Environmental Impact Statement Preparation Notice

PROPOSED OHANA KAI VILLAGE AFFORDABLE HOUSING PROJECT AND RELATED IMPROVEMENTS

Prepared for:

MVI, LLC

Accepting Authority:

County of Maui, Department of Housing and Human Concerns

June 2009

MUNEKIYO HIRAGA, INC.

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Executive Summary

Project Name:	Proposed Ohana Kai Village Affordable Housing Project
Type of Document:	Environmental Impact Statement Preparation Notice
Legal Authority:	Chapter 343, Hawai`i Revised Statutes
Applicable Environmental Assessment Review "Trigger":	Use of State Lands (work within Honoapi`ilani Highway right-of-way); Construction of Wastewater Treatment Facility
Location:	TMK: 3-6-001:18 and 3-6-004:003 (por.) Ma`alaea, Wailuku Maui Island
Landowner:	MVI, LLC
Applicant:	MVI, LLC 4372 West Waiola Street Kihei, Hawai`i 96753 Contact: Jesse Spencer Phone: (808) 298-7708
Accepting Authority:	Department of Housing and Human Concerns County of Maui 2200 Main Street, Suite 546 Wailuku, Hawai`i 96793 Contact: Lori Tsuhako, Director Phone: (808) 270-7805
EIS Preparer:	Munekiyo & Hiraga, Inc. 305 High Street, Suite 104 Wailuku, Hawai`i 96793 Contact: Mark Alexander Roy, Project Manager Phone: (808) 244-2015
Project Summary:	The applicant (MVI, LLC) proposes the development of a residential subdivision on approximately 257 acres of land. The subdivision would contain approximately 1,100 single-family dwellings of which 60 percent will be provided as affordable units to qualified individuals in Below Moderate to Above Moderate (81 percent to 140

percent) median income groups at sales prices set forth by the County of Maui, Department of Housing and Human Concerns' Affordable Sales Price Guidelines. The project will also include a neighborhood-oriented village town center, parks, open space, as well as lands for a public/quasi-public use. Onsite infrastructure improvements include water conveyance, drainage, and wastewater systems, including a new wastewater treatment facility. A private drinking water system will also be developed in conjunction with the project on an adjacent parcel of land consisting of wells, a storage tank, and related infrastructure.

I. PROJECT OVERVIEW

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A. PROJECT LOCATION, OWNERSHIP, AND CURRENT LAND USE

The proposed project involves the use of two (2) parcels of land (hereafter referred to individually as the "project site" and the "utility site" or collectively as the "project area") located in Ma`alaea, Maui, Hawai`i. The project area is bordered on the east side by the State of Hawai`i's Honoapi`ilani Highway, beyond which lies the Ma`alaea Triangle commercial complex. To the south of the project area is the Ma`alaea Small Boat Harbor, while agricultural lands are located to the north. State Conservation District lands border the project area to the west. See **Figure 1**. The project site is identified by Tax Map Key (TMK) (2) 3-6-001:018 and the utility site by TMK (2) 3-6-004:003 (por.). The project site is designated as Project District 12 in the Kihei-Makena Community Plan and is the location for the proposed Ohana Kai Village Affordable Housing Project. See **Figure 2** and **Figure 3**.

The project site is approximately 257 acres in area and is owned by MVI, LLC. The property was acquired by MVI, LLC on October 21, 2008 from former owner Maalaea Properties, LLC. Prior to the sale of the property, the previous owner (Maalaea Properties, LLC) had been involved in the processing of land use entitlement applications for development of a proposed residential subdivision on the property, referred to at the time as the 'Maalaea Mauka' project. The Maalaea Mauka proposal is no longer being pursued by Maalaea Properties, LLC. Since purchasing the property, MVI, LLC (hereafter referred to as the "Applicant") has been working to develop a master plan and associated land use components for the current proposal at hand, which is the Ohana Kai Village Affordable Housing Project.

Portions of the project site are presently being utilized to support agricultural functions, such as cattle grazing. Areas not being utilized for agricultural activities currently lie vacant and underutilized.

B. PROPOSED ACTION

As outlined above, the applicant proposes the development of a 257-acre master-planned single-family residential community on the project site (TMK (2) 3-6-001:018). See **Figure 4**. Referred to as "Ohana Kai Village", the proposed project involves the master-planned development of 1,100 single-family residential units, a neighborhood-oriented village town

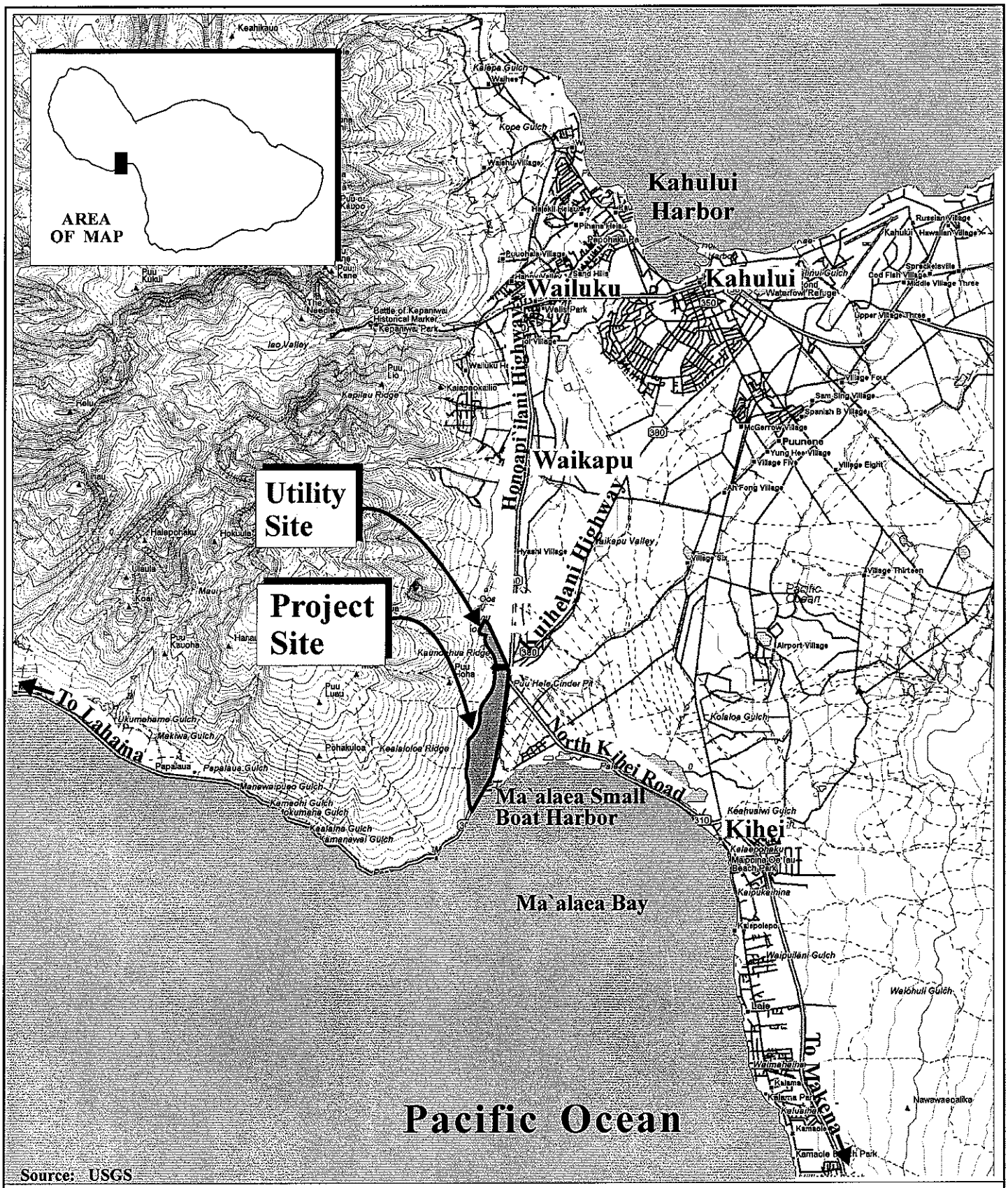


Figure 1 Proposed Ohana Kai Village Affordable Housing Project and Related Improvements

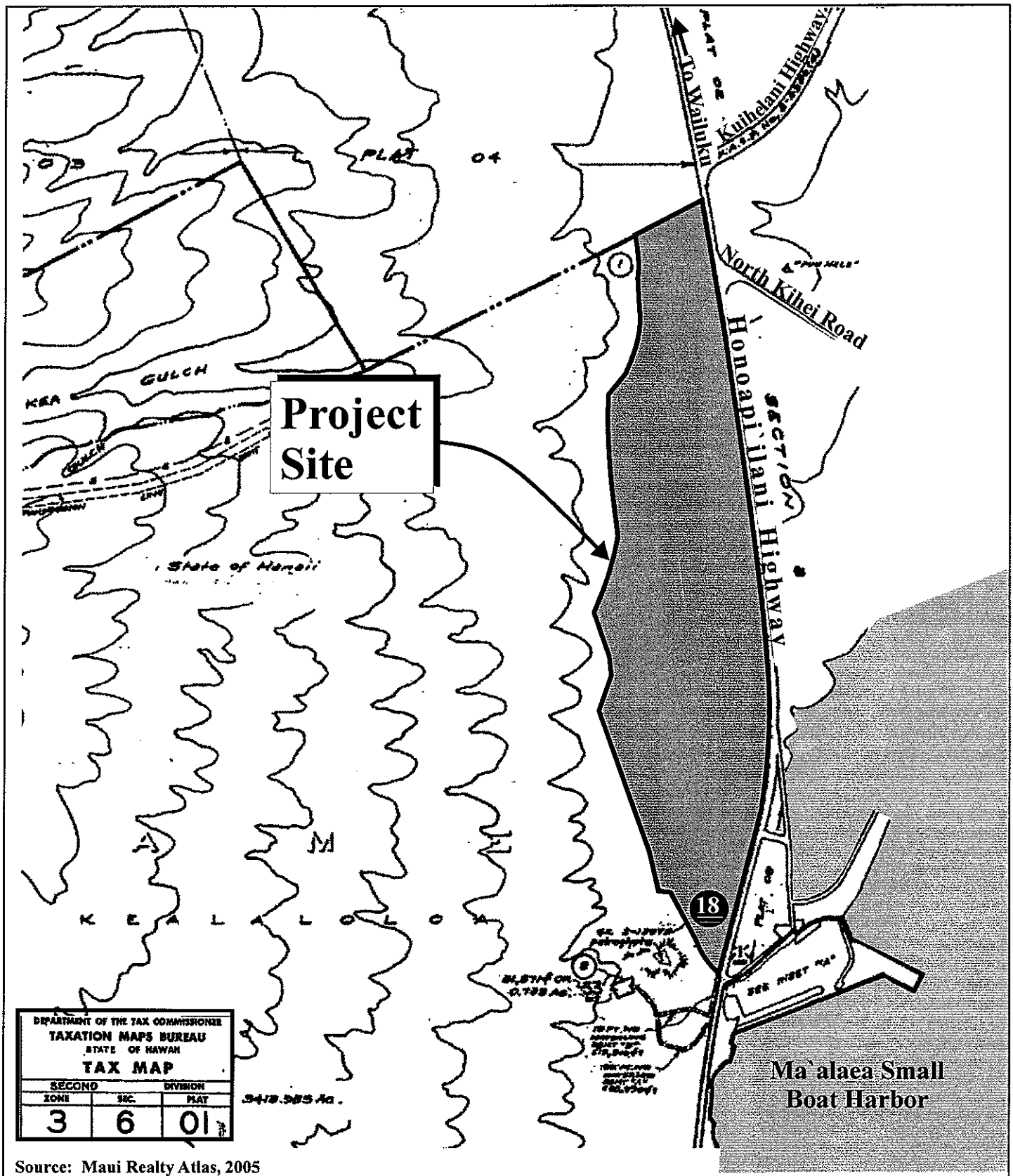
NOT TO SCALE

Regional Location Map

Prepared for: Spencer Homes, Inc.

MUNEKIYO & HIRAGA, INC.

SpenHome/MaalaeaAH/EISPN/regional



Source: Maui Realty Atlas, 2005

Figure 2

Proposed Ohana Kai Village Affordable Housing Project and Related Improvements

Property Location Map (Project Site)

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Key

- Limits of Utility Site
- Remaining Portion of Tax Map Parcel ((2)3-6-004:003)

West Maui Forest Reserve

Utility Site

PLAT 05

PLAT 08

PLAT 02

PLAT 06

PLAT 07

PLAT 09

483.387 Ac.

HFU Mauka Inc.
814.287 Ac.

168.715 Ac.

8.108 Ac.

190.678 Ac.

79.109 Ac.

(Hāpai C&A Inc.) 16.

68.140 Ac.

2.050 Ac.

10.607 Ac.

32.876 Ac.

Waikapu

To Maalaea

To Kihei

To Wailuku

Honoapi'ilani Highway

(F.A.P. No. 13-6)

Kuihelani Highway

Waiko Road

Note: Parcels 3,6,7 & 8 owned by Wailuku Agribusiness Co., Inc. unless otherwise noted.

DEPARTMENT OF FINANCE
PROPERTY ASSESSMENT DIVISION
TAX MAPS SECTION
STATE OF HAWAII
TAX MAP
COUNTY OF MAUI

ZONE	SEC.	PLAT
3	6	04

Source: Maui Realty Atlas 2005

Figure 3 Proposed Ohana Kai Village Affordable Housing Project and Related Improvements

Property Location Map (Utility Site)

NOT TO SCALE

MUNEKIYO & HIRAGA, INC.

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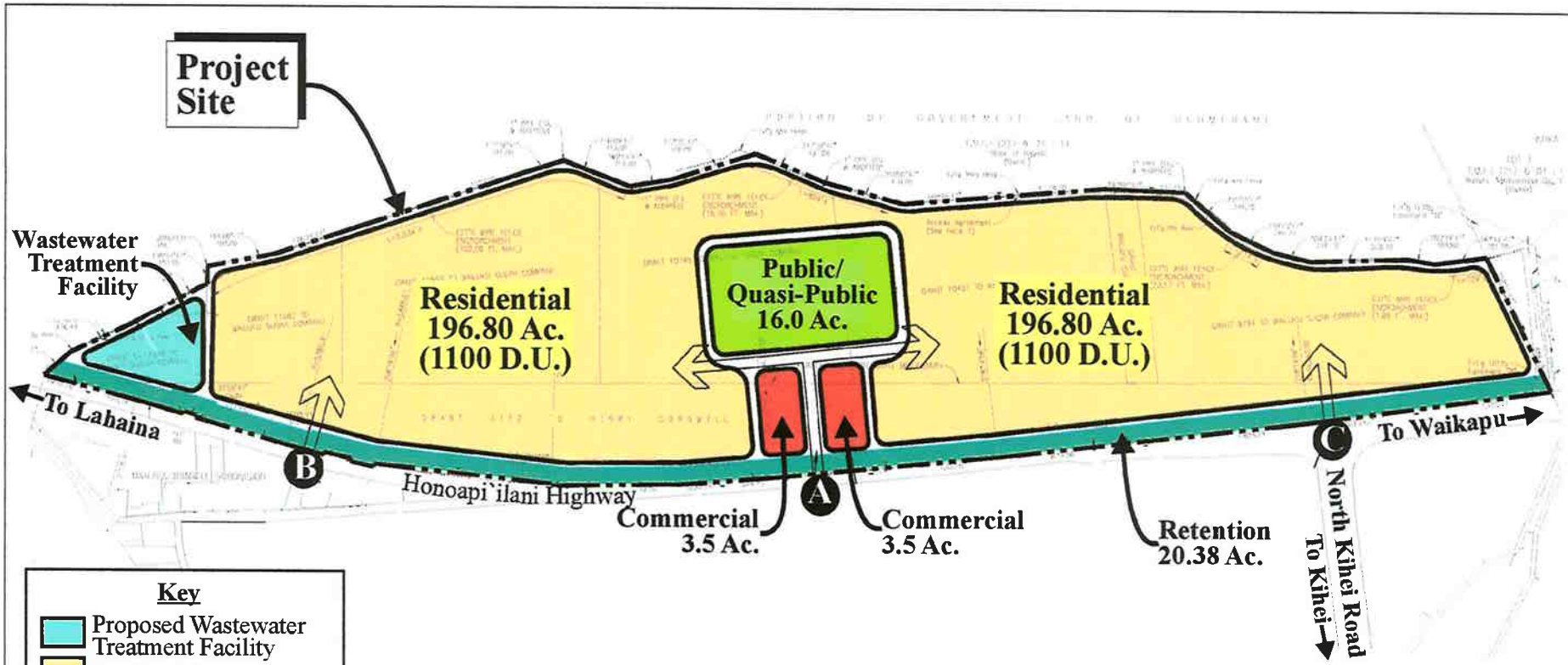
SpenHome/MaalaeaAH/EISPN/propertyloca



Key

- Proposed Wastewater Treatment Facility
- Residential
- Public/Quasi-Public
- Retention Area
- Commercial
- A Primary Access Point
- B Secondary Access Point
- C Secondary Access Point

Source: Maxwell Design Group

Project Summary	
Land Use	**Acres**
Proposed Wastewater Treatment Facility	6.82
Residential	196.80
Public/Quasi-Public	16.00
Retention	20.38
Commercial	7.00
Major Roads	10.00
TOTAL	**257.00**

Figure 4

Proposed Ohana Kai Village Affordable Housing Project and Related Improvements

Conceptual Subdivision Plan

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center, community support facilities (i.e. parks, lands for public/quasi-public use, and open space), and supporting infrastructure, including a Wastewater Treatment Facility (WTF). According to preliminary plans, the 1,100 residential units will be developed on approximately 197 of the 257 total acres in the project site, while the remainder of the parcel will be used for development of the WTF, as well as lands for public/quasi-public use, parks, open space, buffer zones, and collector roadways. **Table 1** below provides a breakdown of the proposed land uses and allocated areas.

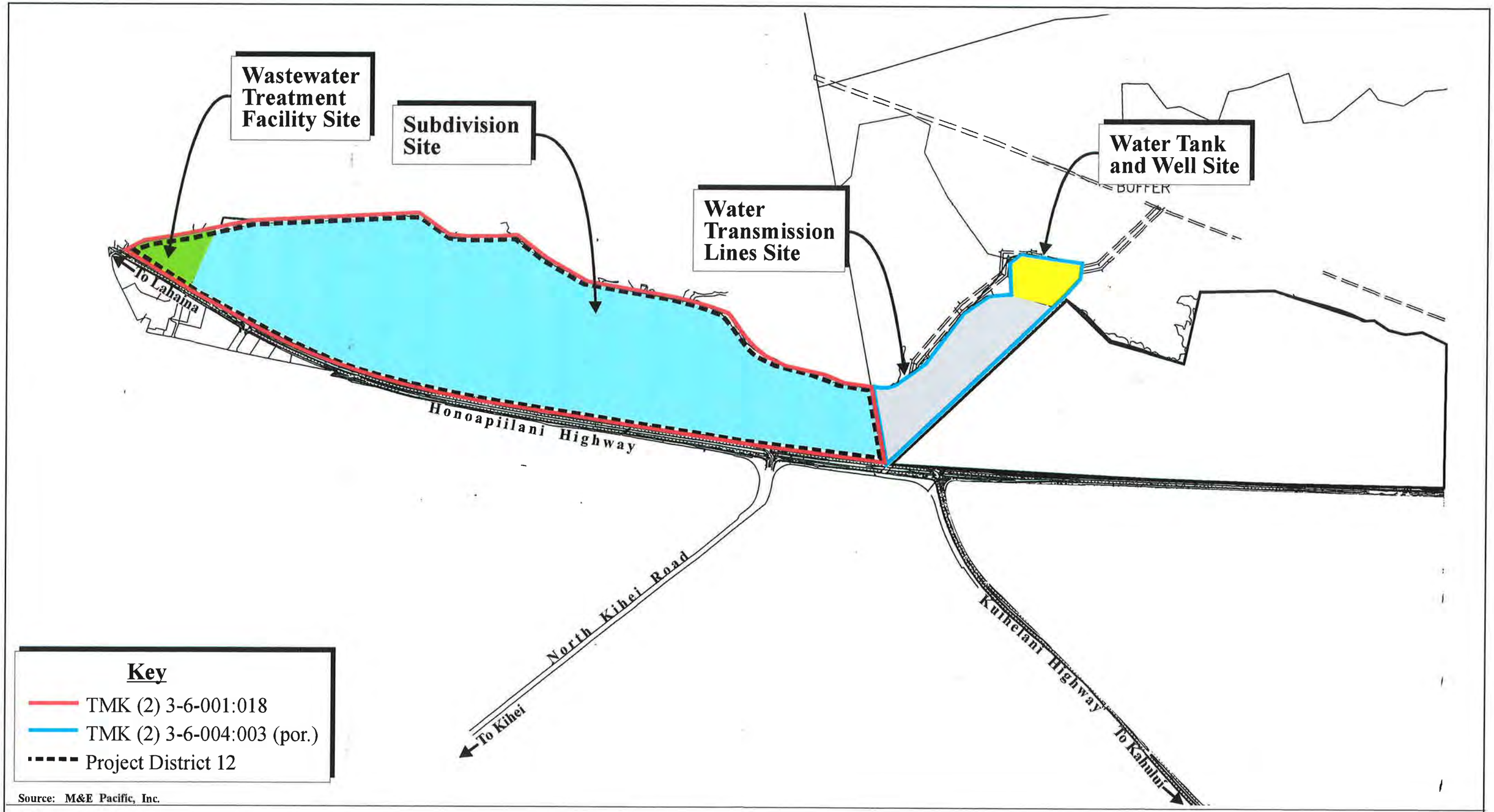
Table 1. Project Site Land Use Allocations

Land Use Component	Acreage Allotment
Single-Family Homes (1,100 units)	197
Village Town Center (Commercial)	7.0
Wastewater Treatment Facility	7.0
Retention/Open Space Areas	20.0
Public/Quasi-Public Uses	16.0
Major Roads	10.0
TOTAL	**257 Acres**

Additionally, the applicant proposes to develop a privately owned and maintained offsite drinking water system to service the proposed community on the utility site (TMK (2) 3-6-004:003 (por.)). The utility site is under lease from neighboring landowner Maalaea Properties, LLC and includes an existing agricultural reservoir and MECO electrical transmission lines. Improvements associated with the proposed Ohana Kai Village project at the utility site will include of a water tank and well site (approximately five (5) acres) and a water transmission lines site. See **Figure 5**. The remaining portion of the 710-acre parcel will not be affected by the proposed action.

C. PROJECT NEED

The proposed Ohana Kai Village project is seeking to increase the supply of available housing for local residents, particularly the supply of affordable housing units, at a time when housing is both expensive and in short supply on Maui. Over recent years, both resident and non-resident (offshore) demand for housing on Maui has intensified due to increased population growth and historically low interest rates. This strong demand, coupled with



Source: M&E Pacific, Inc.

Figure 5

Proposed Ohana Kai Village Affordable Housing Project and Related Improvements

Project Area Components

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SpenHome/MaalaeaAH/prelsiteplan

limited supply, has led to rising housing prices. With the median sales price of a single-family house and lot on Maui over $550,000.00, many residents have been unable to purchase their own homes. The County of Maui, Socio-Economic Forecast (2006) estimates that total housing demand in Maui County will increase from 53,793 units in 2005 to 89,890 units in 2030, an increase of approximately 67 percent over 25 years. The Hawai`i Housing Policy Study Update 2003, estimates that an additional 4,072 resident housing units will be needed by 2010 to meet projected demand. According to the 2003 study, this number is anticipated to further increase to a 4,225-unit deficit in the supply of housing units on Maui by the Year 2020, based on production and population forecasts (SMS, 2003).

The proposed Ohana Kai Village project responds to the need to provide housing opportunities to Maui residents in both the near and long term. The project will serve to meet the varied housing needs of the region, at an attractive and central location in Ma`alaea. The product choices being proposed will provide healthy competition and allow for a more balanced housing market. In light of current and projected housing market conditions and prices, the proposed Ohana Kai Village project is considered to provide a significant community benefit by offering Maui residents new opportunities to secure affordable housing products.

D. AFFORDABLE HOUSING PROGRAM

To increase the supply of affordable housing within Maui County, the following program has been developed in conjunction with the land use plan for the proposed Ohana Kai Village Project. This program consists of the following elements:

- Sixty (60) percent of the proposed 1,100 single-family units will be made available for purchase by qualified individuals in Below Moderate to Above Moderate (81 percent to 140 percent) median income groups at sales prices set forth by the Department of Housing and Human Concerns' (DHHC) Affordable Sales Price Guidelines. The applicant will work alongside the County of Maui during the course of the EIS process to develop a formal selection program for the sale of these 660 units. The applicant will ensure that 80 percent of the first 200 units constructed for the project are sold pursuant to the requirements of this selection program.

- The remaining forty (40) percent (440 units) of the 1,100 single-family units will be offered for sale in accordance with market demand. To maintain the affordability of these units, the applicant will set prices for these homes at or below the upper threshold of pricing for the Gap Income (141 to 160 percent) median income group, as defined in the DHHC Affordable Sales Price Guidelines.

With implementation of the foregoing program, the proposed Ohana Kai Village project will meet both current and future demand for affordable housing in the Maui residential market, a trend which is set to continue given projected population growth rates, continued in-migration trends and the increase in non-resident investment within Maui County.

E. ENTITLEMENTS REQUIRED

The proposed project will require a number of land use entitlement approvals to proceed. The current State Land Use designation for the project site and the utility site is "Agricultural". Both sites are zoned by the County of Maui as "Agricultural".

In regards to community plan designation, the project site is designated "Project District 12" by the 1998 Kihei-Makena Community Plan. The utility site falls within both the Kihei-Makena and Wailuku-Kahului Community Plans and is designated "Agricultural". A summary of entitlements being sought for the project, is provided below:

1. County 201H Application

The proposed Ohana Kai Village project has been developed to meet the criteria for a Section 201H-38, Hawai`i Revised Statutes (HRS) project in coordination with the County of Maui's DHHC. Section 201H-38, HRS promotes the delivery of affordable housing by allowing the exemption of endorsed projects from:

> *"...all statutes, ordinances, charter provisions, and rules of any governmental agency relating to planning, zoning, construction standards for subdivisions, development and improvement of land, and the construction of units thereon."*

As such, a Section 201H-38, HRS application will be filed with the Maui County Council to seek exemptions from the Community Plan Amendment, Change in Zoning, and Project District processes, as well as other County requirements to support the timely implementation of the project, without compromising public health, safety or welfare considerations.

2. State 201H District Boundary Amendment Petition

The current State Land Use designation for the project site is "Agricultural". Concurrent with the County's 201H-38, HRS processing, a petition for a State Land Use Commission (SLUC) District Boundary Amendment (DBA) from the

"Agricultural" to the "Urban" District will be submitted for processing. The SLUC petition will encompass the entire 257-acre project site and will follow the provisions of Section 15-15-97 of the Land Use Commission Rules, pertaining to Section 201H-38, HRS processing.

F. CHAPTER 343, HAWAI`I REVISED STATUTES REQUIREMENTS

In addition to the proposed WTF, the proposed project will involve the construction of project access-related intersection improvements affecting Honoapi`ilani Highway, a State highway facility. The use of State lands and the construction of wastewater treatment facilities are both triggers for the preparation of an Environmental Assessment (EA) pursuant to Chapter 343, Hawai`i Revised Statutes (HRS). Due to the scope of the project, the DHHC has determined that an Environmental Impact Statement (EIS) be prepared to fully document and evaluate the technical characteristics, environmental impacts and alternatives associated with the project. The EIS, prepared in accordance with Chapter 200 of Title 11, Department of Health Administrative Rules, Environmental Impact Statement Rules, will advance findings and conclusions relative to the significance of the proposed action. The EIS will act as the primary technical supporting document for the 201H application. The Accepting Authority for the EIS will be the County of Maui, DHHC.

G. ANTICIPATED DEVELOPMENT SCHEDULE

Construction of the project will commence upon receipt of all applicable regulatory permits and approvals.

The project will be developed over a multi-phase time horizon anticipated to be approximately six (6) years in duration. It is anticipated that the first phase for construction of the project will commence within six (6) months from the date of the 201H approval. Completion of the project is anticipated to occur within six (6) years of start of construction.

The total estimated cost of the proposed project is approximately $400 million, which includes both site work and vertical construction costs.

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

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A. PHYSICAL ENVIRONMENT

1. Surrounding Land Uses

a. Existing Conditions

The project area is situated on the southwest coast of the island of Maui, about eight (8) miles from the commercial and business center of Kahului. It lies to the northwest of the Ma`alaea Small Boat Harbor, a harbor facility for commercial uses with a total berthing capacity of 96 vessels, as well as the commercial and residential uses of Ma`alaea Triangle and several condominium complexes. The harbor is accessed directly from Honoapi`ilani Highway (harbor access road) and by the Old Wailuku Lahaina Road which connects with Ma`alaea Road. The nearby Ma`alaea Triangle accommodates a variety of uses catering predominantly to tourism, including restaurants, an ocean center, a miniature golf course, souvenir shops and parking. The project area lies to the west of the Honoapi`ilani Highway, which is the principal access-way to areas on the west coast of the island, including Lahaina, Ka`anapali and Kapalua. The project area is approximately sixteen (16) miles southeast of Lahaina and nine (9) miles southwest of Kahului Airport.

A large area of agricultural land, predominantly used for sugarcane cultivation, is located to the northeast of the project area. Other uses in the vicinity include the Pohakulepo quarry and concrete recycling site to the north, with the King Kamehameha Golf Courses beyond. The town of Waikapu is located approximately three (3) miles to the north, with the town of Wailuku, the County of Maui's governmental center, located a further one (1) mile to the north of Waikapu.

The project site was formerly used for sugarcane cultivation and more recently for small scale agricultural pursuits, including the cultivation of truck crops. Portions of the property is currently being used for cattle grazing under a lease that can be terminated upon 30 days notice should development occur in the future.

b. Potential Impacts and Proposed Mitigation Measures

The project site is intended to be developed as a master-planned, residential community. As such, the proposed project is in keeping with the intended use of the property as reflected by the designation as Project District 12 in the Kihei-Makena Community Plan. The Draft EIS will further discuss the project's relationship to surrounding land uses.

2. Climate, Topography, and Soils

a. Existing Conditions

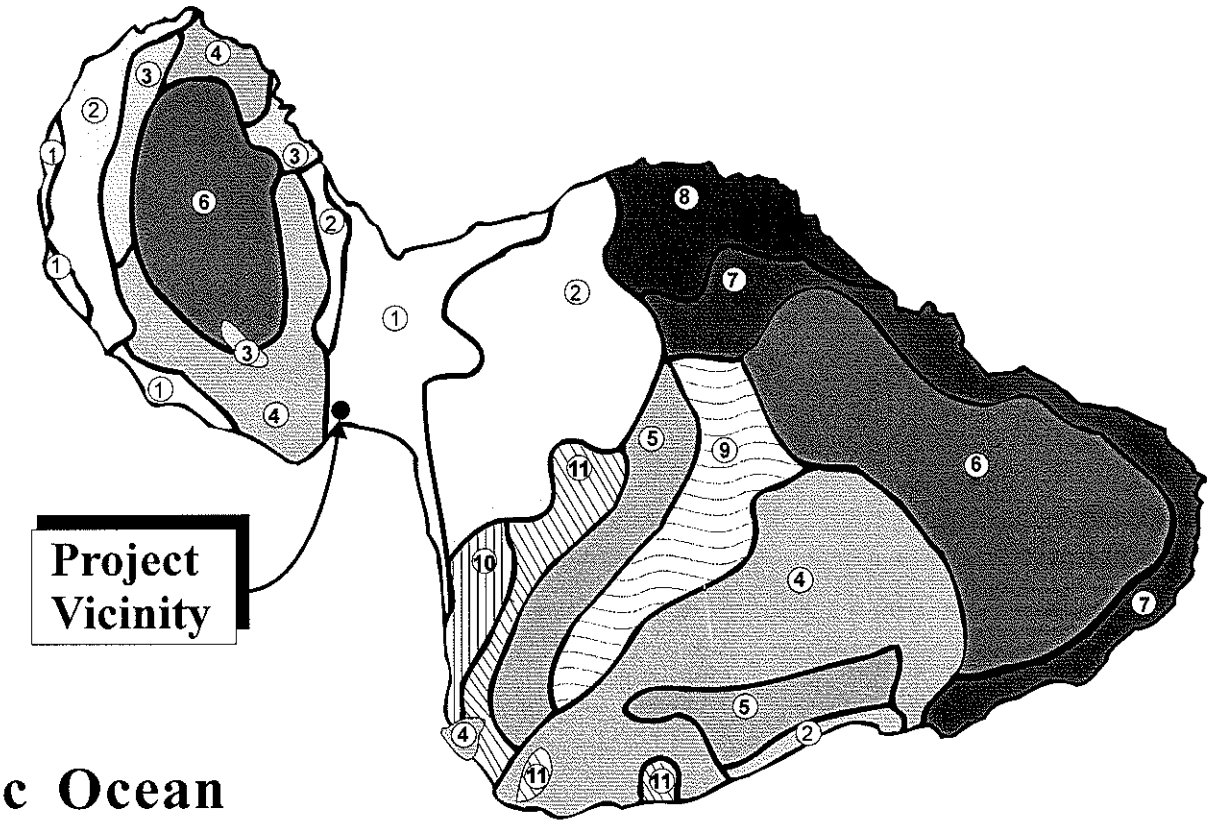
Maui is characterized by a semi-tropical climate containing a multitude of individual microclimates. The mean annual temperature of the island is about 75 degrees Fahrenheit at all locations near sea level. The coolest months on Maui are December and January, with August and September representing the hottest months in the calendar year. A high proportion of the rainfall that Maui receives each year falls on the northeast facing shores leaving the south and southwest coastal areas relatively dry. The proposed Ohana Kai Village project site is located within one of these drier areas of the southwest coast, one that is also often affected by strong winds and high waves. Trade winds originating from the northeast average from 10 to 20 miles per hour (mph) and are common throughout the localized area.

Underlying the project site are soils belonging to the Pulehu-Ewa-Jaucus association. See **Figure 6**. The Soil Survey of the islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawai`i characterizes the soils of this association as deep and well drained and located on alluvial fans and in basins.

The project site contains the following soil types: Ewa Silty Clay (EsB), Stony Alluvial Land (rSM), Ewa Cobbly Silty Clay (EtB), and Pulehu Cobbly

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



Source: USDA Soil Conservation Service

Figure 6

Proposed Ohana Kai Village Affordable Housing Project and Related Improvements
Soil Association Map

NOT TO SCALE

Prepared for: Spencer Homes, Inc.

MUNEKIYO & HIRAGA, INC.

SpenHome/MaalaeaAH\EISPN\SOILS

Clay Loam (PtB). See **Figure 7**. EsB, which is situated on the southeast side of the project site, occurs around alluvial fans and terraces and is generally characterized by a 3 to 7 percent slope, moderate permeability, a slight erosion capacity and slow run-off. This soil classification is predominantly used for sugarcane or pineapple crop cultivation in the Hawaiian Islands.

EtB, which occurs in the central portion of the project site, is similar to EsB, but cobblestones in the surface layer interfere with surface tillage. However, intertilled crops, including sugarcane, are a viable option for this soil type.

PtB is characterized by a 3 to 7 percent slope, slight erosion hazard and slow runoff. Similar to the aforementioned soil types, it is frequently used for sugarcane cultivation, although small acreages are also used as pasture.

rSM, located along the western border of the project site, consists of stones, boulders and soil deposited by streams along the bottoms of gulches and on alluvial fans. This soil classification can be found at elevations ranging from sea level up to around 1,000 feet and is generally characterized by a 3 to 15 percent slope. Improvement of the land in such areas is difficult due to the presence of stones and boulders.

Vegetation normally associated with these soil classifications includes kiawe, ilima, guava, kukui, hilograss and christmas berry.

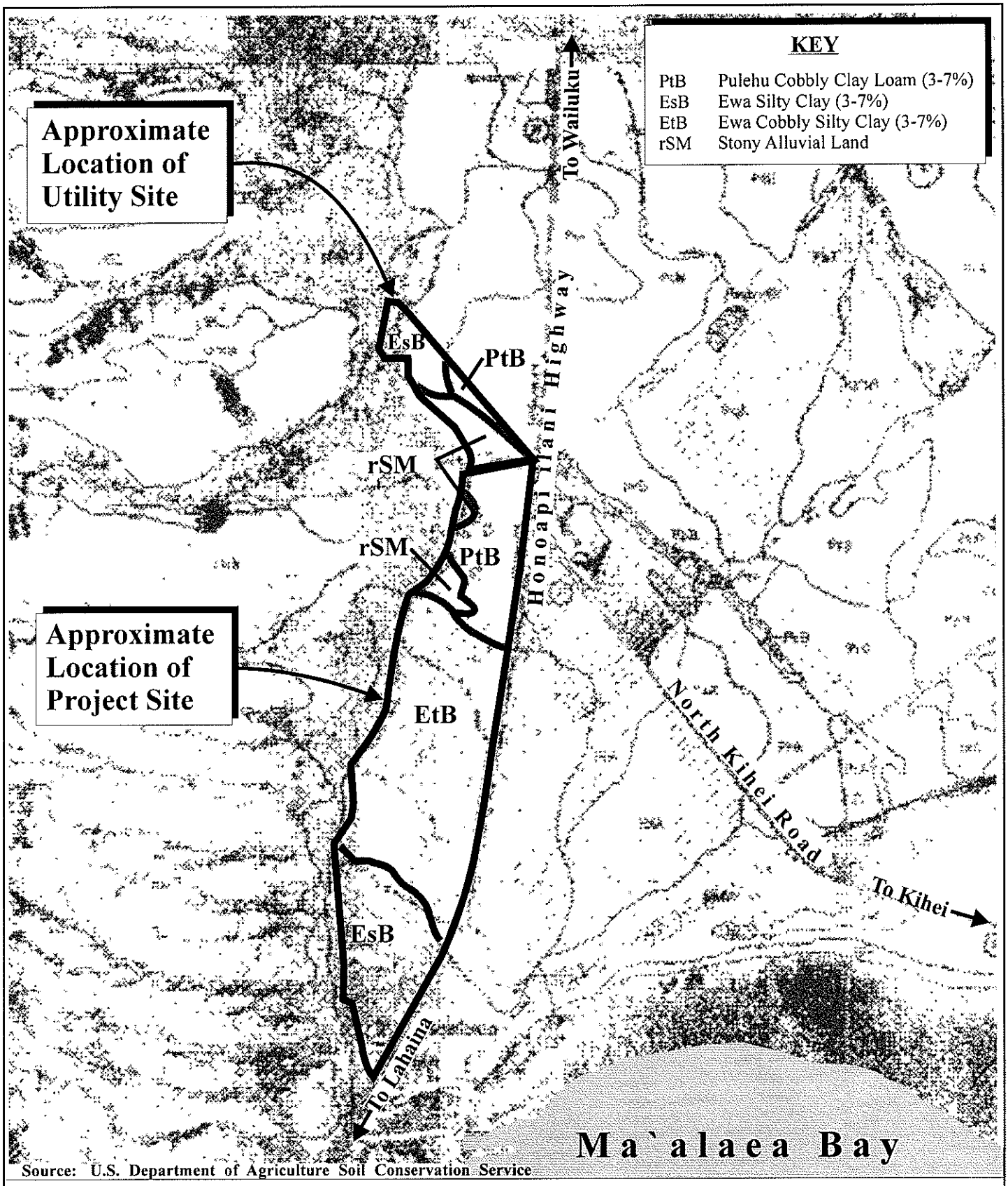
b. Potential Impacts and Proposed Mitigation Measures

Because the project site is located on an incline, mass-grading will be necessary to meet design requirements for roadway vertical profiles and house pad finish grades. The extent of grading, as well as proposed mitigation measures, will be discussed in more detail within the Draft EIS.

3. Agriculture

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, though not



Source: U.S. Department of Agriculture Soil Conservation Service

Figure 7

Proposed Ohana Kai Village Affordable Housing Project and Related Improvements

Soil Classification Map

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exclusively, upon the soil characteristics of the lands. The three (3) classes of ALISH lands are: "Prime", "Unique", and "Other", with all remaining lands termed "Unclassified". When utilized with modern farming methods, "Prime" agricultural lands have a soil quality, growing season, and moisture supply necessary to produce sustained crop yields economically. "Unique" agricultural lands possess a combination of soil quality, growing season, and moisture supply to produce sustained high yields of a specific crop. "Other" agricultural lands include those that have not been rated as "Prime" or "Unique".

As reflected by the ALISH map for the project region, the majority of the project site is comprised of lands that have been defined as "Prime" agricultural lands although small portions at the north end of the property fall into the "Other" and "Unclassified" categories. See **Figure 8**.

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

The project site is located on lands designated as "B72i" by the LSB. See **Figure 9**. These lands are characterized as stony, well-drained lands moderately suited for machine tillability. They are most frequently used for sugarcane production and grazing.

b. Potential Impacts and Proposed Mitigation Measures

As previously noted, the project site lies within the State Agricultural district and is designated for agricultural uses by Maui County zoning. The proposed project will involve the use of a 257-acre parcel, which represents approximately 0.1 percent of the roughly 246,000 acres of State Agricultural district lands on the island of Maui. The proposed Ohana Kai Village residential subdivision is not anticipated to have a significant adverse effect on the inventory of lands available for agricultural cultivation, nor is it expected to affect the inventory of land for diversified agricultural use. Further discussion of agricultural impacts, along with an agricultural impact study, will be included in the Draft EIS.

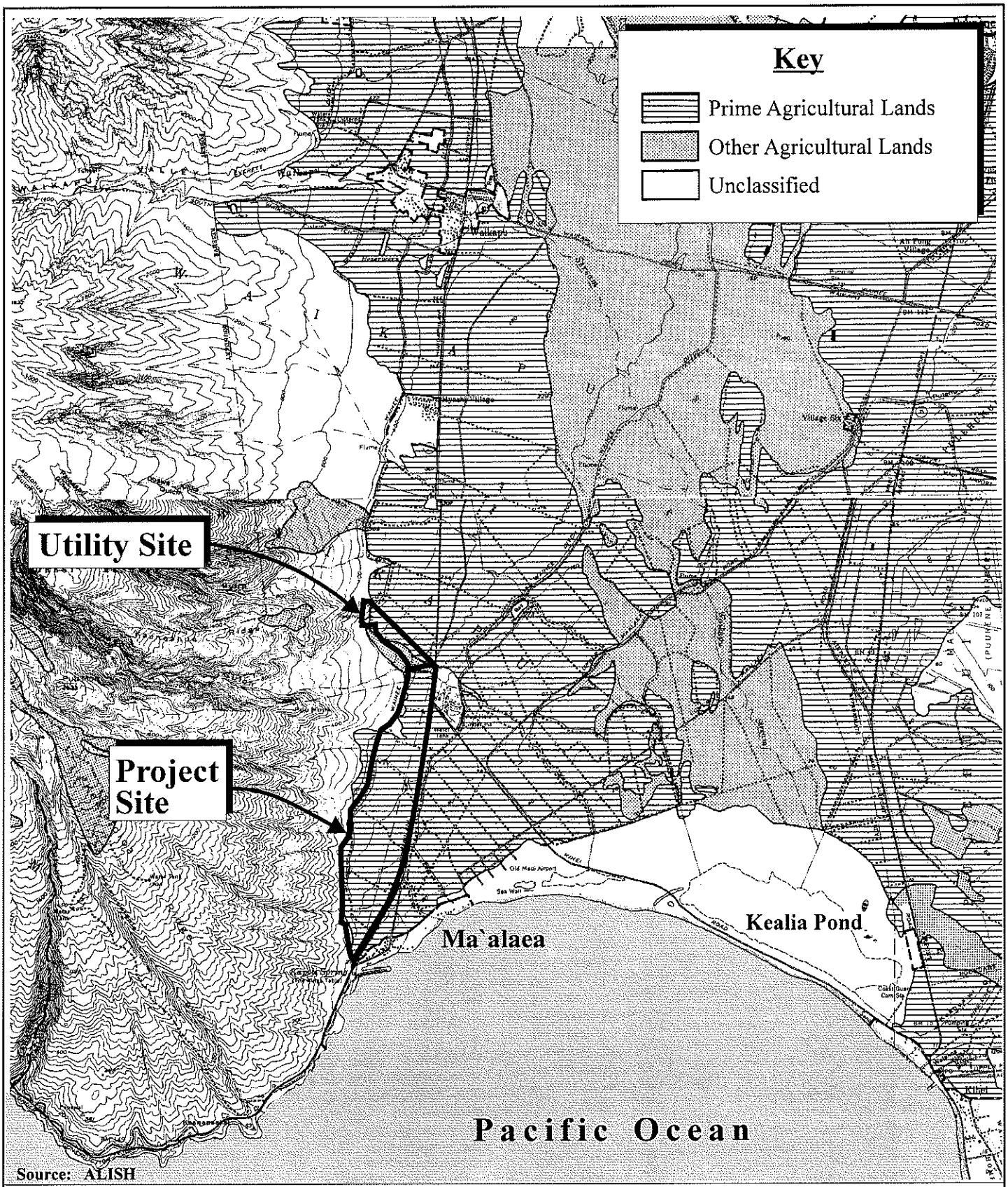

Figure 8 Proposed Ohana Kai Village Affordable Housing Project and Related Improvements

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ALISH Classifications Map

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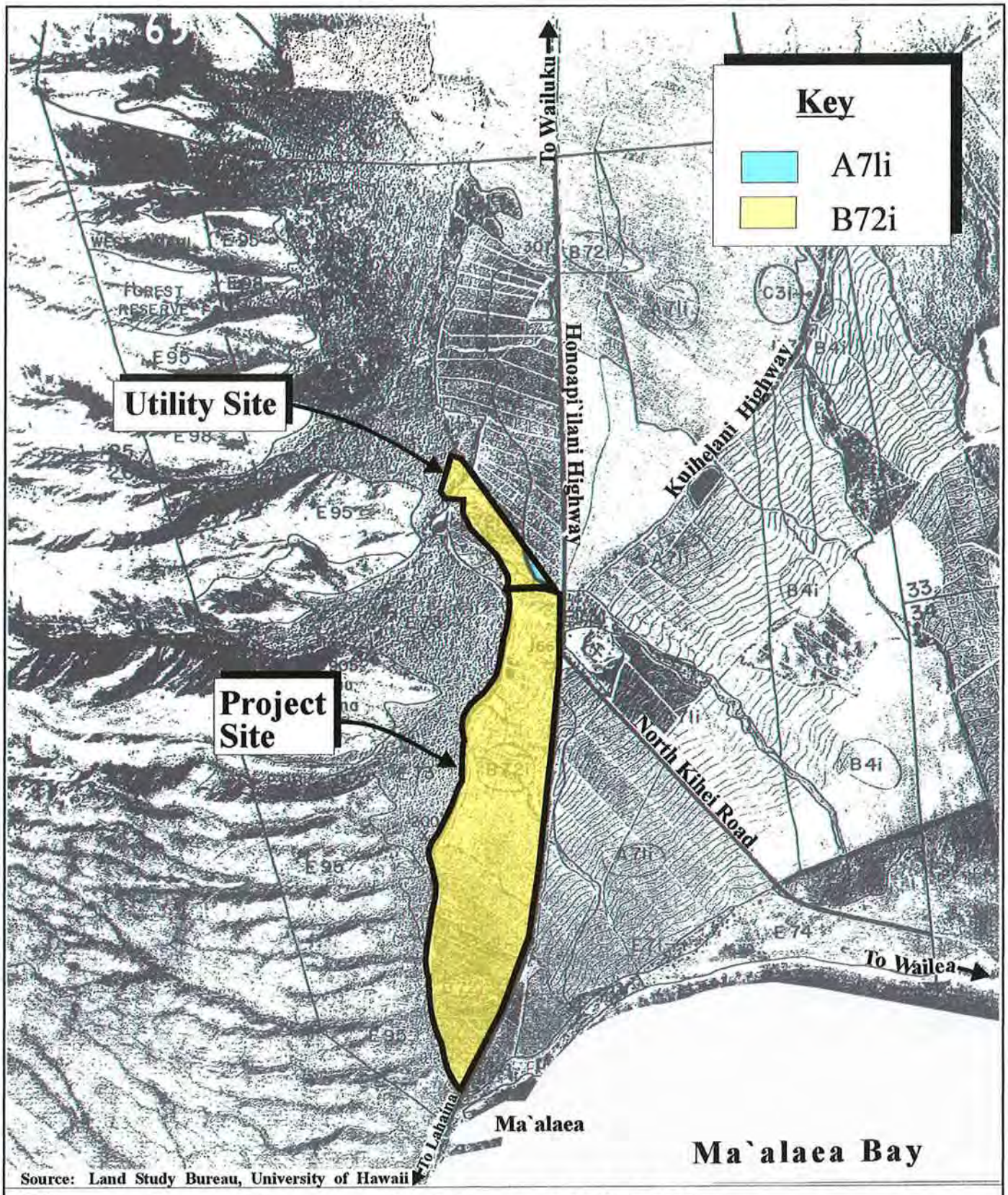
SpenHome/MaalaeaAH/EISPN/alish



Source: Land Study Bureau, University of Hawaii

Figure 9 Proposed Ohana Kai Village Affordable Housing Project and Related Improvements

Detailed Land Classification Map

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MUNEKIYO & HIRAGA, INC.

SpenHome/MaalaeaAH/EISPN/DetailLandClass

4. Flood and Tsunami Hazards

a. Existing Conditions

The flood insurance maps indicate that the majority of the project site falls within Zone C, areas of minimal flooding, although small portions of the site occupy Zone B, or areas between the 100-year and 500-year flood. See **Figure 10** and **Figure 11**.

b. Potential Impacts and Proposed Mitigation Measures

The Draft EIS will address potential impacts of the project on flooding and proposed mitigation measures to deal with these impacts. Based on preliminary project plans, it is anticipated that the portions of the subject property located in flood Zone B will not contain residential structures.

5. Flora and Fauna

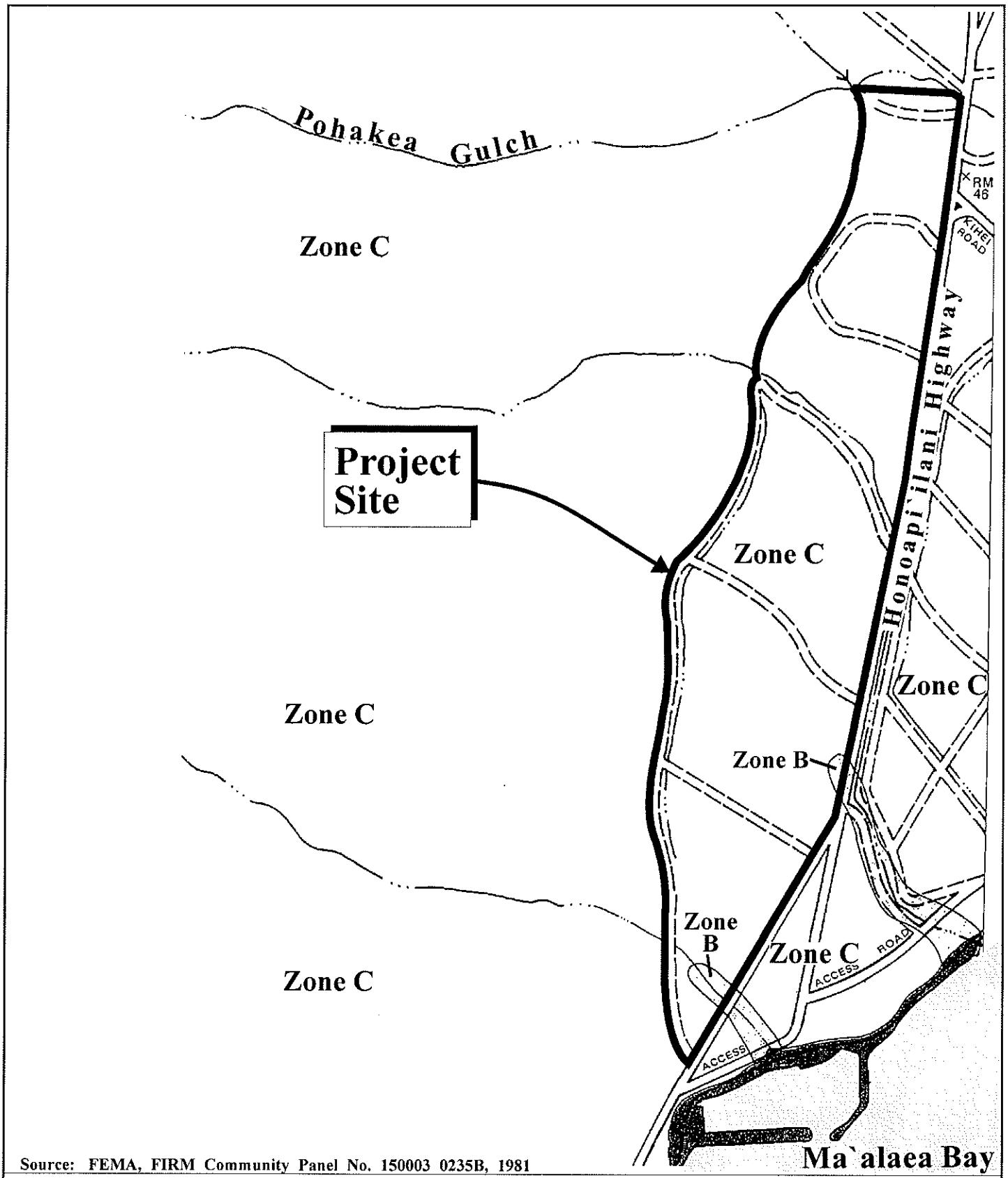
a. Existing Conditions

A Biological Resources Survey of flora and fauna within the project site was conducted in January 2005. See **Appendix "A"**. A total of 95 species of flora were identified, of which six (6) were native species: wiliwili, nehe, a'ali'I, ilima, uhaloa, and ilie'e. The domination of the area by non-native species of plant life can be attributed to the fact that the property was under agricultural cultivation for over a century.

No species of fauna were directly observed, although tracks of feral cats were seen, and other common species such as mongoose, rats, and mice would be expected given the dense vegetation. Moderate levels of avifauna diversity were observed, including the presence of three (3) endangered Nene geese.

b. Potential Impacts and Proposed Mitigation Measures

Given the fact that flora and fauna is generally limited to non-native abundant species, the proposed project is not anticipated to have a significant negative impact on biological resources. Although one endangered species, the Nene goose, was noted within the property, its activities were limited to incidental



Source: FEMA, FIRM Community Panel No. 150003 0235B, 1981

Figure 10 Proposed Ohana Kai Village Affordable Housing Project and Related Improvements

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Flood Insurance Rate Map (Project Site)

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MUNEKIYO & HIRAGA, INC.

SpenHome/MaalaeaAH/EISPN/FIRM

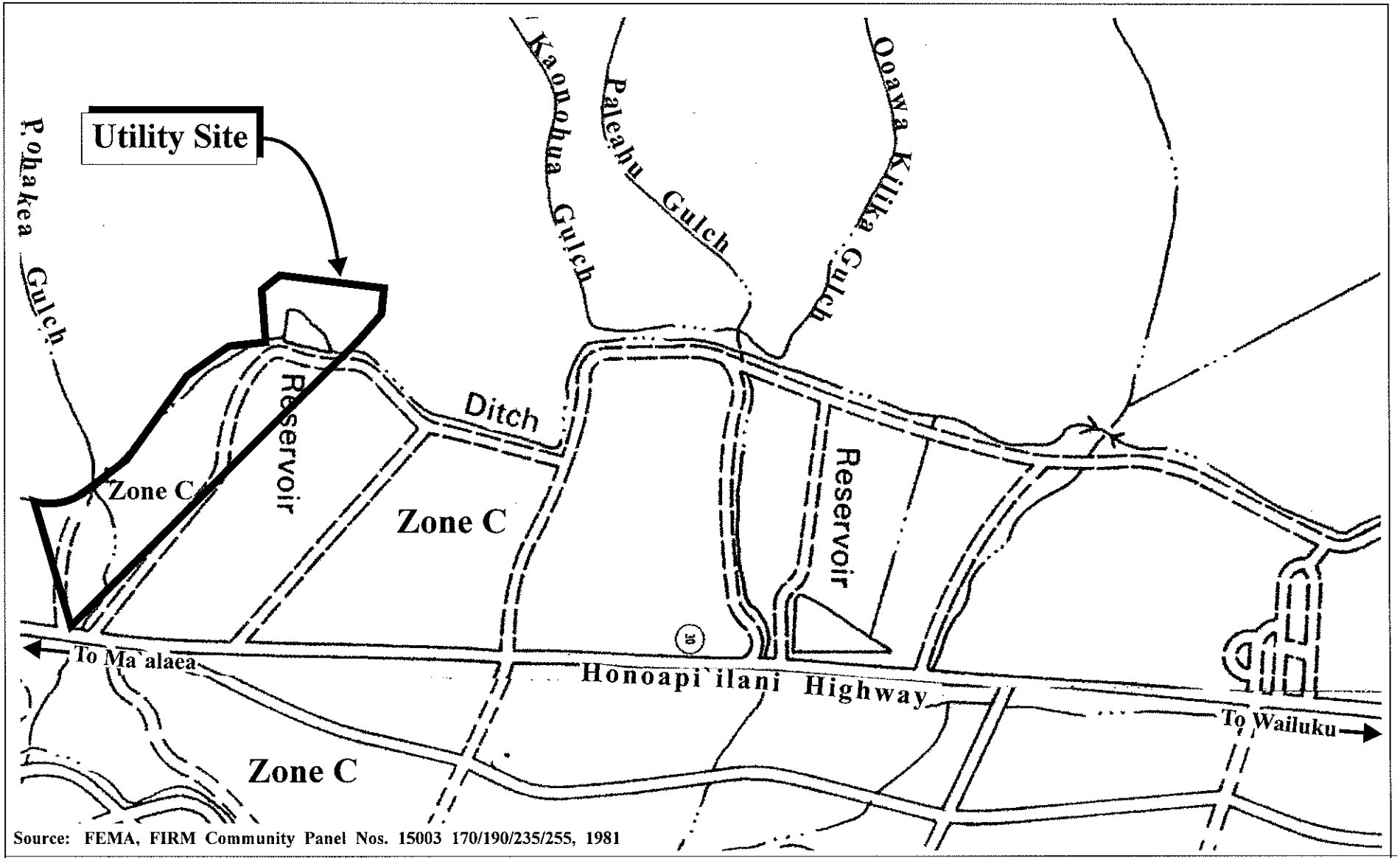

Figure 11

Proposed Ohana Kai Village Affordable Housing Project and Related Improvements

Flood Insurance Rate Map (Utility Site)

NOT TO SCALE

MUNEKIYO & HIRAGA, INC.

Prepared for: Spencer Homes, Inc.

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feeding rather than nesting, and the site was noted to be no different than thousands of acres of fields in the surrounding region in its ability to serve as a feeding ground. Moreover, irrigated parks and other open spaces associated with the proposed development would continue to provide a suitable area for the incidental feeding activities of Nene geese. However, the Biological Resources Survey did recommend preservation of a small stand of wiliwili trees growing in one of the gullies within the project site because of its strong association with Hawaiian dryland forests.

6. Streams and Wetlands

a. Existing Conditions

Four (4) gullies run through the project site at intervals and appear to be dry most of the year. The streams likely flow only during periods of heavy rainfall, when they drain upland slopes. Further analysis of these gullies will be conducted in association with the Draft EIS. There are no documented wetlands on the property.

b. Potential Impacts and Proposed Mitigation Measures

The Draft EIS will analyze the potential impacts of the project to the gullies observed within the project site and address potential mitigation measures. No impact on wetland areas is anticipated given the absence of wetlands in the vicinity of the project area.

7. Nearshore Marine Environment

a. Existing Conditions

Ma`alaea Bay is home to a variety of marine biota, including rice and lace coral, opihi, a'awa (thin-shelled rock crab), and butterfly fish. The Bay was once an area of special interest for nature study, research and photography due to its high diversity of sponges, mollusks, and other marine life, but much of the shell life in the outer bay sand bottom has declined in recent decades.

It is further noted that Ma`alaea Bay is part of the Hawaiian Islands Humpback Whale National Marine Sanctuary, which was established in 1992 to protect endangered humpback whales and their habitat.

b. Potential Impacts and Proposed Mitigation Measures

At its southernmost point, the project site is approximately 100 yards from the shoreline. The potential for stormwater runoff impacts originating from land-based activities will be greatest to those marine communities closest to the source.

Potential impacts to water quality and the marine environment, as well as possible Best Management Practices (BMPs) to prevent or minimize such impacts, will be identified as part of the EIS preparation process and will be included in that document. A Marine Biological Survey will be included in the Draft EIS.

8. Archaeological, Historical, and Cultural Resources

a. Existing Conditions

(1) Archaeological Resources

An Archeological Inventory Survey was conducted between January and February 2005 on the project site by Scientific Consulting Services SCS, Inc. See **Appendix "B"**. Only one (1) previous archeological study had been conducted on the property and yielded no significant findings. Although no prehistoric sites were noted, the 2005 survey identified three (3) historic sites related to the history of sugarcane cultivation.

The Archeological Inventory Survey used a 100 percent pedestrian survey as well as backhoe trenching at twenty (20) separate locations within the project site. For the pedestrian survey, researchers divided the site into hundreds of transects and systematically combed each for surface and exposed subsurface features.

As previously mentioned, three (3) historically significant sites were identified within the property. The first (State Site No. 50-50-09-5657) consists of 13 clearing mounds spread out within the northern 20 percent of the site. Although the exterior of the mounds was likely deposited via modern machinery, the interior is likely more historic, dating back to initial clearing of the land for sugarcane cultivation. The second site (State Site No. 50-50-09-5658) comprises dozens of irrigation modifications to the two (2) larger drainage gulches of the four (4) that run through the project site. These modifications are also associated with the beginning of sugarcane cultivation on the property in the early 20th century. The third and final site (State Site No. 50-50-09-5659) consists of a dirt road, approximately 4.0 meters wide, that follows the mauka perimeter of the subject property. The road is probably an original route that allowed cane hauling and cultivation activities within the internal portions of the property.

(2) Cultural and Historical Resources

Ma`alaea was once a traditional landing site for Hawaiian outrigger canoes, and is a popular reference in the history books as providing a landing point for armies coming to fight Kahekili and their chiefs on their way to Wailuku. It became a commercial landing in the 19th and early 20th century and also holds a place in Hawaiian history as representing the place where the first Westerner to Maui, sea captain George Vancouver (1757-98), landed his ship. A totem pole now stands across from the Maui Lu Hotel to commemorate this historic event. The middle of the 20th century witnessed the coastline along Ma`alaea being used for amphibious landing exercises during World War II. The modern harbor, located south of the project area, however, was not constructed until 1952.

Although historically a landing place for Hawaii's war fleets, the name Ma`alaea has more peaceful origins and seems to

have originated from the fact that "alaea", commonly known as red dirt iron oxide, was found along the coast. There are two (2) different kinds of alaea: kane and wahine. The first of which, kane, is found in the ocean, while the second, wahine is found on land. Ma`alaea Bay is a source for both of these types of alaea.

Although once the site of an old Hawaiian village, there is no visible surface presence of cultural resources in the vicinity of the project area today apart from the "Piko" stone and the large sharpening stone known as the "King's Table" or "Adze" that sits in front of Buzz's Wharf restaurant and proudly commemorates the historic roots of the harbor.

Immediately adjacent to the aforementioned small boat harbor is a historic Japanese shrine. This shrine, called the Ma`alaea Ebisu Jinja, is believed to have been constructed in the early twentieth century.

b. Potential Impacts and Proposed Mitigation Measures

(1) Archaeological Impacts and Mitigation

As noted above, three (3) sites of historic significance to sugarcane activities were documented during the Archeological Inventory Survey.

The following significance evaluations are broad criteria established for the State and National Register of Historic Places. These criteria are as follows:

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 embodies the distinctive characteristics of a type, period, or method of construction; or represents the*

work of a master; or possesses high artistic value; or represents a significant and distinguishable entity whose components may lack individual construction.

Criterion D: *Site has yielded or has potential to yield information important in prehistory or history.*

Criterion E: *Site has an important traditional cultural value to the native Hawaiian people or to another ethnic group of the state due to associations with traditional cultural practices once carried out, or still carried out, at the property or due to associations with traditional beliefs, events, or oral accounts (State of Hawai`i criterion only).*

All three (3) of the aforementioned sites located in the survey were determined to be significant under Criterion D. It is recommended that an archeologist be on site during leveling of a minimum of four (4) of the thirteen (13) clearing mounds located within State Site No. 50-50-09-5657, in order to assess whether or not historic and/or prehistoric features or artifacts are present within or under the mounds. No further archaeological work is required for the remaining two (2) sites (State Site No. 50-50-09-5658 and State Site No. 50-50-09-5659). The Archaeological Inventory Survey was accepted by the State Historic Preservation Division on June 29, 2005. See **Appendix "B-1"**. An archaeological monitoring plan has also been approved by SHPD for the project. See **Appendix "B-2"** and **Appendix "B-3"**.

(2) <u>Cultural Impacts and Mitigation</u>

Act 50 of the Hawai`i State Legislature (2000) requires that Environmental Assessments and Environmental Impact Statements include an assessment of cultural practices, and further mandates that the planning process takes said practices into account. Consequently, a Cultural Impact Assessment report was also prepared by SCS, Inc. for the project site in June 2005. See **Appendix "C"**. The report was based on consultation sought from various agencies and civic groups such as the Maui and Honolulu Offices of Hawaiian Affairs,

the Maui Planning Department's Cultural Resource Planner, and the Central Maui Civic Club. Archival research was also conducted and historical source materials were consulted.

Based on these consultations and research, the report found no evidence that the project site had been used for traditional cultural practices in recent times, and concluded that Hawaiian rights related to gathering, access and other customary activities would not be affected by the project development. However, it was noted that analyzing the visual impact of the project on traditional practices is difficult, given that some customs such as fishing that are located far off-site may nonetheless rely on the site as a visual landmark to locate culturally significant resources (a family fishing ko'a, for example). The report, therefore, recommends that cultural advisors be consulted during the planning phase of the project.

9. Air and Noise Quality

a. Existing Conditions

The Ma`alaea Bay area in general does not experience adverse air quality conditions. There is one notable point source of air contaminants in the local area, which is the power generation site owned and operated by Maui Electric Company. This industrial site is located more than 1,200 yards to the east of the project area. However, this source is not considered a major source of pollution due to the regular occurrence of prevailing trade winds along the south coast. Other airborne pollutants that do exist can largely be attributed to ship exhaust from harbor traffic, vehicle exhaust from Honoapi`ilani Highway, quarrying operations of the nearby Pohakulepo quarry site and the occasional burning of sugarcane by Hawai`i Commercial & Sugar Company. All of the above sources are relatively intermittent, however, and the prevailing tradewinds generally disperse suspended particulates to maintain a relatively high level of air quality in and around the project site.

Existing background noise within the vicinity of the project area is principally attributed to vehicle traffic on the surrounding roadways. The noise from

inter-island flight paths of arriving and departing aircraft at Kahului Airport, located approximately nine (9) miles to the northeast of the project area, represents another occasional source of noise to the surrounding area. It should also be noted that intermittent noise from wind adds to the overall ambient noise level from all of the aforementioned human sources.

b. Potential Impacts and Proposed Mitigation Measures

Air quality impacts attributable to the project will include dust generated by short-term construction-related activities. Site work such as clearing, grubbing and grading, and roadwork and construction will generate airborne particulates. Dust control measures, such as regular watering and sprinkling, will be implemented to minimize wind-blown emissions.

All bare earth areas, including all diversion surfaces, will be vegetated to mitigate dust-generated impacts. In the long term, the proposed project is not expected to adversely impact local and regional ambient air quality.

Ambient noise conditions will be temporarily impacted by construction activities. Heavy construction equipment, such as bulldozers, front-end loaders, and material-transport vehicles, will likely be the dominant source of noise during the construction period. The overall impact of the proposed project on ambient noise levels is not anticipated to be significant given the predominantly residential character of the proposed project.

10. Scenic and Open Space Resources

a. Existing Conditions

The project area is located along the slopes of the West Maui Mountains, near the southwest coastline of Maui, an area, like many other areas on the island, that offers beautiful scenic views. Scenic resources in the vicinity of the project area include the Pacific Ocean, the West Maui Mountains to the west and Haleakala to the east. Open space resources around the project are characterized by the vast expanse of agricultural land in the Central Valley that lies to the north of Ma`alaea and Kihei.

b. Potential Impacts and Proposed Mitigation Measures

The elevations of the project site extend from approximately 50 feet above median sea level (amsl) the southern extent to approximately 250 feet amsl on the northern, mauka boundary of the property. The project site will be developed within the context of a comprehensive master plan. Design standards will establish landscaping details within open space, roadways, public and quasi-public facilities, and buffer zones.

The visual resources of the area, potential impacts to them, and possible mitigation measures will be further addressed in the Draft EIS.

B. SOCIO-ECONOMIC ENVIRONMENT

1. Regional Setting

a. Existing Conditions

Existing and proposed land uses surrounding the Ohana Kai Village project area are indicative of growth trends anticipated for the Ma`alaea area. The Ma`alaea Triangle, a commercial center with shops, restaurants, an aquarium and commercial recreational uses, lies to the immediate east. Project District 11 proposed as a 650-acre master-planned residential community, lies to the northeast. Lands underlying the Project District 11 area is currently in sugarcane use. There are a number of condominiums along the coastline further to the east of the project area, which are both owner occupied and transient vacation rentals.

b. Potential Impacts and Proposed Mitigation Measures

The full-time residential nature of the proposed project is anticipated to balance surrounding land uses, as Ma`alaea has until recently been primarily associated with commercial and recreational activities surrounding the harbor as well as long-term, short-term, and part-time residential use. In total, Ma`alaea currently possesses approximately 560 residential apartment/condominium units, a portion of which are rented on a short-term basis to visitors, while the number of existing single-family homes is significantly lower. The project site constitutes Project District 12 of the

Kihei-Makena Community Plan, and as such is earmarked for development as a residential area. Further consideration of the proposed action's relationship to the regional setting and community character surrounding the project area will be included in the Draft EIS.

2. Population and Demography

a. Existing Conditions

The project site is located along the south coast of Maui, within the Kihei-Makena Community Plan region, an area that has experienced a significant population growth over the last three (3) decades. In the year 2000, the population of Maui was 117,644, with 22,870 people (19.4 percent) of the island's population residing in the Kihei-Makena Community Plan region (SMS, June 2002). The growth in population in the region since 1970 has been considerable, with population increasing from 1,636 in 1970, to approximately 7,263 in 1980, and to 15,365 in 1990. Over the past 30 years, the Kihei-Makena Community Plan region has experienced a fourteen-fold (14) increase in resident population, which is expected to rise further over the coming years. The resident population of Maui is projected to increase to 174,450 by the year 2020, with a projected 33,227 people (19.0 percent) residing in the Kihei-Makena area (County of Maui, 2006).

b. Potential Impacts and Proposed Mitigation Measures

Given the relatively low levels of permanent residential occupancy in Ma`alaea, the proposed project is anticipated to shift population and the demographic characteristics of this subregion of Maui. Within the context of the Kihei-Makena Community Plan region as a whole, however, the impact on population and demographics is anticipated to be more moderate in significance. The potential impact of the proposed Ohana Kai Village development on population and demographics will be analyzed in more detail at the localized, community, and Maui County-level in the Draft EIS.

3. Economy and Labor Force

a. Existing Conditions

The economy of Maui is heavily dependent upon the visitor industry, and the Kihei-Makena area provides a representative illustration of this characteristic. The presence of a high number of vacation condominiums along South Kihei Road, including Kihei Akahi, Kihei Kai Nani, Maui Banyan and Maui Kamaole to name but a few, reflects the fact that Maui's south coast has grown to be one of the most popular tourist destinations in the State. The Wailea area, north of Makena, further reaffirms the island's economic dependence on tourism, with the presence of a number of major luxury hotels, such as the Fairmont Kea Lani, Grand Wailea, Maui Prince and Diamond Resort, all of which are located amongst internationally renowned golf courses.

The neighboring Ma`alaea Small Boat Harbor is an important source of Maui's economic sustenance as it represents one of the focal points for tourism on the island. Many of the commercial boat operators conduct Molokini snorkeling trips, whale-watching tours, deep sea fishing expeditions or sunset cruises on a regular basis. The popularity of the harbor as a tourist gateway can be attributed to its proximity to the airport in Kahului, the hotels in South and West Maui, and Molokini crater, one of the top three (3) sightseeing destinations in Maui County.

As of February 2009, the unemployment rates for Maui County and the island of Maui were 7.8 percent and 7.7 percent, respectively. This is considerably higher than the respective February 2008 figures, which had unemployment rates at 3.1 percent and 3.0 percent (State of Hawai`i, Department of Labor and Industrial Relations).

b. Potential Impacts and Proposed Mitigation Measures

An Economic Impact Assessment for the proposed Ohana Kai Village Project will be included in the Draft EIS. Analysis on the impacts from construction will include projected job and payroll totals, secondary jobs generated, goods and services providers, and job-training and placement programs. A financial impact assessment will build on the data to quantify changes in the tax base,

as well as assess taxable family income and property values. Economic analysis of current land uses will also be undertaken. The findings will be incorporated into the Draft EIS document.

4. Housing

a. Existing Conditions

The project site is located in Ma`alaea, which occupies a relatively central position between Wailuku, Kahului, South Maui, and West Maui. A range of housing types and conditions exists within these areas, from owner-occupied homes to luxury condominiums for part-time residents. While owner-occupied housing constitutes approximately 57.6 percent of all occupied housing units on Maui, the percentage varies from region to region. As noted earlier, Ma`alaea itself lacks a significant stock of permanent housing units and is characterized primarily by a mix of long-term and short-term condominium units.

As stated earlier, Maui is presently experiencing an acute shortage of housing and high prices, with the median sales price of a single-family home currently well over $550,000 and median prices in West Maui significantly higher. At the same time, interest rates nationwide have fallen to lows last seen 40 years ago. Consequently, demand for home ownership is viewed as a continuing market reality, despite disruptions caused by cyclical economic conditions.

b. Potential Impacts and Proposed Mitigation Measures

The proposed Ohana Kai Village subdivision would add to the supply of housing on Maui a total of approximately 1,100 single-family residential units, including affordable units. The proposed project would thus provide relief to the current shortage of general and affordable housing. Moreover, the subject property's central location relative to Maui's major residential and commercial centers suggests that its impact could be felt in several of Maui's localized housing markets. The Draft EIS will include a more thorough investigation of the proposed project's potential impacts on housing and possible mitigation strategies thereto.

C. PUBLIC SERVICES

1. Police and Fire Protection

a. Existing Conditions

The project site is within the Maui Police Department's (MPD) service area, the headquarters for which are located in Wailuku. The MPD consists of several patrol, investigative and administrative divisions. The project site falls within the Kihei Patrol District IV, the MPD service that covers the Kihei-Makena Community Plan region. The Kihei substation is located at the Kihei Town Center near Star Market about five (5) miles from the harbor.

The Maui County Department of Fire and Public Safety provides fire prevention, suppression, protection and emergency services to the islands of Maui, Lanai, and Molokai from 14 fire stations and a fire prevention office. The department's Kihei station, which services the Ma`alaea and Kihei areas, is situated on South Kihei Road in central Kihei. The Makena-Wailea area is covered by a separate Wailea Fire Station located on Kilohana Drive. Other Central Maui stations are located in Wailuku Town and in Kahului, on Dairy Road.

b. Potential Impacts and Proposed Mitigation Measures

An assessment of the impacts to police and fire protection services will be carried out in the Draft EIS process. The EIS Preparation Notice will be circulated to both the Police Department and Department of Fire and Public Safety to solicit comments on the proposed project.

2. Medical Facilities

a. Existing Conditions

The only major medical facility on the island is Maui Memorial Medical Center, which is located in Kahului about eight (8) miles in distance away from the project site. The 231-bed facility provides general, acute, and emergency care services.

Clinics and offices throughout the Kihei and Wailea areas, however, offer medical services on a lesser scale. Such clinics include Kihei Clinic and Wailea Medical Services, Kihei Pediatric Clinic, Kihei Physicians and the Kihei-Wailea Medical Center.

b. Potential Impacts and Proposed Mitigation Measures

An assessment of the impacts to medical treatment and care services will be presented in the Draft EIS. The EIS Preparation Notice will be circulated to the Maui Memorial Medical Center for review and comment.

3. Educational Facilities

a. Existing Conditions

The State Department of Education (DOE) operates three (3) schools in the Kihei area. Kihei Elementary School and Kamalii Elementary School covers grades K to 5, each with enrollments of approximately 800 students. Lokelani Intermediate School includes grades 6 to 8, with similar approximate enrollment. The Kihei Charter High School is also located in the region with an approximate enrollment of 150 students (Department of Education). The majority of public school students in grades 9 through 12 attend Maui High School located in Kahului. Maui Community College, a branch of the University of Hawai`i system, is the primary higher education institution serving the County.

b. Potential Impacts and Proposed Mitigation Measures

Coordination will be undertaken with the State Department of Education to determine educational impact assessments that might pertain to the proposed project. Findings of this coordination effort will be included in the Draft EIS.

4. Recreational Facilities

a. Existing Conditions

Diverse recreational opportunities are available in the Kihei-Makena Community Plan region. Shoreline activities, such as fishing, surfing,

jogging, camping, picnicking, snorkeling, swimming, and windsurfing, are by far the predominant form of recreation in the area. In addition, residents and visitors are drawn to Ma`alaea by the small boat harbor, which provides diverse ocean-related recreational opportunities. The County's Haycraft Park is located to the south of the project site at the terminus of Hauoli Street, and provides access to a sandy beach with paved parking and portable restrooms and shower facilities. Other public park facilities within a relatively short driving distance of the project site include Mai Poina (Memorial), Waipuilani, Kalepolepo, Cove, Kalama and Kamaole I/II/III Beach Parks, located to the southeast along the Kihei coastline. Additionally, recreational resources available in Kihei and Wailea, include the Kihei Community Center as well as resort-affiliated, world-class golf courses and tennis centers.

b. Potential Impacts and Proposed Mitigation Measures

According to the Kihei-Makena Community Plan, Project District 12 should include approximately 5 acres for a community center and 27 acres for parks, open space, and buffer zones. These guidelines have been taken into consideration as the preliminary layout for the proposed project was prepared. Coordination with the County's Department of Parks and Recreation will be undertaken, and details regarding provision of parks and playgrounds will be presented in the Draft EIS.

5. Solid Waste Disposal

a. Existing Conditions

Single-family residential solid waste collection service is provided by the County of Maui on a once-a-week basis. Residential solid waste collected by County crews is disposed of at the County's Central Maui Landfill facility, located 4.0 miles southeast of the Kahului Airport. In addition to County-collected refuse, the Central Maui Landfill also accepts commercial waste from private collection companies. Privately owned facilities, such as the Maui Demolition and Construction Landfill and the Pohakulepo Concrete Recycling Facility, accept solid waste and concrete from demolition and construction activities. These facilities are located at Ma`alaea, near Honoapi`ilani Highway's junctions with North Kihei Road and the Kuihelani

Highway. A County supported green waste/composting facility is located at the Central Maui Landfill.

b. Potential Impacts and Proposed Mitigation Measures

The residential units located in the proposed Ohana Kai Village Subdivision will be served by the County of Maui's solid waste collection and disposal services. Further coordination will be carried out with the County's Department of Environmental Management during the Draft EIS preparation phase of work to identify project implications to solid waste facilities. The findings will be incorporated into the Draft EIS document.

D. INFRASTRUCTURE

1. Roadways

a. Existing Conditions

The project area is served directly by the adjacent Honoapi`ilani Highway, the single route of access for vehicles traveling between West Maui and Central Maui. There are two (2) intersections located to the east of the subject property, which lead onto the Kuihelani Highway and the North Kihei Road. The Kuihelani Highway provides a direct route to Kahului, including the Kahului Airport via Dairy Road. North Kihei Road transitions into South Kihei Road, while Piilani Highway becomes Mokulele Highway near the North Kihei Road-South Kihei Road transition. Both Piilani Highway and South Kihei Road provide access to the residential, commercial and resort areas located further along the south coast of Maui, such as Kihei, Wailea and Makena.

Honoapi`ilani Highway, Kuihelani Highway, and North Kihei Road are all under the jurisdiction of the State of Hawai`i, Department of Transportation. Honoapi`ilani Highway is designated as Route 30 and has a posted speed limit of 45 miles per hour (mph) in the project vicinity. Honoapi`ilani Highway is a two-lane highway for the majority of its length; however, it widens into a four-lane highway in the immediate vicinity of the project area.

b. Potential Impacts and Proposed Mitigation Measures

A Traffic Impact Analysis Report (TIAR) for the proposed project will be prepared and included in the Draft EIS. The TIAR will address the impacts of traffic generated from the proposed project and identify measures required to mitigate the impacts, as well as identify cumulative traffic impacts.

2. Water System

a. Existing Conditions

The County of Maui, Department of Water Supply serves five (5) main regions within the County: Central Maui, Upcountry Maui, West Maui, East Maui, and Molokai. There is no County water supply infrastructure serving the project site.

b. Potential Impacts and Proposed Mitigation Measures

A new water supply system that would be utilized by the proposed development is proposed. This system will utilize groundwater wells located within the neighboring utility site to the north of the project site. Refer to **Figure 5**.

A Preliminary Engineering Report will be prepared to analyze water system requirements for the Ohana Kai Village subdivision based upon calculated water demands. The results of this analysis will be included in the Draft EIS.

3. Wastewater System

a. Existing Conditions

There is currently no sewage collection infrastructure serving the Ma`alaea area. The existing commercial operations and condominiums in the area utilize a combination of cesspools and small individual wastewater package treatment plants.

b. Potential Impacts and Proposed Mitigation Measures

As with water demand and system requirements, the infrastructure assessment generated by the Preliminary Engineering Report will analyze wastewater collection and treatment implementation needs to accommodate the proposed project. The results will be presented in the Draft EIS. A new wastewater treatment facility is proposed for the project, which will be designed to manage all of the subdivision's sewer requirements.

4. Drainage

a. Existing Conditions

Maui receives varying levels of rainfall in a given year depending on location. The average annual rainfall (2000-2006) for the Kihei area, which is also part of the drier southern coast of Maui, was 12.59 inches (Maui County Data Book, 2007). Annual rainfall in the area of the harbor is relatively low. There is a box drain within Ma`alaea Road which carries flows from the roadway and up stream sources to the harbor. Stormwater runoff from the upland drainage area also sheetflows in a southerly direction and is collected in three (3) ditches which drain toward the ocean. During times of unusually high rainfall, however, the sediment load entering the near shore waters of Ma`alaea Bay increases substantially as a result of drainage from erosion prone upland areas. Although the harbor acts as a sediment trap, the daily vessel activity causes the finer particles to be resuspended and flushed out into the ocean in the surface water flow.

b. Potential Impacts and Proposed Mitigation Measures

The Draft EIS will discuss the drainage characteristics of the project area, potential impacts resulting from the proposed project, and proposed mitigation measures. The design of a comprehensive drainage system for Ohana Kai Village will be based on the findings of a Preliminary Drainage Report (PDR) prepared by a licensed civil engineer. A copy of the PDR will be included in the Draft EIS.

5. Electrical, Telephone, and Cable Television Services

a. Existing Conditions

Electrical power, telephone, and CATV services to the region are provided by Maui Electric Company, Hawaiian Telcom, and Oceanic Time Warner Cable of Hawai`i, respectively.

b. Potential Impacts and Proposed Mitigation Measures

Although it is anticipated that electrical, telephone, and CATV service capacity will be available for the proposed development and will not have an adverse impact on service providers, the respective providers will be consulted regarding potential impacts as well as measures to mitigate said impacts. The results will be included in the Draft EIS.

E. CUMULATIVE AND SECONDARY IMPACTS

Cumulative impacts are defined as the impact on the environment which results from the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions.

Secondary impacts are those which have the potential to occur later 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 the project. Secondary impacts from highway projects, for example, can occur because they can induce development by removing one of the impediments to growth-transportation access.

Both cumulative and secondary impacts will be examined in further detail in the Draft EIS.

III. RELATIONSHIP TO LAND USE PLANS, POLICIES, AND CONTROLS

III. RELATIONSHIP TO LAND USE PLANS, POLICIES, AND CONTROLS

A. STATE LAND USE DISTRICT

Chapter 205, Hawai`i Revised Statutes (HRS), relating to the Land Use Commission, establishes four (4) major land use districts in which all lands in the state are placed. These districts are designated as "Urban", "Rural", "Agricultural", and "Conservation". The project area is located within the "Agricultural" district. See **Figure 12**.

A 201H HRS application to reclassify the State Land Use District Boundary for the project site from "Agricultural" to "Urban" will be requested as part of the 201H application process for the Ohana Kai Village project. Criteria considered in the reclassification of lands are set forth in the State Land Use Commission Rules (Chapter 15-15, Hawai`i Administrative Rules). In particular, the provisions of Section 15-15-97 of the State Land Use Commission's rules relating to Section 201H projects, will be addressed. Further coordination with State agencies will be carried out in the Draft EIS phase and the proposed reclassification will be analyzed with respect to the appropriate district use criteria.

B. 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. Examples of State objectives and policies relevant to the proposed project are as follows:

1. **Section 226-05, Objectives and policies for population. To achieve this objective, it shall be the State policy to:**

    a. Promote increased opportunities for Hawaii's people to pursue their socio-economic aspirations throughout the islands.

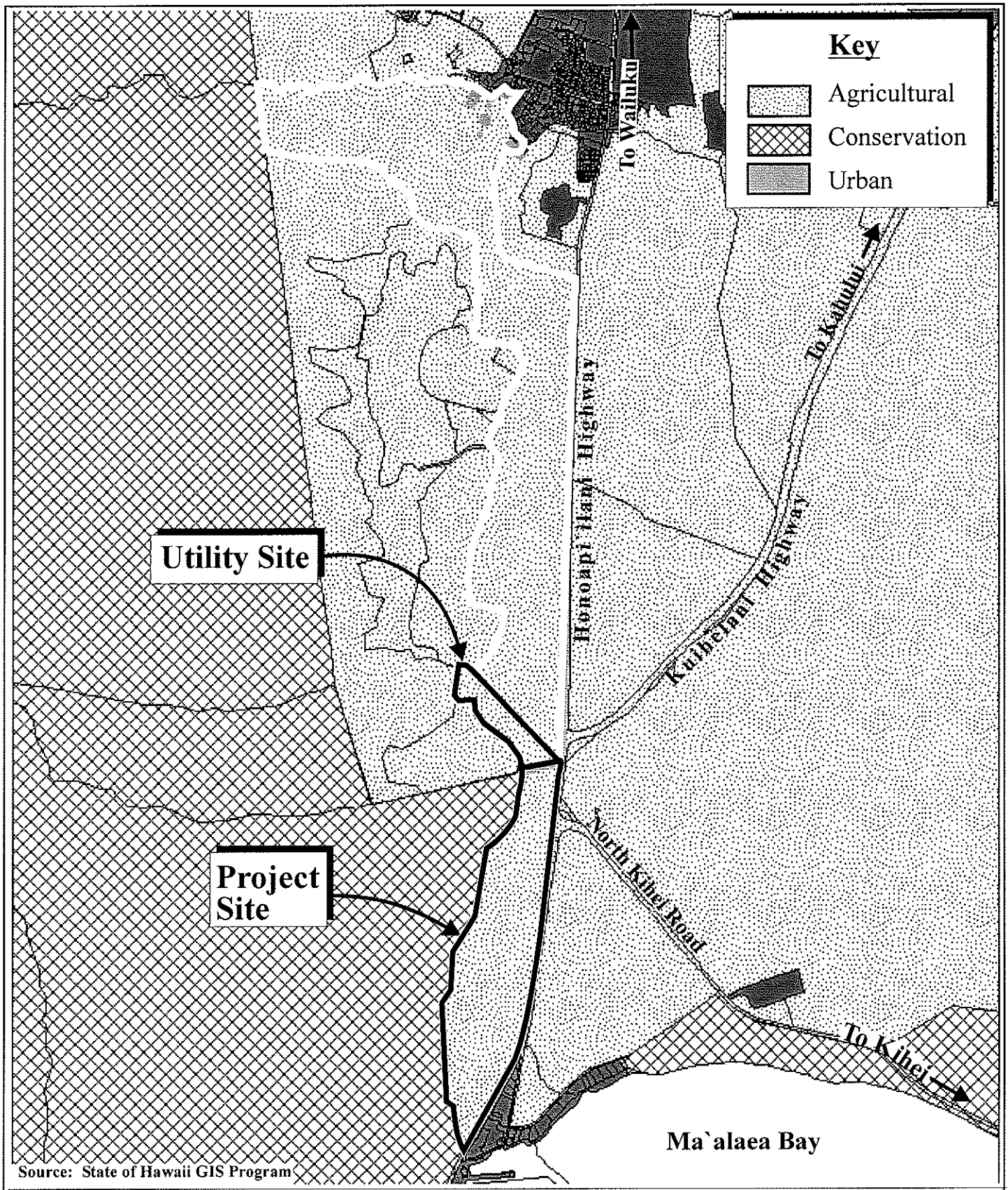

Figure 12 Proposed Ohana Kai Village Affordable Housing Project and Related Improvements

State Land Use Classifications

NOT TO SCALE

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b. 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.

2. **Section 226-19, Objectives and policies for socio-cultural advancement – housing. To achieve the housing objectives, it shall be the policy of the State to:**

a. Effectively accommodate the housing needs of Hawaii's people.

b. Stimulate and promote feasible approaches that increase housing choices for low-income, moderate-income, and gap-group households.

c. Increase homeownership and rental opportunities and choices in terms of quality, location, cost, densities, style, and size of housing.

The Draft EIS will include a full review of applicable State Plan objectives and policies, as well as priority guidelines. In addition, the Draft EIS will examine the project's relationship to applicable State Functional Plans.

C. MAUI COUNTY GENERAL PLAN

The Maui County General Plan (1990 Update) sets forth broad objectives and policies to help guide the long-range development of the County. As stated in the Maui County Charter, the General Plan shall:

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

The Maui County General Plan advances five (5) major themes that focus on the overall goals of the plan. The proposed project responds to the following General Plan themes:

Theme Number 2: Prepare a Directed and Managed Growth Plan

Amendments to the General Plan will preserve a desired quality of life where areas of urban settlement must be managed and directed within a framework that consistently and concurrently balances growth demands against human service needs and physical infrastructure supply.

Theme Number 5: Provide for Needed Resident Housing

Amendments to the General Plan address the development of resident housing as a major social need in our community.

The proposed action is in keeping with the following General Plan objectives and policies:

POPULATION

Objective:

To plan the growth of resident and visitor population through a directed and managed growth plan so as to avoid social, economic and environmental disruptions.

Policy:

Balance population growth by achieving concurrency between the resident employee work force, the job inventory created by new industries, affordable resident/employee housing, constraints on the environment and its natural resources, public and private infrastructure, and essential social services such as schools, hospitals, etc.

LAND USE

Objectives:

1. To preserve for present and future generations existing geographic, cultural and traditional community lifestyles by limiting and managing growth through environmentally sensitive and effective use of land in accordance with the individual character of the various communities and regions of the County.

2. To use the land within the County for the social and economic benefit of all the County's residents.

Policies:

1. Provide and maintain a range of land use districts sufficient to meet the social, physical, environmental and economic needs of the community.

2. Encourage land use methods that will provide a continuous balanced inventory of housing types in all price ranges.

3. Encourage programs to stabilize affordable land and housing prices.

HOUSING

Objective:

To provide a choice of attractive, sanitary and affordable homes for all our residents.

Policies:

1. Encourage the construction of housing in a variety of price ranges and geographic locations.

2. Ensure that each community plan region contains its fair share of affordable housing.

URBAN DESIGN

Objective:

To encourage developments which reflect the character and the culture of Maui County's people.

Policy:

Encourage community design which establishes a cohesive identity.

RECREATION AND OPEN SPACE

Objective:

To provide high-quality recreational facilities to meet the present and future needs of our residents of all ages and physical ability.

Policy:

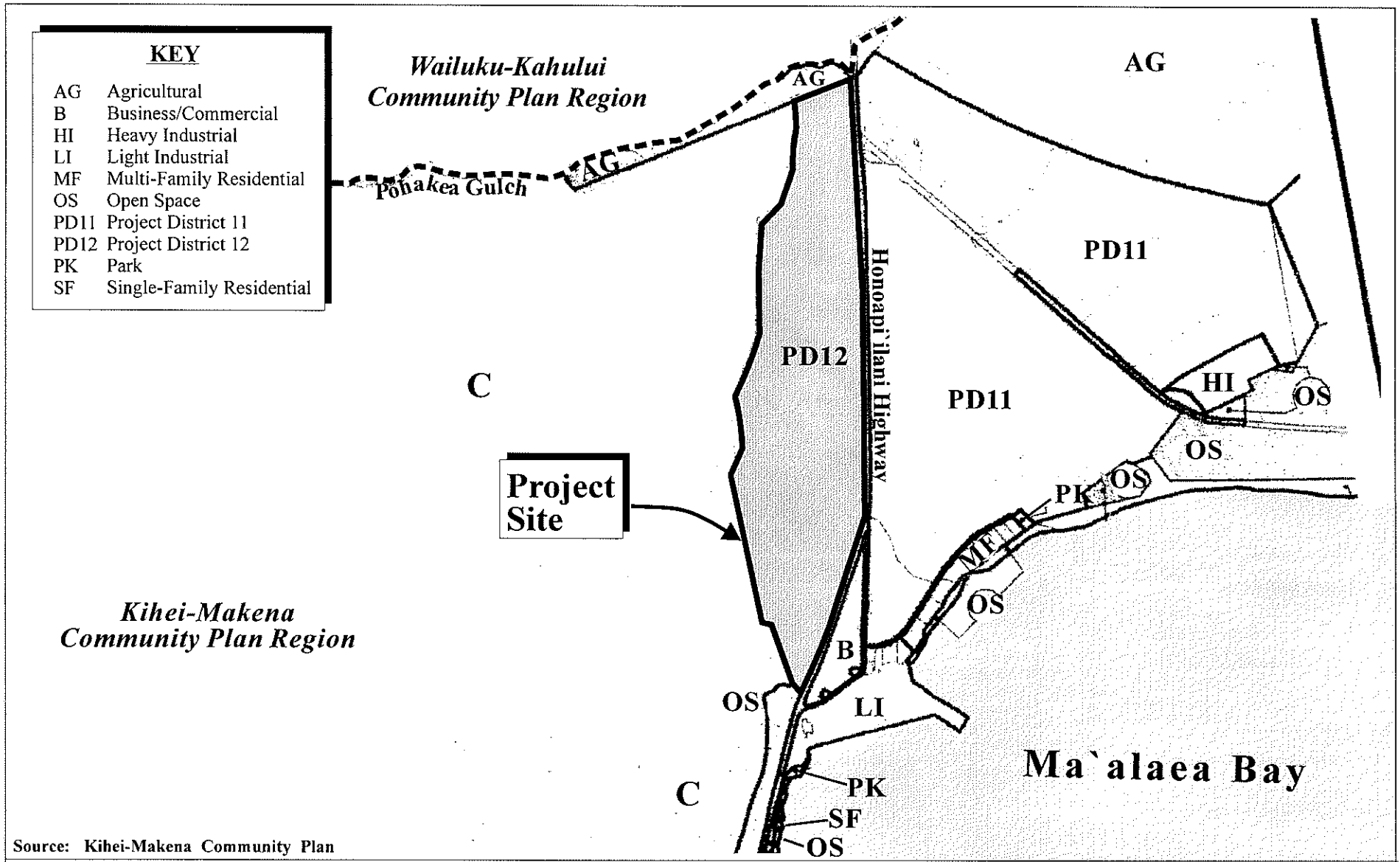
Develop facilities that will meet the different recreational needs of the various communities.

D. KIHEI-MAKENA COMMUNITY PLAN

Within Maui County, there are nine (9) community plan regions. From a General Plan implementation standpoint, each region is governed by a community plan which sets forth desired land use patterns, as well as goals, objectives, policies, and implementing actions for a number of functional areas including infrastructure-related parameters. The proposed Ohana Kai Village project is located within the Kihei-Makena Community Plan region. The existing land use designations for the project area under the Community Plan are set forth in the Kihei-Makena Community Plan Land Use Map. The lands underlying the project site are designated as Project District 12 on the Kihei-Makena Community Plan Map. See **Figure 13**.

As described in the Kihei-Makena Community Plan, project districts provide a "flexible and creative planning approach rather than specific land use designations", establishing "continuity in land uses and designs while providing for orderly growth of the community as well as comprehensive and concurrent provision of infrastructural facilities and systems". According to the "recommended spatial allocations" for Project District 12, 218 acres should be allocated for residential use, 5 acres for a community center, 27 acres for park, open space, and buffer zones, and 10 acres for collector roadways. The Community Plan guidelines also suggest a total of 1,150 residential units be developed in Project District 12.

The proposed Ohana Kai Village residential subdivision, involving the development of a total of approximately 1,100 single-family residential units, has been designed with consideration to the overall intent of the Project District-specific recommendations of the Kihei-Makena Community Plan. The proposed project is also in conformance with the



Source: Kihei-Makena Community Plan

Figure 13

Proposed Ohana Kai Village Affordable Housing Project and Related Improvements

Kihei-Makena Community Plan Land Use Designations

NOT TO SCALE

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MUNEKIYO & HIRAGA, INC.

SpenHome/MaalaeaAH/EISPN/CPLUD

following, more general, goals, objectives, and policies of the Kihei-Makena Community Plan.

LAND USE

Goal:

A well-planned community with land use and development patterns designed to achieve the efficient and timely provision of infrastructural and community needs while preserving and enhancing the unique character of Ma`alaea, Kihei, Wailea and Makena as well as the region's natural environment, marine resources and traditional shoreline uses.

Objectives and Policies:

1. Identify priority growth areas to focus public and private efforts on the provision of infrastructure and amenities to serve existing residents and to accommodate new growth.

2. Provide for limited residential expansion in Ma`alaea which complements the existing natural and built environment.

HOUSING AND URBAN DESIGN

Goal:

A variety of attractive, sanitary, safe and affordable homes for Kihei's residents, especially for families earning less than the median income for families within the County. Also, a built environment which provides complementary and aesthetically pleasing physical and visual linkages with the natural environment.

Objectives and Policies:

1. Provide an adequate variety of housing choices and range of prices for the needs of Kihei's residents, especially for families earning less than the median income for families within the County, through the project district approach and other related programs. Choices can be increased through public/private sector cooperation and coordinated development of necessary support facilities and services.

2. Require a mix of affordable and market-priced housing in all major residential projects, unless the project is to be developed exclusively as an affordable housing project.

PHYSICAL AND SOCIAL INFRASTRUCTURE

Goal:

Provision of facility systems, public services and capital improvement projects in an efficient, reliable, cost effective, and environmentally sensitive manner which accommodates the needs of the Kihei-Makena community, and fully support present and planned land uses, especially in the case of project district implementation. Allow no development for which infrastructure may not be available concurrent with the development's impacts.

Objective and Policy (Recreation):

Provide for a range of park sizes and types at neighborhood, community and regional scales. New residential developments shall provide recreational facilities onsite to meet the immediate needs of project residents.

E. COUNTY ZONING

The project site is currently zoned "Agricultural" by the County. While the current zoning designation does not allow for the uses set forth in the proposed Ohana Kai Village Master Plan, the Section 201H, HRS application will include an exemption from the County's Title 19 zoning provisions which would allow for the proposed project.

F. PROJECT DISTRICT PROCESSING REGULATIONS

Similar to the foregoing section relating to County zoning, the Section 201H, HRS application for the project will include an exemption from the Project District processing regulations that are set forth in Chapter 19.45 of the Maui County Code.

G. COASTAL ZONE MANAGEMENT/SPECIAL MANAGEMENT AREA

The Hawai`i 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 Hawaii's coastal zone. The County of Maui utilizes its Special

Management Area (SMA) regulatory mechanism to implement the HCZMP. A small portion of the project site is located within the SMA. See **Figure 14**. As set forth in Chapter 205A, HRS, this section addresses the project's relationship to applicable coastal zone management considerations. The responses provided herein will be updated and further detailed as results of the various technical studies being conducted for the Draft EIS are made available.

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

b. Provide adequate, accessible, and diverse recreational opportunities in the coastal zone management area by:

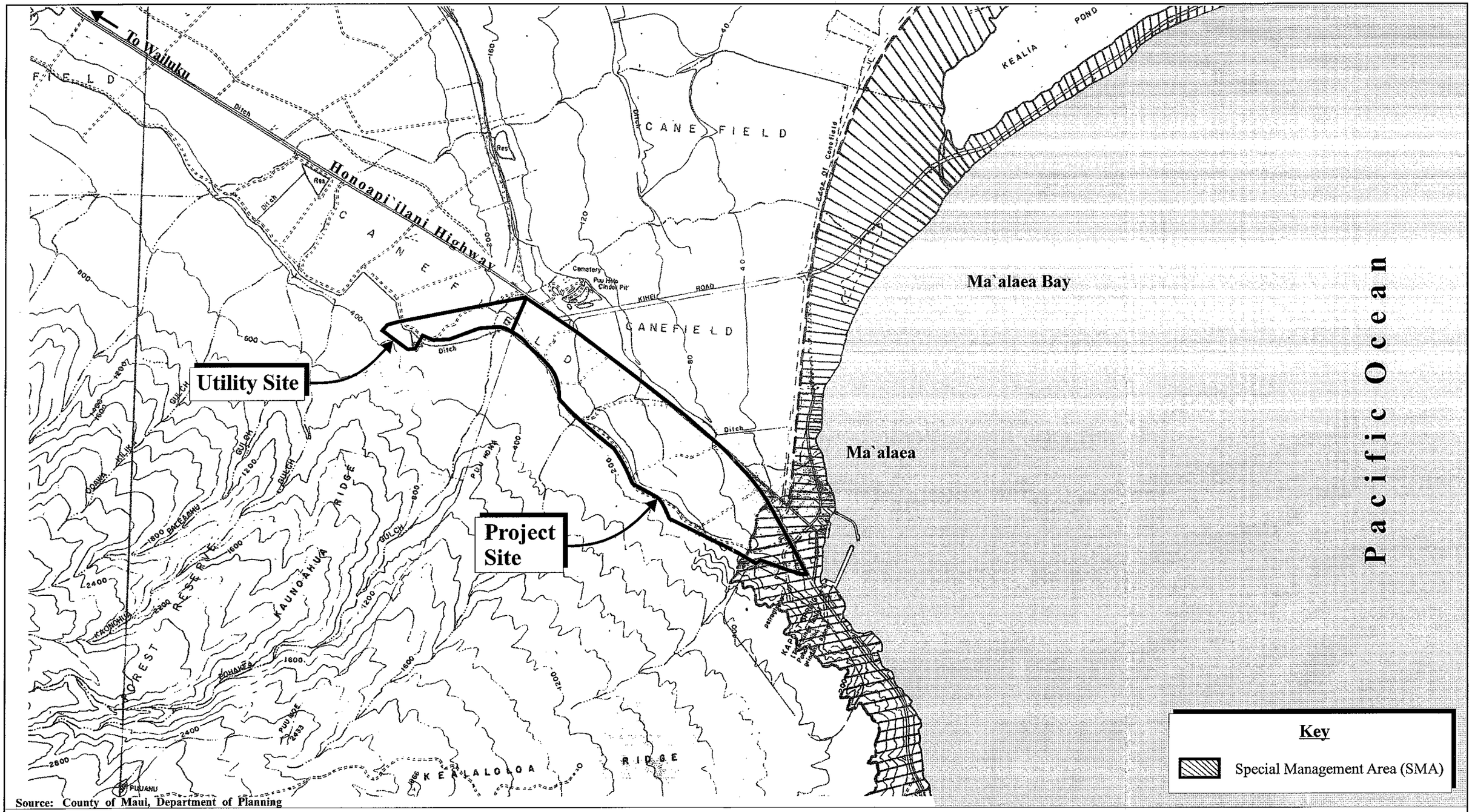
i. Protecting coastal resources uniquely suited for recreational activities that cannot be provided in other areas;

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



Source: County of Maui, Department of Planning

Figure 14 Proposed Ohana Kai Village Affordable Housing Project and Related Improvements
Special Management Area (SMA) Boundary Map

NOT TO SCALE

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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: Recreational area needs of the proposed project are anticipated to be addressed through the allocation of parks, open space and lands for public/quasi-public use within Ohana Kai Village. The Draft EIS will further address specifics regarding these allocations as well as other recreational resource impacts.

2. **Historic Resources**

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

Policies:

a. Identify and analyze significant 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: As stated previously, an archeological inventory survey and cultural assessment report were produced by SCS, Inc. to identify and issue recommendations regarding historic, cultural and archeological resources. Refer to **Appendix "B"**, **Appendix "B-1"**, and **Appendix "C"**. No significant impacts to cultural or historic resources are anticipated from the proposed project. An Archaeological Monitoring Plan has been prepared for the project and accepted by the State Historic Preservation Division (SHPD). Refer to **Appendix "B-2"** and **Appendix "B-3"**. Should human remains be inadvertently discovered during land-based, ground-altering activities, work will promptly cease in the immediate area of the find, and the find will be further protected from damage. The SHPD and the Maui/Lanai Islands Burial Council will be notified immediately and procedures for the treatment of inadvertently discovered human remains will be followed pursuant to Chapter 6E, HRS.

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: The project site is located along the lower slopes of the West Maui Mountains above Honoapi`ilani Highway and Ma`alaea on elevations ranging from approximately 50 feet amsl to approximately 250 feet amsl. The urban forms established by the proposed project plan will be buffered with landscaping and open

space areas to mitigate the impact on visual resources. Analysis of scenic and open space resources will be documented in the Draft EIS.

4. **Coastal Ecosystems**

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: Appropriate Best Management Practices (BMPs) and erosion-control measures will be implemented to minimize the effects of stormwater runoff resulting from the implementation of the project and to ensure that coastal ecosystems are not adversely impacted by construction activities. Potential impacts on the neighboring coastal ecosystem will be discussed in detail in the Draft EIS document using the findings of a marine biological survey.

5. **Economic Uses**

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

Policies:

a. Concentrate coastal dependent development in appropriate areas;

b. Ensure that coastal dependent development such as harbors and ports, and coastal related development such as visitor 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 economic impacts of the proposed project will be studied and addressed in the Draft EIS document.

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: The project site lies principally within Flood Zone C, although small portions of it are located within Flood Zone B. Flood Zone B designates an area between the 100-year and 500-year flood, or an area that experiences less than 12 inches of flooding, or an area protected from flooding by levees. Based on preliminary project plans, it is anticipated that the portions of the property located in Flood Zone B will not contain residential structures. In addition, the proposed Ohana Kai Village residential subdivision will be designed in accordance with the Drainage Standards of the County of Maui, as applicable, to ensure that the project will not adversely affect downstream and adjoining properties from the effects of flooding and erosion.

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: Public input will be solicited in coordination with the processing of the Draft EIS, pursuant to the Chapter 343, HRS environmental assessment review process. All aspects of development will be conducted in accordance with applicable Federal, State, and County standards. Opportunities for review of the proposed

project are offered through the regulatory review process for construction and development permits, as well as the Section 201H application process.

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 EIS document will be processed in accordance with Chapter 343, HRS, and opportunity for comment by agencies and the public will be provided. As previously mentioned, public input opportunities will also be provided through the Section 201H HRS application process.

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; and

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

Response: In broad terms, the proposed project will utilize appropriate Best Management Practices (BMPs) to manage overall drainage for the project area. In the long term, the proposed project will contain a comprehensive drainage system that will retain project-related incremental increases in runoff. Further, details regarding the impact of drainage on water quality and coastal processes within Ma`alaea Bay will be provided in the Draft EIS.

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 in order 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: An assessment of potential adverse impacts to marine resources and the identification of mitigative measures to assure the protection and sustainability of said resources will be incorporated into the Draft EIS.

In addition to the foregoing objectives and policies, SMA permit review criteria pursuant to Act 224 (2005) provides that:

No special management area use permit or special management area minor permit shall be granted for structures that allow artificial light from floodlights, uplights, or spotlights used for decorative or aesthetic purposes when the light:

(1) Directly illuminates the shoreline and ocean waters; or

(2) Is directed to travel across property boundaries toward the shoreline and ocean waters.

Response: The proposed project is not located on or near the shoreline. The preliminary lighting plan will be developed to prevent lighting from being directed across property boundaries towards the shoreline.

H. COUNTY SECTION 201H-38 APPLICATION

The proposed project will be processed as a Section 201H application through the County of Maui. Exemptions from development-related requirements, such as Chapters 2.80B and 19.510 of the Maui County Code, relating to Community Plan Amendments and Change in Zoning, respectively, will be incorporated in the 201H application. Other exemptions which advance affordabililty parameters without compromising public health, safety, and welfare will be considered as possible components of the 201H application, as well. The County 201H application will be considered via Council resolution, with the Maui County Council being the final authority on the application.

I. OTHER REGULATORY APPROVALS

Prior to the filing of the Draft EIS document, coordination will be undertaken with the U.S. Department of the Army regarding permitting requirements associated with the proposed work within the project site and surrounding environs. Similar coordination with the State

Department of Health and State Office of Planning will be conducted to determine the applicability of Section 401 Water Quality Certification and Coastal Zone Management Consistency approval requirements, respectively. The results of the foregoing coordination will be incorporated in the Draft EIS document.

IV. ALTERNATIVES TO THE PROPOSED ACTION

IV. ALTERNATIVES TO THE PROPOSED ACTION

Alternatives to the proposed action will be presented in response to the findings of investigations conducted as part of the Draft EIS process, as well as in response to comments received from the various agencies consulted.

V. SUMMARY OF UNAVOIDABLE IMPACTS AND COMMITMENTS OF RESOURCES

V. SUMMARY OF UNAVOIDABLE IMPACTS AND COMMITMENTS OF RESOURCES

The proposed development of the Ohana Kai Village project will result in unavoidable construction-related environmental impacts as outlined in Chapter II.

Potential effects include noise-generated impacts occurring during the site preparation and construction phases of the proposed development. Air quality impacts will also arise as a direct result of construction activities, such as the generation of dust and other airborne pollutants. As previously discussed, Ma`alaea is an area subject to regular prevailing winds arising from the northeast.

Assessment of appropriate mitigation measures to these impacts will be carried out during preparation of the Draft EIS, which will also identify other potential impacts and mitigation measures.

The proposed action is anticipated to result in the irreversible and irretrievable commitment of land and fiscal resources. Other resource commitments include energy, labor, and material resources. This commitment, however, is also considered appropriate insofar as the proposed Ohana Kai Village project fulfills a need as defined by the Kihei-Makena Community Plan's Project District 12.

Addressing land use development issues and market needs from a comprehensive master planning perspective provides an efficient and effective means of developing and implementing infrastructure and related service components. It is in this context that commitment of resources will be considered in the Draft EIS.

VI. FINDINGS AND CONCLUSIONS

VI. FINDINGS AND CONCLUSIONS

The proposed project, its expected primary and secondary consequences, as well as the short- and long-term effects of the action, have been evaluated in accordance with the Significance Criteria of Section 11-200-12 of the Administrative Rules. A more thorough review and assessment of the significance criteria will be presented in the Draft EIS once remaining technical studies have been completed. Considerations for significance criteria assessment are presented below.

1. **No Irrevocable Commitment to Loss or Destruction of Any Natural or Cultural Resources Would Occur as a Result of the Proposed Project**

   As mentioned in Chapter II of this document, a Cultural Impact Assessment of the project site concluded that no significant impacts to cultural practices were anticipated, while an Archeological Inventory Survey conducted on the property identified three (3) sites considered significant cultural or historic resources under the significance criteria for the State and National Register of Historic Places. Appropriate mitigation measures will be undertaken in coordination with the State Historic Preservation Division.

   A biological inventory survey of the project site similarly found that the proposed development will not have a significant impact on any rare or endangered species of flora or fauna. Refer to **Appendix "A"**. The project's potential impact to marine resources and proposed mitigation measures will be assessed once preliminary drainage studies are available and will be included in the Draft EIS.

2. **The Proposed Action Would Not Curtail the Range of Beneficial Uses of the Environment**

   The Draft EIS will address various parameters to assess impacts to the environment's range of beneficial uses. Development of specific site plans will allow for the identification of applicable Best Management Practices (BMPs) to minimize adverse impacts to the environment. Furthermore, technical studies to be prepared and included in the Draft EIS will contribute to the environmental assessment process. For example, assessment of coastal water quality will be investigated during the EIS preparation phase and the findings will be used to assess potential impacts and mitigation measures to ensure that the proposed project will not curtail the beneficial uses of the environment.

3. **The Proposed Action Does Not Conflict with the State's Long-Term Environmental Policies or Goals or Guidelines as Expressed in Chapter 344, Hawaii Revised Statutes**

The State's Environmental Policy and Guidelines are set forth in Chapter 344, Hawaii Revised Statutes (HRS). Upon completion of remaining investigations for the EIS document, an assessment of the proposed project relative to the policies and guidelines will be undertaken.

4. **The Economic or Social Welfare of the Community or State Would Not Be Substantially Affected**

The proposed project will directly benefit the local economy by providing construction and construction-related employment at a time when unemployment rates are rising. In the long term, the project will support the local economy through the contribution of salaries, wages, benefits and taxes, as well as through the purchases of goods and services. An Economic Impact Assessment for the proposed project will be undertaken with its results incorporated in the Draft EIS.

5. **The Proposed Action Does Not Affect Public Health**

Review of public health impacts will be carried out as part of the Draft EIS preparation process.

6. **No Substantial Secondary Impacts, Such as Population Changes or Effects on Public Facilities are Anticipated**

The proposed project will be a new center of population for the Kihei-Makena Community Plan region and for Ma`alaea in particular. In this regard, the proposed project will impact public services in the region such as schools, police, and fire protection. Further coordination will be undertaken during the Draft EIS with State and County agencies to address services and facilities requirements for the Ohana Kai Village project.

7. **No Substantial Degradation of Environmental Quality is Anticipated**

A full range of technical studies will be incorporated in the Draft EIS to address appropriate mitigation measures to minimize environmental degradation. For example, preliminary engineering work will investigate drainage options to eliminate adverse impacts to downstream or adjacent properties. Archeological and biological investigations have been conducted to ensure that valued historical and biological resources are appropriately treated.

Marine processes and marine water quality will be investigated and appropriate mitigation measures identified, as applicable.

8. **The Proposed Project Does Not Involve a Commitment to Larger Actions, Nor Would Cumulative Impacts Result in Considerable Effects on the Environment**

There are no additional development components associated with the proposed project. Accordingly, the impacts to be assessed in the Draft EIS document will be based on the entire action.

9. **No Rare, Threatened, or Endangered Species or Their Habitats Would Be Adversely Affected by the Proposed Action**

As reported in the Biological Inventory Survey, the project site is used by Nene geese for incidental feeding activity, but the proposed action would not curtail their ability to continue said feeding activity on the site or in the surrounding area. Refer to **Appendix "A"**. No other rare, threatened, or endangered species were observed during the survey. A marine biological assessment will also be included in the Draft EIS.

10. **Air Quality, Water Quality, or Ambient Noise Levels Would Not Be Detrimentally Affected by the Proposed Project**

Construction activities will result in short-term air quality and noise impacts. 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 occur primarily from construction equipment. Equipment mufflers or other noise attenuating equipment, as well as proper equipment and vehicle maintenance, will be used during construction activities. Construction noise impacts will be mitigated through compliance with the provisions of the State of Hawaii, Department of Health Administrative Rules Title 11, Chapter 46, "Community Noise Control". These rules require a noise permit if the noise levels from construction activities are expected to exceed the allowable levels set forth in the Chapter 46 rules.

Long-term impacts on and mitigation of noise and water quality resulting from the proposed project will be studied in greater detail and the results incorporated into the Draft EIS document.

11. The Proposed Project Would Not Affect Environmentally Sensitive Areas, Such as Flood Plains, Tsunami Zones, Erosion-prone Areas, Geologically Hazardous Lands, Estuaries, Fresh waters, or Coastal Waters.

The project site is not located within any environmentally sensitive areas. A detailed discussion relating to coastal water quality within Ma`alaea Bay will be presented in the Draft EIS document.

12. The Proposed Action Would Not Substantially Affect Scenic Vistas and Viewplanes Identified in County or State Plans or Studies

Adverse effects to coastal scenic and open space resources and scenic view corridors resulting from the proposed project will be mitigated by landscaping and buffer zones around developed areas. As site development and thematic architectural plans develop and evolve during the EIS preparation process, appropriate consideration will be given to scenic and viewplane preservation, as well as maintenance requirements.

13. The Proposed Action Would Not Require Substantial Energy Consumption

The proposed project will involve the commitment of fuel for construction equipment, vehicles, and machinery during construction and maintenance activities.

Coordination with Maui Electric Company will be undertaken during the preparation of the Draft EIS to ensure that appropriate planning is implemented to address energy supply issues.

Given the relatively large acreage (257 acres) of Project District 12 and the potential number of residential units (1,100 single-family dwellings) proposed, it has been determined by the County of Maui Department of Housing and Human Concerns that an Environmental Impact Statement is required pursuant to Chapter 343, Hawaii Revised Statutes and Chapter 200 of Title 11, Department of Health Administrative Rules, Environmental Impact Statement Rules.

VII. LIST OF PERMITS AND APPROVALS

VII. LIST OF PERMITS AND APPROVALS

The following list of permits and approvals are anticipated to be needed for project implementation.

1. State of Hawai`i

    A. District Boundary Amendment Approval Pursuant to Section 15-15-97 of the State Land Use Commission Rules

    B. NPDES Permits, as applicable

2. County of Maui

    A. 201H HRS Approval

    B. Subdivision Approval

    C. Construction Permits

VIII. PARTIES TO BE CONSULTED DURING THE PREPARATION OF THE ENVIRONMENTAL IMPACT STATEMENT

VIII. PARTIES TO BE CONSULTED DURING THE PREPARATION OF THE ENVIRONMENTAL IMPACT STATEMENT

The following agencies and organizations will receive a copy of this EIS Preparation Notice:

1. Ranae Ganske-Cerizo, Soil Conservationist
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Kahului, Hawai`i 96732

2. Commanding Officer
U. S. Coast Guard Station Maui
233 Maalaea Road
Wailuku, Hawai`i 96793

3. George Young
Chief, Regulatory Branch
U.S. Department of the Army
U.S. Army Engineer District, Honolulu
Regulatory Branch
Building 230
Fort Shafter, Hawai`i 96858-5440

4. Gordan Furutani, Field Office Director
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5. Patrick Leonard
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U. S. Fish and Wildlife Service
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6. Russ K. Saito, State Comptroller
Department of Accounting and General Services
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Honolulu, Hawai`i 96813

7. Sandra Lee Kunimoto, Chair
Department of Agriculture
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8. Karen Seddon
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10. Patricia Hamamoto, Superintendent
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11. Heidi Meeker
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49. **Waikapu Community Association**
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50. **Wailuku Main Street Association**
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Wailuku, Hawai`i 96793

51. **Maalaea Community Association**
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Ma`alaea, Hawai`i 96793

52. **Maui Memorial Medical Center**
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Wailuku, Hawai`i 96793

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IX. REFERENCES

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APPENDIX A.

Biological Resources Survey

BIOLOGICAL RESOURCES SURVEY

for the

MAALAEA MAUKA PROJECT DISTRICT 12

MAALAEA, MAUI, HAWAII

by

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ENVIRONMENTAL CONSULTANT
Kokomo, Maui
January 2005

Prepared for: Ma'alaea Properties, LLC.

BIOLOGICAL RESOURCES SURVEY
MAALAEA MAUKA PROJECT DISTRICT 12
MAALAEA , MAUI

INTRODUCTION

The Maalaea Mauka Project District 12 lies on approximately 260 acres of land northwest of Ma'alaea. It is bounded on the east by 1.5 miles of Honoapi'ilani Highway extending from Ma'alaea to the Kihei Road Junction, and on the west by a similar distance along the base of the foothills of the West Maui Mountains. Of the 260 acres, 184 acres lie in the ahupua'a of Ukumehame and 76 acres lie within the ahupua'a of Waikapu.

SITE DESCRIPTION

The entire project area is gently sloping grassland through which run four small unnamed gullys that drain toward Ma'alaea and Ma'alaea Mud Flats. Elevations range from about 200 feet above mean sea level (amsl) at the top at the northwest corner down to about 35 feet amsl at the southern tip above Ma'alaea. Annual rainfall averages 14-16 inches with the bulk occurring between the months of November and April (Armstrong 1983). Soils are of the Pulehu Cobbly Clay Loam, Ewa Cobbly Silty Clay and Ewa Silty Clay series all of which have developed from igneous alluvium, are neutral, dark brown in color and at least 60 inches deep (Foote et al, 1972).

BIOLOGICAL HISTORY

The entire project area was once a dry native shrubland with scattered trees such as wiliwili (*Erythrina sandwicensis*). It was cleared for agricultural use in the late 1800's and was cultivated for sugar cane for over 100 years. During the 1990's pineapple was cultivated for a few years, after which the area was leased out for small scale agriculture until 2003. For the past year the land has lain fallow. Little of the original vegetation remains except in the some of the small gullies.

SURVEY OBJECTIVES

This report summarizes the findings of a flora and fauna survey of the proposed Maalaea Mauka Project District 12 which was conducted during January 2005. The objectives of the survey were to:

1. Document what plant, bird and mammal 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.
5. Note which aspects of the proposed development pose significant concerns for plants or for wildlife and recommend measures that would mitigate or avoid these problems.

BOTANICAL SURVEY REPORT

SURVEY METHODS

A walk-through botanical survey method was used following a route to ensure complete coverage of the area. Areas most likely to harbor native or rare plants such as gullies were more intensively examined. Notes were made on plant species, distribution and abundance as well as terrain and substrate.

DESCRIPTION OF THE VEGETATION

The vegetation throughout the 260 acre project area is an open grassland consisting primarily of Guinea grass (*Panicum maximum*) and buffelgrass (*Cenchrus ciliaris*), with a variety of other grass and weed species. The four unnamed gullies also contain grass and weed species but also have a few scattered kiawe (*Prosopis pallida*) trees and one gully contains about 20 small native wiliwili trees. The vegetation also contains widespread remnants of the crop species that were cultivated during recent small scale agriculture period. Twenty one such species were recorded.

A total of 95 plant species were identified. Of this total two were endemic species, wiliwili and nehe (*Melanthera lavarum*), four were indigenous species 'a'ali'i (*Dodonaea viscosa*), 'ilima (*Sida fallax*), 'uhaloa (*Waltheria indica*) and 'ilie'e (*Plumbago zeylanica*) and two were Polynesian introductions, ki (*Cordylene fruticosa*) and ko (*Saccharum officinarum*).

DISCUSSION

The vegetation throughout the project area is dominated by non-native species. This is a result of over a century of intensive agricultural activity. Only six widespread and common native species occur here. No officially listed Threatened or Endangered plants (U.S. Fish and Wildlife Service 1999) are found on the site, nor do any plants proposed as candidate for such status occur on the property.

No wetlands occur on the site. Nothing remotely approaching the three essential criteria that define a Federally recognized wetland, namely 1) hydrophytic vegetation 2) hydric soils and 3) wetland hydrology occur within this dry project area.

Because the vegetation on the site is dominated primarily by non-native plants and because there are no rare or protected native species within the project area, there is little of botanical concern and the proposed project is not expected to have a significant negative impact on the botanical resources.

RECOMMENDATIONS

It is recommended that the native wiliwili trees growing in one of the gullies be left to provide a native accent to the project development. These hardy trees are a signature species of Hawaii's dryland forests and flourish in this habitat with no care required.

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-geographic 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).
   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			
AGAVACEAE (Agave Family)			
Asparagus officinalis L.	asparagus	non-native	common
Cordylene fruticosa (L.) A. Chev.	*ki*	polynesian	rare
CYPERACEAE (Sedge Family)			
Cyperus rotundus L.	nut grass	non-native	rare
MUSACEAE (Banana Family)			
Musa x paradisiaca L.	banana	non-native	uncommon
POACEAE (Grass Family)			
Bambusa vulgaris Schrad.ex Wendl.	feathery bamboo	non-native	rare
Bothriochloa pertusa (L.) A. Camus	pitted beardgrass	non-native	rare
Brachiaria subquadripara (Trin.) Hitch.	----------	non-native	rare
Cenchrus ciliaris L.	buffelgrass	non-native	abundant
Cenchrus echinatus L.	sandbur	non-native	rare
Chloris barbata (L.) Sw.	swollen fingergrass	non-native	common
Chloris virgata Sw.	feather fingergrass	non-native	rare
Cynodon dactylon (L.) Pers.	Bermuda grass	non-native	uncommon
Digitaria insularis (L.) Mex ex Ekman	sourgrass	non-native	common
Digitaria violascens Link	*kukae pua'a*	non-native	uncommon
Echinochloa colona (L.) Link	jungle rice	non-native	rare
Eleusine indica (L.) Gaertn.	wiregrass	non-native	rare
Eragrostis tenella (L.) P. Beauv.Ex Roem. & Schult.	----------	non-native	uncommon
Panicum maximum Jacq.	Guinea grass	non-native	abundant
Pennisetum purpureum Schumach.	Napier grass	non-native	uncommon
Rhynchelytrum repens (Willd.) Hubb.	Natal redtop	non-native	uncommon

SCIENTIFIC NAME	COMMON NAME	STATUS	ABUNDANCE
Saccharum officinarum L.	sugar cane	polynesian	rare
Setaria verticillata (L.) P.Beauv.	bristly foxtail	non-native	rare
Sorghum bicolor (L.) Moench	sorghum	non-native	rare
Tragus berteronianus Schult.	goatgrass	non-native	uncommon
Zea mays L.	corn	non-native	rare
DICOTS			
ACANTHACEAE (Acanthus Family)			
Asystasia gangetica (L.) T. Anderson	Chinese violet	non-native	rare
AMARANTHACEAE (Amaranth Family)			
Amaranthus spinosus L.	spiny amaranth	non-native	uncommon
Amaranthus viridis L.	spleen amaranth	non-native	rare
ANACARDIACEAE (Mango Family)			
Mangifera indica L.	mango	non-native	rare
ASTERACEAE (Sunflower Family)			
Bidens pilosa L.	Spanish needle	non-native	rare
Calyptocarpus vialis Less	----------	non-native	rare
Conyza bonariensis (L.) Cronq.	hairy horseweed	non-native	rare
Emilia fosbergii Nicolson	red pualele	non-native	rare
Melanthera lavarum (Gaud.)W.L.Wagner&H.Rob.	*nehe*	endemic	rare
Pluchea carolinensis (Jacq.) G. Don	sourbush	non-native	uncommon
Sonchus oleraceus L.	*pualele*	non-native	rare
Synedrella nodiflora (L.) Gaertn.	nodeweed	non-native	rare
Tridax procumbens L.	coat buttons	non-native	rare
Verbesina encelioides (Cav.) Benth. & Hook.	golden crown beard	non-native	rare

SCIENTIFIC NAME	COMMON NAME	STATUS	ABUNDANCE
Xanthium strumarium L.	*kikania*	non-native	rare
BRASSICACEAE (Mustard Family)			
Brassica oleracea L.	cabbage	non-native	rare
CAPPARACEAE (Caper Family)			
Cleome gynandra L.	wild spider flower	non-native	rare
CARICACEAE (Papaya Family)			
Carica papaya L.	papaya	non-native	rare
CHENOPODIACEAE (Goosefoot Family)			
Chenopodium murale L.	*aheahea*	non-native	rare
CONVOLVULACEAE (Morning Glory Family)			
Ipomoea batatas (L.) Lam.	sweet potato	non-native	rare
Ipomoea obscura (L.) Ker-Gawl.	----------	non-native	rare
Ipomoea triloba L.	little bell	non-native	rare
Merremia aegyptia (L.) Urb.	hairy merremia	non-native	uncommon
CUCURBITACEAE (Gourd Family)			
Momordica charantia L.	balsam pear	non-native	rare
EUPHORBIACEAE (Spurge Family)			
Chamaecyce hirta (L.) Millsp.	hairy spurge	non-native	uncommon
Chamaecyce hypericifolia (L.) Millsp.	graceful spurge	non-native	uncommon
Manihot dulcis (J.F.Gmel.) Pax	manioc	non-native	uncommon
Ricinus communis L.	castor bean	non-native	rare
Euphorbia cyathophora J.A.Murray	Mexican fire plant	non-native	rare
Euphorbia heterophylla L.	kaliko	non-native	rare
FABACEAE (Pea Family)			
Acacia farnesiana (L.) Willd.	klu	non-native	rare
Cajanus cajan (L.) Millsp.	pigeon pea	non-native	rare

SCIENTIFIC NAME	COMMON NAME	STATUS	ABUNDANCE
Chamaechrista nictitans (L.) Moench	partridge pea	non-native	common
Crotalaria incana L.	fuzzy rattlepod	non-native	rare
Crotalaria pallida Aiton	smooth rattlepod	non-native	uncommon
Desmanthus pernambucanus (L.) Thellung	slender mimosa	non-native	uncommon
Desmodium tortuosum (Sw.) DC	Florida beggarweed	non-native	rare
Erythrina sandwicensis Degener	*wiliwili*	endemic	uncommon
Erythrina variegata L.	fastigiate wiliwili	non-native	rare
Indigofera hendecaphylla Jacq.	creeping indigo	non-native	rare
Indigofera suffruticosa Mill.	*'inīkō*	non-native	rare
Leucaena leucocephala (Lam.) deWit	*koa haole*	non-native	uncommon
Macroptilium atropurpureum (DC) Urb.	----------	non-native	uncommon
Macroptilium lathyroides (L.) Urb.	wild bean	non-native	rare
Phaseolus vulgaris L.	string bean	non-native	rare
Prosopis pallida (Humb.&Bonpl.Ex.Willd.) Kunth	*kiawe*	non-native	uncommon
Sesbania grandiflora (L.)Kunth Poir.	katurai	non-native	rare
LAMIACEAE (Mint Family)			
Leonotis nepetifolia (L.) R.Br.	lion's ear	non-native	uncommon
LAURACEAE (Laurel Family)			
Persea americana Mill.	avocado	non-native	rare
MALVACEAE (Mallow Family)			
Abutilon grandifolium (Willd.)Sweet	hairy abutilon	non-native	uncommon
Hisbiscus esculentus L.	okra	non-native	rare
Malva parviflora L.	cheese weed	non-native	rare
Malvastrum coromandelianum (L.) Garcke	false mallow	non-native	uncommon
Sida fallax Walp.	*'ilima*	indigenous	rare

SCIENTIFIC NAME	COMMON NAME	STATUS	ABUNDANCE
Sida rhombifolia L.	----------	non-native	uncommon
MORACEAE (Mulberry Family)			
Allaeanthus glaber Warb.	alokon	non-native	rare
Ficus microcarpa L. fil.	Chinese banyan	non-native	rare
MORINGACEAE (Moringa Family)			
Moringa oleifera Lam.	horseradish tree	non-native	rare
MYRTACEAE (Myrtle Family)			
Syzygium cumini (L.) Skeels	Java plum	non-native	rare
NYCTAGINACEAE (Four-o'clock Family)			
Boerhavia coccinea Mill.	----------	non-native	rare
OXALIDACEAE (Wood Sorrel Family)			
Oxalis corniculata L.	yellow wood sorrel	non-native	rare
PLUMBAGINACEAE (Leadwort Family)			
Plumbago zeylanica L.	*'ilie'e*	indigenous	rare
PORTULACACEAE (Purslane Family)			
Portulaca oleracea L.	pigweed	non-native	rare
SAPINDACEAE (Soapberry Family)			
Dodonaea viscosa Jacq.	*'a'ali'i*	indigenous	rare
SOLANACEAE (Nightshade Family)			
Nicandra physalodes (L.) Gaertn.	apple of Peru	non-native	rare
Solanum melongena L.	eggplant	non-native	rare
STERCULIACEAE (Cacao Family)			
Waltheria indica L.	*'uhaloa*	indigenous	common
VERBENACEAE (Verbena Family)			
Stachytarpheta jamaicensis (L.) Vahl	Jamaica vervain	non-native	rare

SCIENTIFIC NAME	COMMON NAME	STATUS	ABUNDANCE
Verbena littoralis Kunth	*ha'u owi*	non-native	rare
ZYGOPHYLLACEAE (Creosote Bush Family)			
Tribulus terrestris L.	puncture vine	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

No mammals were observed anywhere in the project area during two site visits. Tracks of a feral cat (*Felis domestica*), however, were noted within one of the small abandoned agricultural plantings. Taxonomy and nomenclature follow Tomich (1986). Dense vegetation prevented good visibility of ground dwelling animals, but a significant population of cats, mongoose (*Herpestes auropunctatus*), rats (*Rattus rattus*) and mice (*Mus musculus*) would be expected. Cats and mongoose feed on rats and mice. While rats and mice were not seen, their presence is virtually guaranteed by an abundant food supply in the form of grass seed and herbaceous vegetation. Another mammal one might possibly see in this area would be axis deer (*axis axis*). No sign of axis deer was observed on the property during either the daytime survey or the evening survey.

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 and plenty of flying insects were seen. This area does not represent ideal bat habitat and there have been no reports of bat sightings in the vicinity.

BIRDS

There was moderate birdlife diversity in this normally dry area. An ample supply of grass and herbaceous plant seeds were available following a good winter wet season. Twelve species of non-native birds, one endemic species and one migratory species were seen, most taking advantage of this seasonal food supply. Taxonomy and nomenclature follow American Ornithologist's Union (1988), Berger (1981), Pratt et al.(1987) and Hawaii Audubon Society (1989).

Nutmeg mannikin (*Lonchura puntulata*) – Several large flocks were seen feeding on seeds in the extensive grasslands.

Barred dove (*Geopelia striata*) – Many barred doves were seen and heard in the kiawe trees and in the agricultural planting remnants. Their smaller size, striated body and white flashing tails feathers when taking flight distinguish this species from the spotted dove.

Common mynah (*Acridotheres tristis*) – A few pairs of mynahs were seen throughout the area, feeding in grassy openings or transiting the area high above the trees. They are confident and assertive birds.

Gray francolin (*Francolinus pondicerianus*) – A few gray francolins were seen in ground openings and in kiawe trees, but their loud and distinctive calls were heard frequently throughout the area indicating a larger population than seen.

Spotted dove (*Streptopelia chinensis*) – Several of these large doves were seen in trees and in the small agricultural planting remnants.

Java sparrow (*Padda oryzivora*) – One large flock of these distinctively colored birds was seen feeding on grass seeds.

Black francolin (*Francolinus francolinus*) – Scattered individuals were seen but their distinctive calls were heard throughout the project area.

Cattle egret (*Bubulcus ibis*) – A few egrets were seen feeding in grassy openings during the day and a few were seen transiting over the property to their roosting areas at Kealia Pond for the night.

House sparrow (*Passer domesticus*) A few sparrows were seen in and around trees in the gullies.

Japanese white-eye (*Zosterops japonica*) – A few white-eyes were seen feeding in the kiawe where their high pitched calls were frequently heard.

House finch (*Carpodacus mexicanus*) – A few pairs of these moderately-sized, light brown finches were seen in the kiawe trees and flying between them.

Kolea or golden plover (*Pluvialis fulva*) – A few plover were seen feeding in grassy openings during the late afternoon. These migratory birds are widespread and common in Hawaii during the fall and winter months.

Skylark (*Alauda arvensis*) – A single skylark was seen in a clearing alongside an old field road.

Nene (*Nesochen sanvicensis*) – Three endemic and Endangered nene were seen feeding on herbaceous vegetation in the agricultural planting remnants. Two of these birds had leg bands indicating that they had been reared as part of an endangered species recovery program at Haleakala National Park. A fourth nene was seen during the evening survey transiting the area heading toward the southern West Maui uplands for the night.

INSECTS

While insects in general were not tallied, they were abundant throughout the area and fueled the elevated bird activity observed. Although not found on the project site one native Sphingid moth, Blackburn's sphinx moth (*Manduca blackburni*), has been put on the Federal Endangered species list and this designation requires special focus (USFWS 2000). Blackburn's sphinx moth occurs on Maui although it has not been found in this area. Its native host plants are species of 'Aiea (*Nothocestrum*) and a non-native alternative host plant is tree tobacco (*Nicotiana glauca*). There are no 'aiea on or near the project area and no tree tobacco plants were observed during the survey. No Blackburn's sphinx moth or their larvae were observed.

CONCLUSIONS

Fauna surveys are seldom comprehensive due to the short window of observation, the seasonal nature of animal activities and the unpredictable nature of their daily movements. This survey, however, should be considered fairly representative due to the abundance of food resources present throughout the area and the resulting level of animal use. All twelve non-native bird species, as well as the indigenous migratory golden plover, are widespread and common on Maui and require no special consideration. While ideal for many types of non-native animals the habitat is not suitable in its present state for most native animals, and is far removed from remnant populations. Three Endangered nene (USFWS, 1999), however, were seen feeding on herbaceous vegetation within the project area and a fourth was seen flying over during the evening. Nene are strong fliers and wide ranging in their search for food. They seem to prefer open areas with lush grasses and herbs. They often utilize pastures, golf courses, large lawns and reservoir margins. While reared in the wild, these birds can become accustomed to people and their irrigated landscapes. These birds showed no sign of nesting behavior and appeared to be using these open fields for incidental feeding activity. This habitat, while useful to nene for such feeding, is not substantially different from thousands of acres of similar pastures and fields in southern West Maui, and should not be considered critical for their survival and well being. In fact if the proposed development contains substantial irrigated open space as indicated in preliminary plans, the habitat will continue to be suitable for incidental nene use and such use will no doubt continue. No unique or special habitats were found on the property.

The proposed changes in land use should have no significant impact on the fauna in this part of Maui.

RECOMMENDATIONS

Some seabirds such as the Endangered dark rumped petrel (*Pterodroma phaeopygia sandwichensis)* and the commoner wedge-tailed shearwater (*Puffinus pacificus chlororhynchus*), nesting on the summit of Haleakala and the coastal sites of Wailea Point and Molokini respectively, leave their burrows before dawn and return after sunset. These birds can become attracted to and confused by bright lights, crash and be killed by vehicles or cats and dogs that find them. Young birds are especially vulnerable when they fledge in late fall and take their first tentative flights. It is recommended that all significant outdoor lighting in the development be hooded to direct the light downward.

ANIMAL SPECIES LIST

Following is a checklist of the animal species inventoried during the field work. Animal species are arranged in descending abundance within two groups: Mammals and Birds. 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.

COMMON NAME	SCIENTIFIC NAME	STATUS	ABUNDANCE
BIRDS			
Nutmeg mannikin	*Lonchiura punctulata*	non-native	common
Barred dove	*Geopelia striata*	non-native	common
Common mynah	*Acridotheres tristis*	non-native	common
Gray francolin	*Francolinus pondicerianus*	non-native	uncommon
Spotted dove	*Streptopelia chinensis*	non-native	uncommon
Java Sparrow	*Padda oryzivora*	non-native	uncommon
Black francolin	*Francolinus francolinus*	non-native	uncommon
Cattle egret	*Bubulcus ibis*	non-native	rare
House sparrow	*Passer domesticus*	non-native	rare
Japanese white-eye	*Zosterops japonica*	non-native	rare
House finch	*Carpodacus mexicana*	non-native	rare
Golden plover	*Pluvialis fulva*	indigenous/migratory	rare
Skylark	*Alauda arvensis*	non-native	rare
Nene	*Nesochen sanvicensis*	endemic	rare

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APPENDIX B.

Archaeological Inventory Survey

SCS Project 334-1

AN ARCHAEOLOGICAL INVENTORY SURVEY REPORT ON 259.903 ACRES IN MA`ALAEA, UKUMEHAME AND WAIKAPU AHUPUA`A, WAILUKU DISTRICT, MAUI ISLAND, HAWAI`I [TMK: (2) 3-6-01:18]

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ABSTRACT

Scientific Consultant Services (SCS), Inc., conducted Archaeological Inventory Survey on a 259.903-acre land parcel in Ma`alaea, Ukumehame and Waikapu Ahupua`a, Wailuku District, Maui Island, Hawai`i [TMK: (2) 3-6-01:18]. The work consisted of historical background and archival research; pedestrian survey and inspection of the parcel; mapping and description of site features; subsurface testing (excavation by backhoe); consultation with state archaeologist Dr. Melissa Kirkendall; and, analysis, interpretation, and reporting of all relevant data. The main objectives of the project were to determine if significant cultural and/or historic resources occurred on the parcel; and, to provide significance assessments and recommendations.

The main results of this study were as follows: Three historic sites, all related to sugarcane agriculture, were identified, documented for the first time, and assigned SIHP numbers: Site 50-50-09-5657 (clearing mounds), Site 50-50-09-5658 (irrigation modifications), and Site 50-50-09-5659 (dirt road). These three sites were the only archaeological sites found within the project area, and all three are considered significant under Criterion D of the Hawaii State and National Register of Historic Places. A 100 percent pedestrian survey concluded that no prehistoric sites exist on the surface of the project area.

Subsurface testing was comprised of twenty backhoe trenches (a volume of approximately 292 cubic meters) which did not reveal any subsurface historic, or prehistoric, cultural material. Rather, excavation confirmed the extent, both in physical and temporal depth, of historic and modern agricultural activity within the project area. No burial features or human remains were observed during pedestrian survey or encountered during subsurface testing.

The following actions are recommended: No further archaeological work is necessary within the project area, with the exception of a period of observation during future earth-moving activity. An archaeologist must be on site during the leveling of a representative sample (a minimum of four) of the thirteen clearing mound features that comprise State Site 50-50-09-5657. This archaeological observation is necessitated by the possibility of historic and/or prehistoric features or artifacts having been buried under/within the large clearing mounds.

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INTRODUCTION

Scientific Consultant Services (SCS), Inc., conducted Archaeological Inventory Survey (AIS) on a 259.903-acre land parcel in Ma`alaea, Ukumehame and Waikapu Ahupua'a, Wailuku District, Maui Island, Hawai`i [TMK: (2) 3-6-01:18] (Figures 1 and 2). The work consisted of historical background and archival research; pedestrian survey and inspection of the parcel; mapping and description of site features; subsurface testing (excavation by backhoe); consultation with state archaeologist Dr. Melissa Kirkendall; and, analysis, interpretation, and reporting of all relevant data. Fieldwork was conducted on January 31–February 11, 2005 by Jon Wilson, B.A. and Eric Pope, B.A. under the supervision of Principal Investigator Michael F. Dega, Ph.D.

Archaeological work in the project area was conducted to determine the presence/absence of archaeological features in surface and subsurface contexts through complete pedestrian survey and representative subsurface testing. The ultimate goals of the project were to determine if significant cultural and/or historic resources occurred on the parcel; and, to provide significance assessments and recommendations to the State Historic Preservation Division (SHPD). Plans for the "Ma`alaea Mauka" residential project by AFK Development utilize nearly the entire project area detailed within this AIS. Included in development plans are over one thousand residential units, a community center, a park and open areas, buffer zones, and roadways.

ENVIRONMENTAL SETTING

PROJECT AREA DESCRIPTION AND LOCATION

Maui's Wailuku District encompasses an area from the eastern half of the West Maui Mountains, north to Kahului Bay, south to Ma`alaea Bay, and includes the entire Kahului Isthmus (Figure 3). Near the southwestern corner of Wailuku District, the boundary separating Ukumehame Ahupua`a and Waikapu Ahupua`a runs from *mauka* to *makai* (roughly west to east). At an elevation of approximately 55 meters (180 feet) the *ahupua`a* boundary sharply angles south toward Ma`alaea Bay. This sharp angle between the two *ahupua`a* marks the northeastern boundary of the current project area. The *ahupua`a* boundary then divides the project area as it continues south, leaving roughly 65 percent of the parcel in Ukumehame Ahupua`a, and 35 percent of the parcel in Waikapu Ahupua`a (see Figure 1).

The "Ma`alaea Mauka" project area consists of one contiguous 259.903-acre parcel that uses the Honoapiilani Highway as its *makai* border. The three-sided project area's southern terminus is a triangular point *mauka* of Ma`alaea Small Boat Harbor. The northern boundary line

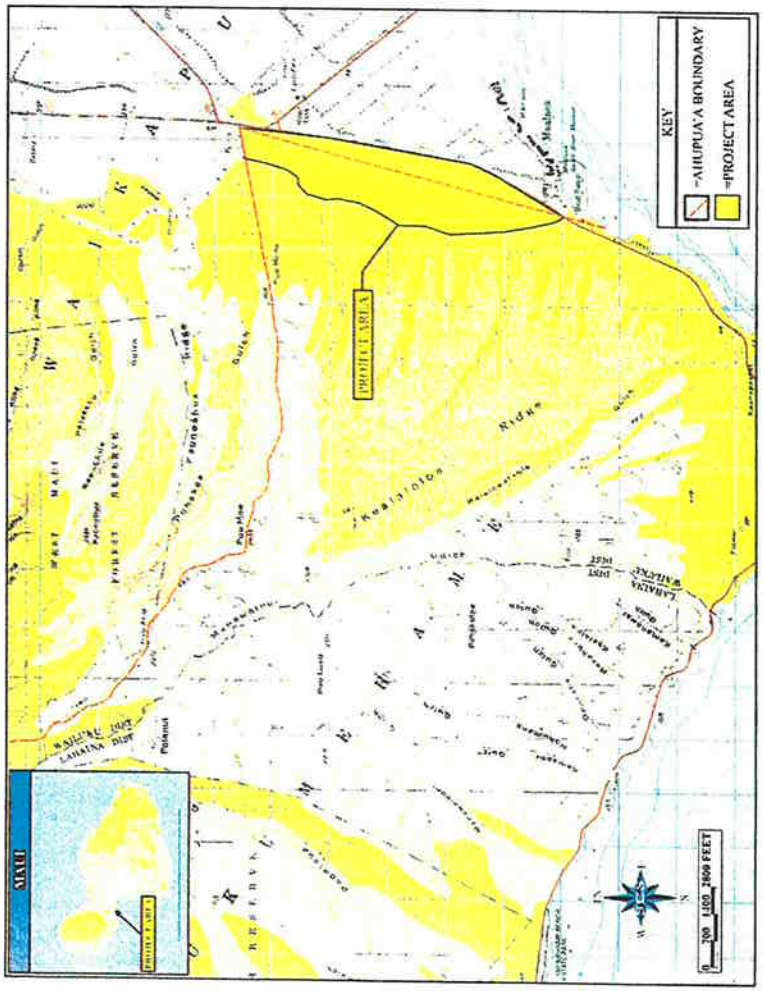

Figure 1: USGS Ma`alaea Quadrangle Showing Project Area Location.

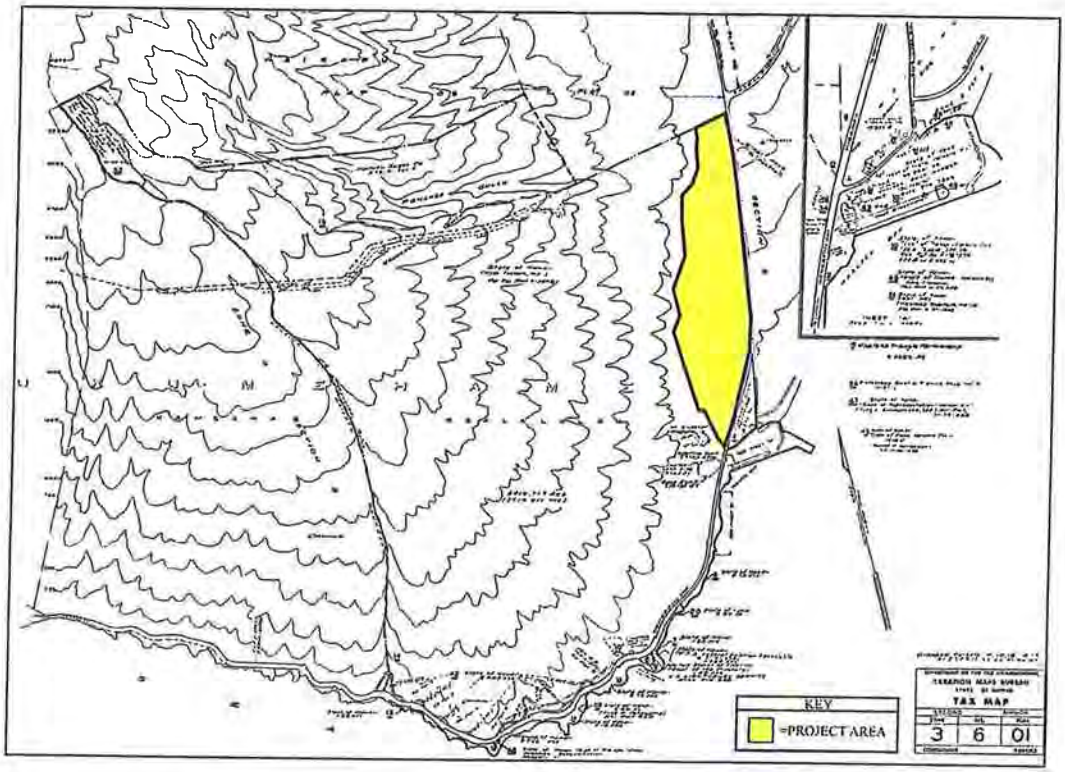

Figure 2: TMK [Tax Map Key] Showing Project Area Location.

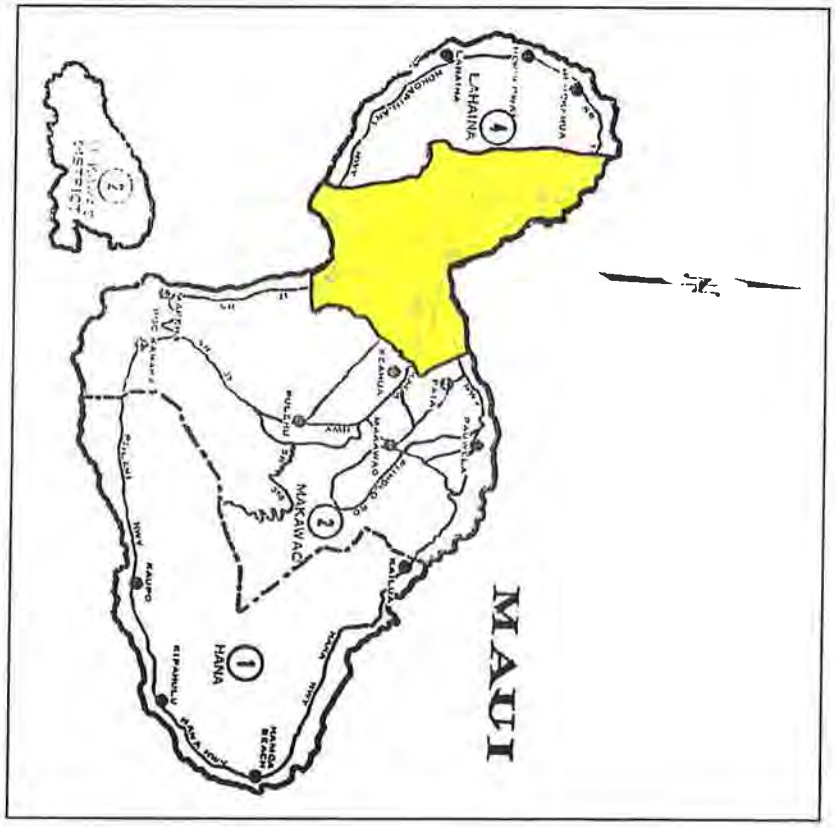

Figure 3: Wailuku District Boundaries.

extends *mauka* from a point 183 m (600 feet) south of the Kuihelani Highway's intersection with Honoapiilani Highway. The long, narrow project area runs 2.7 kilometers (1.7 miles) along the Honoapiilani Highway (Figure 4), and at it widest is 579 m (1900 feet).

PROJECT AREA LANDFORM

The sharp transition from valley floor to mountain slope is the most distinct visual feature of the nearby terrain. This dramatic elevation increase, however, occurs just *mauka* of the relatively flat project area (Figure 5). With the southeastern end of the project area having an elevation of 12 m (40 feet), and the northwestern perimeter high point of 61 m (200 feet), the maximum elevation difference throughout the project area is only 49 m (160 feet). The average *makai* to *mauka* elevation gained from walking the width of the project area (about half a kilometer) is only 24m (80 feet). The average elevation gained from climbing the next half kilometer beyond the project area's *mauka* border is 146 m (480 feet).

The gently-sloping terrain of the project area has been made more flatly uniform through decades of agricultural activity. Few distinct naturally-occurring landmarks remain within the project area's topography. Certain points within the project area afford an uninterrupted view of its entire expanse. The four perennial *mauka-makai* running drainages that cross the project area remained dry at the time of survey. It is likely that these narrow water courses that span the parcel's width only flow in times of heavy rains. Two of the four drainages are fairly shallow and narrow, and do not originate much farther upslope than the base of the mountains. The two more significant drainages appear on the USGS topographical map (see Figure 1), and are currently diverted under Honoapiilani Highway, eventually emptying into Ma`alaea Bay. Of these two, the southern drainage originates at an elevation of 335 m (1100 feet), and the northern drainage (Figure 6) originates near Puu Moe at 640 m (2100 feet). However, at a maximum width of less than four meters, it is likely that even these two more significant water sources served to irrigate the project area only in times of heavy rainfall.

CLIMATE AND VEGETATION

The project area receives 25 to 38 centimeters (10 to 15 inches) of rainfall annually (Armstrong 1983). This area is much drier than higher elevations to the west that receive as much as twenty times the level of precipitation. Air temperatures are consistently slightly warmer here than the Maui seasonal high and low averages, mostly due to the lower, coastal elevation.

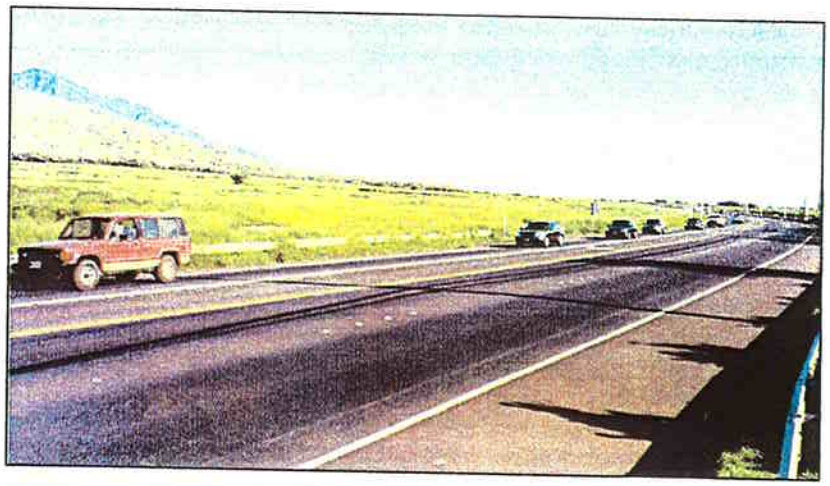

Figure 4: Project Area Overview. View to North, Across Honoapiilani Highway.

Figure 5: Project Area Overview. View to North, from Southern Quadrant.

Figure 6: *Mauka-Makai* Vegetation Line Marks the Northern Drainage Appearing on the USGS Map. Northern Half of Project Area, View to South.

At the time of survey, project area vegetation consisted of a mix of introduced grasses and trees, few native species, and a variety of small garden plots with a mix of planted crop species. The only areas not covered by vegetation were the multiple dirt road segments that transect the property. Introduced grasses, ranging from 0.5 to 1.0 m tall, covered roughly 85 percent of the project area. Few *kiawe* trees (*Prosopis pallida*) were found outside of drainage perimeters, but along and within the drainages these introduced trees were abundant. *Kiawe* also lines the *mauka* side of the *mauka* perimeter road, and grows very dense within the State-owned lands at the base of the mountains. Overall, few trees exist within the former agriculture fields. Recent *koa haole* (*Leucaena leucocephala*) trees have grown to a height of no more than 1.5 m within the fields, but grow to a height of over 3.0 m along the *mauka* perimeter roads. Other species include lantana (*Lantana camarara*), sparse sisal (*Agave sisalana*), and the native *`ilima* (*Sida* sp.).

Over twenty different patches of recently abandoned garden crops are scattered throughout the southern 80 percent of the project area. None are larger than one acre, and none of these patches exist within the rockier northern soils. Two local informants spoke of "renting" land for small-scale farming within the "past couple of years," be it through a formal contract

with the previous land owner or not. Rows of banana trees occur in at least five different areas. One banana patch also includes gourds; papaya trees are interspersed throughout. At the center of the property, surface plastic irrigation pipes appear to be recently constructed and lead to a square sod field. The most elaborate small-scale farming remnant is what appears to be a *Ficus* sp. nursery at the center of the project area's northern half. Here, three rows of identically-sized trees are paralleled by what appear to be recently constructed concrete walkways and irrigation piping (Figure 7).

SOILS

As the project area extends north, its soils contain a greater concentration of basalt cobble and boulder. According to Foote *et al.* (1972:101), soils in the project area fall into mainly two categories: the Ewa Series (80 percent of the project area) and the Pulehu Series (most of the northern 20 percent). The Ewa Series consists of well-drained soils occurring on alluvial fans within Oahu and Maui. They are derived from igneous rock, moderately sloping, and best suited for sugar cane, truck crops, and pasture. The southern third of the project area consists entirely of Ewa Silty Clay (EsB), ideal for sugarcane. Bordering EsB soil to the north is a large contiguous section of Ewa Cobbly Silty Clay (EtB), covering roughly 50 percent of the project area. Foote *et al.* note that the removal of a surface layer of cobble renders this soil equally suitable to sugarcane cultivation as the less rocky soil to the south (1972:29–30, 115–116).

Figure 7: Possible Tree Nursery at Center of Project Area.

Roughly 20 percent of the project area, entirely concentrated at the northern end, consists of a Pulehu Series soil—specifically, Pulehu Cobbly Clay Loam (PtB). This soil is very similar to the Ewa Series in almost every aspect except its greater surface rock concentration. Thus, a direct correlation can be seen between the location of PtB soil and the 13 large, agricultural clearing mounds (State Site 50-50-09-5657) concentrated in the northern end of the project area (Figures 8 and 9). In an effort to create sugarcane fields equally productive as lands to the south, decades of tilling have deposited these enormous mounds of concentrated boulders. (See "RESULTS" section, below, for further discussion of the historic origin of the Site -5657 mounds).

TRADITIONAL AND HISTORIC SETTING

PRE-CONTACT TO EARLY HISTORIC ERA

Wailuku District, is frequently mentioned in historical texts and oral tradition as being politically, ceremonially, and geographically important 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 importance of the district is reflected by the relatively large number of *heiau* that were reportedly present in pre-Contact times. Oral tradition accounts surrounding these *heiau* provide examples of how religion tied into political power in the traditional Wailuku setting. Indeed, the period immediately preceding contact with the Europeans was one of considerable upheaval and conflict. *Wailuku*, meaning 'water of destruction,' succinctly describes the area in the late 1700s. Political power emanating from Moloka`i was an active element during the mid-eighteenth century. The resulting battle at Kalae`ili`ili (A.D. 1765) led to the expulsion of Keeaumoku and the Moloka`i *ali`i* and the beginning of Kahekili's reign (Kamakau 1992). Kahekili successfully defended his capital in Wailuku throughout the 1770s, until his defeat at the hands of Kamehameha's forces.

Closer to the current project area, in the southwest corner of Wailuku District, prehistoric settlement was not as dense as concentrations to the north. Climate had much to do with that trend, as the Ma`alaea area is a more arid environment than the rain-soaked fields to the north. According to Tomonari-Tuggle and Tuggle (1991), the majority of the pre-Contact population was located southwest of the project area, near what is now Ukumehame Beach State Park. Settlement was also probable north of Kealia Pond in Waikapu Ahupua`a. Handy and Handy report that before the historic sugarcane plantations in this region, water from Waikapu Stream ". . . was diverted into lo`i and its overflow was dissipated on the dry plains of the broad isthmus between West and East Maui" (1972:496).

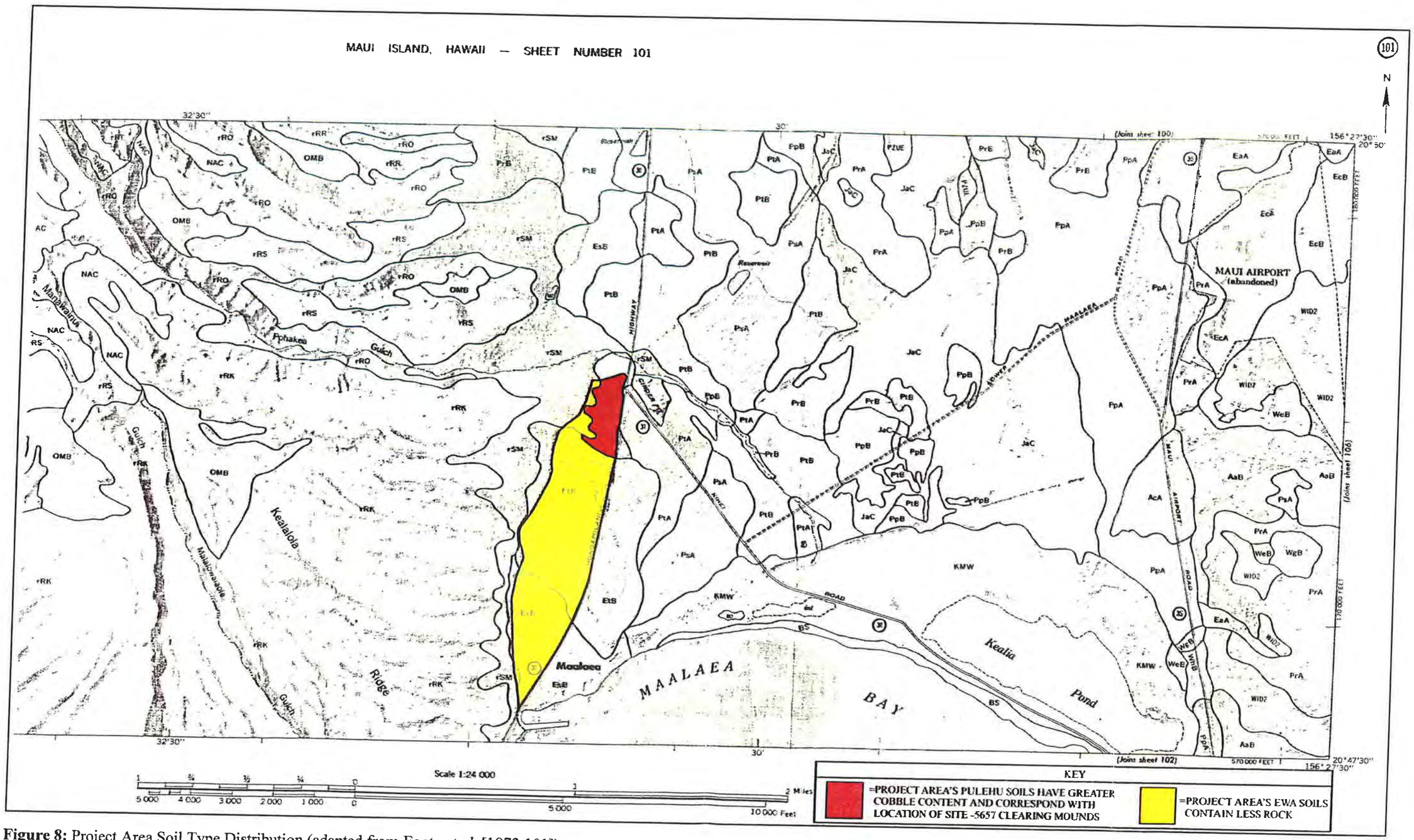

Figure 8: Project Area Soil Type Distribution (adapted from Foote *et al.* [1972:101]).

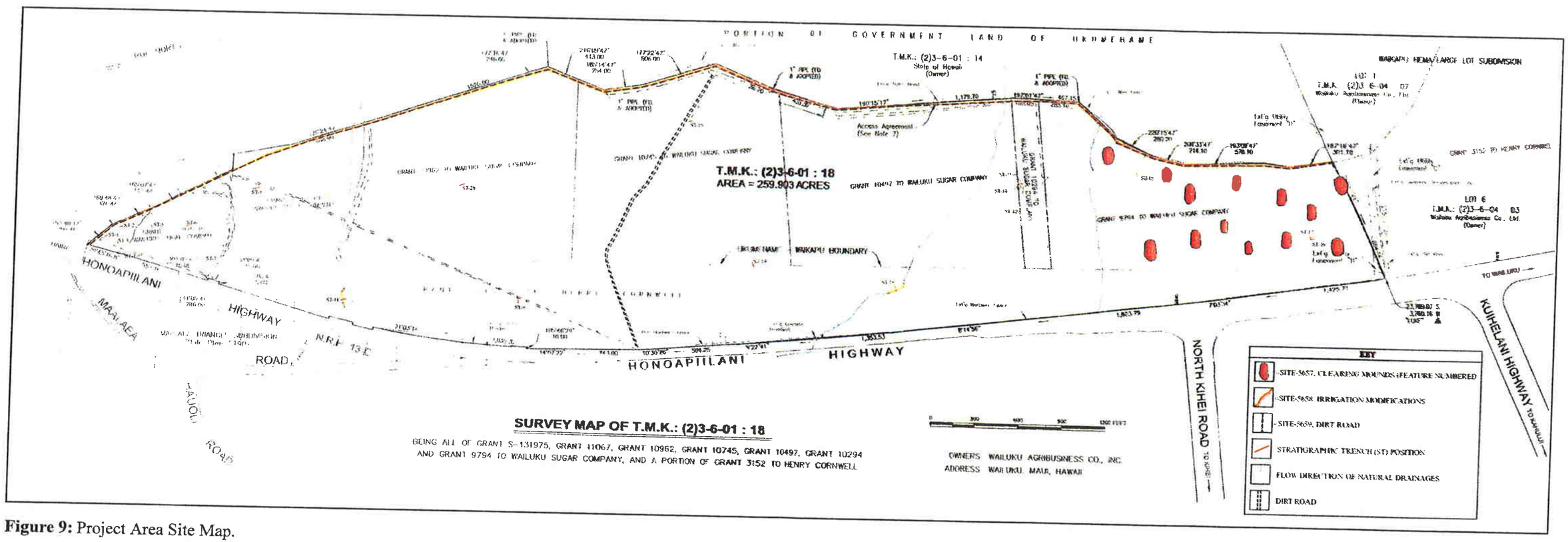

Figure 9: Project Area Site Map.

Wailuku District would see drastic change after Captain James Cook's 1778 arrival in Kahului Bay. The reign of Kamehameha I was intertwined with the increasing presence of Europeans within the Hawaiian Islands. By 1821, American missionaries had established a foothold in Lahaina and first arrived in Wailuku a year later. The religion of the Hawaiian people began to wane under the influence of Christianity. Fredericksen and Fredericksen (2002:4) point to a girls' seminary (Central Female Boarding School), established in Wailuku in 1836, as one of the initial steps in the conversion of Hawaiian language and customs in Maui.

THE GREAT MĀHELE

In 1848, 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 into 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. As a result, 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, commoners would often only make claims if they had first been made aware of the foreign procedures (*kuleana* lands, or 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 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).

During the Māhele, Wailuku District was declared Crown Land and numerous Land Commission Awards, approximately 180, were awarded within Wailuku Ahupua`a alone (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 sugar. 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 Māhele, there were no land claims within the current project area. This fact may be attributed to the sparse pre-1848 Hawaiian population within the parcel, a result of settlement conditions within these *ahupua`a* favoring the coastal area.

THE LATE HISTORIC PERIOD AND GROWTH OF THE SUGAR INDUSTRY

Another influence that brought change to Maui was foreign commercialism. Two Chinese brothers, Ahung and Atai, of Honolulu's Hungtai Company arrived in Wailuku to explore the possibility of setting up one of its earliest sugar mills in 1828. Atai soon created a plant that processed sugar cane cultivated by Hawaiians, named the Hungtai Sugar Works (Dorrance and Morgan 2000:15–16). Ahung later joined Kamehameha III's sugar producing enterprise, although by 1844 both operations had ceased. The Wailuku Sugar Company was the next to follow, in 1862, and would expand sugar production over the next 126 years of its existence—4,450 acres by 1939, still more than three decades before its maximum production levels.

As it expanded its territory, the Wailuku Sugar Company first appeared on maps of the project area in the in the 1920s (Bureau of Conveyances, Grant 9794), although their acquisition of the project area land may have been as early as the turn of the century (Kennedy and Trimble 1992:4). Successive grants (Grant 10294 through to Grant S-13975) would follow in decades following and fully encompass the Ukumehame Ahupua`a side of the project area in Wailuku Sugar land. Kennedy and Trimble (1992:4) summarize the history of the Waikapu Ahupua`a (*makai*) portion of the project area by detailing its acquisition from the state government on November 18, 1875 by Henry Cornwell (Grant 3152). Cornwell subsequently sold to Claus Spreckels, and by the turn of the century the entire project area was under sugarcane cultivation.

Wailuku Sugar Company ended production in 1988, having averaged over 30,000 tons of sugar produced annually at its pinnacle in the 1970s (Dorrance and Morgan 2000:66). Owner C. Brewer & Company, Ltd. shut down sugar cultivation on the project area, which was then used almost entirely for pineapple cultivation starting no later than 1992 (Kennedy and Trimble 1992:1). The lands were under pineapple for at least the next three years (Tomonari-Tuggle 1995:11)—probably slightly longer—before transitioning to smaller-scale "garden" plots.

PREVIOUS ARCHAEOLOGY

Six studies on file within the SHPD-Kapolei archives summarize the most relevant previous archaeology within the vicinity of the current project area. Figure 10 exhibits the locations of these studies in relation to the current project area. Examination of the archaeological record helped to form the expected findings and, consequently, the subsurface testing pattern charted on Figure 9.

Most relevant to the current study is the only other previous archaeological study that took place within the current project area. Kennedy and Trimble (1992) surveyed an area that overlaps State Site 50-50-09-5659 (historic dirt road), first recorded in the present study (see Figure 10). While Kennedy and Trimble also note the lack of archaeological features in their project area due to the obvious history of intense agriculture, their 1992 report does not consider the road upon which their survey takes place to be a potential historic agricultural feature (as discussed below under "RESULTS"). The project area detailed in their study is no more than 5 meters wider than the dirt road itself, and concludes that "No artifacts, midden, or structures of historic or prehistoric significance were identified on the subject property" (1992:11).

An earlier Kennedy report (1986) entitled *Letter Report: Walk-Through Examination of the Proposed Maalaea Triangle, Maui (TMK: 3-6-01:1)* also concluded with negative results. This project area is located on the *makai* side of Honoapiilani Highway and extends to the coastline (see Figure 10). This was the first archaeological study performed on this parcel and Kennedy does mention (1986:2) nearby sites that are detailed in later studies.

Monitoring within a smaller section of the same project area described by Kennedy (1986) resulted in a single site—a previously disturbed historic burial: State Site 50-50-09-4480 (McGerty, Burgett, and Spear 1998). McGerty *et. al*'s report, entitled *Draft: Monitoring Report on Earth Moving and Construction Excavations, Maui Ocean Center Site, Maui, Hawaii, (TMK: 3-6-01:001 and 019)* describes a pearl shell button found with the burial. The location of Site -4480 is of interest to the current study as its position is approximately 200 m *makai* of the current project area's southern corner. As subsequent subsurface testing would prove, however, the sandy matrix McGerty *et. al* experienced in the Maui Ocean Center monitoring contrasted the reddish clay of the current project area, rendering the likelihood of encountering burials much less. Nonetheless, the McGerty *et. al* (1998) study also mentions two more burials found not far to the north from Site -4480. While these (Sites -3553 and -3554) are even less spatially related

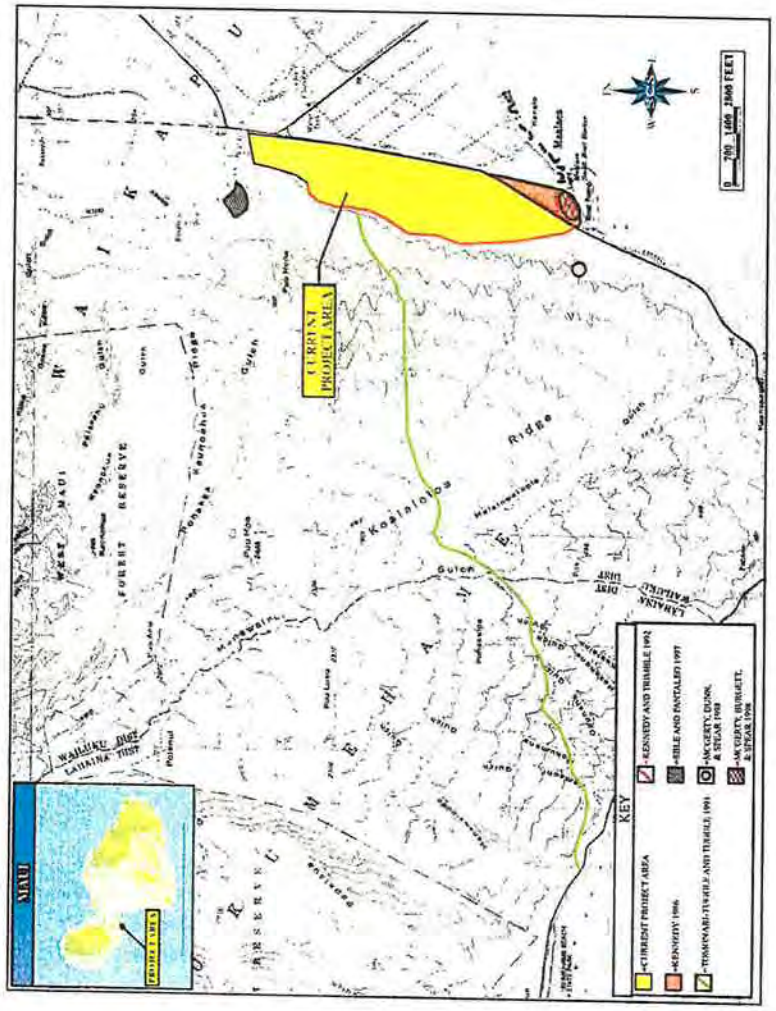

Figure 10: Locations of Selected Previous Archaeological Studies Near Current Project Area.

to the current project area, their presence will later call for increased testing in the southern portion of the current project area (closest to the sandy coastal matrices).

McGerty, Dunn, and Spear (1998) conducted Data Recovery in an area of five traditional sites documented by Moore and Kennedy (1995). These sites (50-50-09-3555, -4022, -4137, -4138, -4139) consisted of 28 features, including petroglyphs, subsurface firepits, agricultural terracing, rock mounds, and a C-shape. McGerty et. al's testing at Sites -4138, and -4139 did not produce any significant artifacts, however, radiocarbon analysis of a charcoal sample produced a date of A.D. 1390 to 1650. This sample was recovered from the C-shape (Site 4139, Feature C) which was determined to be a prehistoric temporary habitation. This site is less than 300 m *mauka* of the current project area's southern point.

There is no doubt that the current project area was utilized as a segment of an important trail system in the early 1800s, and probably prehistorically as well. The Lahaina Pali Trail is five miles long and crosses the southern slopes of the West Maui Mountains between Olowalu and Ma`alaea. The start of this trail, now a demonstration trail as part of the Na Ala Hele Trail System, borders the current project area near the center of the *mauka* border. By the historic period in which the trail's significance as a probable prehistoric route was realized, the portion *makai* of the current trail head (*i.e.* the portion transecting the width of the current project area) was already destroyed by sugarcane cultivation. Thus, the trail starts immediately outside the project area, within the State-owned lands. A 1991 study by Tomonari-Tuggle and Tuggle documented 18 sites upon the trail, the majority of historic origin (Figure 11).

SETTLEMENT PATTERN

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-date accepted ranges gathered from palynological data. A more conservative 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 Waihe`e and Wai`ehu 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 the controversial data of occupation dates from A.D. 300 to 600 [Pearson *et al.* 1971], one of the earliest dated sites in the

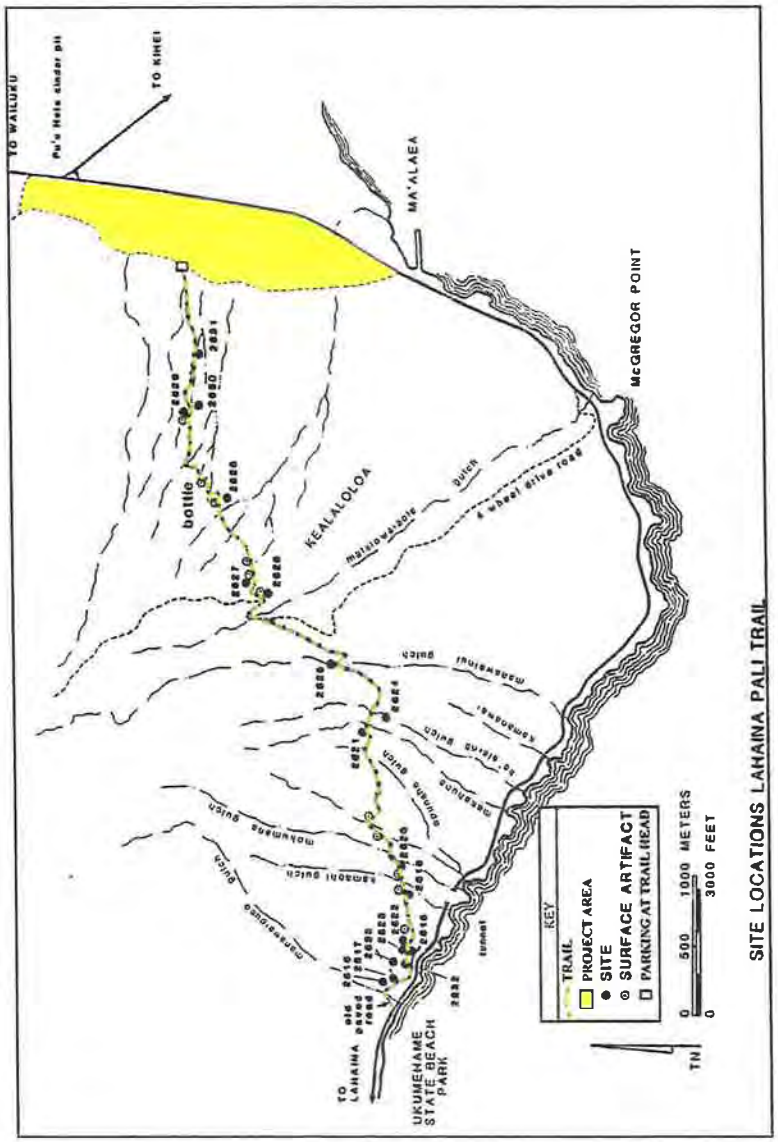

Figure 11: Project Area in Relation to Lahaina Pali Trail (Adapted from Tomonari-Tuggle and Tuggle 1991).

Hawaiian Islands. For the most part, these dates have now been diagnosed as problematic and are no longer considered valid.)

More recent research within Wailuku District indicates that Wailuku Ahupua`a was likely settled between *c.* A.D. 1100 (Kirch 1985:142) and A.D. 1200 (Fredericksen and Fredericksen 1996), whereas *ahupua`a* to the northeast have produced slightly earlier date ranges and *ahupua`a* to the southwest have later settlement dates. The earliest populations purportedly 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. 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 lands like the current project area (*c.* 40–85 meters amsl), taro was cultivated along stream courses, dryland taro was grown on *kula* lands, and populations settled there as well. In the current parcel, however, no LCA records exist that might link prehistoric agriculture to historically documented practice.

EXPECTED FINDINGS

Based on all available physiographic, archaeological, and historical evidence, the following expectations guided this study:

- Historically-significant surface features were expected, particularly those pertaining to historic period sugarcane agriculture. SCS staff conducted a brief reconnaissance (prior to AIS) which reported the presence of the large clearing mounds. The reconnaissance did not report any other historic or prehistoric surface features, however, the probability of documenting additional historic agricultural features during AIS was considered high.

- A variety of traditional Hawaiian sites have been documented at locations within 500 meters outside of all three borders of the project area. While the probability of

encountering prehistoric archaeological surface features within the project area was considered low, there remained a moderate possibility of encountering subsurface cultural layers from a prehistoric period. The latter would depend largely on the existence of a previously undisturbed matrix stratigraphically lower (*i.e.*, older) than historically tilled soils.

- The probability of discovery of historic or prehistoric unmarked burials, or marked burials, was considered low. A slightly higher, yet still low, probability existed in regards to the discovery of scattered human remains during subsurface testing. While burials have been located within the sandy matrix of the adjacent parcels *makai* of Honoapiilani Highway (*i.e.*, during construction activities at the Maui Ocean Center; see McGerty, Burgett, and Spear 1998), SHPD records contain no documented burials *mauka* of Honoapiilani Highway (including on, or within a kilometer, of the current project area). The lack of burial sites immediately *mauka* of the highway can be attributed to two main factors: (1) the types of soils found here were generally less favored in prehistoric burial practices, and (2) the lands have been subject to continual agricultural activity for nearly a century, and in some cases, longer.

METHODOLOGY

In addition to analysis, interpretation, and preparation of this document, the work described in this Archaeological Inventory Survey report consisted of archival research, fieldwork, consultation (both professional and informal— *i.e.* talks with local residents and workers). No laboratory work was necessary. Specifics on all of these research activities are described in detail below.

ARCHIVAL RESEARCH

In addition to referencing available resources at SCS, archival research was conducted at the SHPD library facility (Kapolei, HI) and on the SHPD website before, during, and after the fieldwork described in this report. Archival work consisted of general research on the history and archaeology of the project area, as well as specific searches of previous archaeological studies in and around the subject parcel. Historic land use data, maps, and narrative information were obtained from the Hawaii Bureau of Conveyances as well as the Waihona `Aina Corporation.

FIELD METHODS

Fieldwork was conducted on January 31–February 11, 2005 by Jon Wilson, B.A. and Eric Pope, B.A. under the supervision of Principal Investigator Michael F. Dega, Ph.D. All aspects of the work were photographed and archived on the SCS computer database. Likewise, all fieldnotes, sketches, planviews, profiles, and maps are archived in SCS's Honolulu office.

Fieldwork resulted in a thorough, 100% pedestrian survey project area. The pedestrian survey was conducted via hundreds of east-west transects spanning the width of the project area, starting at the northern border and ending at the southern point. The method of pedestrian survey varied in relation to terrain. In areas of shorter grass and greater surface visibility (*i.e.*, among the Site –5657 clearing mounds) fieldworkers were spaced a maximum of 15 meters apart. In areas of denser vegetation and less surface visibility (*i.e.*, within and bordering the natural drainages) the distance between transect paths was reduced to 5 meters. A total of four temporary sites were plotted on a recently drafted (January 7, 2005) surveyor's map by calculating exact position via tape, compass, and pre-existing survey markers.

SUBSURFACE TESTING

Twenty stratigraphic trenches (ST-1 through ST-20) were excavated in the project area via backhoe, exposing a total of 293.4 linear meters (962.6 feet) of subsurface matrix. A standard 60-cm wide backhoe bucket was used, and the average width of trenches was 64 cm throughout the volume. Sixteen hours of intermittent excavation was conducted over the course of two days: February 9 and 10, 2005.

Methodology regarding excavation was as follows: first, the desired location was flagged by a field archaeologist. Excavation followed with an archaeologist monitoring at all times. Post excavation, three photographs were taken (overall position of the ST within the immediate vicinity of the project area, the length of the entire trench, and a close-up of the selected profiled wall). Also, a sketch stratigraphic profile was recorded on graph paper. All measurements, including detailed soil descriptions, were recorded in fieldnotes, and potential cultural material was screened from *in situ* matrix, or backfill, and thoroughly examined. Finally, the backhoe filled-in the trench.

Three main factors played a role in trench positioning: (1) the desire to excavate at the locations of the four temporary sites found during pedestrian survey, (2) the desire to gain an understanding of subsurface stratigraphy at locations evenly distributed throughout the project area, and (3) the desire to place a higher number of trenches in an area deemed slightly likelier to

contain subsurface prehistoric cultural material (the southern "triangle" *mauka* of the Ma'alaea Small Boat Harbor). This section of the project area lies in between multiple prehistoric sites already registered within the State Index of Historic Places (SIHP). Areas roughly 200 meters *mauka* and *makai* of the project area's southern point have contained traditional features. Therefore, 40 percent (8 STs) of the total individual excavations were placed within this triangle. Trench excavation locations were recorded using tape and compass, and were documented on a project area map (see Figure 9). Trench numbers indicate the chronological order in which they were excavated. Table 1 (in SUBSURFACE STRATIGRAPHY section) details the factors involved in trench positioning.

Maximum depth of individual trench excavation ranged from 96–247 centimeters below surface (cmbs), and averaged 156 cmbs. Bedrock (and/or extremely consolidated clays with decomposing gray basalt directly overlying bedrock) was reached in 16 of the 20 units. Of the units in which bedrock was reached, the shallowest depth was 72 cmbs and the deepest was 151 cmbs; average depth bedrock was first encountered was 114 cmbs. The four STs in which bedrock was not reached were either positioned in an area of convexed surface topography (*i.e.*, the surrounding field had been tilled so that it was higher at the center where the trench was located), or where extra soil had been likely imported for increased crop productivity. Total excavated area was roughly 187.8 square meters; total excavated volume was 292.9 cubic meters.

RESULTS

This section describes: (1) the three archaeological sites documented in the project area; and, (2) the subsurface testing, sediments, and stratigraphy throughout the project area. No significant artifacts or features were exposed in any the trenches. Excavation resulted in relatively homogenous soil stratification—what might be expected in an area subjected to decades of similar agricultural practice. The only relevant change in soil stratigraphy corresponded to the (previously discussed) shift in soil type from north to south. Some matrices had inclusions of modern debris, evidencing agricultural activity (likely small-scale) as recently as 2003.

SITE DESCRIPTION: 50-50-09-5657

Site 50-50-09-5657 consists of 13 historic clearing mounds located throughout the northern twenty percent of the project area (see Figure 9). The average feature measures approximately 40 by 30 m and is piled over 11 m high (Figure 12). Mega-boulders form at least

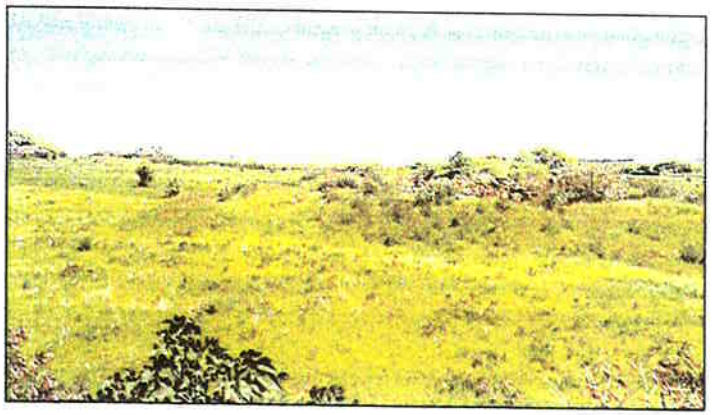

Figure 12: A Typical Boulder Mound Feature of Site -5657. View to Northeast.

the exterior layer of these features, with the average boulder measuring approximately 0.9 by 0.7 by 0.6 m. The majority of these features have a 4.0 m bulldozer blade track forming a ramp from the base to the summit (Figure 13). Heavy machinery scars are visible on the majority of surface boulders. Plastic irrigation tubing—both the ubiquitous black plastic (2 cm diameter) variety, and a larger-diameter white plastic tubing—can be found among surface crevices.

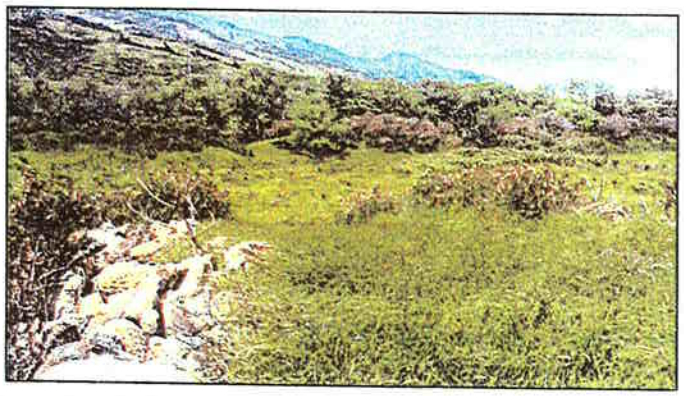

Figure 13: A Pushed "Ramp" on Top of a Site -5657 Mound Feature. Indicates Large Clearing Machinery in the Most Recent Layer of Mound Formation. View to Northwest.

Despite evidence of modern deposit on the exterior of Site -5657, the interior and/or base of these features are very likely historic. Rocky soil type, coupled with land-use records, indicates the necessity of boulder clearing prior to initial sugarcane cultivation. The even distribution of the clearing mounds within the northern portion of the project area may also point to historic agricultural technique. Whereas early 20th century clearing technology and methodology may have been limited to creating sporadic piles (to be gradually added on to throughout later decades), modern technology from the outset would have been likelier to clear the whole field level. Finally, enhancement of a 1965 aerial photo [Awai *et al.* (1967:map 30)] (Figure 14) shows the mounds in their same positions as present—a likely indicator of their locations at least a decade prior to 1965 as well.

While excavation or "testing" of Site -5657 clearing mounds could be accomplished only via highly specialized, very heavy machinery, SCS did perform representative subsurface testing in areas in between mounds (see "Subsurface Testing", below, specifically ST-15, ST-16, ST-17). Nothing of historic or prehistoric archaeological significance was found on the exterior of, or in between, the mounds. Confirmation of the historic origin of Site 50-50-09-5657 may be gained through archaeological observation of their deconstruction (see "RECOMMENDATIONS" section, below).

SITE DESCRIPTION: 50-50-09-5658

Site 50-50-09-5658 consists of dozens of likely historic sugarcane field irrigation modifications. All of these features are modifications within, or stemming out from, the two most significant perennial water courses. These drainages are the two interior drainages within the project area (see Figure 9). The northern of these drainages is approximately 730 m long, and the one directly south is approximately 460 m long. At intervals throughout their length, these two natural drainages have been widened by hand tools to increase and disperse water flow.

This widening modification involves two types: stream bank alterations (collectively recorded as Feature 1) and two narrow ditches (Feature 2 and Feature 3). Dozens of bank alterations are evidenced by shovel cuts and deposits. These modifications were not readily noticeable prior to pedestrian survey within the drainages themselves. When walking the two to four meter deep drainages, it becomes apparent that water flow was manipulated by removing parts of the soil stream bank in certain areas, and fortifying it by soil deposits in other areas. While this sort of alteration can be found within any 50 m stretch of these two drainages, only two isolated areas contain narrow channels extending from the streams. The southern interior stream has an 8 m shallow channel (Feature 2: 30 cm wide and 25 cm deep) that extends from

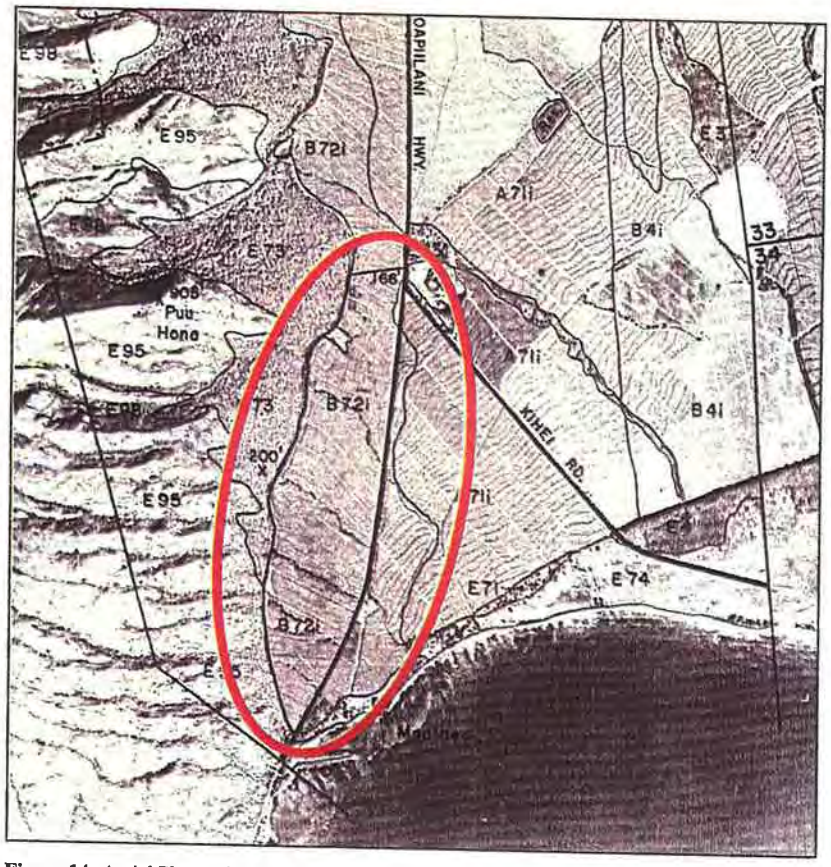

Figure 14: Aerial Photo of Project Area (Adapted from Awai *et al.* [1967:map 30]).

the southern bank to the southwest (see location of ST-11, Figure 9). The northern interior stream has an almost identical 7 m channel (Feature 3) extending eastward from its eastern bank (see location of ST-18, Figure 9).

It is likely that many more of these irrigation channels existed prior to the advent of more efficient irrigation methods (*i.e.*, imported water via tubing networks). Subsurface testing within and around these two channels produced none of the black irrigation tubing found at a depth of approximately 15 cmbs in the majority of all excavation. Surface observations also point to the historic origin of the subtle channel modifications. The channels extend outward from the stream and disappear under more recent deposits of tilled soil. This soil contains fragments of irrigation tubing (Figure 15), whereas no surface or subsurface matrix near the channel contains traces of modern disturbance. It is probable, that these two channels mark small areas that have remained undisturbed since historic use.

Nonetheless, ST-11 and ST-18, at a combined linear 19.1 m, excavated nearly 40 percent of this area. No historic material was observed, other than the depth of the soil-lined channels themselves.

SITE DESCRIPTION: 50-50-09-5659

Site 50-50-09-5659 consists of a historic dirt road that parallels the *mauka* perimeter of the entire project area (Figure 16). At some locations, the project area boundary extends several meters beyond (west of) this road—always including the entire width of the road within its boundaries. Thus, the length of the road is roughly equal to the length of the *mauka* perimeter of the project area (approximately three kilometers); the width of the road averages 4.0 m.

The Site -5659 road originates at the southern terminus of the project area and extends beyond the northern boundary where it forms a right angle with another dirt road segment that connects to Honoapiilani Highway. No less than seven other dirt road segments also connect Site -5659 to Honoapiilani Highway by transecting the width of the project area at various *mauka-makai* angles (see Figure 9). Site -5659's condition suggests that it is frequently traveled by Lahaina Pali trail hikers' vehicles. The parking area for the trail head is a turn out just two meters *mauka* of Site -5659, near the center of the project area's western border. The road is passable via car here. Other, less frequented sections of the road are only passable via four-wheel drive vehicles. One section near the southern point of the project area is washed out, and impassable.

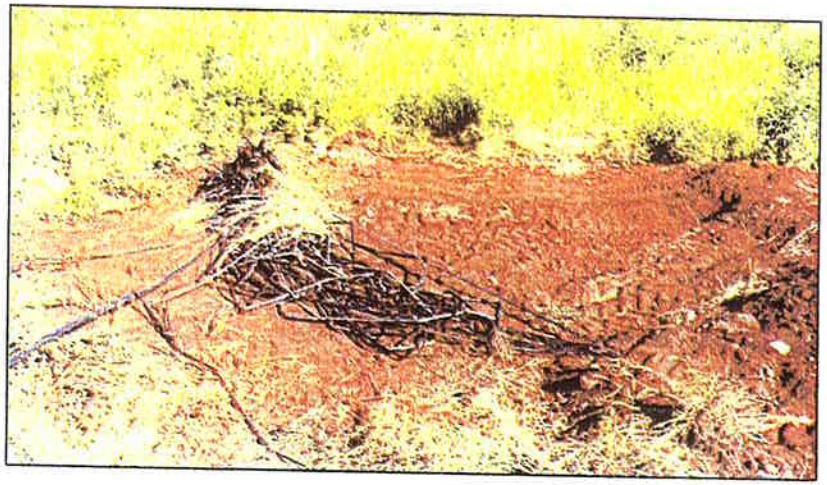

Figure 15: Example of Abundant Irrigation Tubing Found on Surface to 60 cmbs throughout Project Area.

Figure 16: A Segment of Site -5659, Historic Dirt Road.

It is highly probable that this road, along with others that no longer exist, was an original access and cane transport route within the project area. Whereas the predecessor to Honoapiilani Highway offered access along the *makai* border of the original cane fields, a similar *mauka* access (Site -5659) would have been required if the fields were to be worked at all. Awai *et al.*'s aerial photo (see Figure 14) proves that the project area's internal roads are modern (as locations have shifted since) but Site -5659 was in an identical position in 1965, and likely at least a decade earlier as well.

While modern trash was found throughout all sections of Site -5659, no cultural material of archaeological interest was found on the surface of the road. Likewise, the few stratigraphic trenches that were positioned near the road revealed no subsurface cultural material or differing soil stratigraphy (ST-1 and ST-2).

SUBSURFACE STRATIGRAPHY

As stated above, 20 stratigraphic trenches (ST-1 through ST-20) were excavated in the project area (see Table 1), exposing a total of 293.4 linear meters (962.6 ft.) of subsurface matrix. Total excavated area was roughly 187.8 square meters; total excavated volume was approximately 292.9 cubic meters. Depth of excavation ranged from 96–247 cmbs, and averaged 156cmbs. Bedrock, and/or extremely consolidated clays with decomposing gray basalt that directly overlying bedrock, was reached in 16 of the 20 units. Of the units in which bedrock was reached, the shallowest depth was 72 cmbs and the deepest was 151 cmbs; average depth bedrock was first encountered was 114 cmbs. The four STs in which bedrock was not reached were either positioned in an area of convexed surface topography (*i.e.*, the surrounding field had been tilled so that it was higher at the center where the trench was located), or where extra soil had been likely imported for increased crop productivity.

Table 1 presents a summary of all relevant quantitative and qualitative stratigraphic and cultural material observations for each trench. Following, each stratigraphic trench is documented with photograph(s) and post-excavation profile drawing. (Photos and profiles documenting trenches that are very similar to previously described trenches have not been included due to redundancy.) Indeed, the first stratigraphic trench excavated proved to be the standard for nearly every succeeding trench. Only slight variation followed, in both stratigraphy and cultural make-up.

Table 1: Summary of Stratigraphic Trenches within TMK: (2) 3-6-01:18.

Stratigraphic Trench Number	Reason for ST Position*	Trench Length (m)	Maximum Depth (in centimeters)	Average Bedrock Depth (in centimeters)	Cultual Material within ST	ST Orientation (Magnetic)
ST-1	HP*	7.0	154	116	Modern agriculture remnant	North / South
ST-2	HP	7.0	165	125	—	North / South
ST-3	HP	7.0	190	151	—	East / West
ST-4	HP	7.0	153	92	—	North / South
ST-5	HP	7.0	173	112	—	East / West
ST-6	HP, R*	7.0	242	Bedrock not reached	—	North / South
ST-7	HP	7.0	122	106	—	East / West
ST-8	HP	39.1	219	112	Modern agriculture remnant	North / South
ST-9	TS*	21.3	145	104	Modern agriculture remnant	East / West
ST-10	TS, R	17.7	142	112	Modern agriculture remnant	North / South
ST-11	TS	7.1	96	72	Historic agriculture feature (surface)	North / South
ST-12	TS	10.2	247	Bedrock not reached	Modern midden	310 degrees
ST-13	TS	13.7	141	Bedrock not reached	Modern agriculture remnant	240 degrees
ST-14	TS	32.0	153	Bedrock not reached	Modern agriculture remnant	290 degrees
ST-15	R, TS	21.4	110	103	Modern agriculture remnant	290 degrees
ST-16	R, TS	17.3	136	119	—	North / South
ST-17	R, TS	20.6	116	101	—	East / West
ST-18	TS	12.0	160	151	Historic agriculture feature (surface)	East / West
ST-19	R	17.0	125	118	—	East / West
ST-20	R	15.0	133	124	Modern agriculture remnant	North / South

Excavation Intent: (TS) = trenches tested a specific Temporary Site; (R) = trenches dispersed throughout project area for Representative testing of stratigraphy; (HP) = trenches tested the southern "triangle" of project area, which lies in an area between concentrated traditional sites, thus a slightly Higher Probability of encountering prehistoric subsurface features.

TRENCH SUMMARIES

STRATIGRAPHIC TRENCH 1 (ST-1)

ST-1 was positioned at the far southern corner of the project area (see Figure 9) with the intent to test the section of the parcel with the highest probability of containing traditional features. This probability was calculated based on the position of the "southern triangle" of the project area (Figure 17) in relation to previously documented traditional sites not far outside its *mauka* and *makai* borders. ST-1 measured 7.00 by 0.64 m (Figure 18).

Layer I was a 116 cm thick, dark reddish-brown (2.5YR 3/3) clay loam (Figure 19). The matrix was of a medium-sized, blocky ped structure, and was firm. Rock content was less than

Figure 17: Southern "Triangle" of Project Area, with Site -5659 (Road) at Right. View to Southeast.

Figure 18: ST-1, Post-excavation. View to North.

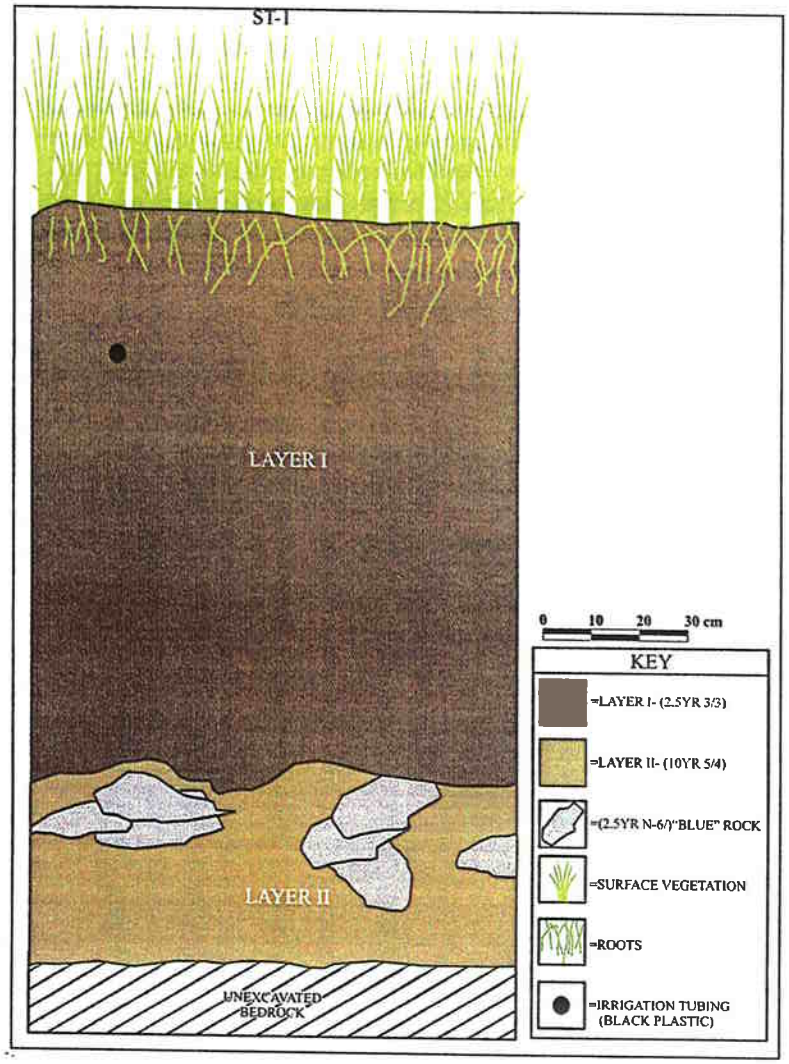

Figure 19: ST-1, Post-excavation. East Wall Stratigraphic Profile (Representative Section).

10 percent. Forty centimeter-tall grass grew dense on the surface and the fine roots extended over 15 cmbs. A 2-cm thick black plastic irrigation pipe had been severed by the backhoe bucket during excavation. The pipe was visible in the east wall profile at 27 cmbs (Figure 20). This was the only cultural material to be observed within ST-1. The base of Layer I likely indicates the subsurface extent of agricultural activity within the project area's southern triangle.

Layer II averaged 38 cm thick and was a yellowish-brown (10YR 5/4) culturally sterile matrix. The soil was a fine, granular ped structure, and was very hard. Twenty percent of Layer II was composed of "blue rock", and a harder, darker bedrock was exposed at the base. Excavation was then terminated at a maximum depth of 154 cmbs.

STRATIGRAPHIC TRENCH 2 (ST-2)

ST-2, like ST-1, intended to test the southern triangle for a cultural deposit. The stratigraphy of ST-2 was very similar to that of ST-1 in every respect, and the recorded profiles appeared nearly identical. No cultural material was observed within ST-2.

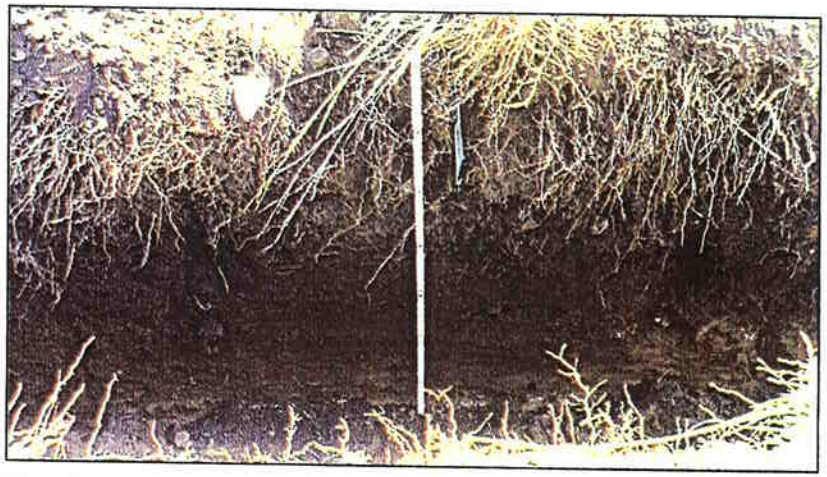

Figure 20: ST-1, Post-excavation. East Wall Photograph.

STRATIGRAPHIC TRENCH 3 (ST-3)

ST-3 was also placed in the "higher probability" zone of subsurface cultural deposit. This trench was the first that was oriented east-west, with the intent of possibly observing a change in the stratigraphy from ST-1 and ST-2. No change was observed and no cultural material was revealed.

STRATIGRAPHIC TRENCH 4 (ST-4)

ST-4 continued the trend of similar profiles (see Figure 19). However, this trench revealed bedrock at a slightly shallower depth (92 cmbs) than previously encountered. It is probable that ST-4's position near a graded, modern dirt road caused a portion of surface soil to erode downslope toward the highway. No cultural material observed.

STRATIGRAPHIC TRENCH 5 (ST-5)

ST-5 repeated the results of STs 2–4.

STRATIGRAPHIC TRENCH 6 (ST-6)

ST-6 was the first trench to be positioned farther north within the southern triangle. There remained the increased probability of encountering subsurface traditional features, however, the archaeological record shows that this chance would grow smaller as trench positions extended north. ST-6 also sought to gain a better understanding of overall project area stratigraphy outside of the southern triangle.

Excavation ceased after more than 200 cm of culturally sterile, homogenous soil. Bedrock was not encountered. This single, homogenous stratigraphic layer would also be observed in three more trenches to come. The likely explanation involves the subtle shape of the field immediately surrounding the trench. Tilling has left the surface within 75 m *mauka* and *makai* sloping down and away from the trench, which was positioned on a minor "crest." Thus, the piled soil here is not a true indicator of typical Layer I thickness. No cultural material was observed in this trench.

STRATIGRAPHIC TRENCH 7 (ST-7)

ST-7 resulted in a profile that matched the majority of previously excavated trenches. No cultural material was observed in this trench.

STRATIGRAPHIC TRENCH 8 (ST-8)

ST-8 resulted in a profile that matched the majority of previously excavated trenches. A black, plastic irrigation tube (identical to the one found in ST-1) extended from the east wall to

the west wall of the trench. This was the last trench to be positioned inside the southern triangle area—initially thought to have been a location of higher traditional site potential. However, no traditional subsurface features were observed within the southern triangle.

STRATIGRAPHIC TRENCH 9 (ST-9)

ST-9 was positioned with the intent to test an area near and within a Temporary Site. Pedestrian survey flagged the dirt road adjacent to ST-9's position as a possible historic road Figure 21). This trench revealed no difference in subsurface stratigraphy than previous excavation, nor did the trench produce any artifacts that may have been within the discard zone of historic traffic. The only cultural material observed was the usual irrigation tubing at 20 cmbs. Research unrelated to the subsurface testing later revealed this dirt road to be modern.

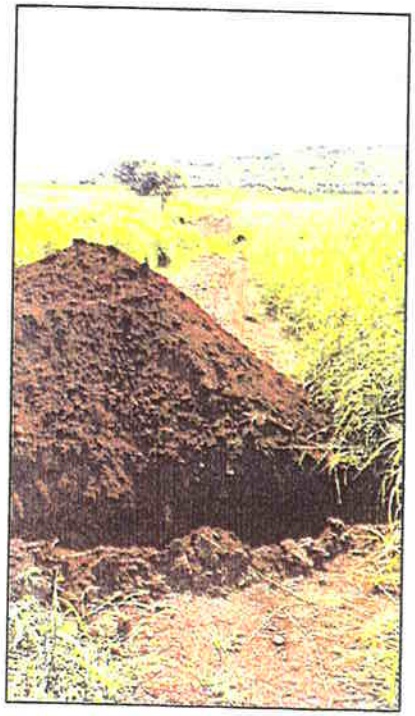

Figure 21: ST-9, Post-excavation. View to Southwest.

STRATIGRAPHIC TRENCH 10 (ST-10)

ST-10 also served to test a possible historic dirt road. The results were identical to ST-9, except that an *in situ* irrigation tube was observed at 58 cmbs. This depth increased known range of modern agricultural manipulation within the project area.

STRATIGRAPHIC TRENCH 11 (ST-11)

ST-11 was positioned to test a temporary site (ditch) that later became part of State Site 50-50-09-5658 (irrigation modification). Other than both the north and south wall profiles displaying the depth of the shallow ditch itself, no further cultural material was observed. (See ST-18 profile for a better subsurface representation of Site -5658.)

STRATIGRAPHIC TRENCH 12 (ST-12)

ST-12 also intended to test a temporary site, one which excavation proved to be modern. The "nursery" of Ficus sp. trees (Temporary Site 2) at the center of the project area was initially flagged as a temporary site. Although some surface features appeared modern (i.e., the relatively new appearance of the concrete walkways), the possibility existed that this temporary site could have been constructed at the location of historic cane workers' camp. A concrete building foundation was mapped in association with the tree rows (Figure 22).

ST-12 extended northwest from the foundation toward the concrete walkways of the nursery. A Coca Cola aluminum 12 ounce can was found *in situ* at a depth of 96 cmbs (Figure 23). The can's manufacture date was clearly decipherable: 2003. Other midden followed; a Dentine gum wrapper at 106 cmbs and a fragmented plastic fork head at 120 cmbs.

Excavation ceased after 247 cm of culturally sterile, homogenous soil. The matrix near the foundation pad had clearly been recently altered.

STRATIGRAPHIC TRENCH 13 (ST-13)

ST-13 sought to further explore what might lie beneath Temporary Site 2. The results of ST-13 also resulted in modern midden, and a single homogenous layer of "filled" soil. A 6-cm diameter, white PVC water pipe was uncovered 4 cmbs (Figure 24). The pipe ran perpendicular to the trench's length and was certainly part of a irrigation system involving the Ficus trees. The standard irrigation tubing appeared in the north wall profile at 19 cmbs. A shard of clear window glass was observed at 88 cmbs. Excavation ceased after 141 cm of culturally sterile, homogenous soil.

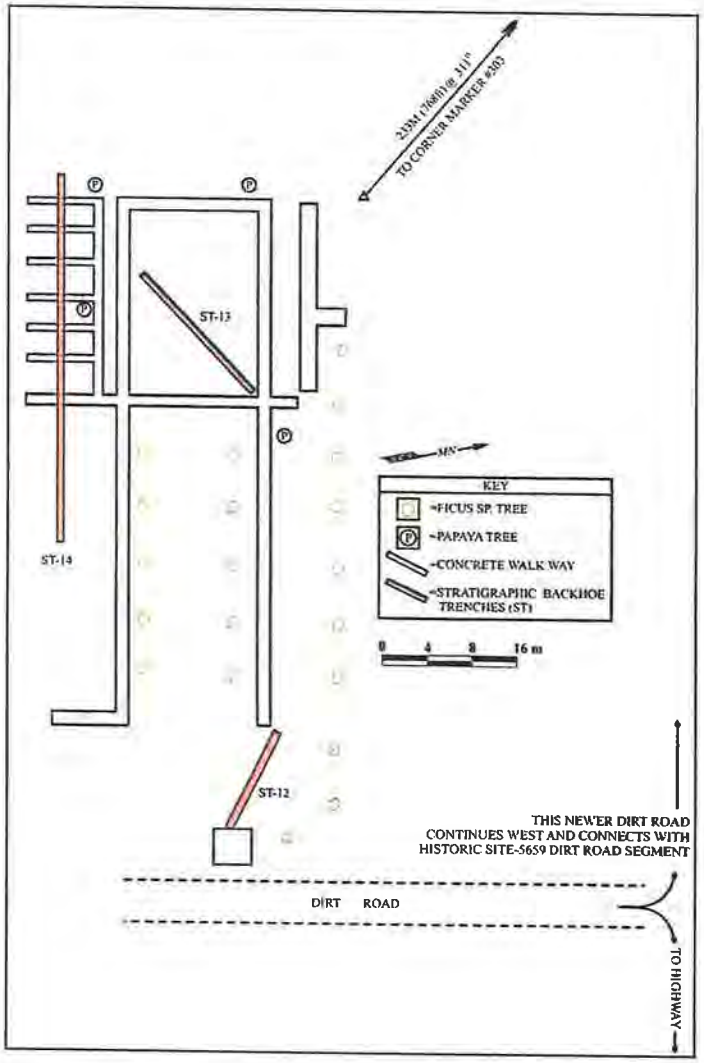

Figure 22: Plan View Map of Temporary Site 2, A Possible Modern *Ficus* sp. Nursery.

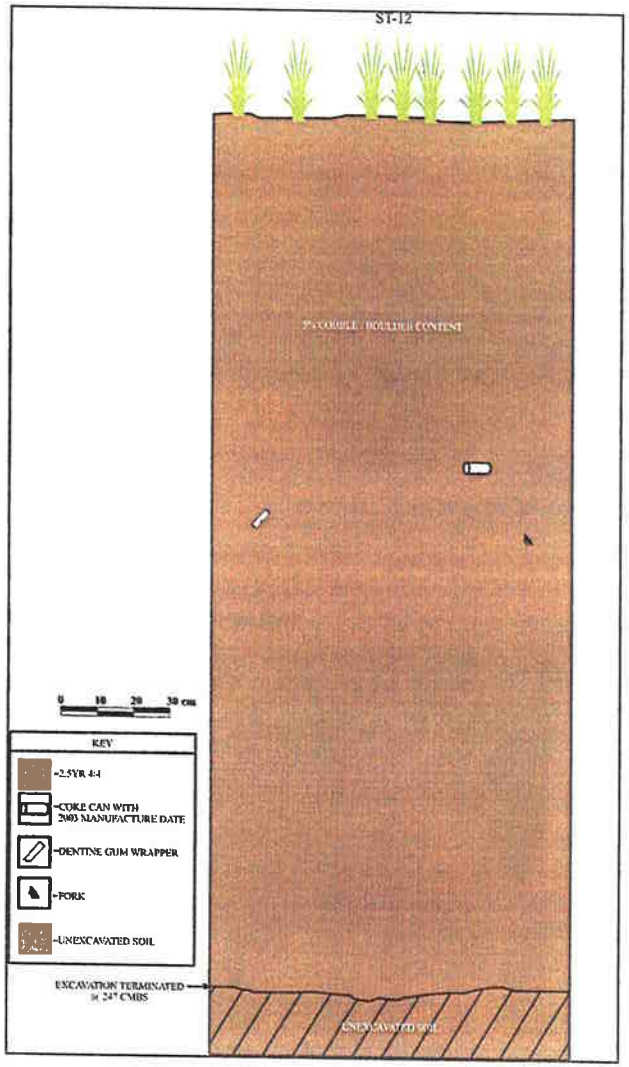

Figure 23: ST-12, Post-excavation. North Wall Stratigraphic Profile (Representative Section).

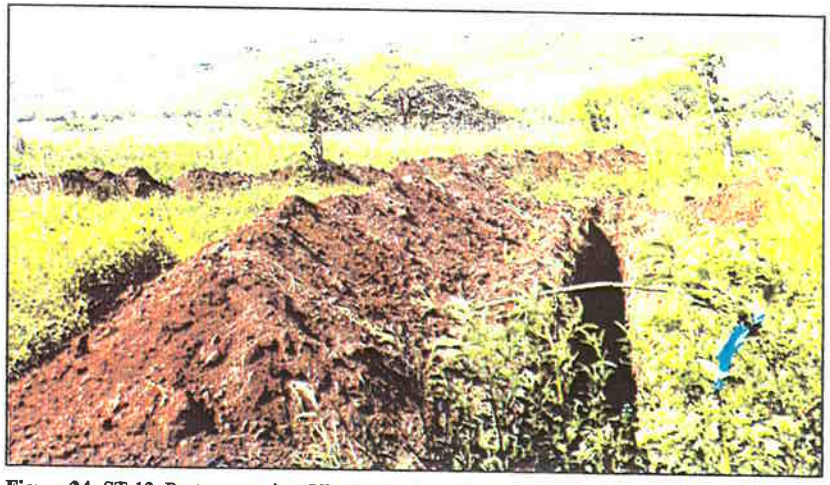

Figure 24: ST-13, Post-excavation. View to Southwest.

STRATIGRAPHIC TRENCH 14 (ST-14)

ST-14 provided another modern absolute date, albeit from a shallower provenience. A defunct electrical box (possibly used for lighting or irrigation system function) was attached to a series wires inside a PVC pipe at 39 cmbs (Figures 25 and 26). The manufacture date stamped on the pipe was "01/04/01". A section of the pipe was patched with an aluminum Coke can and adhesive. Once again, the manufacture date of the can was 2003. ST-14 also did not reach bedrock, although Layer I had a cobble content of 25 percent, higher than other areas tested previously (Figure 27).

No historic or traditional artifacts or features were observed at Temporary Site 2. Thus, the temporary designation was retracted, as this nursery is most likely a more elaborate example of the dozens of small-scale modern agriculture plots that are scattered throughout the project area. Extensive excavation did not reveal any evidence indication an older cultural layer beneath this area.

STRATIGRAPHIC TRENCH 15 (ST-15)

ST-15 sought to gain a representation of subsurface stratigraphy with the area of the (later-designated) Site -5657 clearing mounds. ST-15 was positioned in between two clearing mound features along the western border of the project area's north end (see Figure 9). Results

Figure 25: ST-14 Excavation. View to West.

Figure 26: ST-14 Excavation. View to West.

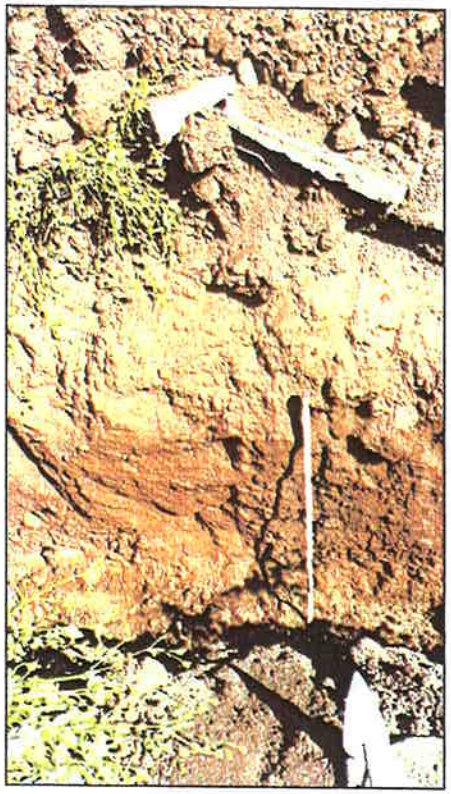

Figure 27: ST-14, Post-excavation. North Wall Photograph.

matched soil records that showed the area to have a greater rock concentration than areas to the south. ST-15 exhibited the first truly significant stratigraphy variation from the previous 14 trenches (Figures 28, 29, and 30).

Layer I was a 20 cm thick, dark brown (7.5YR 3/2) clay loam. The matrix was of a medium-sized, blocky ped structure, and was firm. It had a rock content of approximately five percent. Fifteen centimeter-tall grass grew dense on the surface and the fine roots extended 5 cmbs). No cultural material was observed within Layer I.

Figure 28: ST-15, Post-excavation. View to East.

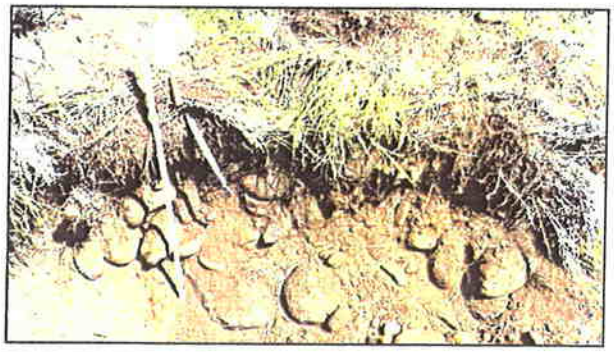

Figure 29: ST-15, Post-excavation. North Wall Photograph.

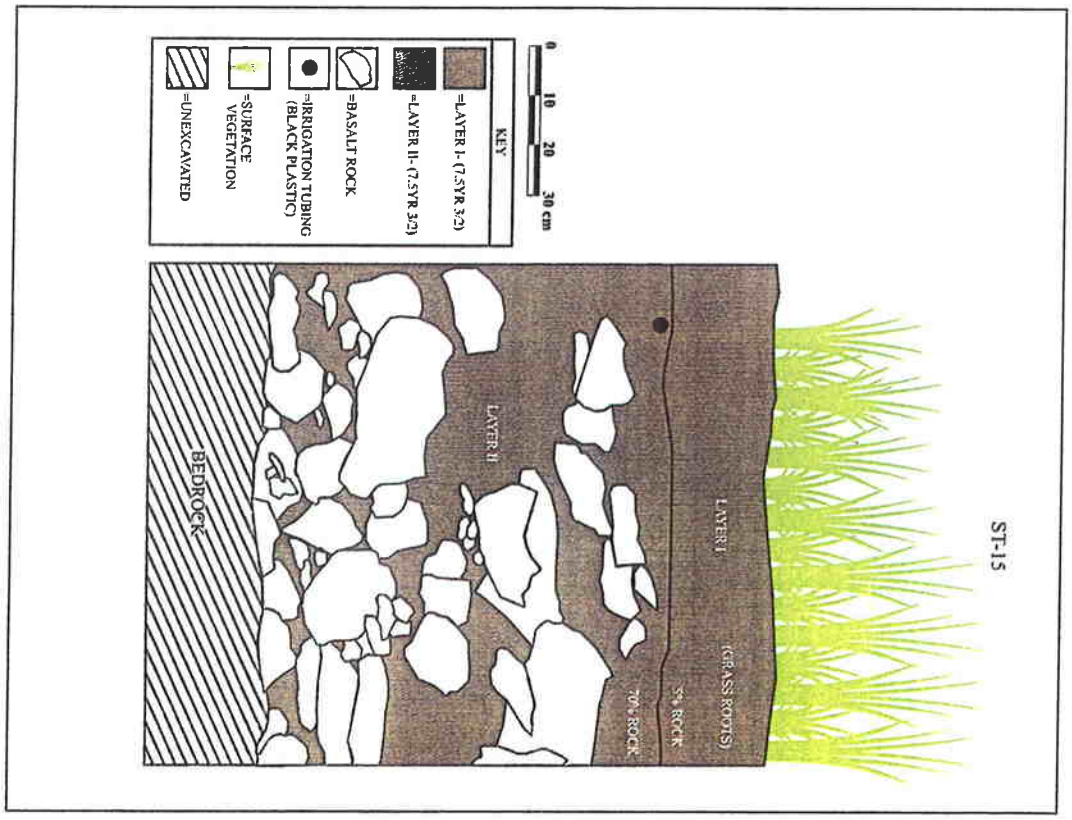

Figure 30: ST-15, Post-excavation. North Wall Stratigraphic Profile (Representative Section).

Layer II averaged 83 cm thick and was also a dark brown (7.5YR 3/2) clay loam. This matrix drastically changed in cobble and small boulder content—a concentration of 70 percent rock. Nonetheless, the common, black irrigation tubing was observed at 21 cmbs—the only cultural material. Whereas Layer I had been stripped of its rock (which then formed the piles of Site -5657), Layer II was beneath the planting soil.

STRATIGRAPHIC TRENCH 16 AND 17 (ST-16 AND ST-17)

ST-16 and ST-17 were excavated perpendicular to each other along the *makai* border of the project area's northern end (Figure 31). The trenches created an "L-shape" with the intention to expose stratigraphy both east-west and north-south in an immediate area. No notable variation was observed between ST-15, ST-16, or ST-17. The latter two trenches contained no cultural material.

STRATIGRAPHIC TRENCH 18 (ST-18)

ST-18, like ST-11, sought to expose the profile of a Site -5658 irrigation modification (shallow ditch). The trench was positioned perpendicular to ditch (which extended from a natural drainage). Aside from exposing the depth and width of the subtle feature, no change in stratigraphy was observed when compared to profiles of southern trenches (Figure 32).

Figure 31: ST-16 Excavation. View to East.

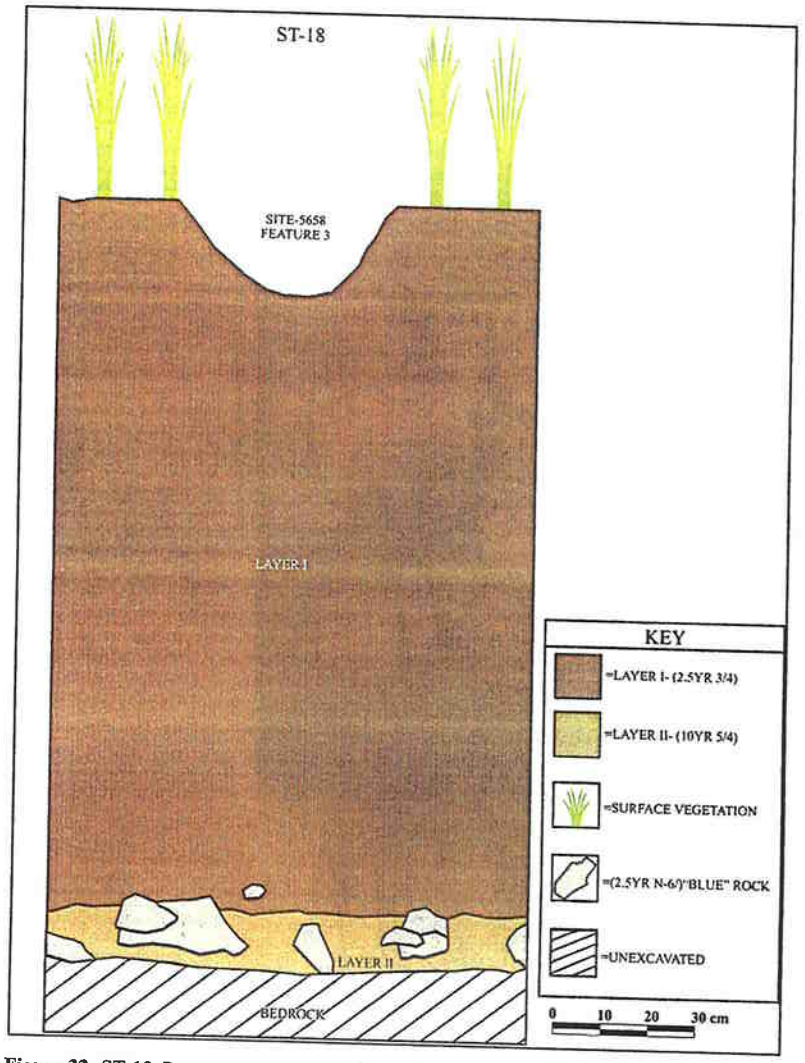

Figure 32: ST-18, Post-excavation. South Wall Stratigraphic Profile (Representative Section).

STRATIGRAPHIC TRENCH 19 (ST-19)

ST-19 sought to test a portion of the project area that remained relatively un-sampled toward the end of the subsurface testing period. Although this region was over 200 m away from any other trench, the stratigraphy was nearly identical to that of trenches to the south (Figure 33). No cultural material was observed within this trench.

STRATIGRAPHIC TRENCH 20 (ST-20)

ST-20 sought to test a portion of the project area that remained relatively un-sampled at the close of the subsurface testing period (Figure 34). Although this region was over 300 m away from any other trench, the stratigraphy was nearly identical to that of all trenches other than ST-14 through ST-17 (the higher rock concentrations). A west wall profile of ST-20 did reveal a black plastic "anti-weed" cover at 3 cmbs, along with irrigation tubing at 25 cmbs (Figure 35).

SUMMARY OF RESULTS

In summary, this Archaeological Inventory Survey resulted in the following findings:

- Three historic sites, all related to sugarcane agriculture, were identified, documented for the first time, and assigned SIHP numbers: Site 50-50-09-5657 (clearing mounds), Site 50-50-09-5658 (irrigation modifications), and Site 50-50-09-5659 (dirt road).
- A 100 percent pedestrian survey concluded that no prehistoric sites exist on the surface of the project area.
- Twently backhoe trenches (a volume of approximately 292 cubic meters) did not reveal any subsurface historic, or prehistoric, cultural material. Rather, excavation confirmed the extent, both in physical and temporal depth, of historic and modern agricultural activity within the project area.
- No burial features or human remains were observed during pedestrian survey or encountered during subsurface testing.

SIGNIFICANCE ASSESSMENTS

Three sites were documented in the project area [TMK: (2) 3-6-01:18] during Archaeological Inventory Survey. All three sites were of historic period construction and related to sugarcane agriculture. The sites have been evaluated for significance according to the criteria

Figure 33: Location of ST-19 within Central Project Area. View to East.

Figure 34: Location of ST-20 within Central Project Area. View to West.

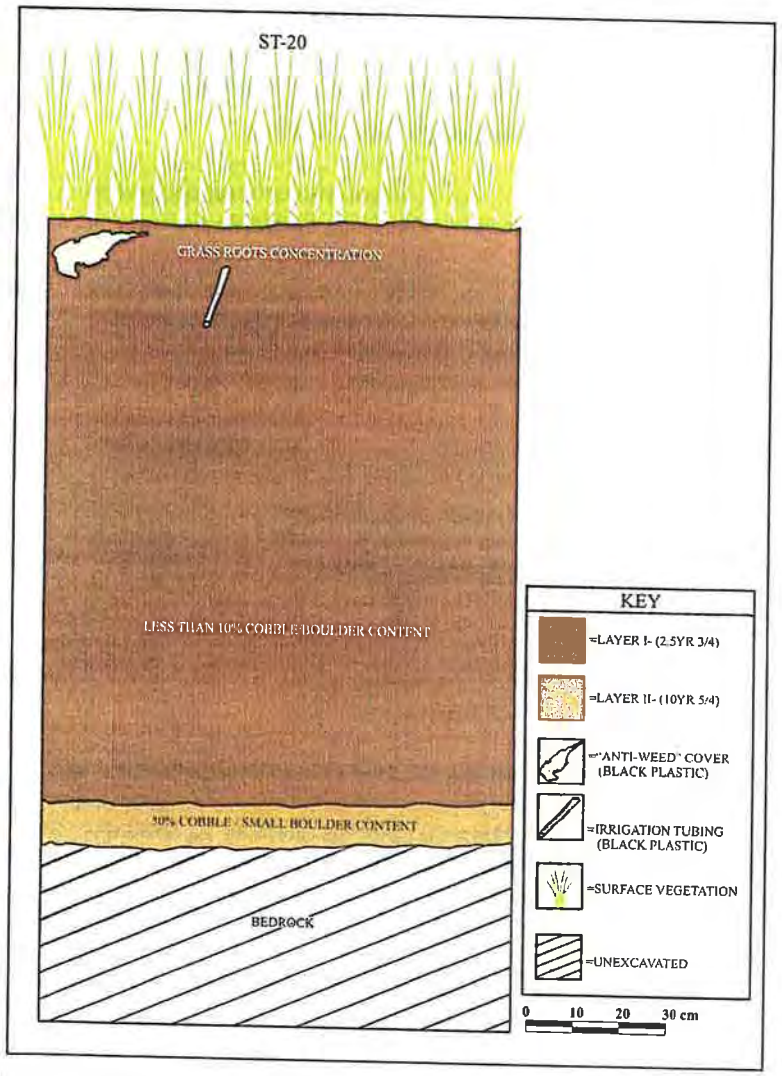

Figure 35: ST-20, Post-excavation. East Wall Stratigraphic Profile (Representative Section).

established for the State and National Register of Historic Places. Site 50-50-09-5657 (clearing mounds), Site 50-50-09-5658 (irrigation modifications), and Site 50-50-09-5659 (dirt road) are all considered significant under Criterion D. The five criteria are listed 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; probable religious structures or burials present (State of Hawai`i criteria only).

RECOMMENDATIONS

Two of the three sites recorded during Inventory Survey require no further archaeological procedures. Criterion D sites 50-50-09-5658 (irrigation modifications) and 50-50-09-5659 (dirt road) have been listed in the SIHP. Identification, testing, analysis, and classification of the sites have been fully documented within this AIS report.

Site 50-50-09-5657 (clearing mounds), also classified under Criterion D, requires one additional archaeological procedure prior to the completion of its documentation (assuming no additional cultural material is located). Discussion between SCS and Dr. M. Kirkendall concluded that the internal construction of Site -5657's thirteen features is still unknown. It is possible that traditional Hawaiian features may be contained within these thirteen large piles of boulders.

Previous archaeological observations during construction activity on Maui have documented prehistoric architecture and artifacts under historic agriculture deposits. As sugarcane lands were originally cleared, it is possible that farmers deposited rubble on top of the nearest pre-existing "rock pile". As locally gathered rock was a staple for traditional Hawaiian

architecture, the pre-existing "rock piles" may have been a variety unidentified traditional features—constructions ranging from simple temporary shelters to elaborate religious platforms.

Due to this possibility, SCS recommends that an archaeologist observes—and directs the method of—the leveling of a sample portion of Site -5657's thirteen mound features. Those responsible for scheduling initial earth-moving procedures at the Ma`alaea Mauka project area will be required to coordinate the presence of an archaeological observer during Site -5657 deconstruction. An archaeologist must be on site prior to any earth-moving activity within the northern 20 percent of the project area, that is, any operation of heavy machinery that occurs within a 15.0 meter (50 feet) radius of a Site -5657 mound.

Deconstruction should incorporate machinery that slowly removes Site -5657 surface boulders in stages, rather than pushes any intact section of mound to a different location. The exact number of mound deconstructions to be witnessed by the archaeologist on site may be determined based on the contents of the first four mounds selected for leveling. Should additional historic and/or prehistoric cultural material be observed during Site -5657 leveling, archaeological procedures will follow SHPD's guidelines for an inadvertent discovery.

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APPENDIX B-1.

Letter from State Historic Preservation Division (SHPD) Accepting Archaeological Inventory Survey

LINDA LINGLE
GOVERNOR OF HAWAII

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

STATE HISTORIC PRESERVATION DIVISION
601 KAMOKILA BOULEVARD, ROOM 555
KAPOLEI, HAWAII 96707

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

June 29, 2005

Michael Dega, Ph.D.
Scientific Consultant Services
711 Kapiolani Blvd. Suite 975
Honolulu, HI 96813

LOG NO: 2005.1191
DOC NO: 0506MK18

Dear Dr. Dega:

SUBJECT: Historic Preservation Review - 6E-42 - Archaeological Inventory Survey 259.903 Acres in Ma'alaea, prepared for AFK Development Ukumehame, and Waikapu Ahupua'a, Wailuku District, Maui Island TMK (2) 3-6-01:18

Thank you for the opportunity to review this report which our staff received on April 18, 2005 (Wilson and Dega 2005, *An Archaeological Inventory Survey Report on 259.903 Acres in Ma'alaea, Ukumehame and Waikapu Ahupua'a, Wailuku District, Maui Island, Hawai'i [TMK (2) 3-6-01:18]*)...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 project area has been utilized for commercial agriculture for probably over a century, and the report suggests that Henry Cornwell was in possession of the land in 1875, and subsequently sold it to Claus Spreckels. By the turn of the 19th century to the 20th, the parcel was under sugarcane production. The parcel was more recently used for commercial pineapple production followed by smaller scale truck garden plots.

The survey has adequately covered the project area documenting three historic properties. All three sites related to the historic use of the property for agriculture. SIHP 50-50-09-5657 consists of 13 "clearing mound", the ubiquitous piles of large boulders and cobbles scattered throughout the agriculturally used areas on Maui. The mounds on the subject parcel are confined to the area of the subject parcel comprised of the Pulehu Series Soil. SIHP 50-50-09-5658 consists of historic field irrigation modifications associated with sugarcane production. The features are modified drainages radiating from the perennial water courses. The drainages show alteration by hand tools. Finally, SIHP 50-50-09-5659 is an historic dirt road paralleling the *mauka* project area boundary. It is currently used by vehicles approaching the Ma'alaea terminus of the Lahaina Pali Trail. The trail ends at the project boundary, although it is assumed that the terminus formerly crossed or skirted portions of the subject parcel. Subsurface testing

(twenty backhoe trenches) were negative for evidence of cultural deposits. The stratigraphy within the trenches exhibited comparability within the two soil series evident on the parcel (Pulehu Series and Ewa Series). The site descriptions are acceptable.

We concur that all three sites are significant under Criterion "D" and have the potential to yield information important to understanding the history of the region. We also concur that the SIHP -5658 and -5659 have yielded adequate information and no further archaeological work is necessary. We also agree that SIHP -5657, the clearing mounds, warrant some additional work. It has been suggested that the mounds may contain historic/cultural materials that were placed there during initial clearance, or that the mounds utilized pre-existing "built" areas in the environment. As such, we concur with the mitigation recommendations detailed below.

We agree that some monitoring on the parcel is appropriate, especially in the vicinity of the rock mounds/piles. We also agree that an initial "sampling" of this area during initial earthmoving, will allow a better assessment of the probability for historic properties being identified beneath the piles. We concur with the general recommendation that during deconstruction, an archaeological monitor will be present. Based on the initial findings, and in consultation with the Maui SHPD office, a determination will be made regarding how many of the mounds merit such a monitoring program. We also believe that because of the proximity of the project area to the Ma'alaea coastal zone, any submitted monitoring plan should include a pre-consultation meeting between the construction crew and the SHPD office to alert the workers of the importance of halting work during construction in the event of inadvertent finds. This meeting will facilitate a relationship between our office, the construction crew, and your archaeologist, to ensure no historic properties are inadvertently impacted. We recog e that this is a relatively unusual approach, but given the paucity of findings in an area in which we know prehistoric activity would have occurred merits a special approach.

We find this report to be acceptable. We will await a monitoring plan detailing the innovative measures suggested in your report and above. 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 Fotey, Director, Dept of Planning, 250 S. High Street, Wailuku, HI 96793
Maui Cultural Res Commission, Dept. of Plng, 250 S. High Street, Wailuku, HI 96793

APPENDIX B-2.

Archaeological Monitoring Plan

SCS Project Number 948-AMP-1

AN ARCHAEOLOGICAL MONITORING PLAN FOR 259.903 ACRES IN MĀ`ALAEA, UKUMEHAME, AND WAIKAPŪ AHUPUA`A, WAILUKU DISTRICT, MAUI ISLAND, HAWAI`I [TMK (2) 3-6-001:018]

Prepared by:
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and
Michael F. Dega, Ph.D.
April 2008

Prepared For:
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711 Kapiolani Blvd. Suite 975 Honolulu, Hawai`i 96813

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INTRODUCTION

Scientific Consultant Services (SCS), Inc. has prepared this Archaeological Monitoring Plan (AMP) in advance of subsurface construction activities on a 259.903 acre lot in Mā`alaea, Ukumehame and Waikapū Ahupua`a, Wailuku District, Maui Island, Hawai`i [TMK: (2) 3-6-001:018] (Figures 1 and 2). An Archaeological Inventory Survey was conducted on this parcel (Wilson and Dega 2005), in which three historic archaeological sites were documented and catalogued under SIHP numbers 50-50-09-5657 (clearing mounds), -5658 (irrigation modifications) and -5659 (dirt road). Subsurface testing yielded negative results. The project area being former industrial farm land, Archaeological Monitoring was recommended for grubbing and grading activities on the property that extend beneath the plow-zone, as well as for the removal of Site -5657, where significant cultural deposits, including human remains, may be present within the lower levels of the rock mounds.

The present Monitoring program will ensure that any human remains found during this work are identified and appropriately mitigated, as deemed appropriate and lawful under Hawai`i State Law for the Inadertant Discovery of Human Remains (pursuent to 13-300-40a, b, c, HAR). Archaeological Monitoring will also ensure that significant cultural resources identified in the project area are adequately sampled, documented, and evaluated for their Historical significance.

This AMP will require the approval of the State Historic Preservation Division prior to the commencement of any ground altering activities. The following text provides more detailed information on the reasons for monitoring, previous archaeology both within and near the current project area, potential site types to be encountered during excavation, monitoring conventions and methodology for both field and laboratory work, as well as discusses curation and reporting.

ENVIRONMENTAL SETTING

PROJECT AREA DESCRIPTION AND LOCATION

Maui's Wailuku District encompasses an area from the eastern half of the West Maui Mountains, north to Kahului Bay, south to Mā`alaea Bay, and includes the entire Kahului Isthmus. Near the southwestern corner of Wailuku District, the boundary separating Ukumehame Ahupua`a and Waikapū Ahupua`a runs from *mauka* to *makai* (roughly west to east). At an elevation of approximately 55 meters (180 feet) the *ahupua`a* boundary sharply angles south toward Mā`alaea Bay. This sharp angle between the two *ahupua`a* demarcates the northeastern boundary of the current project area. The *ahupua`a* boundary then divides the project area as it

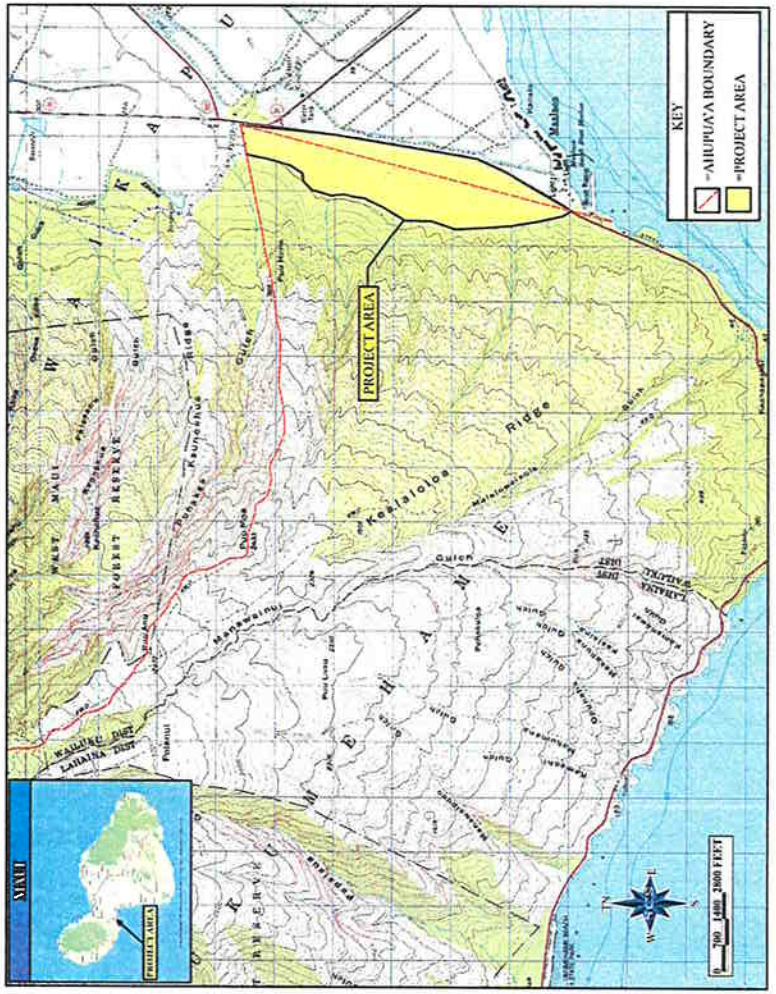

Figure 1: USGS Mā`alaea Quadrangle Showing the Project Area.

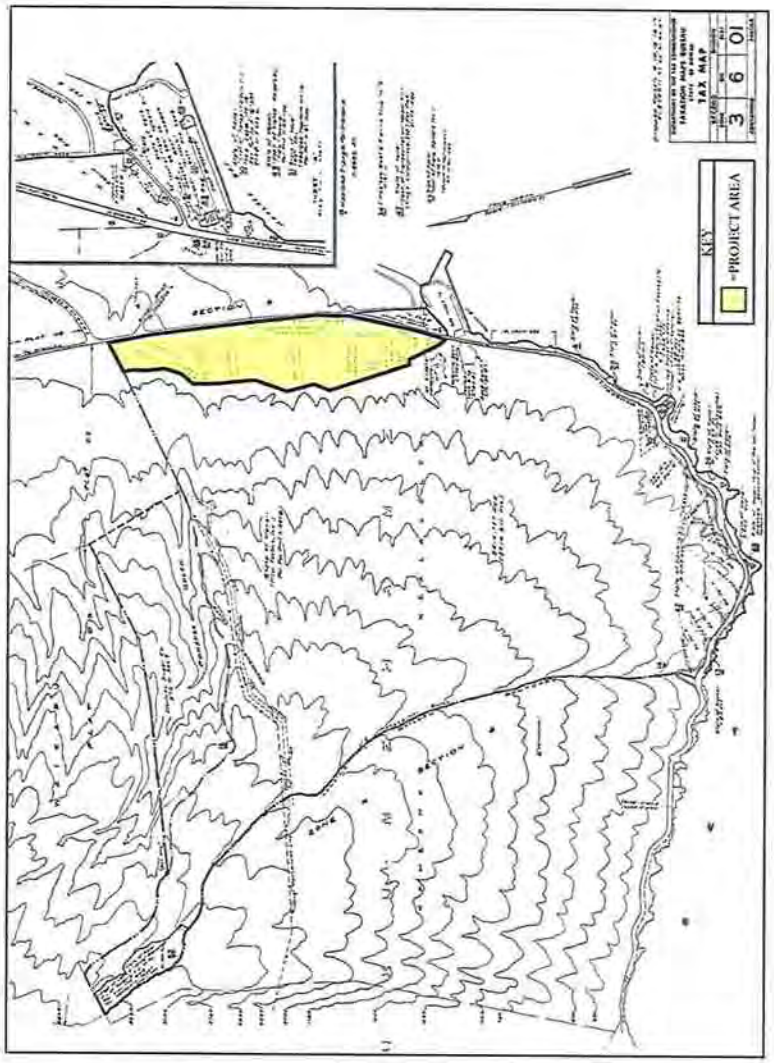

Figure 2: Tax Map Key [TMK] Showing the Project Area.

continues south, leaving roughly 65 percent of the parcel in Ukumehame Ahupua`a, and 35 percent of the parcel in Waikapū Ahupua`a.

The "Mā`alaea Mauka" project area consists of one contiguous 259.903-acre parcel that uses the Hono`api`ilani Highway as its *makai* border. The three-sided project area's southern terminus is a triangular point *mauka* of Mā`alaea Small Boat Harbor. The northern boundary line extends *mauka* from a point 183 m (600 feet) south of the Kuihelani Highway's intersection with Hono`api`ilani Highway. The long, narrow project area runs 2.7 kilometers (1.7 miles) along the Hono`api`ilani Highway, and at it widest is 579 m (1900 feet).

PROJECT AREA LANDFORM

The sharp transition from valley floor to mountain slope is the most distinct visual feature of the nearby terrain. This dramatic elevation increase, however, occurs just northwestof the relatively flat project area. With the southeastern end of the project area having an elevation of 12 m (40 feet), and the northwestern perimeter high point of 61 m (200 feet), the maximum elevation difference throughout the project area is only 49 m (160 feet). The average elevation gained from walking the width of the project area (about half a kilometer) is only 24m (80 feet). The average elevation gained from climbing the next half kilometer beyond the project area's northwest border is 146 m (480 feet).

The gently-sloping terrain of the project area has been made more flatly uniform through decades of agricultural activity. Few distinct naturally-occurring landmarks remain within the project area's topography. Certain points within the project area afford an uninterrupted view of its entire expanse. The four perennial east-west running drainages that cross the project area remained dry at the time of survey. It is likely that these narrow water courses that span the parcel's width only flow in times of heavy rains. Two of the four drainages are fairly shallow and narrow, and do not originate much farther upslope than the base of the mountains. The two more significant drainages appear on the USGS topographical map, and are currently diverted under Hono`api`ilani Highway, eventually emptying into Mā`alaea Bay. Of these two, the southern drainage originates at an elevation of 335 m (1100 feet), and the northern drainage originates near Pu`u Moe at 640 m (2100 feet). However, at a maximum width of less than four meters, it is likely that even these two more significant water sources served to irrigate the project area only in times of heavy rainfall.

CLIMATE AND VEGETATION

The project area receives 25 to 38 centimeters (10 to 15 inches) of rainfall annually (Armstrong 1983). This area is much drier than higher elevations to the west that receive as much as twenty times the level of precipitation. Air temperatures are consistently slightly warmer here than the Maui seasonal high and low averages, mostly due to the lower, coastal elevation. At the time of survey, project area vegetation consisted of a mix of introduced grasses and trees, few native species, and a variety of small garden plots with a mix of planted crop species. The only areas not covered by vegetation were the multiple dirt road segments that transect the property. Introduced grasses, ranging from 0.5 to 1.0 m tall, covered roughly 85 percent of the project area. Few *kiawe* trees (*Prosopis pallida*) were found outside of drainage perimeters, but along and within the drainages these introduced trees were abundant. *Kiawe* also lines the *mauka* side of the *mauka* perimeter road, and grows very dense within the State-owned lands at the base of the mountains. Overall, few trees exist within the former agriculture fields. Recent *koa haole* (*Leucaena leucocephala*) trees have grown to a height of no more than 1.5 m within the fields, but grow to a height of over 3.0 m along the *mauka* perimeter roads. Other species include lantana (*Lantana camarara*), sparse sisal (*Agave sisalana*), and the native *`ilima* (*Sida* sp.).

Over twenty different patches of recently abandoned garden crops are scattered throughout the southern 80 percent of the project area. None are larger than one acre, and none of these patches exist within the rockier northern soils. Two local informants spoke of "renting" land for small-scale farming within the "past couple of years," be it through a formal contract with the previous land owner or not. Rows of banana trees occur in at least five different areas. One banana patch also includes gourds; papaya trees are interspersed throughout. At the center of the property, surface plastic irrigation pipes appear to be recently constructed and lead to a square sod field. The most elaborate small-scale farming remnant is what appears to be a *Ficus* sp. nursery at the center of the project area's northern half. Here, three rows of identically-sized trees are paralleled by what appear to be recently constructed concrete walkways and irrigation piping.

SOILS

As the project area extends north, its soils contain a greater concentration of basalt cobble and boulder. According to Foote *et al.* (1972:101), soils in the project area fall into mainly two categories: the Ewa Series (80 percent of the project area) and the Pulehu Series (most of the northern 20 percent). The Ewa Series consists of well-drained soils occurring on alluvial fans within Oahu and Maui. They are derived from igneous rock, moderately sloping, and best suited

for sugar cane, truck crops, and pasture. The southern third of the project area consists entirely of Ewa Silty Clay (EsB), ideal for sugarcane. Bordering EsB soil to the north is a large contiguous section of Ewa Cobbly Silty Clay (EtB), covering roughly 50 percent of the project area. Foote *et al.* note that the removal of a surface layer of cobble renders this soil equally suitable to sugarcane cultivation as the less rocky soil to the south (1972:29–30, 115–116).

Roughly 20 percent of the project area, entirely concentrated at the northern end, consists of a Pulehu Series soil—specifically, Pulehu Cobbly Clay Loam (PtB). This soil is very similar to the Ewa Series in almost every aspect except its greater surface rock concentration. Thus, a direct correlation can be seen between the location of PtB soil and the 13 large, agricultural clearing mounds (State Site 50-50-09-5657) concentrated in the northern end of the project area. In an effort to create sugarcane fields equally productive as lands to the south, decades of tilling have deposited these enormous mounds of concentrated boulders.

REASON FOR MONITORING

Archaeological Monitoring is being conducted on this parcel due to the potential for discovery of significant cultural deposits, including human remains, in subsurface contexts below the plow-zone and within the lower levels of the rock mounds identified during Inventory Survey (Site 50-50-09-5657). There is a potential for discovery of buried cultural deposits throughout the project area. The subsurface contexts, though heavily disturbed by industrial farming practices, may contain *in situ* deposits below the plow line. While the mounds documented under Site -5657 were identified as clearing mounds associated with the Historic Period (Wilson and Dega 2005), there is also a chance that these mounds were traditional Hawaiian structures that were modified as clearing mounds in Historic times. Removal of these features from their present context may yield undocumented cultural deposits, especially in the lower levels of the features.

In preparation of the Environmental Impact Statement for this project, public testimony expressed concerns relevant to undocumented cultural deposits that may be revealed during the subsurface portion of the planned project. Archaeological Monitoring will mitigate the damage to any such deposits, and will ensure the appropriate and legal handling of such deposits, if any are identified.

TRADITIONAL AND HISTORIC SETTING

PRE-CONTACT TO EARLY HISTORIC ERA

Wailuku District, is frequently mentioned in historical texts and oral tradition as being politically, ceremonially, and geographically important 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 `*f*ao Valley and lower Wailuku. The importance of the district is reflected by the relatively large number of *heiau* that were reportedly present in pre-Contact times. Oral tradition accounts surrounding these *heiau* provide examples of how religion tied into political power in the traditional Wailuku setting. Indeed, the period immediately preceding contact with the Europeans was one of considerable upheaval and conflict. *Wailuku*, meaning 'water of destruction,' succinctly describes the area in the late 1700s. Political power emanating from Moloka`i was an active element during the mid-eighteenth century. The resulting battle at Kalae`ili`ili (A.D. 1765) led to the expulsion of Keeaumoku and the Moloka`i *ali`i* and the beginning of Kahekili's reign (Kamakau 1992). Kahekili successfully defended his capital in Wailuku throughout the 1770s, until his defeat at the hands of Kamehameha's forces.

Closer to the current project area, in the southwest corner of Wailuku District, prehistoric settlement was not as dense as concentrations to the north. Climate had much to do with that trend, as the Mā`alaea area is a more arid environment than the rain-soaked fields to the north. According to Tomonari-Tuggle and Tuggle (1991), the majority of the pre-Contact population was located southwest of the project area, near what is now Ukumehame Beach State Park. Settlement was also probable north of Kealia Pond in Waikapū Ahupua`a. Handy and Handy report that before the historic sugarcane plantations in this region, water from Waikapū Stream ". . . was diverted into lo`i and its overflow was dissipated on the dry plains of the broad isthmus between West and East Maui" (1972:496).

Wailuku District would see drastic change after Captain James Cook's 1778 arrival in Kahului Bay. The reign of Kamehameha I was intertwined with the increasing presence of Europeans within the Hawaiian Islands. By 1821, American missionaries had established a foothold in Lahaina and first arrived in Wailuku a year later. The religion of the Hawaiian people began to wane under the influence of Christianity. Fredericksen and Fredericksen (2002:4) point to a girls' seminary (Central Female Boarding School), established in Wailuku in 1836, as one of the initial steps in the conversion of Hawaiian language and customs in Maui.

THE MĀHELE

In 1848, commissioners of the Mahele 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 Mahele 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 into 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. As a result, 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 `ainana*(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, commoners would often only make claims if they had first been made aware of the foreign procedures (*kuleana* lands, or 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 house lots in Honolulu, Hilo, and Lahaina were required to pay commutation to the government before obtaining a Royal Patent for their awards (Chinen 1961:16).

During the Māhele, Wailuku District was declared Crown Land and numerous Land Commission Awards, approximately 180, were awarded within Wailuku Ahupua`a alone (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 sugar. 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 Mahele, there were no land claims within the current project area. This fact may be attributed to the sparse pre-1848 Hawaiian population within the parcel, a result of settlement conditions within these *ahupua`a* favoring the coastal area.

THE LATE HISTORIC PERIOD AND GROWTH OF THE SUGAR INDUSTRY

Another influence that brought change to Maui was foreign commercialism. Two Chinese brothers, Ahung and Atai, of Honolulu's Hungtai Company arrived in Wailuku to explore the possibility of setting up one of its earliest sugar mills in 1828. Atai soon created a plant that processed sugar cane cultivated by Hawaiians, named the Hungtai Sugar Works (Dorrance and Morgan 2000:15–16). Ahung later joined Kamehameha III's sugar producing enterprise, although by 1844 both operations had ceased. The Wailuku Sugar Company was the next to follow, in 1862, and would expand sugar production over the next 126 years of its existence—4,450 acres by 1939, still more than three decades before its maximum production levels.

As it expanded its territory, the Wailuku Sugar Company first appeared on maps of the project area in the in the 1920s (Bureau of Conveyances, Grant 9794), although their acquisition of the project area land may have been as early as the turn of the century (Kennedy and Trimble 1992:4). Successive grants (Grant 10294 through to Grant S-13975) would follow in decades following and fully encompass the Ukumehame Ahupua`a side of the project area in Wailuku Sugar land. Kennedy and Trimble (1992:4) summarize the history of the Waikapū Ahupua`a (*makai*) portion of the project area by detailing its acquisition from the state government on November 18, 1875 by Henry Cornwell (Grant 3152). Cornwell subsequently sold to Claus Spreckels, and by the turn of the century the entire project area was under sugarcane cultivation.

Wailuku Sugar Company ended production in 1988, having averaged over 30,000 tons of sugar produced annually at its pinnacle in the 1970s (Dorrance and Morgan 2000:66). Owner C. Brewer & Company, Ltd. shut down sugar cultivation on the project area, which was then used almost entirely for pineapple cultivation starting no later than 1992 (Kennedy and Trimble 1992:1). The lands were under pineapple for at least the next three years (Tomonari-Tuggle 1995:11)—probably slightly longer—before transitioning to smaller-scale "garden" plots.

PREVIOUS ARCHAEOLOGY

Seven studies on file within the State Historic Preservation Division (SHPD)- Kapolei archives summarize the most relevant previous archaeology within the vicinity of the current project area (Figure 3).

Wilson and Dega conducted Archaeological Inventory Survey of the present study parcel in 2005. Three historic sites, three historic archaeological sites were documented and catalogued under SIHP numbers 50-50-09-5657 (clearing mounds), -5658 (irrigation modifications) and -5659 (dirt road). Subsurface testing yielded negative results.

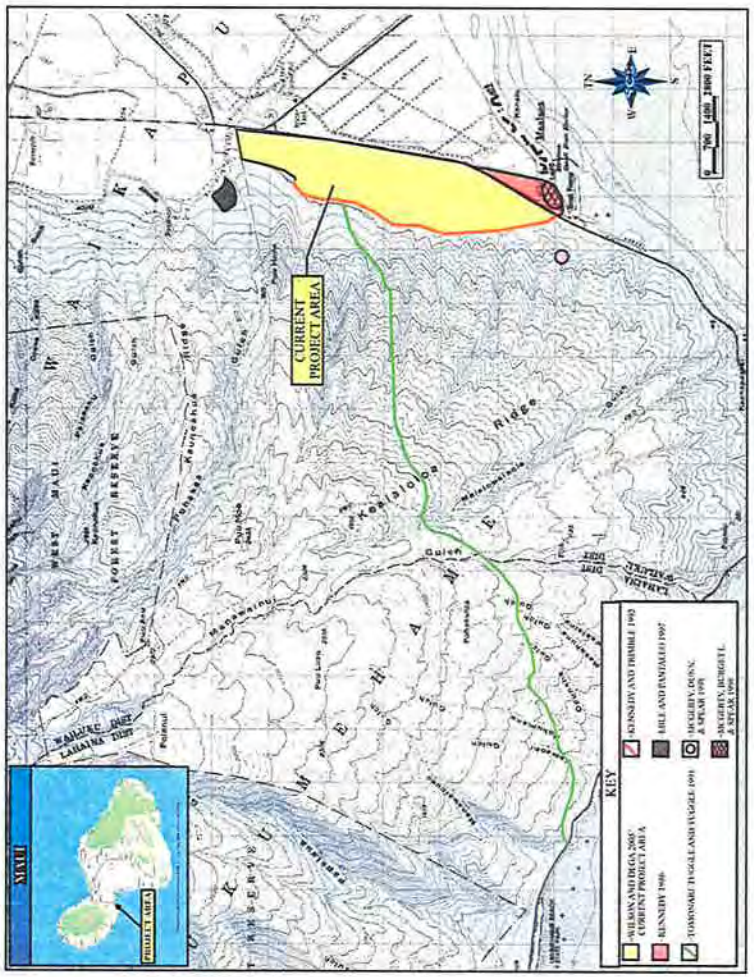

Figure 3: USGS Mā`alaea Quadrangle Showing the Previous Archaeology in the Vicinity of the Present Study Parcel.

Kennedy and Trimble (1992) surveyed an area that overlaps State Site 50-50-09-5659 (historic dirt road), first recorded in the present study. While Kennedy and Trimble also note the lack of archaeological features in their project area due to the obvious history of intense agriculture, their 1992 report does not consider the road upon which their survey takes place to be a potential historic agricultural feature (as discussed below under "RESULTS"). The project area detailed in their study is no more than 5 meters wider than the dirt road itself, and concludes that "No artifacts, midden, or structures of historic or prehistoric significance were identified on the subject property" (1992:11).

Seven historic sites, consisting of 23 features, were documented in a 60-acre parcel just north of the present study parcel (Dagher and Dega 2007: *in review*). These features included walls, enclosures, C-shape, and modified outcrops. All these sites were assessed as significant under Criterion D, and Archaeological Monitoring was recommended for the project area.

An earlier Kennedy report (1986) entitled *Letter Report: Walk-Through Examination of the Proposed Mā`alaea Triangle, Maui (TMK: 3-6-01:1)* also concluded with negative results. This project area is located on the *makai* side of Hono`api`ilani Highway and extends to the coastline. This was the first archaeological study performed on this parcel and Kennedy does mention (1986:2) nearby sites that are detailed in later studies.

Monitoring within a smaller section of the same project area described by Kennedy (1986) resulted in a single site—a previously disturbed historic burial: State Site 50-50-09-4480 (McGerty, Burgett, and Spear 1998). McGerty *et. al*'s report, entitled *Draft: Monitoring Report on Earth Moving and Construction Excavations, Maui Ocean Center Site, Maui, Hawaii, (TMK: 3-6-01:001 and 019)* describes a pearl shell button found with the burial. The location of Site -4480 is of interest to the current study as its position is approximately 200 m *makai* of the current project area's southern corner. As subsequent subsurface testing would prove, however, the sandy matrix McGerty *et. al* experienced in the Maui Ocean Center monitoring contrasted the reddish clay of the current project area, rendering the likelihood of encountering burials much less. Nonetheless, the McGerty *et. al* (1998) study also mentions two more burials found not far to the north from Site -4480. While these (Sites -3553 and -3554) are even less spatially related to the current project area, their presence will later call for increased testing in the southern portion of the current project area (closest to the sandy coastal matrices).

McGerty, Dunn, and Spear (1998) conducted Data Recovery in an area of five traditional sites documented by Moore and Kennedy (1995). These sites (50-50-09-3555, -4022, -4137, -

4138, -4139) consisted of 28 features, including petroglyphs, subsurface fire pits, agricultural terracing, rock mounds, and a C-shape. McGerty et. al's testing at Sites -4138, and -4139 did not produce any significant artifacts, however, radiocarbon analysis of a charcoal sample produced a date of A.D. 1390 to 1650. This sample was recovered from the C-shape (Site 4139, Feature C) which was determined to be a prehistoric temporary habitation. This site is less than 300 m *mauka* of the current project area's southern point.

There is no doubt that the current project area was utilized as a segment of an important trail system in the early 1800s, and probably prehistorically as well. The Lahaina Pali Trail is five miles long and crosses the southern slopes of the West Maui Mountains between Olowalu and Mā`alaea. The start of this trail, now a demonstration trail as part of the Na Ala Hele Trail System, borders the current project area near the center of the *mauka* border. By the historic period in which the trail's significance as a probable prehistoric route was realized, the portion *makai* of the current trail head (*i.e.* the portion transecting the width of the current project area) was already destroyed by sugarcane cultivation. Thus, the trail starts immediately outside the project area, within the State-owned lands. A 1991 study by Tomonari-Tuggle and Tuggle documented 18 sites upon the trail, the majority of historic origin.

In an Inventory Survey of the present study parcel (Wilson and Dega 2005), three historic sites, all related to sugarcane agriculture, were identified. These sites were designated under SIHP numbers 50-50-09-5657 (clearing mounds), -5658 (irrigation modifications), and Site -5659 (dirt road). These three sites were the only archaeological sites found within the project area, and all three are considered significant under Criterion D of the Hawaii State and National Register of Historic Places.

SETTLEMENT PATTERN

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-date accepted ranges gathered from palynological data. A more conservative 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 Waihe`e and Wai`ehu 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 the controversial data of

occupation dates 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 problematic and are no longer considered valid.)

More recent research within Wailuku District indicates that Wailuku Ahupua`a was likely settled between *c.* A.D. 1100 (Kirch 1985:142) and A.D. 1200 (Fredericksen and Fredericksen 1996), whereas *ahupua`a* to the northeast have produced slightly earlier date ranges and *ahupua`a* to the southwest have later settlement dates. The earliest populations purportedly 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. 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 lands like the current project area (*c.* 40–85 meters amsl), taro was cultivated along stream courses, dry land taro was grown on *kula* lands, and populations settled there as well. In the current parcel, however, no LCA records exist that might link prehistoric agriculture to historically documented practice.

EXPECTED FINDINGS

Based on all available physiographic, archaeological, and historical evidence, the following expectations guided this study:

- Historically-significant surface features were expected, particularly those pertaining to historic period commercial sugarcane production. SCS conducted a brief reconnaissance (prior to AIS) which reported the presence of the large clearing mounds. The reconnaissance did not report any other historic or pre-Contact surface features, however, the probability of documenting additional historic agricultural features during Monitoring is considered high.

- A variety of traditional Hawaiian sites have been documented at several adjacent properties. While the probability of encountering pre-Contact archaeological surface features within the project area was considered low, there remains a moderate possibility of encountering subsurface cultural layers from a prehistoric period. The

latter would depend largely on the existence of a previously undisturbed matrix stratigraphically lower (*i.e.*, older) than historically tilled soils.

The probability of discovery of historic or prehistoric unmarked burials, or marked burials, is considered low. A slightly higher, yet still low, probability exists in regards to the discovery of scattered human remains during subsurface testing. While burials have been located within the sandy matrix of the adjacent parcels *makai* of Hono`api`ilani Highway (*i.e.*, during construction activities at the Maui Ocean Center; see McGerty, Burgett, and Spear 1998), SHPD records contain no documented burials *mauka* of Hono`api`ilani Highway (including on, or within a kilometer, of the current project area). The lack of burial sites immediately *mauka* of the highway can be attributed to two main factors: (1) the types of soils found here are generally less favored in prehistoric burial practices, and (2) the lands have been subject to continual agricultural activity for nearly a century, and in some cases, longer.

Based on all of the above background information expected findings during Monitoring include:

(1) A variable subsurface stratigraphy that could indicate agricultural horizons and/or long-term habitation use of the area through post holes, fire features, and even burials, the latter of which would show some permanency in occupation in this geographic area.

(2) Historic sites have been previously documented. Monitoring will allow for additional observation at these sites, which may lead to improved discussions of them, new portions not previously described, or even new features found. Monitoring the parcel will contribute to greater understanding of the areas history and prehistory.

MONITORING CONVENTIONS AND METHODOLOGY

This AMP has been outlined in accordance with DLNR/SHPD administrative rule ' 13-279. Archaeological monitors will adhere to the following guidelines during monitoring procedures:

1. A qualified archaeologist familiar with the project area and the results of previous archaeological work conducted in the general area, will monitor subsurface construction activities on the parcel. If significant deposits or features are identified and additional field personnel are required, the archaeologist will notify the contractor or representatives before additional personnel are brought to the site.

2. If features or cultural deposits are identified during Archaeological Monitoring, the on-site archaeologist will have the authority to temporarily suspend construction activities at the significant location so that the cultural feature(s) or deposit(s) may be fully evaluated

and appropriate treatment of the cultural deposit(s) is conducted. SHPD will be consulted to establish feature significance and potential mitigation procedures. Treatment activities primarily include documenting the feature/deposit through plotting its location on an overall site map, illustrating a plan view map of the feature/deposit, profiling the deposit in three dimensions, photographing the finds (with the exception of human burials), artifact and soil sample collection, and triangulation of the finds. Construction work will only continue in the significant location when all documentation has been completed.

3. Control stratigraphy in association with subsurface cultural deposits will be noted and photographed, particularly those containing significant quantities or qualities of cultural materials. If deemed significant by SHPD and the archaeologist, these deposits will be sampled.

4. In the event that human remains are encountered, all work in the immediate area of the find will cease; the area will be secured from further activity until burial protocol has been completed. The SHPD island archaeologist and SHPD Culture and History Branch will both be immediately notified about the inadvertent discovery of human remains on the property. Notification of the inadvertent discovery will also be made to the Maui/Lanai Islands Burial Council by either SHPD or by the contracting archaeologist. A determination of minimum number of individuals (MNI), age(s), and ethnicity of the burial(s) will be ascertained in the field, following standard osteological procedures (*e.g.*, White 2000). Rules outlined in Chapter 6E, Section 43 shall be followed. Profiles, plan view maps, and illustrative documentation of skeletal parts will be recorded to document the burial(s). The burial location will be identified and marked. If a burial is disturbed, materials excavated from the vicinity of the burial(s) will be manually screened through 1/8-inch wire mesh screens in order to recover any displaced skeletal material. If the remains are to be removed, the work will be in compliance with HRS 6.E-43.6, Procedures Relating to Inadvertent Discoveries after approval from all parties (SHPD, Burial Council). All remains recovered from the site will be temporarily stored in a secure, on-site location until final disposition is determined and completed.

5. To ensure that contractors and the construction crew are aware of this AMP and possible site types to be encountered on the parcel, a brief coordination meeting will be held between the construction personnel and monitoring archaeologist prior to initiation of the project. The construction crew will also be informed as to the possibility that human burials could be encountered and how they should proceed if they observe such remains.

6. The archaeologist will provide all coordination with the contractor, SHPD, and any other group involved in the project. The archaeologist will coordinate all monitoring and sampling activities with the safety officers for the contractors to ensure that proper safety regulations and protective measures meet compliance. Close coordination will also be maintained with construction representatives in order to adequately inform personnel of the possibility that open archaeological units or trenches may occur in the project area.

7. As necessary, verbal reports will be made to SHPD and any other agencies as requested.

LABORATORY ANALYSIS

All samples collected during the project, except human remains, will undergo analysis at the SCS laboratory in Honolulu. In the event that human remains are identified and the SHPD authorizes their removal, these remains and all associated cultural materials will be curated at an appropriate location on Maui. Photographs, illustrations, and all notes accumulated during the project will be curated at the Honolulu laboratory of SCS. All retrieved artifact and midden samples will be sent to the SCS laboratory in Honolulu to be cleaned, sorted, and analyzed. Significant artifacts will be photographed, sketched, and classified (qualitative analysis). All metric measurements and weights will be recorded (quantitative analysis). This data will be presented in tabular form within the final monitoring report. Midden samples will be minimally identified to major 'class' (e.g., bivalve, gastropod mollusk, echinoderm, fish, bird, and mammal). All data will be clearly recorded on standard laboratory forms which also include number and weight (as appropriate) of each constituent category. These counts will also be included in the final report.

Should any samples amenable to dating be collected from a significant cultural deposit, they will be prepared in the SCS laboratory and submitted for specialized radiocarbon analysis. While primary emphasis for dating is placed on charcoal samples, we do not preclude the use of other materials such as marine shell or nonhuman bone materials. SCS will consult with SHPD and the client if radiocarbon dates are deemed necessary.

All stratigraphic profiles will be drafted for presentation in the final report. Representative plan view sketches showing the location and morphology of identified sites/features/deposits will be compiled and illustrated.

CURATION

If requested by the landowner, SCS will curate all recovered materials in Honolulu (except human remains, which would remain on-island) until a permanent, more suitable curation locale is identified. The land owner(s) may request to curate all recovered materials once analysis has been completed.

REPORTING

An Archaeological Monitoring report documenting the project findings and interpretation, following SHPD guidelines for Archaeological Monitoring reports, will be

submitted within 180 days of the completion of fieldwork. This time line is requested to account for any radiocarbon age determinations (typically 60 days), if necessary.

If cultural features or deposits are identified during fieldwork, the sites will be evaluated for historical significance and assessed under State and Federal Significance Criteria. The Archaeological Monitoring report will be drafted until accepted by SHPD and will be submitted to both SHPD and to the client.

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APPENDIX B-3.

Letter from SHPD Accepting Archaeological Monitoring Plan

(9481)

LINDA LINGLE
GOVERNOR OF HAWAII

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
STATE HISTORIC PRESERVATION DIVISION
601 KAMOKILA BOULEVARD, ROOM 555
KAPOLEI, HAWAII 96707

LAURA H. THIELEN
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

RUSSELL Y. TSUJI
FIRST DEPUTY

KEN C. KAWAHARA
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

May 22, 2008

Michael F. Dega, Ph.D.
Scientific Consultant Services, Inc.
711 Kapiolani Boulevard, Suite 975
Honolulu, Hawai'i 96813

LOG NO: 2008.1558
DOC NO: 0805PC40
Archaeology

Dear Dr. Dega:

SUBJECT: Chapter 6E-42 Historic Preservation Review of an Archaeological Monitoring Plan for ca. 260 Acres (104 Hectare) of Wailuku Agribusiness Property, Ma'alaea/Ukumehame/Waikapu Ahupua'a, Wailuku District, Maui Island, Hawai'i TMK: (2) 3-6-001: 018

Thank you for the opportunity to review this plan, which our staff received on April 22, 2008 (Shefcheck and Dega 2008): *Archaeological Monitoring Plan for 259.903 Acres in Ma'alaea, Ukumehame and Waikapu*...Scientific Consultant Services, Inc.

The plan was prepared upon review of a 2005 archaeological inventory survey conducted by your firm and concurrence from this office that precautionary archaeological monitoring is warranted during future ground altering disturbance associated with development of the subject parcel (SHPD LOG: 2005.1191; DOC NO: 0506MK18). Precautionary monitoring was recommended for ground altering disturbance associated with the destruction of the 13 large clearing mounds which comprise SIHP #50-50-09-5657, because of the possibility that they may contain historically significant cultural materials displaced during previous large scale field clearing activities related to commercial agriculture. It is also possible that culturally significant subsurface deposits may be identified below the plow zone at the base of the clearing piles once the piles have been removed.

As specified in the plan, an archaeologist will be on-site for all ground altering disturbance within the parcel. *However, we wish to recommend that given the size of the clearing piles, if more than one pile is dismantled at the same time, there should be one archaeologist on site at each location.* The plan also states that a coordination meeting with the construction crew and all other pertinent parties to explain monitoring procedures and that the monitoring archaeologist has the authority to halt work in the vicinity of a culturally significant find will be undertaken. Further, if human remains are inadvertently exposed, both the SHPD and Maui/Lana'i Islands Burial Council (MLIBC) will be notified and appropriate protocol followed. A report detailing the findings of the monitoring will be prepared and submitted to our office for review within the required 180 days after the completion of the project.

The plan contains the required information as specified in HAR §13-279-4(a) regarding the contents of monitoring plans in general and is acceptable.

Should you have any questions or comments regarding this letter, please contact Patty Conte (Patty.J.Conte@hawaii.gov).

Aloha,

Nancy McMahon, Deputy SHPO/State Archaeologist
State Historic Preservation Division

c: Jeff Hunt, Director, Dept. of Planning, 250 S. High Street, Wailuku, Hawai'i 96793
Lance Nakamura, Engineer, DPWEM, 250 S. High Street, Wailuku, Hawai'i 96793
Maui CRC, Dept. of Planning, 250 S. High Street, Wailuku, Hawai'i 96793

APPENDIX C.

Cultural Impact Assessment Report

A CULTURAL IMPACT ASSESSMENT REPORT ON APPROXIMATELY 260 ACRES OF LAND IN UKUMEHAME AND WAIKAPŪ AHUPUA`A, WAILUKU DISTRICT, MAUI ISLAND, HAWAI`I [TMK: 3-6-01:18]

Prepared by:
Leann McGerty, B.A.
and
Robert L. Spear, Ph.D.
June 2005

Prepared for:
AKF Development
1132 Norman Drive
Manteca, California 95336

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INTRODUCTION

Scientific Consultant Services (SCS), Inc. has been contracted by AKF Development to conduct a Cultural Impact Assessment on approximately 260 acres of land in Ukumehame and Waikapū Ahupua`a, Wailuku District, Maui Island, Hawai`i [TMK: 3-6-01:18] (Figure 1). According to information provided by the developers, a residential project that includes a mix of single-family and multi-family housing types. Amenities also include an open-space buffer along the highway and a 15-acre community oriented park connected to the neighborhoods by a pedestrian/bicycle path.

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 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" (2000). Beginning in 1850 with establishment of Hawai`i Revised Statutes (HRS) 7-1, native Hawaiians were given access rights to undeveloped private property and waterways in order to gather specific natural resources for customary uses. 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, 1992).

Act 50, enacted by the Legislature of the State of Hawaii (2000) with House Bill 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 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 environmental review process (2001). Its purpose has broadened, "to promote and protect cultural beliefs, practices and resources of native Hawaiians [and] other

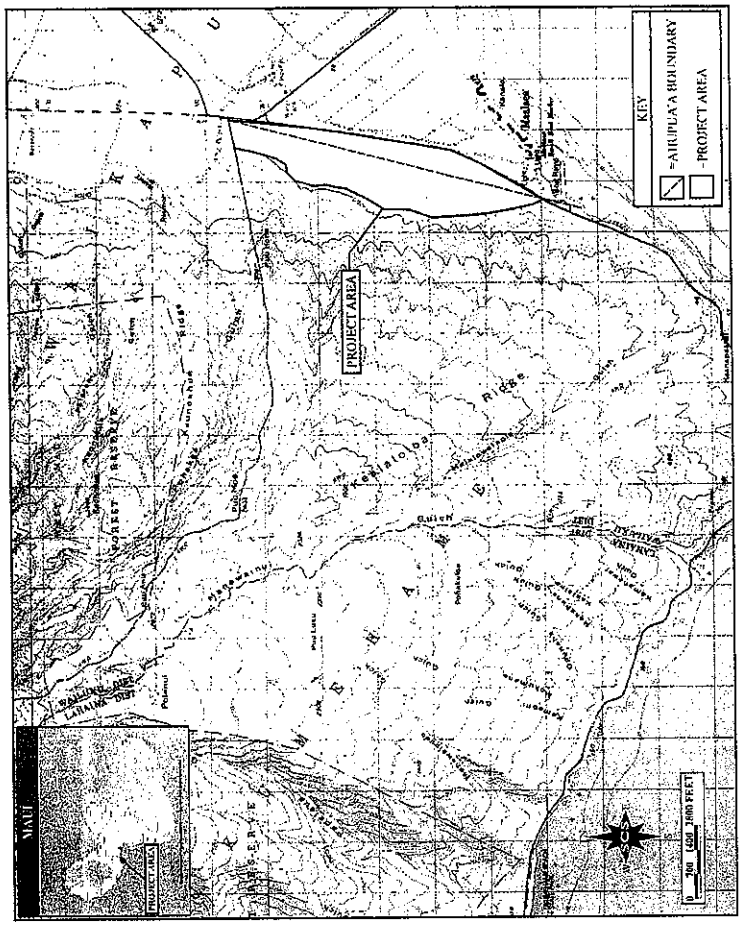

Figure 1: USGS Quadrangle Map Showing the Project Area.

ethnic groups, and it also amends the definition of 'significant effect' to be re-defined as "the sum of effects on the quality of the environment including actions 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" (H.B. 2895, Act 50, 2000). Thus, not only are properties evaluated for impact to Native Hawaiians, but also for other ethnic groups as well.

Act 50 requires an assessment of cultural practices to be included in the Environmental Assessments and the Environmental Impact Statements, and to be taken into consideration during the planning process. The concept of geographical expansion is recognized by using, as an example, "the broad geographical area, e.g. district or *ahupua'a*" (OEQC 1997). It was decided that the process should identify 'anthropological' cultural practices, rather than 'social' cultural practices. For example, *limu* (edible seaweed) gathering would be considered an anthropological cultural practice, while a modern-day marathon would be considered a social cultural practice.

According to the Guidelines for Assessing Cultural Impacts established by the Hawaii State Office of Environmental Quality Control (OEQC 1997):

> 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 manmade and natural which support such cultural beliefs.

This Cultural Impact Assessment involves evaluating the probability of impacts on cultural values and rights within the project area and its vicinity.

METHODOLOGY

This Cultural Impact Assessment was prepared in accordance with the methodology and content protocol provided in the Guidelines for Assessing Cultural Impacts (OEQC 1997). In outlining the "Cultural Impact Assessment Meodology", the OEQC state:

> ...information may be obtained through scooping, community meetings, ethnographic interviews and oral histories...[1997].

This report contains archival and documentary research, as well as communication with organizations having knowledge of the project area, its cultural resources, and its practices and beliefs. This Cultural Impact Assessment was prepared in accordance with the methodology and content protocol provided in the Guidelines for Assessing Cultural Impacts (OEQC 1997). The assessment concerning cultural impacts should address, but not be limited to, the following matters:

(1) a 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 of limitations with might have affected the quality of the information obtained;

(2) a description of methods adopted by the preparer to identify, locate, and select the persons interviewed, including a discussion of the level of effort undertaken;

(3) 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;

(4) 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;

(5) a discussion concerning historical and cultural source materials consulted, the institutions and repositories searched, and the level of effort undertaken, as well as the particular perspective of the authors, if appropriate, any opposing views, and any other relevant constraints, limitations or biases;

(6) a discussion concerning the cultural resources, practices and beliefs identified, and for the 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;

(7) a 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;

(8) an explanation of confidential information that has been withheld from public disclosure in the assessment;

(9) a discussion concerning any conflicting information in regard to identified cultural resources, practices and beliefs;

(10) an 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, and;

(11) the inclusion of bibliography of references, and attached records of interviews which were allowed to be disclosed.

Based on the inclusion of the above information, assessments of the potential effects on cultural resources in the project area and recommendations for mitigation of these effects can be proposed.

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 and land records such as Land Commission Awards, Royal Patent Grants, and Boundary Commission records; historic accounts, and previous archaeological project reports.

INTERVIEW METHODOLOGY

When appropriate, interviews are conducted in accordance with Federal and State laws and guidelines. Individuals and/or groups who have knowledge of traditional practices and beliefs associated with a project area or who know of historical properties within a project area are sought for consultation. 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. Often people are recommended for their expertise or can be located by visiting the area. Organizations, such as Hawaiian Civic Clubs, the Island Branch of Office of Hawaiian Affairs, historical societies, Island Trail clubs, and Planning Commissions are invited to contribute their input and suggest further avenues of inquiry, as well as specific individuals to interview.

When interviewees are identified, a standard procedure follows. Personal interviews are taped and then transcribed. These draft transcripts are returned to each of the participants for their review and comments. After corrections are made, each individual signs a release form, making the information available for this study. Key topics discussed with the interviewees vary from project to project, but usually include: personal association to the *ahupua'a*, land use in the project's vicinity; knowledge of traditional trails, gathering areas, water sources, religious sites;

place names and their meanings; stories that were handed down concerning special places or events in the vicinity of the project area; evidence of previous activities identified while in the project vicinity.

In this case, the project area had been used for ranching and agriculture for over 100 years. Letters, briefly outlining the development plans along with maps of the project area, were sent to organizations whose jurisdiction includes knowledge of the area with an invitation for consultation. Consultation was sought from the Maui Office of Hawaiian Affairs, Community Resource Coordinator, Maui; the Office of Hawaiian Affairs, O'ahu; Cultural Resource Planner for the Maui Planning Department; and the Central Maui Civic Club. Based on this research, an assessment of the potential effects on cultural resources in the project area and recommendations for mitigation of these effects can be proposed.

PROJECT AREA AND VICINITY

The project area comprises approximately 260 acres of land situated *mauka* of Honoapi'iland Highway from Ma'alaea Harbor to near the Kuihelani Highway on the lower eastern slope of Pu'ū Kukui in the *ahupua'a* of Ukumehame, with its eastern most section in the *ahupua'a* of Waikapū, West Maui (Figure 2). Ukumehame is bounded on the west by Olowalu Ahupua'a and on the east by Waikapū Ahupua'a. The *makai* portion of the project area is bounded on the east by Ma'alaea Harbor, on the west by rocky, uncultivated abandoned ranch land, and to the south by more abandoned ranch land.

CULTURAL HISTORICAL CONTEXT

The island of Maui ranks second in size of the eight main islands in the Hawaiian Archipelago. Pu'u Kukui, forming the west end of the island (1,215 m above mean sea level), 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 deep valleys of West Maui and their associated coastal regions have been witness to many battles in ancient times and were coveted productive landscapes. Waikapū was the most southwestern valley of the Na Wai Eha (The Four Streams), a region that was famous as the largest continuous area of wet taro cultivation in the islands (Handy 1940:107).

PAST POLITICAL BOUNDARIES

Traditionally, the division of Maui's lands into districts (*moku*) and sub-districts was performed by a *kahuna* (priest, expert) named Kalaiha'ōhia, during the time of the *ali'i* Kaka'alaneo (Beckwith 1940:383; Fornander places Kaka'alaneo at the end of the 15th century or

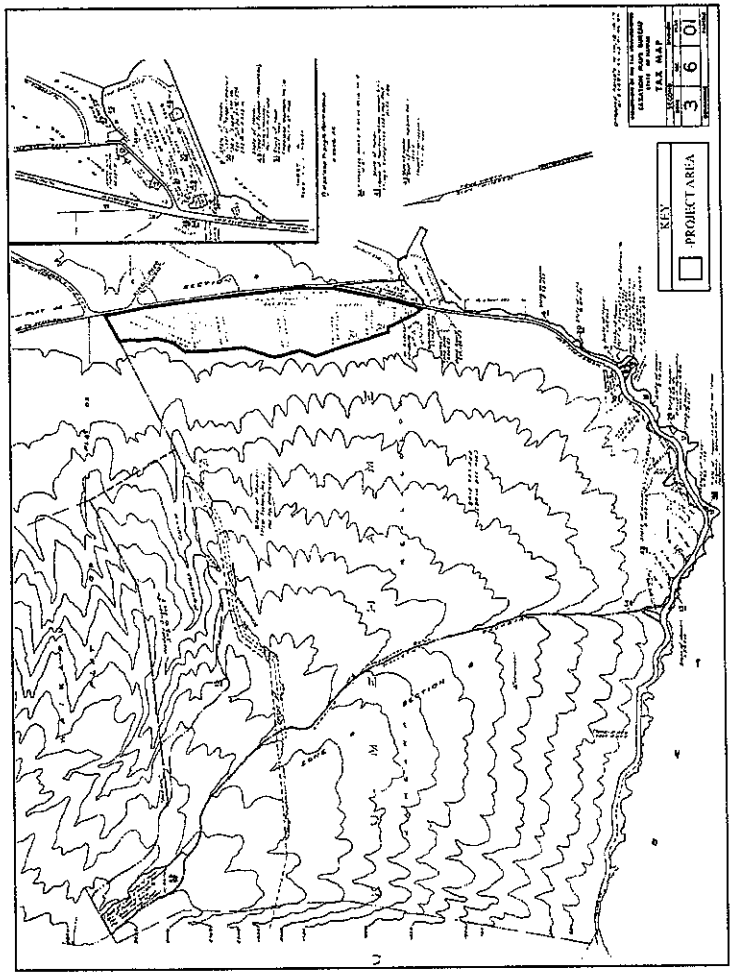

Figure 2: Tax Map Key [TMK] Showing Project Area Location.

the beginning of the 16th century [Fornander 1919–20, Vol. 6:248]). Land was considered the property of the king or *ali`i `ai moku* (the *ali`i* who eats the island/district), which he held in trust for the gods. The title of *ali`i `ai 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, they distributed smaller parcels to lesser chiefs. The *maka`āinana* (commoners) worked the individual plots of land.

In general, several terms, such as *moku*, *ahupua`a*, *`ili* or *`ili`āina* were used to delineate various land sections. A district (*moku*) contained smaller land divisions (*ahupua`a*) that customarily continued inland from the ocean and upland into the mountains. Extended household groups living within the *ahupua`a* were therefore able to harvest from both the land and the sea. Ideally, this situation allowed each *ahupua`a* to be self-sufficient by supplying needed resources from different environmental zones (Lyons 1875:111). The *`ili `āina* or *`ili* were smaller land divisions next in importance to the *ahupua`a* and were administered by the chief who controlled the *ahupua`a* in which it was located (Lyons 1875:33; Lucas 1995:40). The *mo`o`āina* were narrow strips of land within an *`ili*. The land holding of a tenant or *hoa `āina* residing in an *ahupua`a* was called a *kuleana* (Lucas 1995:61). The project area is located in the *ahupua`a* of Ukumehame, meaning literally *paid mehame wood* (most likely referring to the prevalence of the *mehame* [*Antidesma Platyphyllum*] tree prized in ancient times for anvils on which to pound *olonā* [*Touchardia* sp.] and for the red dye made from its fruits), and Waikapū, or *water of the conch* (referring to a special conch shell in the legend of Puapua-lenalena; Pukui *et al.*:214, 223, Rock 1974).

TRADITIONAL SETTLEMENT PATTERNS

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 *ahupua`a*. 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, like those present in the western portion of Ukumehame, provided ideal conditions for wetland *kalo* (*Colocasia esculenta*) agriculture, which included pond fields and irrigation canals. Other cultigens, such as *kō* (sugar cane, *Saccharum officinaruma*) and *mai`a* (banana, *Musa* sp.), were also grown and, where appropriate, such crops as *`uala* (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). Agricultural development on the leeward side of Maui was likely to have begun early in what is known as the Expansion Period (A.D. 1200–1400 [Kirch 1985]).

WAHI PANI (LEGENDARY PLACES)

Scattered amongst the agricultural and habitation sites were other places of cultural significance to the *kama`āina* of the district. At least three *heiau* were recorded in Ukumehame Ahupua`a. Fishing *ko`a* (shrine) were present at Pā Ko`a beach (presently known as Ukumehame Beach Park) and petroglyphs were inscribed on mountain boulders, the meanings of which have yet to be fully understood (Thrum 1908, 1916, 1917; Walker 1930).

Trails extended from the coast to the mountains, linking the two for both economic and social reasons. A trail known as the *alanui* (or, *King's Trail*), which was built by Kihapi`ilani, extended along the coast passing through all the major communities between Lāhainā and Mākena. A path along Kealaloa ridge leads to the summit of Pu`u Kukui, the headwaters of the Pohakea and Ukumehame streams, and beyond. The Lahaina Pali Trail, constructed in 1841, provided access to other parts of the island.

Most of the *ahupua`a* on the coast have been overshadowed by the famous roadstead and village of Lāhainā, which served as the capitol of the Hawaiian Kingdom after the conquest of Kamehameha until 1855. The ethnographic and historic literature, often our only link to the past, reveals that the lands around Lāhainā were rich agricultural areas irrigated by aqueducts originating in well-watered valleys with permanent occupation predominately on the coast. Handy and Handy have stated the space cultivated by the natives of Lāhainā (district) at about "...three leagues [9 miles] in length, and one in its greatest breadth. Beyond this all is dry and barren; everything recalls the image of desolation" (1972:593). Crops cultivated included coconut, breadfruit, paper mulberry, banana, taro, sweet potato, sugar cane, and gourds.

Ukumehame Valley, with its permanent stream was one of the sources along with Olowalu, Launiupoko, and Kaua`ula, providing agricultural opportunities for the growing leeward population. Handy and Handy reported:

> Southeastward along the coast from the *ali`i* settlement were a number of areas where dispersed populations grew taro, sweet potato, breadfruit and coconut on the slopes below and in the sides of valleys which had streams with constant flow. All this area, like that around and above Lahaina, is now sugar-cane land. Ukumehame had extensive terraces below its canyon, some of which were still planted with taro in 1934; these terrace systems used to extend well down below the canyon...[1972].

The western portion of Ukumehame Ahupua`a offered beach and mountain habitation, as well as agricultural areas along the stream banks and in the southern marshy section close to the coast. Land was valuable in this section and 44 claims for land were made during the Great Māhele (Waihona `Aina 2004). Claimants for some parcels included several illustrious individuals who, although living in Lāhainā, claimed Ukumehame resources (David Malo, Charles Kanaina, etc.; McGerty and Spear 2005). Unlike the typical settlement, reflecting patterns of upland agriculture and coastal house sites, Ukumehame appears to have no distinct activity zones. House lots are found throughout the *ahupua`a* and *lo`i* are not only found along the stream, but continue into the plains fed by *`auwai* that is still extant (Devereux *et al* 1999).

However, the slope where the present project area is located faces east and is much drier than higher elevations to the west that receive as much as twenty times the level of precipitation. Air temperatures are consistently slightly warmer here than the Maui seasonal high and low averages, mostly due to the lower, coastal elevation. Four *mauka-makai* drainages cross the project area. In traditional times, it is likely that these narrow watercourses only flowed in times of heavy rains providing some moisture for marginal agriculture.

Closer to the current project area, in the southwest corner of Wailuku District, prehistoric settlement was not as dense as concentrations to the north. Climate had much to do with that trend, as the Ma`alaea area is a more arid environment than the rain-soaked fields to the north. According to Tomonari-Tuggle and Tuggle (1991), the majority of the pre-Contact population was located southwest of the project area, near what is now Ukumehame Beach State Park. Settlement was also probable north of Kealia Pond in Waikapu Ahupua`a. Handy and Handy report that before the historic sugar cane plantations were established in this region, water from Waikapu Stream "was diverted into lo`i and its overflow was dissipated on the dry plains of the broad isthmus between West and East Maui" (1972:496).

THE GREAT MĀHELE

In the 1840s, traditional land tenure shifted drastically with the introduction of private land ownership based on Western law. While it is 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 economy to that of a market economy (Kame`eleihiwa 1992:169–70, 176; Kelly 1983:45, 1998:4; Daws 1962:111; Kuykendall 1938 Vol. I:145). The Great 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 thus made available

and private ownership was instituted, the *maka`āinana* (commoners), if they had been made aware of the procedures, 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, *`okipū* (on O`ahu), 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). There were 44 claims for land in Ukumehame during the Māhele, but none were in or near the project area (Waihona `Aina 2004). Seventeen *`ili* were also named and some of the *ahupua`a* became government land to sell as they saw fit.

Sugar was to be the economic future of Hawai`i and as early as 1828, two Chinese brothers, Ahung and Atai, of Honolulu's Hungtai Company, arrived in Wailuku to explore the possibility of setting up one of its earliest sugar mills. Atai soon created a plant that processed sugar cane cultivated by Hawaiians, named the Hungtai Sugar Works (Dorrance and Morgan 2000:15–16). Ahung then joined Kamehameha III's sugar producing enterprise, although by 1844 both operations had ceased. The Wailuku Sugar Company was the next to follow, in 1862, and would expand sugar production over the next 126 years of its existence—4,450 acres by 1939, still more than three decades before its maximum production levels.

As it expanded its territory, the Wailuku Sugar Company first appeared on maps of the project area in the in the 1920s (Bureau of Conveyances, Grant 9794), although their acquisition of the project area land may have been as early as the turn of the century (Kennedy and Trimble 1992:4). Successive grants (Grant 10294 through to Grant S-13975) would follow in decades following and fully encompass the Ukumehame Ahupua`a side of the project area to Wailuku sugar land. Kennedy and Trimble (1992:4) summarize the history of the Waikapu Ahupua`a (*makai*) portion of the project area by detailing its acquisition from the state government on November 18, 1875 by Henry Cornwell (Grant 3152). Cornwell subsequently sold to Claus Spreckels, and by the turn of the century, the entire project area was under sugar cane cultivation.

Wailuku Sugar Company ended production in 1988, having averaged over 30,000 tons of sugar produced annually at its pinnacle in the 1970s (Dorrance and Morgan 2000:66). Owner C. Brewer and Company, Ltd. shut down sugar cultivation on the project area, which was then used almost entirely for pineapple cultivation starting no later than 1992 (Kennedy and Trimble 1992:1). The lands were under pineapple for at least the next three years (Tomonari-Tuggle

1995:11)—probably slightly longer—before shifting to smaller-scale 'garden' plots. Recently, a few plots of land in the southern portion of the project area were leased. These agricultural ventures have included banana trees, gourds, and papaya. Portions of the upper valley of Ukumehame have been used for cattle grazing and, from the 1970s to the present time, there have been a number of families cultivating plants along the stream gulch. The traditional Hawaiian *`auwai* has been repaired and is now utilized for *lo`i kalo* irrigation. Now that sugar is longer an issue, the stream has found its way to the coast, reviving the stream's ecosystem.

The current project area was utilized as a segment of an important trail system in the early 1800s, and probably prehistorically as well. The Lahaina Pali Trail is five miles long and crosses the southern slopes of the West Maui Mountains between Olowalu and Ma`alaea. The start of this trail, now a demonstration trail as part of the Na Ala Hele Trail System, borders the current project area near the center of the *mauka* border. By the historic period in which the trail's significance as a probable prehistoric route was realized, the portion *makai* of the current trail head (*i.e.*, the portion transecting the width of the current project area) was already destroyed by sugarcane cultivation. Thus, the trail starts immediately outside the project area, within the state-owned lands. A 1991 study by Tomonari-Tuggle and Tuggle documented 18 archaeological sites upon the trail, the majority of historic origin (Figure 3).

SUMMARY ANDCULTURAL ASSESSMEMNT

As suggested in the "Guidelines for Accessing Cultural Impacts" (OEQC 1997), CIAs incorporating personal interviews should include ethnographic and oral history interview procedures, circumstances attending the interviews, as well as the results of this consultation. It is also permissible to include organizations with individuals familiar with cultural practices and features associated with the project area.

The "level of effort undertaken" (OEQC 1997) has not been officially defined and is left up to the investigator. To SCS, a good faith effort means contacting agencies by letter, interviewing people who may be affected by the project or who know its history, researching sensitive areas and previous land use, holding meetings in which the public is invited to testify, notifying the community through the media, and other appropriate strategies based on the type of project being proposed and its impact potential. In the case of the present parcel that has been agricultural for over 100 years, letters of inquiry were sent to organizations whose expertise would include the project area. Consultation was sought from the Maui Office of Hawaiian Affairs, Community Resource Coordinator, Maui; the Office of Hawaiian Affairs, O`ahu;

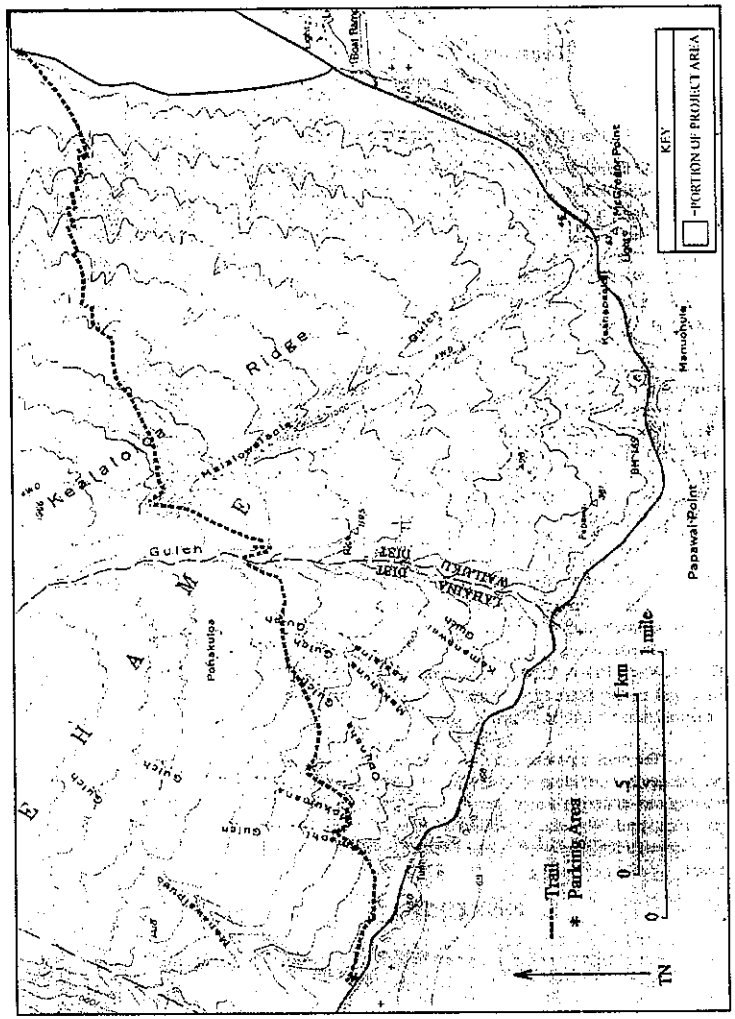

Figure 3: Map Showing Trail and Portion of Project Area.

Cultural Resource Planner for the Maui Planning Department; and the Central Maui Civic Club. Archival research included historical and cultural resources.

Additionally, historical and cultural source materials were also consulted were extensively used and can be found listed in the References Cited portion of the report. Such scholars as Thrum (1908, 1916 1917), Fornander (1919, 1969), Walker (1930), Kuykendall (1938), Beckwith (1940), Chinen (1961), Handy and Handy (1972), Puku`i *et al.* (1974), Kelly (1983, 1998), and Kame`eleihiwa (1992) have contributed, and continue to contribute, to our knowledge and understanding of Hawai`i, past and present. The works of these and other authors were consulted and incorporated in the report where appropriate. Land use document research was supplied by the Waihona `Aina Data base (2004).

Analysis of the potential effect of the project on cultural resources, practices or beliefs, the potential to isolate cultural resources, maintain practices or beliefs in their original setting, and the potential of the project to introduce elements that may alter the setting in which cultural practices take place is a requirement of the OEQC (No. 10, 1997). The project area has not been used for traditional cultural purposes within recent times. Based on historical research and the responses of the Maui Office of Hawaiian Affairs; Community Resource Coordinator, Maui; the Office of Hawaiian Affairs, O`ahu; the Cultural Resource Planner for the Maui Planning Department; and the Central Maui Civic Club, it is reasonable to conclude that Hawaiian rights related to gathering, access or other customary activities will not be affected and there will be no direct adverse effect upon cultural practices or beliefs.

However, the visual impact of the project from surrounding vantage points, for example, the highway, mountain trails, and the ocean is intrinsically more difficult to evaluate. Indirectly, each development may not seem to necessarily impose a negative cultural impact, especially when located on parcels that had been in agriculture for a century. But it is important to recognize that native Hawaiian cultural beliefs and practices are continually affected by the loss of land to development that intrudes into the natural setting and alters the landscape. These changes may affect certain cultural practices outside the project area. The custom of fishermen using certain landforms to triangulate secret, family fishing *ko`a* at sea, is an example of this affect. Maui has seen the development process intensify dramatically in the last 30 years, a trend that suggests the eventual permanent loss of traditional landscapes.

Documents submitted to SCS by AKF Development propose a residential project that will include a mix of single-family and multi-family housing types. Amenities also include an

open-space buffer along the highway and a 15-acre community-oriented park linked to the neighborhoods with a pedestrian/bicycle path. Based on the response from various organizations and through archival research, it is reasonable to conclude that, pursuant to Act 50, the exercise of native Hawaiian rights, or any ethnic group, related to gathering, access or other customary activities will not be affected by development activities on Parcel 18. It is recommended that Cultural Advisors be consulted during the planning process. In this way, appropriate mitigation measures, if needed, can be put in place before development occurs. However, because there were no activities identified, there are likely no adverse effects.

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