. The minor street northbound and southbound shared left-turn/through movements are anticipated to operate at LOS F during both peak hours, with the shared southbound left/through movement operating with overcapacity conditions during the PM peak hour. A signal warrant was not met with the projected Base Year volumes.

Figure 4.2 illustrates the Base Year 2024 forecast traffic volumes and LOS for the study intersection movements. Table 4.2 summarizes the Base Year 2024 LOS at the study intersections compared to existing conditions. LOS worksheets are provided in Appendix C.

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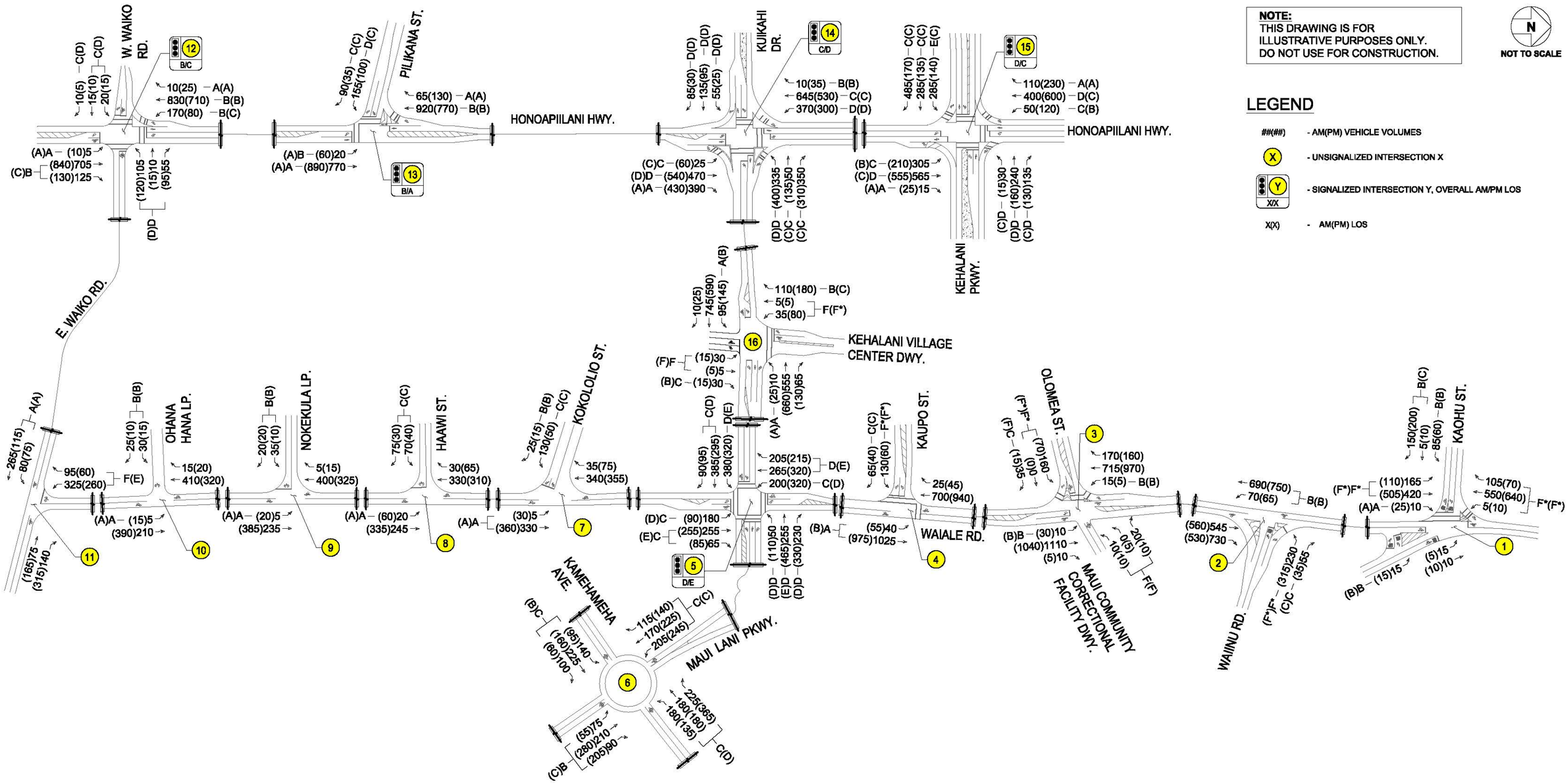

Table 4.2: Existing and Base Year 2024 Level of Service Summary

Intersection	Existing Conditions						Base Year 2024 Conditions					
	AM			PM			AM			PM		
	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS
1: Waiale Rd & Kaohu St/Oluloa Dr												
NB LT/TH	54.8	0.97	F	49.9	0.95	E	123.0	1.22	F*	149.4	1.32	F*
NB RT	8.6	0.01	A	8.7	0.04	A	9.0	0.02	A	9.5	0.05	A
EB LT	13.4	0.21	B	12.6	0.15	B	14.4	0.23	B	13.7	0.17	B
EB TH/RT	12.7	0.28	B	13.9	0.37	B	14.6	0.37	B	17.3	0.51	C
WB LT/TH/RT	12.9	0.10	B	12.6	0.07	B	14.1	0.12	B	14.4	0.10	B
SB LT/TH/RT	76.9	1.04	F*	84.2	1.06	F*	174.9	1.35	F*	235.4	1.49	F*
Overall	55.8	-	F	56.7	-	F	124.8	-	F	160.5	-	F
2: Waiale Rd & Waiinu Rd												
WB LT	563.7	2.02	F*	496.1	1.92	F*	1669.7	4.39	F*	2125.5	5.44	F*
WB RT	16.4	0.15	C	13.7	0.08	B	20.1	0.20	C	17.0	0.11	C
SB LT	11.8	0.12	B	10.2	0.09	B	13.6	0.15	B	11.9	0.12	B
Overall	54.9	-	-	67.7	-	-	166.4	-	-	297.5	-	-
3: Waiale Rd & Olomea St/Waimaluhia Ln												
NB LT	9.3	0.01	A	10.1	0.04	B	10.1	0.02	B	11.8	0.06	B
EB LT/TH	887.0	2.66	F*	330.3	1.29	F*	2518.0	6.00	F*	1358.5	2.98	F*
EB RT	13.6	0.08	B	15.3	0.04	C	16.6	0.11	C	588.5	1.54	F
WB LT/TH/RT	38.6	0.20	E	42.6	0.15	E	101.7	0.49	F	266.0	0.80	F
SB LT	10.3	0.02	B	9.6	0.01	A	11.5	0.03	B	10.9	0.01	B
Overall	77.6	-	-	13.8	-	-	180.4	-	-	40.1	-	-
4: Waiale Rd & Kaupo St												
NB LT	8.8	0.04	A	9.6	0.07	A	9.6	0.05	A	11.2	0.09	B
EB LT	205.9	1.16	F*	72.7	0.44	F	805.5	2.44	F*	654.2	1.86	F*
EB RT	13.1	0.13	B	15.0	0.10	C	16.1	0.18	C	20.9	0.16	C
Overall	16.2	-	-	2.4	-	-	53.5	-	-	19.2	-	-
5: Waiale Rd & Kuikahi Dr/Maui Lani Pkwy												
NB LT	19.1	0.44	B	23.4	0.16	C	30.5	0.71	C	46.3	0.55	D
NB TH/RT	24.1	0.55	C	30.5	0.70	C	34.0	0.61	C	58.7	0.81	E
EB LT	17.0	0.70	B	16.7	0.66	B	43.2	0.92	D	67.6	0.93	E
EB TH/RT	18.0	0.57	B	16.8	0.46	B	33.4	0.75	C	36.7	0.58	D
WB LT	21.5	0.11	C	17.7	0.15	B	37.1	0.22	D	35.5	0.33	D
WB TH	28.3	0.70	C	27.4	0.80	C	54.7	0.85	D	68.3	0.92	E
WB RT	23.1	0.11	C	19.9	0.15	B	39.4	0.10	D	43.5	0.36	D
SB LT	17.9	0.43	B	21.0	0.64	C	25.1	0.54	C	53.5	0.89	D
SB TH/RT	27.7	0.79	C	24.8	0.73	C	43.1	0.89	D	58.5	0.92	E
Overall	21.5	-	C	22.3	-	C	38.6	-	D	55.4	-	E
6: Kamehameha Ave & Maui Lani Pkwy												
NB LT	18.8	0.38	C	17.8	0.28	C	-	-	-	-	-	-
NB TH/RT	47.5	0.86	E	27.4	0.64	D	-	-	-	-	-	-
NB LT/TH/RT	-	-	-	-	-	-	19.3	0.70	C	12.9	0.50	B
EB LT/TH/RT	58.4	0.92	F	118.7	1.19	F*	15.3	0.65	C	18.6	0.75	C
WB LT/TH/RT	48.3	0.85	E	108.4	1.18	F*	14.6	0.58	B	21.8	0.76	C
SB LT	23.2	0.53	C	19.3	0.41	C	-	-	-	-	-	-
SB TH/RT	58.1	0.92	F	109.5	1.19	F*	-	-	-	-	-	-
SB LT/TH/RT	-	-	-	-	-	-	20.5	0.76	C	32.3	0.89	D
Overall	47.2	-	E	90.1	-	F	17.7	-	C	22.9	-	C
7: Waiale Rd & Kokololio St												
NB LT	7.7	0.00	A	7.9	0.03	A	8.1	0.01	A	8.4	0.03	A
EB LT	13.9	0.26	B	12.8	0.10	B	20.4	0.38	C	19.4	0.18	C
EB RT	9.4	0.03	A	9.7	0.02	A	10.7	0.04	B	10.9	0.03	B
Overall	3.4	-	-	1.9	-	-	3.4	-	-	1.5	-	-
8: Waiale Rd & Haawi St												
NB LT	7.7	0.01	A	7.8	0.05	A	8.1	0.02	A	8.3	0.06	A
EB LT/RT	11.5	0.22	B	11.7	0.12	B	15.2	0.31	C	16.3	0.19	C
Overall	3.5	-	-	2.6	-	-	3.1	-	-	2.0	-	-
9: Waiale Rd & Nokekula Lp												
NB LT	7.8	0.00	A	7.7	0.01	A	8.2	0.01	A	8.1	0.02	A
EB LT/RT	11.1	0.08	B	10.3	0.04	B	14.0	0.13	B	12.6	0.07	B
Overall	1.3	-	-	1.0	-	-	1.2	-	-	0.7	-	-
10: Waiale Rd & Ohana Hana Loop												
NB LT	7.8	0.00	A	7.6	0.01	A	8.3	0.01	A	8.1	0.01	A
EB LT/RT	10.6	0.08	B	10.2	0.03	B	12.4	0.11	B	12.2	0.05	B
Overall	1.3	-	-	0.7	-	-	1.0	-	-	0.6	-	-
11: E Waiko Rd & Waiale Rd												
EB LT	7.6	0.04	A	8.0	0.04	A	7.9	0.07	A	8.7	0.08	A
SB LT/RT	15.3	0.44	C	13.2	0.30	B	62.3	0.96	F	38.4	0.80	E
Overall	6.6	-	-	4.6	-	-	27.3	-	-	13.1	-	-

* Denotes overcapacity condition, v/c ≥ 1.

Table 4.2: Existing and Base Year 2024 Level of Service Summary

Intersection	Existing Conditions						Base Year 2024 Conditions					
	AM			PM			AM			PM		
	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS
12: Honoapiilani Hwy & W Waiko Rd/E Waiko Rd												
NB LT	7.0	0.01	A	5.4	0.02	A	9.1	0.02	A	8.7	0.03	A
NB TH/RT	12.1	0.70	B	11.5	0.74	B	16.5	0.81	B	25.2	0.90	C
EB LT/TH	22.9	0.12	C	26.3	0.08	C	31.7	0.13	C	35.6	0.09	D
EB RT	22.4	0.01	C	25.9	0.01	C	31.0	0.00	C	35.0	0.00	D
WB LT/TH/RT	24.7	0.44	C	28.6	0.49	C	35.5	0.60	D	43.1	0.72	D
SB LT	7.7	0.34	A	7.7	0.18	A	14.6	0.55	B	20.8	0.41	C
SB TH	8.3	0.60	A	6.7	0.47	A	11.4	0.73	B	11.1	0.62	B
SB RT	4.6	0.00	A	4.3	0.01	A	4.8	0.01	A	5.8	0.02	A
Overall	11.3	-	B	11.0	-	B	15.9	-	B	21.8	-	C
13: Honoapiilani Hwy & Pilikana St												
NB LT	8.2	0.06	A	7.2	0.15	A	11.6	0.09	B	9.2	0.19	A
NB TH	5.7	0.57	A	6.0	0.66	A	5.4	0.62	A	6.5	0.75	A
EB LT	22.4	0.63	C	18.6	0.44	B	35.2	0.77	D	25.9	0.53	C
EB RT	18.3	0.06	B	16.4	0.00	B	27.0	0.04	C	22.4	0.02	C
SB TH	11.6	0.79	B	11.5	0.75	B	12.9	0.86	B	12.2	0.82	B
SB RT	6.2	0.05	A	7.2	0.11	A	5.2	0.06	A	6.3	0.11	A
Overall	10.2	-	B	9.1	-	A	11.6	-	B	9.9	-	A
14: Honoapiilani Highway & Kuikahi Drive												
NB LT	18.9	0.06	B	17.4	0.14	B	22.3	0.11	C	22.5	0.21	C
NB TH	29.2	0.75	C	28.9	0.77	C	35.3	0.81	D	40.7	0.85	D
NB RT	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A
EB LT	28.2	0.13	C	30.9	0.06	C	38.5	0.20	D	46.6	0.12	D
EB TH	32.3	0.43	C	33.4	0.30	C	45.4	0.71	D	52.0	0.58	D
EB RT	29.0	0.04	C	29.1	0.01	C	38.5	0.05	D	44.5	0.01	D
WB LT	23.4	0.62	C	24.7	0.62	C	41.4	0.81	D	43.9	0.82	D
WB TH	22.4	0.08	C	22.6	0.19	C	29.1	0.12	C	31.4	0.27	C
WB RT	15.3	0.13	B	15.9	0.11	B	20.0	0.31	C	21.0	0.19	C
SB LT	17.4	0.70	B	17.8	0.65	B	39.6	0.91	D	41.1	0.91	D
SB TH	20.5	0.66	C	21.2	0.61	C	26.5	0.79	C	26.6	0.67	C
SB RT	11.6	0.01	B	13.9	0.02	B	11.8	0.01	B	15.5	0.02	B
Overall	23.2	-	C	23.7	-	C	33.5	-	C	36.2	-	D
15: Honoapiilani Hwy & Kehalani Pkwy												
NB LT	17.7	0.63	B	14.2	0.43	B	34.9	0.87	C	18.7	0.69	B
NB TH	25.6	0.76	C	18.8	0.64	B	41.6	0.86	D	23.2	0.73	C
NB RT	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A
EB LT	31.8	0.82	C	20.4	0.36	C	60.7	0.96	E	26.9	0.52	C
EB TH	21.0	0.43	C	21.6	0.18	C	26.9	0.47	C	28.4	0.36	C
EB RT	19.3	0.20	B	21.0	0.08	C	24.8	0.28	C	26.6	0.10	C
WB LT	25.5	0.10	C	23.6	0.04	C	35.9	0.11	D	30.6	0.06	C
WB TH	32.1	0.76	C	26.3	0.38	C	53.8	0.86	D	36.1	0.69	D
WB RT	27.3	0.07	C	24.6	0.04	C	38.2	0.07	D	32.0	0.07	C
SB LT	20.3	0.15	C	13.2	0.19	B	29.0	0.27	C	15.8	0.38	B
SB TH	30.2	0.72	C	22.5	0.75	C	50.1	0.86	D	31.7	0.86	C
SB RT	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A
Overall	26.1	-	C	20.3	-	C	43.3	-	D	26.7	-	C
16: Kuikahi Dr & Kehalani Village Center Dr												
NB LT/TH	-	-	-	-	-	-	203.4	0.79	F	358.8	0.87	F
NB RT	-	-	-	-	-	-	15.5	0.09	C	13.0	0.04	B
EB LT	8.8	0.09	A	9.3	0.12	A	9.4	0.11	A	10.8	0.20	B
WB LT	-	-	-	-	-	-	9.5	0.01	A	9.0	0.03	A
SB LT	31.1	0.18	D	36.9	0.32	E	-	-	-	-	-	-
SB LT/TH	-	-	-	-	-	-	147.0	0.70	F	578.0	1.85	F*
SB RT	12.5	0.19	B	13.8	0.25	B	14.5	0.24	B	20.5	0.46	C
Overall	2.2	-	-	3.3	-	-	9.5	-	-	33.1	-	-

* Denotes overcapacity condition, v/c ≥ 1.

5. FUTURE YEAR 2024 TRAFFIC CONDITIONS

The Future Year 2024 scenario represents the traffic conditions within the Project study area with the full build-out of the Project.

5.1 Background

The Project proposes to develop 137 turn-key homes and 24 vacant residential lots, for a total of 161 single-family dwelling units. Accessory dwelling units or ohana units will not be permitted. Access to the site will occur via two (2) new driveways off of Honoapiilani Highway. The southern access will provide primary access with permitted left-turns along the eastbound and northbound approaches. The northern access will provide secondary access limited to right-in, right-out (RIRO) access only.

5.1.1 Trip Generation

The Institute of Transportation Engineers (ITE) publishes a book based on empirical data compiled from a body of more than 4,250 trip generation studies submitted by public agencies, developers, consulting firms, and associations. This publication, titled Trip Generation Manual, 10th Edition, provides trip rates and/or formulae based on graphs that correlate vehicular trips with independent variables. The independent variable can range from Dwelling Units (DU) for single-family attached homes to Gross Floor Area (GFA) for commercial and office development. See Tables 5.1 and 5.2 for Trip Generation formulae and projections for the Project.

Table 5.1: Project Trip Generation Rates

Land Use Type	Independent Variable	AM Peak Hour		PM Peak Hour	
		Rate	% Enter	Rate	% Enter
Single Family Detached Housing (ITE 210)	Dwelling Units (DU)	[a]	25%	[b]	63%

Notes:
[a] T = 0.71 * (X) + 4.8
[b] T = EXP(0.96 * Ln(X) + 0.2)

Table 5.2: New Project-Generated Trips

Land Use Type	Quantity	AM Peak Hour			PM Peak Hour		
		Enter	Exit	Total	Enter	Exit	Total
Single Family Detached Housing (ITE 210)	161 DU	30	89	119	101	60	161

5.1.2 Trip Distribution

At the two (2) Project intersections, trips were distributed based on percentages derived from existing turning movement volumes entering/exiting the mauka subdivisions at the Honoapiilani Highway intersections with Pilikana Street and W. Waiko Road. Since these mauka developments are currently occupied and in close proximity to the Project, trips will likely be distributed similar to trip patterns from these two developments.

Beyond the Project intersections, trips were assigned based upon existing travel patterns in the remaining study area. The traffic generated by the Project was added to the forecast Base Year 2024 traffic volumes within the vicinity of the Project to constitute the traffic volumes for the Future Year 2024 traffic conditions. Figure 5.1 illustrates the Project-generated trip volumes.

5.2 Future Year 2024 Analysis

Upon completion of the Project, all study intersections are forecast to operate with LOS similar to Base Year 2024 conditions.

At the Waiale Road/Kaohu Street intersection, the northbound shared left-turn/through movement will continue to operate at LOS F and overcapacity conditions for both peak hours. The southbound approach will continue to operate at LOS F during the AM peak hour and LOS F with overcapacity conditions during the PM peak hour, as in Base Year conditions.

At the intersections of Waiale Road/Waiinu Road and Waiale Road/Olomea Street, turning movements from the minor streets will continue to operate at LOS F and overcapacity conditions as in Base Year. As previously stated, improvements to the Waiale Road/Waiinu Road intersection are anticipated, but the exact nature and timeline are not yet known. Also, a signal warrant is met with existing conditions; however there are no planned improvements at the Waiale Road/Olomea Street intersection. As stated in Section 3.3, a median refuge lane may help reduce eastbound left-turn vehicle delays by allowing vehicles to turn onto Waiale Road with a two-stage approach; turning left into the refuge lane after finding gaps in southbound traffic, then merging into the Waiale Road through lane after finding gaps in northbound traffic.

At the Waiale/Kaupo Street intersection, the eastbound left turn movement will continue to operate at LOS F and overcapacity conditions as in Base Year conditions. A signal will not be warranted with projected Future Year volumes.

At the Waiale Road/Kuikahi Drive/Maui Lani Parkway intersection, increases of a few seconds to several movements is anticipated to result in LOS E conditions on the westbound through movement during the AM peak hour, and LOS E conditions on the northbound through/right-turn, eastbound left-turn, westbound through, southbound left-turn and southbound through/right-turn movements. PM peak hour. All other movements are anticipated to operate similarly to Base Year conditions. Overall, the intersection will operate at LOS D(E).

The southbound approach at the Waiko Road/Waiale Road intersection will continue to operate at LOS F(E) during the AM and PM peak hours, respectively. The Project is not anticipated to add any trips to the critical southbound approach. As stated in Section 4.4, a signal is anticipated to be warranted with projected Base Year volumes. However, if the southbound

Waiale Road approach is provided with separate left-turn and right-turn lanes, the four-hour warrant would fall short by 1 hour, making a signal not warranted.

At Honoapiilani Highway/Kehalani Parkway intersection, all movements are anticipated to operate similarly to Base Year conditions, with the eastbound left-turn movement operating at LOS E.

The Kuikahi Drive/Kehalani Village Center Driveway intersection will continue to operate at LOS F for the minor street northbound and southbound shared left-turn/through movements during both peak hours, with the shared southbound left/through movement operating with overcapacity conditions during the PM peak hour. A signal warrant was not met with the projected Future Year volumes.

The new RIRO North Project Access approach is anticipated to operate acceptably at LOS C(C) conditions during the AM and PM peak hours, respectively.

All movements at the new South Project Access are anticipated to operate acceptably at LOS D or better for both peak hours, with the exception of the eastbound left-turn movement, which will operate at LOS E during the AM peak hour. However, all movements will operate adequately below capacity. Based on the MUTCD's Eight-Hour Vehicle Volume Signal Warrant 1 and Four-Hour Vehicle Volume Signal Warrant 2, a signal is not warranted from forecast Future Year volumes. Project generated vehicles exiting the site, which is the critical criteria to warrant a signal, is not high enough to meet any of the minimum warrant thresholds. In lieu of a signal, a median refuge lane may help reduce eastbound left-turn vehicle delays by allowing vehicles to turn onto Honoapiilani Highway with a two-stage approach; turning left into the refuge lane after finding gaps in southbound traffic, then merging into the Honoapiilani Highway through lane after finding gaps in northbound traffic. A crosswalk is not proposed at either the North Project Access or South Project Access, so pedestrian and bike connectively will be maintained along the shoulder of Honoapiilani Highway and any highway crossings will be permitted at the existing traffic signals at the Pilikana Street and Kuikahi Drive intersections.

Figure 5.2 illustrates the Future Year 2024 forecast traffic volumes and LOS for the study intersection movements. Table 5.3 summarizes the Future Year 2024 LOS at the study intersections compared to Base Year 2024 conditions. LOS worksheets are provided in Appendix C.

AustinTsutsumi & ASSOCIATES, INC.
Engineers & Surveyors

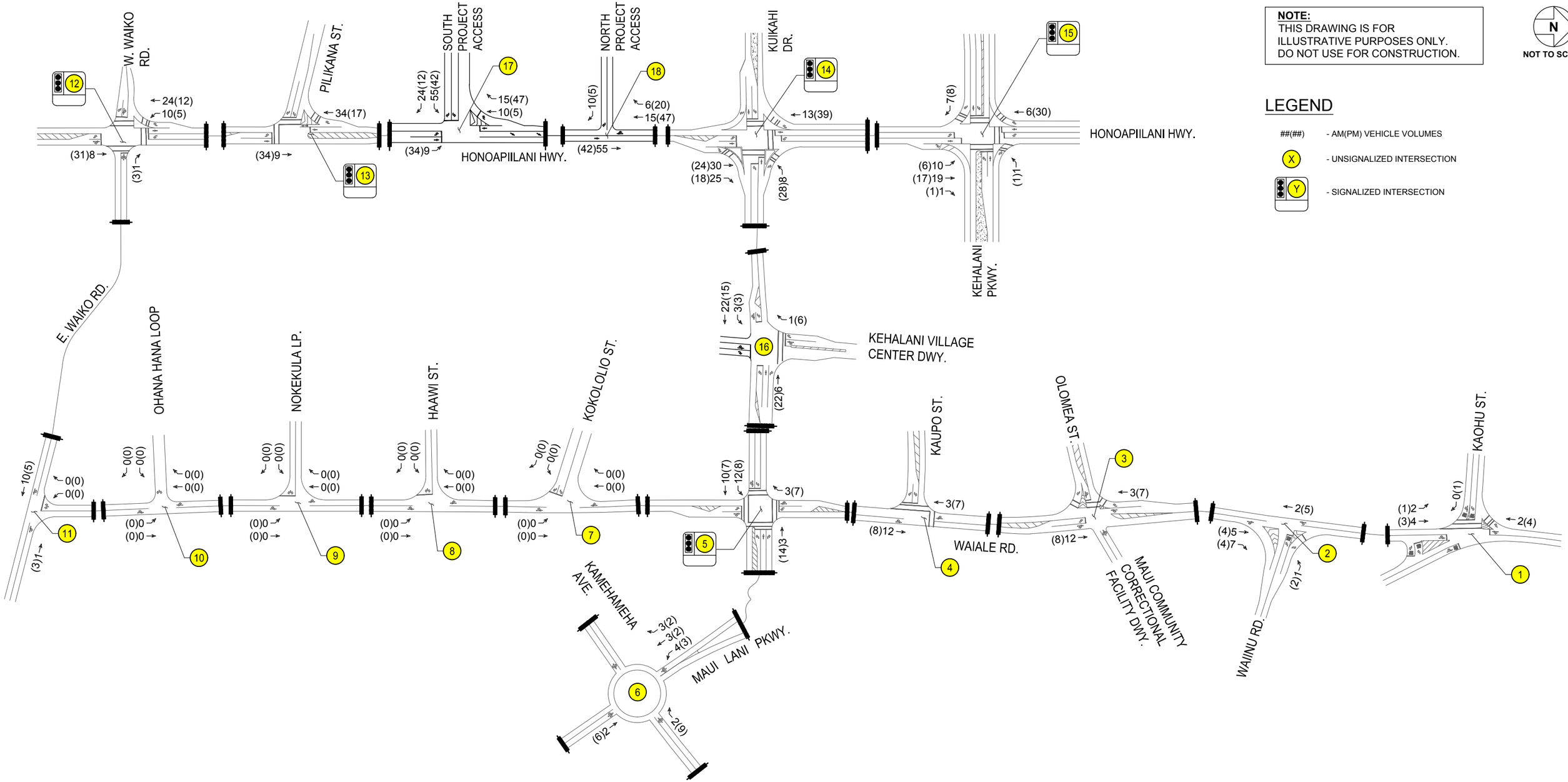

FIGURE 5.1

PROJECT TRIPS

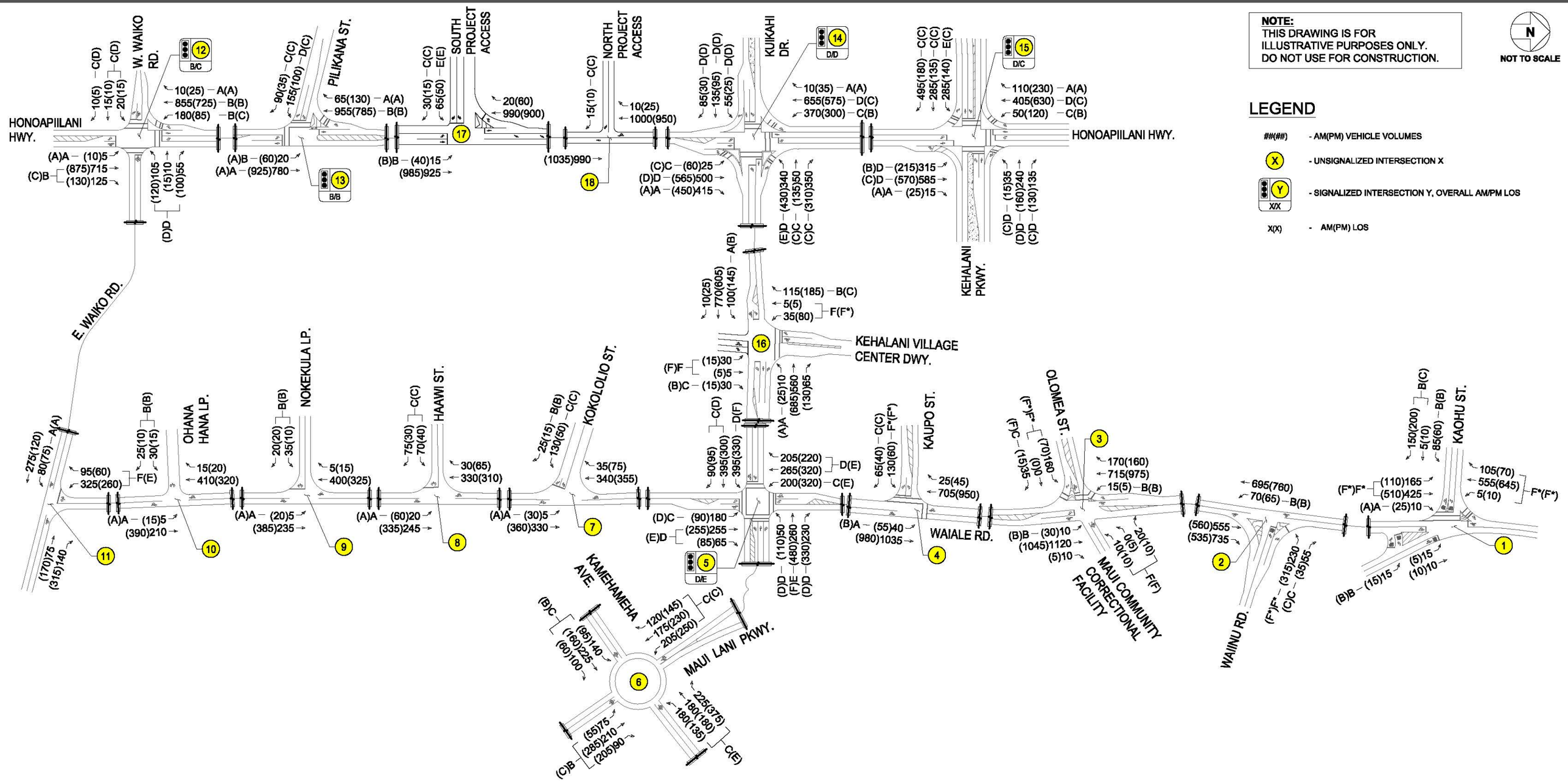

FIGURE 5.2

FUTURE YEAR CONDITIONS

Table 5.3: Base Year 2024 and Future Year 2024 Conditions Level of Service Summary

Intersection	Base Year 2024 Conditions						Future Year 2024 Conditions					
	AM			PM			AM			PM		
	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS
1: Waiale Rd & Kaohu St/Oluloa Dr												
NB LT/TH	123.0	1.22	F*	149.4	1.32	F*	126.8	1.24	F*	153.4	1.34	F*
NB RT	9.0	0.02	A	9.5	0.05	A	9.0	0.02	A	9.5	0.05	A
EB LT	14.4	0.23	B	13.7	0.17	B	14.4	0.23	B	13.7	0.17	B
EB TH/RT	14.6	0.37	B	17.3	0.51	C	14.6	0.37	B	17.4	0.51	C
WB LT/TH/RT	14.1	0.12	B	14.4	0.10	B	14.2	0.12	B	14.5	0.10	B
SB LT/TH/RT	174.9	1.35	F*	235.4	1.49	F*	179.1	1.35	F*	240.1	1.52	F*
Overall	124.8	-	F	160.5	-	F	128.2	-	F	164.3	-	F
2: Waiale Rd & Waiinu Rd												
WB LT	1669.7	4.39	F*	2125.5	5.44	F*	1745.8	4.55	F*	2166.8	5.52	F*
WB RT	20.1	0.20	C	17.0	0.11	C	20.5	0.21	C	17.0	0.11	C
SB LT	13.6	0.15	B	11.9	0.12	B	13.8	0.16	B	12.0	0.12	B
Overall	166.4	-	-	297.5	-	-	172.5	-	-	301.3	-	-
3: Waiale Rd & Olomea St/Waimaluhia Ln												
NB LT	10.1	0.02	B	11.8	0.06	B	10.1	0.02	B	11.8	0.06	B
EB LT/TH	2518.0	6.00	F*	1358.5	2.98	F*	2623.0	6.21	F*	1466.3	3.17	F*
EB RT	16.6	0.11	C	588.5	1.54	F	16.6	0.11	C	660.2	1.67	F
WB LT/TH/RT	101.7	0.49	F	266.0	0.80	F	101.7	0.49	F	279.3	0.82	F
SB LT	11.5	0.03	B	10.9	0.01	B	11.6	0.03	B	11.0	0.01	B
Overall	180.4	-	-	40.1	-	-	187.0	-	-	43.4	-	-
4: Waiale Rd & Kaupo St												
NB LT	9.6	0.05	A	11.2	0.09	B	9.6	0.05	A	11.3	0.10	B
EB LT	805.5	2.44	F*	654.2	1.86	F*	848.5	2.52	F*	683.6	1.92	F*
EB RT	16.1	0.18	C	20.9	0.16	C	16.2	0.18	C	21.2	0.16	C
Overall	53.5	-	-	19.2	-	-	55.9	-	-	19.9	-	-
5: Waiale Rd & Kuikahi Dr/Maui Lani Pkwy												
NB LT	30.5	0.71	C	46.3	0.55	D	32.9	0.73	C	51.9	0.59	D
NB TH/RT	34.0	0.61	C	58.7	0.81	E	35.7	0.61	D	65.1	0.80	E
EB LT	43.2	0.92	D	67.6	0.93	E	49.1	0.94	D	83.7	0.95	F
EB TH/RT	33.4	0.75	C	36.7	0.58	D	34.4	0.75	C	39.3	0.57	D
WB LT	37.1	0.22	D	35.5	0.33	D	38.6	0.22	D	39.2	0.32	D
WB TH	54.7	0.85	D	68.3	0.92	E	59.3	0.87	E	81.4	0.94	F
WB RT	39.4	0.10	D	43.5	0.36	D	41.1	0.10	D	48.3	0.37	D
SB LT	25.1	0.54	C	53.5	0.89	D	26.5	0.55	C	61.1	0.90	E
SB TH/RT	43.1	0.89	D	58.5	0.92	E	46.2	0.89	D	67.7	0.93	E
Overall	38.6	-	D	55.4	-	E	41.6	-	D	64.1	-	E
6: Kamehameha Ave & Maui Lani Pkwy												
NB LT/TH/RT	19.3	0.70	C	12.9	0.50	B	19.6	0.71	C	13.2	0.51	B
EB LT/TH/RT	15.3	0.65	C	18.6	0.75	C	15.8	0.66	C	19.7	0.76	C
WB LT/TH/RT	14.6	0.58	B	21.8	0.76	C	14.6	0.58	B	22.7	0.77	C
SB LT/TH/RT	20.5	0.76	C	32.3	0.89	D	20.5	0.76	C	35.1	0.91	E
Overall	17.7	-	C	22.9	-	C	17.9	-	C	24.4	-	C
7: Waiale Rd & Kokololio St												
NB LT	8.1	0.01	A	8.4	0.03	A	8.1	0.01	A	8.4	0.03	A
EB LT	20.4	0.38	C	19.4	0.18	C	20.4	0.38	C	19.4	0.18	C
EB RT	10.7	0.04	B	10.9	0.03	B	10.7	0.04	B	10.9	0.03	B
Overall	3.4	-	-	1.5	-	-	3.4	-	-	1.5	-	-
8: Waiale Rd & Haawi St												
NB LT	8.1	0.02	A	8.3	0.06	A	8.1	0.02	A	8.3	0.06	A
EB LT/RT	15.2	0.31	C	16.3	0.19	C	15.2	0.31	C	16.3	0.19	C
Overall	3.1	-	-	2.0	-	-	3.1	-	-	2.0	-	-
9: Waiale Rd & Nokekula Lp												
NB LT	8.2	0.01	A	8.1	0.02	A	8.2	0.01	A	8.1	0.02	A
EB LT/RT	14.0	0.13	B	12.6	0.07	B	14.0	0.13	B	12.6	0.07	B
Overall	1.2	-	-	0.7	-	-	1.2	-	-	0.7	-	-
10: Waiale Rd & Ohana Hana Loop												
NB LT	8.3	0.01	A	8.1	0.01	A	8.3	0.01	A	8.1	0.01	A
EB LT/RT	12.4	0.11	B	12.2	0.05	B	12.4	0.11	B	12.2	0.05	B
Overall	1.0	-	-	0.6	-	-	1.0	-	-	0.6	-	-
11: E Waiko Rd & Waiale Rd												
EB LT	7.9	0.07	A	8.7	0.08	A	7.9	0.07	A	8.8	0.08	A
SB LT/RT	62.3	0.96	F	38.4	0.80	E	66.1	0.98	F	40.1	0.81	E
Overall	27.3	-	-	13.1	-	-	28.7	-	-	13.5	-	-

* Denotes overcapacity condition, v/c ≥ 1.

Table 5.2: Base Year 2024 and Future Year 2024 Conditions Level of Service Summary

Intersection	Base Year 2024 Conditions						Future Year 2024 Conditions					
	AM			PM			AM			PM		
	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS
12: Honoapiilani Hwy & W Waiko Rd/E Waiko Rd												
NB LT	9.1	0.02	A	8.7	0.03	A	9.5	0.02	A	9.0	0.03	A
NB TH/RT	16.5	0.81	B	25.2	0.90	C	17.0	0.82	B	29.5	0.93	C
EB LT/TH	31.7	0.13	C	35.6	0.09	D	32.4	0.13	C	36.6	0.09	D
EB RT	31.0	0.00	C	35.0	0.00	D	31.7	0.00	C	36.1	0.00	D
WB LT/TH/RT	35.5	0.60	D	43.1	0.72	D	36.3	0.60	D	45.4	0.73	D
SB LT	14.6	0.55	B	20.8	0.41	C	15.6	0.59	B	24.4	0.49	C
SB TH	11.4	0.73	B	11.1	0.62	B	11.9	0.75	B	11.5	0.63	B
SB RT	4.8	0.01	A	5.8	0.02	A	4.8	0.01	A	5.9	0.02	A
Overall	15.9	-	B	21.8	-	C	16.4	-	B	24.4	-	C
13: Honoapiilani Hwy & Pilikana St												
NB LT	11.6	0.09	B	9.2	0.19	A	12.6	0.09	B	9.4	0.19	A
NB TH	5.4	0.62	A	6.5	0.75	A	5.4	0.62	A	6.8	0.77	A
EB LT	35.2	0.77	D	25.9	0.53	C	37.4	0.78	D	26.6	0.53	C
EB RT	27.0	0.04	C	22.4	0.02	C	28.7	0.04	C	23.0	0.02	C
SB TH	12.9	0.86	B	12.2	0.82	B	14.2	0.87	B	12.3	0.82	B
SB RT	5.2	0.06	A	6.3	0.11	A	5.1	0.06	A	6.2	0.11	A
Overall	11.6	-	B	9.9	-	A	12.3	-	B	10.1	-	B
14: Honoapiilani Highway & Kuikahi Drive												
NB LT	22.3	0.11	C	22.5	0.21	C	21.8	0.11	C	23.2	0.22	C
NB TH	35.3	0.81	D	40.7	0.85	D	35.4	0.82	D	42.7	0.86	D
NB RT	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A
EB LT	38.5	0.20	D	46.6	0.12	D	39.9	0.21	D	48.9	0.12	D
EB TH	45.4	0.71	D	52.0	0.58	D	47.1	0.73	D	54.6	0.60	D
EB RT	38.5	0.05	D	44.5	0.01	D	39.8	0.04	D	46.8	0.01	D
WB LT	41.4	0.81	D	43.9	0.82	D	47.4	0.85	D	55.8	0.90	E
WB TH	29.1	0.12	C	31.4	0.27	C	30.5	0.12	C	33.0	0.27	C
WB RT	20.0	0.31	C	21.0	0.19	C	21.5	0.34	C	22.1	0.19	C
SB LT	39.6	0.91	D	41.1	0.91	D	43.9	0.93	D	46.9	0.92	D
SB TH	26.5	0.79	C	26.6	0.67	C	26.0	0.78	C	28.1	0.71	C
SB RT	11.8	0.01	B	15.5	0.02	B	11.5	0.01	B	15.4	0.03	B
Overall	33.5	-	C	36.2	-	D	35.2	-	D	40.3	-	D
15: Honoapiilani Hwy & Kehalani Pkwy												
NB LT	34.9	0.87	C	18.7	0.69	B	37.6	0.89	D	19.8	0.74	B
NB TH	41.6	0.86	D	23.2	0.73	C	43.5	0.88	D	23.5	0.73	C
NB RT	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A
EB LT	60.7	0.96	E	26.9	0.52	C	64.4	0.97	E	27.9	0.53	C
EB TH	26.9	0.47	C	28.4	0.36	C	27.6	0.47	C	29.4	0.37	C
EB RT	24.8	0.28	C	26.6	0.10	C	25.5	0.28	C	27.6	0.11	C
WB LT	35.9	0.11	D	30.6	0.06	C	36.2	0.13	D	31.7	0.06	C
WB TH	53.8	0.86	D	36.1	0.69	D	54.8	0.86	D	37.4	0.69	D
WB RT	38.2	0.07	D	32.0	0.07	C	38.7	0.07	D	33.1	0.07	C
SB LT	29.0	0.27	C	15.8	0.38	B	29.5	0.29	C	16.0	0.38	B
SB TH	50.1	0.86	D	31.7	0.86	C	51.1	0.87	D	34.3	0.88	C
SB RT	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A
Overall	43.3	-	D	26.7	-	C	45.0	-	D	28.0	-	C
16: Kuikahi Dr & Kehalani Village Center Dr												
NB LT/TH	203.4	0.79	F	358.8	0.87	F	247.2	0.89	F	435.7	0.99	F
NB RT	15.5	0.09	C	13.0	0.04	B	15.9	0.09	C	13.2	0.04	B
EB LT	9.4	0.11	A	10.8	0.20	B	9.5	0.12	A	11.0	0.21	B
WB LT	9.5	0.01	A	9.0	0.03	A	9.6	0.01	A	9.1	0.03	A
SB LT/TH	147.0	0.70	F	578.0	1.85	F*	171.4	0.76	F	659.8	2.01	F*
SB RT	14.5	0.24	B	20.5	0.46	C	14.7	0.25	B	21.9	0.49	C
Overall	9.5	-	-	33.1	-	-	10.8	-	-	36.9	-	-
17: Honoapiilani Highway/Honoapiilani Hwy & South Project Access												
NB LT	-	-	-	-	-	-	10.8	0.03	B	10.8	0.07	B
EB LT	-	-	-	-	-	-	38.5	0.40	E	36.1	0.32	E
EB RT	-	-	-	-	-	-	20.4	0.12	C	17.5	0.05	C
Overall	-	-	-	-	-	-	1.6	-	-	1.2	-	-
18: Honoapiilani Highway/Honoapiilani Hwy & North Project Access												
WB LT/TH/RT	-	-	-	-	-	-	19.6	0.06	C	18.3	0.04	C
Overall	-	-	-	-	-	-	0.1	-	-	0.1	-	-

* Denotes overcapacity condition, v/c ≥ 1.

6. CONCLUSIONS

The Project proposes to develop 137 turn-key homes and 24 vacant residential lots, for a total of 161 single-family dwelling units for DHHL beneficiaries. Accessory dwelling units or ohana units will not be permitted. Access to the site will occur via two (2) new driveways off of Honoapiilani Highway. The southern access will provide primary access with permitted left-turns along the eastbound and northbound approaches. The northern access will provide secondary access limited to right-in, right-out (RIRO) access only.

Representatives from ATA and the Puunani Homestead development team met with the State of Hawaii Department of Transportation (HDOT) on October 23, 2019 and the County of Maui Department of Public Works (DPW) on December 12, 2019 to provide an overview of the Project. Project land use, conclusions and recommendations presented in this TIAR is consistent with what was presented at both meetings with HDOT and DPW.

6.1 Existing Conditions

During the AM peak hour, between 7:30-7:50AM, northbound traffic congestion is observe to occur from the Waiale Road/Kaohu Street/Oluloa Drive intersection and can spill back beyond the Waiale Road/Kuikahi Drive intersection. During the PM peak hour, the southbound approach also operates at LOS F and overcapacity conditions and the northbound left-turn/through movement operates at LOS E during the PM peak hour. As a result, many side street movements and approaches that intersect Waiale Road between Kaohu Street and Kaupo Street, experience lengthy delays and some over-capacity conditions during both peak hours of traffic. Based on existing volumes, a signal is warranted at the Waiale Road/Olomea intersection and the Waiale Road/Kaohu Street intersection, though the Waiale Road/Kaohu Street intersection has existing geometric constraints that may make installation of a signal difficult.

At the Kamehameha Avenue/Maui Lani Parkway four-way stop controlled intersection, various movements operate at LOS F conditions during the peak hours. Queues were inconsistent and varied in length throughout the peak hours, with a short period of extensive southbound queuing during the AM peak hour and periodic eastbound queuing during the AM and PM peak hours of traffic.

The Honoapiilani Highway/Kehalani Parkway intersection provides access to the Puu Kukui Elementary School. As a result, the eastbound left-turn movement queues beyond the existing left-turn storage lane and some vehicles may require two cycle lengths to clear the intersection during the AM peak hour. Heavy traffic during a short period of time is reflective of typical school traffic conditions, as these queuing conditions were observed to last about 30 minutes during the AM peak hour, generally between 7:15-7:45 AM.

Northbound traffic queues along Honoapiilani Highway were observed to primarily stem from Wailuku Elementary School. At Aupuni Street, northbound traffic queued back to Kehalani Parkway for about 5-10 minutes during the AM peak hour due to a police officer directing traffic at Aupuni Street to service Wailuku Elementary School traffic in the morning. The police officer is observed to stop mainline northbound and southbound traffic for as much as 30-40 seconds at a time, creating lengthy mainline queues. This impacted the vehicular progression through the Honoapiilani Highway/Kehalani Parkway intersection.

6.2 Base Year 2024 Conditions

Various nearby developments are anticipated to be completed by Year 2024 and were included as part of this study. These developments are discussed in greater detail in Section 4.2

The Waiale Road Extension, Waiko Road Improvements are planned roadway improvements to be constructed in the future. However, since they are unlikely to be built by Year 2024 given their current status, these roadway improvements were not included in this TIAR.

A traffic signal or roundabout is also planned at the Waiale Road/Waiinu Road intersection. However, since it is unknown if this improvement will be constructed by Year 2024, it was not included in this TIAR.

At the Maui Lani Parkway/Kamehameha Avenue intersection, a single-lane roundabout is planned to be constructed and was included in this TIAR. The roundabout is anticipated to improve conditions and all movements are anticipated to operate at LOS D or higher for both peak hours.

A signal warrant was met with existing volumes at the Waiale Road/Kaohu Street intersection, though a signal may be difficult to implement due to right-of-way and alignment constraints. There are currently no planned improvements at this intersection, and it will operate with LOS F and overcapacity conditions on the northbound and southbound approaches. A signal warrant was also met with existing conditions for the Waiale Road/Olomea Street intersection; however no improvements are planned for the intersection and the eastbound left-turn/through movement will continue to operate with overcapacity conditions. A median refuge lane described in Section 3.3 may help reduce vehicle delays.

The eastbound left-turn movement at the Waiale Road/Kaupo Street intersection is anticipated to continue to operate at LOS F and overcapacity conditions during the AM peak hour, and worsen to become overcapacity during the PM peak hour from existing conditions. A signal is not anticipated to be warranted.

A signal is anticipated to be warranted at the Waiale Road/E Waiko Road intersection with Base Year conditions; however if the southbound Waiale Road approach is provided with separate left- and right-turn lanes, the four-hour signal warrant would fall short by 1 hour, making the signal not warranted.

At the Honoapiilani Highway/Kehalani Parkway intersection, the eastbound left-turn movement will operate at LOS E conditions during the AM peak hour. This heavy traffic and queueing are reflective of typical school traffic conditions stemming from the nearby Puu Kukui Elementary School. There are currently no identified or planned roadway improvements likely to occur at this intersection.

With build-out of the Wailuku Apartments project, the Kuikahi Drive/Kehalani Village Center Driveway intersection will add a fourth leg to service Wailuku Apartments. The minor street northbound and southbound shared left-turn/through movements are anticipated to operate at LOS F during both peak hours, with the shared southbound left/through movement operating with overcapacity conditions during the PM peak hour. A signal warrant was not met with the projected Base Year volumes.

6.3 Trip Generation

The Project is anticipated to generate approximately 119(161) new trips during the AM and PM peak hours. These trips were distributed throughout the network based upon trip distribution from similar existing residential subdivisions at the Honoapiilani Highway intersections with Pilikana and W. Waiko Road.

6.4 Future Year 2024 Conditions

Future Year 2024 conditions were generally similar to Base Year 2024 conditions. The North Project Access, which is anticipated to have RIRO access only, is projected to operate at LOS C for both peak hours.

All movements at the new South Project Access are anticipated to operate acceptably at LOS D or better for both peak hours, with the exception of the eastbound left-turn movement, which will operate at LOS E during the AM peak hour. However, all movements will operate adequately below capacity. Based on the MUTCD's Eight-Hour Vehicle Volume Signal Warrant 1 and Four-Hour Vehicle Volume Signal Warrant 2, a signal is not warranted from forecast Future Year volumes. Project generated vehicles exiting the site, which is the critical criteria to warrant a signal, is not high enough to meet any of the minimum warrant thresholds. In lieu of a signal, a median refuge lane may help reduce eastbound left-turn vehicle delays by allowing vehicles to turn onto Honoapiilani Highway with a two-stage approach; turning left into the refuge lane after finding gaps in the southbound traffic, and then merging into the Honoapiilani Highway through lane after finding gaps in the northbound traffic. A crosswalk is not proposed at either the North Project Access or South Project Access, so pedestrian and bike connectively will be maintained along the shoulder of Honoapiilani Highway and any highway crossings will be permitted at the existing traffic signals at the Pilikana Street and Kuikahi Drive intersections.

7. RECOMMENDATIONS

The following Base Year 2024 recommendations are roadway improvements that can be considered WITHOUT the Project:

Waiale Road Corridor

- For future planning purposes along Waiale Road:
  - Traffic control treatment at Waiale Road/Kaohu Street intersection
  - Intersection improvements at the Waiale Road/Waiinu Road intersection (as identified on the STIP)
  - Median refuge lanes along Waiale Road could be considered to help mitigate Waiale Road northbound flows in the AM peak hour of traffic.

The following Future Year 2024 recommendations are roadway improvements that can be considered WITH the Project:

Honoapiilani Highway/South Project Access

- Provide a median refuge lane to allow eastbound left-turn vehicles to turn onto Honoapiilani Highway with a two-stage approach.

8. REFERENCES

- Austin, Tsutsumi & Associates, Central Maui Regional Sports Complex TIAR, 2014.
- Austin, Tsutsumi & Associates, Waiale Affordable Housing TIAR, 2016.
- Austin, Tsutsumi & Associates, Waikapu Light Industrial Project TIAR, 2013.
- Federal Highway Administration, Manual on Uniform Traffic Control Devices, 2009.
- Fehr & Peers, Waikapu Country Town TIAR, December 2016.
- Institute of Transportation Engineers, Trip Generation, 10th Edition, 2017.
- Phillip Rowell & Associates, Waiko Road Light Industrial Park TIAR, 2014.
- Transportation Research Board, Highway Capacity Manual, 6th Edition.

A P P E N D I C E S

APPENDIX A

TRAFFIC COUNT DATA

Austin Tsutsumi & Associates

501 Sumner Street, Suite 521
Honolulu, HI 96817-5031
Phone: 533-3646 Fax: 526-1267

File Name : Honoapiilani Hwy - Kehalani Pkwy
Site Code : 16-014.07 Maui DOT Signal Optimization
Start Date : 5/10/2018
Page No : 1

Groups Printed- Motorcycles - Cars & Light Goods - Buses - Unit Trucks - Articulated Trucks - Bicycles on Road - Bicycles on Crosswalk - Pedestrians

	HONOAPIILANI HWY SOUTHBOUND				KEHALANI PKWY WESTBOUND				HONOAPIILANI HWY NORTHBOUND				KEHALANI PKWY EASTBOUND				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
06:30	7	109	16	0	10	21	11	1	18	59	1	0	32	17	43	0	345
06:45	15	82	29	0	4	35	17	1	41	85	2	1	54	24	57	0	447
Total	22	191	45	0	14	56	28	2	59	144	3	1	86	41	100	0	792
07:00	9	77	26	1	4	56	31	1	69	89	3	0	84	54	77	0	581
07:15	4	85	28	0	8	67	47	4	90	136	3	0	74	57	98	0	701
07:30	9	44	25	1	11	57	30	0	67	126	5	0	55	86	133	0	649
07:45	15	99	19	0	7	15	13	0	21	98	3	0	25	29	51	0	395
Total	37	305	98	2	30	195	121	5	247	449	14	0	238	226	359	0	2326
08:00	10	93	18	0	8	13	16	0	17	96	4	0	34	19	22	0	350
08:15	11	84	17	2	5	16	17	0	16	92	1	0	20	16	19	0	316
Grand Total	80	673	178	4	57	280	182	7	339	781	22	1	378	302	500	0	3784
Apprch %	8.6	72	19	0.4	10.8	53.2	34.6	1.3	29.7	68.3	1.9	0.1	32	25.6	42.4	0	
Total %	2.1	17.8	4.7	0.1	1.5	7.4	4.8	0.2	9	20.6	0.6	0	10	8	13.2	0	
Motorcycles	0	1	0	0	0	0	0	0	0	4	0	0	0	0	0	0	5
% Motorcycles	0	0.1	0	0	0	0	0	0	0	0.5	0	0	0	0	0	0	0.1
Cars & Light Goods	75	650	175	0	56	278	176	0	331	763	20	0	376	300	497	0	3697
% Cars & Light Goods	93.8	96.6	98.3	0	98.2	99.3	96.7	0	97.6	97.7	90.9	0	99.5	99.3	99.4	0	97.7
Buses	2	16	1	0	1	2	3	0	5	8	2	0	2	2	1	0	45
% Buses	2.5	2.4	0.6	0	1.8	0.7	1.6	0	1.5	1	9.1	0	0.5	0.7	0.2	0	1.2
Single-Unit Trucks	3	6	2	0	0	0	3	0	3	6	0	0	0	0	2	0	25
% Single-Unit Trucks	3.8	0.9	1.1	0	0	0	1.6	0	0.9	0.8	0	0	0	0	0.4	0	0.7
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswalk	0	0	0	1	0	0	0	3	0	0	0	0	0	0	0	0	4
% Bicycles on Crosswalk	0	0	0	25	0	0	0	42.9	0	0	0	0	0	0	0	0	0.1
Pedestrians	0	0	0	3	0	0	0	4	0	0	0	1	0	0	0	0	8
% Pedestrians	0	0	0	75	0	0	0	57.1	0	0	0	100	0	0	0	0	0.2

Austin Tsutsumi & Associates

501 Sumner Street, Suite 521
Honolulu, HI 96817-5031
Phone: 533-3646 Fax: 526-1267

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Site Code : 16-014.07 Maui DOT Signal Optimization
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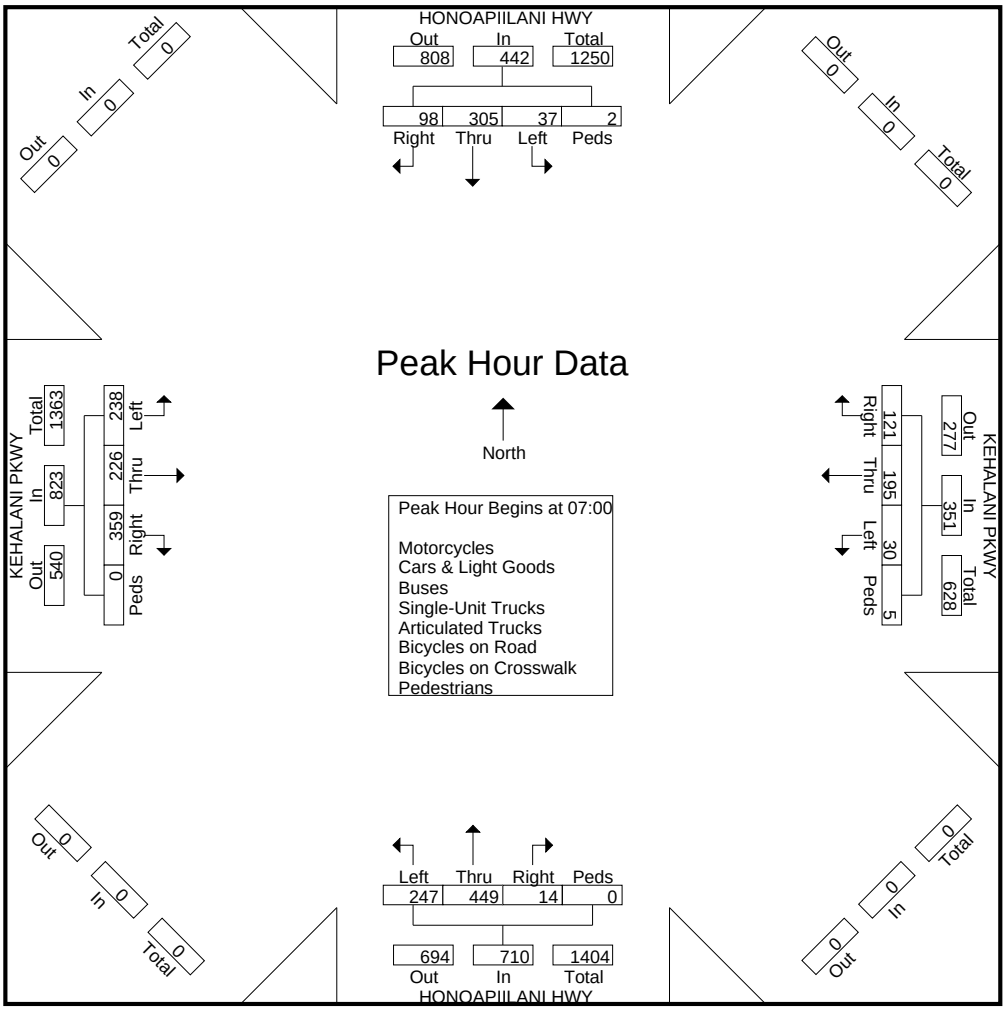
	HONOAPIILANI HWY SOUTHBOUND					KEHALANI PKWY WESTBOUND					HONOAPIILANI HWY NORTHBOUND					KEHALANI PKWY EASTBOUND					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 07:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00																					
07:00	9	77	26	**1**	113	4	56	31	1	92	69	89	3	0	161	**84**	54	77	0	215	581
07:15	4	85	**28**	0	117	8	**67**	**47**	**4**	**126**	**90**	**136**	3	0	**229**	74	57	98	0	229	**701**
07:30	9	44	25	1	79	**11**	57	30	0	98	67	126	**5**	0	198	55	**86**	**133**	0	**274**	649
07:45	**15**	**99**	19	0	**133**	7	15	13	0	35	21	98	3	0	122	25	29	51	0	105	395
Total Volume	37	305	98	2	442	30	195	121	5	351	247	449	14	0	710	238	226	359	0	823	2326
% App. Total	8.4	69	22.2	0.5		8.5	55.6	34.5	1.4		34.8	63.2	2	0		28.9	27.5	43.6	0		
PHF	.617	.770	.875	.500	.831	.682	.728	.644	.313	.696	.686	.825	.700	.000	.775	.708	.657	.675	.000	.751	.830



Austin Tsutsumi & Associates

501 Sumner Street, Suite 521
Honolulu, HI 96817-5031
Phone: 533-3646 Fax: 526-1267

File Name : Honoapiilani Hwy - Kehalani Pkwy
Site Code : 16-014.07 Maui DOT Signal Optimization
Start Date : 5/10/2018
Page No : 1

Groups Printed- Motorcycles - Cars & Light Goods - Buses - Unit Trucks - Articulated Trucks - Bicycles on Road - Bicycles on Crosswalk - Pedestrians

	HONOAPIILANI HWY SOUTHBOUND				KEHALANI PKWY WESTBOUND				HONOAPIILANI HWY NORTHBOUND				KEHALANI PKWY EASTBOUND				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
15:15	19	98	21	0	4	32	19	2	23	101	6	0	31	27	37	0	420
15:30	10	106	31	3	7	33	15	0	33	118	7	0	24	28	35	0	450
15:45	10	77	35	4	1	23	19	0	33	136	4	0	33	21	27	2	425
Total	39	281	87	7	12	88	53	2	89	355	17	0	88	76	99	2	1295
16:00	20	121	37	2	2	25	17	0	23	122	6	0	33	21	32	2	463
16:15	14	104	27	0	5	18	22	0	39	110	4	0	30	17	26	0	416
16:30	12	141	40	2	2	32	20	0	43	108	5	0	28	13	28	0	474
16:45	21	113	48	2	5	30	25	0	38	93	8	0	29	21	35	0	468
Total	67	479	152	6	14	105	84	0	143	433	23	0	120	72	121	2	1821
17:00	25	127	48	0	5	34	14	0	36	102	5	0	19	17	24	1	457
Grand Total	131	887	287	13	31	227	151	2	268	890	45	0	227	165	244	5	3573
Apprch %	9.9	67.3	21.8	1	7.5	55.2	36.7	0.5	22.3	74	3.7	0	35.4	25.7	38.1	0.8	
Total %	3.7	24.8	8	0.4	0.9	6.4	4.2	0.1	7.5	24.9	1.3	0	6.4	4.6	6.8	0.1	
Motorcycles	2	1	0	0	0	2	0	0	0	2	0	0	1	0	0	0	8
% Motorcycles	1.5	0.1	0	0	0	0.9	0	0	0	0.2	0	0	0.4	0	0	0	0.2
Cars & Light Goods	129	871	287	0	29	224	148	0	267	878	44	0	226	165	243	0	3511
% Cars & Light Goods	98.5	98.2	100	0	93.5	98.7	98	0	99.6	98.7	97.8	0	99.6	100	99.6	0	98.3
Buses	0	11	0	0	0	1	3	0	0	4	0	0	0	0	0	1	20
% Buses	0	1.2	0	0	0	0.4	2	0	0	0.4	0	0	0	0	0	20	0.6
Single-Unit Trucks	0	4	0	0	1	0	0	0	1	6	1	0	0	0	1	0	14
% Single-Unit Trucks	0	0.5	0	0	3.2	0	0	0	0.4	0.7	2.2	0	0	0	0.4	0	0.4
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Road	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
% Bicycles on Road	0	0	0	0	3.2	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswalk	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
% Bicycles on Crosswalk	0	0	0	0	0	0	0	50	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	13	0	0	0	1	0	0	0	0	0	0	0	4	18
% Pedestrians	0	0	0	100	0	0	0	50	0	0	0	0	0	0	0	80	0.5

Austin Tsutsumi & Associates

501 Sumner Street, Suite 521
Honolulu, HI 96817-5031
Phone: 533-3646 Fax: 526-1267

File Name : Honoapiilani Hwy - Kehalani Pkwy
Site Code : 16-014.07 Maui DOT Signal Optimization
Start Date : 5/10/2018
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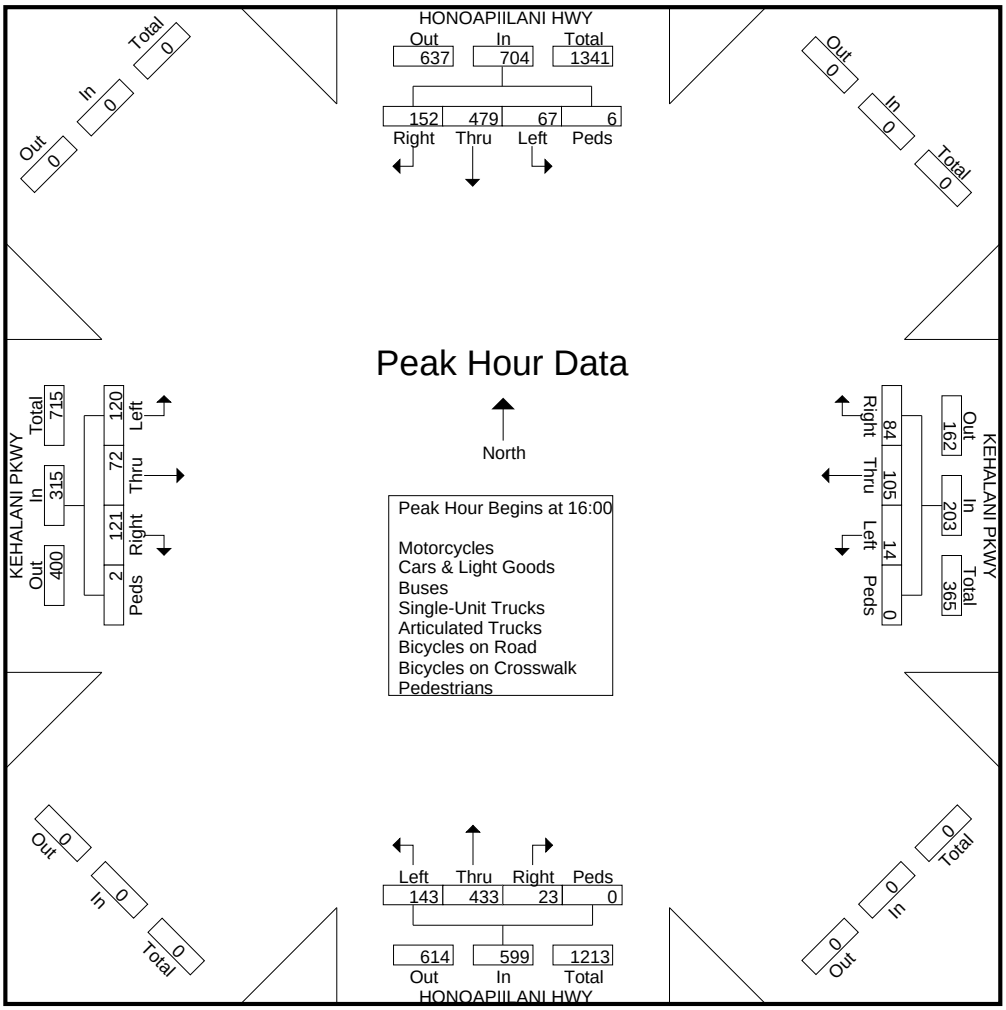
	HONOAPIILANI HWY SOUTHBOUND					KEHALANI PKWY WESTBOUND					HONOAPIILANI HWY NORTHBOUND					KEHALANI PKWY EASTBOUND					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 15:15 to 17:00 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 16:00																					
16:00	20	121	37	**2**	180	2	25	17	0	44	23	**122**	6	0	151	**33**	**21**	32	**2**	**88**	463
16:15	14	104	27	0	145	**5**	18	22	0	45	39	110	4	0	153	30	17	26	0	73	416
16:30	12	**141**	40	2	**195**	2	**32**	20	0	54	**43**	108	5	0	**156**	28	13	28	0	69	**474**
16:45	**21**	113	**48**	2	184	5	30	**25**	0	**60**	38	93	**8**	0	139	29	21	**35**	0	85	468
Total Volume	67	479	152	6	704	14	105	84	0	203	143	433	23	0	599	120	72	121	2	315	1821
% App. Total	9.5	68	21.6	0.9		6.9	51.7	41.4	0		23.9	72.3	3.8	0		38.1	22.9	38.4	0.6		
PHF	.798	.849	.792	.750	.903	.700	.820	.840	.000	.846	.831	.887	.719	.000	.960	.909	.857	.864	.250	.895	.960



Austin Tsutsumi & Associates

1871 Wili Pa Loop, Suite A
Wailuku, Hawaii 96793
Phone: (808) 224-8044 Fax: (808) 242-9163

File Name : Honoapiilani Hwy - Kuikahi Dr
Site Code : 19-503 MAUI LANI DEVELOPMENT
Start Date : 3/13/2019
Page No : 1

Groups Printed- Motorcycles - Cars & Light Goods - Buses - Unit Trucks - Articulated Trucks - Bicycles on Road - Bicycles on Crosswalk - Pedestrians

	HONOAPIILANI HWY SOUTHBOUND				KUIKAHI DR WESTBOUND				HONOAPIILANI HWY NORTHBOUND				KUIKAHI DR EASTBOUND				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
06:30	31	96	0	0	53	2	22	0	2	33	54	0	2	25	12	0	332
06:45	49	95	0	1	48	2	32	0	1	43	69	0	3	29	9	0	381
Total	80	191	0	1	101	4	54	0	3	76	123	0	5	54	21	0	713
07:00	68	118	0	2	60	4	54	0	3	67	77	0	9	27	24	0	513
07:15	69	100	0	0	70	8	72	1	4	110	81	0	17	29	8	0	569
07:30	70	139	3	0	70	12	78	0	5	130	77	0	10	26	20	0	640
07:45	70	117	3	0	79	12	51	0	4	78	82	0	7	22	16	0	541
Total	277	474	6	2	279	36	255	1	16	385	317	0	43	104	68	0	2263
08:00	34	94	1	0	86	18	38	0	3	63	62	0	3	20	13	0	435
08:15	31	84	1	0	61	13	36	0	2	71	65	0	0	25	9	1	399
Grand Total	422	843	8	3	527	71	383	1	24	595	567	0	51	203	111	1	3810
Apprch %	33.1	66.1	0.6	0.2	53.7	7.2	39	0.1	2	50.2	47.8	0	13.9	55.5	30.3	0.3	
Total %	11.1	22.1	0.2	0.1	13.8	1.9	10.1	0	0.6	15.6	14.9	0	1.3	5.3	2.9	0	
Motorcycles	0	1	0	0	2	0	1	0	0	6	2	0	0	1	0	0	13
% Motorcycles	0	0.1	0	0	0.4	0	0.3	0	0	1	0.4	0	0	0.5	0	0	0.3
Cars & Light Goods	416	822	7	0	493	69	369	0	24	584	560	0	51	199	110	0	3704
% Cars & Light Goods	98.6	97.5	87.5	0	93.5	97.2	96.3	0	100	98.2	98.8	0	100	98	99.1	0	97.2
Buses	5	15	1	0	1	0	4	0	0	3	2	0	0	2	1	0	34
% Buses	1.2	1.8	12.5	0	0.2	0	1	0	0	0.5	0.4	0	0	1	0.9	0	0.9
Single-Unit Trucks	0	5	0	0	27	2	9	0	0	2	3	0	0	1	0	0	49
% Single-Unit Trucks	0	0.6	0	0	5.1	2.8	2.3	0	0	0.3	0.5	0	0	0.5	0	0	1.3
Articulated Trucks	1	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	4
% Articulated Trucks	0.2	0	0	0	0.6	0	0	0	0	0	0	0	0	0	0	0	0.1
Bicycles on Road	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
% Bicycles on Road	0	0	0	0	0.2	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswalk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bicycles on Crosswalk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	3	0	0	0	1	0	0	0	0	0	0	0	1	5
% Pedestrians	0	0	0	100	0	0	0	100	0	0	0	0	0	0	0	100	0.1

Austin Tsutsumi & Associates

1871 Wili Pa Loop, Suite A
Wailuku, Hawaii 96793
Phone: (808) 224-8044 Fax: (808) 242-9163

File Name : Honoapiilani Hwy - Kuikahi Dr
Site Code : 19-503 MAUI LANI DEVELOPMENT
Start Date : 3/13/2019
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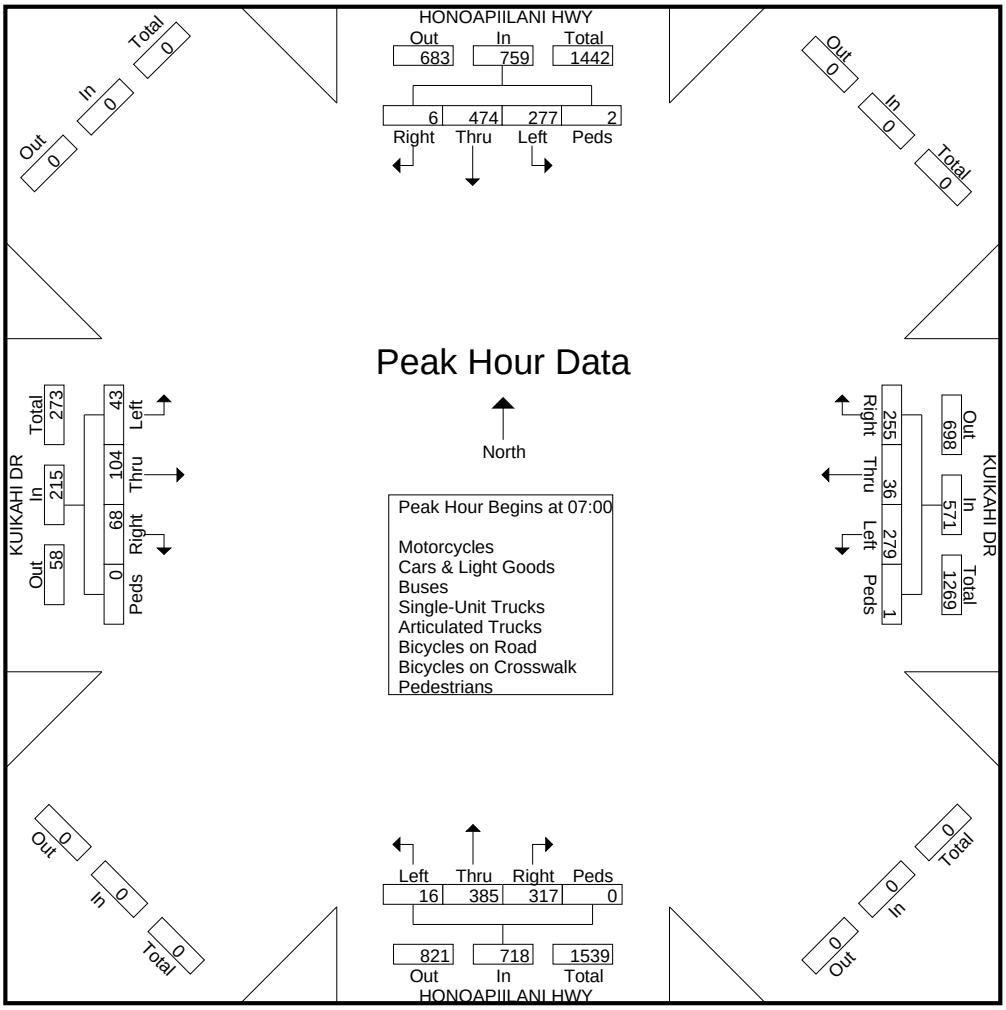
	HONOAPIILANI HWY SOUTHBOUND					KUIKAHI DR WESTBOUND					HONOAPIILANI HWY NORTHBOUND					KUIKAHI DR EASTBOUND					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 06:30 to 08:15 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00																					
07:00	68	118	0	**2**	188	60	4	54	0	118	3	67	77	0	147	9	27	**24**	0	**60**	513
07:15	69	100	0	0	169	70	8	72	**1**	151	4	110	81	0	195	**17**	**29**	8	0	54	569
07:30	**70**	**139**	**3**	0	**212**	70	**12**	**78**	0	**160**	**5**	**130**	77	0	**212**	10	26	20	0	56	**640**
07:45	70	117	3	0	190	**79**	12	51	0	142	4	78	**82**	0	164	7	22	16	0	45	541
Total Volume	277	474	6	2	759	279	36	255	1	571	16	385	317	0	718	43	104	68	0	215	2263
% App. Total	36.5	62.5	0.8	0.3		48.9	6.3	44.7	0.2		2.2	53.6	44.2	0		20	48.4	31.6	0		
PHF	.989	.853	.500	.250	.895	.883	.750	.817	.250	.892	.800	.740	.966	.000	.847	.632	.897	.708	.000	.896	.884



Austin Tsutsumi & Associates

1871 Wili Pa Loop, Suite A
Wailuku, Hawaii 96793
Phone: (808) 224-8044 Fax: (808) 242-9163

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Site Code : 19-503 MAUI LANI DEVELOPMENT
Start Date : 3/13/2019
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Groups Printed- Motorcycles - Cars & Light Goods - Buses - Unit Trucks - Articulated Trucks - Bicycles on Road - Bicycles on Crosswalk - Pedestrians

	HONOAPIILANI HWY SOUTHBOUND				KUIKAHI DR WESTBOUND				HONOAPIILANI HWY NORTHBOUND				KUIKAHI DR EASTBOUND				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
15:30	41	82	4	1	48	16	38	0	8	101	101	0	3	14	6	0	463
15:45	59	70	3	0	64	25	40	0	4	125	82	0	1	15	9	0	497
Total	100	152	7	1	112	41	78	0	12	226	183	0	4	29	15	0	960
16:00	59	103	2	0	56	19	44	2	7	141	73	0	2	17	7	0	532
16:15	57	77	4	0	81	28	37	0	14	90	85	0	5	19	4	0	501
16:30	47	113	7	0	63	25	27	0	14	110	101	0	4	9	8	0	528
16:45	66	131	10	0	66	22	20	0	11	96	82	0	5	23	4	0	536
Total	229	424	23	0	266	94	128	2	46	437	341	0	16	68	23	0	2097
17:00	44	83	8	0	63	19	35	0	5	97	74	0	4	16	5	0	453
17:15	49	86	9	0	77	25	32	0	13	91	67	0	0	20	4	0	473
Grand Total	422	745	47	1	518	179	273	2	76	851	665	0	24	133	47	0	3983
Apprch %	34.7	61.3	3.9	0.1	53.3	18.4	28.1	0.2	4.8	53.5	41.8	0	11.8	65.2	23	0	
Total %	10.6	18.7	1.2	0	13	4.5	6.9	0.1	1.9	21.4	16.7	0	0.6	3.3	1.2	0	
Motorcycles	0	9	0	0	0	0	0	0	0	2	3	0	0	0	0	0	14
% Motorcycles	0	1.2	0	0	0	0	0	0	0	0.2	0.5	0	0	0	0	0	0.4
Cars & Light Goods	415	730	46	0	515	179	271	0	76	842	647	0	24	133	46	0	3924
% Cars & Light Goods	98.3	98	97.9	0	99.4	100	99.3	0	100	98.9	97.3	0	100	100	97.9	0	98.5
Buses	4	5	0	0	1	0	0	0	0	1	2	0	0	0	0	0	13
% Buses	0.9	0.7	0	0	0.2	0	0	0	0	0.1	0.3	0	0	0	0	0	0.3
Single-Unit Trucks	3	0	0	0	2	0	1	0	0	6	12	0	0	0	1	0	25
% Single-Unit Trucks	0.7	0	0	0	0.4	0	0.4	0	0	0.7	1.8	0	0	0	2.1	0	0.6
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Road	0	1	1	0	0	0	1	0	0	0	1	0	0	0	0	0	4
% Bicycles on Road	0	0.1	2.1	0	0	0	0.4	0	0	0	0.2	0	0	0	0	0	0.1
Bicycles on Crosswalk	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
% Bicycles on Crosswalk	0	0	0	0	0	0	0	50	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	2
% Pedestrians	0	0	0	100	0	0	0	50	0	0	0	0	0	0	0	0	0.1

Austin Tsutsumi & Associates

1871 Wili Pa Loop, Suite A
Wailuku, Hawaii 96793
Phone: (808) 224-8044 Fax: (808) 242-9163

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Site Code : 19-503 MAUI LANI DEVELOPMENT
Start Date : 3/13/2019
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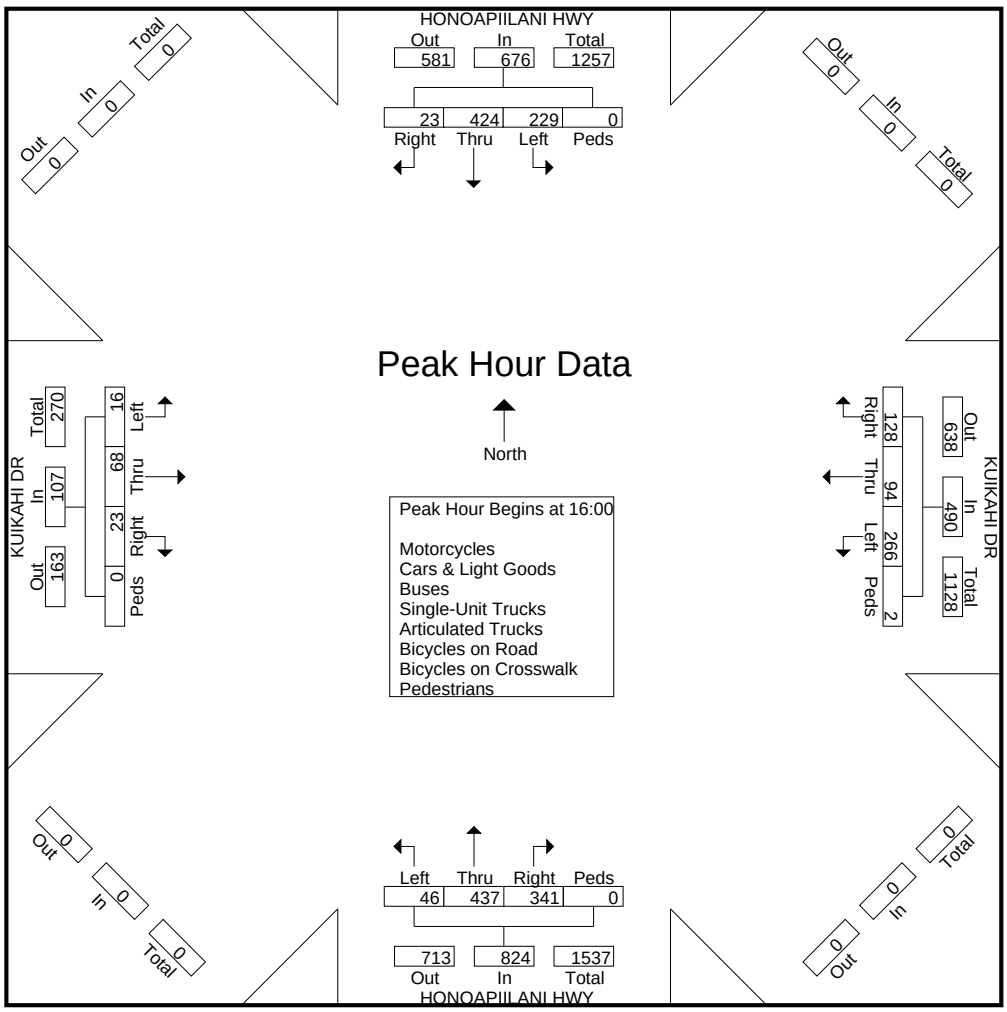
	HONOAPIILANI HWY SOUTHBOUND					KUIKAHI DR WESTBOUND					HONOAPIILANI HWY NORTHBOUND					KUIKAHI DR EASTBOUND					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 15:30 to 17:15 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 16:00																					
16:00	59	103	2	0	164	56	19	**44**	**2**	121	7	**141**	73	0	221	2	17	7	0	26	532
16:15	57	77	4	0	138	**81**	**28**	37	0	**146**	**14**	90	85	0	189	**5**	19	4	0	28	501
16:30	47	113	7	0	167	63	25	27	0	115	14	110	**101**	0	**225**	4	9	**8**	0	21	528
16:45	**66**	**131**	**10**	0	**207**	66	22	20	0	108	11	96	82	0	189	5	**23**	4	0	**32**	**536**
Total Volume	229	424	23	0	676	266	94	128	2	490	46	437	341	0	824	16	68	23	0	107	2097
% App. Total	33.9	62.7	3.4	0		54.3	19.2	26.1	0.4		5.6	53	41.4	0		15	63.6	21.5	0		
PHF	.867	.809	.575	.000	.816	.821	.839	.727	.250	.839	.821	.775	.844	.000	.916	.800	.739	.719	.000	.836	.978



Austin Tsutsumi & Associates

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Honolulu, HI 96817-5031
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File Name : Honoapiilani Hwy - Piikana St
Site Code : 16-014.07 Maui DOT Signal Optimization
Start Date : 5/10/2018
Page No : 1

Groups Printed- Motorcycles - Cars & Light Goods - Buses - Unit Trucks - Articulated Trucks - Bicycles on Road - Bicycles on Crosswalk - Pedestrians

	HONOAPIILANI HWY SOUTHBOUND				WESTBOUND				PILIKANA ST NORTHBOUND				HONOAPIILANI HWY EASTBOUND				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
06:30	0	144	10	0	0	0	0	0	3	101	0	0	25	0	22	0	305
06:45	0	184	11	0	0	0	0	0	1	109	0	0	28	0	19	0	352
Total	0	328	21	0	0	0	0	0	4	210	0	0	53	0	41	0	657
07:00	0	163	15	0	0	0	0	0	3	126	0	0	49	0	28	0	384
07:15	0	163	17	0	0	0	0	0	3	164	0	0	58	0	32	0	437
07:30	0	181	15	0	0	0	0	0	7	189	0	0	32	0	19	0	443
07:45	0	180	15	0	0	0	0	0	5	138	0	0	14	0	9	0	361
Total	0	687	62	0	0	0	0	0	18	617	0	0	153	0	88	0	1625
08:00	0	173	16	0	0	0	0	0	5	125	0	0	10	0	12	0	341
08:15	0	138	3	0	0	0	0	0	3	128	0	0	9	0	4	0	285
Grand Total	0	1326	102	0	0	0	0	0	30	1080	0	0	225	0	145	0	2908
Apprch %	0	92.9	7.1	0	0	0	0	0	2.7	97.3	0	0	60.8	0	39.2	0	
Total %	0	45.6	3.5	0	0	0	0	0	1	37.1	0	0	7.7	0	5	0	
Motorcycles	0	7	0	0	0	0	0	0	0	5	0	0	0	0	0	0	12
% Motorcycles	0	0.5	0	0	0	0	0	0	0	0.5	0	0	0	0	0	0	0.4
Cars & Light Goods	0	1273	101	0	0	0	0	0	29	1056	0	0	223	0	145	0	2827
% Cars & Light Goods	0	96	99	0	0	0	0	0	96.7	97.8	0	0	99.1	0	100	0	97.2
Buses	0	12	1	0	0	0	0	0	1	10	0	0	0	0	0	0	24
% Buses	0	0.9	1	0	0	0	0	0	3.3	0.9	0	0	0	0	0	0	0.8
Single-Unit Trucks	0	26	0	0	0	0	0	0	0	7	0	0	1	0	0	0	34
% Single-Unit Trucks	0	2	0	0	0	0	0	0	0	0.6	0	0	0.4	0	0	0	1.2
Articulated Trucks	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
% Articulated Trucks	0	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2
Bicycles on Road	0	1	0	0	0	0	0	0	0	2	0	0	1	0	0	0	4
% Bicycles on Road	0	0.1	0	0	0	0	0	0	0	0.2	0	0	0.4	0	0	0	0.1
Bicycles on Crosswalk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bicycles on Crosswalk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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Honolulu, HI 96817-5031
Phone: 533-3646 Fax: 526-1267

File Name : Honoapiilani Hwy - Piikana St
Site Code : 16-014.07 Maui DOT Signal Optimization
Start Date : 5/10/2018
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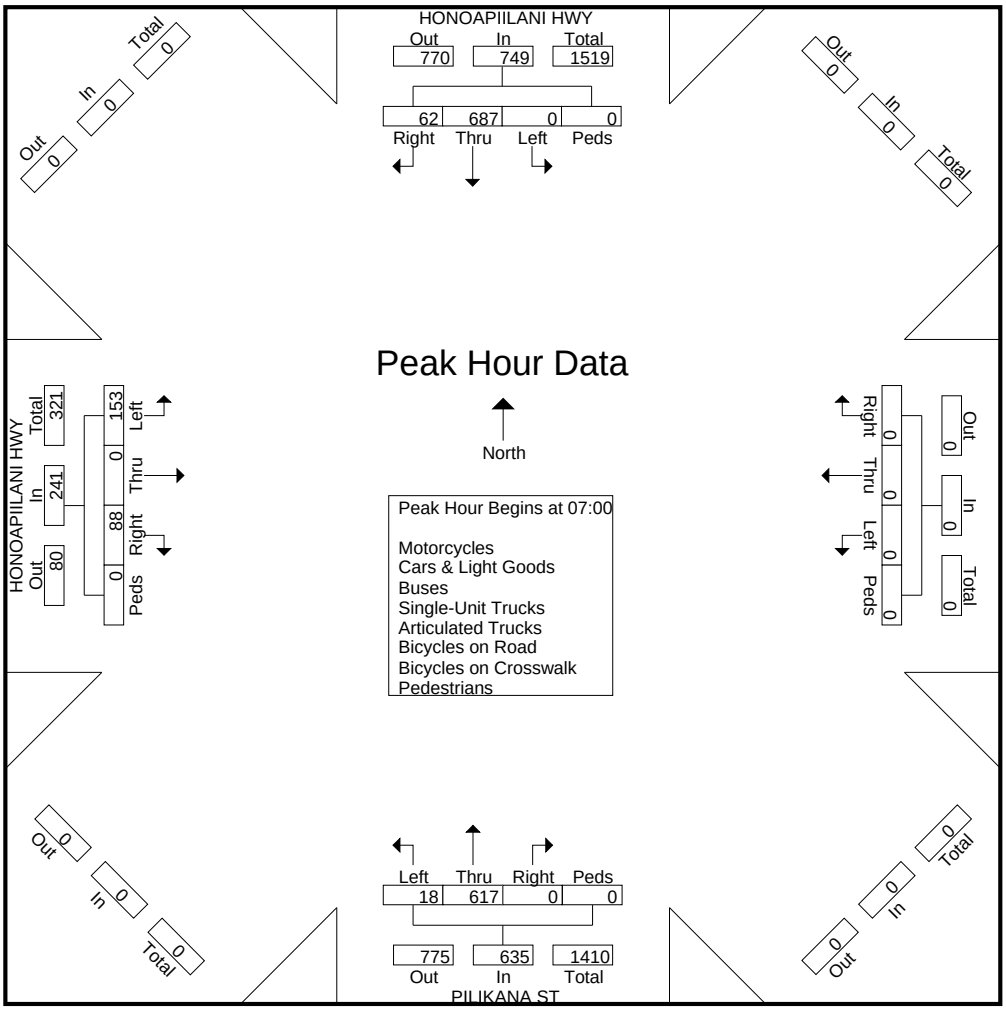
	HONOAPIILANI HWY SOUTHBOUND					WESTBOUND					PILIKANA ST NORTHBOUND					HONOAPIILANI HWY EASTBOUND					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 06:30 to 08:15 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00																					
07:00	0	163	15	0	178	0	0	0	0	0	3	126	0	0	129	49	0	28	0	77	384
07:15	0	163	**17**	0	180	0	0	0	0	0	3	164	0	0	167	**58**	0	**32**	0	**90**	437
07:30	0	**181**	15	0	**196**	0	0	0	0	0	**7**	**189**	0	0	**196**	32	0	19	0	51	**443**
07:45	0	180	15	0	195	0	0	0	0	0	5	138	0	0	143	14	0	9	0	23	361
Total Volume	0	687	62	0	749	0	0	0	0	0	18	617	0	0	635	153	0	88	0	241	1625
% App. Total	0	91.7	8.3	0		0	0	0	0		2.8	97.2	0	0		63.5	0	36.5	0		
PHF	.000	.949	.912	.000	.955	.000	.000	.000	.000	.000	.643	.816	.000	.000	.810	.659	.000	.688	.000	.669	.917



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Honolulu, HI 96817-5031
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File Name : Honoapiilani Hwy - Piikana St
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Groups Printed- Motorcycles - Cars & Light Goods - Buses - Unit Trucks - Articulated Trucks - Bicycles on Road - Bicycles on Crosswalk - Pedestrians

	HONOAPIILANI HWY SOUTHBOUND				WESTBOUND				PILIKANA ST NORTHBOUND				HONOAPIILANI HWY EASTBOUND				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
15:15	0	140	16	0	0	0	0	0	7	170	0	0	16	0	1	0	350
15:30	0	153	27	0	0	0	0	0	14	169	0	0	15	0	4	0	382
15:45	0	130	25	0	0	0	0	0	9	183	0	0	25	0	5	1	378
Total	0	423	68	0	0	0	0	0	30	522	0	0	56	0	10	1	1110
16:00	0	128	26	0	0	0	0	0	12	176	0	0	24	0	11	0	377
16:15	0	130	34	0	0	0	0	0	14	180	0	0	21	0	12	0	391
16:30	0	135	31	0	0	0	0	0	19	177	0	0	29	0	2	1	394
16:45	0	170	34	0	0	0	0	0	12	162	0	0	21	0	6	0	405
Total	0	563	125	0	0	0	0	0	57	695	0	0	95	0	31	1	1567
17:00	0	150	28	0	0	0	0	0	15	171	0	0	13	0	11	0	388
Grand Total	0	1136	221	0	0	0	0	0	102	1388	0	0	164	0	52	2	3065
Apprch %	0	83.7	16.3	0	0	0	0	0	6.8	93.2	0	0	75.2	0	23.9	0.9	
Total %	0	37.1	7.2	0	0	0	0	0	3.3	45.3	0	0	5.4	0	1.7	0.1	
Motorcycles	0	2	0	0	0	0	0	0	2	5	0	0	0	0	0	0	9
% Motorcycles	0	0.2	0	0	0	0	0	0	2	0.4	0	0	0	0	0	0	0.3
Cars & Light Goods	0	1122	217	0	0	0	0	0	100	1359	0	0	163	0	49	0	3010
% Cars & Light Goods	0	98.8	98.2	0	0	0	0	0	98	97.9	0	0	99.4	0	94.2	0	98.2
Buses	0	10	0	0	0	0	0	0	0	9	0	0	0	0	0	0	19
% Buses	0	0.9	0	0	0	0	0	0	0	0.6	0	0	0	0	0	0	0.6
Single-Unit Trucks	0	2	4	0	0	0	0	0	0	12	0	0	1	0	1	0	20
% Single-Unit Trucks	0	0.2	1.8	0	0	0	0	0	0	0.9	0	0	0.6	0	1.9	0	0.7
Articulated Trucks	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
% Articulated Trucks	0	0	0	0	0	0	0	0	0	0.1	0	0	0	0	0	0	0.1
Bicycles on Road	0	0	0	0	0	0	0	0	0	1	0	0	0	0	2	0	3
% Bicycles on Road	0	0	0	0	0	0	0	0	0	0.1	0	0	0	0	3.8	0	0.1
Bicycles on Crosswalk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bicycles on Crosswalk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2
% Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100	0.1

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501 Sumner Street, Suite 521
Honolulu, HI 96817-5031
Phone: 533-3646 Fax: 526-1267

File Name : Honoapiilani Hwy - Piikana St
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Start Date : 5/10/2018
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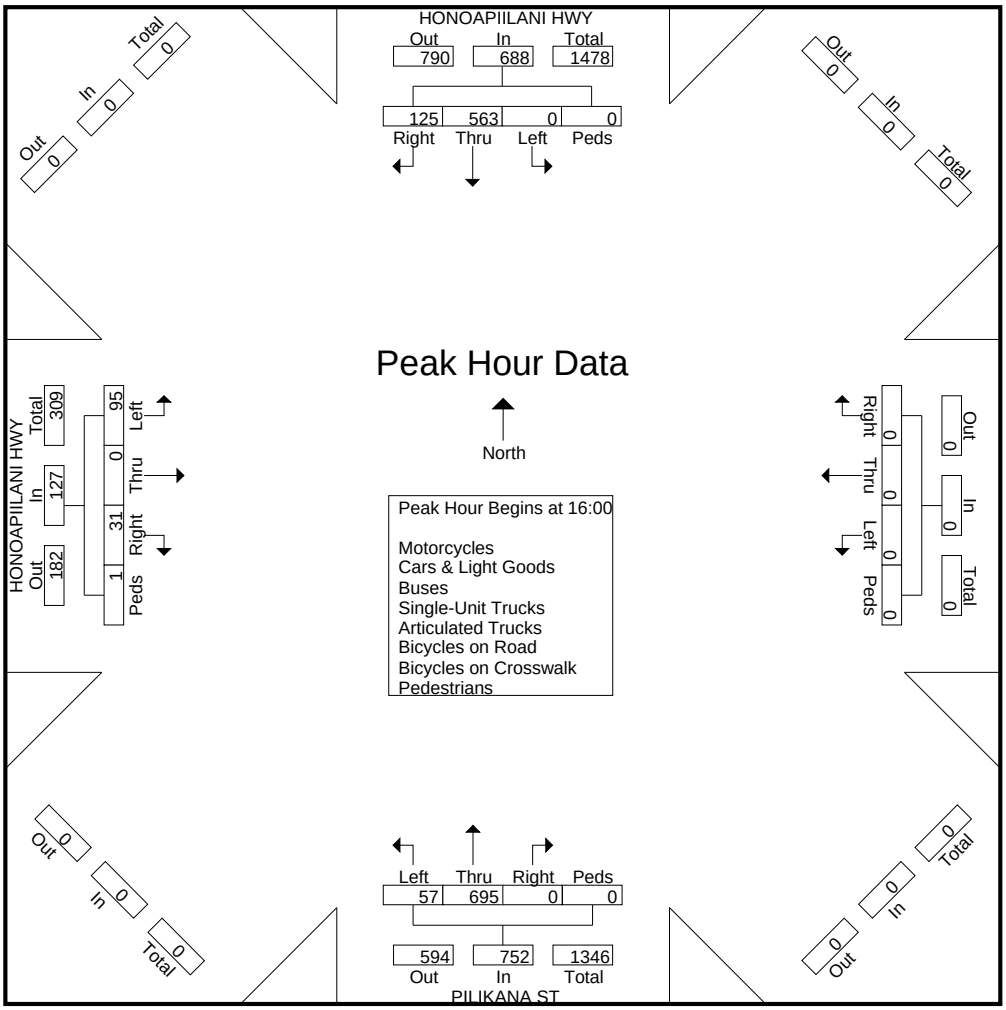
	HONOAPIILANI HWY SOUTHBOUND					WESTBOUND					PILIKANA ST NORTHBOUND					HONOAPIILANI HWY EASTBOUND					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 16:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 16:00																					
16:00	0	128	26	0	154	0	0	0	0	0	12	176	0	0	188	24	0	11	0	**35**	377
16:15	0	130	**34**	0	164	0	0	0	0	0	14	**180**	0	0	194	21	0	**12**	0	33	391
16:30	0	135	31	0	166	0	0	0	0	0	**19**	177	0	0	**196**	**29**	0	2	**1**	32	394
16:45	0	**170**	34	0	**204**	0	0	0	0	0	12	162	0	0	174	21	0	6	0	27	**405**
Total Volume	0	563	125	0	688	0	0	0	0	0	57	695	0	0	752	95	0	31	1	127	1567
% App. Total	0	81.8	18.2	0		0	0	0	0		7.6	92.4	0	0		74.8	0	24.4	0.8		
PHF	.000	.828	.919	.000	.843	.000	.000	.000	.000	.000	.750	.965	.000	.000	.959	.819	.000	.646	.250	.907	.967



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Honolulu, HI 96817-5031
Phone: 533-3646 Fax: 526-1267

File Name : Honoapiilani Hwy - Waiko Rd
Site Code : 16-014.07 Maui DOT Signal Optimization
Start Date : 5/10/2018
Page No : 1

Groups Printed- Motorcycles - Cars & Light Goods - Buses - Unit Trucks - Articulated Trucks - Bicycles on Road - Bicycles on Crosswalk - Pedestrians

	HONOAPIILANI HWY SOUTHBOUND				WAIKO RD WESTBOUND				HONOAPIILANI HWY NORTHBOUND				WAIKO RD EASTBOUND				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
06:30	16	130	2	0	10	0	3	0	0	89	4	0	3	7	2	1	267
06:45	15	206	1	0	19	1	5	0	1	97	12	0	7	5	7	0	376
Total	31	336	3	0	29	1	8	0	1	186	16	0	10	12	9	1	643
07:00	28	161	0	0	16	2	9	0	0	112	13	1	3	4	1	0	350
07:15	29	154	0	0	18	1	14	0	1	141	17	0	6	5	1	0	387
07:30	46	148	1	0	19	4	15	0	3	167	17	0	8	0	2	0	430
07:45	40	161	5	0	22	0	10	0	0	138	20	0	3	4	2	0	405
Total	143	624	6	0	75	7	48	0	4	558	67	1	20	13	6	0	1572
08:00	16	160	1	1	16	4	8	0	0	111	11	1	4	2	2	1	338
08:15	5	147	2	0	18	3	3	0	2	123	10	0	8	1	1	1	324
Grand Total	195	1267	12	1	138	15	67	0	7	978	104	2	42	28	18	3	2877
Apprch %	13.2	85.9	0.8	0.1	62.7	6.8	30.5	0	0.6	89.6	9.5	0.2	46.2	30.8	19.8	3.3	
Total %	6.8	44	0.4	0	4.8	0.5	2.3	0	0.2	34	3.6	0.1	1.5	1	0.6	0.1	
Motorcycles	0	6	0	0	0	0	0	0	0	4	1	0	0	0	0	0	11
% Motorcycles	0	0.5	0	0	0	0	0	0	0	0.4	1	0	0	0	0	0	0.4
Cars & Light Goods	191	1220	12	0	137	15	65	0	6	958	101	0	41	27	16	0	2789
% Cars & Light Goods	97.9	96.3	100	0	99.3	100	97	0	85.7	98	97.1	0	97.6	96.4	88.9	0	96.9
Buses	2	10	0	0	1	0	1	0	0	11	1	0	0	1	1	0	28
% Buses	1	0.8	0	0	0.7	0	1.5	0	0	1.1	1	0	0	3.6	5.6	0	1
Single-Unit Trucks	2	23	0	0	0	0	1	0	1	4	0	0	1	0	1	0	33
% Single-Unit Trucks	1	1.8	0	0	0	0	1.5	0	14.3	0.4	0	0	2.4	0	5.6	0	1.1
Articulated Trucks	0	6	0	0	0	0	0	0	0	0	1	0	0	0	0	0	7
% Articulated Trucks	0	0.5	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0.2
Bicycles on Road	0	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0	3
% Bicycles on Road	0	0.2	0	0	0	0	0	0	0	0.1	0	0	0	0	0	0	0.1
Bicycles on Crosswalk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bicycles on Crosswalk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	1	0	0	0	0	0	0	0	2	0	0	0	3	6
% Pedestrians	0	0	0	100	0	0	0	0	0	0	0	100	0	0	0	100	0.2

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Honolulu, HI 96817-5031
Phone: 533-3646 Fax: 526-1267

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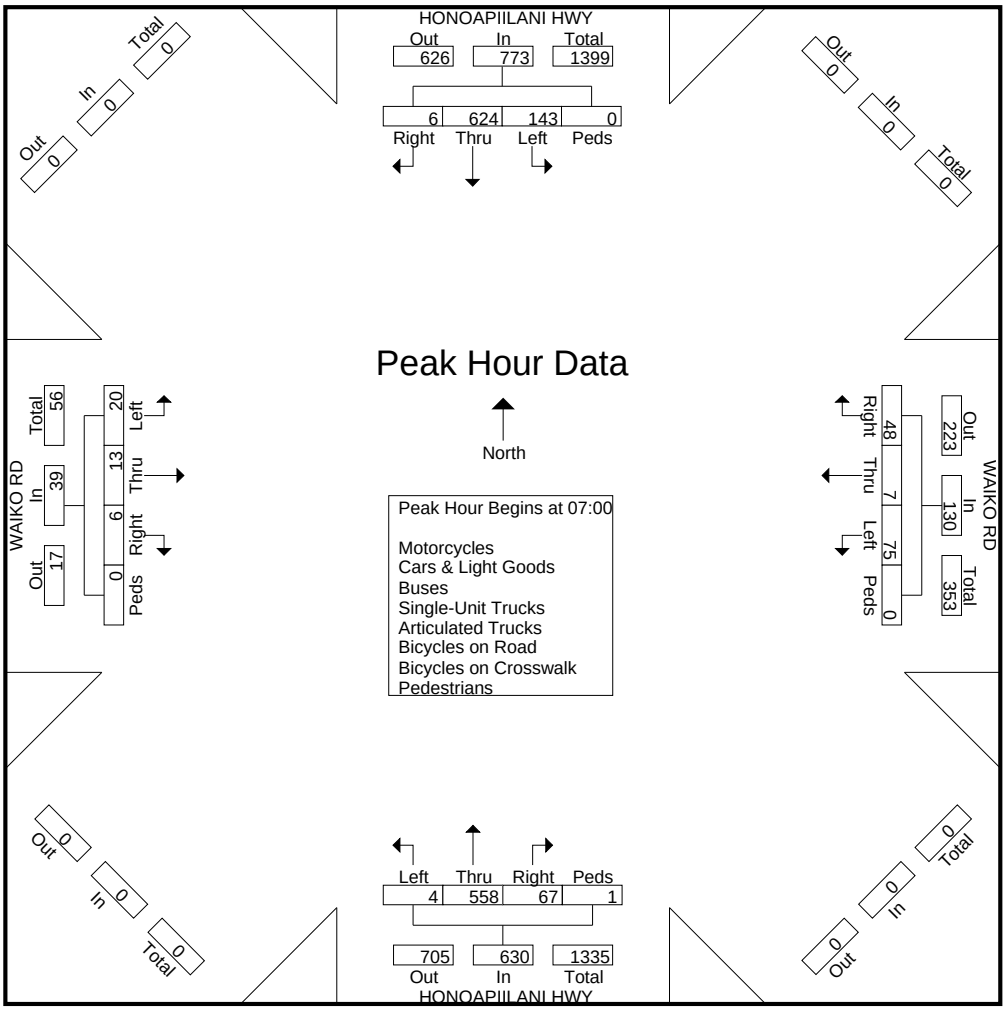
	HONOAPIILANI HWY SOUTHBOUND					WAIKO RD WESTBOUND					HONOAPIILANI HWY NORTHBOUND					WAIKO RD EASTBOUND					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 06:30 to 08:15 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00																					
07:00	28	**161**	0	0	189	16	2	9	0	27	0	112	13	**1**	126	3	4	1	0	8	350
07:15	29	154	0	0	183	18	1	14	0	33	1	141	17	0	159	6	**5**	1	0	**12**	387
07:30	**46**	148	1	0	195	19	**4**	**15**	0	**38**	**3**	**167**	17	0	**187**	**8**	0	**2**	0	10	**430**
07:45	40	161	**5**	0	**206**	**22**	0	10	0	32	0	138	**20**	0	158	3	4	2	0	9	405
Total Volume	143	624	6	0	773	75	7	48	0	130	4	558	67	1	630	20	13	6	0	39	1572
% App. Total	18.5	80.7	0.8	0		57.7	5.4	36.9	0		0.6	88.6	10.6	0.2		51.3	33.3	15.4	0		
PHF	.777	.969	.300	.000	.938	.852	.438	.800	.000	.855	.333	.835	.838	.250	.842	.625	.650	.750	.000	.813	.914



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Groups Printed- Motorcycles - Cars & Light Goods - Buses - Unit Trucks - Articulated Trucks - Bicycles on Road - Bicycles on Crosswalk - Pedestrians

	HONOAPIILANI HWY SOUTHBOUND				WAIKO RD WESTBOUND				HONOAPIILANI HWY NORTHBOUND				WAIKO RD EASTBOUND				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
15:15	5	114	3	0	12	2	17	0	2	150	10	0	1	4	3	0	323
15:30	16	144	4	0	17	5	6	1	3	178	21	0	3	2	0	0	400
15:45	11	108	5	0	13	3	18	1	2	183	16	0	2	5	2	0	369
Total	32	366	12	0	42	10	41	2	7	511	47	0	6	11	5	0	1092
16:00	14	125	3	0	14	4	13	1	4	165	19	0	2	1	3	0	368
16:15	21	113	4	0	7	2	21	0	1	171	19	0	6	2	0	1	368
16:30	17	114	3	0	20	3	24	0	2	183	16	0	0	3	0	0	385
16:45	12	164	12	0	16	1	16	0	2	146	22	0	4	1	0	0	396
Total	64	516	22	0	57	10	74	1	9	665	76	0	12	7	3	1	1517
17:00	15	136	6	0	12	4	21	0	1	154	26	0	2	1	1	1	380
Grand Total	111	1018	40	0	111	24	136	3	17	1330	149	0	20	19	9	2	2989
Apprch %	9.5	87.1	3.4	0	40.5	8.8	49.6	1.1	1.1	88.9	10	0	40	38	18	4	
Total %	3.7	34.1	1.3	0	3.7	0.8	4.6	0.1	0.6	44.5	5	0	0.7	0.6	0.3	0.1	
Motorcycles	1	5	0	0	0	0	0	0	0	8	0	0	0	0	0	0	14
% Motorcycles	0.9	0.5	0	0	0	0	0	0	0	0.6	0	0	0	0	0	0	0.5
Cars & Light Goods	109	998	40	0	110	24	135	0	16	1294	147	0	20	19	7	0	2919
% Cars & Light Goods	98.2	98	100	0	99.1	100	99.3	0	94.1	97.3	98.7	0	100	100	77.8	0	97.7
Buses	0	9	0	0	0	0	0	0	0	9	0	0	0	0	0	0	18
% Buses	0	0.9	0	0	0	0	0	0	0	0.7	0	0	0	0	0	0	0.6
Single-Unit Trucks	0	4	0	0	0	0	0	0	0	14	1	0	0	0	0	0	19
% Single-Unit Trucks	0	0.4	0	0	0	0	0	0	0	1.1	0.7	0	0	0	0	0	0.6
Articulated Trucks	1	1	0	0	1	0	0	0	0	4	0	0	0	0	0	0	7
% Articulated Trucks	0.9	0.1	0	0	0.9	0	0	0	0	0.3	0	0	0	0	0	0	0.2
Bicycles on Road	0	1	0	0	0	0	1	0	1	1	1	0	0	0	2	0	7
% Bicycles on Road	0	0.1	0	0	0	0	0.7	0	5.9	0.1	0.7	0	0	0	22.2	0	0.2
Bicycles on Crosswalk	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	2
% Bicycles on Crosswalk	0	0	0	0	0	0	0	33.3	0	0	0	0	0	0	0	50	0.1
Pedestrians	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	1	3
% Pedestrians	0	0	0	0	0	0	0	66.7	0	0	0	0	0	0	0	50	0.1

Austin Tsutsumi & Associates

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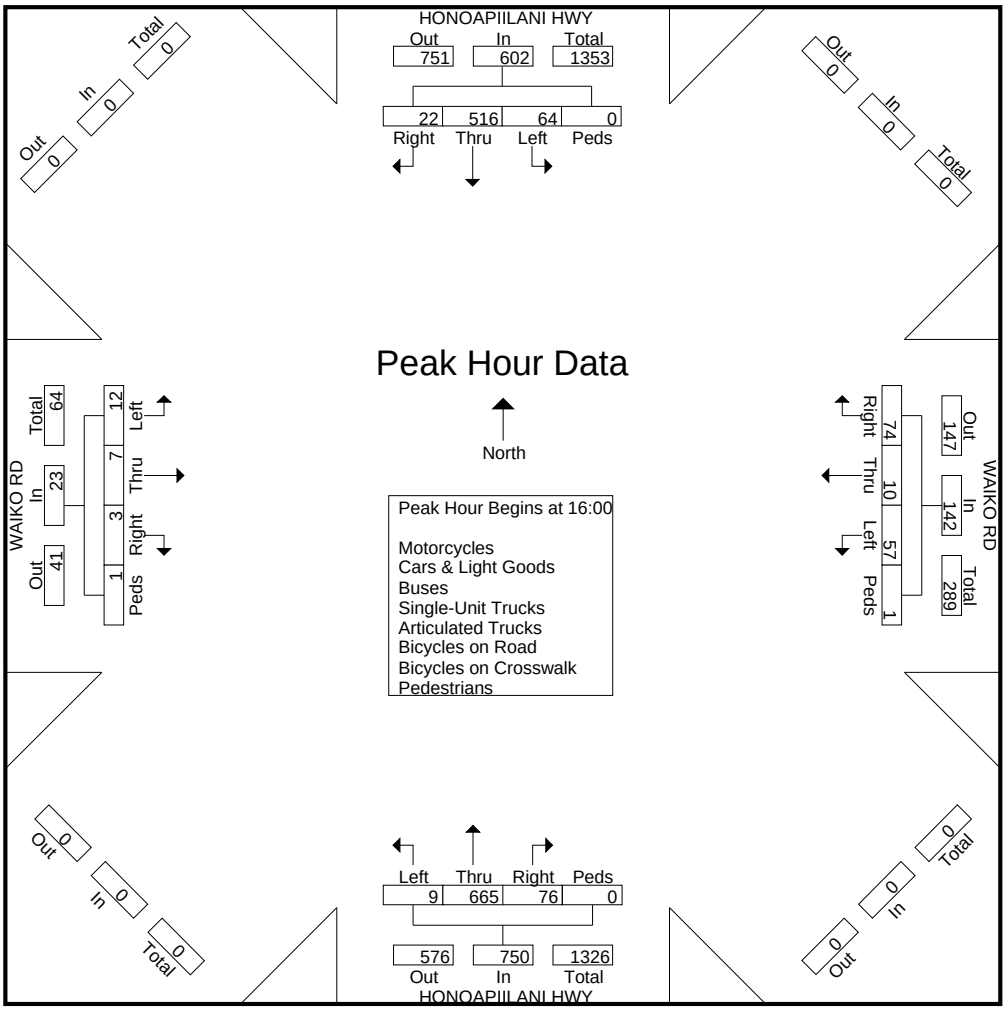
	HONOAPIILANI HWY SOUTHBOUND					WAIKO RD WESTBOUND					HONOAPIILANI HWY NORTHBOUND					WAIKO RD EASTBOUND					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 16:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 16:00																					
16:00	14	125	3	0	142	14	**4**	13	**1**	32	**4**	165	19	0	188	2	1	**3**	0	6	368
16:15	**21**	113	4	0	138	7	2	21	0	30	1	171	19	0	191	**6**	2	0	**1**	**9**	368
16:30	17	114	3	0	134	**20**	3	**24**	0	**47**	2	**183**	16	0	**201**	0	**3**	0	0	3	385
16:45	12	**164**	**12**	0	**188**	16	1	16	0	33	2	146	**22**	0	170	4	1	0	0	5	**396**
Total Volume	64	516	22	0	602	57	10	74	1	142	9	665	76	0	750	12	7	3	1	23	1517
% App. Total	10.6	85.7	3.7	0		40.1	7	52.1	0.7		1.2	88.7	10.1	0		52.2	30.4	13	4.3		
PHF	.762	.787	.458	.000	.801	.713	.625	.771	.250	.755	.563	.908	.864	.000	.933	.500	.583	.250	.250	.639	.958



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1871 Wili Pa Loop, Suite A
Wailuku, Hawaii 96793
Phone: (808) 224-8044 Fax: (808) 242-9163

File Name : Kehalani Village Center Dwy - Kukahi Dr
Site Code : 19-508 Puunani Homesteads
Start Date : 4/9/2019
Page No : 1

Groups Printed- Motorcycles - Cars & Light Goods - Buses - Unit Trucks - Articulated Trucks - Bicycles on Road - Bicycles on Crosswalk - Pedestrians

	KEHALANI VILLAGE CENTER DWY SOUTHBOUND				KUIKAHI DR WESTBOUND				NORTHBOUND				KUIKAHI DR EASTBOUND				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
06:30	7	0	26	0	0	120	14	0	0	0	0	0	23	161	0	0	351
06:45	11	0	30	0	0	137	14	0	0	0	0	0	14	181	0	0	387
Total	18	0	56	0	0	257	28	0	0	0	0	0	37	342	0	0	738
07:00	4	0	28	0	0	116	16	0	0	0	0	0	27	154	0	0	345
07:15	3	0	21	0	0	107	18	0	0	0	0	0	23	176	0	0	348
07:30	10	0	26	1	0	118	14	0	0	0	0	0	15	114	0	0	298
07:45	11	0	25	0	0	94	10	0	0	0	0	0	18	129	0	0	287
Total	28	0	100	1	0	435	58	0	0	0	0	0	83	573	0	0	1278
08:00	3	0	11	0	0	74	17	0	0	0	0	0	10	124	0	0	239
08:15	7	0	14	0	0	76	15	0	0	0	0	0	14	135	0	0	261
Grand Total	56	0	181	1	0	842	118	0	0	0	0	0	144	1174	0	0	2516
Apprch %	23.5	0	76.1	0.4	0	87.7	12.3	0	0	0	0	0	10.9	89.1	0	0	
Total %	2.2	0	7.2	0	0	33.5	4.7	0	0	0	0	0	5.7	46.7	0	0	
Motorcycles	0	0	0	0	0	2	0	0	0	0	0	0	1	3	0	0	6
% Motorcycles	0	0	0	0	0	0.2	0	0	0	0	0	0	0.7	0.3	0	0	0.2
Cars & Light Goods	54	0	181	0	0	807	114	0	0	0	0	0	143	1147	0	0	2446
% Cars & Light Goods	96.4	0	100	0	0	95.8	96.6	0	0	0	0	0	99.3	97.7	0	0	97.2
Buses	0	0	0	0	0	2	0	0	0	0	0	0	0	12	0	0	14
% Buses	0	0	0	0	0	0.2	0	0	0	0	0	0	0	1	0	0	0.6
Single-Unit Trucks	1	0	0	0	0	27	2	0	0	0	0	0	0	8	0	0	38
% Single-Unit Trucks	1.8	0	0	0	0	3.2	1.7	0	0	0	0	0	0	0.7	0	0	1.5
Articulated Trucks	1	0	0	0	0	3	2	0	0	0	0	0	0	2	0	0	8
% Articulated Trucks	1.8	0	0	0	0	0.4	1.7	0	0	0	0	0	0	0.2	0	0	0.3
Bicycles on Road	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0	3
% Bicycles on Road	0	0	0	0	0	0.1	0	0	0	0	0	0	0	0.2	0	0	0.1
Bicycles on Crosswalk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bicycles on Crosswalk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
% Pedestrians	0	0	0	100	0	0	0	0	0	0	0	0	0	0	0	0	0

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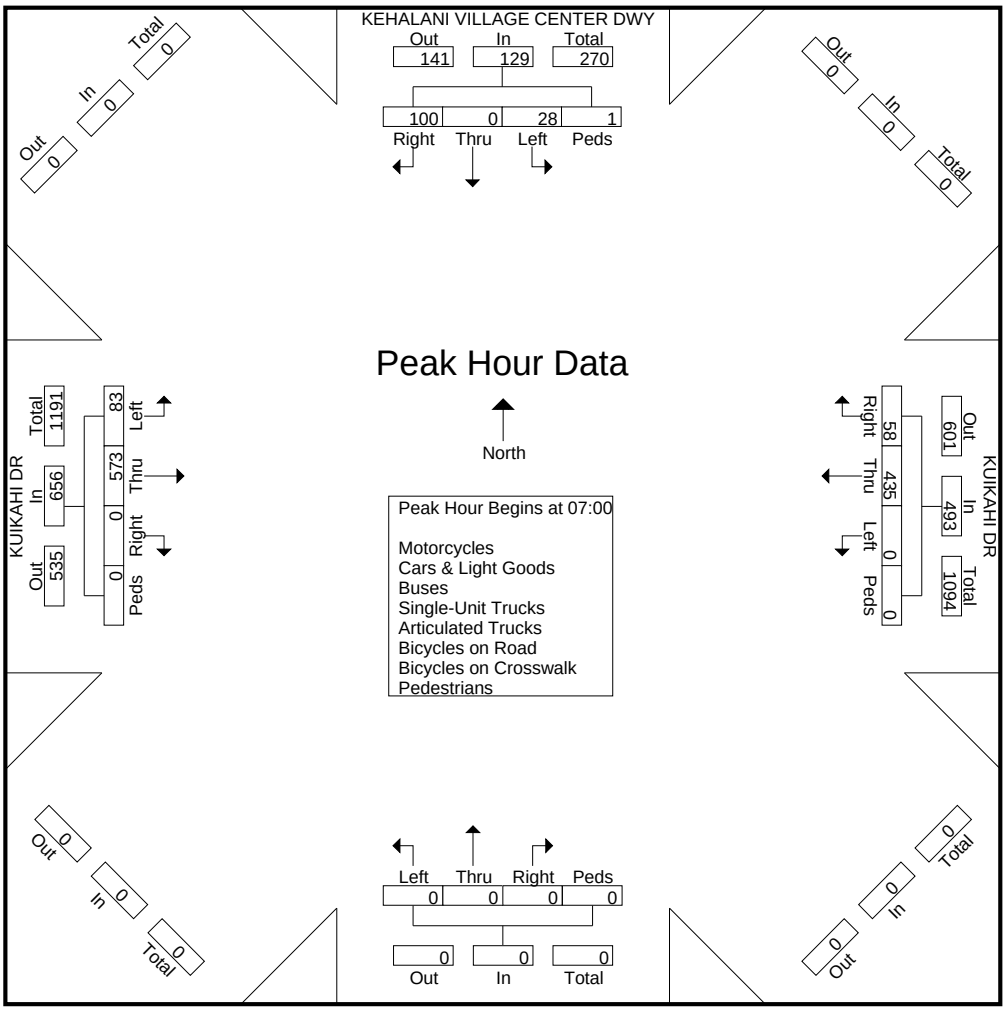
Wailuku, Hawaii 96793
Phone: (808) 224-8044 Fax: (808) 242-9163

File Name : Kehalani Village Center Dwy - Kukahi Dr
Site Code : 19-508 Puunani Homesteads
Start Date : 4/9/2019
Page No : 2

	KEHALANI VILLAGE CENTER DWY SOUTHBOUND					KUIKAHI DR WESTBOUND					NORTHBOUND					KUIKAHI DR EASTBOUND					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 07:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00																					
07:00	4	0	**28**	0	32	0	116	16	0	**132**	0	0	0	0	0	**27**	154	0	0	181	345
07:15	3	0	21	0	24	0	107	**18**	0	125	0	0	0	0	0	23	**176**	0	0	**199**	**348**
07:30	10	0	26	**1**	**37**	0	**118**	14	0	132	0	0	0	0	0	15	114	0	0	129	298
07:45	**11**	0	25	0	36	0	94	10	0	104	0	0	0	0	0	18	129	0	0	147	287
Total Volume	28	0	100	1	129	0	435	58	0	493	0	0	0	0	0	83	573	0	0	656	1278
% App. Total	21.7	0	77.5	0.8		0	88.2	11.8	0		0	0	0	0		12.7	87.3	0	0		
PHF	.636	.000	.893	.250	.872	.000	.922	.806	.000	.934	.000	.000	.000	.000	.000	.769	.814	.000	.000	.824	.918



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1871 Wili Pa Loop, Suite A
Wailuku, Hawaii 96793
Phone: (808) 224-8044 Fax: (808) 242-9163

File Name : Kehalani Village Center Dwy - Kukahi Dr
Site Code : 19-508 Puunani Homesteads
Start Date : 4/9/2019
Page No : 1

Groups Printed- Motorcycles - Cars & Light Goods - Buses - Unit Trucks - Articulated Trucks - Bicycles on Road - Bicycles on Crosswalk - Pedestrians

	KEHALANI VILLAGE CENTER DWY SOUTHBOUND				KUIKAHI DR WESTBOUND				NORTHBOUND				KUIKAHI DR EASTBOUND				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
15:30	20	0	32	0	0	121	27	0	0	0	0	0	17	155	0	0	372
15:45	11	0	25	1	0	123	16	0	0	0	0	0	23	136	0	0	335
Total	31	0	57	1	0	244	43	0	0	0	0	0	40	291	0	0	707
16:00	9	0	37	0	0	113	23	0	0	0	0	0	32	130	0	0	344
16:15	11	0	27	2	0	119	24	0	0	0	0	0	15	103	0	0	301
16:30	16	0	30	0	0	135	21	0	0	0	0	0	23	101	0	0	326
16:45	12	0	34	2	0	116	33	0	0	0	0	0	30	112	0	0	339
Total	48	0	128	4	0	483	101	0	0	0	0	0	100	446	0	0	1310
17:00	9	0	32	1	0	102	31	1	0	0	0	0	31	109	0	0	316
17:15	11	0	26	0	0	93	19	0	0	0	0	0	26	93	0	0	268
Grand Total	99	0	243	6	0	922	194	1	0	0	0	0	197	939	0	0	2601
Apprch %	28.4	0	69.8	1.7	0	82.5	17.4	0.1	0	0	0	0	17.3	82.7	0	0	
Total %	3.8	0	9.3	0.2	0	35.4	7.5	0	0	0	0	0	7.6	36.1	0	0	
Motorcycles	0	0	2	0	0	3	0	0	0	0	0	0	2	2	0	0	9
% Motorcycles	0	0	0.8	0	0	0.3	0	0	0	0	0	0	1	0.2	0	0	0.3
Cars & Light Goods	98	0	241	0	0	912	193	0	0	0	0	0	193	912	0	0	2549
% Cars & Light Goods	99	0	99.2	0	0	98.9	99.5	0	0	0	0	0	98	97.1	0	0	98
Buses	1	0	0	0	0	1	1	0	0	0	0	0	2	9	0	0	14
% Buses	1	0	0	0	0	0.1	0.5	0	0	0	0	0	1	1	0	0	0.5
Single-Unit Trucks	0	0	0	0	0	6	0	0	0	0	0	0	0	11	0	0	17
% Single-Unit Trucks	0	0	0	0	0	0.7	0	0	0	0	0	0	0	1.2	0	0	0.7
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3
% Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	0	0	0.1
Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
% Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0	0	0.1
Bicycles on Crosswalk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bicycles on Crosswalk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	6	0	0	0	1	0	0	0	0	0	0	0	0	7
% Pedestrians	0	0	0	100	0	0	0	100	0	0	0	0	0	0	0	0	0.3

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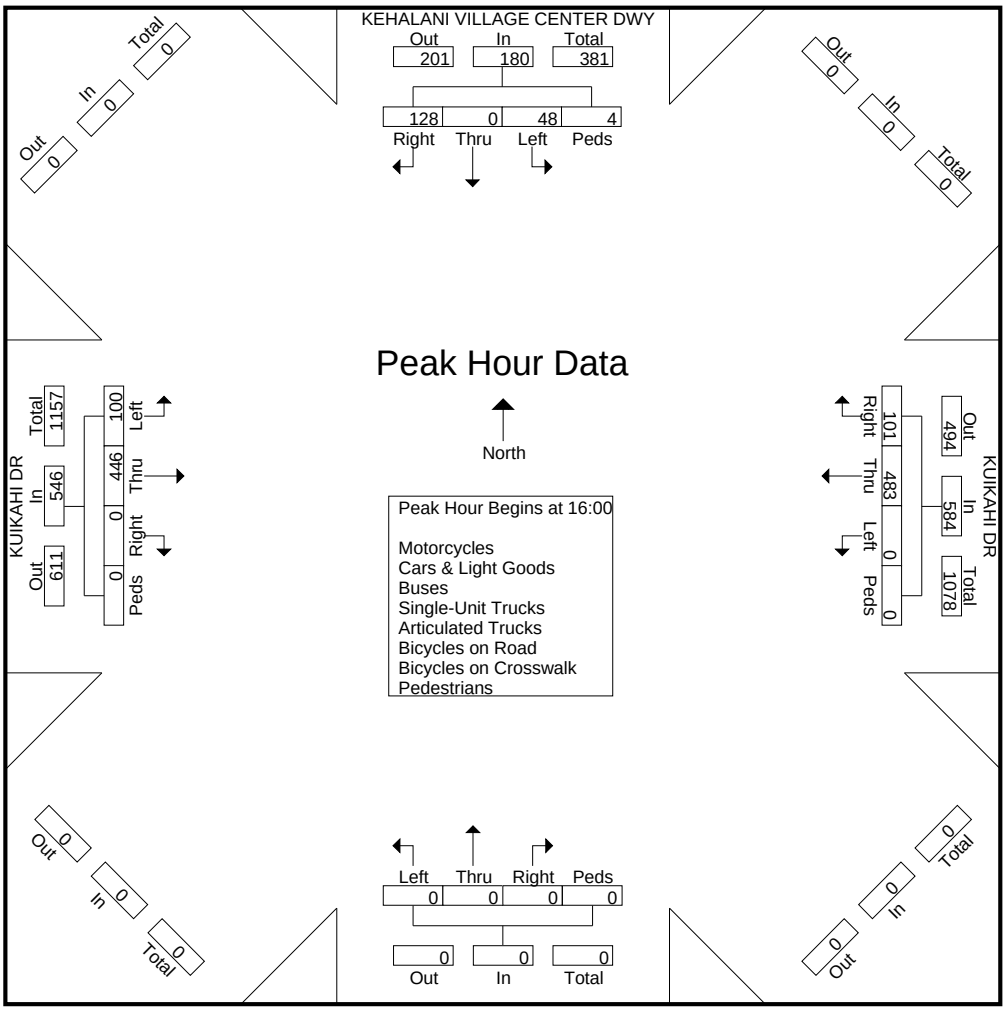
1871 Wili Pa Loop, Suite A
Wailuku, Hawaii 96793
Phone: (808) 224-8044 Fax: (808) 242-9163

File Name : Kehalani Village Center Dwy - Kukahi Dr
Site Code : 19-508 Puunani Homesteads
Start Date : 4/9/2019
Page No : 2

	KEHALANI VILLAGE CENTER DWY SOUTHBOUND					KUIKAHI DR WESTBOUND					NORTHBOUND					KUIKAHI DR EASTBOUND					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 16:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 16:00																					
16:00	9	0	**37**	0	46	0	113	23	0	136	0	0	0	0	0	**32**	**130**	0	0	**162**	**344**
16:15	11	0	27	**2**	40	0	119	24	0	143	0	0	0	0	0	15	103	0	0	118	301
16:30	**16**	0	30	0	46	0	**135**	21	0	**156**	0	0	0	0	0	23	101	0	0	124	326
16:45	12	0	34	2	**48**	0	116	**33**	0	149	0	0	0	0	0	30	112	0	0	142	339
Total Volume	48	0	128	4	180	0	483	101	0	584	0	0	0	0	0	100	446	0	0	546	1310
% App. Total	26.7	0	71.1	2.2		0	82.7	17.3	0		0	0	0	0		18.3	81.7	0	0		
PHF	.750	.000	.865	.500	.938	.000	.894	.765	.000	.936	.000	.000	.000	.000	.000	.781	.858	.000	.000	.843	.952



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1871 Wili Pa Loop, Suite A
Wailuku, Hawaii 96793
Phone: (808) 224-8044 Fax: (808) 242-9163

File Name : Maui Lani Pkwy - Kamehameha Ave
Site Code : 19-503 MAUI LANI DEVELOPMENT
Start Date : 3/13/2019
Page No : 1

Groups Printed- Motorcycles - Cars & Light Goods - Buses - Unit Trucks - Articulated Trucks - Bicycles on Road - Bicycles on Crosswalk - Pedestrians

	MAUI LANI PKWY SOUTHBOUND				KAMEHAMEHA AVE WESTBOUND				MAUI LANI PKWY NORTHBOUND				KAMEHAMEHA AVE EASTBOUND				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
06:30	29	44	6	0	61	6	39	0	3	36	12	0	17	16	15	3	287
06:45	42	44	4	2	55	15	52	0	13	40	23	0	13	27	13	0	343
Total	71	88	10	2	116	21	91	0	16	76	35	0	30	43	28	3	630
07:00	30	33	14	4	67	40	50	0	18	38	9	0	26	34	21	1	385
07:15	31	26	25	12	30	58	36	0	26	34	20	0	31	61	23	3	416
07:30	32	22	32	11	40	60	21	0	16	35	30	0	33	63	24	0	419
07:45	46	31	17	4	42	15	63	0	12	48	27	0	38	57	26	0	426
Total	139	112	88	31	179	173	170	0	72	155	86	0	128	215	94	4	1646
08:00	46	37	6	3	43	15	63	0	5	46	20	0	22	22	17	0	345
08:15	40	44	6	0	42	8	51	0	2	56	25	0	9	14	6	0	303
Grand Total	296	281	110	36	380	217	375	0	95	333	166	0	189	294	145	7	2924
Apprch %	40.9	38.9	15.2	5	39.1	22.3	38.6	0	16	56.1	27.9	0	29.8	46.3	22.8	1.1	
Total %	10.1	9.6	3.8	1.2	13	7.4	12.8	0	3.2	11.4	5.7	0	6.5	10.1	5	0.2	
Motorcycles	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
% Motorcycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	0	0	0
Cars & Light Goods	286	267	109	0	375	217	368	0	95	315	164	0	188	291	145	0	2820
% Cars & Light Goods	96.6	95	99.1	0	98.7	100	98.1	0	100	94.6	98.8	0	99.5	99	100	0	96.4
Buses	2	0	1	0	1	0	2	0	0	6	1	0	1	2	0	0	16
% Buses	0.7	0	0.9	0	0.3	0	0.5	0	0	1.8	0.6	0	0.5	0.7	0	0	0.5
Single-Unit Trucks	8	12	0	0	4	0	5	0	0	12	1	0	0	0	0	0	42
% Single-Unit Trucks	2.7	4.3	0	0	1.1	0	1.3	0	0	3.6	0.6	0	0	0	0	0	1.4
Articulated Trucks	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
% Articulated Trucks	0	0.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1
Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswalk	0	0	0	21	0	0	0	0	0	0	0	0	0	0	0	2	23
% Bicycles on Crosswalk	0	0	0	58.3	0	0	0	0	0	0	0	0	0	0	0	28.6	0.8
Pedestrians	0	0	0	15	0	0	0	0	0	0	0	0	0	0	0	5	20
% Pedestrians	0	0	0	41.7	0	0	0	0	0	0	0	0	0	0	0	71.4	0.7

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Wailuku, Hawaii 96793
Phone: (808) 224-8044 Fax: (808) 242-9163

File Name : Maui Lani Pkwy - Kamehameha Ave
Site Code : 19-503 MAUI LANI DEVELOPMENT
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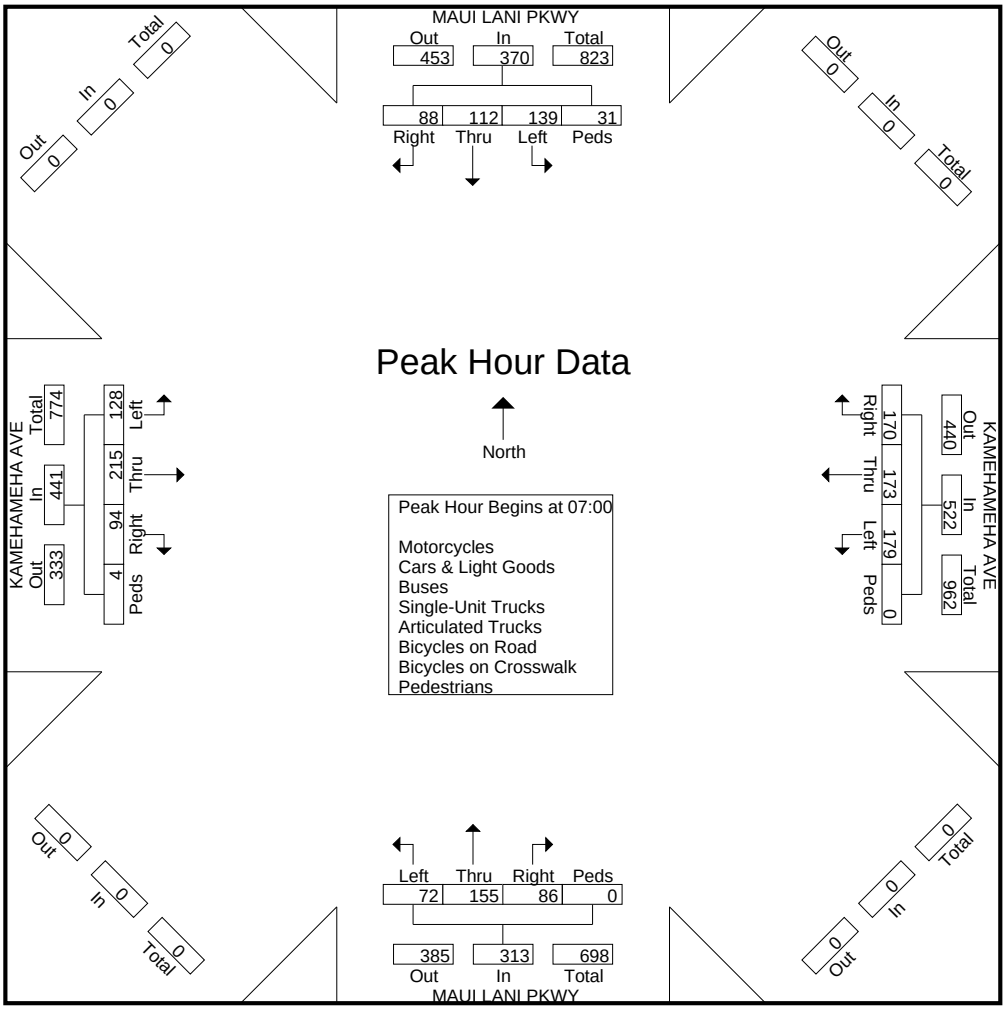
	MAUI LANI PKWY SOUTHBOUND					KAMEHAMEHA AVE WESTBOUND					MAUI LANI PKWY NORTHBOUND					KAMEHAMEHA AVE EASTBOUND					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 06:30 to 08:15 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00																					
07:00	30	**33**	14	4	81	**67**	40	50	0	**157**	18	38	9	0	65	26	34	21	1	82	385
07:15	31	26	25	**12**	94	30	58	36	0	124	**26**	34	20	0	80	31	61	23	**3**	118	416
07:30	32	22	**32**	11	97	40	**60**	21	0	121	16	35	**30**	0	81	33	**63**	24	0	120	419
07:45	**46**	31	17	4	**98**	42	15	**63**	0	120	12	**48**	27	0	**87**	**38**	57	**26**	0	**121**	**426**
Total Volume	139	112	88	31	370	179	173	170	0	522	72	155	86	0	313	128	215	94	4	441	1646
% App. Total	37.6	30.3	23.8	8.4		34.3	33.1	32.6	0		23	49.5	27.5	0		29	48.8	21.3	0.9		
PHF	.755	.848	.688	.646	.944	.668	.721	.675	.000	.831	.692	.807	.717	.000	.899	.842	.853	.904	.333	.911	.966



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Wailuku, Hawaii 96793
Phone: (808) 224-8044 Fax: (808) 242-9163

File Name : Maui Lani Pkwy - Kamehameha Ave
Site Code : 19-503 MAUI LANI DEVELOPMENT
Start Date : 3/13/2019
Page No : 1

Groups Printed- Motorcycles - Cars & Light Goods - Buses - Unit Trucks - Articulated Trucks - Bicycles on Road - Bicycles on Crosswalk - Pedestrians

	MAUI LANI PKWY SOUTHBOUND				KAMEHAMEHA AVE WESTBOUND				MAUI LANI PKWY NORTHBOUND				KAMEHAMEHA AVE EASTBOUND				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
15:30	46	43	23	0	35	39	49	0	12	50	43	0	18	25	12	0	395
15:45	37	32	37	2	39	52	59	0	14	42	51	0	30	41	19	0	455
Total	83	75	60	2	74	91	108	0	26	92	94	0	48	66	31	0	850
16:00	43	27	32	1	42	46	55	0	11	46	45	0	20	41	19	0	428
16:15	39	32	35	3	26	40	63	0	10	48	42	0	31	48	14	0	431
16:30	48	32	26	1	27	42	63	0	15	42	54	0	24	36	12	0	422
16:45	44	54	17	2	38	40	79	0	15	39	60	0	9	26	9	0	432
Total	174	145	110	7	133	168	260	0	51	175	201	0	84	151	54	0	1713
17:00	41	62	13	2	31	36	66	0	8	66	44	0	8	15	9	0	401
17:15	53	41	21	0	30	32	69	0	10	30	63	0	20	16	4	0	389
Grand Total	351	323	204	11	268	327	503	0	95	363	402	0	160	248	98	0	3353
Apprch %	39.5	36.3	22.9	1.2	24.4	29.8	45.8	0	11	42.2	46.7	0	31.6	49	19.4	0	
Total %	10.5	9.6	6.1	0.3	8	9.8	15	0	2.8	10.8	12	0	4.8	7.4	2.9	0	
Motorcycles	1	0	0	0	0	0	2	0	0	0	1	0	1	0	0	0	5
% Motorcycles	0.3	0	0	0	0	0	0.4	0	0	0	0.2	0	0.6	0	0	0	0.1
Cars & Light Goods	348	322	202	0	264	327	499	0	95	362	395	0	158	245	98	0	3315
% Cars & Light Goods	99.1	99.7	99	0	98.5	100	99.2	0	100	99.7	98.3	0	98.8	98.8	100	0	98.9
Buses	1	0	1	0	1	0	0	0	0	0	3	0	1	0	0	0	7
% Buses	0.3	0	0.5	0	0.4	0	0	0	0	0	0.7	0	0.6	0	0	0	0.2
Single-Unit Trucks	1	1	1	0	3	0	2	0	0	1	3	0	0	3	0	0	15
% Single-Unit Trucks	0.3	0.3	0.5	0	1.1	0	0.4	0	0	0.3	0.7	0	0	1.2	0	0	0.4
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswalk	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3
% Bicycles on Crosswalk	0	0	0	27.3	0	0	0	0	0	0	0	0	0	0	0	0	0.1
Pedestrians	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	8
% Pedestrians	0	0	0	72.7	0	0	0	0	0	0	0	0	0	0	0	0	0.2

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Phone: (808) 224-8044 Fax: (808) 242-9163

File Name : Maui Lani Pkwy - Kamehameha Ave
Site Code : 19-503 MAUI LANI DEVELOPMENT
Start Date : 3/13/2019
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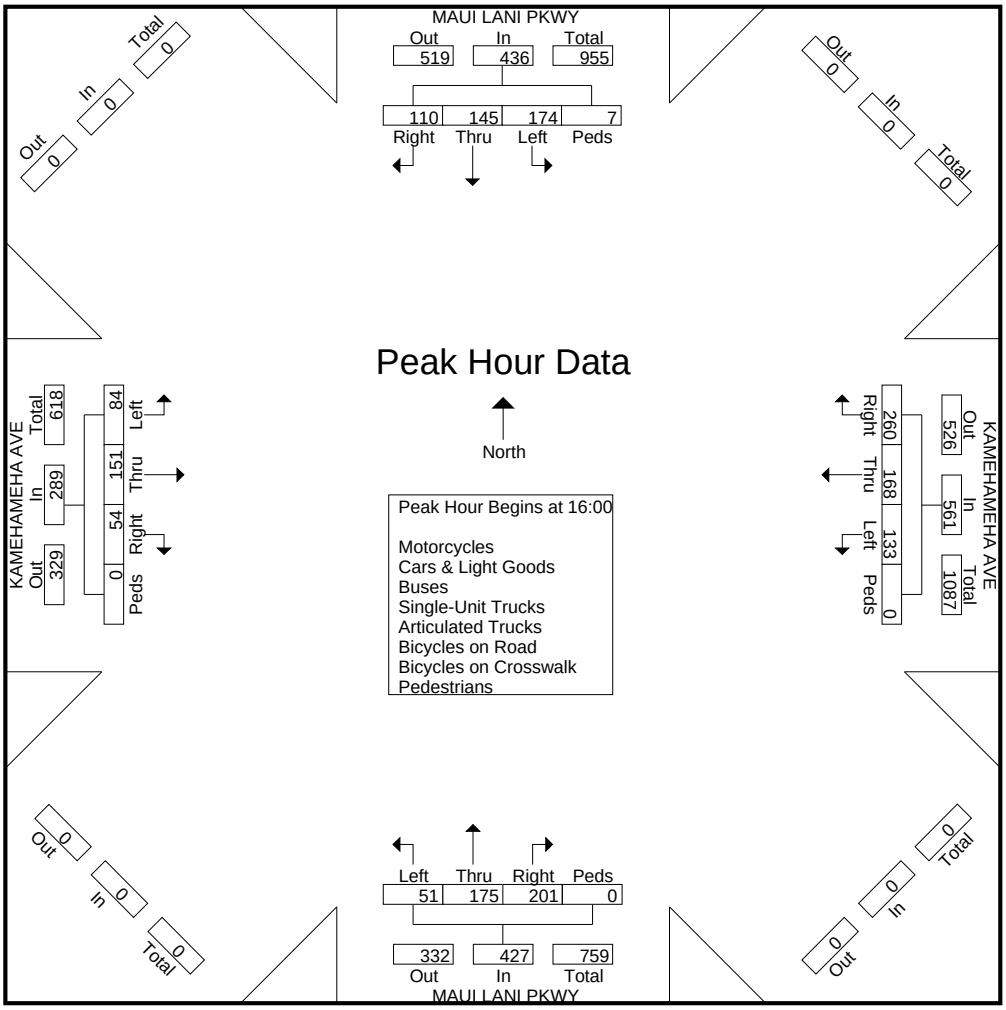
	MAUI LANI PKWY SOUTHBOUND					KAMEHAMEHA AVE WESTBOUND					MAUI LANI PKWY NORTHBOUND					KAMEHAMEHA AVE EASTBOUND					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 16:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 16:00																					
16:00	43	27	32	1	103	**42**	**46**	55	0	143	11	46	45	0	102	20	41	**19**	0	80	428
16:15	39	32	**35**	**3**	109	26	40	63	0	129	10	**48**	42	0	100	**31**	**48**	14	0	**93**	431
16:30	**48**	32	26	1	107	27	42	63	0	132	**15**	42	54	0	111	24	36	12	0	72	422
16:45	44	**54**	17	2	**117**	38	40	**79**	0	**157**	15	39	**60**	0	**114**	9	26	9	0	44	**432**
Total Volume	174	145	110	7	436	133	168	260	0	561	51	175	201	0	427	84	151	54	0	289	1713
% App. Total	39.9	33.3	25.2	1.6		23.7	29.9	46.3	0		11.9	41	47.1	0		29.1	52.2	18.7	0		
PHF	.906	.671	.786	.583	.932	.792	.913	.823	.000	.893	.850	.911	.838	.000	.936	.677	.786	.711	.000	.777	.991



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1871 Wili Pa Loop, Suite A
Wailuku, Hawaii 96793
Phone: (808) 224-8044 Fax: (808) 242-9163

File Name : Waiale Rd - Kuikahi Dr
Site Code : 19-503 MAUI LANI DEVELOPMENT
Start Date : 3/13/2019
Page No : 1

Groups Printed- Motorcycles - Cars & Light Goods - Buses - Unit Trucks - Articulated Trucks - Bicycles on Road - Bicycles on Crosswalk - Pedestrians

	WAIALE RD SOUTHBOUND				MAUI LANI PKWY WESTBOUND				WAIALE RD NORTHBOUND				KUIKAHI DR EASTBOUND				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
06:30	30	18	37	0	6	31	39	1	4	23	12	0	54	48	4	0	307
06:45	49	26	35	2	5	45	52	0	11	45	11	0	86	50	8	1	426
Total	79	44	72	2	11	76	91	1	15	68	23	0	140	98	12	1	733
07:00	40	48	36	0	8	46	52	2	28	27	13	0	95	61	8	0	464
07:15	45	22	50	0	5	61	52	0	41	49	20	0	79	66	10	0	500
07:30	42	42	25	0	10	57	30	0	48	42	3	2	57	83	16	2	459
07:45	44	37	59	1	9	32	59	2	18	40	1	0	76	72	22	4	476
Total	171	149	170	1	32	196	193	4	135	158	37	2	307	282	56	6	1899
08:00	48	32	51	2	7	58	58	0	7	25	4	0	67	49	10	0	418
08:15	51	18	33	0	11	71	62	0	4	10	3	0	65	51	8	0	387
Grand Total	349	243	326	5	61	401	404	5	161	261	67	2	579	480	86	7	3437
Apprch %	37.8	26.3	35.3	0.5	7	46	46.4	0.6	32.8	53.2	13.6	0.4	50.3	41.7	7.5	0.6	
Total %	10.2	7.1	9.5	0.1	1.8	11.7	11.8	0.1	4.7	7.6	1.9	0.1	16.8	14	2.5	0.2	
Motorcycles	0	0	4	0	0	0	0	0	0	0	0	0	0	1	1	0	6
% Motorcycles	0	0	1.2	0	0	0	0	0	0	0	0	0	0	0.2	1.2	0	0.2
Cars & Light Goods	340	225	300	0	60	383	397	0	157	254	67	0	570	475	82	0	3310
% Cars & Light Goods	97.4	92.6	92	0	98.4	95.5	98.3	0	97.5	97.3	100	0	98.4	99	95.3	0	96.3
Buses	1	3	1	0	0	3	3	0	1	2	0	0	8	2	1	0	25
% Buses	0.3	1.2	0.3	0	0	0.7	0.7	0	0.6	0.8	0	0	1.4	0.4	1.2	0	0.7
Single-Unit Trucks	5	12	19	0	1	15	4	0	3	4	0	0	0	2	2	0	67
% Single-Unit Trucks	1.4	4.9	5.8	0	1.6	3.7	1	0	1.9	1.5	0	0	0	0.4	2.3	0	1.9
Articulated Trucks	3	2	2	0	0	0	0	0	0	0	0	0	1	0	0	0	8
% Articulated Trucks	0.9	0.8	0.6	0	0	0	0	0	0	0	0	0	0.2	0	0	0	0.2
Bicycles on Road	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2
% Bicycles on Road	0	0.4	0	0	0	0	0	0	0	0.4	0	0	0	0	0	0	0.1
Bicycles on Crosswalk	0	0	0	2	0	0	0	1	0	0	0	0	0	0	0	0	3
% Bicycles on Crosswalk	0	0	0	40	0	0	0	20	0	0	0	0	0	0	0	0	0.1
Pedestrians	0	0	0	3	0	0	0	4	0	0	0	2	0	0	0	7	16
% Pedestrians	0	0	0	60	0	0	0	80	0	0	0	100	0	0	0	100	0.5

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1871 Wili Pa Loop, Suite A
Wailuku, Hawaii 96793
Phone: (808) 224-8044 Fax: (808) 242-9163

File Name : Waiale Rd - Kuikahi Dr
Site Code : 19-503 MAUI LANI DEVELOPMENT
Start Date : 3/13/2019
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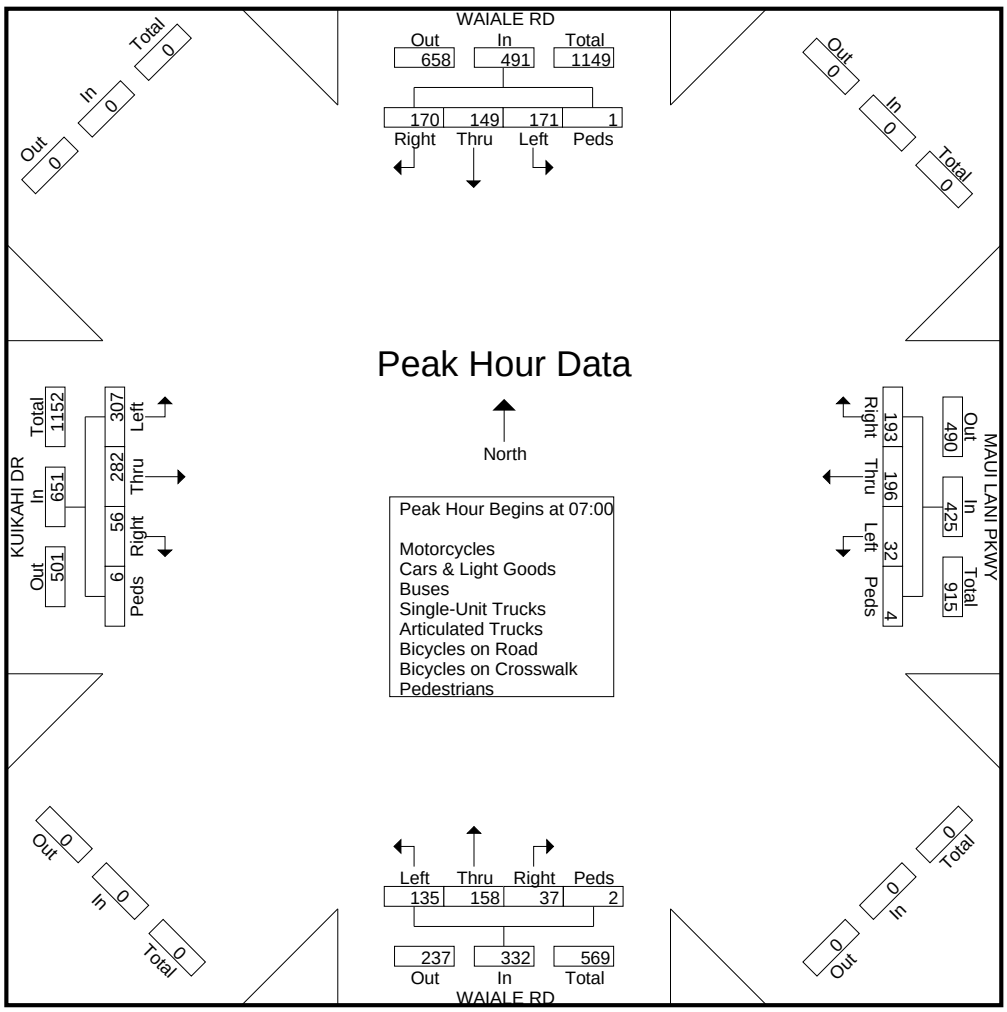
	WAIALE RD SOUTHBOUND					MAUI LANI PKWY WESTBOUND					WAIALE RD NORTHBOUND					KUIKAHI DR EASTBOUND					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 06:30 to 08:15 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00																					
07:00	40	**48**	36	0	124	8	46	52	**2**	108	28	27	13	0	68	**95**	61	8	0	164	464
07:15	**45**	22	50	0	117	5	**61**	52	0	**118**	41	**49**	**20**	0	**110**	79	66	10	0	155	**500**
07:30	42	42	25	0	109	**10**	57	30	0	97	**48**	42	3	**2**	95	57	**83**	16	2	158	459
07:45	44	37	**59**	**1**	**141**	9	32	**59**	2	102	18	40	1	0	59	76	72	**22**	**4**	**174**	476
Total Volume	171	149	170	1	491	32	196	193	4	425	135	158	37	2	332	307	282	56	6	651	1899
% App. Total	34.8	30.3	34.6	0.2		7.5	46.1	45.4	0.9		40.7	47.6	11.1	0.6		47.2	43.3	8.6	0.9		
PHF	.950	.776	.720	.250	.871	.800	.803	.818	.500	.900	.703	.806	.463	.250	.755	.808	.849	.636	.375	.935	.950



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Wailuku, Hawaii 96793
Phone: (808) 224-8044 Fax: (808) 242-9163

File Name : Waiale Rd - Kuikahi Dr
Site Code : 19-503 MAUI LANI DEVELOPMENT
Start Date : 3/13/2019
Page No : 1

Groups Printed- Motorcycles - Cars & Light Goods - Buses - Unit Trucks - Articulated Trucks - Bicycles on Road - Bicycles on Crosswalk - Pedestrians

	WAIALE RD SOUTHBOUND				MAUI LANI PKWY WESTBOUND				WAIALE RD NORTHBOUND				KUIKAHI DR EASTBOUND				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
15:30	74	32	29	1	9	67	64	0	17	36	19	0	73	47	16	0	484
15:45	77	34	36	0	12	68	53	0	14	47	10	0	68	65	18	0	502
Total	151	66	65	1	21	135	117	0	31	83	29	0	141	112	34	0	986
16:00	63	29	41	0	11	72	77	1	10	38	9	1	60	65	14	0	491
16:15	69	43	41	0	20	66	74	0	12	36	17	0	68	50	10	0	506
16:30	65	54	45	0	14	78	55	0	5	25	15	0	66	62	12	0	496
16:45	67	52	38	0	16	61	74	0	12	30	7	0	79	44	21	0	501
Total	264	178	165	0	61	277	280	1	39	129	48	1	273	221	57	0	1994
17:00	75	45	47	0	21	78	68	0	4	24	5	0	63	52	8	0	490
17:15	71	35	50	0	22	60	67	0	9	26	3	0	54	59	16	0	472
Grand Total	561	324	327	1	125	550	532	1	83	262	85	1	531	444	115	0	3942
Apprch %	46.2	26.7	27	0.1	10.3	45.5	44	0.1	19.3	60.8	19.7	0.2	48.7	40.7	10.6	0	
Total %	14.2	8.2	8.3	0	3.2	14	13.5	0	2.1	6.6	2.2	0	13.5	11.3	2.9	0	
Motorcycles	0	0	1	0	0	1	1	0	0	2	1	0	1	2	0	0	9
% Motorcycles	0	0	0.3	0	0	0.2	0.2	0	0	0.8	1.2	0	0.2	0.5	0	0	0.2
Cars & Light Goods	558	322	324	0	123	547	529	0	83	257	84	0	513	439	114	0	3893
% Cars & Light Goods	99.5	99.4	99.1	0	98.4	99.5	99.4	0	100	98.1	98.8	0	96.6	98.9	99.1	0	98.8
Buses	2	0	0	0	0	2	0	0	0	0	0	0	6	0	0	0	10
% Buses	0.4	0	0	0	0	0.4	0	0	0	0	0	0	1.1	0	0	0	0.3
Single-Unit Trucks	1	1	2	0	1	0	2	0	0	3	0	0	11	3	1	0	25
% Single-Unit Trucks	0.2	0.3	0.6	0	0.8	0	0.4	0	0	1.1	0	0	2.1	0.7	0.9	0	0.6
Articulated Trucks	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
% Articulated Trucks	0	0	0	0	0.8	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Road	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
% Bicycles on Road	0	0.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswalk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bicycles on Crosswalk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0	0	3
% Pedestrians	0	0	0	100	0	0	0	100	0	0	0	100	0	0	0	0	0.1

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1871 Wili Pa Loop, Suite A
Wailuku, Hawaii 96793
Phone: (808) 224-8044 Fax: (808) 242-9163

File Name : Waiale Rd - Kuikahi Dr
Site Code : 19-503 MAUI LANI DEVELOPMENT
Start Date : 3/13/2019
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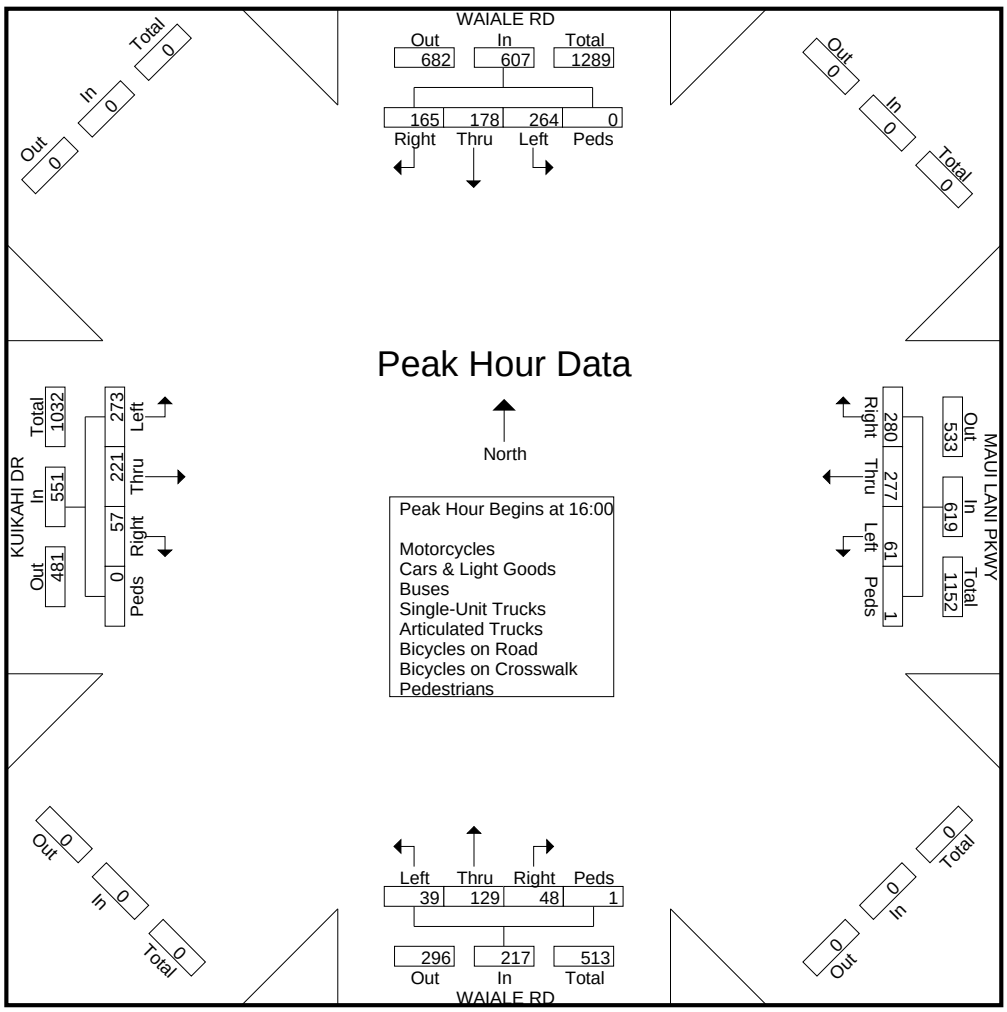
	WAIALE RD SOUTHBOUND					MAUI LANI PKWY WESTBOUND					WAIALE RD NORTHBOUND					KUIKAHI DR EASTBOUND					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 16:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 16:00																					
16:00	63	29	41	0	133	11	72	**77**	**1**	**161**	10	**38**	9	**1**	58	60	**65**	14	0	139	491
16:15	**69**	43	41	0	153	**20**	66	74	0	160	**12**	36	**17**	0	**65**	68	50	10	0	128	**506**
16:30	65	**54**	**45**	0	**164**	14	**78**	55	0	147	5	25	15	0	45	66	62	12	0	140	496
16:45	67	52	38	0	157	16	61	74	0	151	12	30	7	0	49	**79**	44	**21**	0	**144**	501
Total Volume	264	178	165	0	607	61	277	280	1	619	39	129	48	1	217	273	221	57	0	551	1994
% App. Total	43.5	29.3	27.2	0		9.9	44.7	45.2	0.2		18	59.4	22.1	0.5		49.5	40.1	10.3	0		
PHF	.957	.824	.917	.000	.925	.763	.888	.909	.250	.961	.813	.849	.706	.250	.835	.864	.850	.679	.000	.957	.985



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1871 Wili Pa Loop, Suite A
Wailuku, Hawaii 96793
Phone: (808) 224-8044 Fax: (808) 242-9163

File Name : Waiale Rd - Olomea St
Site Code : 19-503 MAUI LANI DEVELOPMENT
Start Date : 3/14/2019
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Groups Printed- Motorcycles - Cars & Light Goods - Buses - Unit Trucks - Articulated Trucks - Bicycles on Road - Bicycles on Crosswalk - Pedestrians

	WAIALE RD SOUTHBOUND				WAIMALUHIA LN WESTBOUND				WAIALE RD NORTHBOUND				OLOMEA ST EASTBOUND				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
06:30	6	102	8	0	1	0	0	0	1	164	6	0	19	0	11	0	318
06:45	3	105	15	0	3	0	2	1	2	166	9	0	18	0	9	0	333
Total	9	207	23	0	4	0	2	1	3	330	15	0	37	0	20	0	651
07:00	3	125	27	0	3	0	7	2	1	201	1	0	30	0	7	0	407
07:15	3	137	52	0	3	0	6	1	1	248	4	0	32	0	10	2	499
07:30	4	128	56	0	2	0	2	0	1	223	2	0	58	0	8	1	485
07:45	1	142	31	0	0	0	1	0	4	228	0	0	39	0	7	0	453
Total	11	532	166	0	8	0	16	3	7	900	7	0	159	0	32	3	1844
08:00	2	107	15	0	1	0	3	0	3	193	3	0	23	0	8	0	358
08:15	1	103	19	0	0	0	2	0	3	143	1	0	21	0	3	0	296
Grand Total	23	949	223	0	13	0	23	4	16	1566	26	0	240	0	63	3	3149
Apprch %	1.9	79.4	18.7	0	32.5	0	57.5	10	1	97.4	1.6	0	78.4	0	20.6	1	
Total %	0.7	30.1	7.1	0	0.4	0	0.7	0.1	0.5	49.7	0.8	0	7.6	0	2	0.1	
Motorcycles	0	2	0	0	0	0	0	0	0	2	0	0	3	0	0	0	7
% Motorcycles	0	0.2	0	0	0	0	0	0	0	0.1	0	0	1.2	0	0	0	0.2
Cars & Light Goods	23	909	219	0	13	0	22	0	11	1536	26	0	234	0	63	0	3056
% Cars & Light Goods	100	95.8	98.2	0	100	0	95.7	0	68.8	98.1	100	0	97.5	0	100	0	97
Buses	0	4	2	0	0	0	0	0	5	6	0	0	2	0	0	0	19
% Buses	0	0.4	0.9	0	0	0	0	0	31.2	0.4	0	0	0.8	0	0	0	0.6
Single-Unit Trucks	0	29	0	0	0	0	1	0	0	19	0	0	1	0	0	0	50
% Single-Unit Trucks	0	3.1	0	0	0	0	4.3	0	0	1.2	0	0	0.4	0	0	0	1.6
Articulated Trucks	0	4	2	0	0	0	0	0	0	3	0	0	0	0	0	0	9
% Articulated Trucks	0	0.4	0.9	0	0	0	0	0	0	0.2	0	0	0	0	0	0	0.3
Bicycles on Road	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
% Bicycles on Road	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswalk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bicycles on Crosswalk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	3	7
% Pedestrians	0	0	0	0	0	0	0	100	0	0	0	0	0	0	0	100	0.2

Austin Tsutsumi & Associates

1871 Wili Pa Loop, Suite A
Wailuku, Hawaii 96793
Phone: (808) 224-8044 Fax: (808) 242-9163

File Name : Waiale Rd - Olomea St
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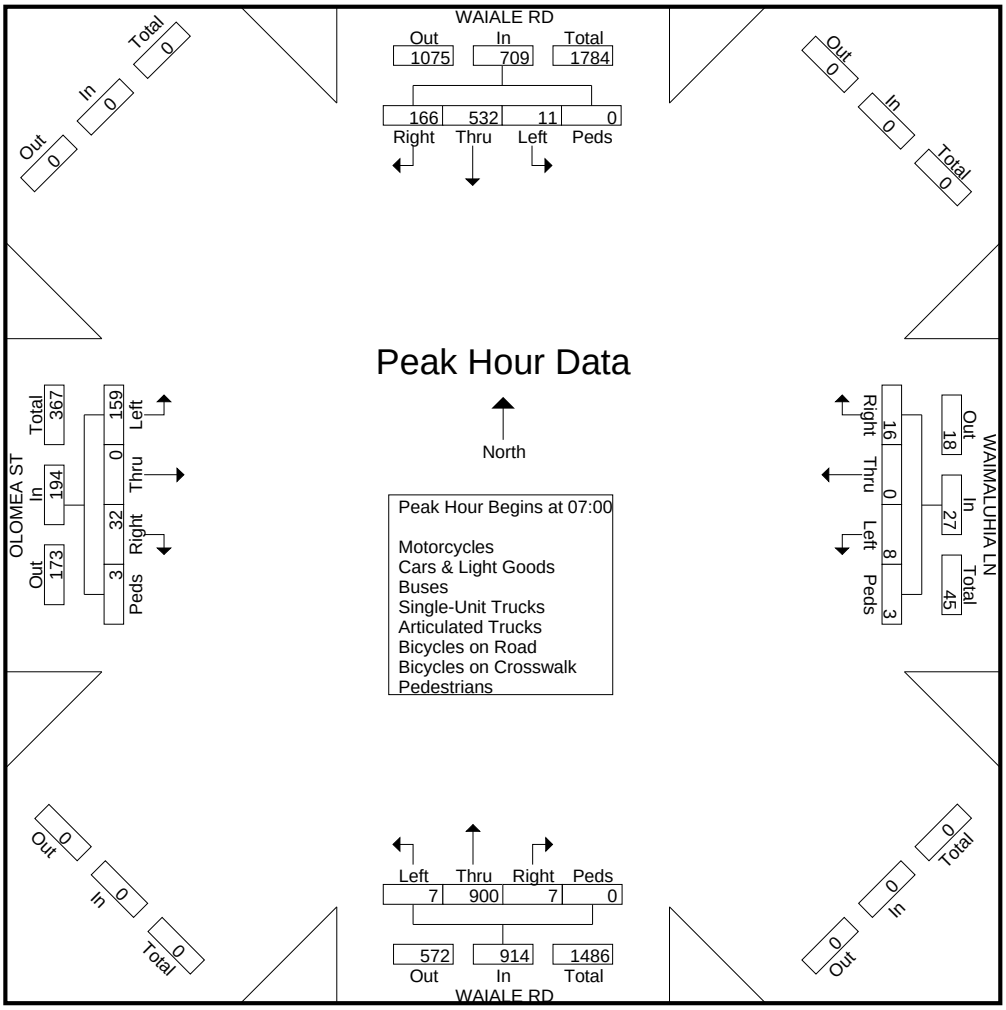
	WAIALE RD SOUTHBOUND					WAIMALUHIA LN WESTBOUND					WAIALE RD NORTHBOUND					OLOMEA ST EASTBOUND					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 06:30 to 08:15 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00																					
07:00	3	125	27	0	155	**3**	0	**7**	**2**	**12**	1	201	1	0	203	30	0	7	0	37	407
07:15	3	137	52	0	**192**	3	0	6	1	10	1	**248**	**4**	0	**253**	32	0	**10**	**2**	44	**499**
07:30	**4**	128	**56**	0	188	2	0	2	0	4	1	223	2	0	226	**58**	0	8	1	**67**	485
07:45	1	**142**	31	0	174	0	0	1	0	1	**4**	228	0	0	232	39	0	7	0	46	453
Total Volume	11	532	166	0	709	8	0	16	3	27	7	900	7	0	914	159	0	32	3	194	1844
% App. Total	1.6	75	23.4	0		29.6	0	59.3	11.1		0.8	98.5	0.8	0		82	0	16.5	1.5		
PHF	.688	.937	.741	.000	.923	.667	.000	.571	.375	.563	.438	.907	.438	.000	.903	.685	.000	.800	.375	.724	.924



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1871 Wili Pa Loop, Suite A
Wailuku, Hawaii 96793
Phone: (808) 224-8044 Fax: (808) 242-9163

File Name : Waiale Rd - Olomea St
Site Code : 19-503 MAUI LANI DEVELOPMENT
Start Date : 3/14/2019
Page No : 1

Groups Printed- Motorcycles - Cars & Light Goods - Buses - Unit Trucks - Articulated Trucks - Bicycles on Road - Bicycles on Crosswalk - Pedestrians

	WAIALE RD SOUTHBOUND				WAIMALUHIA LN WESTBOUND				WAIALE RD NORTHBOUND				OLOMEA ST EASTBOUND				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
15:30	0	164	43	0	4	0	5	1	7	161	0	0	23	0	7	0	415
15:45	2	148	42	0	2	0	4	0	8	209	0	0	19	0	3	1	438
Total	2	312	85	0	6	0	9	1	15	370	0	0	42	0	10	1	853
16:00	2	173	38	0	2	1	5	2	7	214	0	0	21	0	5	4	474
16:15	1	157	37	0	2	0	1	0	4	205	1	0	22	0	0	0	430
16:30	0	185	41	0	2	0	3	2	6	187	1	0	16	0	4	1	448
16:45	1	174	40	0	0	0	0	0	9	175	2	0	11	0	4	0	416
Total	4	689	156	0	6	1	9	4	26	781	4	0	70	0	13	5	1768
17:00	0	174	40	0	1	0	1	0	5	162	2	0	17	0	3	1	406
17:15	0	117	29	0	0	0	1	3	6	138	0	0	15	0	4	2	315
Grand Total	6	1292	310	0	13	1	20	8	52	1451	6	0	144	0	30	9	3342
Apprch %	0.4	80.3	19.3	0	31	2.4	47.6	19	3.4	96.2	0.4	0	78.7	0	16.4	4.9	
Total %	0.2	38.7	9.3	0	0.4	0	0.6	0.2	1.6	43.4	0.2	0	4.3	0	0.9	0.3	
Motorcycles	0	3	1	0	0	0	0	0	0	13	0	0	0	0	0	0	17
% Motorcycles	0	0.2	0.3	0	0	0	0	0	0	0.9	0	0	0	0	0	0	0.5
Cars & Light Goods	5	1280	309	0	13	1	20	0	46	1401	6	0	142	0	30	0	3253
% Cars & Light Goods	83.3	99.1	99.7	0	100	100	100	0	88.5	96.6	100	0	98.6	0	100	0	97.3
Buses	0	1	0	0	0	0	0	0	4	5	0	0	0	0	0	0	10
% Buses	0	0.1	0	0	0	0	0	0	7.7	0.3	0	0	0	0	0	0	0.3
Single-Unit Trucks	0	5	0	0	0	0	0	0	2	26	0	0	2	0	0	0	35
% Single-Unit Trucks	0	0.4	0	0	0	0	0	0	3.8	1.8	0	0	1.4	0	0	0	1
Articulated Trucks	0	3	0	0	0	0	0	0	0	5	0	0	0	0	0	0	8
% Articulated Trucks	0	0.2	0	0	0	0	0	0	0	0.3	0	0	0	0	0	0	0.2
Bicycles on Road	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2
% Bicycles on Road	16.7	0	0	0	0	0	0	0	0	0.1	0	0	0	0	0	0	0.1
Bicycles on Crosswalk	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	3
% Bicycles on Crosswalk	0	0	0	0	0	0	0	37.5	0	0	0	0	0	0	0	0	0.1
Pedestrians	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	9	14
% Pedestrians	0	0	0	0	0	0	0	62.5	0	0	0	0	0	0	0	100	0.4

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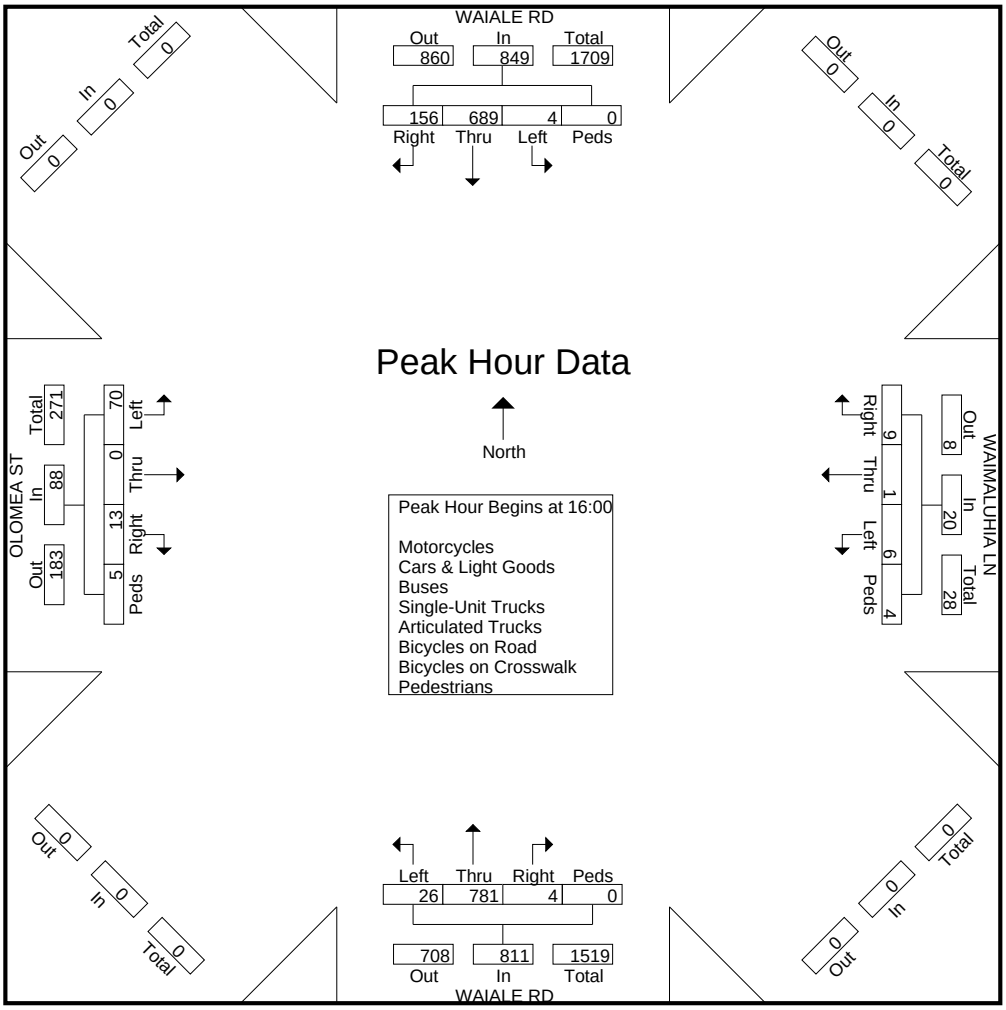
1871 Wili Pa Loop, Suite A
Wailuku, Hawaii 96793
Phone: (808) 224-8044 Fax: (808) 242-9163

File Name : Waiale Rd - Olomea St
Site Code : 19-503 MAUI LANI DEVELOPMENT
Start Date : 3/14/2019
Page No : 2

	WAIALE RD SOUTHBOUND					WAIMALUHIA LN WESTBOUND					WAIALE RD NORTHBOUND					OLOMEA ST EASTBOUND					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 16:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 16:00																					
16:00	**2**	173	38	0	213	**2**	**1**	**5**	**2**	**10**	7	**214**	0	0	**221**	21	0	**5**	**4**	**30**	**474**
16:15	1	157	37	0	195	2	0	1	0	3	4	205	1	0	210	**22**	0	0	0	22	430
16:30	0	**185**	**41**	0	**226**	2	0	3	2	7	6	187	1	0	194	16	0	4	1	21	448
16:45	1	174	40	0	215	0	0	0	0	0	**9**	175	**2**	0	186	11	0	4	0	15	416
Total Volume	4	689	156	0	849	6	1	9	4	20	26	781	4	0	811	70	0	13	5	88	1768
% App. Total	0.5	81.2	18.4	0		30	5	45	20		3.2	96.3	0.5	0		79.5	0	14.8	5.7		
PHF	.500	.931	.951	.000	.939	.750	.250	.450	.500	.500	.722	.912	.500	.000	.917	.795	.000	.650	.313	.733	.932



Austin Tsutsumi & Associates

1871 Wili Pa Loop, Suite A
Wailuku, Hawaii 96793
Phone: (808) 224-8044 Fax: (808) 242-9163

File Name : Waiale Rd - Waiinu Rd
Site Code : 19-503 Maui Lani Development
Start Date : 3/13/2019
Page No : 1

Groups Printed- Motorcycles - Cars & Light Goods - Buses - Unit Trucks - Articulated Trucks - Bicycles on Road - Bicycles on Crosswalk - Pedestrians

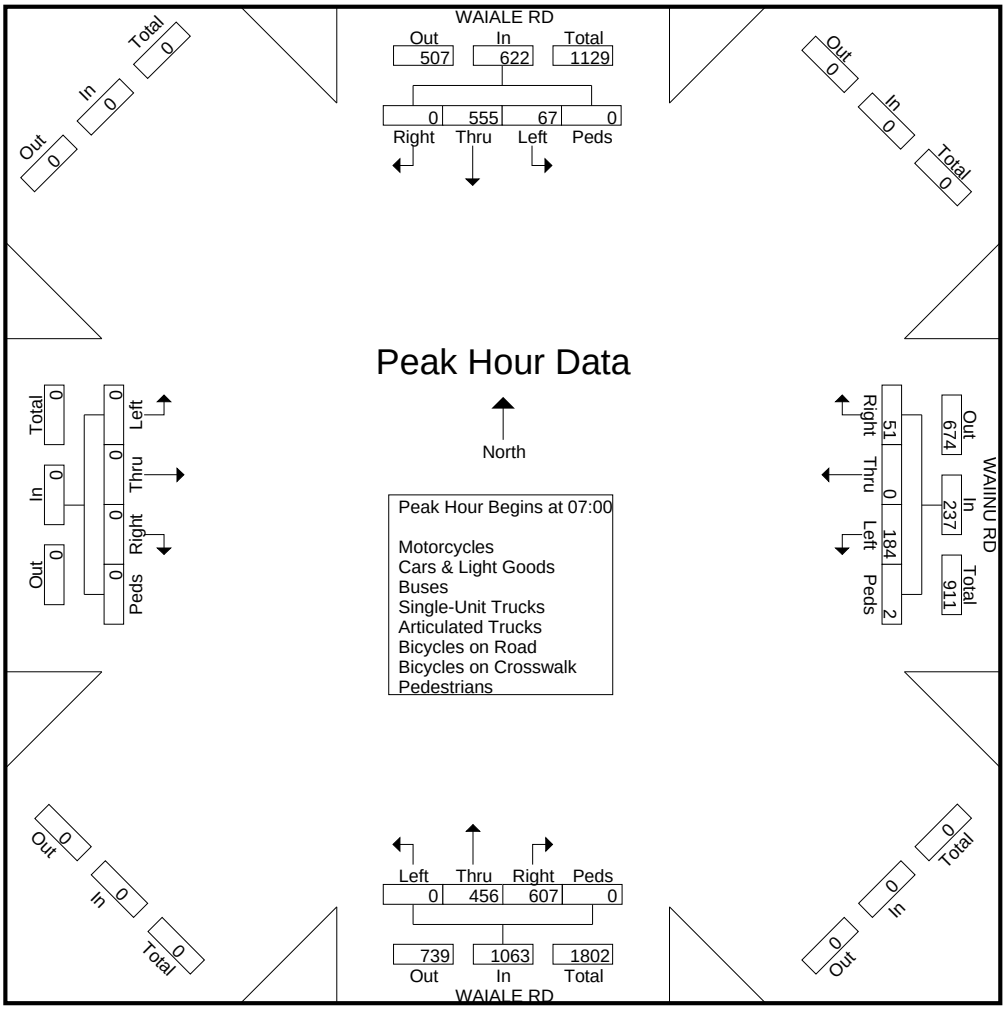
	WAIALE RD SOUTHBOUND				WAIINU RD WESTBOUND				WAIALE RD NORTHBOUND				EASTBOUND				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
06:30	10	72	0	0	36	0	2	0	0	67	98	0	0	0	0	0	285
06:45	9	89	0	0	39	0	9	0	0	83	134	0	0	0	0	0	363
Total	19	161	0	0	75	0	11	0	0	150	232	0	0	0	0	0	648
07:00	14	120	0	0	44	0	9	1	0	101	109	0	0	0	0	0	398
07:15	16	138	0	0	39	0	14	0	0	126	138	0	0	0	0	0	471
07:30	20	153	0	0	52	0	19	1	0	114	174	0	0	0	0	0	533
07:45	17	144	0	0	49	0	9	0	0	115	186	0	0	0	0	0	520
Total	67	555	0	0	184	0	51	2	0	456	607	0	0	0	0	0	1922
08:00	12	99	0	0	36	0	4	1	0	87	84	0	0	0	0	0	323
08:15	15	80	0	0	29	0	15	0	0	85	83	0	0	0	0	0	307
Grand Total	113	895	0	0	324	0	81	3	0	778	1006	0	0	0	0	0	3200
Apprch %	11.2	88.8	0	0	79.4	0	19.9	0.7	0	43.6	56.4	0	0	0	0	0	
Total %	3.5	28	0	0	10.1	0	2.5	0.1	0	24.3	31.4	0	0	0	0	0	
Motorcycles	0	3	0	0	1	0	1	0	0	1	2	0	0	0	0	0	8
% Motorcycles	0	0.3	0	0	0.3	0	1.2	0	0	0.1	0.2	0	0	0	0	0	0.2
Cars & Light Goods	109	854	0	0	298	0	78	0	0	761	993	0	0	0	0	0	3093
% Cars & Light Goods	96.5	95.4	0	0	92	0	96.3	0	0	97.8	98.7	0	0	0	0	0	96.7
Buses	0	6	0	0	1	0	0	0	0	8	7	0	0	0	0	0	22
% Buses	0	0.7	0	0	0.3	0	0	0	0	1	0.7	0	0	0	0	0	0.7
Single-Unit Trucks	3	29	0	0	18	0	2	0	0	8	3	0	0	0	0	0	63
% Single-Unit Trucks	2.7	3.2	0	0	5.6	0	2.5	0	0	1	0.3	0	0	0	0	0	2
Articulated Trucks	0	1	0	0	6	0	0	0	0	0	1	0	0	0	0	0	8
% Articulated Trucks	0	0.1	0	0	1.9	0	0	0	0	0	0.1	0	0	0	0	0	0.2
Bicycles on Road	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
% Bicycles on Road	0.9	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1
Bicycles on Crosswalk	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
% Bicycles on Crosswalk	0	0	0	0	0	0	0	33.3	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	2
% Pedestrians	0	0	0	0	0	0	0	66.7	0	0	0	0	0	0	0	0	0.1

Austin Tsutsumi & Associates

1871 Wili Pa Loop, Suite A
Wailuku, Hawaii 96793
Phone: (808) 224-8044 Fax: (808) 242-9163

File Name : Waiale Rd - Waiinu Rd
Site Code : 19-503 Maui Lani Development
Start Date : 3/13/2019
Page No : 2

	WAIALE RD SOUTHBOUND					WAIINU RD WESTBOUND					WAIALE RD NORTHBOUND					EASTBOUND					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 06:30 to 08:15 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00																					
07:00	14	120	0	0	134	44	0	9	**1**	54	0	101	109	0	210	0	0	0	0	0	398
07:15	16	138	0	0	154	39	0	14	0	53	0	**126**	138	0	264	0	0	0	0	0	471
07:30	**20**	**153**	0	0	**173**	**52**	0	**19**	1	**72**	0	114	174	0	288	0	0	0	0	0	**533**
07:45	17	144	0	0	161	49	0	9	0	58	0	115	**186**	0	**301**	0	0	0	0	0	520
Total Volume	67	555	0	0	622	184	0	51	2	237	0	456	607	0	1063	0	0	0	0	0	1922
% App. Total	10.8	89.2	0	0		77.6	0	21.5	0.8		0	42.9	57.1	0		0	0	0	0		
PHF	.838	.907	.000	.000	.899	.885	.000	.671	.500	.823	.000	.905	.816	.000	.883	.000	.000	.000	.000	.000	.902



Austin Tsutsumi & Associates

1871 Wili Pa Loop, Suite A
Wailuku, Hawaii 96793
Phone: (808) 224-8044 Fax: (808) 242-9163

File Name : Waiale Rd - Waiinu Rd
Site Code : 19-503 Maui Lani Development
Start Date : 3/12/2019
Page No : 1

Groups Printed- Motorcycles - Cars & Light Goods - Buses - Unit Trucks - Articulated Trucks - Bicycles on Road - Bicycles on Crosswalk - Pedestrians

	WAIALE RD SOUTHBOUND				WAIINU RD WESTBOUND				WAIALE RD NORTHBOUND				EASTBOUND				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
15:30	13	170	0	0	55	0	13	0	0	114	91	0	0	0	0	0	456
15:45	14	131	0	0	43	0	7	0	0	107	89	1	0	0	0	0	392
Total	27	301	0	0	98	0	20	0	0	221	180	1	0	0	0	0	848
16:00	9	141	0	0	55	0	3	0	0	110	101	0	0	0	0	0	419
16:15	14	124	0	0	54	0	7	0	0	114	108	0	0	0	0	0	421
16:30	21	156	0	0	50	0	7	0	0	91	99	0	0	0	0	0	424
16:45	18	133	0	0	72	0	15	0	0	110	96	0	0	0	0	0	444
Total	62	554	0	0	231	0	32	0	0	425	404	0	0	0	0	0	1708
17:00	7	141	0	0	71	0	12	0	0	97	82	0	0	0	0	0	410
17:15	7	103	0	0	48	0	10	1	0	84	81	0	0	0	0	0	334
Grand Total	103	1099	0	0	448	0	74	1	0	827	747	1	0	0	0	0	3300
Apprch %	8.6	91.4	0	0	85.7	0	14.1	0.2	0	52.5	47.4	0.1	0	0	0	0	
Total %	3.1	33.3	0	0	13.6	0	2.2	0	0	25.1	22.6	0	0	0	0	0	
Motorcycles	0	4	0	0	1	0	0	0	0	4	3	0	0	0	0	0	12
% Motorcycles	0	0.4	0	0	0.2	0	0	0	0	0.5	0.4	0	0	0	0	0	0.4
Cars & Light Goods	101	1088	0	0	440	0	74	0	0	815	726	0	0	0	0	0	3244
% Cars & Light Goods	98.1	99	0	0	98.2	0	100	0	0	98.5	97.2	0	0	0	0	0	98.3
Buses	0	1	0	0	3	0	0	0	0	1	8	0	0	0	0	0	13
% Buses	0	0.1	0	0	0.7	0	0	0	0	0.1	1.1	0	0	0	0	0	0.4
Single-Unit Trucks	2	3	0	0	1	0	0	0	0	6	7	0	0	0	0	0	19
% Single-Unit Trucks	1.9	0.3	0	0	0.2	0	0	0	0	0.7	0.9	0	0	0	0	0	0.6
Articulated Trucks	0	0	0	0	2	0	0	0	0	0	3	0	0	0	0	0	5
% Articulated Trucks	0	0	0	0	0.4	0	0	0	0	0	0.4	0	0	0	0	0	0.2
Bicycles on Road	0	3	0	0	1	0	0	0	0	1	0	0	0	0	0	0	5
% Bicycles on Road	0	0.3	0	0	0.2	0	0	0	0	0.1	0	0	0	0	0	0	0.2
Bicycles on Crosswalk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bicycles on Crosswalk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	2
% Pedestrians	0	0	0	0	0	0	0	100	0	0	0	100	0	0	0	0	0.1

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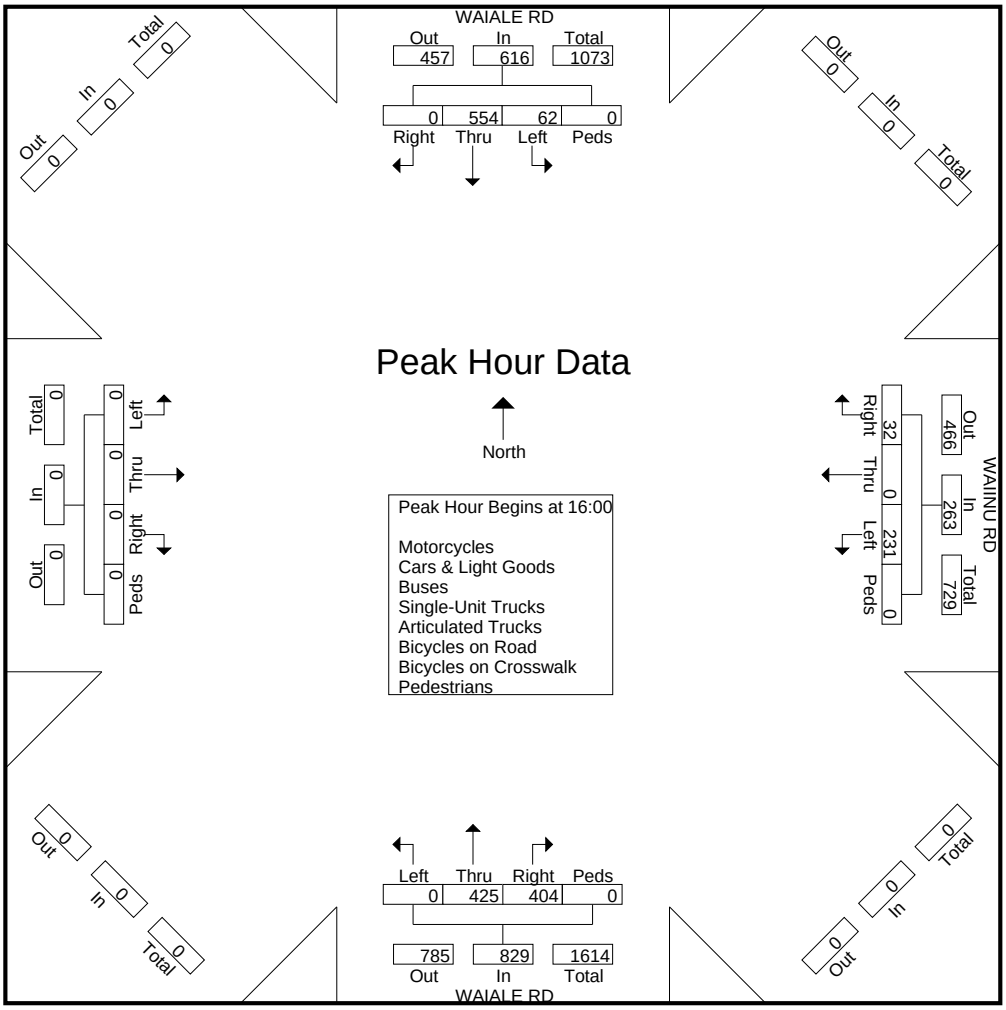
1871 Wili Pa Loop, Suite A
Wailuku, Hawaii 96793
Phone: (808) 224-8044 Fax: (808) 242-9163

File Name : Waiale Rd - Waiinu Rd
Site Code : 19-503 Maui Lani Development
Start Date : 3/12/2019
Page No : 2

	WAIALE RD SOUTHBOUND					WAIINU RD WESTBOUND					WAIALE RD NORTHBOUND					EASTBOUND					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 15:30 to 17:15 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 16:00																					
16:00	9	141	0	0	150	55	0	3	0	58	0	110	101	0	211	0	0	0	0	0	419
16:15	14	124	0	0	138	54	0	7	0	61	0	**114**	**108**	0	**222**	0	0	0	0	0	421
16:30	**21**	**156**	0	0	**177**	50	0	7	0	57	0	91	99	0	190	0	0	0	0	0	424
16:45	18	133	0	0	151	**72**	0	**15**	0	**87**	0	110	96	0	206	0	0	0	0	0	**444**
Total Volume	62	554	0	0	616	231	0	32	0	263	0	425	404	0	829	0	0	0	0	0	1708
% App. Total	10.1	89.9	0	0		87.8	0	12.2	0		0	51.3	48.7	0		0	0	0	0		
PHF	.738	.888	.000	.000	.870	.802	.000	.533	.000	.756	.000	.932	.935	.000	.934	.000	.000	.000	.000	.000	.962



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1871 Wili Pa Loop, Suite A
Wailuku, Hawaii 96793
Phone: (808) 224-8044 Fax: (808) 242-9163

File Name : Waiale Rd - Haawi St
Site Code : 19-508 Puunani Homesteads
Start Date : 4/9/2019
Page No : 1

Groups Printed- Motorcycles - Cars & Light Goods - Buses - Unit Trucks - Articulated Trucks - Bicycles on Road - Bicycles on Crosswalk - Pedestrians

	WAIALE RD SOUTHBOUND				WESTBOUND				WAIALE RD NORTHBOUND				HAAWI ST EASTBOUND				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
06:30	0	36	4	0	0	0	0	0	3	21	0	0	18	0	17	0	99
06:45	0	42	12	0	0	0	0	0	2	28	0	0	24	0	19	0	127
Total	0	78	16	0	0	0	0	0	5	49	0	0	42	0	36	0	226
07:00	0	46	7	0	0	0	0	0	4	48	0	0	26	0	29	0	160
07:15	0	46	7	0	0	0	0	0	4	46	0	0	21	0	20	0	144
07:30	0	35	6	0	0	0	0	0	6	38	0	0	14	0	10	0	109
07:45	0	33	8	0	0	0	0	0	2	25	0	0	7	0	14	0	89
Total	0	160	28	0	0	0	0	0	16	157	0	0	68	0	73	0	502
08:00	0	22	6	0	0	0	0	0	5	11	0	0	15	0	8	0	67
08:15	0	19	6	0	0	0	0	0	1	16	0	0	11	0	8	0	61
Grand Total	0	279	56	0	0	0	0	0	27	233	0	0	136	0	125	0	856
Apprch %	0	83.3	16.7	0	0	0	0	0	10.4	89.6	0	0	52.1	0	47.9	0	
Total %	0	32.6	6.5	0	0	0	0	0	3.2	27.2	0	0	15.9	0	14.6	0	
Motorcycles	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
% Motorcycles	0	0.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2
Cars & Light Goods	0	265	56	0	0	0	0	0	25	222	0	0	136	0	125	0	829
% Cars & Light Goods	0	95	100	0	0	0	0	0	92.6	95.3	0	0	100	0	100	0	96.8
Buses	0	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	4
% Buses	0	0.7	0	0	0	0	0	0	7.4	0	0	0	0	0	0	0	0.5
Single-Unit Trucks	0	6	0	0	0	0	0	0	0	9	0	0	0	0	0	0	15
% Single-Unit Trucks	0	2.2	0	0	0	0	0	0	0	3.9	0	0	0	0	0	0	1.8
Articulated Trucks	0	4	0	0	0	0	0	0	0	1	0	0	0	0	0	0	5
% Articulated Trucks	0	1.4	0	0	0	0	0	0	0	0.4	0	0	0	0	0	0	0.6
Bicycles on Road	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
% Bicycles on Road	0	0	0	0	0	0	0	0	0	0.4	0	0	0	0	0	0	0.1
Bicycles on Crosswalk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bicycles on Crosswalk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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Wailuku, Hawaii 96793
Phone: (808) 224-8044 Fax: (808) 242-9163

File Name : Waiale Rd - Haawi St
Site Code : 19-508 Puunani Homesteads
Start Date : 4/9/2019
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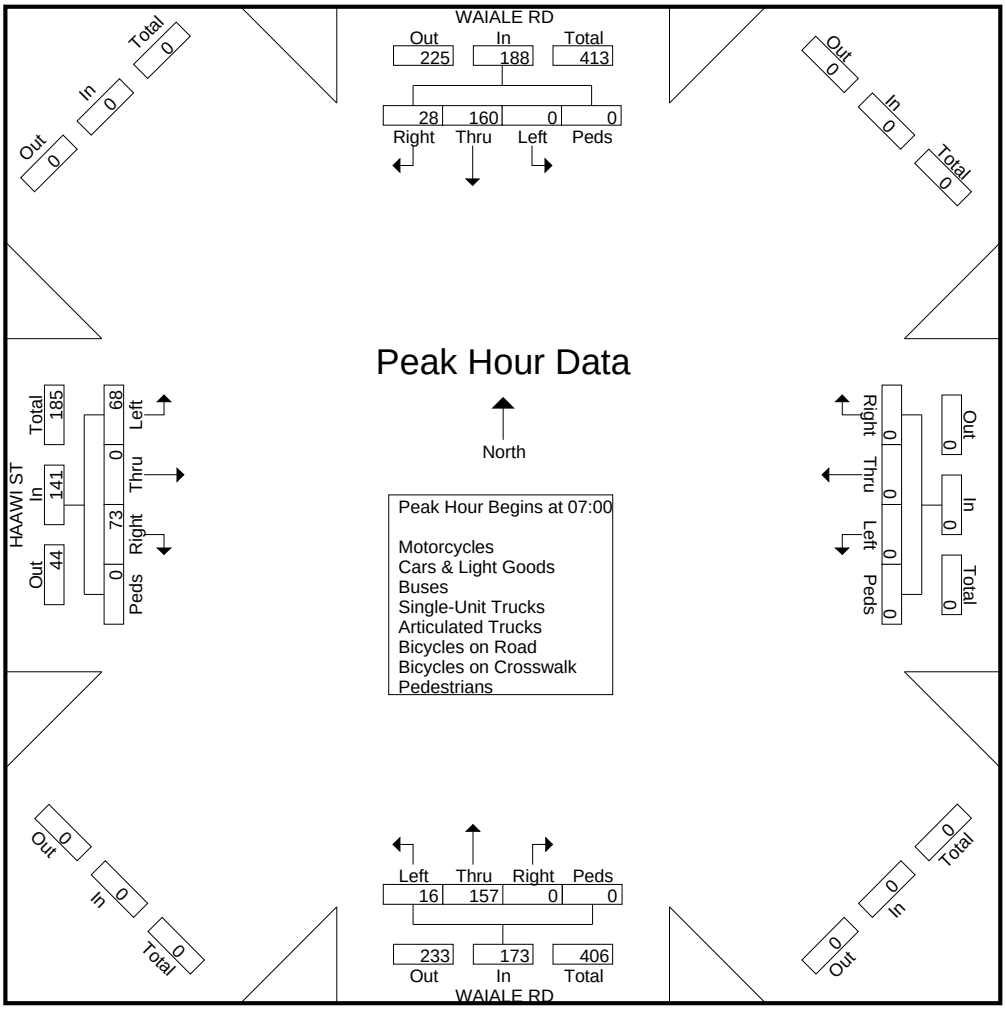
	WAIALE RD SOUTHBOUND					WESTBOUND					WAIALE RD NORTHBOUND					HAAWI ST EASTBOUND					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 07:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00																					
07:00	0	**46**	7	0	**53**	0	0	0	0	0	4	**48**	0	0	**52**	**26**	0	**29**	0	**55**	**160**
07:15	0	46	7	0	53	0	0	0	0	0	4	46	0	0	50	21	0	20	0	41	144
07:30	0	35	6	0	41	0	0	0	0	0	**6**	38	0	0	44	14	0	10	0	24	109
07:45	0	33	**8**	0	41	0	0	0	0	0	2	25	0	0	27	7	0	14	0	21	89
Total Volume	0	160	28	0	188	0	0	0	0	0	16	157	0	0	173	68	0	73	0	141	502
% App. Total	0	85.1	14.9	0		0	0	0	0		9.2	90.8	0	0		48.2	0	51.8	0		
PHF	.000	.870	.875	.000	.887	.000	.000	.000	.000	.000	.667	.818	.000	.000	.832	.654	.000	.629	.000	.641	.784



Austin Tsutsumi & Associates

1871 Wili Pa Loop, Suite A
Wailuku, Hawaii 96793
Phone: (808) 224-8044 Fax: (808) 242-9163

File Name : Waiale Rd - Haawi St
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Groups Printed- Motorcycles - Cars & Light Goods - Buses - Unit Trucks - Articulated Trucks - Bicycles on Road - Bicycles on Crosswalk - Pedestrians

	WAIALE RD SOUTHBOUND				WESTBOUND				WAIALE RD NORTHBOUND				HAAWI ST EASTBOUND				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
15:30	0	37	7	0	0	0	0	0	18	41	0	0	9	0	8	0	120
15:45	0	33	14	0	0	0	0	0	15	38	0	0	13	0	5	1	119
Total	0	70	21	0	0	0	0	0	33	79	0	0	22	0	13	1	239
16:00	0	42	17	0	0	0	0	0	14	41	0	0	11	0	8	0	133
16:15	0	43	10	0	0	0	0	0	14	42	0	0	13	0	6	0	128
16:30	0	35	18	0	0	0	0	0	16	31	0	0	8	0	6	0	114
16:45	0	35	17	0	0	0	0	0	16	28	0	0	6	0	8	0	110
Total	0	155	62	0	0	0	0	0	60	142	0	0	38	0	28	0	485
17:00	0	47	11	0	0	0	0	0	16	34	0	0	5	0	6	0	119
17:15	0	20	13	0	0	0	0	0	10	29	0	0	10	0	6	0	88
Grand Total	0	292	107	0	0	0	0	0	119	284	0	0	75	0	53	1	931
Apprch %	0	73.2	26.8	0	0	0	0	0	29.5	70.5	0	0	58.1	0	41.1	0.8	
Total %	0	31.4	11.5	0	0	0	0	0	12.8	30.5	0	0	8.1	0	5.7	0.1	
Motorcycles	0	0	1	0	0	0	0	0	0	0	0	0	2	0	0	0	3
% Motorcycles	0	0	0.9	0	0	0	0	0	0	0	0	0	2.7	0	0	0	0.3
Cars & Light Goods	0	286	106	0	0	0	0	0	119	282	0	0	73	0	52	0	918
% Cars & Light Goods	0	97.9	99.1	0	0	0	0	0	100	99.3	0	0	97.3	0	98.1	0	98.6
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Single-Unit Trucks	0	3	0	0	0	0	0	0	0	1	0	0	0	0	1	0	5
% Single-Unit Trucks	0	1	0	0	0	0	0	0	0	0.4	0	0	0	0	1.9	0	0.5
Articulated Trucks	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
% Articulated Trucks	0	0.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2
Bicycles on Road	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2
% Bicycles on Road	0	0.3	0	0	0	0	0	0	0	0.4	0	0	0	0	0	0	0.2
Bicycles on Crosswalk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bicycles on Crosswalk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
% Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100	0.1

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1871 Wili Pa Loop, Suite A
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Phone: (808) 224-8044 Fax: (808) 242-9163

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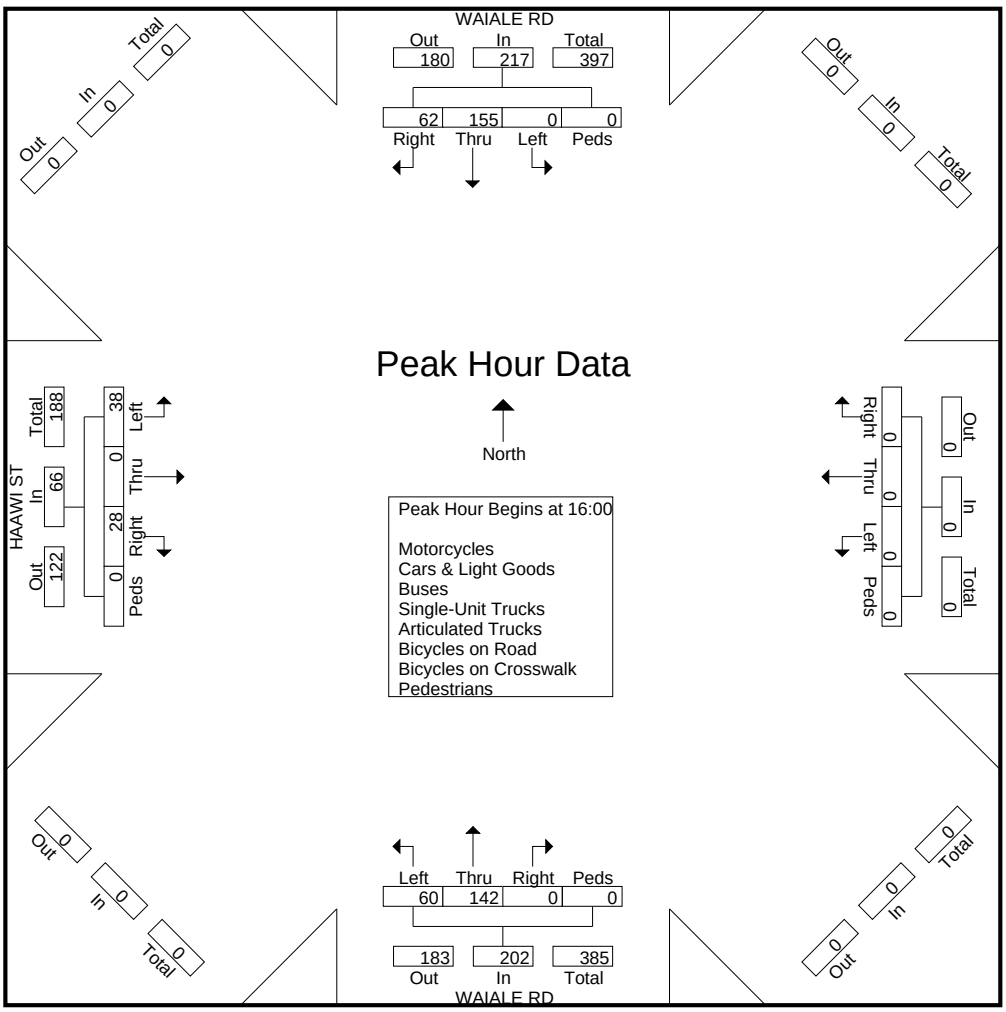
	WAIALE RD SOUTHBOUND					WESTBOUND					WAIALE RD NORTHBOUND					HAAWI ST EASTBOUND					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 16:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 16:00																					
16:00	0	42	17	0	**59**	0	0	0	0	0	14	41	0	0	55	11	0	**8**	0	**19**	**133**
16:15	0	**43**	10	0	53	0	0	0	0	0	14	**42**	0	0	**56**	**13**	0	6	0	19	128
16:30	0	35	**18**	0	53	0	0	0	0	0	**16**	31	0	0	47	8	0	6	0	14	114
16:45	0	35	17	0	52	0	0	0	0	0	16	28	0	0	44	6	0	8	0	14	110
Total Volume	0	155	62	0	217	0	0	0	0	0	60	142	0	0	202	38	0	28	0	66	485
% App. Total	0	71.4	28.6	0		0	0	0	0		29.7	70.3	0	0		57.6	0	42.4	0		
PHF	.000	.901	.861	.000	.919	.000	.000	.000	.000	.000	.938	.845	.000	.000	.902	.731	.000	.875	.000	.868	.912



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1871 Wili Pa Loop, Suite A
Wailuku, Hawaii 96793
Phone: (808) 224-8044 Fax: (808) 242-9163

File Name : Waiale Rd - Oluloa Dr
Site Code : 19-508 PUUNANI HOMESTEAD
Start Date : 4/9/2019
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Groups Printed- Motorcycles - Cars & Light Goods - Buses - Unit Trucks - Articulated Trucks - Bicycles on Road - Bicycles on Crosswalk - Pedestrians

	WAIALE RD SOUTHBOUND				OLULOA DR WESTBOUND				WAIALE RD NORTHBOUND				KAOHU ST EASTBOUND				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
06:30	0	56	12	0	1	2	1	1	17	46	0	0	6	0	11	0	153
06:45	1	71	30	0	6	2	0	0	24	51	0	0	3	0	14	0	202
Total	1	127	42	0	7	4	1	1	41	97	0	0	9	0	25	0	355
07:00	1	77	24	0	1	1	1	1	30	80	2	0	14	0	22	0	254
07:15	0	113	40	0	5	3	2	0	40	79	2	0	25	0	29	0	338
07:30	1	112	28	0	4	6	2	2	45	76	1	0	23	3	43	0	346
07:45	0	135	12	0	5	5	4	1	30	111	1	0	20	0	30	0	354
Total	2	437	104	0	15	15	9	4	145	346	6	0	82	3	124	0	1292
08:00	2	111	12	0	2	1	2	0	20	110	3	0	12	2	16	0	293
08:15	1	88	9	0	5	0	0	0	13	66	3	0	13	0	21	0	219
Grand Total	6	763	167	0	29	20	12	5	219	619	12	0	116	5	186	0	2159
Apprch %	0.6	81.5	17.8	0	43.9	30.3	18.2	7.6	25.8	72.8	1.4	0	37.8	1.6	60.6	0	
Total %	0.3	35.3	7.7	0	1.3	0.9	0.6	0.2	10.1	28.7	0.6	0	5.4	0.2	8.6	0	
Motorcycles	0	4	2	0	0	0	0	0	1	1	0	0	0	0	0	0	8
% Motorcycles	0	0.5	1.2	0	0	0	0	0	0.5	0.2	0	0	0	0	0	0	0.4
Cars & Light Goods	6	741	154	0	27	20	10	0	216	604	12	0	114	5	177	0	2086
% Cars & Light Goods	100	97.1	92.2	0	93.1	100	83.3	0	98.6	97.6	100	0	98.3	100	95.2	0	96.6
Buses	0	4	7	0	0	0	1	0	2	4	0	0	0	0	0	0	18
% Buses	0	0.5	4.2	0	0	0	8.3	0	0.9	0.6	0	0	0	0	0	0	0.8
Single-Unit Trucks	0	13	4	0	1	0	0	0	0	10	0	0	2	0	7	0	37
% Single-Unit Trucks	0	1.7	2.4	0	3.4	0	0	0	0	1.6	0	0	1.7	0	3.8	0	1.7
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
% Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.1	0	0.1
Bicycles on Road	0	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	3
% Bicycles on Road	0	0.1	0	0	3.4	0	8.3	0	0	0	0	0	0	0	0	0	0.1
Bicycles on Crosswalk	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	2
% Bicycles on Crosswalk	0	0	0	0	0	0	0	40	0	0	0	0	0	0	0	0	0.1
Pedestrians	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	3
% Pedestrians	0	0	0	0	0	0	0	60	0	0	0	0	0	0	0	0	0.1

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1871 Wili Pa Loop, Suite A
Wailuku, Hawaii 96793
Phone: (808) 224-8044 Fax: (808) 242-9163

File Name : Waiale Rd - Oluloa Dr
Site Code : 19-508 PUUNANI HOMESTEAD
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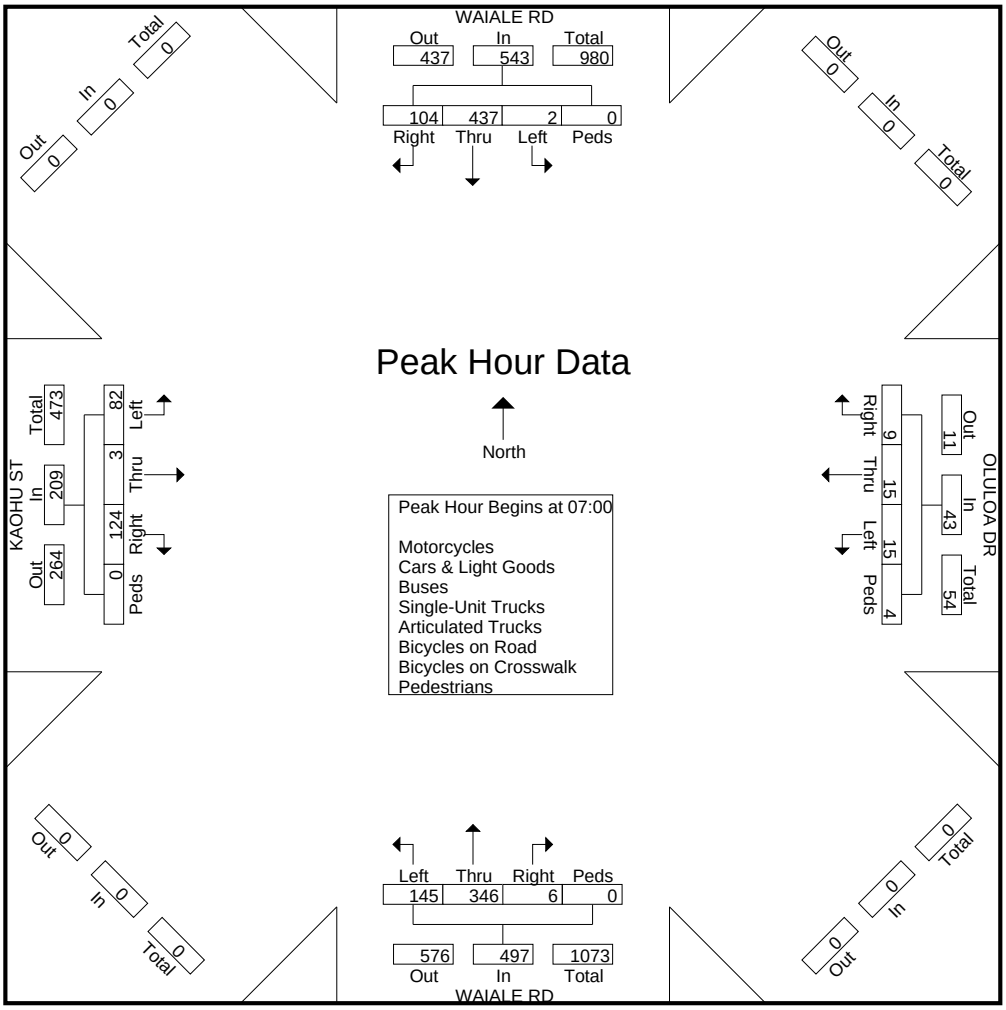
	WAIALE RD SOUTHBOUND					OLULOA DR WESTBOUND					WAIALE RD NORTHBOUND					KAOHU ST EASTBOUND					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 07:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00																					
07:00	**1**	77	24	0	102	1	1	1	1	4	30	80	**2**	0	112	14	0	22	0	36	254
07:15	0	113	**40**	0	**153**	**5**	3	2	0	10	40	79	2	0	121	**25**	0	29	0	54	338
07:30	1	112	28	0	141	4	**6**	2	**2**	14	**45**	76	1	0	122	23	**3**	**43**	0	**69**	346
07:45	0	**135**	12	0	147	5	5	**4**	1	**15**	30	**111**	1	0	**142**	20	0	30	0	50	**354**
Total Volume	2	437	104	0	543	15	15	9	4	43	145	346	6	0	497	82	3	124	0	209	1292
% App. Total	0.4	80.5	19.2	0		34.9	34.9	20.9	9.3		29.2	69.6	1.2	0		39.2	1.4	59.3	0		
PHF	.500	.809	.650	.000	.887	.750	.625	.563	.500	.717	.806	.779	.750	.000	.875	.820	.250	.721	.000	.757	.912



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Start Date : 4/9/2019
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Groups Printed- Motorcycles - Cars & Light Goods - Buses - Unit Trucks - Articulated Trucks - Bicycles on Road - Bicycles on Crosswalk - Pedestrians

	WAIALE RD SOUTHBOUND				OLULOA DR WESTBOUND				WAIALE RD NORTHBOUND				KAOHU ST EASTBOUND				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
15:30	3	107	11	0	2	2	1	5	17	98	4	0	27	5	42	0	324
15:45	1	108	14	0	5	1	1	0	26	95	6	0	16	2	16	0	291
Total	4	215	25	0	7	3	2	5	43	193	10	0	43	7	58	0	615
16:00	2	114	9	0	3	0	2	0	30	97	6	0	13	2	17	0	295
16:15	0	120	20	0	3	2	3	0	27	110	7	0	14	1	28	0	335
16:30	0	119	15	0	5	1	0	0	25	94	1	0	16	3	51	0	330
16:45	6	127	22	4	3	1	3	0	9	91	7	0	15	4	62	0	354
Total	8	480	66	4	14	4	8	0	91	392	21	0	58	10	158	0	1314
17:00	5	129	8	5	3	0	2	1	20	79	2	0	18	1	30	2	305
17:15	0	118	7	3	0	0	1	0	18	69	1	0	5	1	16	1	240
Grand Total	17	942	106	12	24	7	13	6	172	733	34	0	124	19	262	3	2474
Apprch %	1.6	87.5	9.8	1.1	48	14	26	12	18.3	78.1	3.6	0	30.4	4.7	64.2	0.7	
Total %	0.7	38.1	4.3	0.5	1	0.3	0.5	0.2	7	29.6	1.4	0	5	0.8	10.6	0.1	
Motorcycles	0	4	0	0	0	0	0	0	0	6	0	0	1	0	2	0	13
% Motorcycles	0	0.4	0	0	0	0	0	0	0	0.8	0	0	0.8	0	0.8	0	0.5
Cars & Light Goods	17	923	103	0	24	7	12	0	172	714	32	0	122	19	259	0	2404
% Cars & Light Goods	100	98	97.2	0	100	100	92.3	0	100	97.4	94.1	0	98.4	100	98.9	0	97.2
Buses	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	3
% Buses	0	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0.4	0	0.1
Single-Unit Trucks	0	10	2	0	0	0	1	0	0	13	1	0	0	0	0	0	27
% Single-Unit Trucks	0	1.1	1.9	0	0	0	7.7	0	0	1.8	2.9	0	0	0	0	0	1.1
Articulated Trucks	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	3
% Articulated Trucks	0	0.2	0.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1
Bicycles on Road	0	1	0	0	0	0	0	0	0	0	1	0	1	0	0	0	3
% Bicycles on Road	0	0.1	0	0	0	0	0	0	0	0	2.9	0	0.8	0	0	0	0.1
Bicycles on Crosswalk	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	2
% Bicycles on Crosswalk	0	0	0	0	0	0	0	16.7	0	0	0	0	0	0	0	33.3	0.1
Pedestrians	0	0	0	12	0	0	0	5	0	0	0	0	0	0	0	2	19
% Pedestrians	0	0	0	100	0	0	0	83.3	0	0	0	0	0	0	0	66.7	0.8

Austin Tsutsumi & Associates

1871 Wili Pa Loop, Suite A
Wailuku, Hawaii 96793
Phone: (808) 224-8044 Fax: (808) 242-9163

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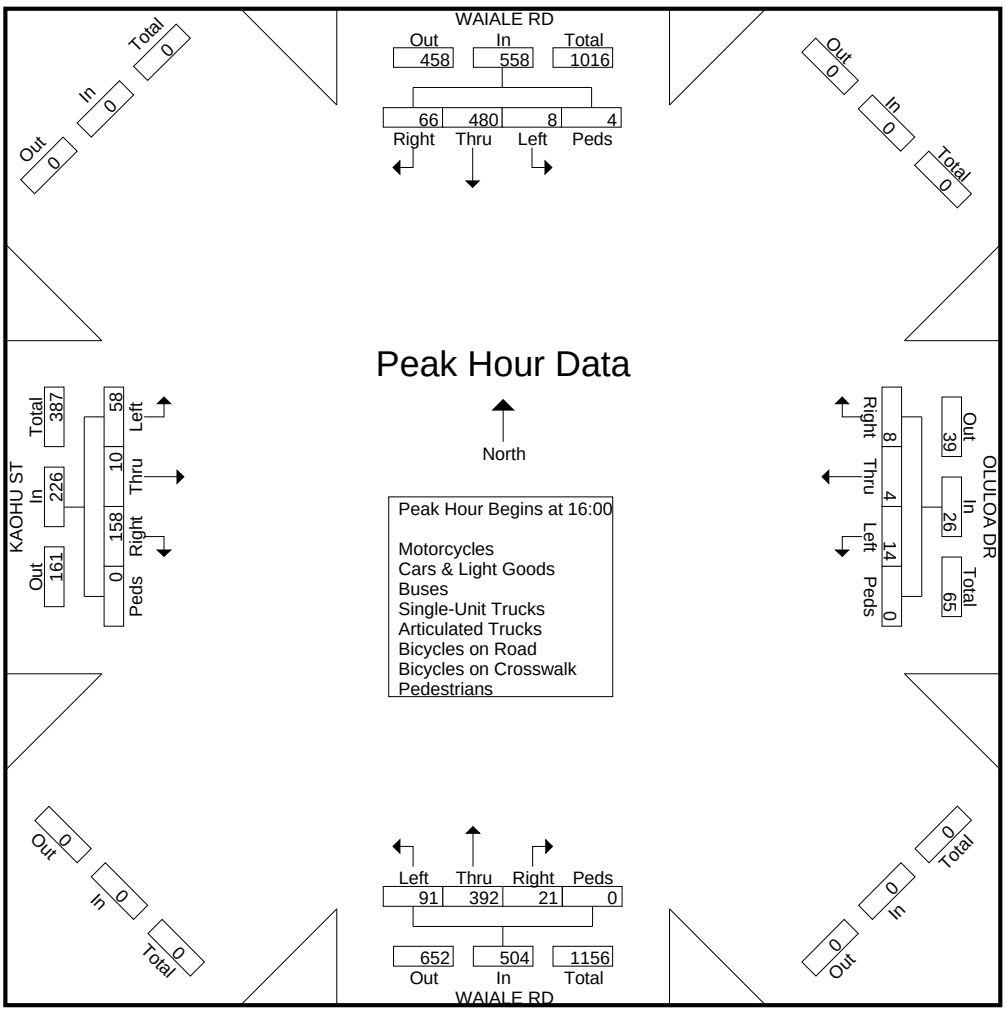
	WAIALE RD SOUTHBOUND					OLULOA DR WESTBOUND					WAIALE RD NORTHBOUND					KAOHU ST EASTBOUND					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 16:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 16:00																					
16:00	2	114	9	0	125	3	0	2	0	5	**30**	97	6	0	133	13	2	17	0	32	295
16:15	0	120	20	0	140	3	**2**	**3**	0	**8**	27	**110**	**7**	0	**144**	14	1	28	0	43	335
16:30	0	119	15	0	134	**5**	1	0	0	6	25	94	1	0	120	**16**	3	51	0	70	330
16:45	**6**	**127**	**22**	**4**	**159**	3	1	3	0	7	9	91	7	0	107	15	**4**	**62**	0	**81**	**354**
Total Volume	8	480	66	4	558	14	4	8	0	26	91	392	21	0	504	58	10	158	0	226	1314
% App. Total	1.4	86	11.8	0.7		53.8	15.4	30.8	0		18.1	77.8	4.2	0		25.7	4.4	69.9	0		
PHF	.333	.945	.750	.250	.877	.700	.500	.667	.000	.813	.758	.891	.750	.000	.875	.906	.625	.637	.000	.698	.928



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1871 Wili Pa Loop, Suite A
Wailuku, Hawaii 96793
Phone: (808) 224-8044 Fax: (808) 242-9163

File Name : Waiale Rd - Kaupo St
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Groups Printed- Motorcycles - Cars & Light Goods - Buses - Unit Trucks - Articulated Trucks - Bicycles on Road - Bicycles on Crosswalk - Pedestrians

	WAIALE RD SOUTHBOUND				WESTBOUND				WAIALE RD NORTHBOUND				KAUPO ST EASTBOUND				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
06:30	0	81	2	0	0	0	0	0	6	137	0	0	11	0	10	2	249
06:45	0	110	4	0	0	0	0	0	5	181	0	0	17	0	6	1	324
Total	0	191	6	0	0	0	0	0	11	318	0	0	28	0	16	3	573
07:00	0	118	4	0	0	0	0	0	13	183	0	0	19	0	18	1	356
07:15	0	129	5	0	0	0	0	0	13	235	0	0	26	0	13	0	421
07:30	0	131	6	0	0	0	0	0	8	180	0	0	46	0	17	0	388
07:45	0	145	6	0	0	0	0	0	6	222	0	0	28	0	14	2	423
Total	0	523	21	0	0	0	0	0	40	820	0	0	119	0	62	3	1588
08:00	0	147	2	0	0	0	0	0	10	173	0	0	6	0	7	2	347
08:15	0	118	2	1	0	0	0	0	9	150	0	0	6	0	13	0	299
Grand Total	0	979	31	1	0	0	0	0	70	1461	0	0	159	0	98	8	2807
Apprch %	0	96.8	3.1	0.1	0	0	0	0	4.6	95.4	0	0	60	0	37	3	
Total %	0	34.9	1.1	0	0	0	0	0	2.5	52	0	0	5.7	0	3.5	0.3	
Motorcycles	0	4	0	0	0	0	0	0	0	5	0	0	2	0	0	0	11
% Motorcycles	0	0.4	0	0	0	0	0	0	0	0.3	0	0	1.3	0	0	0	0.4
Cars & Light Goods	0	933	30	0	0	0	0	0	66	1427	0	0	153	0	97	0	2706
% Cars & Light Goods	0	95.3	96.8	0	0	0	0	0	94.3	97.7	0	0	96.2	0	99	0	96.4
Buses	0	5	1	0	0	0	0	0	4	10	0	0	3	0	1	0	24
% Buses	0	0.5	3.2	0	0	0	0	0	5.7	0.7	0	0	1.9	0	1	0	0.9
Single-Unit Trucks	0	23	0	0	0	0	0	0	0	14	0	0	1	0	0	0	38
% Single-Unit Trucks	0	2.3	0	0	0	0	0	0	0	1	0	0	0.6	0	0	0	1.4
Articulated Trucks	0	12	0	0	0	0	0	0	0	2	0	0	0	0	0	0	14
% Articulated Trucks	0	1.2	0	0	0	0	0	0	0	0.1	0	0	0	0	0	0	0.5
Bicycles on Road	0	2	0	0	0	0	0	0	0	3	0	0	0	0	0	0	5
% Bicycles on Road	0	0.2	0	0	0	0	0	0	0	0.2	0	0	0	0	0	0	0.2
Bicycles on Crosswalk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bicycles on Crosswalk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	8	9
% Pedestrians	0	0	0	100	0	0	0	0	0	0	0	0	0	0	0	100	0.3

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Phone: (808) 224-8044 Fax: (808) 242-9163

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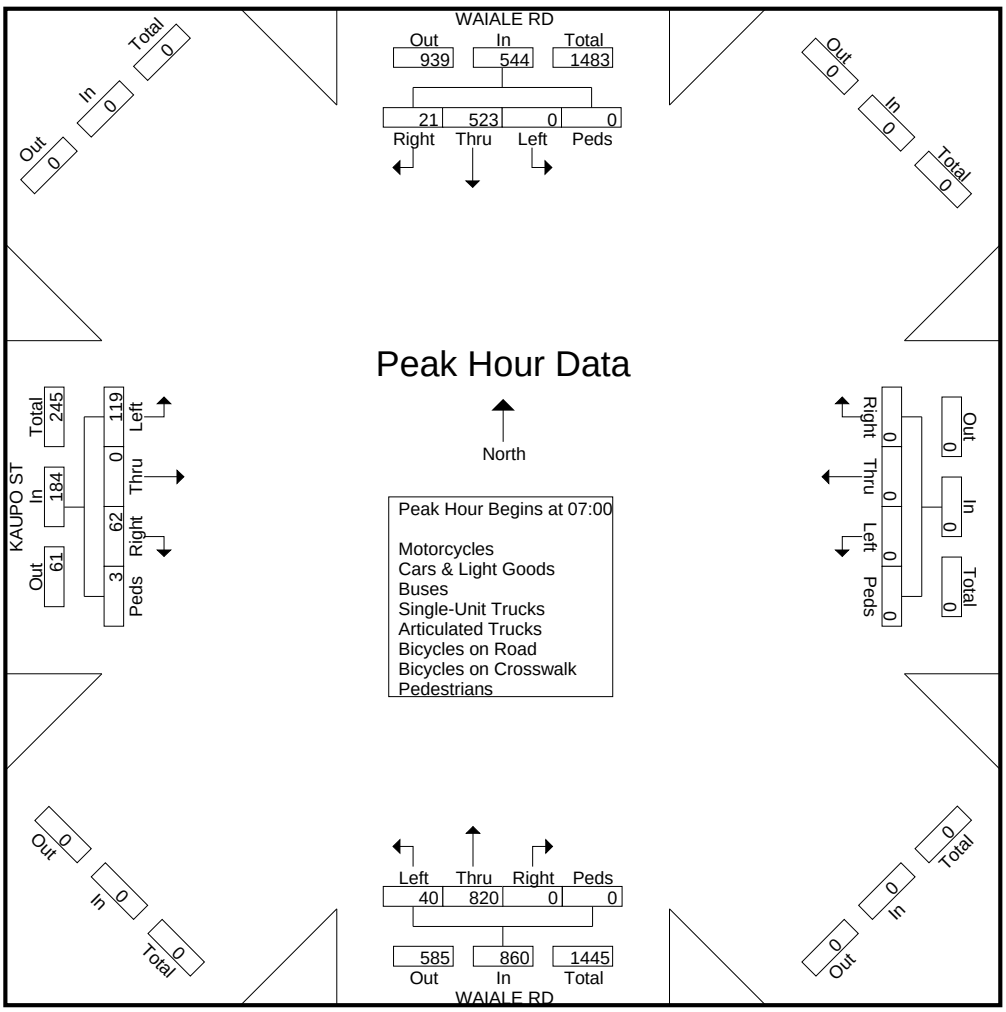
	WAIALE RD SOUTHBOUND					WESTBOUND					WAIALE RD NORTHBOUND					KAUPO ST EASTBOUND					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 06:30 to 08:15 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00																					
07:00	0	118	4	0	122	0	0	0	0	0	**13**	183	0	0	196	19	0	**18**	1	38	356
07:15	0	129	5	0	134	0	0	0	0	0	13	**235**	0	0	**248**	26	0	13	0	39	421
07:30	0	131	**6**	0	137	0	0	0	0	0	8	180	0	0	188	**46**	0	17	0	**63**	388
07:45	0	**145**	6	0	**151**	0	0	0	0	0	6	222	0	0	228	28	0	14	**2**	44	**423**
Total Volume	0	523	21	0	544	0	0	0	0	0	40	820	0	0	860	119	0	62	3	184	1588
% App. Total	0	96.1	3.9	0		0	0	0	0		4.7	95.3	0	0		64.7	0	33.7	1.6		
PHF	.000	.902	.875	.000	.901	.000	.000	.000	.000	.000	.769	.872	.000	.000	.867	.647	.000	.861	.375	.730	.939



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Wailuku, Hawaii 96793
Phone: (808) 224-8044 Fax: (808) 242-9163

File Name : Waiale Rd - Kaupo St
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Start Date : 4/9/2019
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Groups Printed- Motorcycles - Cars & Light Goods - Buses - Unit Trucks - Articulated Trucks - Bicycles on Road - Bicycles on Crosswalk - Pedestrians

	WAIALE RD SOUTHBOUND				WESTBOUND				WAIALE RD NORTHBOUND				KAUPO ST EASTBOUND				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
15:30	0	163	5	0	0	0	0	0	8	188	0	0	3	0	16	0	383
15:45	0	132	10	0	0	0	0	0	8	177	0	0	10	0	15	4	356
Total	0	295	15	0	0	0	0	0	16	365	0	0	13	0	31	4	739
16:00	0	173	8	0	0	0	0	0	11	201	0	0	6	0	8	2	409
16:15	0	155	5	0	0	0	0	0	11	191	0	0	15	0	9	0	386
16:30	0	168	2	0	0	0	0	0	9	174	0	0	8	0	10	7	378
16:45	0	179	13	0	0	0	0	0	20	171	0	0	8	0	11	3	405
Total	0	675	28	0	0	0	0	0	51	737	0	0	37	0	38	12	1578
17:00	0	171	14	0	0	0	0	0	7	143	0	0	12	0	8	8	363
17:15	0	173	5	0	0	0	0	0	17	121	0	0	10	0	6	10	342
Grand Total	0	1314	62	0	0	0	0	0	91	1366	0	0	72	0	83	34	3022
Apprch %	0	95.5	4.5	0	0	0	0	0	6.2	93.8	0	0	38.1	0	43.9	18	
Total %	0	43.5	2.1	0	0	0	0	0	3	45.2	0	0	2.4	0	2.7	1.1	
Motorcycles	0	2	0	0	0	0	0	0	0	5	0	0	1	0	0	0	8
% Motorcycles	0	0.2	0	0	0	0	0	0	0	0.4	0	0	1.4	0	0	0	0.3
Cars & Light Goods	0	1299	61	0	0	0	0	0	90	1335	0	0	70	0	81	0	2936
% Cars & Light Goods	0	98.9	98.4	0	0	0	0	0	98.9	97.7	0	0	97.2	0	97.6	0	97.2
Buses	0	2	0	0	0	0	0	0	0	9	0	0	0	0	0	0	11
% Buses	0	0.2	0	0	0	0	0	0	0	0.7	0	0	0	0	0	0	0.4
Single-Unit Trucks	0	8	1	0	0	0	0	0	0	11	0	0	0	0	1	0	21
% Single-Unit Trucks	0	0.6	1.6	0	0	0	0	0	0	0.8	0	0	0	0	1.2	0	0.7
Articulated Trucks	0	2	0	0	0	0	0	0	1	5	0	0	1	0	1	0	10
% Articulated Trucks	0	0.2	0	0	0	0	0	0	1.1	0.4	0	0	1.4	0	1.2	0	0.3
Bicycles on Road	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2
% Bicycles on Road	0	0.1	0	0	0	0	0	0	0	0.1	0	0	0	0	0	0	0.1
Bicycles on Crosswalk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2
% Bicycles on Crosswalk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5.9	0.1
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	32	32
% Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	94.1	1.1

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1871 Wili Pa Loop, Suite A
Wailuku, Hawaii 96793
Phone: (808) 224-8044 Fax: (808) 242-9163

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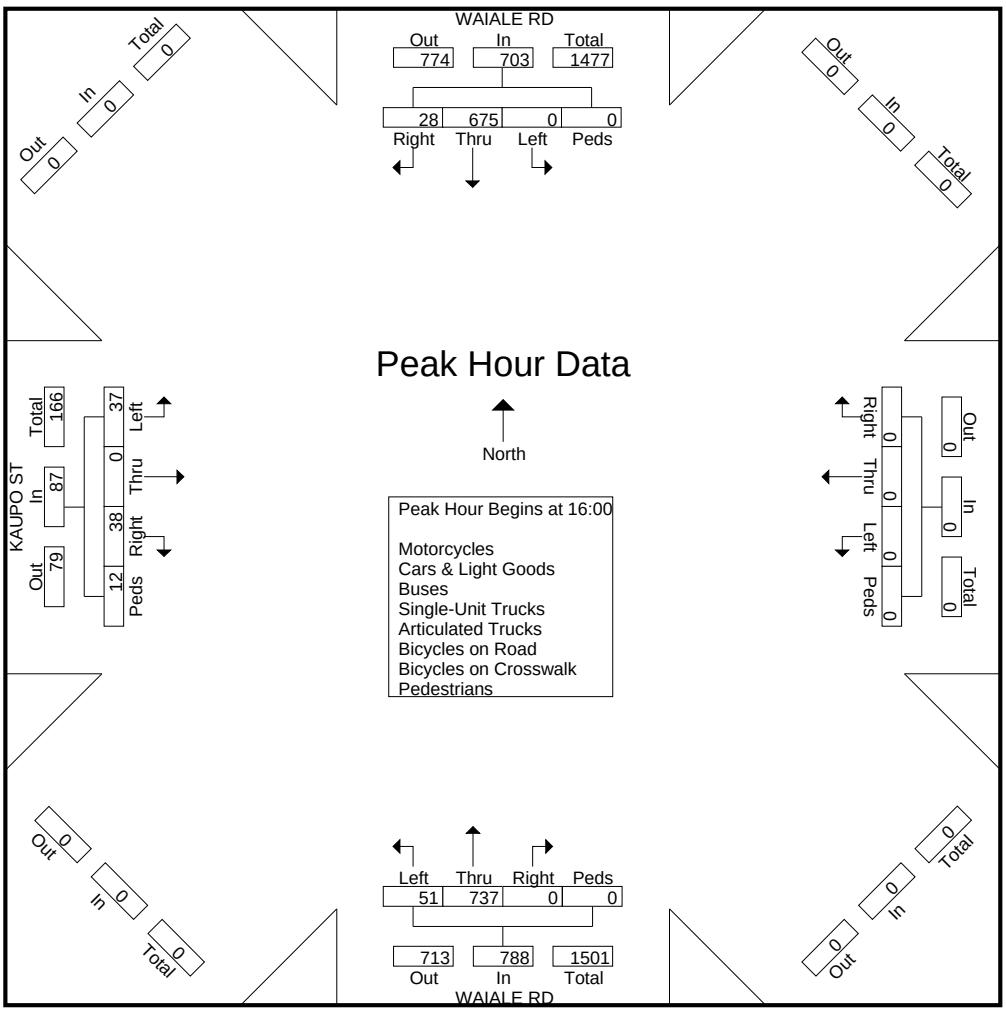
	WAIALE RD SOUTHBOUND					WESTBOUND					WAIALE RD NORTHBOUND					KAUPO ST EASTBOUND					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 15:30 to 17:15 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 16:00																					
16:00	0	173	8	0	181	0	0	0	0	0	11	**201**	0	0	**212**	6	0	8	2	16	**409**
16:15	0	155	5	0	160	0	0	0	0	0	11	191	0	0	202	**15**	0	9	0	24	386
16:30	0	168	2	0	170	0	0	0	0	0	9	174	0	0	183	8	0	10	**7**	**25**	378
16:45	0	**179**	**13**	0	**192**	0	0	0	0	0	**20**	171	0	0	191	8	0	**11**	3	22	405
Total Volume	0	675	28	0	703	0	0	0	0	0	51	737	0	0	788	37	0	38	12	87	1578
% App. Total	0	96	4	0		0	0	0	0		6.5	93.5	0	0		42.5	0	43.7	13.8		
PHF	.000	.943	.538	.000	.915	.000	.000	.000	.000	.000	.638	.917	.000	.000	.929	.617	.000	.864	.429	.870	.965



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Wailuku, Hawaii 96793
Phone: (808) 224-8044 Fax: (808) 242-9163

File Name : Waiale Rd - Kolokolo St
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Start Date : 4/4/2019
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Groups Printed- Motorcycles - Cars & Light Goods - Buses - Unit Trucks - Articulated Trucks - Bicycles on Road - Bicycles on Crosswalk - Pedestrians

	WAIALE RD SOUTHBOUND				WESTBOUND				WAIALE RD NORTHBOUND				KOKOLOLIO ST EASTBOUND				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
07:00	0	41	5	0	0	0	0	0	1	60	0	0	29	0	1	0	137
07:15	0	43	9	0	0	0	0	0	1	71	0	0	53	0	9	0	186
07:30	0	48	6	0	0	0	0	0	0	65	0	0	33	0	3	0	155
07:45	0	40	14	0	0	0	0	0	2	45	0	0	15	0	8	0	124
Total	0	172	34	0	0	0	0	0	4	241	0	0	130	0	21	0	602
08:00	0	50	14	0	0	0	0	0	3	25	0	0	5	0	1	0	98
08:15	0	29	5	0	0	0	0	0	1	27	0	0	5	0	2	0	69
08:30	0	24	5	0	0	0	0	0	1	33	0	0	8	0	0	0	71
08:45	0	19	5	0	0	0	0	0	1	22	0	0	9	0	2	0	58
Total	0	122	29	0	0	0	0	0	6	107	0	0	27	0	5	0	296
Grand Total	0	294	63	0	0	0	0	0	10	348	0	0	157	0	26	0	898
Apprch %	0	82.4	17.6	0	0	0	0	0	2.8	97.2	0	0	85.8	0	14.2	0	
Total %	0	32.7	7	0	0	0	0	0	1.1	38.8	0	0	17.5	0	2.9	0	
Motorcycles	0	2	0	0	0	0	0	0	0	0	0	0	1	0	0	0	3
% Motorcycles	0	0.7	0	0	0	0	0	0	0	0	0	0	0.6	0	0	0	0.3
Cars & Light Goods	0	282	63	0	0	0	0	0	10	332	0	0	155	0	25	0	867
% Cars & Light Goods	0	95.9	100	0	0	0	0	0	100	95.4	0	0	98.7	0	96.2	0	96.5
Buses	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
% Buses	0	0.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2
Single-Unit Trucks	0	5	0	0	0	0	0	0	0	10	0	0	1	0	1	0	17
% Single-Unit Trucks	0	1.7	0	0	0	0	0	0	0	2.9	0	0	0.6	0	3.8	0	1.9
Articulated Trucks	0	3	0	0	0	0	0	0	0	4	0	0	0	0	0	0	7
% Articulated Trucks	0	1	0	0	0	0	0	0	0	1.1	0	0	0	0	0	0	0.8
Bicycles on Road	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
% Bicycles on Road	0	0	0	0	0	0	0	0	0	0.6	0	0	0	0	0	0	0.2
Bicycles on Crosswalk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bicycles on Crosswalk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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1871 Wili Pa Loop, Suite A
Wailuku, Hawaii 96793
Phone: (808) 224-8044 Fax: (808) 242-9163

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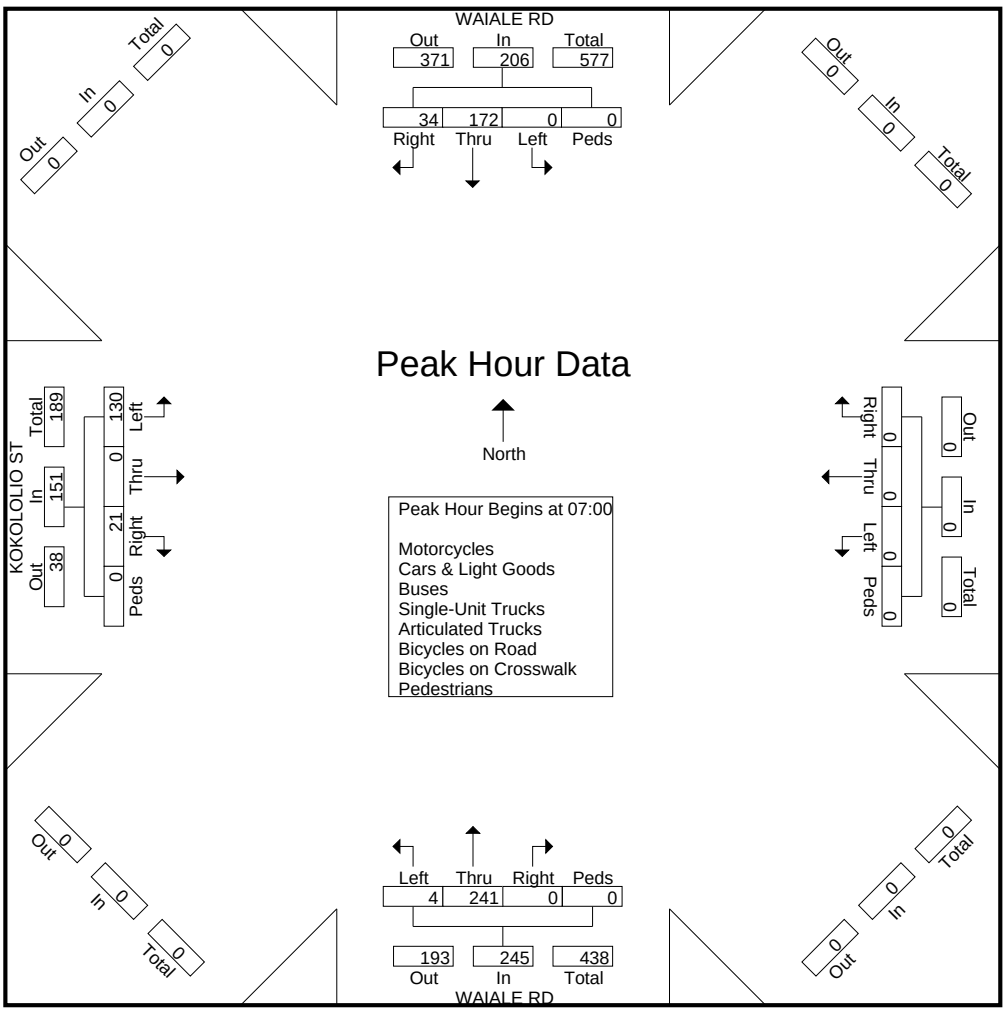
	WAIALE RD SOUTHBOUND					WESTBOUND					WAIALE RD NORTHBOUND					KOKOLOLIO ST EASTBOUND					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00																					
07:00	0	41	5	0	46	0	0	0	0	0	1	60	0	0	61	29	0	1	0	30	137
07:15	0	43	9	0	52	0	0	0	0	0	1	**71**	0	0	**72**	**53**	0	**9**	0	**62**	**186**
07:30	0	**48**	6	0	**54**	0	0	0	0	0	0	65	0	0	65	33	0	3	0	36	155
07:45	0	40	**14**	0	54	0	0	0	0	0	**2**	45	0	0	47	15	0	8	0	23	124
Total Volume	0	172	34	0	206	0	0	0	0	0	4	241	0	0	245	130	0	21	0	151	602
% App. Total	0	83.5	16.5	0		0	0	0	0		1.6	98.4	0	0		86.1	0	13.9	0		
PHF	.000	.896	.607	.000	.954	.000	.000	.000	.000	.000	.500	.849	.000	.000	.851	.613	.000	.583	.000	.609	.809



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Wailuku, Hawaii 96793
Phone: (808) 224-8044 Fax: (808) 242-9163

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Groups Printed- Motorcycles - Cars & Light Goods - Buses - Unit Trucks - Articulated Trucks - Bicycles on Road - Bicycles on Crosswalk - Pedestrians

	WAIALE RD SOUTHBOUND				WESTBOUND				WAIALE RD NORTHBOUND				KOKOLOLIO ST EASTBOUND				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
16:00	0	52	13	0	0	0	0	0	9	39	0	0	17	0	1	0	131
16:15	0	50	20	0	0	0	0	0	8	55	0	0	15	0	5	0	153
16:30	0	46	19	0	0	0	0	0	7	43	0	0	11	0	7	0	133
16:45	0	49	21	0	0	0	0	0	6	32	0	0	6	0	1	0	115
Total	0	197	73	0	0	0	0	0	30	169	0	0	49	0	14	0	532
17:00	0	48	19	0	0	0	0	0	5	27	0	0	9	0	4	0	112
17:15	0	54	14	0	0	0	0	0	4	33	0	1	18	0	3	0	127
17:30	0	37	14	0	0	0	0	0	8	29	0	0	7	0	0	0	95
17:45	0	33	13	0	0	0	0	0	7	15	0	0	0	0	2	0	70
Total	0	172	60	0	0	0	0	0	24	104	0	1	34	0	9	0	404
Grand Total	0	369	133	0	0	0	0	0	54	273	0	1	83	0	23	0	936
Apprch %	0	73.5	26.5	0	0	0	0	0	16.5	83.2	0	0.3	78.3	0	21.7	0	
Total %	0	39.4	14.2	0	0	0	0	0	5.8	29.2	0	0.1	8.9	0	2.5	0	
Motorcycles	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2
% Motorcycles	0	0.3	0	0	0	0	0	0	0	0.4	0	0	0	0	0	0	0.2
Cars & Light Goods	0	360	133	0	0	0	0	0	53	270	0	0	82	0	23	0	921
% Cars & Light Goods	0	97.6	100	0	0	0	0	0	98.1	98.9	0	0	98.8	0	100	0	98.4
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Single-Unit Trucks	0	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0	3
% Single-Unit Trucks	0	0.5	0	0	0	0	0	0	0	0.4	0	0	0	0	0	0	0.3
Articulated Trucks	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
% Articulated Trucks	0	1.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4
Bicycles on Road	0	2	0	0	0	0	0	0	1	1	0	0	1	0	0	0	5
% Bicycles on Road	0	0.5	0	0	0	0	0	0	1.9	0.4	0	0	1.2	0	0	0	0.5
Bicycles on Crosswalk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bicycles on Crosswalk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
% Pedestrians	0	0	0	0	0	0	0	0	0	0	0	100	0	0	0	0	0.1

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Wailuku, Hawaii 96793
Phone: (808) 224-8044 Fax: (808) 242-9163

File Name : Waiale Rd - Kolokolo St
Site Code : 19-508 PUUNANI HOMESTEADS
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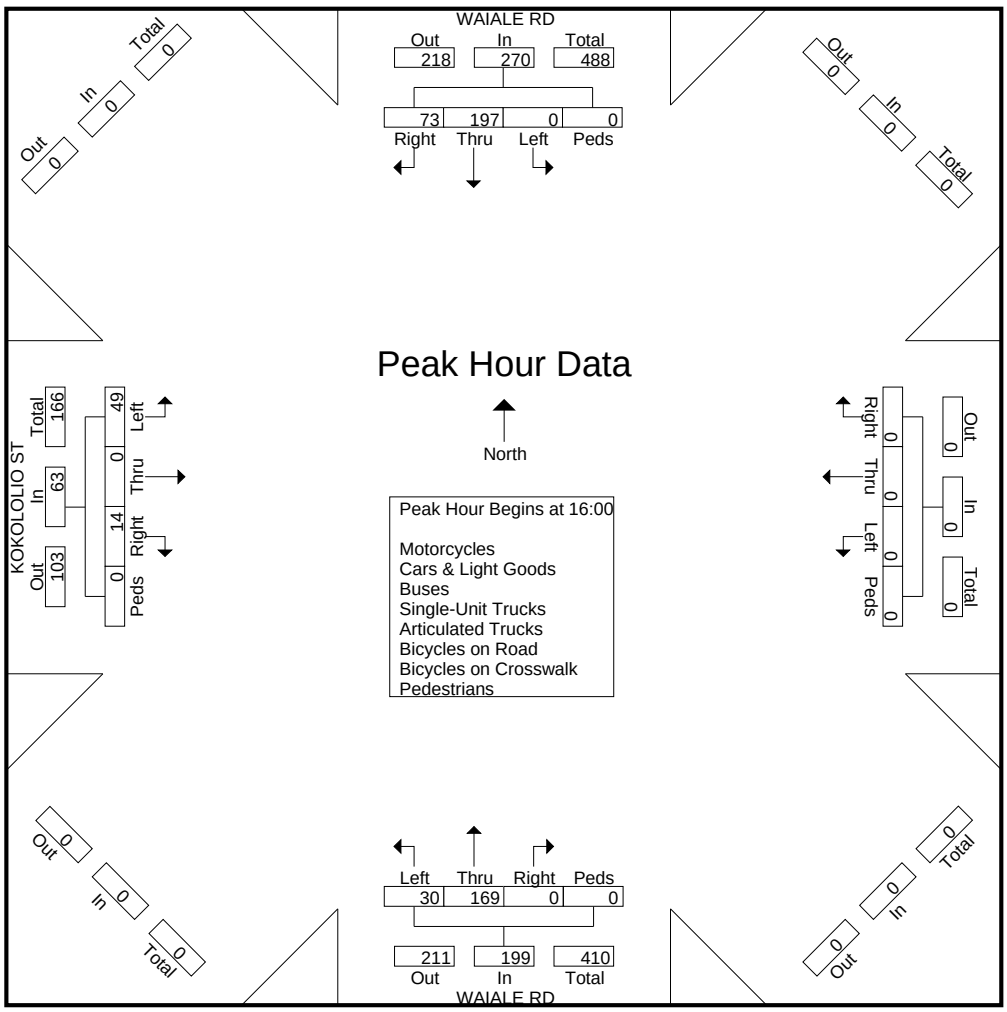
	WAIALE RD SOUTHBOUND					WESTBOUND					WAIALE RD NORTHBOUND					KOKOLOLIO ST EASTBOUND					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 16:00																					
16:00	0	**52**	13	0	65	0	0	0	0	0	**9**	39	0	0	48	**17**	0	1	0	18	131
16:15	0	50	20	0	**70**	0	0	0	0	0	8	**55**	0	0	**63**	15	0	5	0	**20**	**153**
16:30	0	46	19	0	65	0	0	0	0	0	7	43	0	0	50	11	0	**7**	0	18	133
16:45	0	49	**21**	0	70	0	0	0	0	0	6	32	0	0	38	6	0	1	0	7	115
Total Volume	0	197	73	0	270	0	0	0	0	0	30	169	0	0	199	49	0	14	0	63	532
% App. Total	0	73	27	0		0	0	0	0		15.1	84.9	0	0		77.8	0	22.2	0		
PHF	.000	.947	.869	.000	.964	.000	.000	.000	.000	.000	.833	.768	.000	.000	.790	.721	.000	.500	.000	.788	.869



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1871 Wili Pa Loop, Suite A
Wailuku, Hawaii 96793
Phone: (808) 224-8044 Fax: (808) 242-9163

File Name : Waiale Rd - Nokekula St
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Groups Printed- Motorcycles - Cars & Light Goods - Buses - Unit Trucks - Articulated Trucks - Bicycles on Road - Bicycles on Crosswalk - Pedestrians

	WAIALE RD SOUTHBOUND				WESTBOUND				WAIALE RD NORTHBOUND				NOKEKULA ST EASTBOUND				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
06:30	0	31	0	0	0	0	0	0	0	17	0	0	3	0	5	0	56
06:45	0	73	3	0	0	0	0	0	0	24	0	0	4	0	9	0	113
Total	0	104	3	0	0	0	0	0	0	41	0	0	7	0	14	0	169
07:00	0	49	1	0	0	0	0	0	1	30	0	0	10	0	6	0	97
07:15	0	72	0	0	0	0	0	0	2	32	0	0	13	0	5	0	124
07:30	0	60	2	0	0	0	0	0	1	42	0	0	7	0	3	0	115
07:45	0	50	2	0	0	0	0	0	0	41	0	0	1	0	2	0	96
Total	0	231	5	0	0	0	0	0	4	145	0	0	31	0	16	0	432
08:00	0	38	1	0	0	0	0	0	2	22	0	0	1	0	4	0	68
08:15	0	27	5	0	0	0	0	0	1	17	0	0	3	0	6	0	59
Grand Total	0	400	14	0	0	0	0	0	7	225	0	0	42	0	40	0	728
Apprch %	0	96.6	3.4	0	0	0	0	0	3	97	0	0	51.2	0	48.8	0	
Total %	0	54.9	1.9	0	0	0	0	0	1	30.9	0	0	5.8	0	5.5	0	
Motorcycles	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
% Motorcycles	0	0.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4
Cars & Light Goods	0	385	12	0	0	0	0	0	6	209	0	0	41	0	40	0	693
% Cars & Light Goods	0	96.2	85.7	0	0	0	0	0	85.7	92.9	0	0	97.6	0	100	0	95.2
Buses	0	2	2	0	0	0	0	0	1	2	0	0	0	0	0	0	7
% Buses	0	0.5	14.3	0	0	0	0	0	14.3	0.9	0	0	0	0	0	0	1
Single-Unit Trucks	0	7	0	0	0	0	0	0	0	10	0	0	1	0	0	0	18
% Single-Unit Trucks	0	1.8	0	0	0	0	0	0	0	4.4	0	0	2.4	0	0	0	2.5
Articulated Trucks	0	3	0	0	0	0	0	0	0	2	0	0	0	0	0	0	5
% Articulated Trucks	0	0.8	0	0	0	0	0	0	0	0.9	0	0	0	0	0	0	0.7
Bicycles on Road	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
% Bicycles on Road	0	0	0	0	0	0	0	0	0	0.9	0	0	0	0	0	0	0.3
Bicycles on Crosswalk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bicycles on Crosswalk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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1871 Wili Pa Loop, Suite A
Wailuku, Hawaii 96793
Phone: (808) 224-8044 Fax: (808) 242-9163

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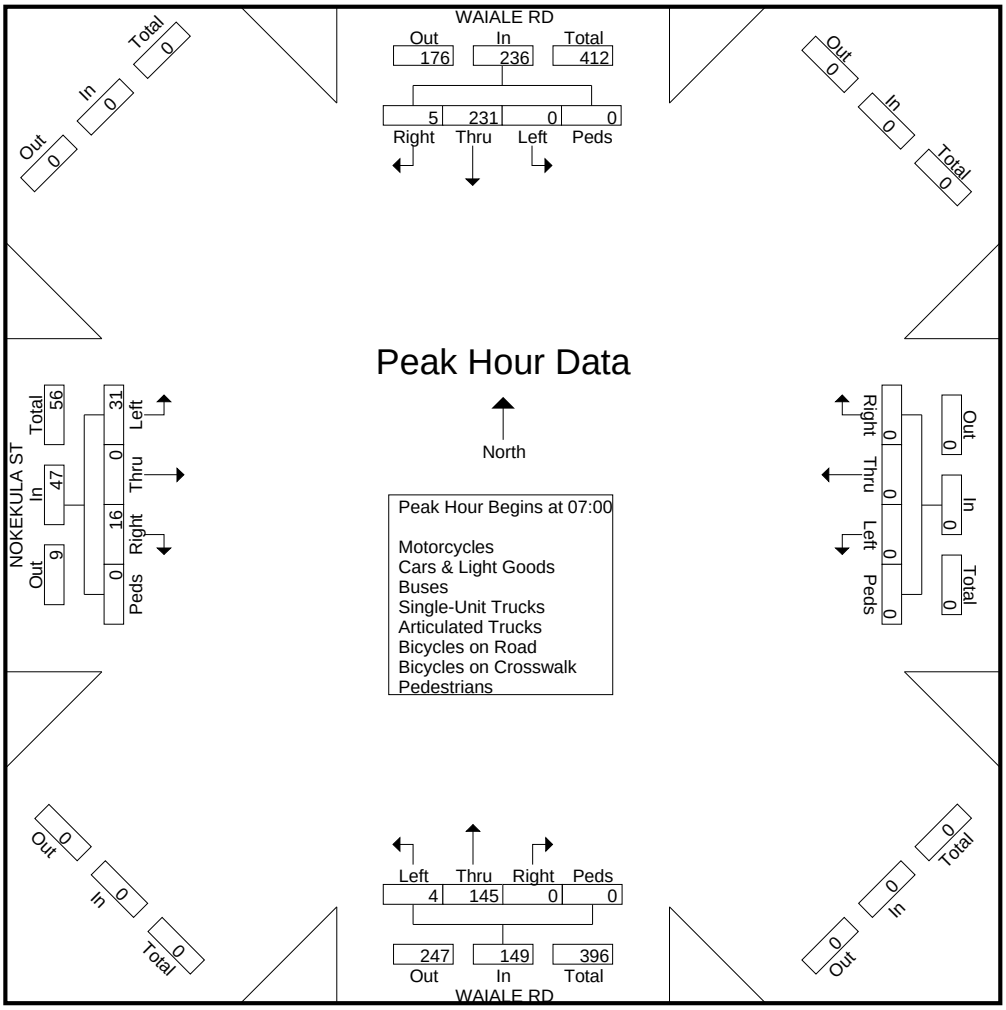
	WAIALE RD SOUTHBOUND					WESTBOUND					WAIALE RD NORTHBOUND					NOKEKULA ST EASTBOUND					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 07:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00																					
07:00	0	49	1	0	50	0	0	0	0	0	1	30	0	0	31	10	0	**6**	0	16	97
07:15	0	**72**	0	0	**72**	0	0	0	0	0	**2**	32	0	0	34	**13**	0	5	0	**18**	**124**
07:30	0	60	**2**	0	62	0	0	0	0	0	1	**42**	0	0	**43**	7	0	3	0	10	115
07:45	0	50	2	0	52	0	0	0	0	0	0	41	0	0	41	1	0	2	0	3	96
Total Volume	0	231	5	0	236	0	0	0	0	0	4	145	0	0	149	31	0	16	0	47	432
% App. Total	0	97.9	2.1	0		0	0	0	0		2.7	97.3	0	0		66	0	34	0		
PHF	.000	.802	.625	.000	.819	.000	.000	.000	.000	.000	.500	.863	.000	.000	.866	.596	.000	.667	.000	.653	.871



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1871 Wili Pa Loop, Suite A
Wailuku, Hawaii 96793
Phone: (808) 224-8044 Fax: (808) 242-9163

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Groups Printed- Motorcycles - Cars & Light Goods - Buses - Unit Trucks - Articulated Trucks - Bicycles on Road - Bicycles on Crosswalk - Pedestrians

	WAIALE RD SOUTHBOUND				WESTBOUND				WAIALE RD NORTHBOUND				NOKEKULA ST EASTBOUND				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
15:30	0	45	6	0	0	0	0	0	4	47	0	0	2	0	4	0	108
15:45	0	33	7	0	0	0	0	0	4	56	0	0	1	0	1	0	102
Total	0	78	13	0	0	0	0	0	8	103	0	0	3	0	5	0	210
16:00	0	36	4	0	0	0	0	0	5	52	0	0	1	0	3	2	103
16:15	0	52	2	0	0	0	0	0	4	51	0	0	6	0	7	0	122
16:30	0	41	6	0	0	0	0	0	2	44	0	0	2	0	4	0	99
16:45	0	39	2	0	0	0	0	0	5	47	0	0	1	0	3	0	97
Total	0	168	14	0	0	0	0	0	16	194	0	0	10	0	17	2	421
17:00	0	40	6	0	0	0	0	0	3	41	0	0	1	0	2	0	93
17:15	0	40	5	0	0	0	0	0	7	47	0	0	3	0	2	0	104
Grand Total	0	326	38	0	0	0	0	0	34	385	0	0	17	0	26	2	828
Apprch %	0	89.6	10.4	0	0	0	0	0	8.1	91.9	0	0	37.8	0	57.8	4.4	
Total %	0	39.4	4.6	0	0	0	0	0	4.1	46.5	0	0	2.1	0	3.1	0.2	
Motorcycles	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
% Motorcycles	0	0	0	0	0	0	0	0	0	0.3	0	0	0	0	0	0	0.1
Cars & Light Goods	0	318	38	0	0	0	0	0	34	379	0	0	17	0	26	0	812
% Cars & Light Goods	0	97.5	100	0	0	0	0	0	100	98.4	0	0	100	0	100	0	98.1
Buses	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
% Buses	0	0	0	0	0	0	0	0	0	0.3	0	0	0	0	0	0	0.1
Single-Unit Trucks	0	4	0	0	0	0	0	0	0	3	0	0	0	0	0	0	7
% Single-Unit Trucks	0	1.2	0	0	0	0	0	0	0	0.8	0	0	0	0	0	0	0.8
Articulated Trucks	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
% Articulated Trucks	0	0.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2
Bicycles on Road	0	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0	3
% Bicycles on Road	0	0.6	0	0	0	0	0	0	0	0.3	0	0	0	0	0	0	0.4
Bicycles on Crosswalk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bicycles on Crosswalk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2
% Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100	0.2

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1871 Wili Pa Loop, Suite A
Wailuku, Hawaii 96793
Phone: (808) 224-8044 Fax: (808) 242-9163

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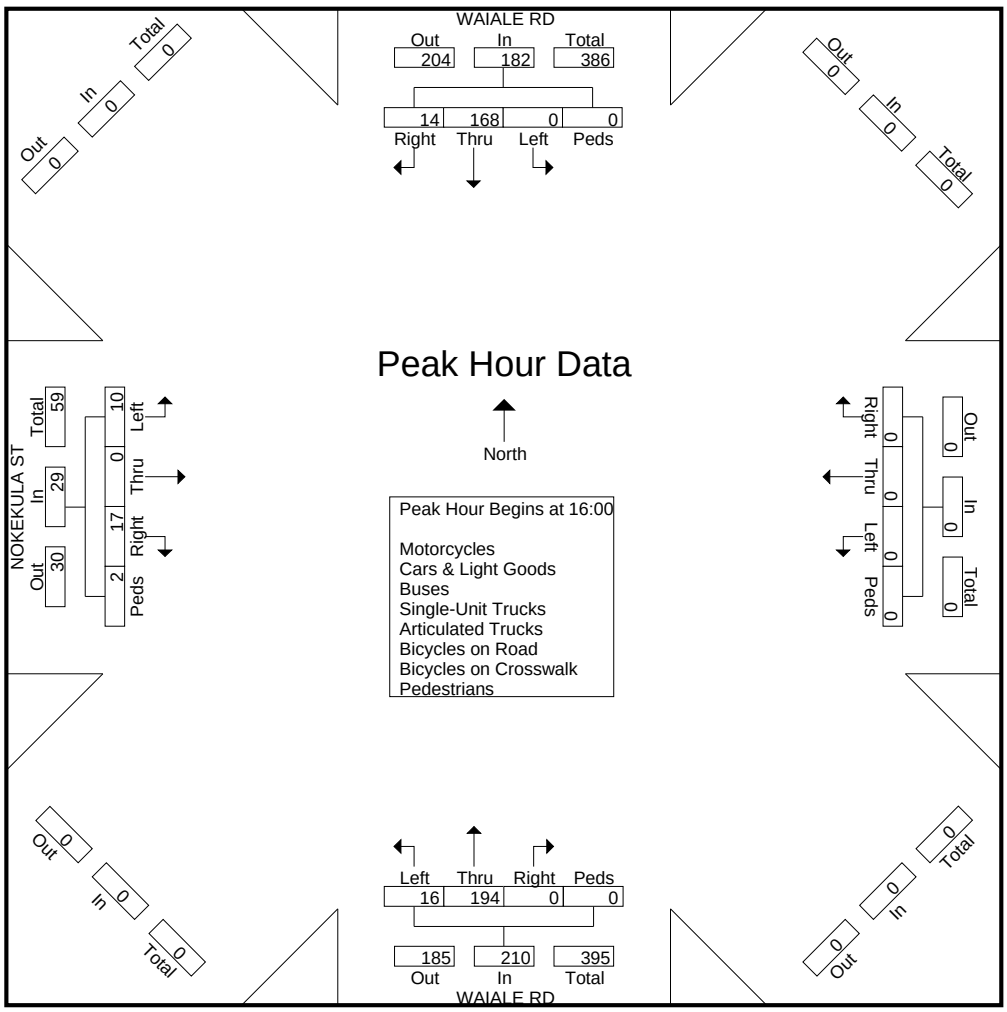
	WAIALE RD SOUTHBOUND					WESTBOUND					WAIALE RD NORTHBOUND					NOKEKULA ST EASTBOUND					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 16:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 16:00																					
16:00	0	36	4	0	40	0	0	0	0	0	**5**	**52**	0	0	**57**	1	0	3	**2**	6	103
16:15	0	**52**	2	0	**54**	0	0	0	0	0	4	51	0	0	55	**6**	0	**7**	0	**13**	**122**
16:30	0	41	**6**	0	47	0	0	0	0	0	2	44	0	0	46	2	0	4	0	6	99
16:45	0	39	2	0	41	0	0	0	0	0	5	47	0	0	52	1	0	3	0	4	97
Total Volume	0	168	14	0	182	0	0	0	0	0	16	194	0	0	210	10	0	17	2	29	421
% App. Total	0	92.3	7.7	0		0	0	0	0		7.6	92.4	0	0		34.5	0	58.6	6.9		
PHF	.000	.808	.583	.000	.843	.000	.000	.000	.000	.000	.800	.933	.000	.000	.921	.417	.000	.607	.250	.558	.863



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1871 Wili Pa Loop, Suite A
Wailuku, Hawaii 96793
Phone: (808) 224-8044 Fax: (808) 242-9163

File Name : Waiale Rd - Ohana Hana Lp
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Groups Printed- Motorcycles - Cars & Light Goods - Buses - Unit Trucks - Articulated Trucks - Bicycles on Road - Bicycles on Crosswalk - Pedestrians

	WAIALE RD SOUTHBOUND				WESTBOUND				WAIALE RD NORTHBOUND				OHANA HANA LOOP EASTBOUND				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
06:30	0	31	0	0	0	0	0	0	1	14	0	0	1	0	3	0	50
06:45	0	74	0	0	0	0	0	0	1	19	0	0	4	0	4	0	102
Total	0	105	0	0	0	0	0	0	2	33	0	0	5	0	7	0	152
07:00	0	58	4	0	0	0	0	0	1	18	0	0	11	0	4	0	96
07:15	0	74	2	0	0	0	0	0	0	29	0	0	6	0	8	0	119
07:30	0	62	3	0	0	0	0	0	0	33	0	0	8	0	5	0	111
07:45	0	45	3	0	0	0	0	0	4	39	0	0	3	0	5	0	99
Total	0	239	12	0	0	0	0	0	5	119	0	0	28	0	22	0	425
08:00	0	44	1	0	0	0	0	0	0	19	0	0	4	0	2	0	70
08:15	0	30	2	0	0	0	0	0	0	17	0	0	1	0	5	0	55
Grand Total	0	418	15	0	0	0	0	0	7	188	0	0	38	0	36	0	702
Apprch %	0	96.5	3.5	0	0	0	0	0	3.6	96.4	0	0	51.4	0	48.6	0	
Total %	0	59.5	2.1	0	0	0	0	0	1	26.8	0	0	5.4	0	5.1	0	
Motorcycles	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
% Motorcycles	0	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1
Cars & Light Goods	0	405	15	0	0	0	0	0	7	176	0	0	38	0	36	0	677
% Cars & Light Goods	0	96.9	100	0	0	0	0	0	100	93.6	0	0	100	0	100	0	96.4
Buses	0	1	0	0	0	0	0	0	0	2	0	0	0	0	0	0	3
% Buses	0	0.2	0	0	0	0	0	0	0	1.1	0	0	0	0	0	0	0.4
Single-Unit Trucks	0	6	0	0	0	0	0	0	0	9	0	0	0	0	0	0	15
% Single-Unit Trucks	0	1.4	0	0	0	0	0	0	0	4.8	0	0	0	0	0	0	2.1
Articulated Trucks	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
% Articulated Trucks	0	1.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.7
Bicycles on Road	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
% Bicycles on Road	0	0	0	0	0	0	0	0	0	0.5	0	0	0	0	0	0	0.1
Bicycles on Crosswalk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bicycles on Crosswalk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Austin Tsutsumi & Associates

1871 Wili Pa Loop, Suite A
Wailuku, Hawaii 96793
Phone: (808) 224-8044 Fax: (808) 242-9163

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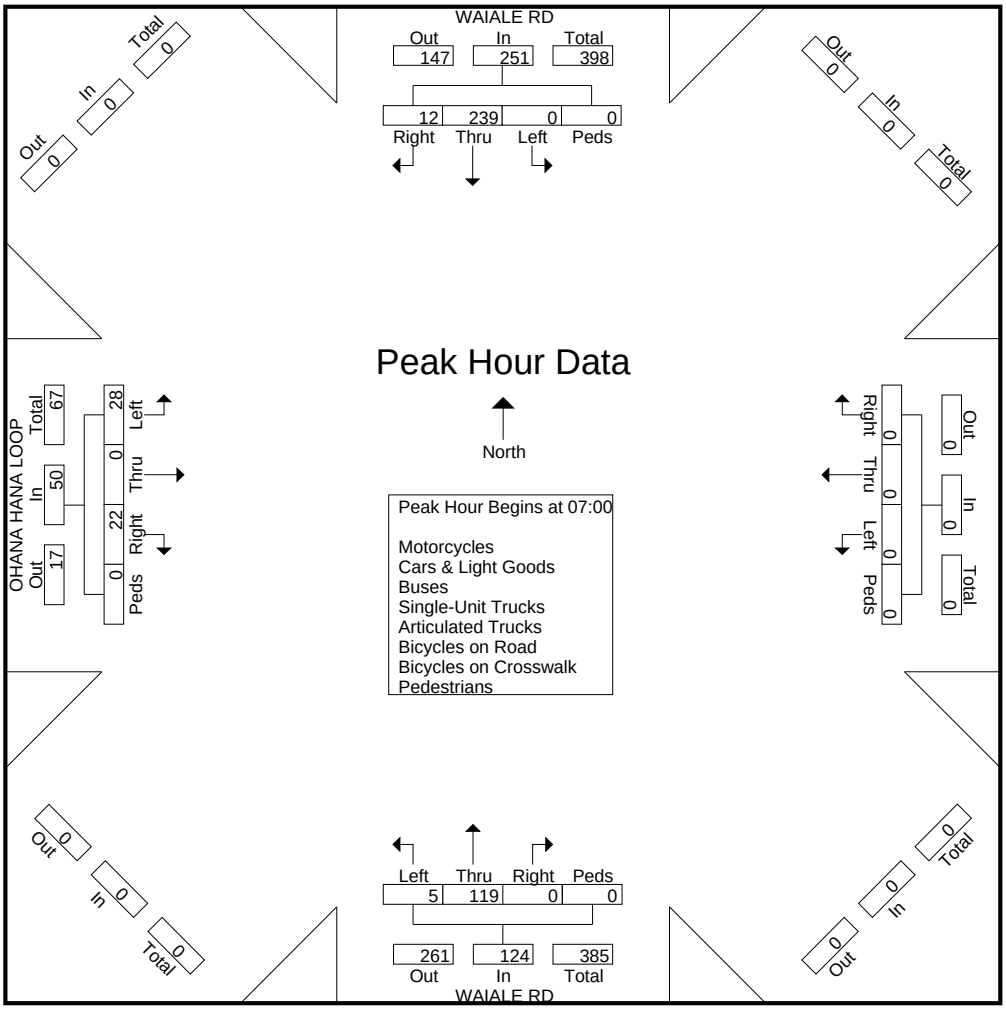
	WAIALE RD SOUTHBOUND					WESTBOUND					WAIALE RD NORTHBOUND					OHANA HANA LOOP EASTBOUND					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 07:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00																					
07:00	0	58	**4**	0	62	0	0	0	0	0	1	18	0	0	19	**11**	0	4	0	**15**	96
07:15	0	**74**	2	0	**76**	0	0	0	0	0	0	29	0	0	29	6	0	**8**	0	14	**119**
07:30	0	62	3	0	65	0	0	0	0	0	0	33	0	0	33	8	0	5	0	13	111
07:45	0	45	3	0	48	0	0	0	0	0	**4**	**39**	0	0	**43**	3	0	5	0	8	99
Total Volume	0	239	12	0	251	0	0	0	0	0	5	119	0	0	124	28	0	22	0	50	425
% App. Total	0	95.2	4.8	0		0	0	0	0		4	96	0	0		56	0	44	0		
PHF	.000	.807	.750	.000	.826	.000	.000	.000	.000	.000	.313	.763	.000	.000	.721	.636	.000	.688	.000	.833	.893



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1871 Wili Pa Loop, Suite A
Wailuku, Hawaii 96793
Phone: (808) 224-8044 Fax: (808) 242-9163

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Groups Printed- Motorcycles - Cars & Light Goods - Buses - Unit Trucks - Articulated Trucks - Bicycles on Road - Bicycles on Crosswalk - Pedestrians

	WAIALE RD SOUTHBOUND				WESTBOUND				WAIALE RD NORTHBOUND				OHANA HANA LOOP EASTBOUND				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
15:30	0	40	3	0	0	0	0	0	2	51	0	0	3	0	0	1	100
15:45	0	32	2	0	0	0	0	0	4	58	0	0	3	0	1	0	100
Total	0	72	5	0	0	0	0	0	6	109	0	0	6	0	1	1	200
16:00	0	39	2	0	0	0	0	0	6	55	0	0	1	0	2	0	105
16:15	0	49	5	0	0	0	0	0	5	53	0	0	4	0	4	0	120
16:30	0	35	5	0	0	0	0	0	2	46	0	0	3	0	1	0	92
16:45	0	38	4	0	0	0	0	0	1	42	0	0	3	0	1	0	89
Total	0	161	16	0	0	0	0	0	14	196	0	0	11	0	8	0	406
17:00	0	41	3	0	0	0	0	0	2	49	0	0	0	0	1	0	96
17:15	0	39	3	0	0	0	0	0	2	44	0	0	6	0	0	0	94
Grand Total	0	313	27	0	0	0	0	0	24	398	0	0	23	0	10	1	796
Apprch %	0	92.1	7.9	0	0	0	0	0	5.7	94.3	0	0	67.6	0	29.4	2.9	
Total %	0	39.3	3.4	0	0	0	0	0	3	50	0	0	2.9	0	1.3	0.1	
Motorcycles	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
% Motorcycles	0	0	0	0	0	0	0	0	0	0.3	0	0	0	0	0	0	0.1
Cars & Light Goods	0	306	26	0	0	0	0	0	24	394	0	0	23	0	10	0	783
% Cars & Light Goods	0	97.8	96.3	0	0	0	0	0	100	99	0	0	100	0	100	0	98.4
Buses	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
% Buses	0	0.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1
Single-Unit Trucks	0	3	0	0	0	0	0	0	0	3	0	0	0	0	0	0	6
% Single-Unit Trucks	0	1	0	0	0	0	0	0	0	0.8	0	0	0	0	0	0	0.8
Articulated Trucks	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
% Articulated Trucks	0	0.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3
Bicycles on Road	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2
% Bicycles on Road	0	0.3	3.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3
Bicycles on Crosswalk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bicycles on Crosswalk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
% Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100	0.1

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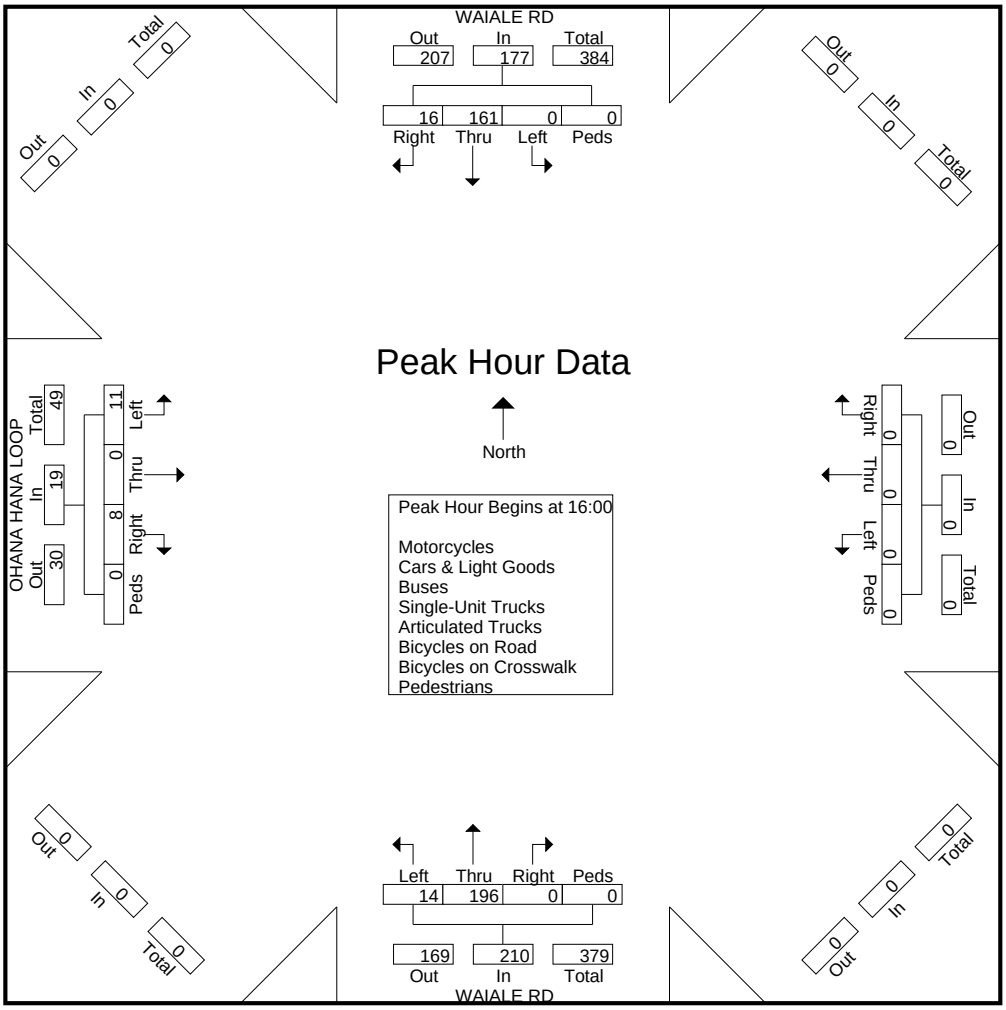
	WAIALE RD SOUTHBOUND					WESTBOUND					WAIALE RD NORTHBOUND					OHANA HANA LOOP EASTBOUND					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 16:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 16:00																					
16:00	0	39	2	0	41	0	0	0	0	0	**6**	**55**	0	0	**61**	1	0	2	0	3	105
16:15	0	**49**	**5**	0	**54**	0	0	0	0	0	5	53	0	0	58	**4**	0	**4**	0	**8**	**120**
16:30	0	35	5	0	40	0	0	0	0	0	2	46	0	0	48	3	0	1	0	4	92
16:45	0	38	4	0	42	0	0	0	0	0	1	42	0	0	43	3	0	1	0	4	89
Total Volume	0	161	16	0	177	0	0	0	0	0	14	196	0	0	210	11	0	8	0	19	406
% App. Total	0	91	9	0		0	0	0	0		6.7	93.3	0	0		57.9	0	42.1	0		
PHF	.000	.821	.800	.000	.819	.000	.000	.000	.000	.000	.583	.891	.000	.000	.861	.688	.000	.500	.000	.594	.846



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1871 Wili Pa Loop, Suite A
Wailuku, Hawaii 96793
Phone: (808) 224-8044 Fax: (808) 242-9163

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Groups Printed- Motorcycles - Cars & Light Goods - Buses - Unit Trucks - Articulated Trucks - Bicycles on Road - Bicycles on Crosswalk - Pedestrians

	WAIALE RD SOUTHBOUND				WAIKO RD WESTBOUND				NORTHBOUND				WAIKO RD EASTBOUND				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
06:30	28	0	9	0	0	12	10	0	0	0	0	0	5	22	0	0	86
06:45	66	0	22	0	0	10	7	0	0	0	0	0	11	24	0	0	140
Total	94	0	31	0	0	22	17	0	0	0	0	0	16	46	0	0	226
07:00	37	0	15	0	0	11	14	0	0	0	0	0	9	45	0	0	131
07:15	56	0	26	0	0	12	20	0	0	0	0	0	11	55	0	0	180
07:30	51	0	13	0	0	17	20	0	0	0	0	0	18	56	0	0	175
07:45	39	0	14	0	0	18	24	0	0	0	0	0	15	43	0	0	153
Total	183	0	68	0	0	58	78	0	0	0	0	0	53	199	0	0	639
08:00	20	0	23	0	0	11	13	0	0	0	0	0	4	17	0	0	88
08:15	22	0	14	0	0	18	14	0	0	0	0	0	6	15	0	0	89
Grand Total	319	0	136	0	0	109	122	0	0	0	0	0	79	277	0	0	1042
Apprch %	70.1	0	29.9	0	0	47.2	52.8	0	0	0	0	0	22.2	77.8	0	0	
Total %	30.6	0	13.1	0	0	10.5	11.7	0	0	0	0	0	7.6	26.6	0	0	
Motorcycles	2	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	4
% Motorcycles	0.6	0	0.7	0	0	0.9	0	0	0	0	0	0	0	0	0	0	0.4
Cars & Light Goods	304	0	134	0	0	106	109	0	0	0	0	0	76	273	0	0	1002
% Cars & Light Goods	95.3	0	98.5	0	0	97.2	89.3	0	0	0	0	0	96.2	98.6	0	0	96.2
Buses	2	0	0	0	0	1	0	0	0	0	0	0	2	2	0	0	7
% Buses	0.6	0	0	0	0	0.9	0	0	0	0	0	0	2.5	0.7	0	0	0.7
Single-Unit Trucks	7	0	1	0	0	1	12	0	0	0	0	0	0	2	0	0	23
% Single-Unit Trucks	2.2	0	0.7	0	0	0.9	9.8	0	0	0	0	0	0	0.7	0	0	2.2
Articulated Trucks	4	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	5
% Articulated Trucks	1.3	0	0	0	0	0	0.8	0	0	0	0	0	0	0	0	0	0.5
Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
% Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	1.3	0	0	0	0.1
Bicycles on Crosswalk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bicycles on Crosswalk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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1871 Wili Pa Loop, Suite A
Wailuku, Hawaii 96793
Phone: (808) 224-8044 Fax: (808) 242-9163

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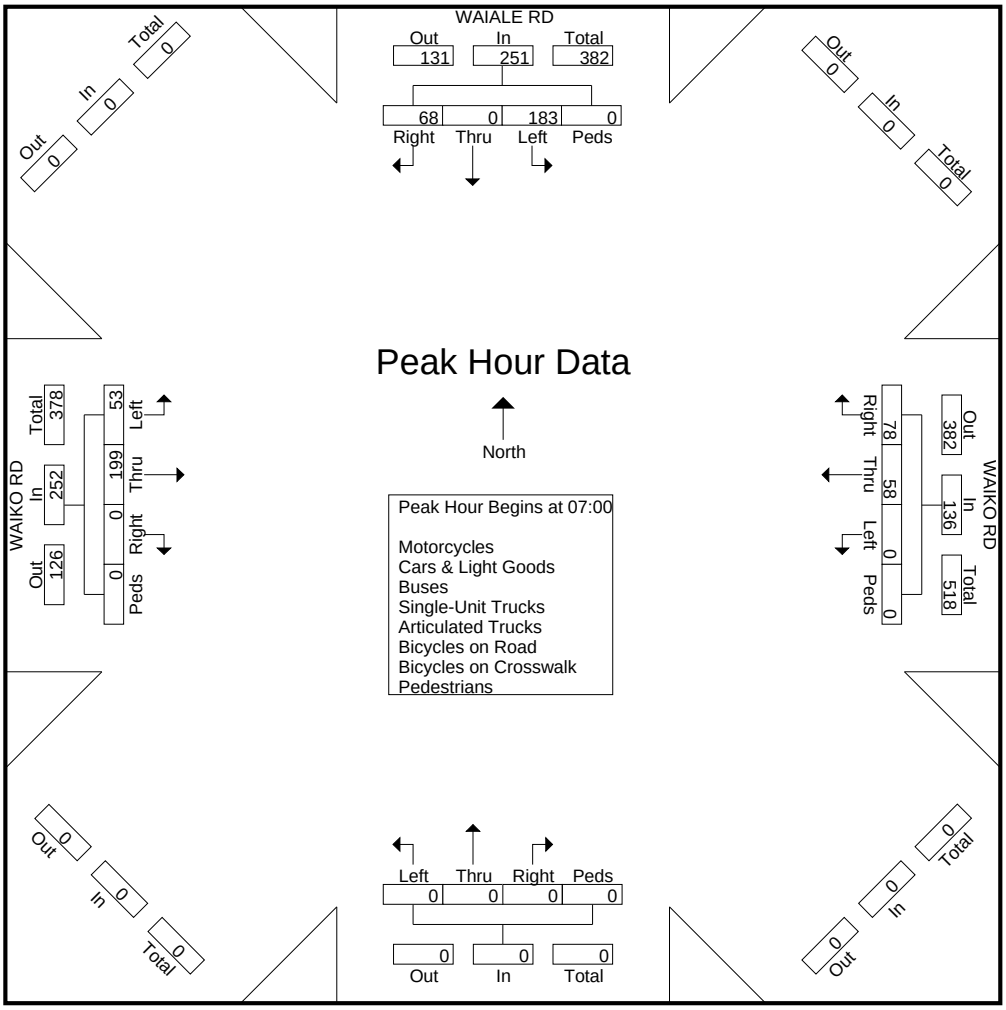
	WAIALE RD SOUTHBOUND					WAIKO RD WESTBOUND					NORTHBOUND					WAIKO RD EASTBOUND					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 06:30 to 08:15 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00																					
07:00	37	0	15	0	52	0	11	14	0	25	0	0	0	0	0	9	45	0	0	54	131
07:15	**56**	0	**26**	0	**82**	0	12	20	0	32	0	0	0	0	0	11	55	0	0	66	**180**
07:30	51	0	13	0	64	0	17	20	0	37	0	0	0	0	0	**18**	**56**	0	0	**74**	175
07:45	39	0	14	0	53	0	**18**	**24**	0	**42**	0	0	0	0	0	15	43	0	0	58	153
Total Volume	183	0	68	0	251	0	58	78	0	136	0	0	0	0	0	53	199	0	0	252	639
% App. Total	72.9	0	27.1	0		0	42.6	57.4	0		0	0	0	0		21	79	0	0		
PHF	.817	.000	.654	.000	.765	.000	.806	.813	.000	.810	.000	.000	.000	.000	.000	.736	.888	.000	.000	.851	.888



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1871 Wili Pa Loop, Suite A
Wailuku, Hawaii 96793
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Groups Printed- Motorcycles - Cars & Light Goods - Buses - Unit Trucks - Articulated Trucks - Bicycles on Road - Bicycles on Crosswalk - Pedestrians

	WAIALE RD SOUTHBOUND				WAIKO RD WESTBOUND				NORTHBOUND				WAIKO RD EASTBOUND				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
15:30	34	0	12	0	0	24	40	0	0	0	0	0	14	19	0	0	143
15:45	24	0	7	0	0	24	47	0	0	0	0	0	15	21	0	0	138
Total	58	0	19	0	0	48	87	0	0	0	0	0	29	40	0	0	281
16:00	34	0	8	0	0	35	50	0	0	0	0	0	13	15	0	0	155
16:15	45	0	12	0	0	25	40	0	0	0	0	0	15	21	0	0	158
16:30	31	0	6	0	0	25	39	0	0	0	0	0	7	22	0	0	130
16:45	30	0	9	0	0	21	39	0	0	0	0	0	7	22	0	0	128
Total	140	0	35	0	0	106	168	0	0	0	0	0	42	80	0	0	571
17:00	30	0	13	0	0	25	32	0	0	0	0	0	15	17	0	0	132
17:15	25	0	12	0	0	19	30	0	0	0	0	0	16	21	0	0	123
Grand Total	253	0	79	0	0	198	317	0	0	0	0	0	102	158	0	0	1107
Apprch %	76.2	0	23.8	0	0	38.4	61.6	0	0	0	0	0	39.2	60.8	0	0	
Total %	22.9	0	7.1	0	0	17.9	28.6	0	0	0	0	0	9.2	14.3	0	0	
Motorcycles	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	2
% Motorcycles	0	0	0	0	0	0.5	0.3	0	0	0	0	0	0	0	0	0	0.2
Cars & Light Goods	247	0	79	0	0	196	315	0	0	0	0	0	101	157	0	0	1095
% Cars & Light Goods	97.6	0	100	0	0	99	99.4	0	0	0	0	0	99	99.4	0	0	98.9
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Single-Unit Trucks	4	0	0	0	0	1	1	0	0	0	0	0	1	1	0	0	8
% Single-Unit Trucks	1.6	0	0	0	0	0.5	0.3	0	0	0	0	0	1	0.6	0	0	0.7
Articulated Trucks	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
% Articulated Trucks	0.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2
Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswalk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bicycles on Crosswalk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Austin Tsutsumi & Associates

1871 Wili Pa Loop, Suite A
Wailuku, Hawaii 96793
Phone: (808) 224-8044 Fax: (808) 242-9163

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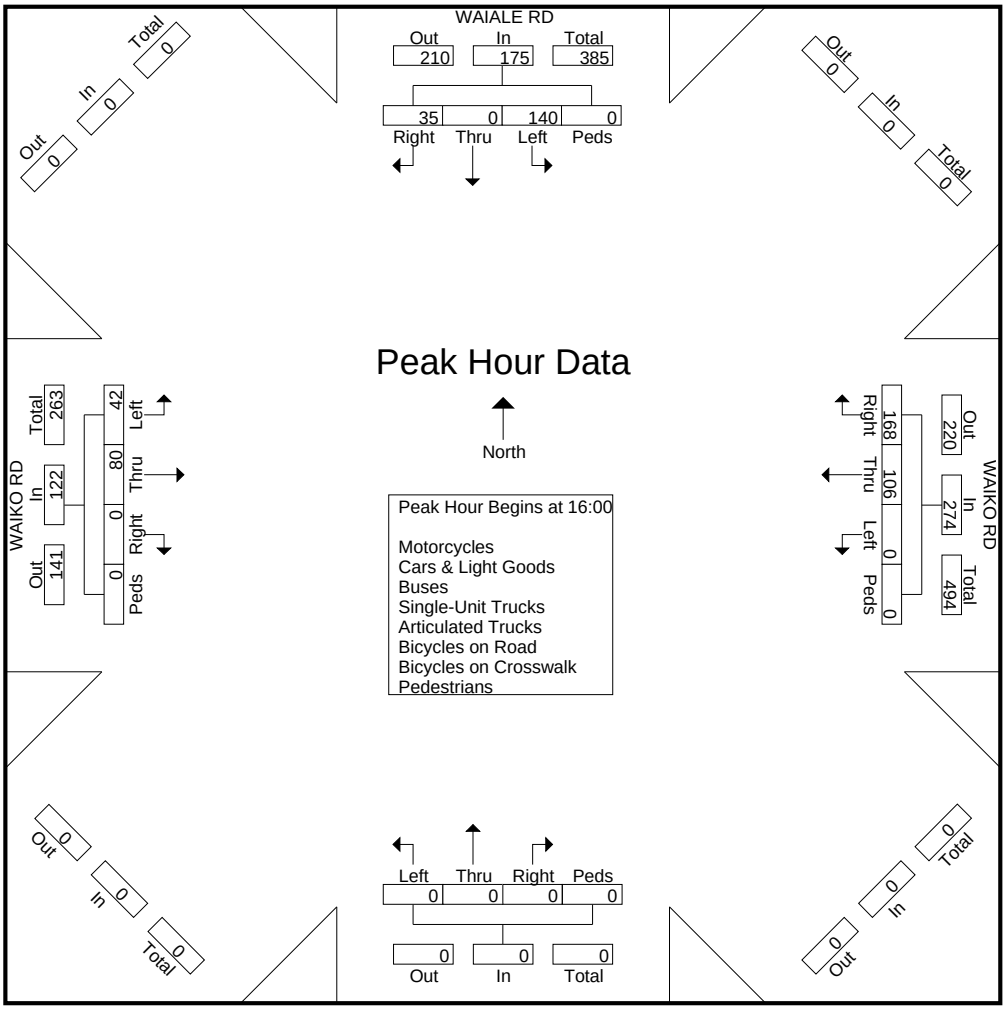
	WAIALE RD SOUTHBOUND					WAIKO RD WESTBOUND					NORTHBOUND					WAIKO RD EASTBOUND					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 16:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 16:00																					
16:00	34	0	8	0	42	0	**35**	**50**	0	**85**	0	0	0	0	0	13	15	0	0	28	155
16:15	**45**	0	**12**	0	**57**	0	25	40	0	65	0	0	0	0	0	**15**	21	0	0	**36**	**158**
16:30	31	0	6	0	37	0	25	39	0	64	0	0	0	0	0	7	**22**	0	0	29	130
16:45	30	0	9	0	39	0	21	39	0	60	0	0	0	0	0	7	22	0	0	29	128
Total Volume	140	0	35	0	175	0	106	168	0	274	0	0	0	0	0	42	80	0	0	122	571
% App. Total	80	0	20	0		0	38.7	61.3	0		0	0	0	0		34.4	65.6	0	0		
PHF	.778	.000	.729	.000	.768	.000	.757	.840	.000	.806	.000	.000	.000	.000	.000	.700	.909	.000	.000	.847	.903



APPENDIX B

LEVEL OF SERVICE CRITERIA

APPENDIX B – LEVEL OF SERVICE (LOS) CRITERIA

VEHICULAR LEVEL OF SERVICE FOR SIGNALIZED INTERSECTIONS (HCM 6th EDITION)

Level of service for vehicles at signalized intersections is directly related to delay values and is assigned on that basis. Level of Service is a measure of the acceptability of delay values to motorists at a given intersection. The criteria are given in the table below.

Level-of Service Criteria for Signalized Intersections

Level of Service	Control Delay per Vehicle (sec./veh.)
A	< 10.0
B	>10.0 and ≤ 20.0
C	>20.0 and ≤ 35.0
D	>35.0 and ≤ 55.0
E	>55.0 and ≤ 80.0
F	> 80.0

Delay is a complex measure, and is dependent on a number of variables, including the quality of progression, the cycle length, the green ratio, and the v/c ratio for the lane group or approach in question.

VEHICULAR LEVEL OF SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS (HCM 6th EDITION)

The level of service criteria for vehicles at unsignalized intersections is defined as the average control delay, in seconds per vehicle.

LOS delay threshold values are lower for two-way stop-controlled (TWSC) and all-way stop-controlled (AWSC) intersections than those of signalized intersections. This is because more vehicles pass through signalized intersections, and therefore, drivers expect and tolerate greater delays. While the criteria for level of service for TWSC and AWSC intersections are the same, procedures to calculate the average total delay may differ.

Level of Service Criteria for Two-Way Stop-Controlled Intersections

Level of Service	Average Control Delay (sec/veh)
A	≤ 10
B	>10 and ≤15
C	>15 and ≤25
D	>25 and ≤35
E	>35 and ≤50
F	> 50

APPENDIX C

LEVEL OF SERVICE CALCULATIONS

APPENDIX C

LEVEL OF SERVICE CALCULATIONS

- Existing AM Peak

Intersection	
Intersection Delay, s/veh	55.8
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	82	3	124	15	15	9	145	346	6	2	437	104
Future Vol, veh/h	82	3	124	15	15	9	145	346	6	2	437	104
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	89	3	135	16	16	10	158	376	7	2	475	113
Number of Lanes	1	1	0	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	2
HCM Control Delay	13	12.9	54.2	76.9
HCM LOS	B	B	F	F

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	30%	0%	100%	0%	38%	0%
Vol Thru, %	70%	0%	0%	2%	38%	80%
Vol Right, %	0%	100%	0%	98%	23%	19%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	491	6	82	127	39	543
LT Vol	145	0	82	0	15	2
Through Vol	346	0	0	3	15	437
RT Vol	0	6	0	124	9	104
Lane Flow Rate	534	7	89	138	42	590
Geometry Grp	7	7	7	7	6	6
Degree of Util (X)	0.96	0.01	0.204	0.271	0.1	1.049
Departure Headway (Hd)	6.664	5.798	8.533	7.309	8.881	6.397
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	550	621	423	494	406	567
Service Time	4.364	3.498	6.233	5.009	6.881	4.471
HCM Lane V/C Ratio	0.971	0.011	0.21	0.279	0.103	1.041
HCM Control Delay	54.8	8.6	13.4	12.7	12.9	76.9
HCM Lane LOS	F	A	B	B	B	F
HCM 95th-tile Q	12.7	0	0.8	1.1	0.3	16.6

Intersection	
Int Delay, s/veh	54.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	184	51	456	607	67	555
Future Vol, veh/h	184	51	456	607	67	555
Conflicting Peds, #/hr	0	0	0	2	2	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	145	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	200	55	496	660	73	603

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1577	828	0	0	1158	0
Stage 1	828	-	-	-	-	-
Stage 2	749	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	~ 121	371	-	-	603	-
Stage 1	429	-	-	-	-	-
Stage 2	467	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 99	370	-	-	602	-
Mov Cap-2 Maneuver	~ 99	-	-	-	-	-
Stage 1	428	-	-	-	-	-
Stage 2	382	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	$ 444.9	0	1.3
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	99	370	602	-
HCM Lane V/C Ratio	-	-	2.02	0.15	0.121	-
HCM Control Delay (s)	-	-	$ 563.7	16.4	11.8	0
HCM Lane LOS	-	-	F	C	B	A
HCM 95th %tile Q(veh)	-	-	17	0.5	0.4	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	77.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	159	0	32	8	0	16	7	900	7	11	532	166
Future Vol, veh/h	159	0	32	8	0	16	7	900	7	11	532	166
Conflicting Peds, #/hr	0	0	0	0	0	0	3	0	3	3	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	173	0	35	9	0	17	8	978	8	12	578	180

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1702	1700	671	1711	1786	985	761	0	0	989	0	0
Stage 1	695	695	-	1001	1001	-	-	-	-	-	-	-
Stage 2	1007	1005	-	710	785	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	~ 72	92	456	71	81	301	851	-	-	699	-	-
Stage 1	433	444	-	293	321	-	-	-	-	-	-	-
Stage 2	290	319	-	424	404	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 65	87	455	63	76	300	849	-	-	697	-	-
Mov Cap-2 Maneuver	~ 65	87	-	63	76	-	-	-	-	-	-	-
Stage 1	423	429	-	286	313	-	-	-	-	-	-	-
Stage 2	267	311	-	379	390	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 740.7	38.6	0.1	0.2
HCM LOS	F	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	849	-	-	65	455	133	697	-	-
HCM Lane V/C Ratio	0.009	-	-	2.659	0.076	0.196	0.017	-	-
HCM Control Delay (s)	9.3	0	-	$ 887	13.6	38.6	10.3	-	-
HCM Lane LOS	A	A	-	F	B	E	B	-	-
HCM 95th %tile Q(veh)	0	-	-	17.2	0.2	0.7	0.1	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	16.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	119	62	40	820	523	21
Future Vol, veh/h	119	62	40	820	523	21
Conflicting Peds, #/hr	0	0	3	0	0	3
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	125	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	129	67	43	891	568	23

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1560	583	594	0	-	0
Stage 1	583	-	-	-	-	-
Stage 2	977	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	~ 123	512	982	-	-	-
Stage 1	558	-	-	-	-	-
Stage 2	365	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 112	511	979	-	-	-
Mov Cap-2 Maneuver	~ 112	-	-	-	-	-
Stage 1	508	-	-	-	-	-
Stage 2	364	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	139.9	0.4	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	979	-	112	511	-	-
HCM Lane V/C Ratio	0.044	-	1.155	0.132	-	-
HCM Control Delay (s)	8.8	0	205.9	13.1	-	-
HCM Lane LOS	A	A	F	B	-	-
HCM 95th %tile Q(veh)	0.1	-	8.1	0.5	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	307	282	56	32	196	193	135	158	37	171	149	170
Future Volume (veh/h)	307	282	56	32	196	193	135	158	37	171	149	170
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	0.99		0.99	0.99		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	384	307	53	35	213	27	147	172	31	186	162	143
Peak Hour Factor	0.80	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	550	535	92	329	304	256	334	314	57	431	204	180
Arrive On Green	0.21	0.34	0.34	0.03	0.16	0.16	0.09	0.20	0.20	0.11	0.22	0.22
Sat Flow, veh/h	1781	1553	268	1781	1870	1575	1781	1538	277	1781	910	803
Grp Volume(v), veh/h	384	0	360	35	213	27	147	0	203	186	0	305
Grp Sat Flow(s),veh/h/ln	1781	0	1821	1781	1870	1575	1781	0	1816	1781	0	1713
Q Serve(g_s), s	10.5	0.0	10.4	1.0	6.9	0.9	4.1	0.0	6.4	5.1	0.0	10.8
Cycle Q Clear(g_c), s	10.5	0.0	10.4	1.0	6.9	0.9	4.1	0.0	6.4	5.1	0.0	10.8
Prop In Lane	1.00		0.15	1.00		1.00	1.00		0.15	1.00		0.47
Lane Grp Cap(c), veh/h	550	0	627	329	304	256	334	0	370	431	0	384
V/C Ratio(X)	0.70	0.00	0.57	0.11	0.70	0.11	0.44	0.00	0.55	0.43	0.00	0.79
Avail Cap(c_a), veh/h	897	0	1108	583	700	590	533	0	623	595	0	588
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.4	0.0	17.2	21.4	25.4	22.9	18.2	0.0	22.9	17.2	0.0	23.5
Incr Delay (d2), s/veh	1.6	0.0	0.8	0.1	2.9	0.2	0.9	0.0	1.3	0.7	0.0	4.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	0.0	4.2	0.4	3.2	0.3	1.7	0.0	2.8	2.1	0.0	4.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.0	0.0	18.0	21.5	28.3	23.1	19.1	0.0	24.1	17.9	0.0	27.7
LnGrp LOS	B	A	B	C	C	C	B	A	C	B	A	C
Approach Vol, veh/h		744			275			350			491	
Approach Delay, s/veh		17.5			26.9			22.0			24.0	
Approach LOS		B			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.1	19.1	5.9	28.1	9.8	20.4	17.5	16.4
Change Period (Y+Rc), s	4.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0
Max Green Setting (Gmax), s	13.0	22.0	11.0	39.0	13.0	22.0	26.0	24.0
Max Q Clear Time (g_c+I1), s	7.1	8.4	3.0	12.4	6.1	12.8	12.5	8.9
Green Ext Time (p_c), s	0.2	0.9	0.0	2.5	0.2	1.3	1.0	1.1

Intersection Summary	
HCM 6th Ctrl Delay	21.5
HCM 6th LOS	C

Intersection	
Intersection Delay, s/veh	47.2
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	139	112	88	72	155	86	128	215	94	179	173	170
Future Vol, veh/h	139	112	88	72	155	86	128	215	94	179	173	170
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	151	122	96	78	168	93	139	234	102	195	188	185
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Righ	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	58.4	48.3	39.1	46.1
HCM LOS	F	E	E	E

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	41%	23%	100%	0%
Vol Thru, %	0%	70%	33%	50%	0%	50%
Vol Right, %	0%	30%	26%	27%	0%	50%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	128	309	339	313	179	343
LT Vol	128	0	139	72	179	0
Through Vol	0	215	112	155	0	173
RT Vol	0	94	88	86	0	170
Lane Flow Rate	139	336	368	340	195	373
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.383	0.856	0.922	0.861	0.53	0.924
Departure Headway (Hd)	9.923	9.174	9.007	9.11	9.806	8.918
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	362	393	402	398	368	406
Service Time	7.696	6.947	7.081	7.187	7.581	6.692
HCM Lane V/C Ratio	0.384	0.855	0.915	0.854	0.53	0.919
HCM Control Delay	18.8	47.5	58.4	48.3	23.2	58.1
HCM Lane LOS	C	E	F	E	C	F
HCM 95th-tile Q	1.8	8.2	9.9	8.3	3	10

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	130	21	4	241	172	34
Future Vol, veh/h	130	21	4	241	172	34
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	50	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	141	23	4	262	187	37

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	476	206	224	0	-	0
Stage 1	206	-	-	-	-	-
Stage 2	270	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	548	835	1345	-	-	-
Stage 1	829	-	-	-	-	-
Stage 2	775	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	546	835	1345	-	-	-
Mov Cap-2 Maneuver	546	-	-	-	-	-
Stage 1	827	-	-	-	-	-
Stage 2	775	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.3	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1345	-	546	835	-	-
HCM Lane V/C Ratio	0.003	-	0.259	0.027	-	-
HCM Control Delay (s)	7.7	0	13.9	9.4	-	-
HCM Lane LOS	A	A	B	A	-	-
HCM 95th %tile Q(veh)	0	-	1	0.1	-	-

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	68	73	16	157	160	28
Future Vol, veh/h	68	73	16	157	160	28
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	74	79	17	171	174	30

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	394	189	204	0	-	0
Stage 1	189	-	-	-	-	-
Stage 2	205	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	611	853	1368	-	-	-
Stage 1	843	-	-	-	-	-
Stage 2	829	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	602	853	1368	-	-	-
Mov Cap-2 Maneuver	602	-	-	-	-	-
Stage 1	831	-	-	-	-	-
Stage 2	829	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.5	0.7	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1368	-	710	-	-
HCM Lane V/C Ratio	0.013	-	0.216	-	-
HCM Control Delay (s)	7.7	0	11.5	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.8	-	-

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	31	16	4	145	231	5
Future Vol, veh/h	31	16	4	145	231	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	34	17	4	158	251	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	420	254	256	0	-	0
Stage 1	254	-	-	-	-	-
Stage 2	166	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	590	785	1309	-	-	-
Stage 1	788	-	-	-	-	-
Stage 2	863	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	588	785	1309	-	-	-
Mov Cap-2 Maneuver	588	-	-	-	-	-
Stage 1	786	-	-	-	-	-
Stage 2	863	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.1	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1309	-	643	-	-
HCM Lane V/C Ratio	0.003	-	0.079	-	-
HCM Control Delay (s)	7.8	0	11.1	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	28	22	5	119	239	12
Future Vol, veh/h	28	22	5	119	239	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	200	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	30	24	5	129	260	13

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	406	267	273	0	-	0
Stage 1	267	-	-	-	-	-
Stage 2	139	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	601	772	1290	-	-	-
Stage 1	778	-	-	-	-	-
Stage 2	888	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	599	772	1290	-	-	-
Mov Cap-2 Maneuver	647	-	-	-	-	-
Stage 1	775	-	-	-	-	-
Stage 2	888	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.6	0.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1290	-	697	-	-
HCM Lane V/C Ratio	0.004	-	0.078	-	-
HCM Control Delay (s)	7.8	-	10.6	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Intersection	
Int Delay, s/veh	6.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	53	199	58	78	183	68
Future Vol, veh/h	53	199	58	78	183	68
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	58	216	63	85	199	74

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	148	0	-	0	438	106
Stage 1	-	-	-	-	106	-
Stage 2	-	-	-	-	332	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1434	-	-	-	576	948
Stage 1	-	-	-	-	918	-
Stage 2	-	-	-	-	727	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1434	-	-	-	550	948
Mov Cap-2 Maneuver	-	-	-	-	550	-
Stage 1	-	-	-	-	876	-
Stage 2	-	-	-	-	727	-

Approach	EB	WB	SB
HCM Control Delay, s	1.6	0	15.3
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1434	-	-	-	621
HCM Lane V/C Ratio	0.04	-	-	-	0.439
HCM Control Delay (s)	7.6	0	-	-	15.3
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	13	6	75	7	48	4	558	67	143	624	6
Future Volume (veh/h)	20	13	6	75	7	48	4	558	67	143	624	6
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	22	14	2	82	8	32	4	607	69	155	678	4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	198	101	180	214	19	45	420	867	99	459	1123	952
Arrive On Green	0.11	0.11	0.11	0.11	0.11	0.11	0.01	0.53	0.53	0.08	0.60	0.60
Sat Flow, veh/h	842	886	1578	952	165	397	1781	1649	187	1781	1870	1585
Grp Volume(v), veh/h	36	0	2	122	0	0	4	0	676	155	678	4
Grp Sat Flow(s),veh/h/ln	1728	0	1578	1514	0	0	1781	0	1837	1781	1870	1585
Q Serve(g_s), s	0.0	0.0	0.1	3.4	0.0	0.0	0.1	0.0	15.8	2.0	13.0	0.1
Cycle Q Clear(g_c), s	1.0	0.0	0.1	4.4	0.0	0.0	0.1	0.0	15.8	2.0	13.0	0.1
Prop In Lane	0.61		1.00	0.67		0.26	1.00		0.10	1.00		1.00
Lane Grp Cap(c), veh/h	298	0	180	278	0	0	420	0	965	459	1123	952
V/C Ratio(X)	0.12	0.00	0.01	0.44	0.00	0.00	0.01	0.00	0.70	0.34	0.60	0.00
Avail Cap(c_a), veh/h	793	0	691	752	0	0	847	0	2253	754	2294	1944
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.8	0.0	22.4	24.3	0.0	0.0	7.0	0.0	10.2	7.5	7.1	4.6
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.4	0.0	0.0	0.0	0.0	2.0	0.2	1.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.0	1.5	0.0	0.0	0.0	0.0	5.5	0.5	4.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.9	0.0	22.4	24.7	0.0	0.0	7.0	0.0	12.1	7.7	8.3	4.6
LnGrp LOS	C	A	C	C	A	A	A	A	B	A	A	A
Approach Vol, veh/h		38			122			680			837	
Approach Delay, s/veh		22.9			24.7			12.1			8.1	
Approach LOS		C			C			B			A	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.6	36.0		11.5	5.3	40.3		11.5
Change Period (Y+Rc), s	5.0	6.0		5.0	5.0	6.0		5.0
Max Green Setting (Gmax), s	14.0	70.0		25.0	14.0	70.0		25.0
Max Q Clear Time (g_c+I1), s	4.0	17.8		3.0	2.1	15.0		6.4
Green Ext Time (p_c), s	0.1	12.2		0.1	0.0	12.3		0.4

Intersection Summary	
HCM 6th Ctrl Delay	11.3
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	153	88	18	617	687	62
Future Volume (veh/h)	153	88	18	617	687	62
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	166	13	20	671	747	40
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	263	234	315	1180	946	802
Arrive On Green	0.15	0.15	0.02	0.63	0.51	0.51
Sat Flow, veh/h	1781	1585	1781	1870	1870	1585
Grp Volume(v), veh/h	166	13	20	671	747	40
Grp Sat Flow(s),veh/h/ln	1781	1585	1781	1870	1870	1585
Q Serve(g_s), s	4.3	0.3	0.2	10.3	16.3	0.6
Cycle Q Clear(g_c), s	4.3	0.3	0.2	10.3	16.3	0.6
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	263	234	315	1180	946	802
V/C Ratio(X)	0.63	0.06	0.06	0.57	0.79	0.05
Avail Cap(c_a), veh/h	1077	958	774	3392	2676	2268
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.9	18.2	8.1	5.3	10.1	6.2
Incr Delay (d2), s/veh	2.5	0.1	0.1	0.4	1.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	0.1	0.1	2.5	5.3	0.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	22.4	18.3	8.2	5.7	11.6	6.2
LnGrp LOS	C	B	A	A	B	A
Approach Vol, veh/h	179			691	787	
Approach Delay, s/veh	22.1			5.8	11.3	
Approach LOS	C			A	B	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	16.2	31.1		12.3		37.3
Change Period (Y+Rc), s	5.0	6.0		5.0		6.0
Max Green Setting (Gmax), s	14.0	71.0		30.0		90.0
Max Q Clear Time (g_c+I1), s	12.3	18.3		6.3		12.3
Green Ext Time (p_c), s	0.0	6.8		0.5		5.6

Intersection Summary	
HCM 6th Ctrl Delay	10.2
HCM 6th LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	43	104	68	279	36	255	16	385	317	277	474	6
Future Volume (veh/h)	43	104	68	279	36	255	16	385	317	277	474	6
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	2067	2067	2067	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	47	113	9	303	39	80	17	418	0	301	515	4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	361	261	254	491	479	623	300	560		432	781	723
Arrive On Green	0.04	0.13	0.13	0.17	0.26	0.26	0.02	0.30	0.00	0.14	0.42	0.42
Sat Flow, veh/h	1968	2067	1738	1781	1870	1579	1781	1870	1585	1781	1870	1576
Grp Volume(v), veh/h	47	113	9	303	39	80	17	418	0	301	515	4
Grp Sat Flow(s),veh/h/ln	1968	2067	1738	1781	1870	1579	1781	1870	1585	1781	1870	1576
Q Serve(g_s), s	1.6	4.0	0.4	11.0	1.3	2.6	0.5	15.9	0.0	8.6	17.5	0.1
Cycle Q Clear(g_c), s	1.6	4.0	0.4	11.0	1.3	2.6	0.5	15.9	0.0	8.6	17.5	0.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	361	261	254	491	479	623	300	560		432	781	723
V/C Ratio(X)	0.13	0.43	0.04	0.62	0.08	0.13	0.06	0.75		0.70	0.66	0.01
Avail Cap(c_a), veh/h	505	785	694	616	947	1019	693	1421		614	1421	1261
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.1	31.9	28.9	22.2	22.3	15.3	18.9	25.0	0.0	16.7	18.5	11.6
Incr Delay (d2), s/veh	0.2	0.4	0.0	1.3	0.0	0.0	0.0	4.2	0.0	0.8	2.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	2.0	0.1	4.6	0.5	0.9	0.2	7.3	0.0	3.2	7.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.2	32.3	29.0	23.4	22.4	15.3	18.9	29.2	0.0	17.4	20.5	11.6
LnGrp LOS	C	C	C	C	C	B	B	C		B	C	B
Approach Vol, veh/h		169			422			435	A		820	
Approach Delay, s/veh		31.0			21.8			28.8			19.3	
Approach LOS		C			C			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.9	29.6	18.5	15.0	6.6	39.0	8.2	25.2
Change Period (Y+Rc), s	5.0	6.0	5.0	5.0	5.0	6.0	5.0	5.0
Max Green Setting (Gmax), s	19.0	60.0	19.0	30.0	19.0	60.0	9.0	40.0
Max Q Clear Time (g_c+I1), s	10.6	17.9	13.0	6.0	2.5	19.5	3.6	4.6
Green Ext Time (p_c), s	0.3	5.7	0.5	0.4	0.0	7.5	0.0	0.3

Intersection Summary	
HCM 6th Ctrl Delay	23.2
HCM 6th LOS	C

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	238	226	359	30	195	121	247	449	14	37	305	98
Future Volume (veh/h)	238	226	359	30	195	121	247	449	14	37	305	98
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1567	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	340	246	94	33	212	16	268	488	0	40	332	0
Peak Hour Factor	0.70	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	10	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	416	567	479	323	278	234	425	643		265	460	
Arrive On Green	0.19	0.30	0.30	0.03	0.15	0.15	0.14	0.34	0.00	0.04	0.25	0.00
Sat Flow, veh/h	1493	1870	1580	1781	1870	1574	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	340	246	94	33	212	16	268	488	0	40	332	0
Grp Sat Flow(s),veh/h/ln	1493	1870	1580	1781	1870	1574	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	14.0	7.9	3.3	1.2	8.1	0.7	7.8	17.3	0.0	1.2	12.1	0.0
Cycle Q Clear(g_c), s	14.0	7.9	3.3	1.2	8.1	0.7	7.8	17.3	0.0	1.2	12.1	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	416	567	479	323	278	234	425	643		265	460	
V/C Ratio(X)	0.82	0.43	0.20	0.10	0.76	0.07	0.63	0.76		0.15	0.72	
Avail Cap(c_a), veh/h	416	567	479	599	502	423	758	1256		772	1256	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	20.5	20.8	19.2	25.4	30.4	27.3	17.1	21.7	0.0	20.2	25.7	0.0
Incr Delay (d2), s/veh	11.3	0.2	0.1	0.1	1.6	0.0	0.6	3.9	0.0	0.1	4.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.9	3.4	1.2	0.5	3.7	0.2	2.9	7.5	0.0	0.5	5.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.8	21.0	19.3	25.5	32.1	27.3	17.7	25.6	0.0	20.3	30.2	0.0
LnGrp LOS	C	C	B	C	C	C	B	C		C	C	
Approach Vol, veh/h		680			261			756	A		372	A
Approach Delay, s/veh		26.2			31.0			22.8			29.2	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.8	31.6	7.5	27.6	15.1	24.3	19.0	16.1
Change Period (Y+Rc), s	5.0	6.0	5.0	5.0	5.0	6.0	5.0	5.0
Max Green Setting (Gmax), s	24.0	50.0	14.0	20.0	24.0	50.0	14.0	20.0
Max Q Clear Time (g_c+I1), s	3.2	19.3	3.2	9.9	9.8	14.1	16.0	10.1
Green Ext Time (p_c), s	0.0	6.2	0.0	0.8	0.3	4.0	0.0	0.6

Intersection Summary	
HCM 6th Ctrl Delay	26.1
HCM 6th LOS	C

Notes

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	83	573	435	58	28	100
Future Vol, veh/h	83	573	435	58	28	100
Conflicting Peds, #/hr	1	0	0	1	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	145	-	-	50	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	90	623	473	63	30	109

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	537	0	-	0	1277	474
Stage 1	-	-	-	-	474	-
Stage 2	-	-	-	-	803	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1031	-	-	-	184	590
Stage 1	-	-	-	-	626	-
Stage 2	-	-	-	-	441	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1030	-	-	-	168	589
Mov Cap-2 Maneuver	-	-	-	-	168	-
Stage 1	-	-	-	-	571	-
Stage 2	-	-	-	-	441	-

Approach	EB	WB	SB
HCM Control Delay, s	1.1	0	16.6
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1030	-	-	-	168	589
HCM Lane V/C Ratio	0.088	-	-	-	0.181	0.185
HCM Control Delay (s)	8.8	-	-	-	31.1	12.5
HCM Lane LOS	A	-	-	-	D	B
HCM 95th %tile Q(veh)	0.3	-	-	-	0.6	0.7

APPENDIX C

LEVEL OF SERVICE CALCULATIONS

- Existing PM Peak

Intersection	
Intersection Delay, s/veh	56.7
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	58	10	158	14	4	8	91	392	21	8	480	66
Future Vol, veh/h	58	10	158	14	4	8	91	392	21	8	480	66
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	63	11	172	15	4	9	99	426	23	9	522	72
Number of Lanes	1	1	0	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	2
HCM Control Delay	13.6	12.6	48.2	84.2
HCM LOS	B	B	E	F

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	19%	0%	100%	0%	54%	1%
Vol Thru, %	81%	0%	0%	6%	15%	87%
Vol Right, %	0%	100%	0%	94%	31%	12%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	483	21	58	168	26	554
LT Vol	91	0	58	0	14	8
Through Vol	392	0	0	10	4	480
RT Vol	0	21	0	158	8	66
Lane Flow Rate	525	23	63	183	28	602
Geometry Grp	7	7	7	7	6	6
Degree of Util (X)	0.937	0.036	0.143	0.355	0.067	1.073
Departure Headway (Hd)	6.622	5.81	8.47	7.272	8.946	6.416
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	551	620	426	499	403	566
Service Time	4.322	3.51	6.17	4.972	6.946	4.479
HCM Lane V/C Ratio	0.953	0.037	0.148	0.367	0.069	1.064
HCM Control Delay	49.9	8.7	12.6	13.9	12.6	84.2
HCM Lane LOS	E	A	B	B	B	F
HCM 95th-tile Q	11.8	0.1	0.5	1.6	0.2	17.7

Intersection	
Int Delay, s/veh	67.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	231	32	425	404	62	554
Future Vol, veh/h	231	32	425	404	62	554
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	145	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	251	35	462	439	67	602

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1418	682	0	0	901	0
Stage 1	682	-	-	-	-	-
Stage 2	736	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	~ 151	450	-	-	754	-
Stage 1	502	-	-	-	-	-
Stage 2	474	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 131	450	-	-	754	-
Mov Cap-2 Maneuver	~ 131	-	-	-	-	-
Stage 1	502	-	-	-	-	-
Stage 2	410	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	$ 437.4	0	1
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	131	450	754	-
HCM Lane V/C Ratio	-	-	1.917	0.077	0.089	-
HCM Control Delay (s)	-	-	$ 496.1	13.7	10.2	0
HCM Lane LOS	-	-	F	B	B	A
HCM 95th %tile Q(veh)	-	-	19.8	0.2	0.3	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	13.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	70	0	13	6	1	9	26	781	4	4	689	156
Future Vol, veh/h	70	0	13	6	1	9	26	781	4	4	689	156
Conflicting Peds, #/hr	0	0	0	0	0	0	5	0	4	4	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	135	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	76	0	14	7	1	10	28	849	4	4	749	170

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1760	1760	839	1760	1843	855	924	0	0	857	0	0
Stage 1	847	847	-	911	911	-	-	-	-	-	-	-
Stage 2	913	913	-	849	932	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	~ 66	84	366	66	75	358	739	-	-	783	-	-
Stage 1	357	378	-	328	353	-	-	-	-	-	-	-
Stage 2	328	352	-	356	345	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 59	76	364	59	68	357	735	-	-	780	-	-
Mov Cap-2 Maneuver	~ 59	76	-	59	68	-	-	-	-	-	-	-
Stage 1	330	372	-	303	326	-	-	-	-	-	-	-
Stage 2	295	325	-	338	339	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	281	42.6	0.3	0
HCM LOS	F	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	735	-	-	59	364	113	780	-	-
HCM Lane V/C Ratio	0.038	-	-	1.29	0.039	0.154	0.006	-	-
HCM Control Delay (s)	10.1	0	-	$ 330.3	15.3	42.6	9.6	-	-
HCM Lane LOS	B	A	-	F	C	E	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	6.5	0.1	0.5	0	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	37	38	51	737	675	28
Future Vol, veh/h	37	38	51	737	675	28
Conflicting Peds, #/hr	0	0	12	0	0	12
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	125	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	40	41	55	801	734	30

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1672	761	776	0	-	0
Stage 1	761	-	-	-	-	-
Stage 2	911	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	105	405	840	-	-	-
Stage 1	461	-	-	-	-	-
Stage 2	392	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	91	400	830	-	-	-
Mov Cap-2 Maneuver	91	-	-	-	-	-
Stage 1	402	-	-	-	-	-
Stage 2	388	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	43.5	0.6	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	830	-	91	400	-	-
HCM Lane V/C Ratio	0.067	-	0.442	0.103	-	-
HCM Control Delay (s)	9.6	0	72.7	15	-	-
HCM Lane LOS	A	A	F	C	-	-
HCM 95th %tile Q(veh)	0.2	-	1.8	0.3	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	273	221	57	61	329	280	39	129	48	264	178	165
Future Volume (veh/h)	273	221	57	61	329	280	39	129	48	264	178	165
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	297	240	52	66	358	56	42	140	37	287	193	146
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	447	526	114	435	447	378	259	199	53	449	263	199
Arrive On Green	0.16	0.35	0.35	0.04	0.24	0.24	0.03	0.14	0.14	0.16	0.27	0.27
Sat Flow, veh/h	1781	1489	323	1781	1870	1582	1781	1425	376	1781	987	747
Grp Volume(v), veh/h	297	0	292	66	358	56	42	0	177	287	0	339
Grp Sat Flow(s),veh/h/ln	1781	0	1812	1781	1870	1582	1781	0	1801	1781	0	1734
Q Serve(g_s), s	7.5	0.0	8.1	1.8	11.8	1.8	1.3	0.0	6.1	8.4	0.0	11.7
Cycle Q Clear(g_c), s	7.5	0.0	8.1	1.8	11.8	1.8	1.3	0.0	6.1	8.4	0.0	11.7
Prop In Lane	1.00		0.18	1.00		1.00	1.00		0.21	1.00		0.43
Lane Grp Cap(c), veh/h	447	0	640	435	447	378	259	0	251	449	0	462
V/C Ratio(X)	0.66	0.00	0.46	0.15	0.80	0.15	0.16	0.00	0.70	0.64	0.00	0.73
Avail Cap(c_a), veh/h	874	0	1078	657	685	579	500	0	659	464	0	635
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.9	0.0	16.3	17.6	23.5	19.7	23.1	0.0	26.9	18.2	0.0	21.9
Incr Delay (d2), s/veh	1.7	0.0	0.5	0.2	3.9	0.2	0.3	0.0	3.6	2.8	0.0	2.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	0.0	3.3	0.7	5.4	0.7	0.6	0.0	2.8	3.6	0.0	4.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.7	0.0	16.8	17.7	27.4	19.9	23.4	0.0	30.5	21.0	0.0	24.8
LnGrp LOS	B	A	B	B	C	B	C	A	C	C	A	C
Approach Vol, veh/h		589			480			219			626	
Approach Delay, s/veh		16.7			25.2			29.1			23.1	
Approach LOS		B			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.4	15.1	6.8	29.2	6.1	23.5	14.3	21.7
Change Period (Y+Rc), s	4.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0
Max Green Setting (Gmax), s	11.0	24.0	11.0	39.0	11.0	24.0	26.0	24.0
Max Q Clear Time (g_c+I1), s	10.4	8.1	3.8	10.1	3.3	13.7	9.5	13.8
Green Ext Time (p_c), s	0.1	0.9	0.1	2.0	0.0	1.6	0.8	1.8

Intersection Summary	
HCM 6th Ctrl Delay	22.3
HCM 6th LOS	C

Intersection	
Intersection Delay, s/veh	90.1
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	174	145	110	51	175	201	84	151	54	133	168	260
Future Vol, veh/h	174	145	110	51	175	201	84	151	54	133	168	260
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	189	158	120	55	190	218	91	164	59	145	183	283
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Righ	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	118.7	108.4	24.6	88.1
HCM LOS	F	F	C	F

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	41%	12%	100%	0%
Vol Thru, %	0%	74%	34%	41%	0%	39%
Vol Right, %	0%	26%	26%	47%	0%	61%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	84	205	429	427	133	428
LT Vol	84	0	174	51	133	0
Through Vol	0	151	145	175	0	168
RT Vol	0	54	110	201	0	260
Lane Flow Rate	91	223	466	464	145	465
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.262	0.594	1.136	1.107	0.384	1.11
Departure Headway (Hd)	11.203	10.477	9.388	9.261	10.321	9.345
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	322	348	392	395	351	391
Service Time	8.903	8.177	7.388	7.261	8.021	7.045
HCM Lane V/C Ratio	0.283	0.641	1.189	1.175	0.413	1.189
HCM Control Delay	17.8	27.4	118.7	108.4	19.3	109.5
HCM Lane LOS	C	D	F	F	C	F
HCM 95th-tile Q	1	3.6	16.4	15.6	1.8	15.6

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	49	14	30	169	197	73
Future Vol, veh/h	49	14	30	169	197	73
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	50	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	53	15	33	184	214	79

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	504	254	293	0	-	0
Stage 1	254	-	-	-	-	-
Stage 2	250	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	528	785	1269	-	-	-
Stage 1	788	-	-	-	-	-
Stage 2	792	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	513	785	1269	-	-	-
Mov Cap-2 Maneuver	513	-	-	-	-	-
Stage 1	765	-	-	-	-	-
Stage 2	792	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.1	1.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1269	-	513	785	-	-
HCM Lane V/C Ratio	0.026	-	0.104	0.019	-	-
HCM Control Delay (s)	7.9	0	12.8	9.7	-	-
HCM Lane LOS	A	A	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.3	0.1	-	-

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	38	28	60	142	155	62
Future Vol, veh/h	38	28	60	142	155	62
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	41	30	65	154	168	67

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	486	202	235	0	-	0
Stage 1	202	-	-	-	-	-
Stage 2	284	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	540	839	1332	-	-	-
Stage 1	832	-	-	-	-	-
Stage 2	764	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	511	839	1332	-	-	-
Mov Cap-2 Maneuver	511	-	-	-	-	-
Stage 1	788	-	-	-	-	-
Stage 2	764	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.7	2.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1332	-	613	-	-
HCM Lane V/C Ratio	0.049	-	0.117	-	-
HCM Control Delay (s)	7.8	0	11.7	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.4	-	-

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	10	17	16	194	168	14
Future Vol, veh/h	10	17	16	194	168	14
Conflicting Peds, #/hr	0	0	2	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	18	17	211	183	15

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	438	193	200	0	-	0
Stage 1	193	-	-	-	-	-
Stage 2	245	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	576	849	1372	-	-	-
Stage 1	840	-	-	-	-	-
Stage 2	796	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	566	847	1369	-	-	-
Mov Cap-2 Maneuver	566	-	-	-	-	-
Stage 1	827	-	-	-	-	-
Stage 2	794	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.3	0.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1369	-	715	-	-
HCM Lane V/C Ratio	0.013	-	0.041	-	-
HCM Control Delay (s)	7.7	0	10.3	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	11	8	14	196	161	16
Future Vol, veh/h	11	8	14	196	161	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	200	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	9	15	213	175	17

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	427	184	192	0	-	0
Stage 1	184	-	-	-	-	-
Stage 2	243	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	584	858	1381	-	-	-
Stage 1	848	-	-	-	-	-
Stage 2	797	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	578	858	1381	-	-	-
Mov Cap-2 Maneuver	636	-	-	-	-	-
Stage 1	839	-	-	-	-	-
Stage 2	797	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.2	0.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1381	-	714	-	-
HCM Lane V/C Ratio	0.011	-	0.029	-	-
HCM Control Delay (s)	7.6	-	10.2	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	4.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	42	80	106	168	140	35
Future Vol, veh/h	42	80	106	168	140	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	46	87	115	183	152	38

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	298	0	-	0	386	207
Stage 1	-	-	-	-	207	-
Stage 2	-	-	-	-	179	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1263	-	-	-	617	833
Stage 1	-	-	-	-	828	-
Stage 2	-	-	-	-	852	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1263	-	-	-	594	833
Mov Cap-2 Maneuver	-	-	-	-	594	-
Stage 1	-	-	-	-	797	-
Stage 2	-	-	-	-	852	-

Approach	EB	WB	SB
HCM Control Delay, s	2.7	0	13.2
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1263	-	-	-	630
HCM Lane V/C Ratio	0.036	-	-	-	0.302
HCM Control Delay (s)	8	0	-	-	13.2
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	7	3	57	10	74	9	665	76	64	516	22
Future Volume (veh/h)	12	7	3	57	10	74	9	665	76	64	516	22
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	13	8	1	62	11	44	10	723	80	70	561	15
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	179	89	161	159	23	58	543	982	109	400	1191	1008
Arrive On Green	0.10	0.10	0.10	0.10	0.10	0.10	0.01	0.59	0.59	0.06	0.64	0.64
Sat Flow, veh/h	869	873	1585	725	230	576	1781	1654	183	1781	1870	1584
Grp Volume(v), veh/h	21	0	1	117	0	0	10	0	803	70	561	15
Grp Sat Flow(s),veh/h/ln	1741	0	1585	1531	0	0	1781	0	1837	1781	1870	1584
Q Serve(g_s), s	0.0	0.0	0.0	4.1	0.0	0.0	0.1	0.0	20.2	0.9	10.0	0.2
Cycle Q Clear(g_c), s	0.7	0.0	0.0	4.7	0.0	0.0	0.1	0.0	20.2	0.9	10.0	0.2
Prop In Lane	0.62		1.00	0.53		0.38	1.00		0.10	1.00		1.00
Lane Grp Cap(c), veh/h	267	0	161	241	0	0	543	0	1091	400	1191	1008
V/C Ratio(X)	0.08	0.00	0.01	0.49	0.00	0.00	0.02	0.00	0.74	0.18	0.47	0.01
Avail Cap(c_a), veh/h	702	0	617	675	0	0	909	0	2003	689	2039	1727
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.2	0.0	25.9	28.0	0.0	0.0	5.4	0.0	9.4	7.7	6.1	4.3
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	2.1	0.1	0.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.0	1.7	0.0	0.0	0.0	0.0	6.8	0.2	3.1	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.3	0.0	25.9	28.6	0.0	0.0	5.4	0.0	11.5	7.7	6.7	4.3
LnGrp LOS	C	A	C	C	A	A	A	A	B	A	A	A
Approach Vol, veh/h		22			117			813			646	
Approach Delay, s/veh		26.2			28.6			11.4			6.7	
Approach LOS		C			C			B			A	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.6	44.1		11.5	5.8	46.9		11.5
Change Period (Y+Rc), s	5.0	6.0		5.0	5.0	6.0		5.0
Max Green Setting (Gmax), s	14.0	70.0		25.0	14.0	70.0		25.0
Max Q Clear Time (g_c+I1), s	2.9	22.2		2.7	2.1	12.0		6.7
Green Ext Time (p_c), s	0.0	15.9		0.0	0.0	9.4		0.4

Intersection Summary	
HCM 6th Ctrl Delay	11.0
HCM 6th LOS	B

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	95	31	57	695	563	125
Future Volume (veh/h)	95	31	57	695	563	125
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	103	1	62	755	612	73
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	235	209	408	1149	820	694
Arrive On Green	0.13	0.13	0.06	0.61	0.44	0.44
Sat Flow, veh/h	1781	1585	1781	1870	1870	1583
Grp Volume(v), veh/h	103	1	62	755	612	73
Grp Sat Flow(s),veh/h/ln	1781	1585	1781	1870	1870	1583
Q Serve(g_s), s	2.3	0.0	0.7	11.3	11.8	1.2
Cycle Q Clear(g_c), s	2.3	0.0	0.7	11.3	11.8	1.2
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	235	209	408	1149	820	694
V/C Ratio(X)	0.44	0.00	0.15	0.66	0.75	0.11
Avail Cap(c_a), veh/h	1233	1097	875	3884	3064	2594
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.3	16.3	7.0	5.4	10.2	7.2
Incr Delay (d2), s/veh	1.3	0.0	0.2	0.6	1.4	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	0.2	1.9	3.9	0.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	18.6	16.4	7.2	6.0	11.5	7.2
LnGrp LOS	B	B	A	A	B	A
Approach Vol, veh/h	104			817	685	
Approach Delay, s/veh	18.6			6.1	11.1	
Approach LOS	B			A	B	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	7.6	25.0		10.7		32.6
Change Period (Y+Rc), s	5.0	6.0		5.0		6.0
Max Green Setting (Gmax), s	14.0	71.0		30.0		90.0
Max Q Clear Time (g_c+I1), s	2.7	13.8		4.3		13.3
Green Ext Time (p_c), s	0.1	5.2		0.3		6.1

Intersection Summary	
HCM 6th Ctrl Delay	9.1
HCM 6th LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	68	23	299	94	205	46	437	341	229	424	23
Future Volume (veh/h)	16	68	23	299	94	205	46	437	341	229	424	23
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	2067	2067	2067	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	17	74	2	325	102	70	50	475	0	249	461	11
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	298	249	284	525	526	625	355	621		385	755	669
Arrive On Green	0.02	0.12	0.12	0.18	0.28	0.28	0.04	0.33	0.00	0.11	0.40	0.40
Sat Flow, veh/h	1968	2067	1751	1781	1870	1585	1781	1870	1585	1781	1870	1581
Grp Volume(v), veh/h	17	74	2	325	102	70	50	475	0	249	461	11
Grp Sat Flow(s),veh/h/ln	1968	2067	1751	1781	1870	1585	1781	1870	1585	1781	1870	1581
Q Serve(g_s), s	0.6	2.7	0.1	12.4	3.4	2.3	1.5	18.8	0.0	7.1	16.1	0.3
Cycle Q Clear(g_c), s	0.6	2.7	0.1	12.4	3.4	2.3	1.5	18.8	0.0	7.1	16.1	0.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	298	249	284	525	526	625	355	621		385	755	669
V/C Ratio(X)	0.06	0.30	0.01	0.62	0.19	0.11	0.14	0.77		0.65	0.61	0.02
Avail Cap(c_a), veh/h	474	750	708	613	905	947	691	1358		593	1358	1179
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.8	33.1	29.0	23.2	22.6	15.9	17.4	24.7	0.0	17.1	19.5	13.8
Incr Delay (d2), s/veh	0.1	0.2	0.0	1.5	0.1	0.0	0.1	4.2	0.0	0.7	1.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	1.4	0.0	5.3	1.5	0.8	0.6	8.5	0.0	2.7	6.8	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.9	33.4	29.1	24.7	22.6	15.9	17.4	28.9	0.0	17.8	21.2	13.9
LnGrp LOS	C	C	C	C	C	B	B	C		B	C	B
Approach Vol, veh/h		93			497			525	A		721	
Approach Delay, s/veh		32.8			23.0			27.8			19.9	
Approach LOS		C			C			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.4	33.4	19.9	15.0	8.4	39.4	6.6	28.2
Change Period (Y+Rc), s	5.0	6.0	5.0	5.0	5.0	6.0	5.0	5.0
Max Green Setting (Gmax), s	19.0	60.0	19.0	30.0	19.0	60.0	9.0	40.0
Max Q Clear Time (g_c+I1), s	19.1	20.8	14.4	4.7	3.5	18.1	2.6	5.4
Green Ext Time (p_c), s	0.3	6.6	0.4	0.2	0.0	6.6	0.0	0.5

Intersection Summary	
HCM 6th Ctrl Delay	23.7
HCM 6th LOS	C

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	120	72	121	14	105	84	143	433	23	67	479	152
Future Volume (veh/h)	120	72	121	14	105	84	143	433	23	67	479	152
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	0.98		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1673	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	130	78	28	15	114	9	155	471	0	73	521	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	361	427	357	343	298	248	358	740		378	693	
Arrive On Green	0.09	0.23	0.23	0.02	0.16	0.16	0.08	0.40	0.00	0.05	0.37	0.00
Sat Flow, veh/h	1594	1870	1564	1781	1870	1555	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	130	78	28	15	114	9	155	471	0	73	521	0
Grp Sat Flow(s),veh/h/ln	1594	1870	1564	1781	1870	1555	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	4.5	2.3	1.0	0.5	3.8	0.3	3.6	14.1	0.0	1.7	16.8	0.0
Cycle Q Clear(g_c), s	4.5	2.3	1.0	0.5	3.8	0.3	3.6	14.1	0.0	1.7	16.8	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	361	427	357	343	298	248	358	740		378	693	
V/C Ratio(X)	0.36	0.18	0.08	0.04	0.38	0.04	0.43	0.64		0.19	0.75	
Avail Cap(c_a), veh/h	545	540	452	671	540	449	834	1351		899	1351	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	20.2	21.5	21.0	23.6	26.0	24.6	13.9	16.9	0.0	13.1	19.0	0.0
Incr Delay (d2), s/veh	0.2	0.1	0.0	0.0	0.3	0.0	0.3	1.9	0.0	0.1	3.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	1.0	0.3	0.2	1.7	0.1	1.3	5.6	0.0	0.6	7.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.4	21.6	21.0	23.6	26.3	24.6	14.2	18.8	0.0	13.2	22.5	0.0
LnGrp LOS	C	C	C	C	C	C	B	B		B	C	
Approach Vol, veh/h		236			138			626	A		594	A
Approach Delay, s/veh		20.9			25.9			17.7			21.4	
Approach LOS		C			C			B			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.8	33.4	6.3	20.8	10.5	31.7	11.0	16.0
Change Period (Y+Rc), s	5.0	6.0	5.0	5.0	5.0	6.0	5.0	5.0
Max Green Setting (Gmax), s	24.0	50.0	14.0	20.0	24.0	50.0	14.0	20.0
Max Q Clear Time (g_c+I1), s	3.7	16.1	2.5	4.3	5.6	18.8	6.5	5.8
Green Ext Time (p_c), s	0.1	6.1	0.0	0.2	0.2	6.8	0.1	0.3

Intersection Summary	
HCM 6th Ctrl Delay	20.3
HCM 6th LOS	C

Notes

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	100	477	483	101	48	128
Future Vol, veh/h	100	477	483	101	48	128
Conflicting Peds, #/hr	4	0	0	4	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	145	-	-	50	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	109	518	525	110	52	139

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	639	0	-	0	1265	529
Stage 1	-	-	-	-	529	-
Stage 2	-	-	-	-	736	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	945	-	-	-	187	550
Stage 1	-	-	-	-	591	-
Stage 2	-	-	-	-	474	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	941	-	-	-	164	548
Mov Cap-2 Maneuver	-	-	-	-	164	-
Stage 1	-	-	-	-	520	-
Stage 2	-	-	-	-	472	-

Approach	EB	WB	SB
HCM Control Delay, s	1.6	0	20.1
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	941	-	-	-	164	548
HCM Lane V/C Ratio	0.116	-	-	-	0.318	0.254
HCM Control Delay (s)	9.3	-	-	-	36.9	13.8
HCM Lane LOS	A	-	-	-	E	B
HCM 95th %tile Q(veh)	0.4	-	-	-	1.3	1

APPENDIX C

LEVEL OF SERVICE CALCULATIONS

- Base Year 2024 AM Peak

Intersection	
Intersection Delay, s/veh	124.8
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	85	5	150	15	15	10	165	420	10	5	550	105
Future Vol, veh/h	85	5	150	15	15	10	165	420	10	5	550	105
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	92	5	163	16	16	11	179	457	11	5	598	114
Number of Lanes	1	1	0	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	2
HCM Control Delay	14.5	14.1	121.1	174.9
HCM LOS	B	B	F	F

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	28%	0%	100%	0%	38%	1%
Vol Thru, %	72%	0%	0%	3%	38%	83%
Vol Right, %	0%	100%	0%	97%	25%	16%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	585	10	85	155	40	660
LT Vol	165	0	85	0	15	5
Through Vol	420	0	0	5	15	550
RT Vol	0	10	0	150	10	105
Lane Flow Rate	636	11	92	168	43	717
Geometry Grp	7	7	7	7	6	6
Degree of Util (X)	1.178	0.018	0.213	0.333	0.106	1.312
Departure Headway (Hd)	7.074	6.211	9.183	7.953	9.945	6.887
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	521	580	394	455	363	531
Service Time	4.774	3.911	6.883	5.653	7.945	4.887
HCM Lane V/C Ratio	1.221	0.019	0.234	0.369	0.118	1.35
HCM Control Delay	123	9	14.4	14.6	14.1	174.9
HCM Lane LOS	F	A	B	B	B	F
HCM 95th-tile Q	21.7	0.1	0.8	1.4	0.4	29.2

Intersection	
Int Delay, s/veh	166.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	230	55	545	730	70	690
Future Vol, veh/h	230	55	545	730	70	690
Conflicting Peds, #/hr	0	0	0	2	2	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	145	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	250	60	592	793	76	750

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1893	991	0	0	1387	0
Stage 1	991	-	-	-	-	-
Stage 2	902	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	~ 77	299	-	-	494	-
Stage 1	359	-	-	-	-	-
Stage 2	396	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 57	298	-	-	493	-
Mov Cap-2 Maneuver	~ 57	-	-	-	-	-
Stage 1	358	-	-	-	-	-
Stage 2	291	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	$ 1351.4	0	1.3
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	57	298	493	-
HCM Lane V/C Ratio	-	-	4.386	0.201	0.154	-
HCM Control Delay (s)	-	-	$ 1669.7	20.1	13.6	0
HCM Lane LOS	-	-	F	C	B	A
HCM 95th %tile Q(veh)	-	-	27.5	0.7	0.5	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	180.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	160	0	35	10	0	20	10	1110	10	15	715	170
Future Vol, veh/h	160	0	35	10	0	20	10	1110	10	15	715	170
Conflicting Peds, #/hr	0	0	0	0	0	0	3	0	3	3	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	174	0	38	11	0	22	11	1207	11	16	777	185

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2151	2148	873	2159	2235	1216	965	0	0	1221	0	0
Stage 1	905	905	-	1238	1238	-	-	-	-	-	-	-
Stage 2	1246	1243	-	921	997	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	~ 35	48	349	34	43	221	714	-	-	571	-	-
Stage 1	331	355	-	215	248	-	-	-	-	-	-	-
Stage 2	213	246	-	324	322	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 29	43	348	28	38	220	712	-	-	569	-	-
Mov Cap-2 Maneuver	~ 29	43	-	28	38	-	-	-	-	-	-	-
Stage 1	314	332	-	204	235	-	-	-	-	-	-	-
Stage 2	183	233	-	270	301	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 2069	101.7	0.1	0.2
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	712	-	-	29	348	67	569	-	-
HCM Lane V/C Ratio	0.015	-	-	5.997	0.109	0.487	0.029	-	-
HCM Control Delay (s)	10.1	0	-	$ 2518	16.6	101.7	11.5	-	-
HCM Lane LOS	B	A	-	F	C	F	B	-	-
HCM 95th %tile Q(veh)	0	-	-	21.2	0.4	2	0.1	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	53.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	130	65	40	1025	700	25
Future Vol, veh/h	130	65	40	1025	700	25
Conflicting Peds, #/hr	0	0	3	0	0	3
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	125	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	141	71	43	1114	761	27

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1978	778	791	0	-	0
Stage 1	778	-	-	-	-	-
Stage 2	1200	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	~ 68	396	829	-	-	-
Stage 1	453	-	-	-	-	-
Stage 2	285	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 58	395	827	-	-	-
Mov Cap-2 Maneuver	~ 58	-	-	-	-	-
Stage 1	390	-	-	-	-	-
Stage 2	284	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	$ 542.4	0.4	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	827	-	58	395	-	-
HCM Lane V/C Ratio	0.053	-	2.436	0.179	-	-
HCM Control Delay (s)	9.6	0	$ 805.5	16.1	-	-
HCM Lane LOS	A	A	F	C	-	-
HCM 95th %tile Q(veh)	0.2	-	14.2	0.6	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	380	385	90	50	255	230	180	255	65	200	265	205
Future Volume (veh/h)	380	385	90	50	255	230	180	255	65	200	265	205
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	475	418	93	54	277	28	196	277	64	217	288	203
Peak Hour Factor	0.80	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	517	555	124	240	325	273	277	457	106	402	325	229
Arrive On Green	0.24	0.37	0.37	0.03	0.17	0.17	0.09	0.31	0.31	0.10	0.32	0.32
Sat Flow, veh/h	1781	1481	329	1781	1870	1576	1781	1467	339	1781	1018	718
Grp Volume(v), veh/h	475	0	511	54	277	28	196	0	341	217	0	491
Grp Sat Flow(s),veh/h/ln	1781	0	1810	1781	1870	1576	1781	0	1805	1781	0	1736
Q Serve(g_s), s	23.5	0.0	27.8	2.8	16.2	1.7	8.3	0.0	18.1	9.2	0.0	30.3
Cycle Q Clear(g_c), s	23.5	0.0	27.8	2.8	16.2	1.7	8.3	0.0	18.1	9.2	0.0	30.3
Prop In Lane	1.00		0.18	1.00		1.00	1.00		0.19	1.00		0.41
Lane Grp Cap(c), veh/h	517	0	679	240	325	273	277	0	563	402	0	554
V/C Ratio(X)	0.92	0.00	0.75	0.22	0.85	0.10	0.71	0.00	0.61	0.54	0.00	0.89
Avail Cap(c_a), veh/h	648	0	882	320	481	405	394	0	960	474	0	892
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	27.2	0.0	30.7	36.6	45.2	39.2	27.2	0.0	33.0	24.0	0.0	36.5
Incr Delay (d2), s/veh	16.0	0.0	2.7	0.5	9.5	0.2	3.3	0.0	1.1	1.1	0.0	6.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.2	0.0	12.6	1.3	8.4	0.7	3.8	0.0	8.1	4.0	0.0	13.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	43.2	0.0	33.4	37.1	54.7	39.4	30.5	0.0	34.0	25.1	0.0	43.1
LnGrp LOS	D	A	C	D	D	D	C	A	C	C	A	D
Approach Vol, veh/h		986			359			537			708	
Approach Delay, s/veh		38.1			50.9			32.8			37.6	
Approach LOS		D			D			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.4	41.2	7.9	48.3	14.6	42.0	30.7	25.6
Change Period (Y+Rc), s	4.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0
Max Green Setting (Gmax), s	16.0	60.0	9.0	55.0	18.0	58.0	35.0	29.0
Max Q Clear Time (g_c+I1), s	11.2	20.1	4.8	29.8	10.3	32.3	25.5	18.2
Green Ext Time (p_c), s	0.3	2.5	0.0	3.8	0.3	3.7	1.2	1.3

Intersection Summary	
HCM 6th Ctrl Delay	38.6
HCM 6th LOS	D

Intersection	
Intersection Delay, s/veh	17.7
Intersection LOS	C

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	533	408	506	637
Demand Flow Rate, veh/h	544	417	516	650
Vehicles Circulating, veh/h	484	632	616	472
Vehicles Exiting, veh/h	638	500	411	577
Ped Vol Crossing Leg, #/h	31	0	4	0
Ped Cap Adj	0.996	1.000	0.999	1.000
Approach Delay, s/veh	15.3	14.6	19.3	20.5
Approach LOS	C	B	C	C

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	544	417	516	650
Cap Entry Lane, veh/h	842	724	736	853
Entry HV Adj Factor	0.980	0.979	0.981	0.980
Flow Entry, veh/h	533	408	506	637
Cap Entry, veh/h	822	709	722	836
V/C Ratio	0.649	0.576	0.701	0.762
Control Delay, s/veh	15.3	14.6	19.3	20.5
LOS	C	B	C	C
95th %tile Queue, veh	5	4	6	7

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	130	25	5	330	340	35
Future Vol, veh/h	130	25	5	330	340	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	50	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	141	27	5	359	370	38

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	758	389	408	0	-	0
Stage 1	389	-	-	-	-	-
Stage 2	369	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	375	659	1151	-	-	-
Stage 1	685	-	-	-	-	-
Stage 2	699	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	373	659	1151	-	-	-
Mov Cap-2 Maneuver	373	-	-	-	-	-
Stage 1	682	-	-	-	-	-
Stage 2	699	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	18.8	0.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1151	-	373	659	-	-
HCM Lane V/C Ratio	0.005	-	0.379	0.041	-	-
HCM Control Delay (s)	8.1	0	20.4	10.7	-	-
HCM Lane LOS	A	A	C	B	-	-
HCM 95th %tile Q(veh)	0	-	1.7	0.1	-	-

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	70	75	20	245	330	30
Future Vol, veh/h	70	75	20	245	330	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	76	82	22	266	359	33

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	686	376	392	0	-	0
Stage 1	376	-	-	-	-	-
Stage 2	310	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	413	670	1167	-	-	-
Stage 1	694	-	-	-	-	-
Stage 2	744	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	404	670	1167	-	-	-
Mov Cap-2 Maneuver	404	-	-	-	-	-
Stage 1	679	-	-	-	-	-
Stage 2	744	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.2	0.6	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1167	-	508	-	-
HCM Lane V/C Ratio	0.019	-	0.31	-	-
HCM Control Delay (s)	8.1	0	15.2	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.1	-	1.3	-	-

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	35	20	5	235	400	5
Future Vol, veh/h	35	20	5	235	400	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	38	22	5	255	435	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	703	438	440	0	-	0
Stage 1	438	-	-	-	-	-
Stage 2	265	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	404	619	1120	-	-	-
Stage 1	651	-	-	-	-	-
Stage 2	779	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	402	619	1120	-	-	-
Mov Cap-2 Maneuver	402	-	-	-	-	-
Stage 1	648	-	-	-	-	-
Stage 2	779	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1120	-	461	-	-
HCM Lane V/C Ratio	0.005	-	0.13	-	-
HCM Control Delay (s)	8.2	0	14	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.4	-	-

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	30	25	5	210	410	15
Future Vol, veh/h	30	25	5	210	410	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	200	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	33	27	5	228	446	16

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	692	454	462	0	-	0
Stage 1	454	-	-	-	-	-
Stage 2	238	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	410	606	1099	-	-	-
Stage 1	640	-	-	-	-	-
Stage 2	802	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	408	606	1099	-	-	-
Mov Cap-2 Maneuver	505	-	-	-	-	-
Stage 1	637	-	-	-	-	-
Stage 2	802	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.4	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1099	-	546	-	-
HCM Lane V/C Ratio	0.005	-	0.109	-	-
HCM Control Delay (s)	8.3	-	12.4	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.4	-	-

Intersection	
Int Delay, s/veh	27.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	80	265	75	140	325	95
Future Vol, veh/h	80	265	75	140	325	95
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	87	288	82	152	353	103

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	234	0	-	0	620	158
Stage 1	-	-	-	-	158	-
Stage 2	-	-	-	-	462	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1333	-	-	-	452	887
Stage 1	-	-	-	-	871	-
Stage 2	-	-	-	-	634	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1333	-	-	-	417	887
Mov Cap-2 Maneuver	-	-	-	-	417	-
Stage 1	-	-	-	-	803	-
Stage 2	-	-	-	-	634	-

Approach	EB	WB	SB
HCM Control Delay, s	1.8	0	62.3
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1333	-	-	-	474
HCM Lane V/C Ratio	0.065	-	-	-	0.963
HCM Control Delay (s)	7.9	0	-	-	62.3
HCM Lane LOS	A	A	-	-	F
HCM 95th %tile Q(veh)	0.2	-	-	-	12

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	15	10	105	10	55	5	705	125	170	830	10
Future Volume (veh/h)	20	15	10	105	10	55	5	705	125	170	830	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	22	16	1	114	11	45	5	766	131	185	902	7
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	178	113	222	208	20	56	312	945	162	336	1238	1049
Arrive On Green	0.14	0.14	0.14	0.14	0.14	0.14	0.01	0.61	0.61	0.06	0.66	0.66
Sat Flow, veh/h	785	800	1579	968	139	399	1781	1556	266	1781	1870	1585
Grp Volume(v), veh/h	38	0	1	170	0	0	5	0	897	185	902	7
Grp Sat Flow(s),veh/h/ln	1586	0	1579	1506	0	0	1781	0	1822	1781	1870	1585
Q Serve(g_s), s	0.0	0.0	0.0	7.6	0.0	0.0	0.1	0.0	31.9	3.0	26.4	0.1
Cycle Q Clear(g_c), s	1.5	0.0	0.0	9.1	0.0	0.0	0.1	0.0	31.9	3.0	26.4	0.1
Prop In Lane	0.58		1.00	0.67		0.26	1.00		0.15	1.00		1.00
Lane Grp Cap(c), veh/h	291	0	222	284	0	0	312	0	1107	336	1238	1049
V/C Ratio(X)	0.13	0.00	0.00	0.60	0.00	0.00	0.02	0.00	0.81	0.55	0.73	0.01
Avail Cap(c_a), veh/h	531	0	471	514	0	0	597	0	1521	524	1561	1323
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.6	0.0	31.0	34.7	0.0	0.0	9.1	0.0	12.7	14.1	9.3	4.8
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.8	0.0	0.0	0.0	0.0	3.7	0.5	2.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.0	3.4	0.0	0.0	0.0	0.0	12.2	1.7	9.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.7	0.0	31.0	35.5	0.0	0.0	9.1	0.0	16.5	14.6	11.4	4.8
LnGrp LOS	C	A	C	D	A	A	A	A	B	B	B	A
Approach Vol, veh/h		39			170			902			1094	
Approach Delay, s/veh		31.7			35.5			16.4			11.9	
Approach LOS		C			D			B			B	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.1	56.9		16.8	5.5	61.5		16.8
Change Period (Y+Rc), s	5.0	6.0		5.0	5.0	6.0		5.0
Max Green Setting (Gmax), s	14.0	70.0		25.0	14.0	70.0		25.0
Max Q Clear Time (g_c+I1), s	5.0	33.9		3.5	2.1	28.4		11.1
Green Ext Time (p_c), s	0.2	17.0		0.1	0.0	18.2		0.5

Intersection Summary	
HCM 6th Ctrl Delay	15.9
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	155	90	20	770	920	65
Future Volume (veh/h)	155	90	20	770	920	65
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	168	8	22	837	1000	56
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	218	194	254	1345	1164	986
Arrive On Green	0.12	0.12	0.02	0.72	0.62	0.62
Sat Flow, veh/h	1781	1585	1781	1870	1870	1585
Grp Volume(v), veh/h	168	8	22	837	1000	56
Grp Sat Flow(s),veh/h/ln	1781	1585	1781	1870	1870	1585
Q Serve(g_s), s	6.4	0.3	0.3	15.8	30.2	1.0
Cycle Q Clear(g_c), s	6.4	0.3	0.3	15.8	30.2	1.0
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	218	194	254	1345	1164	986
V/C Ratio(X)	0.77	0.04	0.09	0.62	0.86	0.06
Avail Cap(c_a), veh/h	769	684	569	2422	1911	1619
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.5	26.9	11.4	5.0	10.6	5.1
Incr Delay (d2), s/veh	5.6	0.1	0.1	0.5	2.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	0.1	0.1	4.0	10.2	0.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	35.2	27.0	11.6	5.4	12.9	5.2
LnGrp LOS	D	C	B	A	B	A
Approach Vol, veh/h	176			859	1056	
Approach Delay, s/veh	34.8			5.6	12.5	
Approach LOS	C			A	B	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	6.7	49.3		13.5		56.0
Change Period (Y+Rc), s	5.0	6.0		5.0		6.0
Max Green Setting (Gmax), s	14.0	71.0		30.0		90.0
Max Q Clear Time (g_c+I1), s	2.3	32.2		8.4		17.8
Green Ext Time (p_c), s	0.0	11.1		0.5		8.2

Intersection Summary	
HCM 6th Ctrl Delay	11.6
HCM 6th LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	135	85	335	50	350	25	470	390	370	645	10
Future Volume (veh/h)	55	135	85	335	50	350	25	470	390	370	645	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	2067	2067	2067	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	60	147	10	364	54	203	27	511	0	402	701	6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	299	206	219	448	466	650	237	633		440	887	812
Arrive On Green	0.04	0.10	0.10	0.19	0.25	0.25	0.03	0.34	0.00	0.16	0.47	0.47
Sat Flow, veh/h	1968	2067	1734	1781	1870	1579	1781	1870	1585	1781	1870	1577
Grp Volume(v), veh/h	60	147	10	364	54	203	27	511	0	402	701	6
Grp Sat Flow(s),veh/h/ln	1968	2067	1734	1781	1870	1579	1781	1870	1585	1781	1870	1577
Q Serve(g_s), s	2.7	6.9	0.5	17.7	2.2	8.7	1.0	24.9	0.0	14.0	31.6	0.2
Cycle Q Clear(g_c), s	2.7	6.9	0.5	17.7	2.2	8.7	1.0	24.9	0.0	14.0	31.6	0.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	299	206	219	448	466	650	237	633		440	887	812
V/C Ratio(X)	0.20	0.71	0.05	0.81	0.12	0.31	0.11	0.81		0.91	0.79	0.01
Avail Cap(c_a), veh/h	396	619	566	448	747	888	528	1121		490	1121	1009
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.1	43.7	38.4	30.5	29.1	19.9	22.2	30.1	0.0	20.4	22.1	11.8
Incr Delay (d2), s/veh	0.3	1.7	0.0	10.8	0.0	0.1	0.1	5.2	0.0	19.2	4.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	3.6	0.2	8.9	1.0	3.2	0.4	11.7	0.0	7.6	14.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.5	45.4	38.5	41.4	29.1	20.0	22.3	35.3	0.0	39.6	26.5	11.8
LnGrp LOS	D	D	D	D	C	C	C	D		D	C	B
Approach Vol, veh/h		217			621			538	A		1109	
Approach Delay, s/veh		43.1			33.3			34.7			31.2	
Approach LOS		D			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.2	39.9	24.0	15.0	7.6	53.5	9.1	29.9
Change Period (Y+Rc), s	5.0	6.0	5.0	5.0	5.0	6.0	5.0	5.0
Max Green Setting (Gmax), s	19.0	60.0	19.0	30.0	19.0	60.0	9.0	40.0
Max Q Clear Time (g_c+I1), s	16.0	26.9	19.7	8.9	3.0	33.6	4.7	10.7
Green Ext Time (p_c), s	0.2	7.0	0.0	0.5	0.0	9.9	0.0	0.6

Intersection Summary	
HCM 6th Ctrl Delay	33.5
HCM 6th LOS	C

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	285	285	485	30	240	135	305	565	15	50	400	110
Future Volume (veh/h)	285	285	485	30	240	135	305	565	15	50	400	110
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1567	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	407	310	156	33	261	17	332	614	0	54	435	0
Peak Hour Factor	0.70	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	10	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	425	666	563	291	303	255	380	715		198	503	
Arrive On Green	0.22	0.36	0.36	0.03	0.16	0.16	0.15	0.38	0.00	0.04	0.27	0.00
Sat Flow, veh/h	1493	1870	1581	1781	1870	1575	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	407	310	156	33	261	17	332	614	0	54	435	0
Grp Sat Flow(s),veh/h/ln	1493	1870	1581	1781	1870	1575	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	24.0	13.7	7.6	1.6	14.6	1.0	13.8	32.4	0.0	2.3	23.8	0.0
Cycle Q Clear(g_c), s	24.0	13.7	7.6	1.6	14.6	1.0	13.8	32.4	0.0	2.3	23.8	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	425	666	563	291	303	255	380	715		198	503	
V/C Ratio(X)	0.96	0.47	0.28	0.11	0.86	0.07	0.87	0.86		0.27	0.86	
Avail Cap(c_a), veh/h	425	666	563	704	418	352	510	715		530	627	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	27.9	26.7	24.7	35.8	43.9	38.2	25.0	30.5	0.0	28.7	37.4	0.0
Incr Delay (d2), s/veh	32.8	0.2	0.1	0.1	9.9	0.0	10.0	11.1	0.0	0.3	12.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.3	6.2	2.9	0.7	7.6	0.4	6.5	16.0	0.0	1.0	12.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.7	26.9	24.8	35.9	53.8	38.2	34.9	41.6	0.0	29.0	50.1	0.0
LnGrp LOS	E	C	C	D	D	D	C	D		C	D	
Approach Vol, veh/h		873			311			946	A		489	A
Approach Delay, s/veh		42.3			51.0			39.3			47.8	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.0	47.1	8.1	43.3	21.2	34.9	29.0	22.4
Change Period (Y+Rc), s	5.0	6.0	5.0	5.0	5.0	6.0	5.0	5.0
Max Green Setting (Gmax), s	24.0	36.0	28.0	20.0	24.0	36.0	24.0	24.0
Max Q Clear Time (g_c+I1), s	4.3	34.4	3.6	15.7	15.8	25.8	26.0	16.6
Green Ext Time (p_c), s	0.0	0.9	0.0	0.7	0.3	3.1	0.0	0.6

Intersection Summary	
HCM 6th Ctrl Delay	43.3
HCM 6th LOS	D

Notes

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	9.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	95	745	10	10	555	65	30	5	30	35	5	110
Future Vol, veh/h	95	745	10	10	555	65	30	5	30	35	5	110
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	145	-	-	0	-	50	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	103	810	11	11	603	71	33	5	33	38	5	120

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	675	0	0	821	0	0	1745	1719	816	1667	1653	604
Stage 1	-	-	-	-	-	-	1022	1022	-	626	626	-
Stage 2	-	-	-	-	-	-	723	697	-	1041	1027	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	916	-	-	808	-	-	68	90	377	77	98	498
Stage 1	-	-	-	-	-	-	285	313	-	472	477	-
Stage 2	-	-	-	-	-	-	417	443	-	278	312	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	915	-	-	808	-	-	45	79	377	60	86	498
Mov Cap-2 Maneuver	-	-	-	-	-	-	45	79	-	60	86	-
Stage 1	-	-	-	-	-	-	253	278	-	419	470	-
Stage 2	-	-	-	-	-	-	309	436	-	221	277	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.1	0.2	116.7	49.8
HCM LOS			F	E

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	48	377	915	-	-	808	-	-	62	498
HCM Lane V/C Ratio	0.793	0.086	0.113	-	-	0.013	-	-	0.701	0.24
HCM Control Delay (s)	203.4	15.5	9.4	-	-	9.5	-	-	147	14.5
HCM Lane LOS	F	C	A	-	-	A	-	-	F	B
HCM 95th %tile Q(veh)	3.2	0.3	0.4	-	-	0	-	-	3	0.9

APPENDIX C

LEVEL OF SERVICE CALCULATIONS

- Base Year 2024 PM Peak

Intersection	
Intersection Delay, s/veh	160.5
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	60	10	200	15	5	10	110	505	25	10	640	70
Future Vol, veh/h	60	10	200	15	5	10	110	505	25	10	640	70
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	65	11	217	16	5	11	120	549	27	11	696	76
Number of Lanes	1	1	0	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	2
HCM Control Delay	16.5	14.4	143.9	235.4
HCM LOS	C	B	F	F

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	18%	0%	100%	0%	50%	1%
Vol Thru, %	82%	0%	0%	5%	17%	89%
Vol Right, %	0%	100%	0%	95%	33%	10%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	615	25	60	210	30	720
LT Vol	110	0	60	0	15	10
Through Vol	505	0	0	10	5	640
RT Vol	0	25	0	200	10	70
Lane Flow Rate	668	27	65	228	33	783
Geometry Grp	7	7	7	7	6	6
Degree of Util (X)	1.245	0.045	0.15	0.45	0.081	1.455
Departure Headway (Hd)	7.26	6.447	9.361	8.138	10.523	7.073
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	508	559	385	445	343	524
Service Time	4.96	4.147	7.061	5.838	8.523	5.073
HCM Lane V/C Ratio	1.315	0.048	0.169	0.512	0.096	1.494
HCM Control Delay	149.4	9.5	13.7	17.3	14.4	235.4
HCM Lane LOS	F	A	B	C	B	F
HCM 95th-tile Q	24.6	0.1	0.5	2.3	0.3	36.5

Intersection	
Int Delay, s/veh	297.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	315	35	560	530	65	750
Future Vol, veh/h	315	35	560	530	65	750
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	145	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	342	38	609	576	71	815

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1854	897	0	0	1185	0
Stage 1	897	-	-	-	-	-
Stage 2	957	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	~ 81	339	-	-	589	-
Stage 1	398	-	-	-	-	-
Stage 2	373	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 63	339	-	-	589	-
Mov Cap-2 Maneuver	~ 63	-	-	-	-	-
Stage 1	398	-	-	-	-	-
Stage 2	~ 291	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, $	1914.7	0	1
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	63	339	589	-
HCM Lane V/C Ratio	-	-	5.435	0.112	0.12	-
HCM Control Delay (s)	-	$	2125.5	17	11.9	0
HCM Lane LOS	-	-	F	C	B	A
HCM 95th %tile Q(veh)	-	-	38.3	0.4	0.4	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	40.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	70	0	15	10	5	10	30	1040	5	5	970	160
Future Vol, veh/h	70	0	15	10	5	10	30	1040	5	5	970	160
Conflicting Peds, #/hr	0	0	0	0	0	0	5	0	4	4	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	135	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	76	0	16	11	5	11	33	1130	5	5	1054	174

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2363	2361	1146	2362	2446	1137	1233	0	0	1139	0	0
Stage 1	1156	1156	-	1203	1203	-	-	-	-	-	-	-
Stage 2	1207	1205	-	1159	1243	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	~ 25	35	243	25	31	246	565	-	-	613	-	-
Stage 1	239	271	-	225	257	-	-	-	-	-	-	-
Stage 2	224	257	-	238	246	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 17	28	242	20	25	245	562	-	-	611	-	-
Mov Cap-2 Maneuver	~ 17	28	-	20	25	-	-	-	-	-	-	-
Stage 1	200	262	-	189	215	-	-	-	-	-	-	-
Stage 2	175	215	-	216	238	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 1011.2	266	0.3	0
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	562	-	-	17	27	34	611	-	-
HCM Lane V/C Ratio	0.058	-	-	2.984	1.543	0.799	0.009	-	-
HCM Control Delay (s)	11.8	0	$	1358.5	$ 588.5	266	10.9	-	-
HCM Lane LOS	B	A	-	F	F	F	B	-	-
HCM 95th %tile Q(veh)	0.2	-	-	7	5	2.8	0	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	19.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	60	40	55	975	940	45
Future Vol, veh/h	60	40	55	975	940	45
Conflicting Peds, #/hr	0	0	12	0	0	12
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	125	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	65	43	60	1060	1022	49

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2239	1059	1083	0	-	0
Stage 1	1059	-	-	-	-	-
Stage 2	1180	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	~ 47	273	644	-	-	-
Stage 1	333	-	-	-	-	-
Stage 2	292	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 35	270	637	-	-	-
Mov Cap-2 Maneuver	~ 35	-	-	-	-	-
Stage 1	254	-	-	-	-	-
Stage 2	289	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	$ 400.9	0.6	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	637	-	35	270	-	-
HCM Lane V/C Ratio	0.094	-	1.863	0.161	-	-
HCM Control Delay (s)	11.2	0	$ 654.2	20.9	-	-
HCM Lane LOS	B	A	F	C	-	-
HCM 95th %tile Q(veh)	0.3	-	7.2	0.6	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	320	295	95	110	465	330	90	255	85	320	320	215
Future Volume (veh/h)	320	295	95	110	465	330	90	255	85	320	320	215
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	348	321	98	120	505	167	98	277	84	348	348	220
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	373	555	169	368	552	467	177	343	104	390	379	240
Arrive On Green	0.17	0.40	0.40	0.06	0.29	0.29	0.05	0.25	0.25	0.16	0.35	0.35
Sat Flow, veh/h	1781	1375	420	1781	1870	1582	1781	1377	417	1781	1071	677
Grp Volume(v), veh/h	348	0	419	120	505	167	98	0	361	348	0	568
Grp Sat Flow(s),veh/h/ln	1781	0	1794	1781	1870	1582	1781	0	1794	1781	0	1747
Q Serve(g_s), s	23.4	0.0	28.1	7.2	40.4	12.9	6.3	0.0	29.3	21.8	0.0	48.2
Cycle Q Clear(g_c), s	23.4	0.0	28.1	7.2	40.4	12.9	6.3	0.0	29.3	21.8	0.0	48.2
Prop In Lane	1.00		0.23	1.00		1.00	1.00		0.23	1.00		0.39
Lane Grp Cap(c), veh/h	373	0	724	368	552	467	177	0	446	390	0	619
V/C Ratio(X)	0.93	0.00	0.58	0.33	0.92	0.36	0.55	0.00	0.81	0.89	0.00	0.92
Avail Cap(c_a), veh/h	452	0	846	434	664	562	221	0	695	475	0	903
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	43.7	0.0	35.9	35.0	52.7	43.0	43.6	0.0	54.7	36.9	0.0	47.9
Incr Delay (d2), s/veh	23.9	0.0	0.7	0.5	15.6	0.5	2.7	0.0	4.0	16.7	0.0	10.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	16.0	0.0	12.7	3.3	21.5	5.2	3.0	0.0	13.9	11.4	0.0	23.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	67.6	0.0	36.7	35.5	68.3	43.5	46.3	0.0	58.7	53.5	0.0	58.5
LnGrp LOS	E	A	D	D	E	D	D	A	E	D	A	E
Approach Vol, veh/h		767			792			459			916	
Approach Delay, s/veh		50.7			58.1			56.1			56.6	
Approach LOS		D			E			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	28.5	44.5	13.3	68.5	12.2	60.8	30.1	51.7
Change Period (Y+Rc), s	4.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0
Max Green Setting (Gmax), s	32.0	60.0	15.0	73.0	12.0	80.0	33.0	55.0
Max Q Clear Time (g_c+I1), s	23.8	31.3	9.2	30.1	8.3	50.2	25.4	42.4
Green Ext Time (p_c), s	0.7	2.5	0.1	3.2	0.1	4.6	0.7	3.3

Intersection Summary	
HCM 6th Ctrl Delay	55.4
HCM 6th LOS	E

Intersection	
Intersection Delay, s/veh	22.9
Intersection LOS	C

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	663	587	342	740
Demand Flow Rate, veh/h	676	598	348	755
Vehicles Circulating, veh/h	411	553	671	476
Vehicles Exiting, veh/h	820	466	416	675
Ped Vol Crossing Leg, #/h	7	0	0	0
Ped Cap Adj	0.999	1.000	1.000	1.000
Approach Delay, s/veh	18.6	21.8	12.9	32.3
Approach LOS	C	C	B	D

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	676	598	348	755
Cap Entry Lane, veh/h	907	785	696	849
Entry HV Adj Factor	0.981	0.981	0.981	0.980
Flow Entry, veh/h	663	587	342	740
Cap Entry, veh/h	889	770	683	832
V/C Ratio	0.746	0.762	0.500	0.889
Control Delay, s/veh	18.6	21.8	12.9	32.3
LOS	C	C	B	D
95th %tile Queue, veh	7	7	3	12

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	50	15	30	360	355	75
Future Vol, veh/h	50	15	30	360	355	75
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	50	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	54	16	33	391	386	82

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	884	427	468	0	-	0
Stage 1	427	-	-	-	-	-
Stage 2	457	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	316	628	1094	-	-	-
Stage 1	658	-	-	-	-	-
Stage 2	638	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	304	628	1094	-	-	-
Mov Cap-2 Maneuver	304	-	-	-	-	-
Stage 1	632	-	-	-	-	-
Stage 2	638	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.4	0.6	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1094	-	304	628	-	-
HCM Lane V/C Ratio	0.03	-	0.179	0.026	-	-
HCM Control Delay (s)	8.4	0	19.4	10.9	-	-
HCM Lane LOS	A	A	C	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.6	0.1	-	-

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	40	30	60	335	310	65
Future Vol, veh/h	40	30	60	335	310	65
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	43	33	65	364	337	71

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	867	373	408	0	-	0
Stage 1	373	-	-	-	-	-
Stage 2	494	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	323	673	1151	-	-	-
Stage 1	696	-	-	-	-	-
Stage 2	613	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	300	673	1151	-	-	-
Mov Cap-2 Maneuver	300	-	-	-	-	-
Stage 1	647	-	-	-	-	-
Stage 2	613	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	16.3	1.3	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1151	-	393	-	-
HCM Lane V/C Ratio	0.057	-	0.194	-	-
HCM Control Delay (s)	8.3	0	16.3	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.2	-	0.7	-	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	10	20	20	385	325	15
Future Vol, veh/h	10	20	20	385	325	15
Conflicting Peds, #/hr	0	0	2	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	22	22	418	353	16

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	825	363	371	0	-	0
Stage 1	363	-	-	-	-	-
Stage 2	462	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	342	682	1188	-	-	-
Stage 1	704	-	-	-	-	-
Stage 2	634	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	332	681	1186	-	-	-
Mov Cap-2 Maneuver	332	-	-	-	-	-
Stage 1	686	-	-	-	-	-
Stage 2	633	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.6	0.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1186	-	504	-	-
HCM Lane V/C Ratio	0.018	-	0.065	-	-
HCM Control Delay (s)	8.1	0	12.6	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	15	10	15	390	320	20
Future Vol, veh/h	15	10	15	390	320	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	200	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	16	11	16	424	348	22

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	815	359	370	0	-	0
Stage 1	359	-	-	-	-	-
Stage 2	456	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	347	685	1189	-	-	-
Stage 1	707	-	-	-	-	-
Stage 2	638	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	342	685	1189	-	-	-
Mov Cap-2 Maneuver	460	-	-	-	-	-
Stage 1	698	-	-	-	-	-
Stage 2	638	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.2	0.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1189	-	530	-	-
HCM Lane V/C Ratio	0.014	-	0.051	-	-
HCM Control Delay (s)	8.1	-	12.2	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Intersection	
Int Delay, s/veh	13.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	75	115	165	315	260	60
Future Vol, veh/h	75	115	165	315	260	60
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	82	125	179	342	283	65

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	521	0	-	0	639	350
Stage 1	-	-	-	-	350	-
Stage 2	-	-	-	-	289	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1045	-	-	-	440	693
Stage 1	-	-	-	-	713	-
Stage 2	-	-	-	-	760	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1045	-	-	-	403	693
Mov Cap-2 Maneuver	-	-	-	-	403	-
Stage 1	-	-	-	-	653	-
Stage 2	-	-	-	-	760	-

Approach	EB	WB	SB
HCM Control Delay, s	3.4	0	38.4
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1045	-	-	-	437
HCM Lane V/C Ratio	0.078	-	-	-	0.796
HCM Control Delay (s)	8.7	0	-	-	38.4
HCM Lane LOS	A	A	-	-	E
HCM 95th %tile Q(veh)	0.3	-	-	-	7.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	10	5	120	15	95	10	840	130	80	710	25
Future Volume (veh/h)	15	10	5	120	15	95	10	840	130	80	710	25
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	16	11	1	130	16	81	11	913	137	87	772	17
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	183	112	271	199	23	92	383	1014	152	211	1242	1052
Arrive On Green	0.17	0.17	0.17	0.17	0.17	0.17	0.01	0.64	0.64	0.03	0.66	0.66
Sat Flow, veh/h	742	658	1585	839	134	540	1781	1589	238	1781	1870	1584
Grp Volume(v), veh/h	27	0	1	227	0	0	11	0	1050	87	772	17
Grp Sat Flow(s),veh/h/ln	1400	0	1585	1512	0	0	1781	0	1827	1781	1870	1584
Q Serve(g_s), s	0.0	0.0	0.1	13.6	0.0	0.0	0.2	0.0	49.8	1.7	24.0	0.4
Cycle Q Clear(g_c), s	1.2	0.0	0.1	14.9	0.0	0.0	0.2	0.0	49.8	1.7	24.0	0.4
Prop In Lane	0.59		1.00	0.57		0.36	1.00		0.13	1.00		1.00
Lane Grp Cap(c), veh/h	296	0	271	314	0	0	383	0	1166	211	1242	1052
V/C Ratio(X)	0.09	0.00	0.00	0.72	0.00	0.00	0.03	0.00	0.90	0.41	0.62	0.02
Avail Cap(c_a), veh/h	406	0	389	425	0	0	614	0	1256	396	1286	1089
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.5	0.0	35.0	41.0	0.0	0.0	8.7	0.0	15.7	20.3	9.8	5.8
Incr Delay (d2), s/veh	0.0	0.0	0.0	2.1	0.0	0.0	0.0	0.0	9.5	0.5	1.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.0	5.7	0.0	0.0	0.1	0.0	21.3	1.2	9.2	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.6	0.0	35.0	43.1	0.0	0.0	8.7	0.0	25.2	20.8	11.1	5.8
LnGrp LOS	D	A	D	D	A	A	A	A	C	C	B	A
Approach Vol, veh/h		28			227			1061			876	
Approach Delay, s/veh		35.5			43.1			25.0			12.0	
Approach LOS		D			D			C			B	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.5	71.0		22.4	5.8	73.6		22.4
Change Period (Y+Rc), s	5.0	6.0		5.0	5.0	6.0		5.0
Max Green Setting (Gmax), s	14.0	70.0		25.0	14.0	70.0		25.0
Max Q Clear Time (g_c+I1), s	3.7	51.8		3.2	2.2	26.0		16.9
Green Ext Time (p_c), s	0.1	13.2		0.1	0.0	14.5		0.6

Intersection Summary	
HCM 6th Ctrl Delay	21.8
HCM 6th LOS	C

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	100	35	60	890	770	130
Future Volume (veh/h)	100	35	60	890	770	130
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	109	3	65	967	837	96
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	207	184	346	1294	1025	868
Arrive On Green	0.12	0.12	0.06	0.69	0.55	0.55
Sat Flow, veh/h	1781	1585	1781	1870	1870	1584
Grp Volume(v), veh/h	109	3	65	967	837	96
Grp Sat Flow(s),veh/h/ln	1781	1585	1781	1870	1870	1584
Q Serve(g_s), s	3.3	0.1	0.8	18.9	21.0	1.7
Cycle Q Clear(g_c), s	3.3	0.1	0.8	18.9	21.0	1.7
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	207	184	346	1294	1025	868
V/C Ratio(X)	0.53	0.02	0.19	0.75	0.82	0.11
Avail Cap(c_a), veh/h	933	830	681	2939	2319	1963
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.8	22.4	9.0	5.6	10.6	6.2
Incr Delay (d2), s/veh	2.1	0.0	0.3	0.9	1.7	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	0.0	0.2	3.5	7.0	0.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	25.9	22.4	9.2	6.5	12.2	6.3
LnGrp LOS	C	C	A	A	B	A
Approach Vol, veh/h	112			1032	933	
Approach Delay, s/veh	25.8			6.7	11.6	
Approach LOS	C			A	B	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	8.2	37.4		11.7		45.6
Change Period (Y+Rc), s	5.0	6.0		5.0		6.0
Max Green Setting (Gmax), s	14.0	71.0		30.0		90.0
Max Q Clear Time (g_c+I1), s	2.8	23.0		5.3		20.9
Green Ext Time (p_c), s	0.1	8.4		0.3		9.7

Intersection Summary	
HCM 6th Ctrl Delay	9.9
HCM 6th LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	95	30	400	135	310	60	540	430	300	530	35
Future Volume (veh/h)	25	95	30	400	135	310	60	540	430	300	530	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	2067	2067	2067	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	27	103	3	435	147	125	65	587	0	326	576	18
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	230	178	217	527	551	670	315	694		359	863	769
Arrive On Green	0.03	0.09	0.09	0.23	0.29	0.29	0.04	0.37	0.00	0.13	0.46	0.46
Sat Flow, veh/h	1968	2067	1751	1781	1870	1585	1781	1870	1585	1781	1870	1582
Grp Volume(v), veh/h	27	103	3	435	147	125	65	587	0	326	576	18
Grp Sat Flow(s),veh/h/ln	1968	2067	1751	1781	1870	1585	1781	1870	1585	1781	1870	1582
Q Serve(g_s), s	1.4	5.6	0.2	24.8	7.0	5.7	2.6	33.3	0.0	12.6	27.8	0.7
Cycle Q Clear(g_c), s	1.4	5.6	0.2	24.8	7.0	5.7	2.6	33.3	0.0	12.6	27.8	0.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	230	178	217	527	551	670	315	694		359	863	769
V/C Ratio(X)	0.12	0.58	0.01	0.82	0.27	0.19	0.21	0.85		0.91	0.67	0.02
Avail Cap(c_a), veh/h	656	464	459	542	551	670	570	985		454	985	872
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.4	50.9	44.5	34.1	31.3	21.0	22.4	33.4	0.0	24.3	24.3	15.5
Incr Delay (d2), s/veh	0.2	1.1	0.0	9.9	0.1	0.0	0.1	7.3	0.0	16.8	2.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	3.0	0.1	12.2	3.2	2.2	1.1	16.1	0.0	6.6	12.4	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.6	52.0	44.5	43.9	31.4	21.0	22.5	40.7	0.0	41.1	26.6	15.5
LnGrp LOS	D	D	D	D	C	C	C	D		D	C	B
Approach Vol, veh/h		133			707			652	A		920	
Approach Delay, s/veh		50.7			37.3			38.9			31.5	
Approach LOS		D			D			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.8	49.0	32.0	15.0	9.4	59.4	7.9	39.1
Change Period (Y+Rc), s	5.0	6.0	5.0	5.0	5.0	6.0	5.0	5.0
Max Green Setting (Gmax), s	21.0	61.0	28.0	26.0	21.0	61.0	28.0	26.0
Max Q Clear Time (g_c+I1), s	14.6	35.3	26.8	7.6	4.6	29.8	3.4	9.0
Green Ext Time (p_c), s	0.3	7.7	0.2	0.3	0.1	8.2	0.0	0.7

Intersection Summary	
HCM 6th Ctrl Delay	36.2
HCM 6th LOS	D

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	140	135	170	15	160	130	210	555	25	120	600	230
Future Volume (veh/h)	140	135	170	15	160	130	210	555	25	120	600	230
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	0.98		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1673	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	152	147	34	16	174	14	228	603	0	130	652	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	294	405	338	283	253	210	330	826		342	760	
Arrive On Green	0.10	0.22	0.22	0.02	0.14	0.14	0.10	0.44	0.00	0.06	0.41	0.00
Sat Flow, veh/h	1594	1870	1563	1781	1870	1550	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	152	147	34	16	174	14	228	603	0	130	652	0
Grp Sat Flow(s),veh/h/ln	1594	1870	1563	1781	1870	1550	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	6.6	5.7	1.5	0.6	7.5	0.7	6.1	22.5	0.0	3.5	26.9	0.0
Cycle Q Clear(g_c), s	6.6	5.7	1.5	0.6	7.5	0.7	6.1	22.5	0.0	3.5	26.9	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	294	405	338	283	253	210	330	826		342	760	
V/C Ratio(X)	0.52	0.36	0.10	0.06	0.69	0.07	0.69	0.73		0.38	0.86	
Avail Cap(c_a), veh/h	324	729	609	461	707	586	659	906		734	906	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	26.4	28.2	26.6	30.6	34.9	31.9	17.7	19.5	0.0	15.5	22.9	0.0
Incr Delay (d2), s/veh	0.5	0.2	0.0	0.0	1.2	0.0	1.0	3.7	0.0	0.3	8.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	2.5	0.6	0.3	3.5	0.3	2.2	9.5	0.0	1.3	12.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.9	28.4	26.6	30.6	36.1	32.0	18.7	23.2	0.0	15.8	31.7	0.0
LnGrp LOS	C	C	C	C	D	C	B	C		B	C	
Approach Vol, veh/h		333			204			831	A		782	A
Approach Delay, s/veh		27.5			35.4			21.9			29.0	
Approach LOS		C			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.4	43.4	6.6	24.3	13.4	40.4	13.4	17.5
Change Period (Y+Rc), s	5.0	6.0	5.0	* 6	5.0	6.0	5.0	6.0
Max Green Setting (Gmax), s	24.0	41.0	10.0	* 33	24.0	41.0	10.0	32.0
Max Q Clear Time (g_c+I1), s	15.5	24.5	2.6	7.7	8.1	28.9	8.6	9.5
Green Ext Time (p_c), s	0.1	6.2	0.0	0.6	0.3	5.5	0.0	0.6

Intersection Summary	
HCM 6th Ctrl Delay	26.7
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	33.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	145	590	25	25	660	130	15	5	15	80	5	180
Future Vol, veh/h	145	590	25	25	660	130	15	5	15	80	5	180
Conflicting Peds, #/hr	4	0	0	0	0	4	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	145	-	-	50	-	50	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	158	641	27	27	717	141	16	5	16	87	5	196

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	862	0	0	668	0	0	1913	1887	655	1756	1759	721
Stage 1	-	-	-	-	-	-	971	971	-	775	775	-
Stage 2	-	-	-	-	-	-	942	916	-	981	984	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	780	-	-	922	-	-	51	70	466	~ 66	85	427
Stage 1	-	-	-	-	-	-	304	331	-	391	408	-
Stage 2	-	-	-	-	-	-	316	351	-	300	327	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	777	-	-	922	-	-	21	54	466	~ 49	66	425
Mov Cap-2 Maneuver	-	-	-	-	-	-	21	54	-	~ 49	66	-
Stage 1	-	-	-	-	-	-	242	264	-	310	395	-
Stage 2	-	-	-	-	-	-	163	339	-	226	261	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.1	0.3	210.6	199.3
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	25	466	777	-	-	922	-	-	50	425
HCM Lane V/C Ratio	0.87	0.035	0.203	-	-	0.029	-	-	1.848	0.46
HCM Control Delay (s)	$ 358.8	13	10.8	-	-	9	-	-	$ 578	20.5
HCM Lane LOS	F	B	B	-	-	A	-	-	F	C
HCM 95th %tile Q(veh)	2.7	0.1	0.8	-	-	0.1	-	-	9.1	2.4

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

APPENDIX C

LEVEL OF SERVICE CALCULATIONS

- Future Year 2024 AM Peak

Intersection	
Intersection Delay, s/veh	128.2
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	85	5	150	15	15	10	165	425	10	5	555	105
Future Vol, veh/h	85	5	150	15	15	10	165	425	10	5	555	105
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	92	5	163	16	16	11	179	462	11	5	603	114
Number of Lanes	1	1	0	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	2
HCM Control Delay	14.5	14.2	124.8	179.1
HCM LOS	B	B	F	F

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	28%	0%	100%	0%	38%	1%
Vol Thru, %	72%	0%	0%	3%	38%	83%
Vol Right, %	0%	100%	0%	97%	25%	16%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	590	10	85	155	40	665
LT Vol	165	0	85	0	15	5
Through Vol	425	0	0	5	15	555
RT Vol	0	10	0	150	10	105
Lane Flow Rate	641	11	92	168	43	723
Geometry Grp	7	7	7	7	6	6
Degree of Util (X)	1.188	0.018	0.213	0.334	0.106	1.322
Departure Headway (Hd)	7.085	6.222	9.208	7.978	9.985	6.901
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	519	579	393	453	361	535
Service Time	4.785	3.922	6.908	5.678	7.985	4.901
HCM Lane V/C Ratio	1.235	0.019	0.234	0.371	0.119	1.351
HCM Control Delay	126.8	9	14.4	14.6	14.2	179.1
HCM Lane LOS	F	A	B	B	B	F
HCM 95th-tile Q	22.2	0.1	0.8	1.4	0.4	29.7

Intersection	
Int Delay, s/veh	172.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	230	55	555	735	70	695
Future Vol, veh/h	230	55	555	735	70	695
Conflicting Peds, #/hr	0	0	0	2	2	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	145	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	250	60	603	799	76	755

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1912	1005	0	0	1404	0
Stage 1	1005	-	-	-	-	-
Stage 2	907	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	~ 75	293	-	-	486	-
Stage 1	354	-	-	-	-	-
Stage 2	394	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 55	292	-	-	485	-
Mov Cap-2 Maneuver	~ 55	-	-	-	-	-
Stage 1	353	-	-	-	-	-
Stage 2	288	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	$ 1412.8	0	1.3
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	55	292	485	-
HCM Lane V/C Ratio	-	-	4.545	0.205	0.157	-
HCM Control Delay (s)	-	-	$ 1745.8	20.5	13.8	0
HCM Lane LOS	-	-	F	C	B	A
HCM 95th %tile Q(veh)	-	-	27.8	0.8	0.6	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	187

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	160	0	35	10	0	20	10	1120	10	15	715	170
Future Vol, veh/h	160	0	35	10	0	20	10	1120	10	15	715	170
Conflicting Peds, #/hr	0	0	0	0	0	0	3	0	3	3	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	174	0	38	11	0	22	11	1217	11	16	777	185

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2161	2158	873	2169	2245	1226	965	0	0	1231	0	0
Stage 1	905	905	-	1248	1248	-	-	-	-	-	-	-
Stage 2	1256	1253	-	921	997	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	~ 34	48	349	34	42	218	714	-	-	566	-	-
Stage 1	331	355	-	212	245	-	-	-	-	-	-	-
Stage 2	210	244	-	324	322	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 28	42	348	28	37	217	712	-	-	564	-	-
Mov Cap-2 Maneuver	~ 28	42	-	28	37	-	-	-	-	-	-	-
Stage 1	314	331	-	201	232	-	-	-	-	-	-	-
Stage 2	180	231	-	270	300	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, $	2155.2	101.7	0.1	0.2
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	712	-	-	28	348	67	564	-	-
HCM Lane V/C Ratio	0.015	-	-	6.211	0.109	0.487	0.029	-	-
HCM Control Delay (s)	10.1	0	-	$ 2623	16.6	101.7	11.6	-	-
HCM Lane LOS	B	A	-	F	C	F	B	-	-
HCM 95th %tile Q(veh)	0	-	-	21.3	0.4	2	0.1	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	55.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	130	65	40	1035	705	25
Future Vol, veh/h	130	65	40	1035	705	25
Conflicting Peds, #/hr	0	0	3	0	0	3
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	125	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	141	71	43	1125	766	27

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1994	783	796	0	-	0
Stage 1	783	-	-	-	-	-
Stage 2	1211	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	~ 66	394	826	-	-	-
Stage 1	450	-	-	-	-	-
Stage 2	282	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 56	393	824	-	-	-
Mov Cap-2 Maneuver	~ 56	-	-	-	-	-
Stage 1	386	-	-	-	-	-
Stage 2	281	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	$ 571.1	0.4	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	824	-	56	393	-	-
HCM Lane V/C Ratio	0.053	-	2.523	0.18	-	-
HCM Control Delay (s)	9.6	0	$ 848.5	16.2	-	-
HCM Lane LOS	A	A	F	C	-	-
HCM 95th %tile Q(veh)	0.2	-	14.4	0.6	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	395	395	90	50	260	230	180	255	65	200	265	205
Future Volume (veh/h)	395	395	90	50	260	230	180	255	65	200	265	205
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	494	429	93	54	283	28	196	277	64	217	288	203
Peak Hour Factor	0.80	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	527	573	124	243	327	275	270	455	105	396	323	228
Arrive On Green	0.25	0.39	0.39	0.03	0.17	0.17	0.09	0.31	0.31	0.10	0.32	0.32
Sat Flow, veh/h	1781	1489	323	1781	1870	1576	1781	1467	339	1781	1017	717
Grp Volume(v), veh/h	494	0	522	54	283	28	196	0	341	217	0	491
Grp Sat Flow(s),veh/h/ln	1781	0	1811	1781	1870	1576	1781	0	1805	1781	0	1733
Q Serve(g_s), s	25.9	0.0	29.4	2.9	17.4	1.8	8.7	0.0	19.0	9.7	0.0	31.9
Cycle Q Clear(g_c), s	25.9	0.0	29.4	2.9	17.4	1.8	8.7	0.0	19.0	9.7	0.0	31.9
Prop In Lane	1.00		0.18	1.00		1.00	1.00		0.19	1.00		0.41
Lane Grp Cap(c), veh/h	527	0	698	243	327	275	270	0	560	396	0	550
V/C Ratio(X)	0.94	0.00	0.75	0.22	0.87	0.10	0.73	0.00	0.61	0.55	0.00	0.89
Avail Cap(c_a), veh/h	618	0	843	316	459	387	376	0	917	458	0	851
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	28.8	0.0	31.4	38.2	47.4	41.0	28.7	0.0	34.7	25.3	0.0	38.4
Incr Delay (d2), s/veh	20.3	0.0	3.0	0.5	11.9	0.2	4.3	0.0	1.1	1.2	0.0	7.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	13.9	0.0	13.4	1.3	9.2	0.7	4.0	0.0	8.6	4.2	0.0	14.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	49.1	0.0	34.4	38.6	59.3	41.1	32.9	0.0	35.7	26.5	0.0	46.2
LnGrp LOS	D	A	C	D	E	D	C	A	D	C	A	D
Approach Vol, veh/h		1016			365			537			708	
Approach Delay, s/veh		41.5			54.9			34.7			40.2	
Approach LOS		D			D			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.9	42.6	8.1	51.5	15.0	43.5	33.0	26.6
Change Period (Y+Rc), s	4.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0
Max Green Setting (Gmax), s	16.0	60.0	9.0	55.0	18.0	58.0	35.0	29.0
Max Q Clear Time (g_c+I1), s	11.7	21.0	4.9	31.4	10.7	33.9	27.9	19.4
Green Ext Time (p_c), s	0.2	2.5	0.0	3.8	0.3	3.7	1.0	1.2

Intersection Summary	
HCM 6th Ctrl Delay	41.6
HCM 6th LOS	D

Intersection	
Intersection Delay, s/veh	17.9
Intersection LOS	C

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	543	408	506	637
Demand Flow Rate, veh/h	554	417	516	650
Vehicles Circulating, veh/h	484	632	621	472
Vehicles Exiting, veh/h	638	505	417	577
Ped Vol Crossing Leg, #/h	31	0	4	0
Ped Cap Adj	0.996	1.000	0.999	1.000
Approach Delay, s/veh	15.8	14.6	19.6	20.5
Approach LOS	C	B	C	C

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	554	417	516	650
Cap Entry Lane, veh/h	842	724	732	853
Entry HV Adj Factor	0.980	0.979	0.981	0.980
Flow Entry, veh/h	543	408	506	637
Cap Entry, veh/h	822	709	718	836
V/C Ratio	0.661	0.576	0.705	0.762
Control Delay, s/veh	15.8	14.6	19.6	20.5
LOS	C	B	C	C
95th %tile Queue, veh	5	4	6	7

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	130	25	5	330	340	35
Future Vol, veh/h	130	25	5	330	340	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	50	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	141	27	5	359	370	38

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	758	389	408	0	-	0
Stage 1	389	-	-	-	-	-
Stage 2	369	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	375	659	1151	-	-	-
Stage 1	685	-	-	-	-	-
Stage 2	699	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	373	659	1151	-	-	-
Mov Cap-2 Maneuver	373	-	-	-	-	-
Stage 1	682	-	-	-	-	-
Stage 2	699	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	18.8	0.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1151	-	373	659	-	-
HCM Lane V/C Ratio	0.005	-	0.379	0.041	-	-
HCM Control Delay (s)	8.1	0	20.4	10.7	-	-
HCM Lane LOS	A	A	C	B	-	-
HCM 95th %tile Q(veh)	0	-	1.7	0.1	-	-

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	70	75	20	245	330	30
Future Vol, veh/h	70	75	20	245	330	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	76	82	22	266	359	33

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	686	376	392	0	-	0
Stage 1	376	-	-	-	-	-
Stage 2	310	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	413	670	1167	-	-	-
Stage 1	694	-	-	-	-	-
Stage 2	744	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	404	670	1167	-	-	-
Mov Cap-2 Maneuver	404	-	-	-	-	-
Stage 1	679	-	-	-	-	-
Stage 2	744	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.2	0.6	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1167	-	508	-	-
HCM Lane V/C Ratio	0.019	-	0.31	-	-
HCM Control Delay (s)	8.1	0	15.2	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.1	-	1.3	-	-

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	35	20	5	235	400	5
Future Vol, veh/h	35	20	5	235	400	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	38	22	5	255	435	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	703	438	440	0	-	0
Stage 1	438	-	-	-	-	-
Stage 2	265	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	404	619	1120	-	-	-
Stage 1	651	-	-	-	-	-
Stage 2	779	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	402	619	1120	-	-	-
Mov Cap-2 Maneuver	402	-	-	-	-	-
Stage 1	648	-	-	-	-	-
Stage 2	779	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1120	-	461	-	-
HCM Lane V/C Ratio	0.005	-	0.13	-	-
HCM Control Delay (s)	8.2	0	14	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.4	-	-

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	30	25	5	210	410	15
Future Vol, veh/h	30	25	5	210	410	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	200	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	33	27	5	228	446	16

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	692	454	462	0	-	0
Stage 1	454	-	-	-	-	-
Stage 2	238	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	410	606	1099	-	-	-
Stage 1	640	-	-	-	-	-
Stage 2	802	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	408	606	1099	-	-	-
Mov Cap-2 Maneuver	505	-	-	-	-	-
Stage 1	637	-	-	-	-	-
Stage 2	802	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.4	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1099	-	546	-	-
HCM Lane V/C Ratio	0.005	-	0.109	-	-
HCM Control Delay (s)	8.3	-	12.4	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.4	-	-

Intersection	
Int Delay, s/veh	28.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	80	275	75	140	325	95
Future Vol, veh/h	80	275	75	140	325	95
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	87	299	82	152	353	103

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	234	0	-	0	631	158
Stage 1	-	-	-	-	158	-
Stage 2	-	-	-	-	473	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1333	-	-	-	445	887
Stage 1	-	-	-	-	871	-
Stage 2	-	-	-	-	627	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1333	-	-	-	410	887
Mov Cap-2 Maneuver	-	-	-	-	410	-
Stage 1	-	-	-	-	803	-
Stage 2	-	-	-	-	627	-

Approach	EB	WB	SB
HCM Control Delay, s	1.8	0	66.1
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1333	-	-	-	467
HCM Lane V/C Ratio	0.065	-	-	-	0.978
HCM Control Delay (s)	7.9	0	-	-	66.1
HCM Lane LOS	A	A	-	-	F
HCM 95th %tile Q(veh)	0.2	-	-	-	12.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	15	10	105	10	55	5	715	125	180	855	10
Future Volume (veh/h)	20	15	10	105	10	55	5	715	125	180	855	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	22	16	1	114	11	45	5	777	132	196	929	7
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	176	112	221	206	19	56	299	951	161	332	1246	1056
Arrive On Green	0.14	0.14	0.14	0.14	0.14	0.14	0.01	0.61	0.61	0.06	0.67	0.67
Sat Flow, veh/h	785	796	1579	970	137	399	1781	1558	265	1781	1870	1585
Grp Volume(v), veh/h	38	0	1	170	0	0	5	0	909	196	929	7
Grp Sat Flow(s),veh/h/ln	1581	0	1579	1506	0	0	1781	0	1823	1781	1870	1585
Q Serve(g_s), s	0.0	0.0	0.0	7.7	0.0	0.0	0.1	0.0	33.2	3.2	28.2	0.1
Cycle Q Clear(g_c), s	1.5	0.0	0.0	9.3	0.0	0.0	0.1	0.0	33.2	3.2	28.2	0.1
Prop In Lane	0.58		1.00	0.67		0.26	1.00		0.15	1.00		1.00
Lane Grp Cap(c), veh/h	288	0	221	281	0	0	299	0	1112	332	1246	1056
V/C Ratio(X)	0.13	0.00	0.00	0.60	0.00	0.00	0.02	0.00	0.82	0.59	0.75	0.01
Avail Cap(c_a), veh/h	520	0	461	504	0	0	578	0	1491	512	1530	1296
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.3	0.0	31.7	35.5	0.0	0.0	9.5	0.0	13.0	15.0	9.5	4.8
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.8	0.0	0.0	0.0	0.0	4.0	0.6	2.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.0	3.5	0.0	0.0	0.0	0.0	12.8	2.0	10.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.4	0.0	31.7	36.3	0.0	0.0	9.5	0.0	17.0	15.6	11.9	4.8
LnGrp LOS	C	A	C	D	A	A	A	A	B	B	B	A
Approach Vol, veh/h		39			170			914			1132	
Approach Delay, s/veh		32.4			36.3			16.9			12.5	
Approach LOS		C			D			B			B	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.4	58.2		17.0	5.6	63.0		17.0
Change Period (Y+Rc), s	5.0	6.0		5.0	5.0	6.0		5.0
Max Green Setting (Gmax), s	14.0	70.0		25.0	14.0	70.0		25.0
Max Q Clear Time (g_c+I1), s	5.2	35.2		3.5	2.1	30.2		11.3
Green Ext Time (p_c), s	0.2	17.0		0.1	0.0	18.7		0.5

Intersection Summary	
HCM 6th Ctrl Delay	16.4
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	155	90	20	780	955	65
Future Volume (veh/h)	155	90	20	780	955	65
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	168	7	22	848	1038	57
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	216	192	242	1365	1192	1010
Arrive On Green	0.12	0.12	0.02	0.73	0.64	0.64
Sat Flow, veh/h	1781	1585	1781	1870	1870	1585
Grp Volume(v), veh/h	168	7	22	848	1038	57
Grp Sat Flow(s),veh/h/ln	1781	1585	1781	1870	1870	1585
Q Serve(g_s), s	6.8	0.3	0.3	16.5	33.4	1.0
Cycle Q Clear(g_c), s	6.8	0.3	0.3	16.5	33.4	1.0
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	216	192	242	1365	1192	1010
V/C Ratio(X)	0.78	0.04	0.09	0.62	0.87	0.06
Avail Cap(c_a), veh/h	724	644	536	2281	1799	1525
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.5	28.6	12.5	4.9	10.9	5.0
Incr Delay (d2), s/veh	5.9	0.1	0.2	0.5	3.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	0.1	0.2	4.3	11.7	0.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	37.4	28.7	12.6	5.4	14.2	5.1
LnGrp LOS	D	C	B	A	B	A
Approach Vol, veh/h	175			870	1095	
Approach Delay, s/veh	37.1			5.6	13.7	
Approach LOS	D			A	B	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	16.8	53.0		14.0		59.9
Change Period (Y+Rc), s	5.0	6.0		5.0		6.0
Max Green Setting (Gmax), s	14.0	71.0		30.0		90.0
Max Q Clear Time (g_c+I1), s	12.3	35.4		8.8		18.5
Green Ext Time (p_c), s	0.0	11.7		0.5		8.4

Intersection Summary	
HCM 6th Ctrl Delay	12.3
HCM 6th LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	135	85	340	50	350	25	500	415	370	655	10
Future Volume (veh/h)	55	135	85	340	50	350	25	500	415	370	655	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	2067	2067	2067	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	60	147	9	370	54	213	27	543	0	402	712	6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	292	201	214	434	453	634	244	664		432	913	833
Arrive On Green	0.04	0.10	0.10	0.18	0.24	0.24	0.03	0.36	0.00	0.16	0.49	0.49
Sat Flow, veh/h	1968	2067	1733	1781	1870	1579	1781	1870	1585	1781	1870	1577
Grp Volume(v), veh/h	60	147	9	370	54	213	27	543	0	402	712	6
Grp Sat Flow(s),veh/h/ln	1968	2067	1733	1781	1870	1579	1781	1870	1585	1781	1870	1577
Q Serve(g_s), s	2.8	7.1	0.5	18.8	2.3	9.6	1.0	27.1	0.0	14.1	32.4	0.2
Cycle Q Clear(g_c), s	2.8	7.1	0.5	18.8	2.3	9.6	1.0	27.1	0.0	14.1	32.4	0.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	292	201	214	434	453	634	244	664		432	913	833
V/C Ratio(X)	0.21	0.73	0.04	0.85	0.12	0.34	0.11	0.82		0.93	0.78	0.01
Avail Cap(c_a), veh/h	386	603	551	434	727	865	527	1091		478	1091	983
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.5	45.1	39.7	32.3	30.4	21.4	21.8	30.1	0.0	21.0	21.8	11.5
Incr Delay (d2), s/veh	0.3	1.9	0.0	15.1	0.0	0.1	0.1	5.3	0.0	22.9	4.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	3.8	0.2	9.9	1.1	3.6	0.4	12.7	0.0	8.1	14.3	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.9	47.1	39.8	47.4	30.5	21.5	21.8	35.4	0.0	43.9	26.0	11.5
LnGrp LOS	D	D	D	D	C	C	C	D		D	C	B
Approach Vol, veh/h		216			637			570	A		1120	
Approach Delay, s/veh		44.8			37.3			34.8			32.4	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.3	42.6	24.0	15.0	7.7	56.2	9.1	29.9
Change Period (Y+Rc), s	5.0	6.0	5.0	5.0	5.0	6.0	5.0	5.0
Max Green Setting (Gmax), s	19.0	60.0	19.0	30.0	19.0	60.0	9.0	40.0
Max Q Clear Time (g_c+I1), s	16.1	29.1	20.8	9.1	3.0	34.4	4.8	11.6
Green Ext Time (p_c), s	0.2	7.4	0.0	0.5	0.0	9.9	0.0	0.6

Intersection Summary	
HCM 6th Ctrl Delay	35.2
HCM 6th LOS	D

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	285	285	495	35	240	135	315	585	15	50	405	110
Future Volume (veh/h)	285	285	495	35	240	135	315	585	15	50	405	110
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1567	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	407	310	158	38	261	17	342	636	0	54	440	0
Peak Hour Factor	0.70	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	10	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	420	656	555	294	302	254	384	724		189	506	
Arrive On Green	0.22	0.35	0.35	0.03	0.16	0.16	0.15	0.39	0.00	0.04	0.27	0.00
Sat Flow, veh/h	1493	1870	1581	1781	1870	1575	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	407	310	158	38	261	17	342	636	0	54	440	0
Grp Sat Flow(s),veh/h/ln	1493	1870	1581	1781	1870	1575	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	24.0	14.0	7.8	1.9	14.8	1.0	14.4	34.3	0.0	2.4	24.4	0.0
Cycle Q Clear(g_c), s	24.0	14.0	7.8	1.9	14.8	1.0	14.4	34.3	0.0	2.4	24.4	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	420	656	555	294	302	254	384	724		189	506	
V/C Ratio(X)	0.97	0.47	0.28	0.13	0.86	0.07	0.89	0.88		0.29	0.87	
Avail Cap(c_a), veh/h	420	656	555	697	413	348	504	724		517	620	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	28.7	27.4	25.4	36.2	44.4	38.6	25.1	30.9	0.0	29.2	37.8	0.0
Incr Delay (d2), s/veh	35.7	0.2	0.1	0.1	10.5	0.0	12.5	12.6	0.0	0.3	13.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.8	6.3	3.0	0.8	7.7	0.4	7.0	17.1	0.0	1.0	12.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	64.4	27.6	25.5	36.2	54.8	38.7	37.6	43.5	0.0	29.5	51.1	0.0
LnGrp LOS	E	C	C	D	D	D	D	D		C	D	
Approach Vol, veh/h		875			316			978	A		494	A
Approach Delay, s/veh		44.3			51.7			41.4			48.8	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.0	48.1	8.4	43.1	21.7	35.4	29.0	22.5
Change Period (Y+Rc), s	5.0	6.0	5.0	5.0	5.0	6.0	5.0	5.0
Max Green Setting (Gmax), s	24.0	36.0	28.0	20.0	24.0	36.0	24.0	24.0
Max Q Clear Time (g_c+I1), s	14.4	36.3	3.9	16.0	16.4	26.4	26.0	16.8
Green Ext Time (p_c), s	0.0	0.0	0.0	0.7	0.3	3.0	0.0	0.6

Intersection Summary	
HCM 6th Ctrl Delay	45.0
HCM 6th LOS	D

Notes

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	10.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	100	770	10	10	560	65	30	5	30	35	5	115
Future Vol, veh/h	100	770	10	10	560	65	30	5	30	35	5	115
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	145	-	-	50	-	50	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	109	837	11	11	609	71	33	5	33	38	5	125

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	681	0	0	848	0	0	1793	1764	843	1712	1698	610
Stage 1	-	-	-	-	-	-	1061	1061	-	632	632	-
Stage 2	-	-	-	-	-	-	732	703	-	1080	1066	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	912	-	-	790	-	-	63	84	364	71	92	494
Stage 1	-	-	-	-	-	-	271	300	-	468	474	-
Stage 2	-	-	-	-	-	-	413	440	-	264	299	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	911	-	-	790	-	-	40	73	364	55	80	494
Mov Cap-2 Maneuver	-	-	-	-	-	-	40	73	-	55	80	-
Stage 1	-	-	-	-	-	-	238	264	-	412	467	-
Stage 2	-	-	-	-	-	-	301	433	-	207	263	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.1	0.2	140.4	55.1
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	43	364	911	-	-	790	-	-	57	494
HCM Lane V/C Ratio	0.885	0.09	0.119	-	-	0.014	-	-	0.763	0.253
HCM Control Delay (s)	247.2	15.9	9.5	-	-	9.6	-	-	171.4	14.7
HCM Lane LOS	F	C	A	-	-	A	-	-	F	B
HCM 95th %tile Q(veh)	3.5	0.3	0.4	-	-	0	-	-	3.3	1

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	65	30	15	925	990	20
Future Vol, veh/h	65	30	15	925	990	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	200	-	-	200
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	71	33	16	1005	1076	22

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2113	1076	1098	0	-	0
Stage 1	1076	-	-	-	-	-
Stage 2	1037	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	~ 56	267	636	-	-	-
Stage 1	327	-	-	-	-	-
Stage 2	342	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 55	267	636	-	-	-
Mov Cap-2 Maneuver	176	-	-	-	-	-
Stage 1	319	-	-	-	-	-
Stage 2	342	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	32.8	0.2	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	636	-	176	267	-	-
HCM Lane V/C Ratio	0.026	-	0.401	0.122	-	-
HCM Control Delay (s)	10.8	-	38.5	20.4	-	-
HCM Lane LOS	B	-	E	C	-	-
HCM 95th %tile Q(veh)	0.1	-	1.8	0.4	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↱		↑	↑	↱
Traffic Vol, veh/h	0	15	0	990	1000	10
Future Vol, veh/h	0	15	0	990	1000	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	200
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	16	0	1076	1087	11

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	1087	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	-	-	-	-
Pot Cap-1 Maneuver	0	263	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	263	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	19.6	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	263	-	-
HCM Lane V/C Ratio	-	0.062	-	-
HCM Control Delay (s)	-	19.6	-	-
HCM Lane LOS	-	C	-	-
HCM 95th %tile Q(veh)	-	0.2	-	-

APPENDIX C

LEVEL OF SERVICE CALCULATIONS

- Future Year 2024 PM Peak

Intersection	
Intersection Delay, s/veh	164.3
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	60	10	200	15	5	10	110	510	25	10	645	70
Future Vol, veh/h	60	10	200	15	5	10	110	510	25	10	645	70
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	65	11	217	16	5	11	120	554	27	11	701	76
Number of Lanes	1	1	0	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	2
HCM Control Delay	16.6	14.5	147.8	240.1
HCM LOS	C	B	F	F

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	18%	0%	100%	0%	50%	1%
Vol Thru, %	82%	0%	0%	5%	17%	89%
Vol Right, %	0%	100%	0%	95%	33%	10%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	620	25	60	210	30	725
LT Vol	110	0	60	0	15	10
Through Vol	510	0	0	10	5	645
RT Vol	0	25	0	200	10	70
Lane Flow Rate	674	27	65	228	33	788
Geometry Grp	7	7	7	7	6	6
Degree of Util (X)	1.255	0.045	0.15	0.45	0.081	1.466
Departure Headway (Hd)	7.27	6.458	9.385	8.161	10.564	7.084
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	505	558	385	445	341	520
Service Time	4.97	4.158	7.085	5.861	8.564	5.084
HCM Lane V/C Ratio	1.335	0.048	0.169	0.512	0.097	1.515
HCM Control Delay	153.4	9.5	13.7	17.4	14.5	240.1
HCM Lane LOS	F	A	B	C	B	F
HCM 95th-tile Q	25.1	0.1	0.5	2.3	0.3	37.1

Intersection	
Int Delay, s/veh	301.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	315	35	560	535	65	760
Future Vol, veh/h	315	35	560	535	65	760
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	145	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	342	38	609	582	71	826

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1868	900	0	0	1191	0
Stage 1	900	-	-	-	-	-
Stage 2	968	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	~ 80	337	-	-	586	-
Stage 1	397	-	-	-	-	-
Stage 2	368	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 62	337	-	-	586	-
Mov Cap-2 Maneuver	~ 62	-	-	-	-	-
Stage 1	397	-	-	-	-	-
Stage 2	~ 286	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	$ 1951.8	0	0.9
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	62	337	586	-
HCM Lane V/C Ratio	-	-	5.522	0.113	0.121	-
HCM Control Delay (s)	-	-	$ 2166.8	17	12	0
HCM Lane LOS	-	-	F	C	B	A
HCM 95th %tile Q(veh)	-	-	38.4	0.4	0.4	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	43.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	70	0	15	10	5	10	30	1045	5	5	975	160
Future Vol, veh/h	70	0	15	10	5	10	30	1045	5	5	975	160
Conflicting Peds, #/hr	0	0	0	0	0	0	5	0	4	4	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	135	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	76	0	16	11	5	11	33	1136	5	5	1060	174

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2375	2373	1152	2374	2458	1143	1239	0	0	1145	0	0
Stage 1	1162	1162	-	1209	1209	-	-	-	-	-	-	-
Stage 2	1213	1211	-	1165	1249	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	~ 24	35	241	24	31	244	562	-	-	610	-	-
Stage 1	237	269	-	223	256	-	-	-	-	-	-	-
Stage 2	222	255	-	237	245	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 16	28	240	19	25	243	559	-	-	608	-	-
Mov Cap-2 Maneuver	~ 16	28	-	19	25	-	-	-	-	-	-	-
Stage 1	198	260	-	186	214	-	-	-	-	-	-	-
Stage 2	173	213	-	215	237	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 1102.8	279.3	0.3	0
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	559	-	-	16	25	33	608	-	-
HCM Lane V/C Ratio	0.058	-	-	3.17	1.667	0.823	0.009	-	-
HCM Control Delay (s)	11.8	0	-	$ 1466.3	$ 660.2	279.3	11	-	-
HCM Lane LOS	B	A	-	F	F	F	B	-	-
HCM 95th %tile Q(veh)	0.2	-	-	7	5.1	2.8	0	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	19.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	60	40	55	980	950	45
Future Vol, veh/h	60	40	55	980	950	45
Conflicting Peds, #/hr	0	0	12	0	0	12
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	125	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	65	43	60	1065	1033	49

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2255	1070	1094	0	-	0
Stage 1	1070	-	-	-	-	-
Stage 2	1185	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	~ 45	269	638	-	-	-
Stage 1	329	-	-	-	-	-
Stage 2	290	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 34	266	631	-	-	-
Mov Cap-2 Maneuver	~ 34	-	-	-	-	-
Stage 1	250	-	-	-	-	-
Stage 2	287	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	$ 418.6	0.6	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	631	-	34	266	-	-
HCM Lane V/C Ratio	0.095	-	1.918	0.163	-	-
HCM Control Delay (s)	11.3	0	$ 683.6	21.2	-	-
HCM Lane LOS	B	A	F	C	-	-
HCM 95th %tile Q(veh)	0.3	-	7.3	0.6	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	330	300	95	110	480	330	90	255	85	320	320	225
Future Volume (veh/h)	330	300	95	110	480	330	90	255	85	320	320	225
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	359	326	98	120	522	175	98	277	84	348	348	230
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	378	575	173	374	555	469	166	348	105	385	374	247
Arrive On Green	0.18	0.42	0.42	0.06	0.30	0.30	0.05	0.25	0.25	0.16	0.36	0.36
Sat Flow, veh/h	1781	1380	415	1781	1870	1582	1781	1377	417	1781	1050	694
Grp Volume(v), veh/h	359	0	424	120	522	175	98	0	361	348	0	578
Grp Sat Flow(s),veh/h/ln	1781	0	1795	1781	1870	1582	1781	0	1794	1781	0	1744
Q Serve(g_s), s	28.4	0.0	31.0	8.0	46.8	15.0	7.0	0.0	32.4	24.2	0.0	54.9
Cycle Q Clear(g_c), s	28.4	0.0	31.0	8.0	46.8	15.0	7.0	0.0	32.4	24.2	0.0	54.9
Prop In Lane	1.00		0.23	1.00		1.00	1.00		0.23	1.00		0.40
Lane Grp Cap(c), veh/h	378	0	748	374	555	469	166	0	453	385	0	622
V/C Ratio(X)	0.95	0.00	0.57	0.32	0.94	0.37	0.59	0.00	0.80	0.90	0.00	0.93
Avail Cap(c_a), veh/h	402	0	762	425	598	506	197	0	626	439	0	811
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	52.4	0.0	38.3	38.7	59.0	47.8	48.5	0.0	60.1	40.9	0.0	53.3
Incr Delay (d2), s/veh	31.2	0.0	1.0	0.5	22.4	0.5	3.3	0.0	5.0	20.2	0.0	14.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	19.0	0.0	14.2	3.7	25.9	6.1	3.3	0.0	15.6	13.0	0.0	26.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	83.7	0.0	39.3	39.2	81.4	48.3	51.9	0.0	65.1	61.1	0.0	67.7
LnGrp LOS	F	A	D	D	F	D	D	A	E	E	A	E
Approach Vol, veh/h		783			817			459			926	
Approach Delay, s/veh		59.6			68.1			62.3			65.2	
Approach LOS		E			E			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	30.8	49.4	14.1	77.6	12.9	67.3	34.7	57.0
Change Period (Y+Rc), s	4.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0
Max Green Setting (Gmax), s	32.0	60.0	15.0	73.0	12.0	80.0	33.0	55.0
Max Q Clear Time (g_c+I1), s	26.2	34.4	10.0	33.0	9.0	56.9	30.4	48.8
Green Ext Time (p_c), s	0.6	2.5	0.1	3.2	0.1	4.4	0.3	2.2

Intersection Summary	
HCM 6th Ctrl Delay	64.1
HCM 6th LOS	E

Intersection	
Intersection Delay, s/veh	24.4
Intersection LOS	C

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	680	593	342	751
Demand Flow Rate, veh/h	693	604	348	766
Vehicles Circulating, veh/h	411	559	682	482
Vehicles Exiting, veh/h	837	471	422	681
Ped Vol Crossing Leg, #/h	7	0	0	0
Ped Cap Adj	0.999	1.000	1.000	1.000
Approach Delay, s/veh	19.7	22.7	13.2	35.1
Approach LOS	C	C	B	E

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	693	604	348	766
Cap Entry Lane, veh/h	907	780	688	844
Entry HV Adj Factor	0.981	0.981	0.981	0.981
Flow Entry, veh/h	680	593	342	751
Cap Entry, veh/h	890	766	675	828
V/C Ratio	0.764	0.774	0.506	0.908
Control Delay, s/veh	19.7	22.7	13.2	35.1
LOS	C	C	B	E
95th %tile Queue, veh	8	8	3	13

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	50	15	30	360	355	75
Future Vol, veh/h	50	15	30	360	355	75
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	50	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	54	16	33	391	386	82

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	884	427	468	0	-	0
Stage 1	427	-	-	-	-	-
Stage 2	457	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	316	628	1094	-	-	-
Stage 1	658	-	-	-	-	-
Stage 2	638	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	304	628	1094	-	-	-
Mov Cap-2 Maneuver	304	-	-	-	-	-
Stage 1	632	-	-	-	-	-
Stage 2	638	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.4	0.6	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1094	-	304	628	-	-
HCM Lane V/C Ratio	0.03	-	0.179	0.026	-	-
HCM Control Delay (s)	8.4	0	19.4	10.9	-	-
HCM Lane LOS	A	A	C	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.6	0.1	-	-

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	40	30	60	335	310	65
Future Vol, veh/h	40	30	60	335	310	65
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	43	33	65	364	337	71

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	867	373	408	0	-	0
Stage 1	373	-	-	-	-	-
Stage 2	494	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	323	673	1151	-	-	-
Stage 1	696	-	-	-	-	-
Stage 2	613	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	300	673	1151	-	-	-
Mov Cap-2 Maneuver	300	-	-	-	-	-
Stage 1	647	-	-	-	-	-
Stage 2	613	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	16.3	1.3	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1151	-	393	-	-
HCM Lane V/C Ratio	0.057	-	0.194	-	-
HCM Control Delay (s)	8.3	0	16.3	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.2	-	0.7	-	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	10	20	20	385	325	15
Future Vol, veh/h	10	20	20	385	325	15
Conflicting Peds, #/hr	0	0	2	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	22	22	418	353	16

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	825	363	371	0	-	0
Stage 1	363	-	-	-	-	-
Stage 2	462	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	342	682	1188	-	-	-
Stage 1	704	-	-	-	-	-
Stage 2	634	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	332	681	1186	-	-	-
Mov Cap-2 Maneuver	332	-	-	-	-	-
Stage 1	686	-	-	-	-	-
Stage 2	633	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.6	0.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1186	-	504	-	-
HCM Lane V/C Ratio	0.018	-	0.065	-	-
HCM Control Delay (s)	8.1	0	12.6	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	15	10	15	390	320	20
Future Vol, veh/h	15	10	15	390	320	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	200	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	16	11	16	424	348	22

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	815	359	370	0	-	0
Stage 1	359	-	-	-	-	-
Stage 2	456	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	347	685	1189	-	-	-
Stage 1	707	-	-	-	-	-
Stage 2	638	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	342	685	1189	-	-	-
Mov Cap-2 Maneuver	460	-	-	-	-	-
Stage 1	698	-	-	-	-	-
Stage 2	638	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.2	0.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1189	-	530	-	-
HCM Lane V/C Ratio	0.014	-	0.051	-	-
HCM Control Delay (s)	8.1	-	12.2	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Intersection	
Int Delay, s/veh	13.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	75	120	170	315	260	60
Future Vol, veh/h	75	120	170	315	260	60
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	82	130	185	342	283	65

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	527	0	-	0	650	356
Stage 1	-	-	-	-	356	-
Stage 2	-	-	-	-	294	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1040	-	-	-	434	688
Stage 1	-	-	-	-	709	-
Stage 2	-	-	-	-	756	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1040	-	-	-	397	688
Mov Cap-2 Maneuver	-	-	-	-	397	-
Stage 1	-	-	-	-	649	-
Stage 2	-	-	-	-	756	-

Approach	EB	WB	SB
HCM Control Delay, s	3.4	0	40.1
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1040	-	-	-	431
HCM Lane V/C Ratio	0.078	-	-	-	0.807
HCM Control Delay (s)	8.8	0	-	-	40.1
HCM Lane LOS	A	A	-	-	E
HCM 95th %tile Q(veh)	0.3	-	-	-	7.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	10	5	120	15	100	10	875	130	85	725	25
Future Volume (veh/h)	15	10	5	120	15	100	10	875	130	85	725	25
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	16	11	1	130	16	85	11	951	137	92	788	17
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	181	112	274	196	23	96	375	1024	148	189	1249	1057
Arrive On Green	0.17	0.17	0.17	0.17	0.17	0.17	0.01	0.64	0.64	0.03	0.67	0.67
Sat Flow, veh/h	735	646	1585	826	131	557	1781	1598	230	1781	1870	1584
Grp Volume(v), veh/h	27	0	1	231	0	0	11	0	1088	92	788	17
Grp Sat Flow(s),veh/h/ln	1381	0	1585	1513	0	0	1781	0	1829	1781	1870	1584
Q Serve(g_s), s	0.0	0.0	0.1	14.4	0.0	0.0	0.2	0.0	55.6	1.9	25.5	0.4
Cycle Q Clear(g_c), s	1.3	0.0	0.1	15.6	0.0	0.0	0.2	0.0	55.6	1.9	25.5	0.4
Prop In Lane	0.59		1.00	0.56		0.37	1.00		0.13	1.00		1.00
Lane Grp Cap(c), veh/h	293	0	274	315	0	0	375	0	1172	189	1249	1057
V/C Ratio(X)	0.09	0.00	0.00	0.73	0.00	0.00	0.03	0.00	0.93	0.49	0.63	0.02
Avail Cap(c_a), veh/h	389	0	376	411	0	0	598	0	1216	364	1249	1057
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.6	0.0	36.1	42.4	0.0	0.0	9.0	0.0	16.8	23.7	10.1	5.9
Incr Delay (d2), s/veh	0.1	0.0	0.0	3.0	0.0	0.0	0.0	0.0	12.7	0.7	1.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.0	6.1	0.0	0.0	0.1	0.0	24.6	1.4	9.8	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.6	0.0	36.1	45.4	0.0	0.0	9.0	0.0	29.5	24.4	11.5	5.9
LnGrp LOS	D	A	D	D	A	A	A	A	C	C	B	A
Approach Vol, veh/h		28			231			1099			897	
Approach Delay, s/veh		36.6			45.4			29.3			12.7	
Approach LOS		D			D			C			B	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.7	73.4		23.2	5.8	76.3		23.2
Change Period (Y+Rc), s	5.0	6.0		5.0	5.0	6.0		5.0
Max Green Setting (Gmax), s	14.0	70.0		25.0	14.0	70.0		25.0
Max Q Clear Time (g_c+I1), s	3.9	57.6		3.3	2.2	27.5		17.6
Green Ext Time (p_c), s	0.1	9.9		0.1	0.0	14.8		0.5

Intersection Summary	
HCM 6th Ctrl Delay	24.4
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	100	35	60	925	785	130
Future Volume (veh/h)	100	35	60	925	785	130
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	109	3	65	1005	853	99
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	204	182	341	1304	1040	880
Arrive On Green	0.11	0.11	0.06	0.70	0.56	0.56
Sat Flow, veh/h	1781	1585	1781	1870	1870	1584
Grp Volume(v), veh/h	109	3	65	1005	853	99
Grp Sat Flow(s),veh/h/ln	1781	1585	1781	1870	1870	1584
Q Serve(g_s), s	3.4	0.1	0.8	20.6	21.8	1.7
Cycle Q Clear(g_c), s	3.4	0.1	0.8	20.6	21.8	1.7
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	204	182	341	1304	1040	880
V/C Ratio(X)	0.53	0.02	0.19	0.77	0.82	0.11
Avail Cap(c_a), veh/h	914	814	668	2880	2272	1924
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.4	22.9	9.2	5.8	10.6	6.2
Incr Delay (d2), s/veh	2.2	0.0	0.3	1.0	1.7	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	0.0	0.3	3.8	7.3	0.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	26.6	23.0	9.4	6.8	12.3	6.2
LnGrp LOS	C	C	A	A	B	A
Approach Vol, veh/h	112			1070	952	
Approach Delay, s/veh	26.5			6.9	11.6	
Approach LOS	C			A	B	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	8.3	38.5		11.7		46.7
Change Period (Y+Rc), s	5.0	6.0		5.0		6.0
Max Green Setting (Gmax), s	14.0	71.0		30.0		90.0
Max Q Clear Time (g_c+I1), s	2.8	23.8		5.4		22.6
Green Ext Time (p_c), s	0.1	8.7		0.3		10.5

Intersection Summary	
HCM 6th Ctrl Delay	10.1
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	95	30	430	135	310	60	565	450	300	575	35
Future Volume (veh/h)	25	95	30	430	135	310	60	565	450	300	575	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	2067	2067	2067	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	27	103	3	467	147	125	65	614	0	326	625	20
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	222	171	210	518	543	664	293	715		353	886	789
Arrive On Green	0.02	0.08	0.08	0.23	0.29	0.29	0.04	0.38	0.00	0.13	0.47	0.47
Sat Flow, veh/h	1968	2067	1751	1781	1870	1585	1781	1870	1585	1781	1870	1582
Grp Volume(v), veh/h	27	103	3	467	147	125	65	614	0	326	625	20
Grp Sat Flow(s),veh/h/ln	1968	2067	1751	1781	1870	1585	1781	1870	1585	1781	1870	1582
Q Serve(g_s), s	1.5	5.8	0.2	28.0	7.3	6.0	2.7	36.4	0.0	13.2	31.8	0.8
Cycle Q Clear(g_c), s	1.5	5.8	0.2	28.0	7.3	6.0	2.7	36.4	0.0	13.2	31.8	0.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	222	171	210	518	543	664	293	715		353	886	789
V/C Ratio(X)	0.12	0.60	0.01	0.90	0.27	0.19	0.22	0.86		0.92	0.71	0.03
Avail Cap(c_a), veh/h	631	446	442	518	543	664	538	946		435	946	839
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.7	53.4	46.8	37.0	32.9	22.1	23.1	34.3	0.0	26.3	25.1	15.4
Incr Delay (d2), s/veh	0.2	1.3	0.0	18.7	0.1	0.1	0.1	8.4	0.0	20.6	3.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	3.1	0.1	15.2	3.4	2.3	1.1	17.7	0.0	7.3	14.4	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.9	54.6	46.8	55.8	33.0	22.1	23.2	42.7	0.0	46.9	28.1	15.4
LnGrp LOS	D	D	D	E	C	C	C	D		D	C	B
Approach Vol, veh/h		133			739			679	A		971	
Approach Delay, s/veh		53.3			45.6			40.8			34.1	
Approach LOS		D			D			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.5	52.1	33.0	15.0	9.4	63.1	8.0	40.0
Change Period (Y+Rc), s	5.0	6.0	5.0	5.0	5.0	6.0	5.0	5.0
Max Green Setting (Gmax), s	21.0	61.0	28.0	26.0	21.0	61.0	28.0	26.0
Max Q Clear Time (g_c+I1), s	15.2	38.4	30.0	7.8	4.7	33.8	3.5	9.3
Green Ext Time (p_c), s	0.3	7.6	0.0	0.3	0.1	8.7	0.0	0.7

Intersection Summary	
HCM 6th Ctrl Delay	40.3
HCM 6th LOS	D

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	140	135	180	15	160	130	215	570	25	120	630	230
Future Volume (veh/h)	140	135	180	15	160	130	215	570	25	120	630	230
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	0.98		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1673	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	152	147	36	16	174	14	234	620	0	130	685	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	289	402	336	279	251	208	318	846		339	778	
Arrive On Green	0.10	0.21	0.21	0.02	0.13	0.13	0.10	0.45	0.00	0.06	0.42	0.00
Sat Flow, veh/h	1594	1870	1563	1781	1870	1550	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	152	147	36	16	174	14	234	620	0	130	685	0
Grp Sat Flow(s),veh/h/ln	1594	1870	1563	1781	1870	1550	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	6.9	5.9	1.6	0.7	7.8	0.7	6.4	23.7	0.0	3.6	29.5	0.0
Cycle Q Clear(g_c), s	6.9	5.9	1.6	0.7	7.8	0.7	6.4	23.7	0.0	3.6	29.5	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	289	402	336	279	251	208	318	846		339	778	
V/C Ratio(X)	0.53	0.37	0.11	0.06	0.69	0.07	0.74	0.73		0.38	0.88	
Avail Cap(c_a), veh/h	314	706	590	450	685	568	631	878		717	878	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	27.4	29.2	27.6	31.6	36.1	33.0	18.5	19.6	0.0	15.7	23.5	0.0
Incr Delay (d2), s/veh	0.6	0.2	0.1	0.0	1.3	0.1	1.3	3.9	0.0	0.3	10.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	2.6	0.6	0.3	3.6	0.3	2.4	10.2	0.0	1.3	14.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.9	29.4	27.6	31.7	37.4	33.1	19.8	23.5	0.0	16.0	34.3	0.0
LnGrp LOS	C	C	C	C	D	C	B	C		B	C	
Approach Vol, veh/h		335			204			854	A		815	A
Approach Delay, s/veh		28.5			36.6			22.5			31.4	
Approach LOS		C			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.5	45.5	6.6	24.8	13.6	42.4	13.7	17.7
Change Period (Y+Rc), s	5.0	6.0	5.0	* 6	5.0	6.0	5.0	6.0
Max Green Setting (Gmax), s	24.0	41.0	10.0	* 33	24.0	41.0	10.0	32.0
Max Q Clear Time (g_c+I1), s	5.6	25.7	2.7	7.9	8.4	31.5	8.9	9.8
Green Ext Time (p_c), s	0.1	6.1	0.0	0.6	0.3	4.9	0.0	0.6

Intersection Summary	
HCM 6th Ctrl Delay	28.0
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	36.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	145	605	25	25	685	130	15	5	15	80	5	185
Future Vol, veh/h	145	605	25	25	685	130	15	5	15	80	5	185
Conflicting Peds, #/hr	4	0	0	0	0	4	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	145	-	-	50	-	50	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	158	658	27	27	745	141	16	5	16	87	5	201

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	890	0	0	685	0	0	1961	1932	672	1801	1804	749
Stage 1	-	-	-	-	-	-	988	988	-	803	803	-
Stage 2	-	-	-	-	-	-	973	944	-	998	1001	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	761	-	-	908	-	-	48	66	456	~ 62	79	412
Stage 1	-	-	-	-	-	-	297	325	-	377	396	-
Stage 2	-	-	-	-	-	-	303	341	-	294	321	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	758	-	-	908	-	-	19	50	456	~ 45	60	410
Mov Cap-2 Maneuver	-	-	-	-	-	-	19	50	-	~ 45	60	-
Stage 1	-	-	-	-	-	-	235	257	-	297	383	-
Stage 2	-	-	-	-	-	-	148	329	-	220	254	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.1	0.3	254.6	222.7
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	22	456	758	-	-	908	-	-	46	410
HCM Lane V/C Ratio	0.988	0.036	0.208	-	-	0.03	-	-	2.009	0.49
HCM Control Delay (s)	$ 435.7	13.2	11	-	-	9.1	-	-	$ 659.8	21.9
HCM Lane LOS	F	B	B	-	-	A	-	-	F	C
HCM 95th %tile Q(veh)	2.8	0.1	0.8	-	-	0.1	-	-	9.5	2.6

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	50	15	40	985	900	60
Future Vol, veh/h	50	15	40	985	900	60
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	200	-	-	200
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	54	16	43	1071	978	65

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2135	978	1043	0	-	0
Stage 1	978	-	-	-	-	-
Stage 2	1157	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	~ 54	304	667	-	-	-
Stage 1	364	-	-	-	-	-
Stage 2	299	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 51	304	667	-	-	-
Mov Cap-2 Maneuver	169	-	-	-	-	-
Stage 1	341	-	-	-	-	-
Stage 2	299	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	31.8	0.4	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	667	-	169	304	-	-
HCM Lane V/C Ratio	0.065	-	0.322	0.054	-	-
HCM Control Delay (s)	10.8	-	36.1	17.5	-	-
HCM Lane LOS	B	-	E	C	-	-
HCM 95th %tile Q(veh)	0.2	-	1.3	0.2	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↱		↑	↑	↱
Traffic Vol, veh/h	0	10	0	1035	950	25
Future Vol, veh/h	0	10	0	1035	950	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	200
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	11	0	1125	1033	27

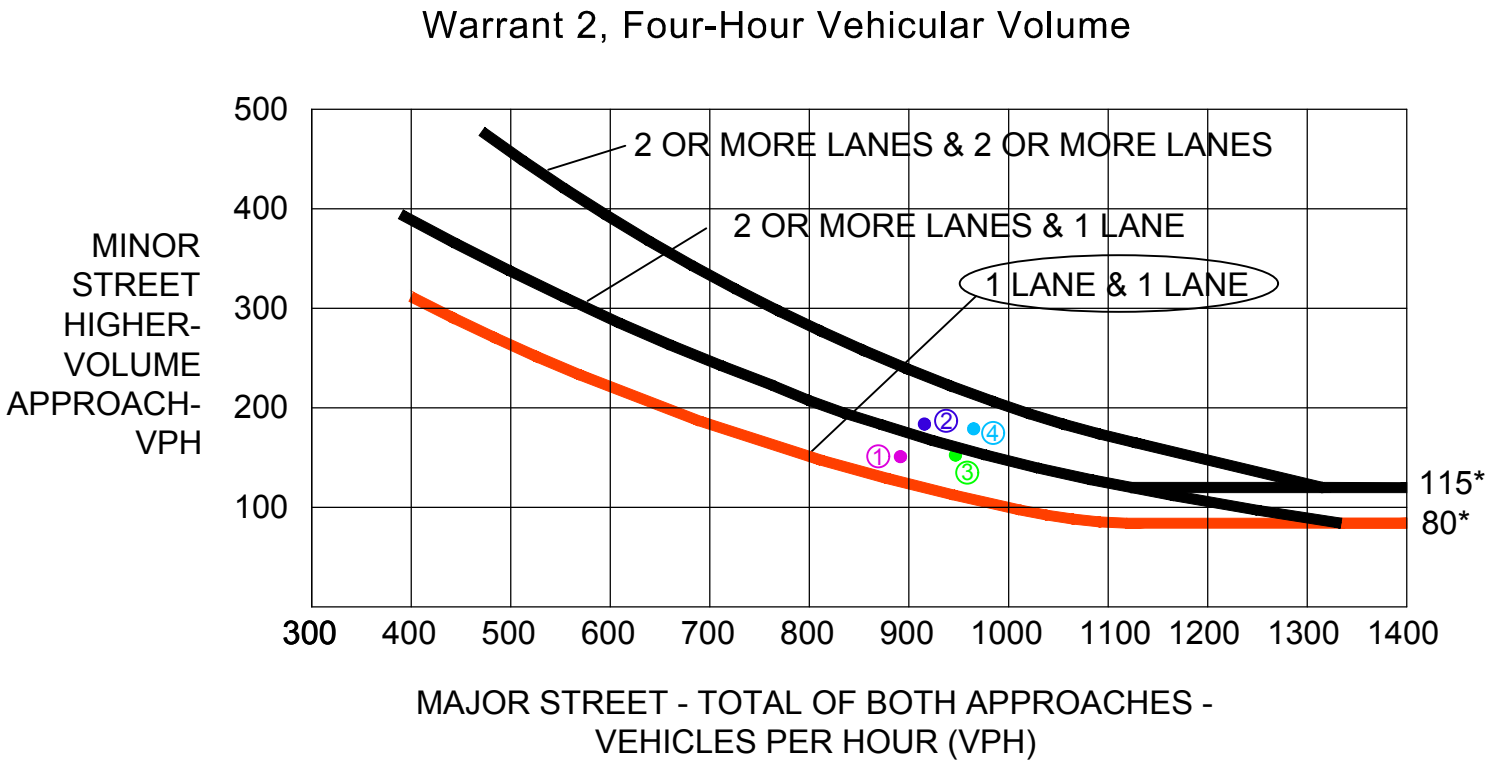
Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	1033	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	-	-	-	-
Pot Cap-1 Maneuver	0	282	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	282	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	18.3	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	282	-	-
HCM Lane V/C Ratio	-	0.039	-	-
HCM Control Delay (s)	-	18.3	-	-
HCM Lane LOS	-	C	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-

APPENDIX D

TRAFFIC SIGNAL WARRANTS



*Note
1. 115 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 80 vph applies as the lower threshold volume for a minor-street approach with one lane..

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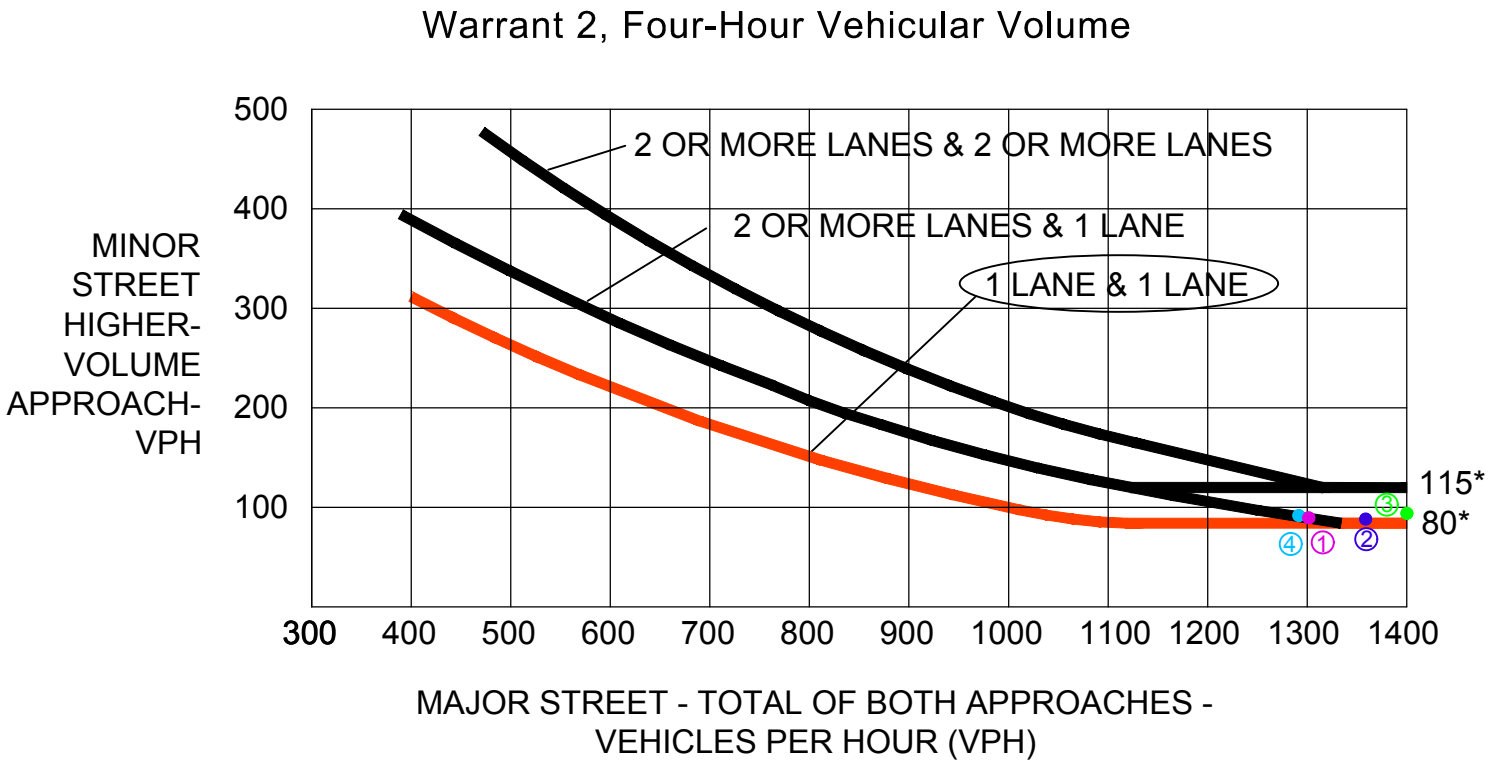
② (2:15 PM to 3:15 PM), (917,193)
③ (3:15 PM to 4:15 PM), (946, 153)
④ (4:15 PM to 5:15 PM), (965, 187)



*Note
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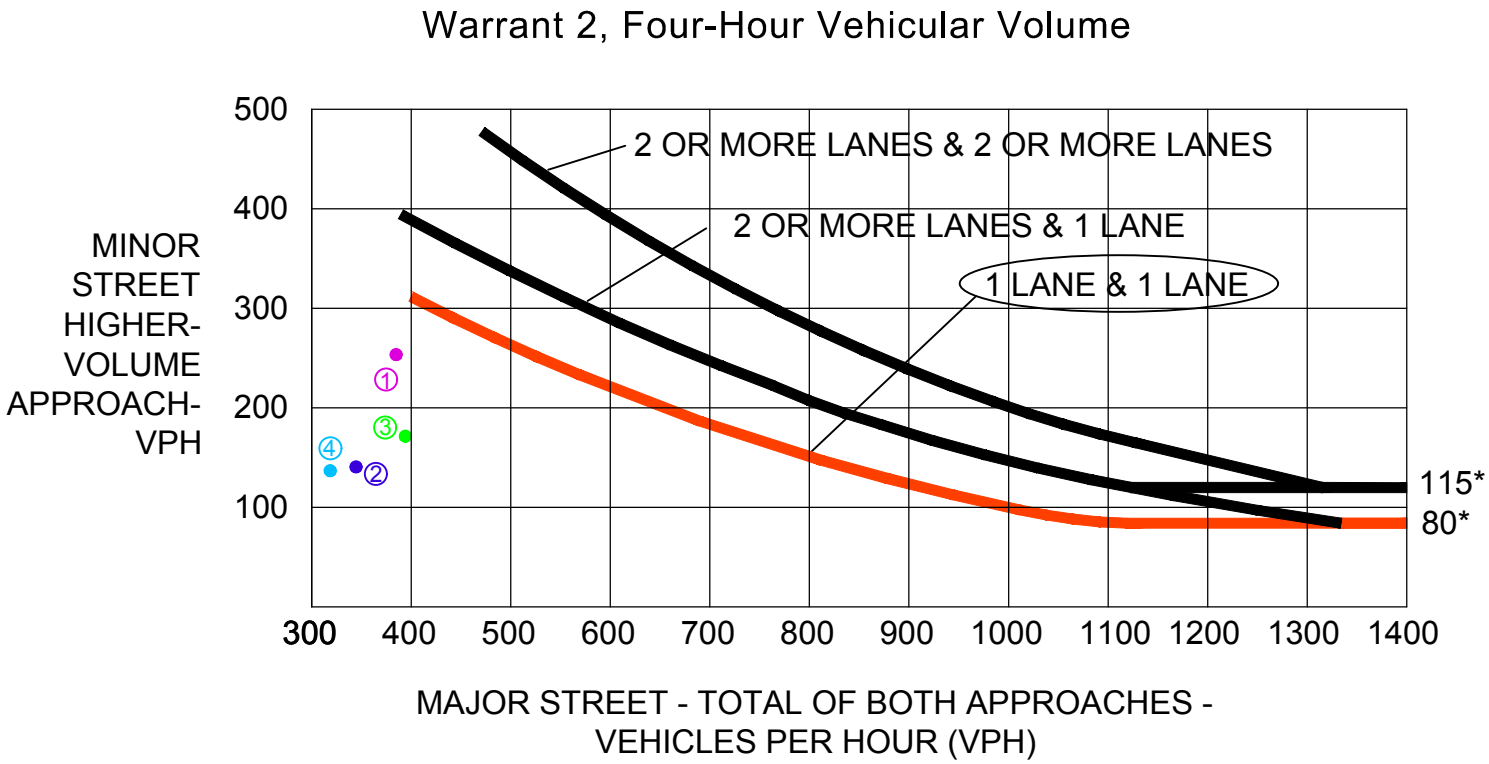
③ (4:00 PM to 5:00 PM), (1552, 92)
④ (5:00 PM to 6:00 PM), (1293, 82)



*Note
1. 115 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 80 vph applies as the lower threshold volume for a minor-street approach with one lane.

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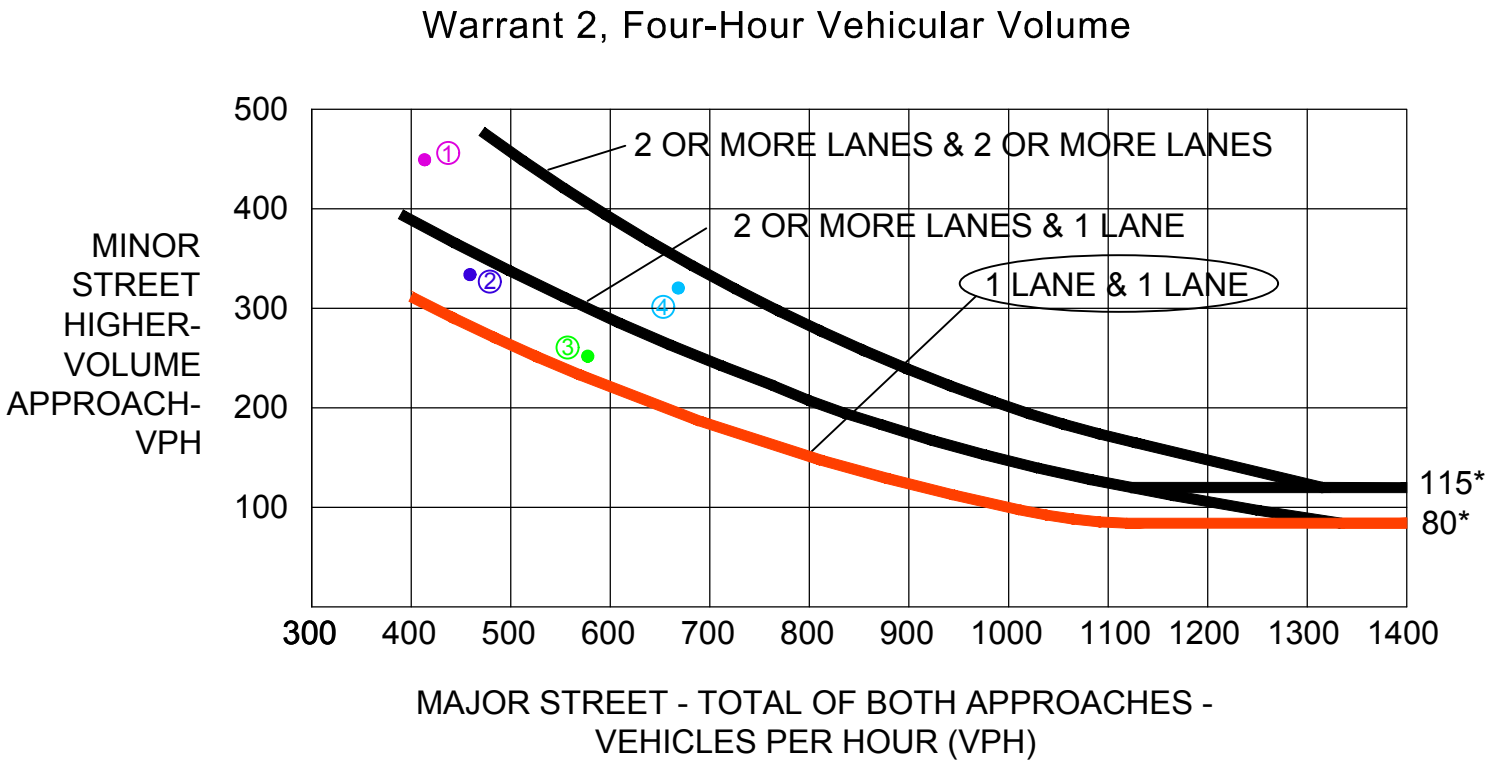
④ (5:00 PM to 6:00 PM), (314, 135)



*Note
1. 115 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 80 vph applies as the lower threshold volume for a minor-street approach with one lane..

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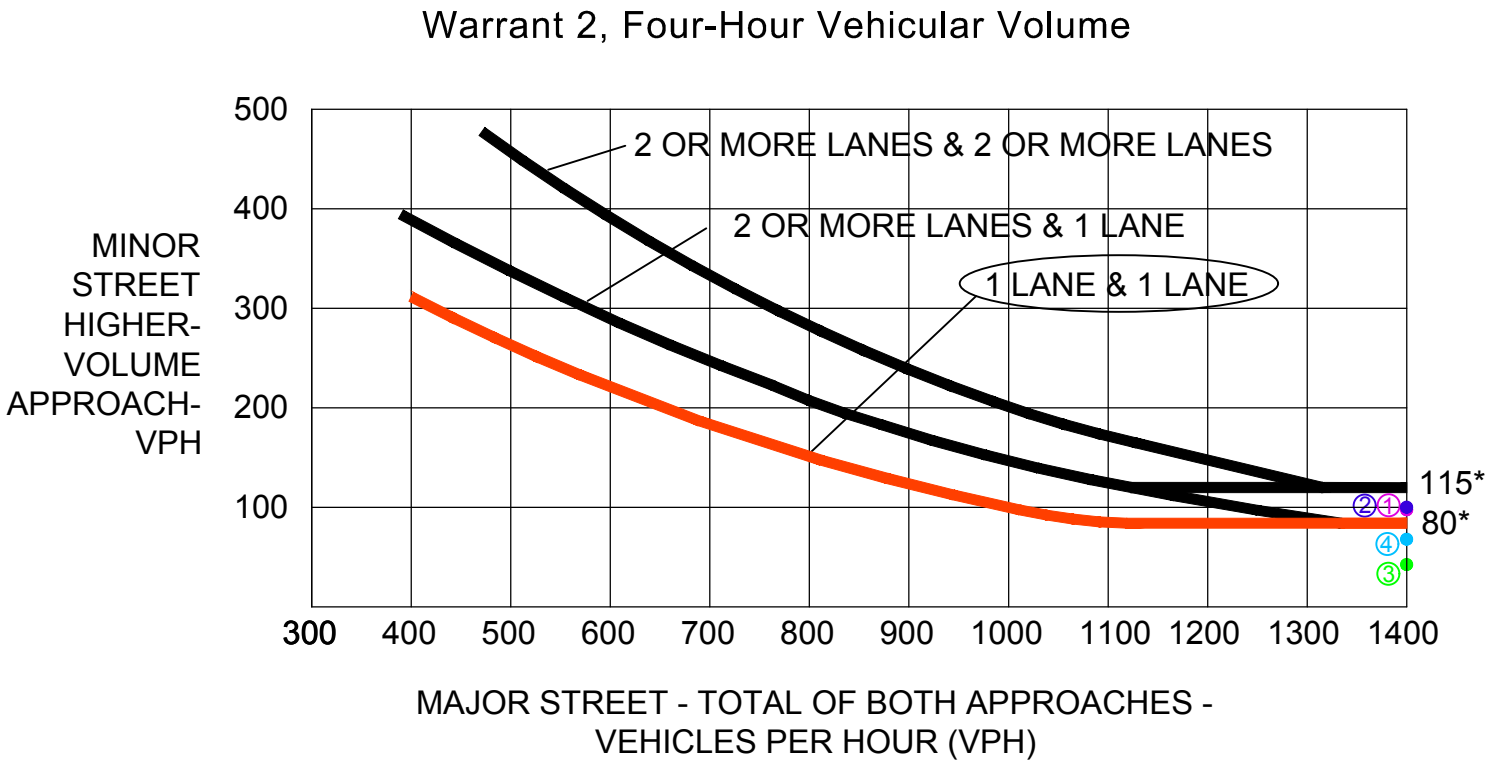

*Note
1. 115 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 80 vph applies as the lower threshold volume for a minor-street approach with one lane.

① (6:30 AM to 7:30 AM), (1610, 95)
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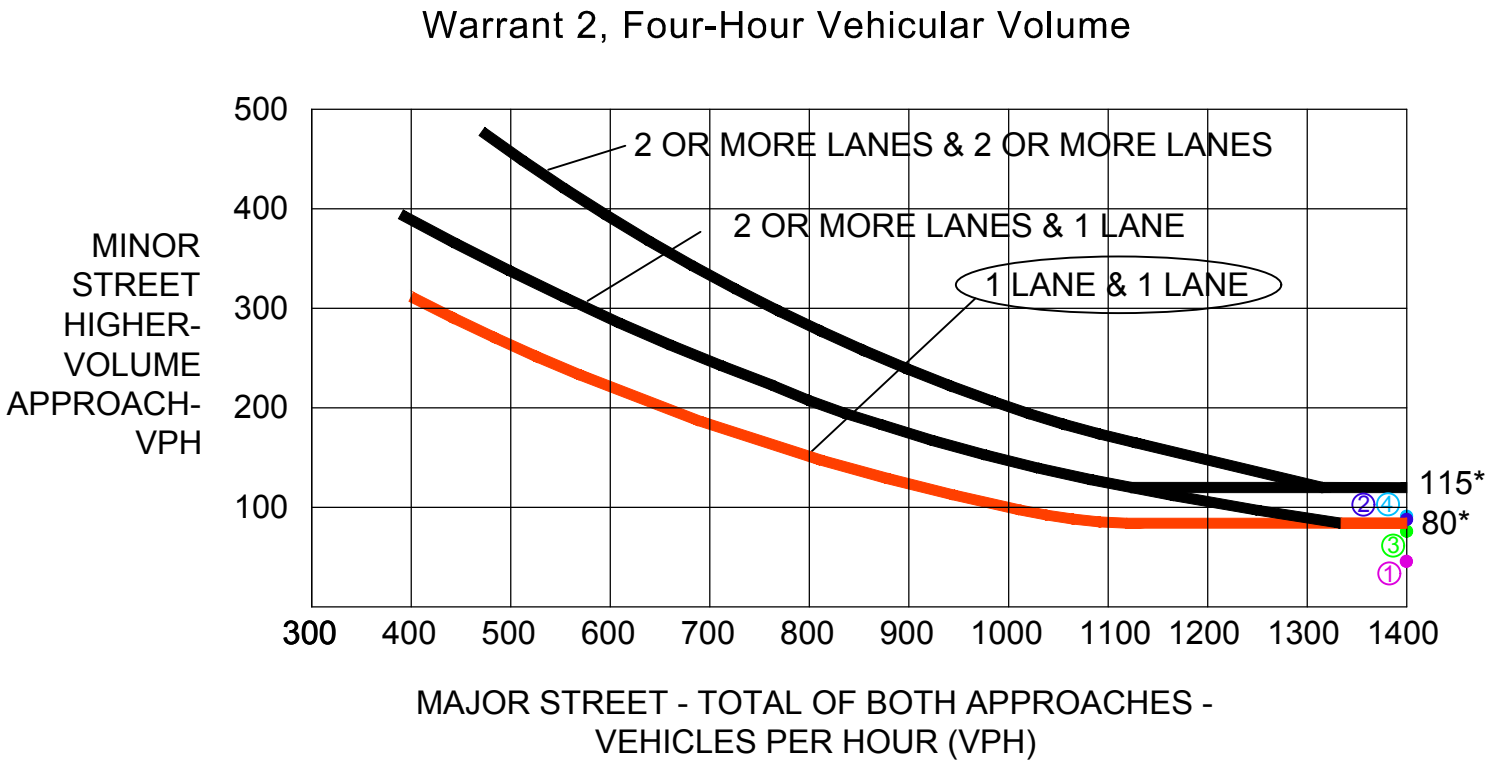
③ (3:00 PM to 4:00 PM), (1867, 44)
④ (4:00 PM to 5:00 PM), (2030, 60)

Signal Warrant Future Year 2024 Conditions
Waiale Rd - Kaupo Street



*Note
1. 115 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 80 vph applies as the lower threshold volume for a minor-street approach with one lane.

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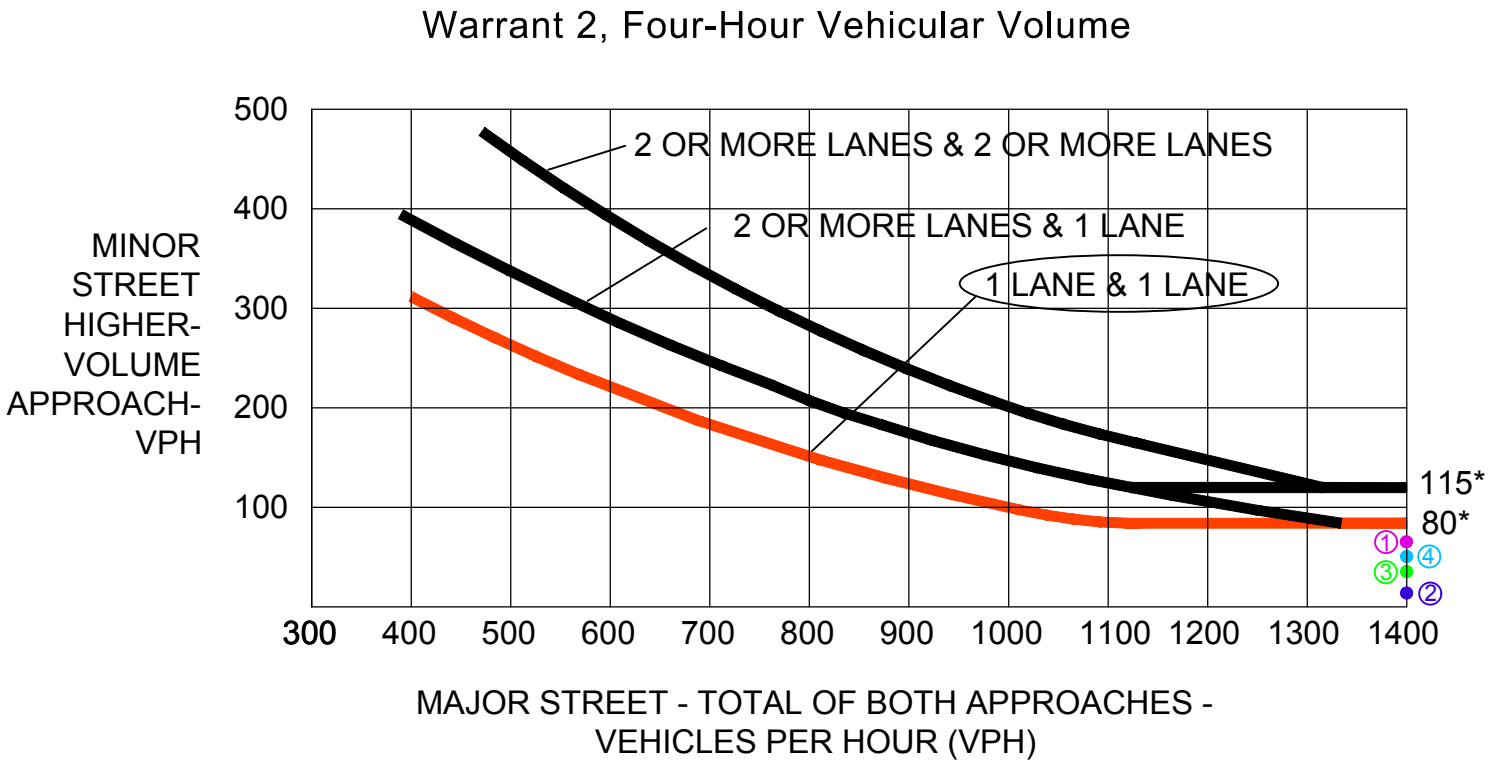
Signal Warrant Future Year 2024 Conditions
Kuikahi Drive - Kehalani Village Center DW



*Note
1. 115 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 80 vph applies as the lower threshold volume for a minor-street approach with one lane..

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③ (3:00 PM to 4:00 PM), (1917, 37)
④ (4:00 PM to 5:00 PM), (1970, 45)

Signal Warrant Future Year 2024 Conditions
Honoapiilani Hwy - South Project Access

PRELIMINARY ENGINEERING REPORT

APPENDIX L

Established 1969

Preliminary Engineering Report

PU`UNANI HOMESTEAD

Wailuku, Maui, Hawaii
TMK: (2) 3-5-002: 002 (por.)
TMK: (2) 3-5-001: 064 (por.)

Prepared For:

State of Hawaii
Department of Hawaiian Home Lands
91-5420 Kapolei Parkway
Kapolei, HI 96707

WARREN S. UNEMORI ENGINEERING, INC.
Civil and Structural Engineers – Land Surveyors
Wells Street Professional Center – Suite 403
2145 Wells Street
Wailuku, Maui, Hawaii 96793

February 24, 2020

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Preliminary Engineering Report
for
Pu'unani Homestead

1. INTRODUCTION

1.1 Purpose

This report describes the existing infrastructure in the vicinity of the Pu'unani Homestead project and identifies the key improvements needed to implement the proposed development plan.

1.2 Project Location

The 47.4-acre Pu'unani Homestead subdivision is located in Wailuku, Maui, on the western (mauka) side of Honoapiilani Highway adjacent to the existing Waiolani Mauka subdivision. The project site is a portion of an undeveloped 60-acre land parcel at Tax Map Key 3-5-002: 002.[1] Offsite sewerline work described in Section 5.3 of this report will affect a portion of Tax Map Key 3-5-001: 064.

1.3 Project Description

Pu'unani Homestead will be an urban residential subdivision development by the Department of Hawaiian Home Lands (DHHL) consisting of 161 single-family houselots, with each lot having an area of approximately 7,500 square feet.

[1] The 47.382 acre project site is Lot 1 of the *Pu'unani Ag Subdivision* application which is currently being processed by the Maui County Department of Public Works as DSA Subdivision No. 3.2405.

2. ROADWAY IMPROVEMENTS

2.1 Existing Conditions

Honoapiilani Highway is the principal public roadway providing vehicular access to the undeveloped project site.[2] Old Waikapu Road, which abuts the project site along its north and west sides, is a substandard County right-of-way that has fallen into disrepair and been abandoned as a public thoroughfare in favor of other safer and more modern streets serving the area.

2.2 Proposed Improvements

A network of streets will be constructed within the Pu'unani Homestead to provide access to all new houselots. These internal streets will connect to Honoapiilani Highway at two locations: a new full-movement "T" intersection will be constructed in line with the Kokololio Street right-of-way to serve as the main subdivision entrance[3]; a second intersection will be established approximately 1,500 feet north of the first with vehicle movements restricted to right turns only. (See Figure 2-1)

---

[2] Honoapiilani Highway a two-lane highway owned by the State of Hawaii and maintained by the Hawaii State Department of Transportation's Highways Division.

[3] A 60 ft. wide right-of-way for Kokololio Street has been established between Waiale Road and Honoapiilani Highway and improved along most of its length. However, the 280 ft. long segment between Honoapiilani Highway and Kamahana'o Street, which forms the western approach to the Honoapiilani Highway / Kokololio Street intersection, remains unimproved.

The new internal streets will have 44- or 60-foot wide rights-of-way and are expected to conform to current Maui County subdivision standards in all but two respects: 1) sidewalks will be provided on only one side of the street instead of both sides, and 2) electrical power and telephone lines will be installed overhead instead of underground. The existing 75-foot wide right-of-way at Honoapiilani Highway will be widened by up to 25 feet to accommodate turning lanes and improve sight distance at the new intersections. (See Figures 2-2a and 2-2b)

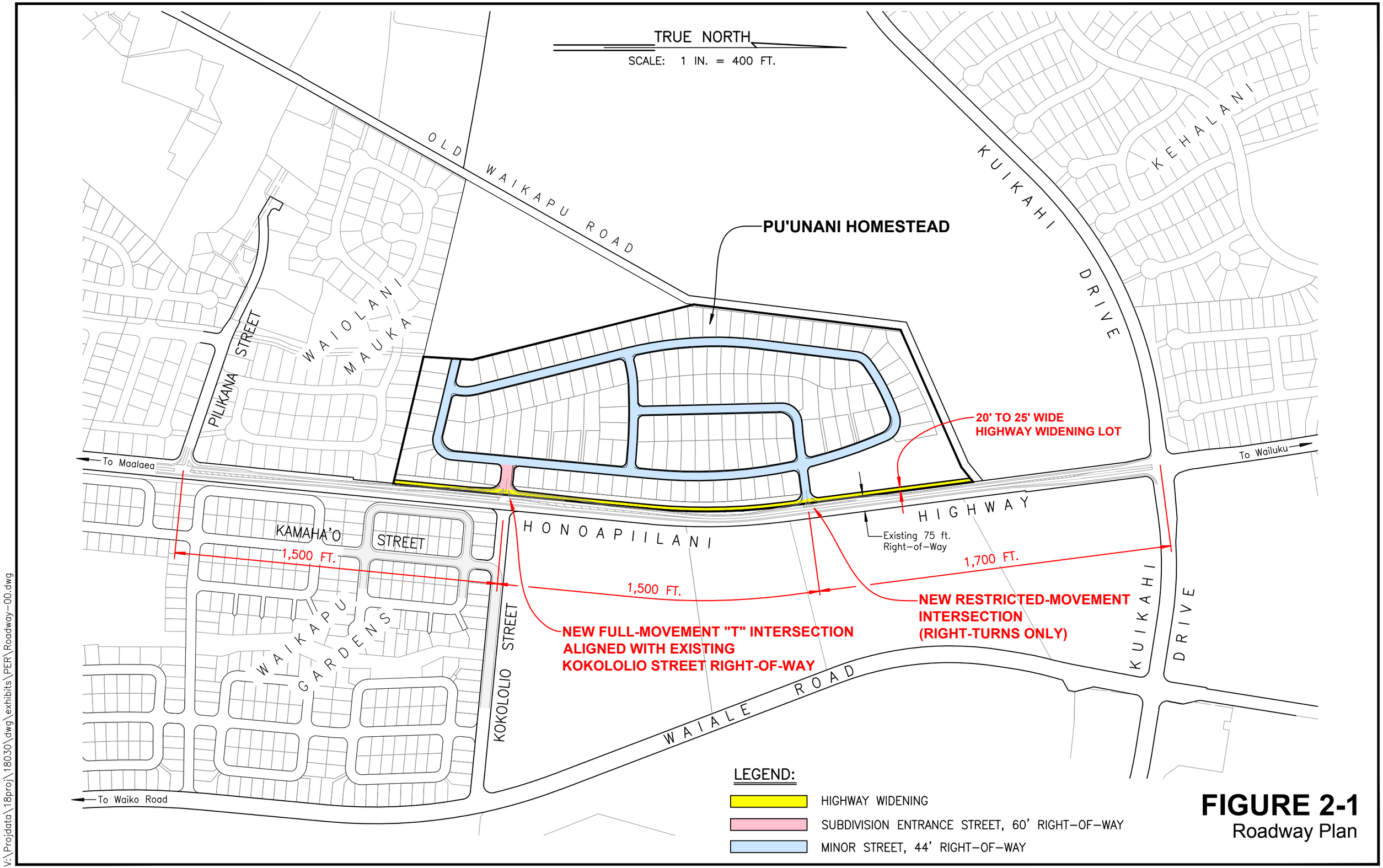
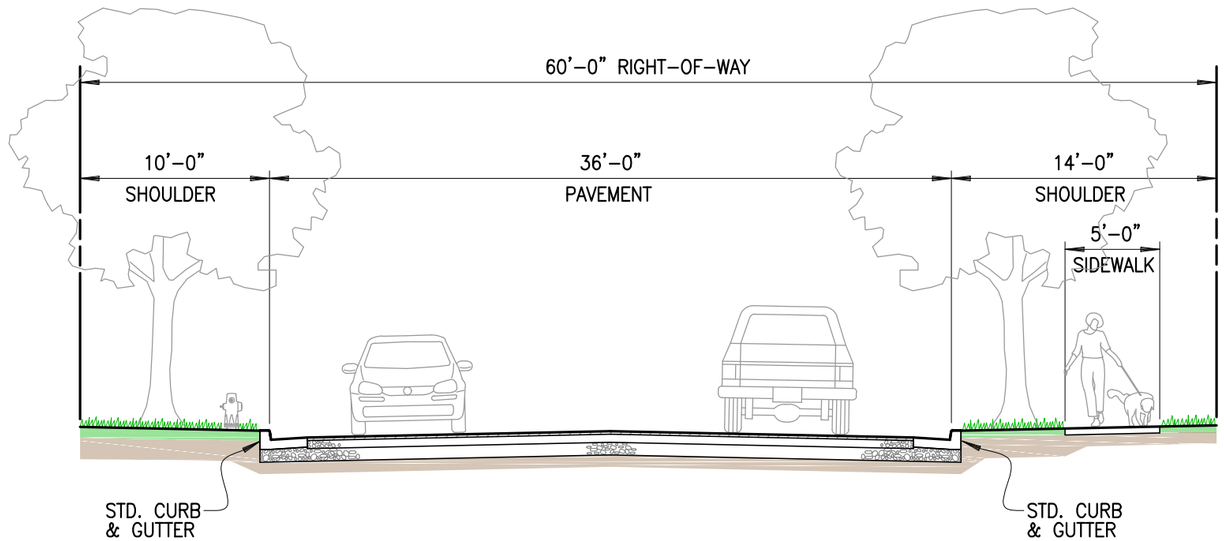
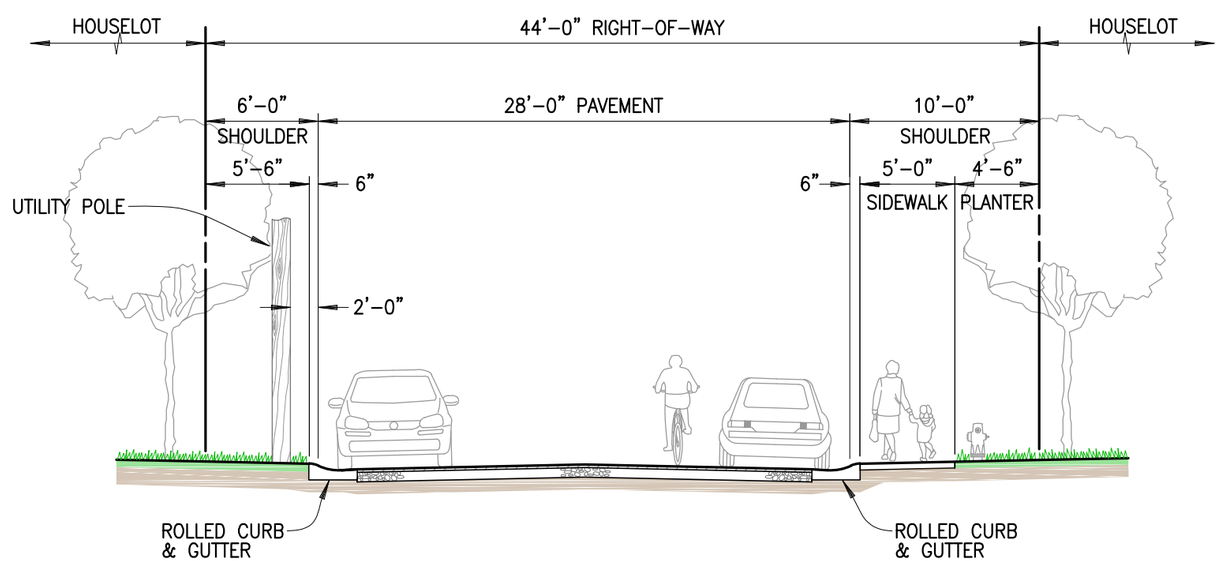


FIGURE 2-1
Roadway Plan



MAIN SUBDIVISION ENTRANCE

SCALE: 1/8" = 1'-0"



INTERNAL MINOR STREET

SCALE: 1/8" = 1'-0"

FIGURE 2-2a

Internal Roadway Sections

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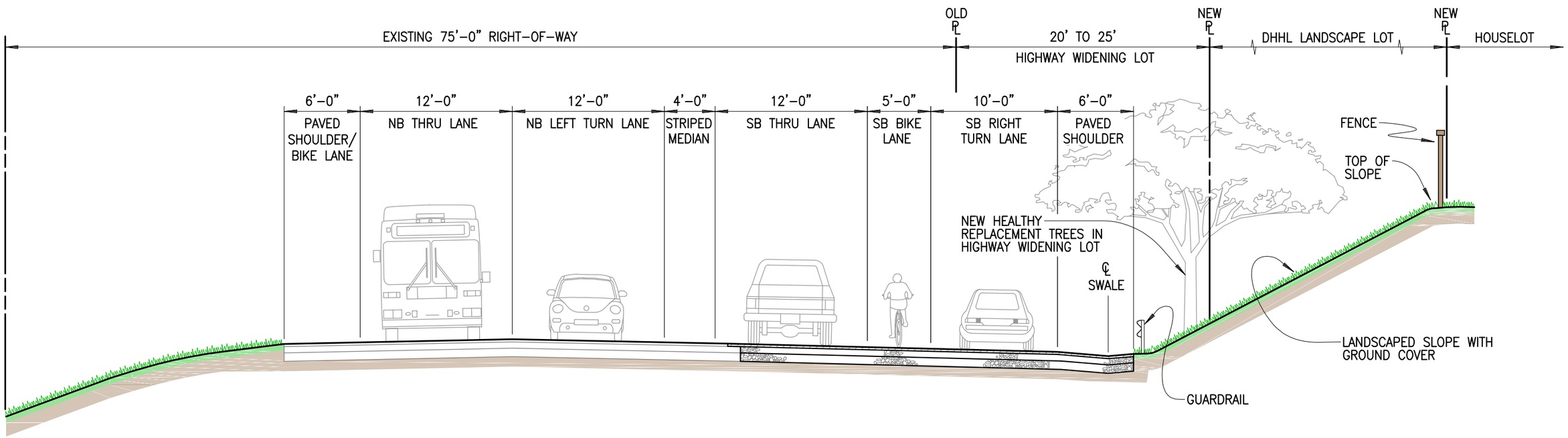

HONOAPIILANI HIGHWAY WIDENING AT SUBDIVISION ENTRANCE

SCALE: 1/8" = 1'-0"

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FIGURE 2-2b

Honoapiilani Highway Section

3. DRAINAGE

3.1 Existing Conditions

3.1.1 Topography and Soils

The 47.4-acre project site was once used for cultivating sugar cane and pineapple; however, the land currently lies fallow and is no longer in productive agricultural use.

The existing terrain slopes steadily downward across the site from west to east at a grade of 7 to 8 percent. Elevation ranges from 450 feet at the southwestern side of the site, to 380 feet at its northeast corner. An existing drainage gully runs along the site's northern border, and an irrigation ditch with maintenance access road bounds its western side.

The USDA Natural Resources Conservation Service identifies Iao Clay (IcB) and Iao Silty Clay (IbB) as the predominant soil types found on the project site. (See Figure 3-1) These Iao clay soils are reported to produce a medium amount of runoff and represent a slight to moderate erosion hazard.[4]

[4] United States Department of Agriculture, Soil Conservation Service, *Soil Survey of Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii*, August 1972, pp. 46-47, Maps 99-100.

3.1.2 Flood and Tsunami Zone

FEMA's Flood Insurance Rate Map for Maui County locates the project site within Zone X, outside of both the 500-year floodplain and tsunami zone.[5] Appendix A-1 contains a current DLNR Flood Hazard Assessment Report for the parcel.

3.1.3 Existing Drainage Condition

Surface runoff generated by the undeveloped 47.4-acre project site sheet flows eastward toward Honoapiilani Highway, where it concentrates along the road shoulder and flows northward along the highway into the existing drainage gully. The runoff then passes through a drainage culvert under Honoapiilani Highway on its way to the Waiale irrigation reservoir[6] where it is impounded. (See Figure 3-2) The 10-year 1-hour peak flow rate generated by the project site in its current, undeveloped state is estimated to be 41 cubic feet per second (cfs).[7]

---

[5] U.S. Department of Homeland Security, Federal Emergency Management Agency, Flood Insurance Rate Map, Maui County, Hawaii, Community-Panel Numbers 150003 0391E, September 25, 2009, and 150003 0393F, November 04, 2015.

[6] TMK 3-8-046: 020, owned by Mahi Pono entity MP CPR LLC.

[7] Supporting calculations may be found in Appendix A-2.

3.2 Drainage Plan

3.2.1 Projected Increase in Runoff

Pu'unani Homestead is expected to produce a peak runoff volume of 109 cfs from a 10-year 1-hour storm once it has been fully developed.[8] This represents a net increase of approximately 68 cfs attributable to development of the project area. A comparative summary of pre-development and post-development runoff is presented in Table 3-1 below:

TABLE 3-1
Increase in Runoff Attributable to Development
(10 yr. - 1 hr. storm)

Pre-Development Flow	Post-Development Flow Before Mitigation	Net Change
41 cfs	109 cfs	+68 cfs

3.2.2 Proposed Improvements

Peak Flow Mitigation

Surface runoff generated by the roads and homes within the Pu'unani Homestead will be directed to drain inlets located along the internal streets. The collected runoff will then be conveyed by underground drainage pipes to a stormwater detention basin located at the northeast corner of the homestead which, in turn, will discharge into the existing drainage gully on the north side of the project site. (See Figure 3-3) This detention basin, whose capacity will be at

[8] See Appendix A-3 for supporting calculations.

least 4.2 acre-feet [9], will fully mitigate the expected increase in peak flow by limiting the downstream release of stormwater to a flow rate which does not exceed pre-development levels in compliance with Maui County storm drainage standards.[10]

Water Quality Measures

Maui County requires the implementation of water quality control measures to reduce water pollution from stormwater runoff.[11] A "detention based" treatment approach will be employed by the Pu'unani Homestead to mitigate stormwater-related water pollution associated with the developed site. This will involve providing additional storage volume in the detention basin to facilitate sediment removal in addition to peak flow mitigation.[12]

---

[9] The drainage basin will be sized to route the 50-year 1-hour design storm with a downstream release not exceeding the 10-year 1-hour pre-development peak discharge of 41 cfs. Detention basin sizing calculations can be found in Appendix A-4.

[10] County of Maui, Department of Public Works and Waste Management, "Rules for the Design of Storm Drainage Facilities in the County of Maui," Title MC-15, Chapter 4, November 2, 1995.

[11] County of Maui, Department of Public Works, "Rules for the Design of Storm Water Treatment Best Management Practices," Title MC-15, Chapter 111, November 15, 2012.

[12] 1.2 acre-feet of storage capacity will be provided below the basin outlet to provide the volume for sedimentation required by County storm water quality rules. The calculation of this required volume can be found in Appendix A-4.1.

3.2.3 Post-Development Runoff After Application of Mitigation Measures

The proposed stormwater detention basin will fully mitigate the increase in peak flow attributable to development while simultaneously providing water pollution control. Table 3-2 summarizes the storage capacity within the stormwater detention basin needed to achieve both of these objectives.

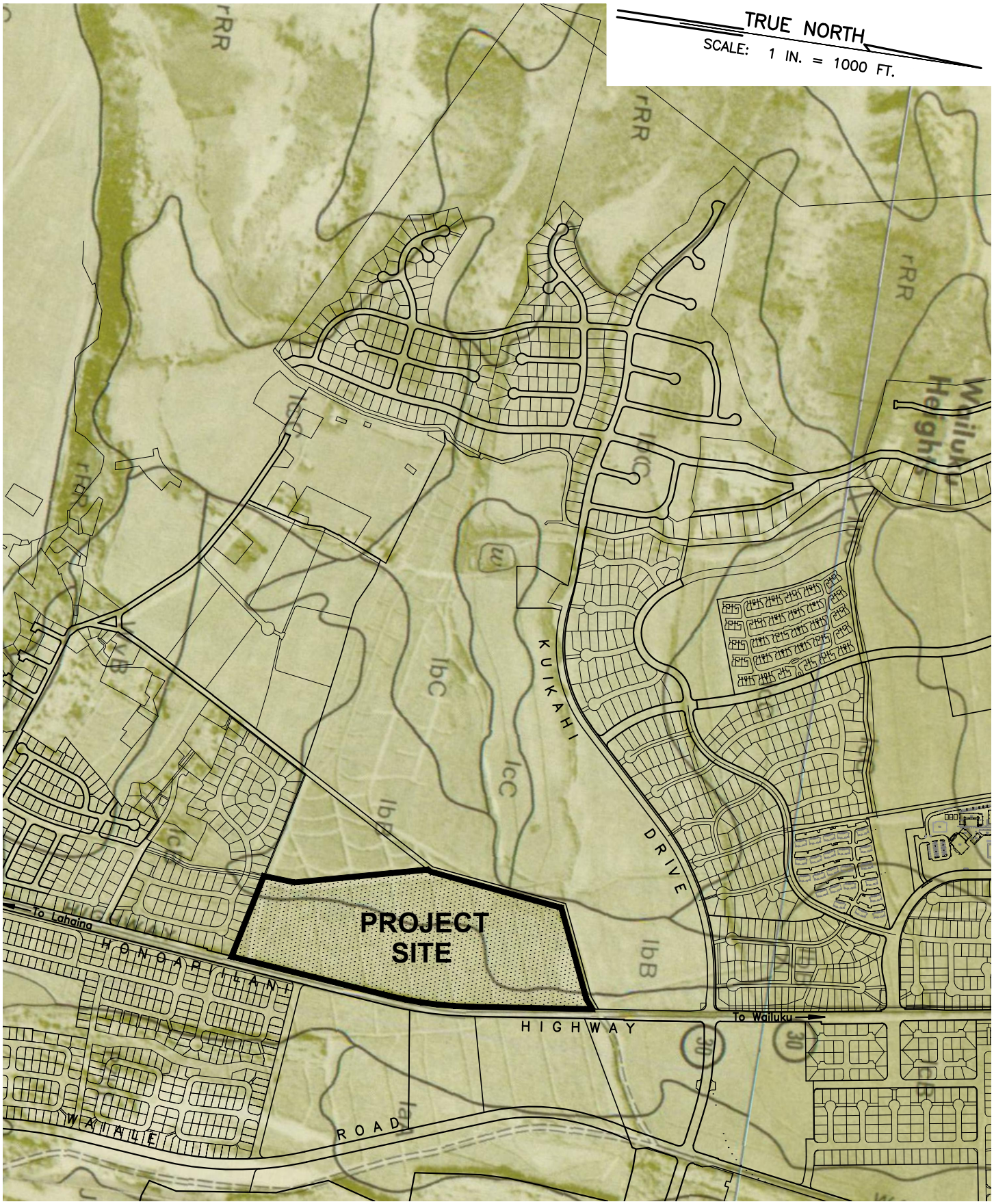
TABLE 3-2
Stormwater Detention Basin Capacity
(Basin Sized for 50 yr. - 1 hr. storm)

Storage Capacity Required to Meet Water Quality Criteria	Additional Storage Capacity Required to Mitigate Peak Flow	Total Storage Capacity to be Provided
1.2 Ac.-ft.	3.0 Ac.-ft.	4.2 Ac.-ft.

Once the detention basin is in place, the hydrologic impact on downstream properties resulting from the proposed development of Pu'unani Homestead will be fully mitigated, as summarized in Table 3-3.

TABLE 3-3
Result of Onsite Peak Runoff Mitigation
(10 yr. - 1 hr. storm)

Pre-Development Peak Flow	Post-Development Peak Flow Before Mitigation	Post-Development Peak Flow After Mitigation	Net Change in Peak Runoff
41 cfs	109 cfs	41 cfs	0 cfs



Source:
U.S. Department of Agriculture, Soil Conservation Service, "Soil Survey of Islands of Kauai, Oahu, Maui, Molokai and Lanai, State of Hawaii", 1972, Map Sheets 99–100.

FIGURE 3-1
Soil Survey Map

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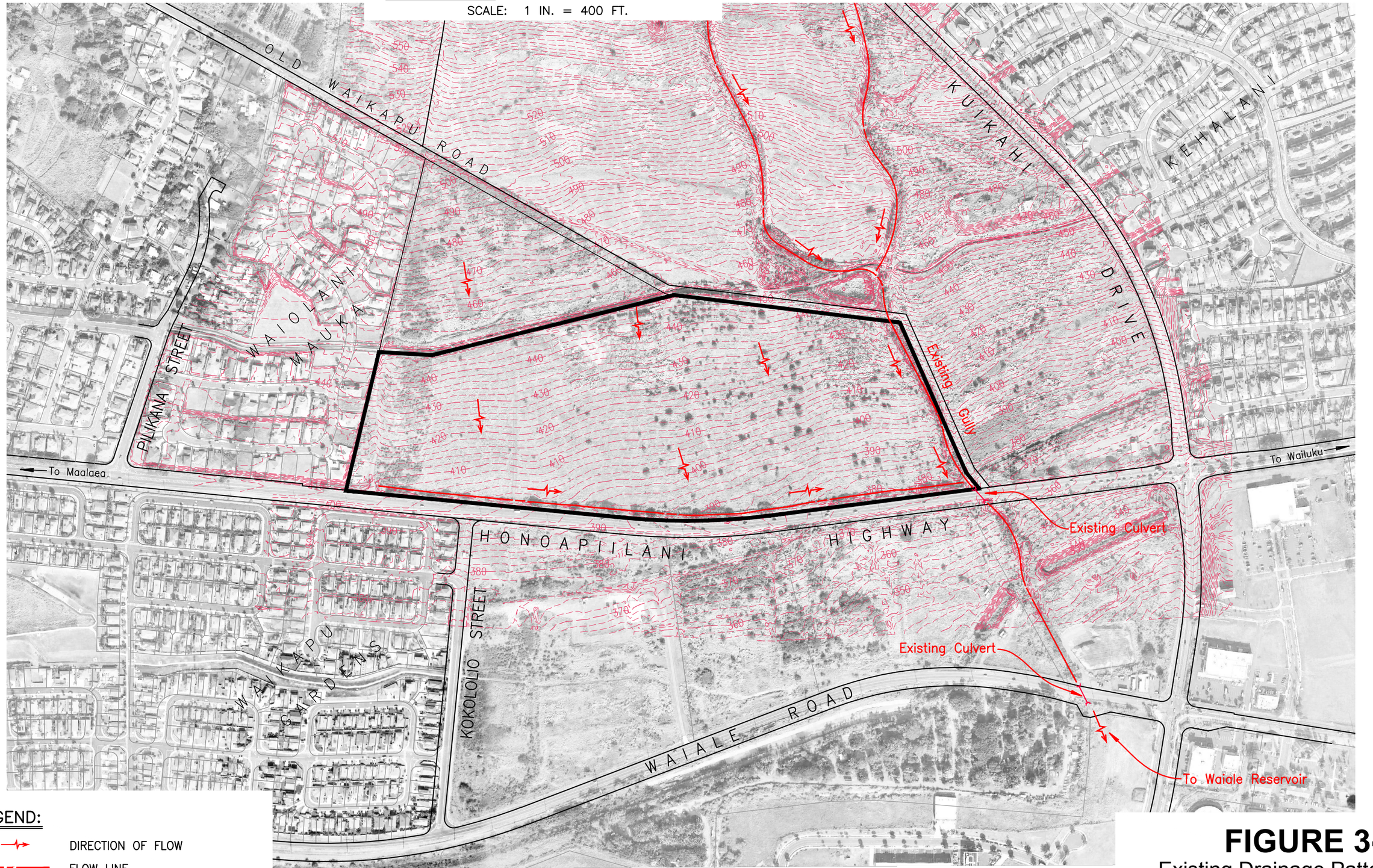

FIGURE 3-2
Existing Drainage Pattern

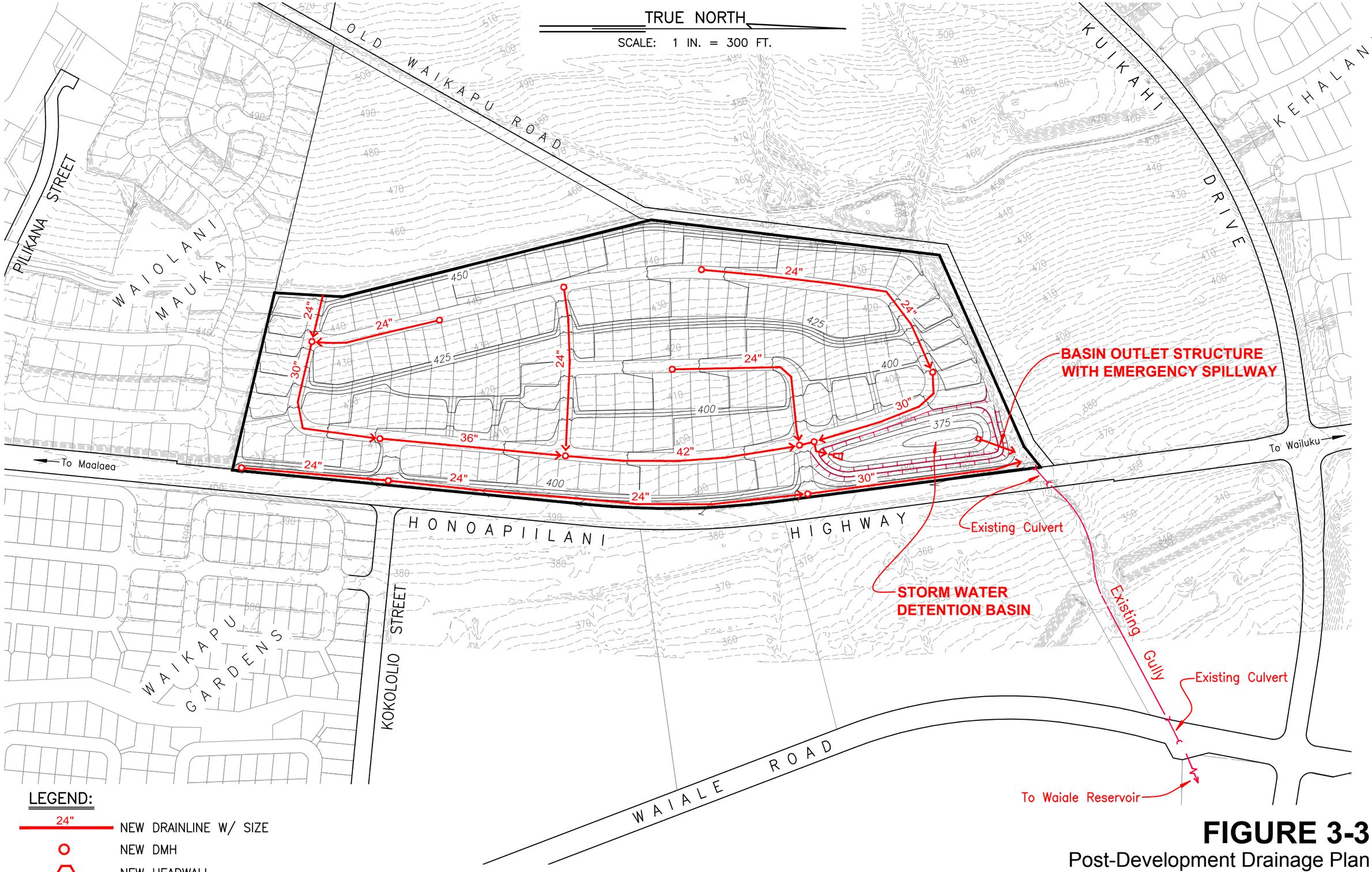

FIGURE 3-3
Post-Development Drainage Plan

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4. WATER SYSTEM

4.1 Existing Infrastructure

The Pu'unani Homestead is located within the Maui County Department of Water Supply's Central Maui water system. Water for Pu'unani Homestead will be supplied from the Dept. of Water Supply's distribution system in Waikapu, which uses a groundwater well as its source and distributes water from the existing 1.5 million gallon (MG) capacity storage tank located along Kuikahi Drive at elevation 670 feet.

4.2 Projected Demand

Average daily water consumption by the 161 single-family homes comprising the Pu'unani Homestead is projected to be approximately 96,600 gallons per day (gpd).[13]

4.3 Proposed Improvements

Water Source

No water source improvements are proposed with the Pu'unani Homestead project. The subdivision will be processed under the water source provisions for affordable housing projects present in the Dept. of Water Supply's Water Service Rules[14] and Maui County Code[15].

---

[13] Water demand calculations may be found in Appendix B-1.

[14] Maui County Administrative Rules, Section 16-201-03(g)(1).

[15] Maui County Code, Section 14.12.030.F.

Distribution System

An 8-inch water main will be extended into the subdivision from the Dept. of Water Supply's existing 12-inch distribution main along Old Waikapu Road. A network of 8-inch distribution mains within the subdivision on which service laterals and fire hydrants have been installed will then provide water service and fire protection to the individual houselots in accordance with Dept. of Water Supply standards.[16] (See Figure 4-1)

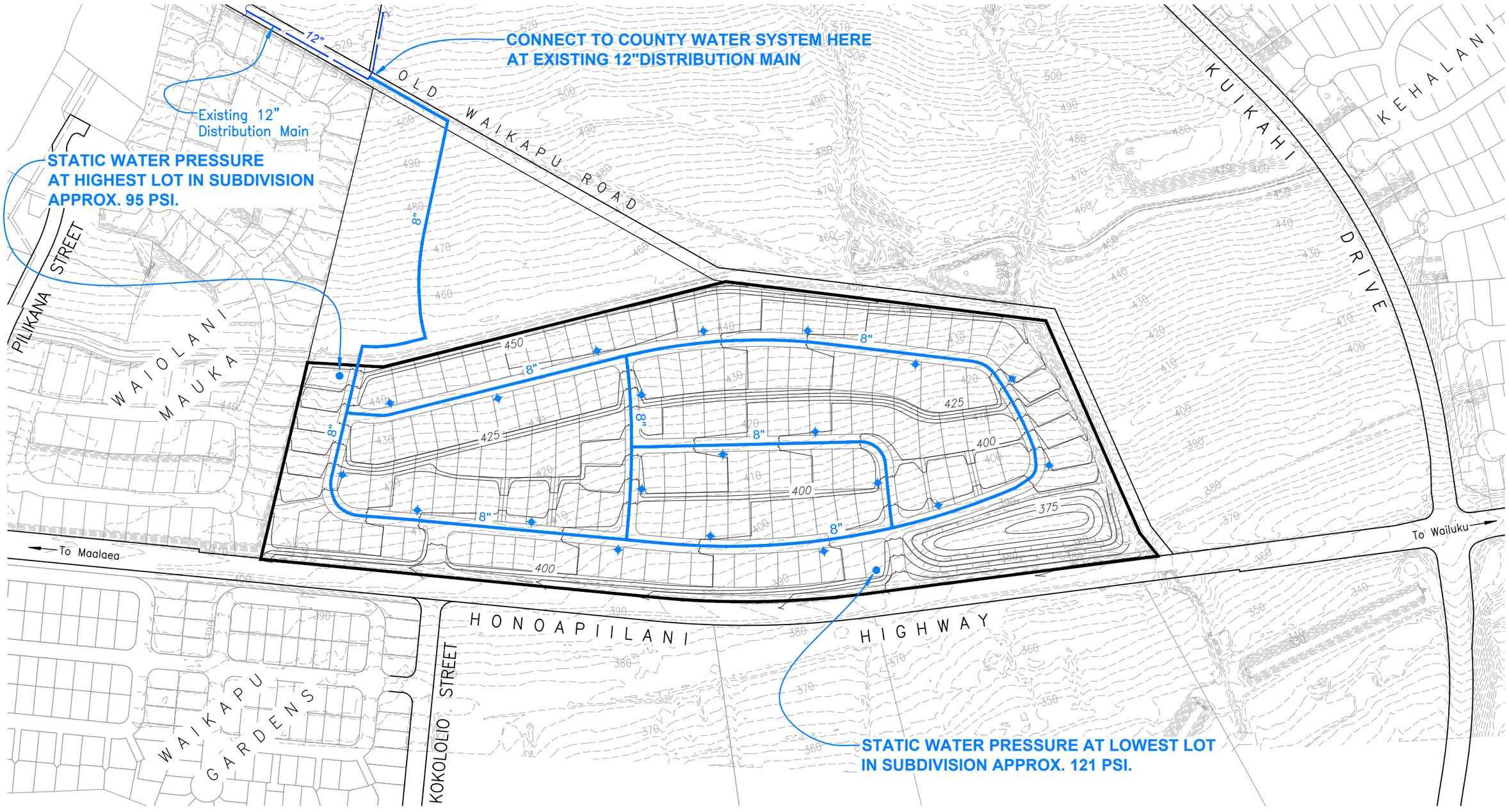
Reservoir Storage Capacity

The storage capacity needed by Pu'unani Homestead under Maui County Dept. of Water Supply standards is 144,900 gallons.[17] DHHL is working with the Dept. of Water Supply to determine whether the payment of fees or improvements will be needed to address the storage requirements for the project.

---

[16] Water system will provide a static water pressures ranging from 95 psi to 121 psi and deliver a fire flow of 1,000 gpm for at least 2 hours duration (120,000 gallons) from the 1.5 MG storage tank. [Ref. Maui County Dept. of Water Supply, *Water System Standards*, 2002, pp.111-4 to 111-6.]

[17] Water storage calculations may be found in Appendix B-2.



LEGEND:

- 8" — EXISTING WATERLINE W/ SIZE
- 8" — NEW WATERLINE W/ SIZE
- NEW FIRE HYDRANT

FIGURE 4-1

Potable Water System Plan

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5. WASTEWATER SYSTEM

5.1 Existing Infrastructure

The land parcel on which the Pu'unani Homestead will be developed has no sewer service currently available to it; however, the area in which it is located is served by the County of Maui's sewerage system, which collects wastewater and conveys it to the Kahului Wastewater Reclamation Facility (KWWRF) for treatment and disposal.

The 12- and 18-inch diameter County-owned gravity sewer main located near Waiale Road which collects wastewater from the Waikapu and Kehalani residential areas is the closest existing sewerline to the project site. This trunk sewer main conveys wastewater toward Lower Main Street on its way to the KWWRF.

5.2 Projected Demand

The Pu'unani Homestead is expected to generate 56,350 gallons of wastewater per day.[18]

5.3 Proposed Improvements

Collection System

A branching network of new gravity sewer pipes will be installed within the internal streets to collect wastewater from the houselots and convey it toward the low end of the homestead near its northeast corner at Honoapiilani Highway. A new 8-inch diameter, 1,700 ft. long gravity sewer main will convey the

[18] Wastewater demand calculations can be found in Appendix C.

homestead's wastewater northward along Honoapiilani Highway from there, then eastward under Honoapiilani Highway and across TMK 3-5-001: 064[19] to a connection point at Waiale Road where the County's sewer system has sufficient capacity to accept the wastewater generated by the project. (See Figure 5-1)

A County sewerline project is currently underway to relieve a known capacity bottleneck on Lower Main Street, downstream of Pu'unani Homestead. The sewerline project's November 2021 scheduled completion date is compatible with planned occupancy of the first homes in Pu'unani Homestead.

Treatment Plant Capacity

Average daily wastewater flows received at the County's Kahului Wastewater Reclamation Facility currently measure about 5.6 million gallons per day (MGD), or roughly 71 percent of the plant's 7.9 MGD capacity. KWWRF's remaining treatment capacity appears ample to accommodate the 0.06 MGD of wastewater that Pu'unani Homestead is expected to generate at build-out; therefore, a plant capacity upgrade is not necessary to fully occupy the subdivision.

[19] Pu'unani Homestead has already secured the sewerline easement rights across TMK 3-5-001: 064 necessary to complete the described connection to the County sewer system.

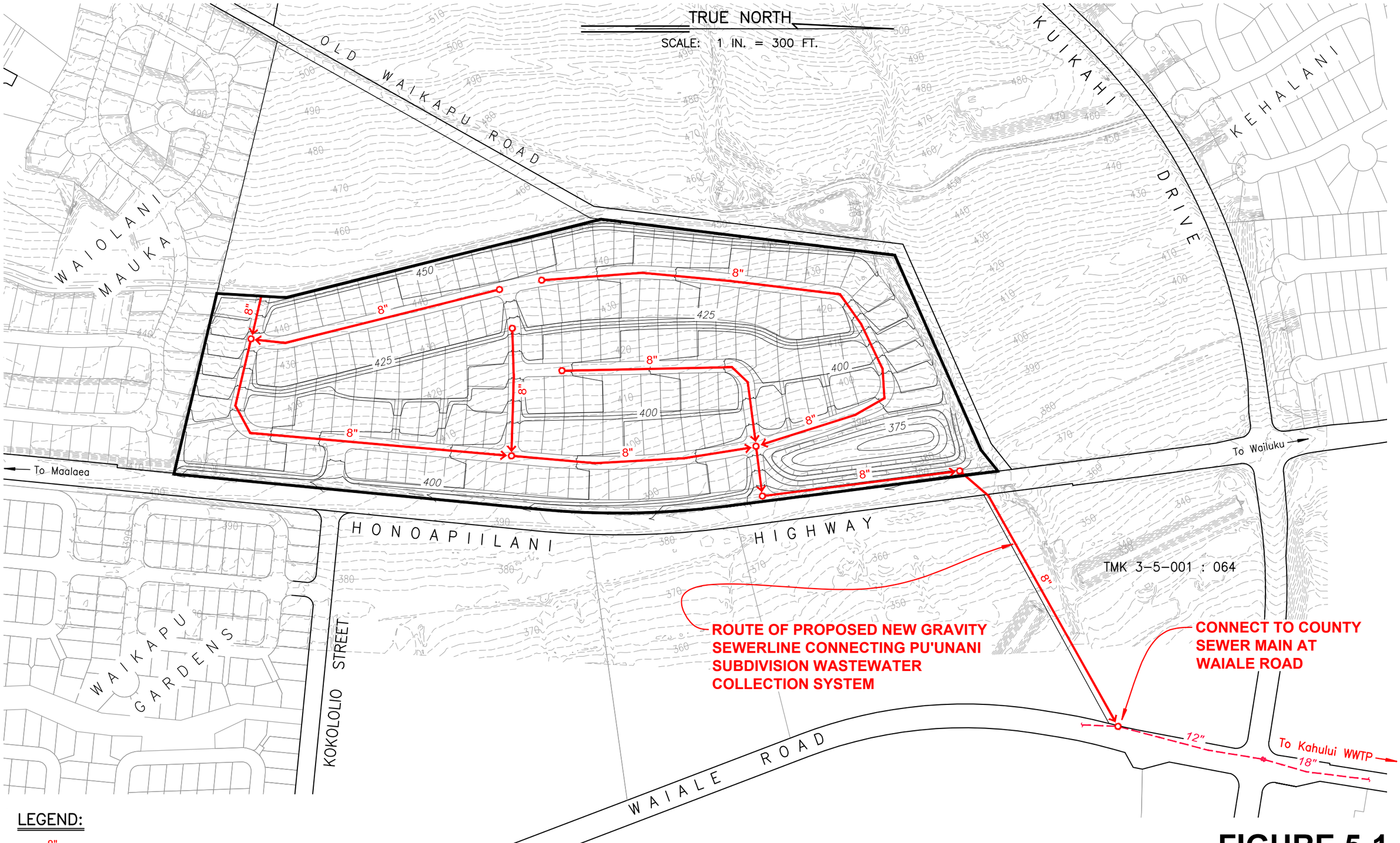

FIGURE 5-1
Sewer System Plan

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6. POWER AND TELECOMMUNICATIONS

6.1 Existing Infrastructure

Maui Electric Company (MECo), Hawaiian Telcom and Spectrum are the regulated Public Utilities offering electrical power, telephone and cable television services in the area where the Pu'unani Homestead subdivision is located. All three providers have existing overhead lines along Honoapiilani Highway, both on and across the street from the project site. Sandwich Isle Communications, which provides telephone and internet service to DHHL projects, has an underground fiber optic trunk line located along Honoapiilani Highway.[20]

6.2 Project Requirements

Electrical power, telephone and cable television distribution systems will be extended into the project from the existing overhead utility lines along Honoapiilani Highway to provide those services to each houselot in the subdivision. DHHL has opted to install an overhead distribution system to be consistent with other nearby DHHL subdivisions. (See Figure 6-1)

6.2.1 Maui Electric Company

Pu'unani Homestead is expected to add approximately 805 kW of load to Maui Electric Company's infrastructure. MECo will install an overhead power

[20] Sandwich Isle Communications had previously been the exclusive provider for Department of Hawaiian Homelands' projects; however, as of 2018, they no longer have an exclusive right to service DHHL projects.

distribution system along the subdivision's streets that will include poles, anchors, lines, pole-mounted transformers and street lights complying with its residential service requirements. Easements may be required to cover any new poles, anchors and overhead equipment that must be located in private property in order to provide service. Individual customers will be responsible for their own service connection and monthly fees.

6.2.2 Hawaiian Telcom

Hawaiian Telcom is the closest service provider in the area capable of providing regulated telephone and DSL service to the project. Its existing telephone plant serving the area is not sufficient to serve this project; therefore, a fiber distribution hub (FDH) and fiber optic equipment will be installed to provide the needed telecommunication services.[21] The FDH equipment will function as a hub for the distribution of all Hawaiian Telcom telecommunication services within the Pu'unani Homestead development.

Hawaiian Telcom's route of entry into Pu'unani Homestead will be from Honoapiilani Highway. The final configuration of the telephone system will be dependent upon the location selected for the FDH, which will be specified by Hawaiian Telcom's planning department at the time detailed construction plans are prepared.

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[21] The fiber distribution hub will consist of a metal equipment cabinet approximately 36 inches high x 30 inches wide x 18 inches deep, sitting atop a 4 ft. x 4 ft. concrete slab within an 8 ft. x 8 ft. easement.

Overhead telephone lines will be installed at Hawaiian Telcom's expense; supporting structures for the overhead lines will be provided by DHHL; and individual customers will be responsible for their own service connection and monthly fees.

6.2.3 Spectrum

Spectrum is the regulated cable television provider on Maui, but also can provide telephone and internet connection. Spectrum will need to extend their overhead facilities across Honoapiilani Highway in order to provide service to the project site.

Spectrum will install the needed cables and power supply equipment at its expense; DHHL will be responsible for providing any other improvements required for system installation such as riser ducts, boxes, at least one power supply pad, easements and maintenance vehicle access; and individual customers will be responsible for their own service connection and monthly fees.

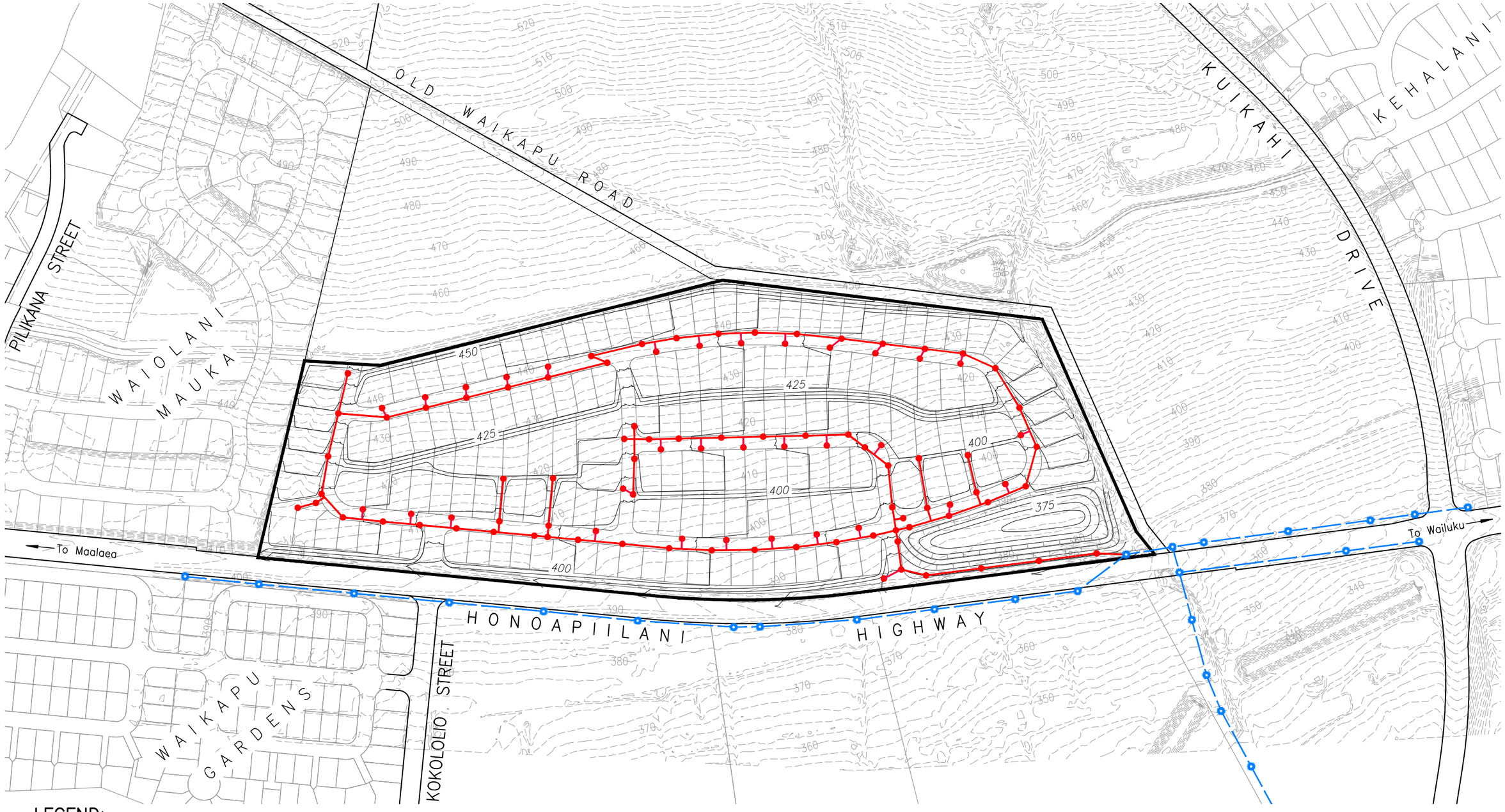
6.2.4 Sandwich Isle Communications

Sandwich Isle Communications has an underground fiber optic trunk line located along Honoapiilani Highway and will be offered the opportunity to provide telephone and internet service to the project on a competitive basis with Spectrum and Hawaiian Telcom.

SIC will design and construct an underground distribution system extending into the project from its trunk line on Honoapiilani Highway at its expense, and individual customers will be responsible for their own monthly fees.

TRUE NORTH

SCALE: 1 IN. = 300 FT.



LEGEND:

- EXISTING POWER POLE
- NEW POWER POLE
- NEW OVERHEAD ELECTRICAL LINE
- EXISTING OVERHEAD ELECTRICAL LINE

FIGURE 6-1

Electrical System Plan

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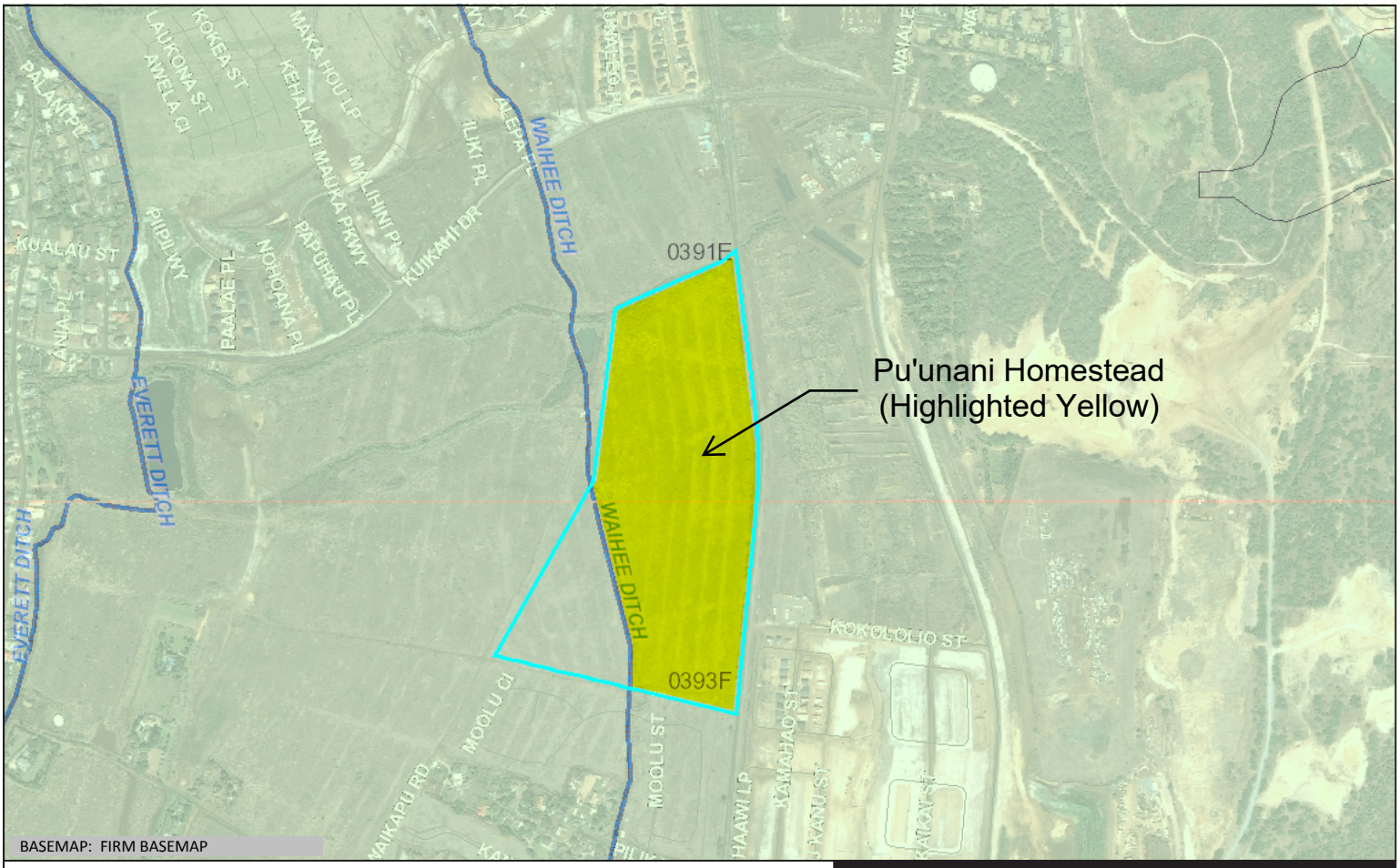
APPENDIX A

Drainage Calculations

APPENDIX A-1

DLNR Flood Hazard Assessment Report for TMK 3-5-002: 002



Flood Hazard Assessment Report

www.hawaiinfip.org

Property Information

COUNTY:	MAUI
TMK NO:	(2) 3-5-002:002
WATERSHED:	IAO
PARCEL ADDRESS:	HONOAPIILANI HWY WAILUKU, HI 96793

Notes:

Flood Hazard Information

FIRM INDEX DATE:	NOVEMBER 04, 2015
LETTER OF MAP CHANGE(S):	NONE
FEMA FIRM PANEL - EFFECTIVE DATE:	1500030391E - SEPTEMBER 25, 2009 1500030393F - NOVEMBER 04, 2015

THIS PROPERTY IS WITHIN A TSUNAMI EVACUTION ZONE: NO
FOR MORE INFO, VISIT: http://www.scd.hawaii.gov/

THIS PROPERTY IS WITHIN A DAM EVACUATION ZONE: YES (MA-0151)
FOR MORE INFO, VISIT: http://dlnreng.hawaii.gov/dam/

0 600 1,200 ft

Disclaimer: The Hawaii Department of Land and Natural Resources (DLNR) assumes no responsibility arising from the use, accuracy, completeness, and timeliness of any information contained in this report. Viewers/Users are responsible for verifying the accuracy of the information and agree to indemnify the DLNR, its officers, and employees from any liability which may arise from its use of its data or information.

If this map has been identified as 'PRELIMINARY', please note that it is being provided for informational purposes and is not to be used for flood insurance rating. Contact your county floodplain manager for flood zone determinations to be used for compliance with local floodplain management regulations.

FLOOD HAZARD ASSESSMENT TOOL LAYER LEGEND
(*Note: legend does not correspond with NFHL*)

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD - The 1% annual chance flood (100-year), also know as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. SFHAs include Zone A, AE, AH, AO, V, and VE. The Base Flood Elevation (BFE) is the water surface elevation of the 1% annual chance flood. Mandatory flood insurance purchase applies in these zones:

	Zone A: No BFE determined.
	Zone AE: BFE determined.
	Zone AH: Flood depths of 1 to 3 feet (usually areas of ponding); BFE determined.
	Zone AO: Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined.
	Zone V: Coastal flood zone with velocity hazard (wave action); no BFE determined.
	Zone VE: Coastal flood zone with velocity hazard (wave action); BFE determined.
	Zone AEF: Floodway areas in Zone AE. The floodway is the channel of stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without increasing the BFE.

NON-SPECIAL FLOOD HAZARD AREA - An area in a low-to-moderate risk flood zone. No mandatory flood insurance purchase requirements apply, but coverage is available in participating communities.

	Zone XS (X shaded): Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.
	Zone X: Areas determined to be outside the 0.2% annual chance floodplain.

OTHER FLOOD AREAS

	Zone D: Unstudied areas where flood hazards are undetermined, but flooding is possible. No mandatory flood insurance purchase apply, but coverage is available in participating communities.

APPENDIX A-2

Pre-Development Surface Runoff (10-yr./1-hr.)

Warren S. Unemori Engineering, Inc.
Civil & Structural Engineers · Land Surveyors
Wells Street Professional Center
2145 Wells Street, Suite 403
Wailuku, Maui, HI 96793

HYDROLOGIC CALCULATIONS - Surface Runoff

Project Name: Pu'unani Homestead
Project No.: 18030
Engineer: Derek T. Ono
Date: 7/16/2018

Area

Description: Pre-development onsite surface runoff

Area (A): 48.3 acres

Runoff Coefficient

Infiltration:	[Medium]	→	0.07
Relief:	[Rolling]	→	0.03
Vegetal Cover:	[Good]	→	0.03
Development:	[Agricultural]	→	0.15
	Composite Runoff Coefficient:		0.28

Time of Concentration

Runoff Length:	970	ft.
Start Elevation:	450	ft. M.S.L.
End Elevation:	390	ft. M.S.L.
Average Slope:	6.2	%
Time of Concentration (T_c):	25	minutes

Intensity

Project Location: Wailuku, Maui, Hawaii
Design Storm: 10-year recurrence interval, 1-hour duration
Rainfall Depth: 2.00 in.
Intensity (I): 3.05 in./hr.

Flow Rate

$$Q = C \cdot I \cdot A$$
$$= 41.2 \quad ft.^3/sec.$$

APPENDIX A-3

Post-Development Surface Runoff (10-yr./1-hr.)

Warren S. Unemori Engineering, Inc.
Civil & Structural Engineers · Land Surveyors
Wells Street Professional Center
2145 Wells Street, Suite 403

HYDROLOGIC CALCULATIONS - Surface Runof

Project Name: Pu'unani Homestead
Project No.: 18030
Engineer: Derek T. Ono
Date: 11/9/2018

Area

Description: Post-development onsite surface runof

Area (A): 48.3 acres

Runoff Coefficient

Residential Runoff Coefficient 0.55

Time of Concentration

Time of Concentration (T_c): 10 minutes

Intensity

Project Location: Wailuku, Maui, Hawaii
Design Storm: 10-year recurrence interval, 1-hour duratio
Rainfall Depth: 2.00 in.
Intensity (I): 4.10 in./hr.

Flow Rate & Volume

$Q = C \cdot I \cdot A$
$= 108.9$ ft.^{3}/sec.

APPENDIX A-4

Detention Basin Sizing Calculations (50-yr./1-hr.)

APPENDIX A-4.1

Storage Capacity Needed to Meet Water Quality Requirements

Warren S. Unemori Engineering, Inc.
Civil & Structural Engineers · Land Surveyors
Wells Street Professional Center
2145 Wells Street, Suite 403

HYDROLOGIC CALCULATIONS - Storm Water Treatment

Project Name: Pu'unani Homestead
Project No.: 18030
Engineer: Derek T. Ono
Date: 11/9/2018

Purpose: To determine the required basin volume to meet the County of Maui, Department of Public Works' "Rules for the Design of Storm Water Treatment Best Management Practices"

Calculations: The required design volume for detention based control is computed by the MCC §15-111-5.a.1.C formula:

$$WQDV = C \cdot 1'' \cdot A \cdot 3630$$

where, WQDV = water quality design volume in cubic feet
C = EPA volumetric runoff coefficien
A = gross area of the site in acres = 48.3 ac.
1" = design storm for detention based water quality system
3630 = conversion facto

The EPA volumetric runoff coefficient, C, calculated from the formula given i MCC §15-111-5.a.1.A is:

$$C = 0.05 + (0.009) \cdot (IMP)$$

where, IMP = percentage of impervious are
= (impervious area) / (gross area) · 100
= (13 ac.) / (48.3 ac.) · 100
= 27

Since IMP = 27, the value of C is:

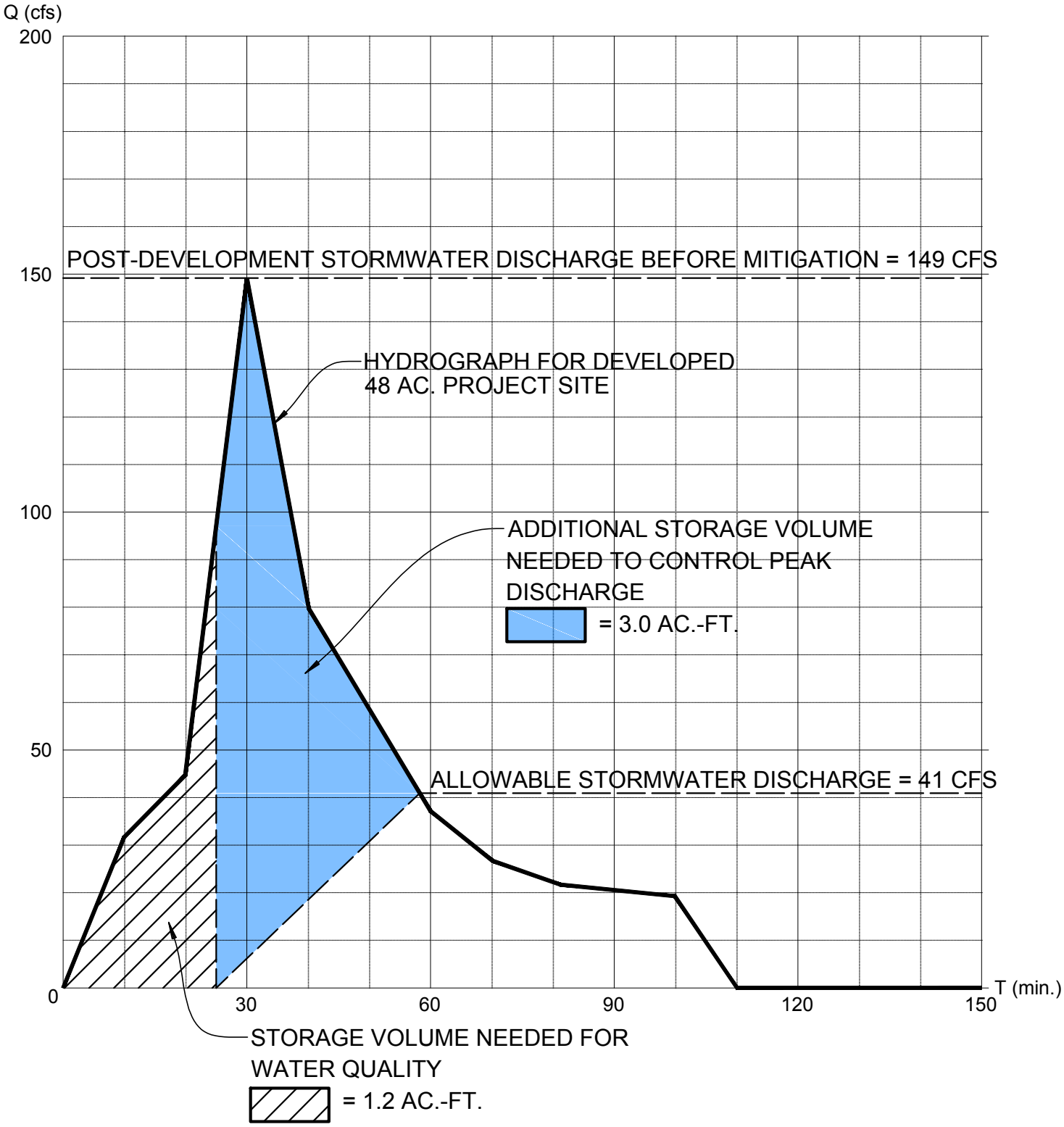
$$C = 0.05 + (0.009) \cdot (27)$$
$$= 0.29$$

Compute the required design volume for a 1" storm with C = 0.29:

$$WQDV = C \cdot 1'' \cdot A \cdot 3630$$
$$= 0.29 \cdot 1'' \cdot 48.3 \cdot 3630$$
$$= 50{,}845\ ft^3$$
$$= 1.2\ Ac.\text{-}ft.$$

APPENDIX A-4.2

Basin Inflow/Outflow Hydrograph



NOTE:

1. TOTAL REQUIRED STORAGE VOLUME = ▨ + ▭ = 4.2 AC.–FT.
2. HYDROGRAPH DEPICTS 50–YR., 1–HR. STORM FOR WAILUKU, HI (DEPTH=2.75 IN.)

APPENDIX A-4.2

Basin Inflow/Outflow Hydrograph for 50-Year Storm

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Warren S. Unemori Engineering, Inc.
Civil & Structural Engineers · Land Surveyors
Wells Street Professional Center
2145 Wells Street, Suite 403
Wailuku, Maui, HI 96793

HYDROLOGIC CALCULATIONS - Surface Runoff

Project Name: Pu'unani Homestead
Project No.: 18030
Engineer: Derek T. Ono
Date: 7/16/2018

Area

Description: Pre-development onsite surface runoff

Area (A): 48.3 acres

Runoff Coefficient

Infiltration:	[Medium]	→	0.07
Relief:	[Rolling]	→	0.03
Vegetal Cover:	[Good]	→	0.03
Development:	[Agricultural]	→	0.15
	Composite Runoff Coefficient:		0.28

Time of Concentration

Runoff Length:	970	ft.
Start Elevation:	450	ft. M.S.L.
End Elevation:	390	ft. M.S.L.
Average Slope:	6.2	%
Time of Concentration (T_c):	25	minutes

Intensity

Project Location: Wailuku, Maui, Hawaii
Design Storm: 50-year recurrence interval, 1-hour duration
Rainfall Depth: 2.75 in.
Intensity (I): 4.18 in./hr.

Flow Rate

$$Q = C \cdot I \cdot A$$
$$= 56.5 \text{ ft.}^3\text{/sec.}$$

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HYDROLOGIC CALCULATIONS - Surface Runoff

Project Name: Pu'unani Homestead
Project No.: 18030
Engineer: Derek T. Ono
Date: 11/9/2018

Area

Description: Post-development onsite surface runof

Area (A): 48.3 acres

Runoff Coefficient

Residential Runoff Coefficient 0.55

Time of Concentration

Time of Concentration (T_c): 10 minutes

Intensity

Project Location: Wailuku, Maui, Hawaii
Design Storm: 50-year recurrence interval, 1-hour duratio
Rainfall Depth: 2.75 in.
Intensity (I): 5.60 in./hr.

Flow Rate & Volume

$Q = C \cdot I \cdot A$
$= 148.8$ ft.^{3}/sec.

APPENDIX B

Potable Water Calculations

APPENDIX B-1

Potable Water Demand Calculation

PU'UNANI HOMESTEAD

ESTIMATED POTABLE WATER DEMAND

	Base Unit		Rate		Average Daily Demand			Maximum Daily Demand
Single-Family Dwellings	161 D.U.	x	600 gals/DU*	==>	96,600 gpd	*x 1.5***	==>	144,900 gpd
Total					96,600 gpd			144,900 gpd

Sources:

** Rate taken from Water System Standards, Department of Water Supply, County of Maui, State of Hawaii, 2002, Table 100-18, p. 111-3*

*** Max. daily demand factor taken from Water System Standards, Department of Water Supply, County of Maui, State of Hawaii, 2002, Table 100-20, p. 111-5.*

APPENDIX B-2

Potable Water Storage Capacity Calculation

PU'UNANI HOMESTEAD

NEEDED POTABLE WATER STORAGE CAPACITY

	Average Daily Demand		Required Storage Capacity
161 Single-Family Residential Dwellings	96,600 gpd	*x 1.5** ==>	144,900 gal.
Total	96,600 gpd		144,900 gal.

Source:

** Max. daily demand factor taken from Water System Standards, Department of Water Supply, County of Maui, State of Hawaii, 2002, Table 100-20, p. 111-5.*

APPENDIX C

Wastewater Discharge Calculations

PU'UNANI HOMESTEAD

PROJECTED WASTEWATER DEMAND

Source	Base Unit		Contribution Rate		Average Daily Demand
Single-Family Dwellings	161 units	x	350 gals/unit/day*	==>	56,350 gpd
Total	161 units				56,350 gpd

Source:

** Contribution rate taken from County of Maui, Wastewater Reclamation Division, "Wastewater Flow Standards," February 2, 2000.*

MUNEKIYO HIRAGA

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