Final Environmental Assessment

PROPOSED LANAI AFFORDABLE HOUSING PROJECT

(TMK (2)4-9-002:058(por.))

Prepared for:

County of Maui,
Department of Housing and Human Concerns

January 2010

MUNEKIYO & HIRAGA, INC.

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Executive Summary

Project Name:	Proposed Lanai Affordable Housing Project
Type of Document:	Final Environmental Assessment
Legal Authority:	Chapter 343, Hawaii Revised Statutes
Agency Determination:	Finding of No Significant Impact (FONSI)
Applicable Environmental Assessment review "Trigger":	Use of County Lands and Funds
Location:	TMK (2)4-9-002:058 (por.) Lanai City Island of Lanai
Landowner:	County of Maui
Applicant:	County of Maui, Department of Housing and Human Concerns
Approving Agency:	County of Maui, Department of Housing and Human Concerns 2200 Main Street, Suite 546 Wailuku, Hawaii 96793 Contact: JoAnn Ridao, Deputy Director Phone: (808) 270-7805
Consultant:	Munekiyo & Hiraga, Inc. 305 High Street, Suite 104 Wailuku, Hawaii 96793 Contact: Colleen Suyama, Project Manager Phone: (808) 244-2015
Project Summary:	The County of Maui, Department of Housing and Human Concerns proposes the Lanai Affordable Housing Project to be located on 73 acres of a larger 115-acre parcel owned by the County of Maui. The project will consist of approximately 412 residential units. According to the project's conceptual master plan, there will be 239 house lots of approximately 5,000 square feet on 29.15 acres and 173 multi-family units on 14.48 acres with a proposed density of 12 units per acre. The project will also include two (2) park

sites consisting of 2.83 acres and 2.08 acres. In addition, a 4.94-acre public/quasi-public site for a future community center and 4.0-acre detention pond are proposed. Approximately 15.52 acres will be for street right-of-way.

Access to the project site will be via an extension of Fifth Street. Additionally, a Ninth Street extension is proposed to facilitate long-term traffic circulation in the vicinity of the project site.

I. PROJECT OVERVIEW

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A. BACKGROUND

The applicant, the County of Maui, Department of Housing and Human Concerns (DHHC), proposes a Section 201H-38, Hawaii Revised Statutes (HRS) Affordable Housing Project located in Lanai City, Lanai, Hawaii.

The proposed Lanai Affordable Housing Project will be located on the western side of Lanai City, Island of Lanai, County of Maui. The project site, consisting of approximately 73 acres of land, is part of a larger 115-acre parcel. See **Figure 1**. The subject property is currently designated "Single-Family" on the Lanai Community Plan, zoned "Interim District" by the County of Maui, while the State Land Use District designation is currently "Agricultural".

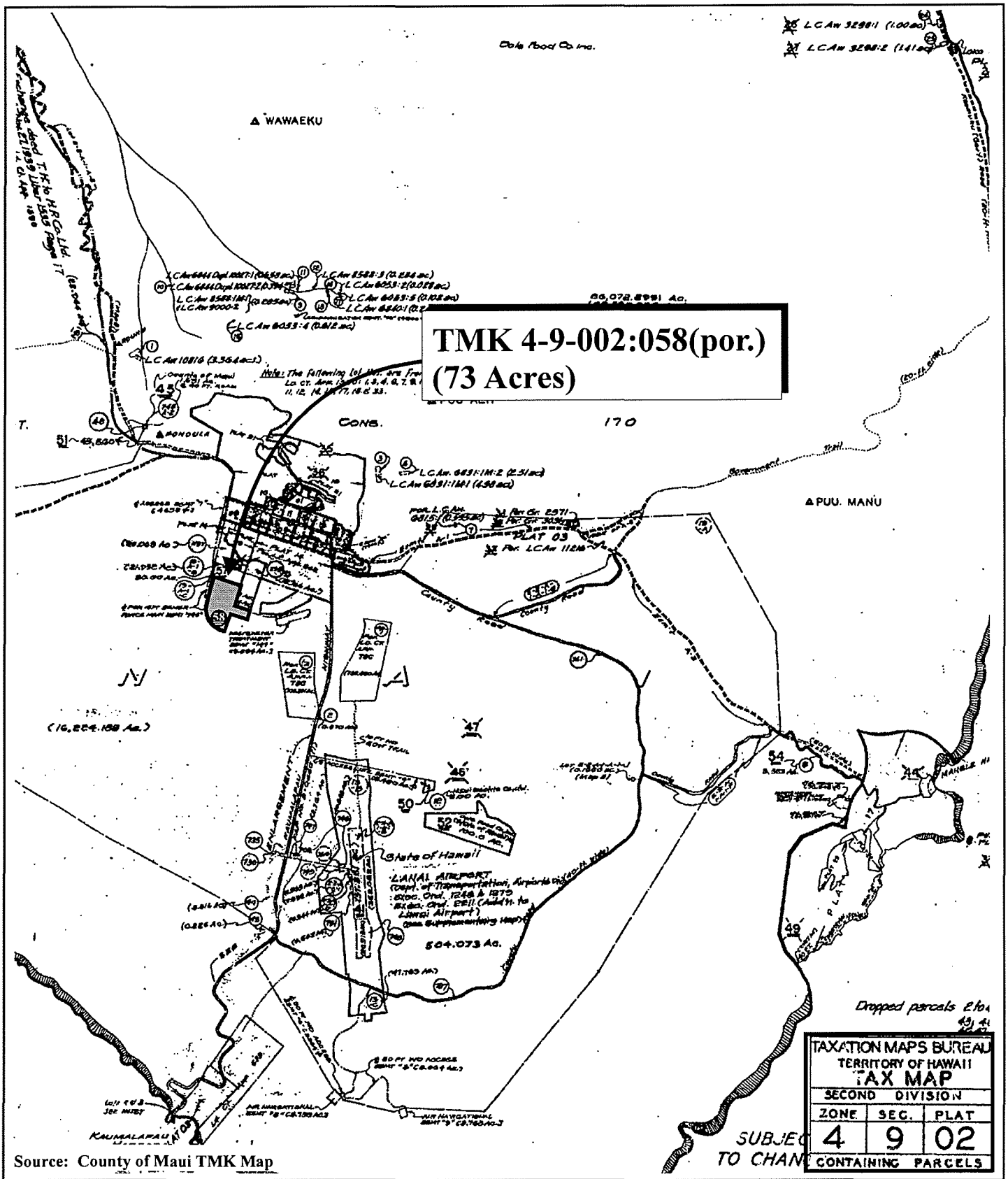
The 115-acre parcel was donated to the County of Maui by Castle & Cooke Resorts, LLC as fulfillment of Condition No. 2 of Change in Zoning Ordinance No. 2140, adopted on August 13, 1992 for the Koele Project District. See **Figure 2**.

Condition No. 2 states: *"The Declarant shall donate in fee simple absolute, at no cost and free and clear of all mortgage and lien encumbrances, 115 acres of land adjacent to the Lower Waialua single-family site to the County as shown in Exhibit "A" (shaded area) attached hereto and by reference made a part hereof, for an affordable housing project. The project shall be similar in design, quality and density to the recent affordable housing developments on Lanai."*

It is noted that the remaining 42 acres of the 115-acre site has been set aside for use by the State Department of Education (DOE) for the planned expansion of the Lanai High and Elementary School.

B. PROPERTY LOCATION, EXISTING USE, AND LAND OWNERSHIP

Identified by TMK 4-9-002:058(por.), the subject property is located within Lanai City. Land uses surrounding the subject property include the Lanai High School and Elementary School, a Department of Hawaiian Home Lands subdivision, Olopua Woods Subdivision,



Source: County of Maui TMK Map

Figure 1 Proposed Lanai Affordable Housing Project

Regional Location Map

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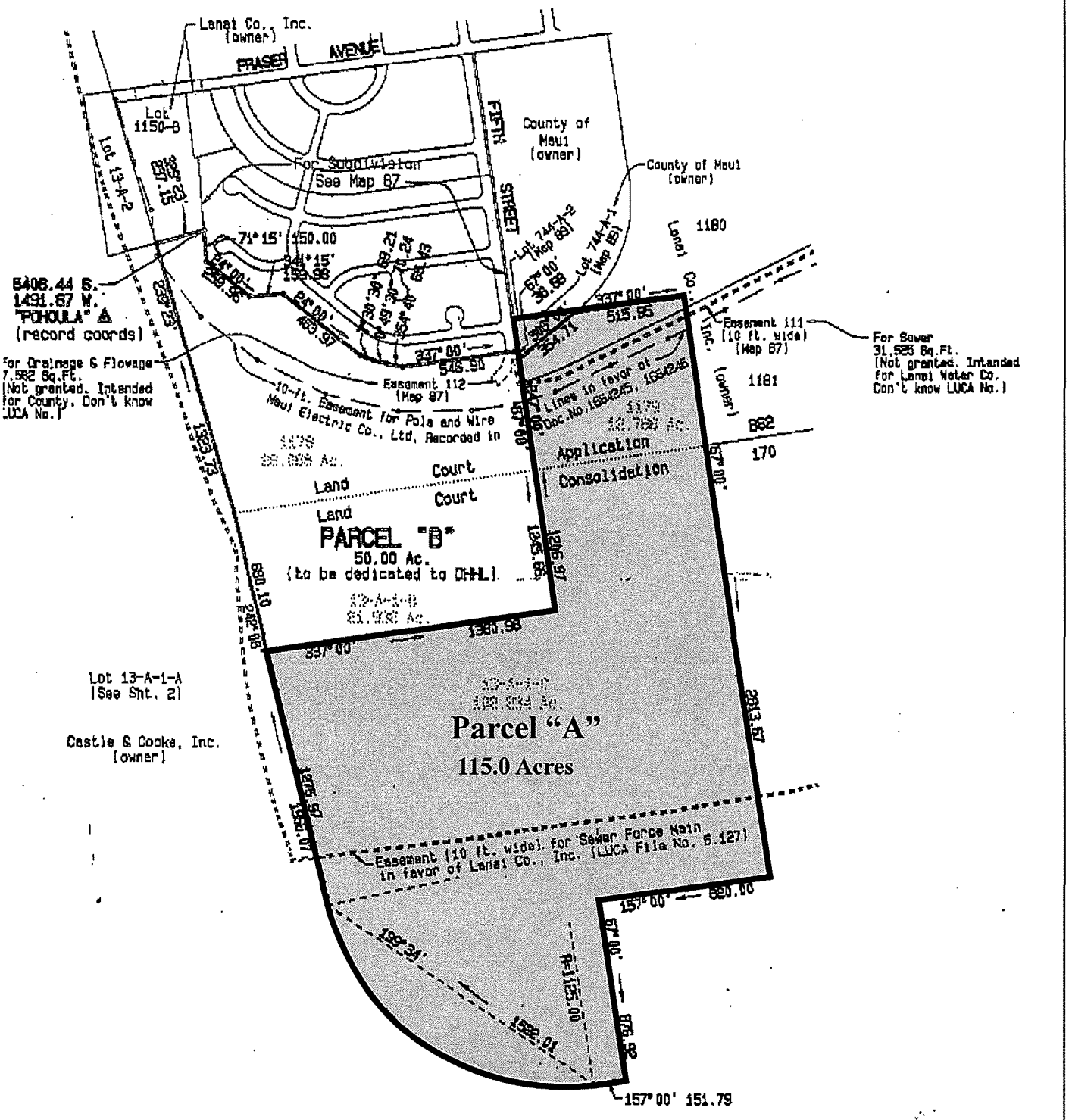

Source: Belt Collins Hawaii

Figure 2

Proposed Lanai Affordable Housing Project

Property Site Map

NOT TO SCALE

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PAI/LanaiCityHousing/propsitemap

and vacant agricultural lands. The 73-acre project site, as delineated in **Figure 3**, is currently vacant. The County of Maui is the owner of the subject property.

C. PROPOSED ACTION

1. Project Need

Housing on Lanai is separated into two (2) distinct segments: resort and workforce or resident housing. Workforce housing is located within the limits of Lanai City.

ACM Consulting, Inc. conducted a Lanai Affordable Housing Survey and interviews with representatives of the island's real estate market. Of the respondents in the survey, 41 percent currently rent. According to the survey results and interviews, the community expressed a desire for affordably priced three-bedroom and two-bathroom single-family home, of between 1,200 and 1,400 square feet. The proposed Lanai Affordable Housing Project is viewed as a means to meet the long-term housing needs and desires of the island's residents.

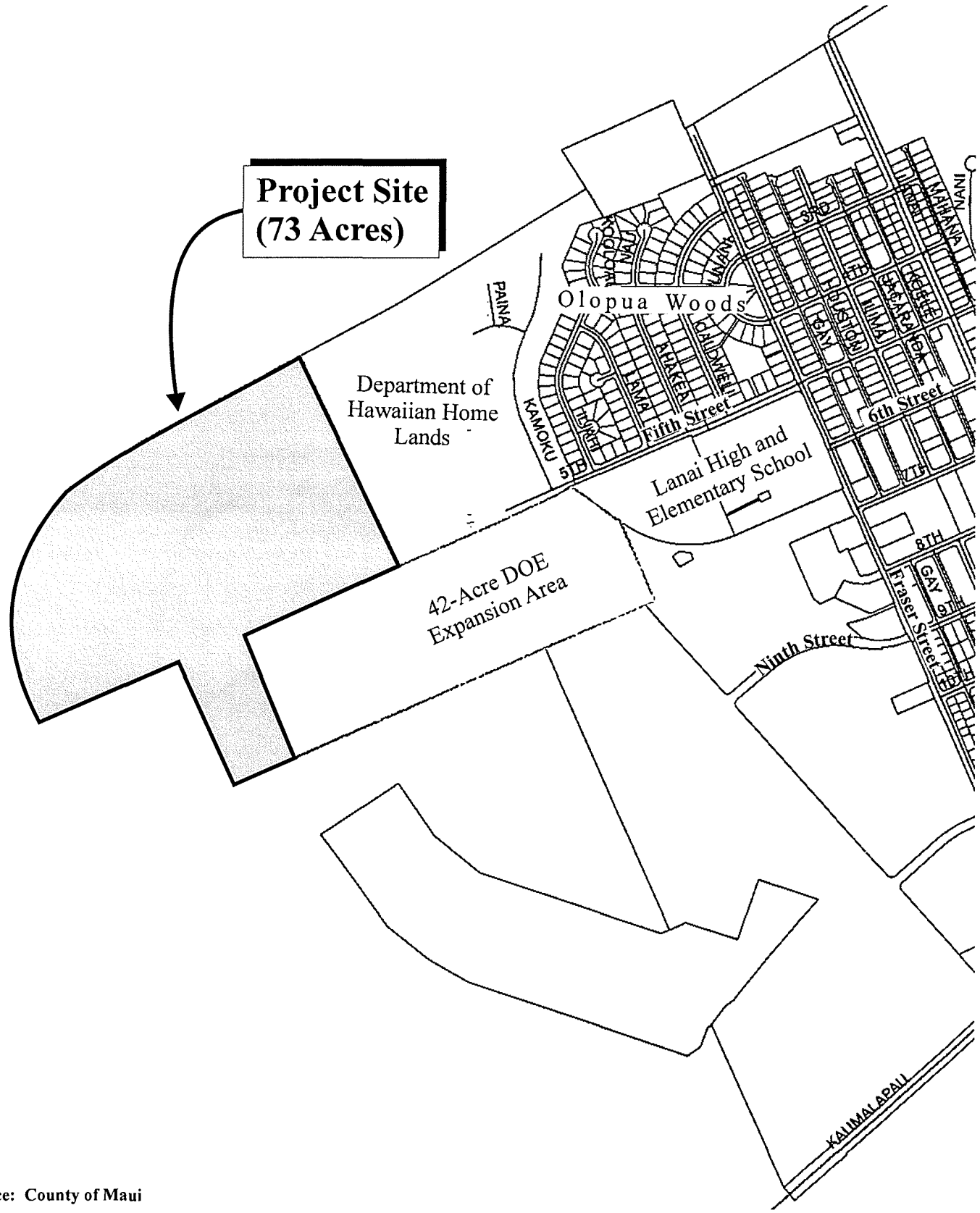
The Lanai Affordable Housing project is intended to provide housing to existing residents on Lanai. According to the Maui Planning Department, the average household size for Lanai Island is forecasted in **Table 1** below:

Table 1. Average Household Size for Lanai Island

	2010	2015	2020	2025	2030
Household Size	2.64	2.60	2.56	2.53	2.51
Source: Maui Planning Department, 2006.					

Phase 1 is anticipated to be constructed in 2015. Based on the forecasted household size, the 81 dwelling units will house approximately 211 persons. Depending on the absorption rate, subsequent units will be constructed over the next 17 years to accommodate the growing population.

The population of Lanai is projected to increase as indicated in **Table 2**:



Source: County of Maui

Figure 3

Proposed Lanai Affordable Housing Project

Property Location Map

NOT TO SCALE

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PAI\LanaiCityHousing\PropertyLocation

Table 2. Population Projections for Lanai Island

	2010	2015	2020	2025	2030
Population	3,735	4,046	4,308	4,598	4,901
Increase		311	262	290	303
Source: Maui Planning Department, 2006.					

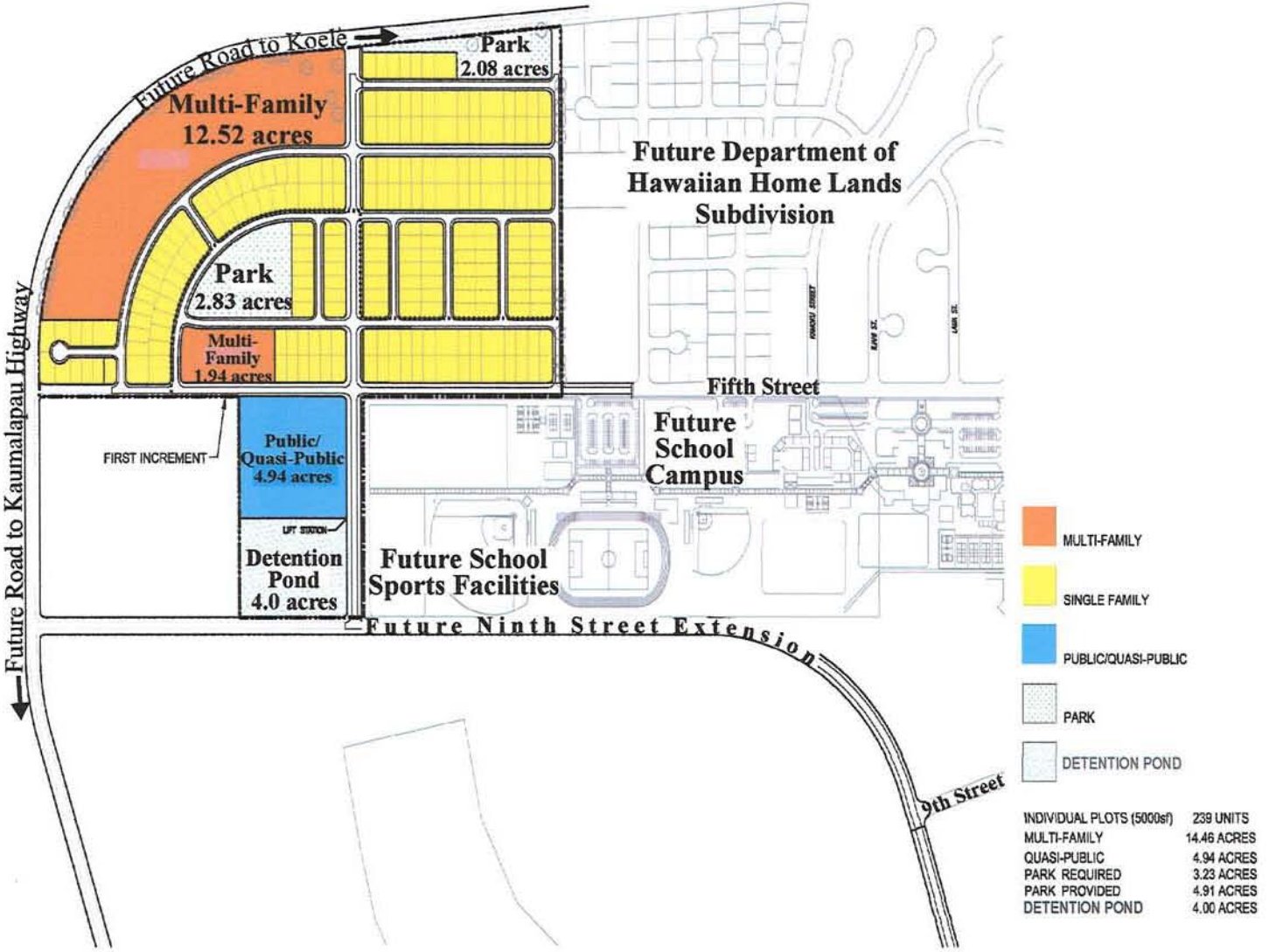
Based on the anticipated population growth in 2015, the 81 dwelling units will provide housing units for this anticipated growth.

2. Proposed Development

Preliminarily, the project will consist of approximately 412 residential units. According to the project's conceptual master plan, there will be 239 house lots of approximately 5,000 square feet on 29.15 acres and 14.48 acres of multi-family with a proposed density of 12 units/acre. At this density, approximately 173 multi-family units can be accommodated within the project site. The project will also include two (2) park sites consisting of 2.83 acres and 2.08 acres. In addition, a 4.94-acre public/quasi-public site will be for a future community center and a 4.0-acre detention pond are proposed. Approximately 15.52 acres will be for street right-of-way. See **Figure 4**.

The first increment of the project will consist of approximately 58 single-family lots, 23 multi-family units, a 2.83-acre park, a 4.94-acre public/quasi-public site, and a 4.0-acre open space (detention pond). See **Figure 5**.

The conceptual plans for the project reflect the architectural details recommended in the Lanai City Community Design Guidelines dated April 1997. The plan proposes three (3) wood frame one-story single-family models and a handicap accessible model unit. The single-family dwellings will include three (3) bedrooms and two (2) bathrooms. Except for the handicap accessible unit, the dwellings will be constructed



Source: Pacific Architects, Inc.

Figure 4 Proposed Lanai Affordable Housing Project

Conceptual Master Plan

NOT TO SCALE

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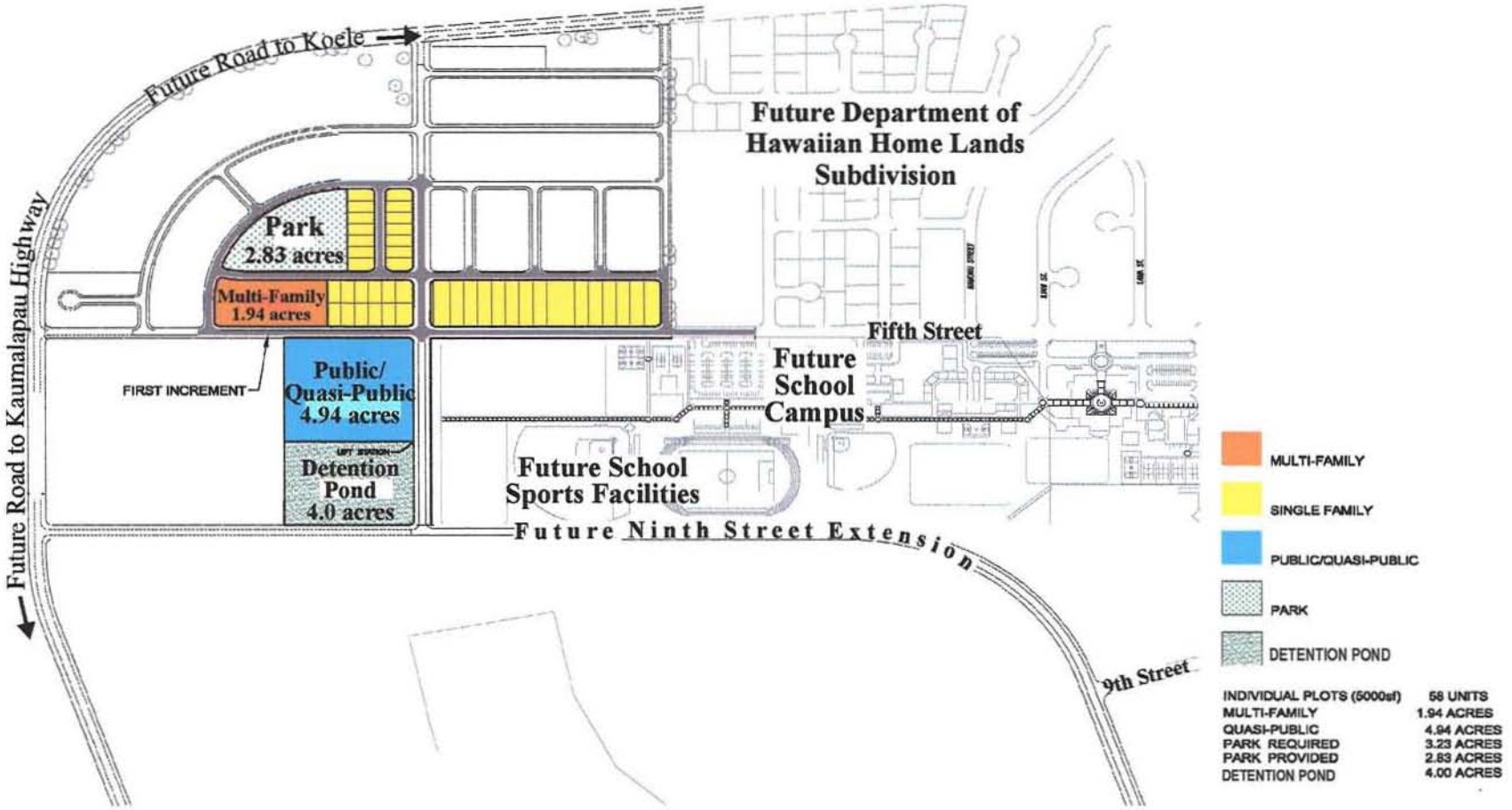

Source: Pacific Architects, Inc.

Figure 5 Proposed Lanai Affordable Housing Project

First Increment Development Concept

NOT TO SCALE

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on post and pier reflecting the plantation architecture of the older homes in Lanai City. See **Figure 6**. The project also includes three (3) wood-frame multi-family models consisting of two-story units with living areas on the ground floor and sleeping areas on the second floor. See **Figure 7**.

Access to the project site will be via an extension of Fifth Street. Additionally, a Ninth Street extension is proposed to facilitate long-term traffic circulation in the vicinity of the project site.

D. ENTITLEMENTS REQUIRED

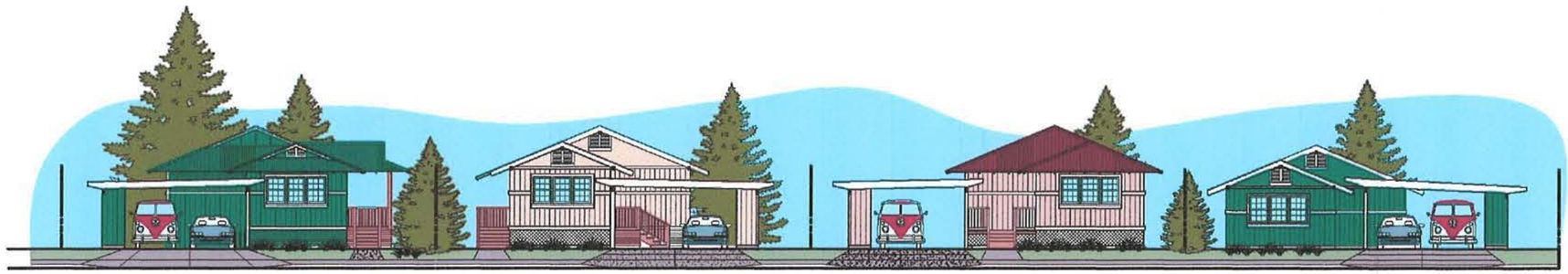
The Lanai Affordable Housing project has been developed to meet the criteria for a Section 201H-38, HRS project by the DHHC. Section 201H-38, HRS promotes the delivery of affordable housing by allowing the exemption of endorsed project from:

> *"... 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 and Change in Zoning processes, as well as other County requirements to support the timely implementation of the project, without compromising public health, safety, or welfare considerations. Proposed exemptions are presented in **Appendix "A"**.

The current State Land Use designation for the plan area 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 "Urban" District will be processed. The SLUC petition will encompass the 73-acre project area and follow the provisions of Section 15-15-97 of the Land Use Commission Rules, pertaining to Section 201H-38, HRS processing.

Subdivision design and construction of the proposed improvements will be initiated upon completion of the SLUC DBA and County Section 201H-38, HRS processes.



Model 'A' Model 'B' Model 'C' Accessible Unit

TYPICAL STREET SCENE

TYPICAL MODEL UNITS

Source: Pacific Architects, Inc.

Figure 6

Proposed Lanai Affordable Housing Project

Conceptual Plans of Single Family

NOT TO SCALE

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Prepared for: County of Maui, Dept. Of Housing and Human Concerns

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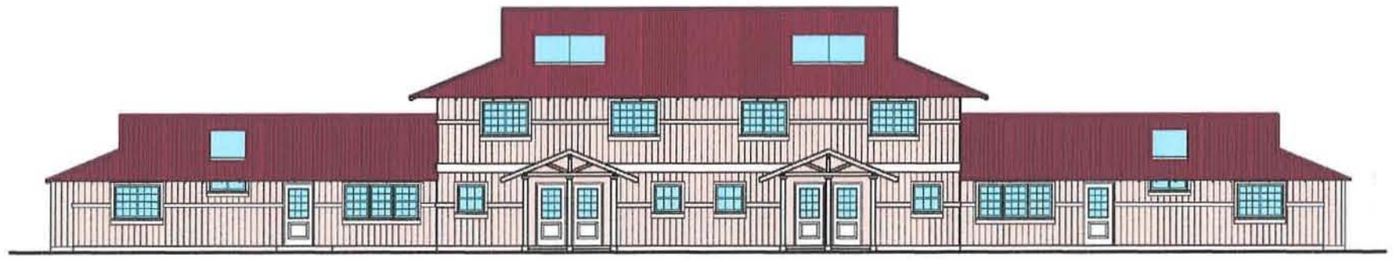

Front Elevation

Typical Side Elevation

Rear Elevation

Source: Pacific Architects, Inc.

Figure 7

Proposed Lanai Affordable Housing Project

Conceptual Plans of Multi Family

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E. REGULATORY CONTEXT AND CHAPTER 343, HAWAII REVISED STATUTES

The Lanai Affordable Housing project will involve the use of County lands and funds. As such, the processing of an Environmental Assessment (EA) pursuant to Chapter 343, Hawaii Revised Statutes (HRS) will be required. This EA is being prepared pursuant to both HRS, Chapter 343 and Chapter 200 of Title 11, Department of Health Administrative Rules, Environmental Impact Statement Rules. Accordingly, this document addresses the project's technical characteristics, environmental impacts and alternatives, and advances findings and conclusions relative to the significance of the proposed action. The approving agency for the EA is the DHHC.

F. ANTICIPATED DEVELOPMENT SCHEDULE

Additional funds will be required before construction can be initiated. The DHHC will need to include the project into the County of Maui budget process as the project proceeds through the proposed entitlements.

The project will be developed over a multi-phase time horizon anticipated to be approximately 17 years in duration.

The total estimated cost of the proposed project is approximately $23 million for the site development.

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

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A. PHYSICAL ENVIRONMENT

1. Surrounding Land Uses

a. Existing Conditions

As previously indicated, the subject property is situated within Lanai City. The area is characterized by vacant agricultural lands, single-family uses, as well as park, public uses, and open space. Single- and multi-family residential properties surround the town's commercial core located across Dole Park. Project District 2 (Koele) is located north of Lanai City.

Other urban areas of Lanai include Lanai Airport, situated about 3.2 miles to the southwest, Kaumalapau Harbor, the commercial seaport situated about seven (7) miles to the southwest, and Lanai Project District 1 (Manele) situated about 8.0 miles to the south of Lanai City.

b. Potential Impacts and Proposed Mitigation

The proposed action enhances the residential component of Lanai City. The proposed action will complement existing surrounding land uses, as well as other permitted uses which may be developed in the area in the future. The project shall be similar in design, quality, and density to other workforce housing developments on Lanai.

The project site is in close proximity of Lanai High and Elementary School and the first phase Department of Hawaiian Home Lands Residential Subdivision, as well as Olopua Woods. The proposed project will be an extension of the existing residential use of the area. The close proximity

of the school will encourage future students in the project to walk or bike to school.

2. Climate, Topography, and Soil Characteristics

a. Existing Conditions

Like most areas of Hawaii, Lanai's climate is relatively uniform year-round. The region's tropical climate, its position relative to storm tracks and the Pacific anticyclone, and the surrounding ocean combine to produce this stable climate. Variations in climate among different regions then, is largely left to local terrain.

Temperature data collected at Lanai Airport indicates that August is typically the warmest month, with an average temperature of 75.4 degrees Fahrenheit, while January is the coolest month of the year with an average temperature of 62.4 degrees Fahrenheit (Maui County Data Book, 2008).

Rainfall at Lanai City is highly seasonal, with most precipitation occurring between November and April when winter storms hit the area. Precipitation data collected at Lanai City Airport in 2007 shows that January was the wettest month, with 5.3 inches of precipitation, while June was the driest with 1.26 inches of precipitation. The average annual total rainfall is 41.55 inches (Maui County Data Book, 2008).

The prevailing winds are northeasterly trades 90 percent of the time during summer and 50 percent of the time during winter (Atlas of Hawaii).

The subject property is characterized as having a level to gently sloping topography. The property lies at an elevation of approximately 1,562 feet above mean sea level (amsl). The project site is located within the Molokai-Lahaina association of soils. See **Figure 8**. Found on small areas that are subject to ponding, this soil association is characterized as deep, nearly level to moderately steep sloping, and well drained that have a

SOIL ASSOCIATIONS

1 — Jaucas-Mala-Pulehu association: Deep, nearly level and gently sloping, excessively drained and well-drained soils that have coarse-textured to fine-textured underlying material; on alluvial fans and in drainageways

2 — Molokai-Lahaina association: Deep, nearly level to moderately steep, well-drained soils that have a moderately fine textured or fine textured subsoil; on uplands

3 — Kahanui-Kalae-Kanepuu association: Deep, gently sloping to moderately steep, well-drained soils that have a dominantly fine-textured subsoil; on uplands

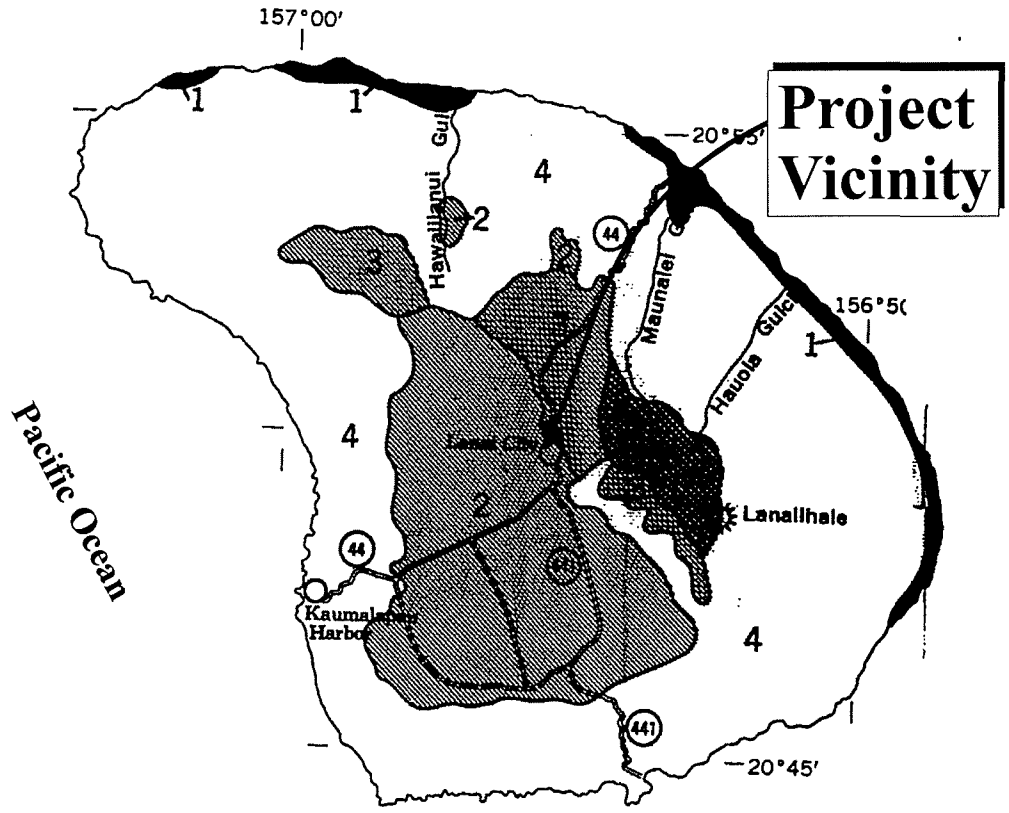
4 — Very stony land-Rock land association: Gently sloping to very steep, rocky and stony land types; on uplands and in gulches and valleys

5 — Rough broken land-Oli association: Shallow to deep, very steep to precipitous soils in gulches and moderately deep to deep, gently sloping to steep, well-drained soils that have a medium-textured and moderately fine textured subsoil; on uplands

6 — Rough mountainous land-Amalu-Olokui association: Shallow, very steep lands of mountains and gulches and deep to shallow, gently sloping to hilly, poorly drained soils over soft weathered rock; on uplands

January 1971

Kalohi Channel



Source: USDA Soil Conservation Service

Figure 8

Proposed Lanai Affordable Housing Project

Soil Association Map

NOT TO SCALE

Prepared for: County of Maui, Dept. Of Housing and Human Concerns

MUNEKIYO & HIRAGA, INC.

PAI/LanaiCityHousing/Soil Association Map

moderately fine course texture. Waihuna clay, 0 to 3 percent slopes (WoA), defines the soil type for the project site. It is characterized by moderately slow permeability, slow runoff, and slight erosion hazard. See **Figure 9.**

The State Department of Agriculture has established three (3) categories of Agricultural Lands of Importance to the State of Hawaii (ALISH). "Prime" lands are those lands which possess the soil quality, growing season, and moisture supply needed to produce high yields of crops economically, when treated and managed according to modern farming techniques.

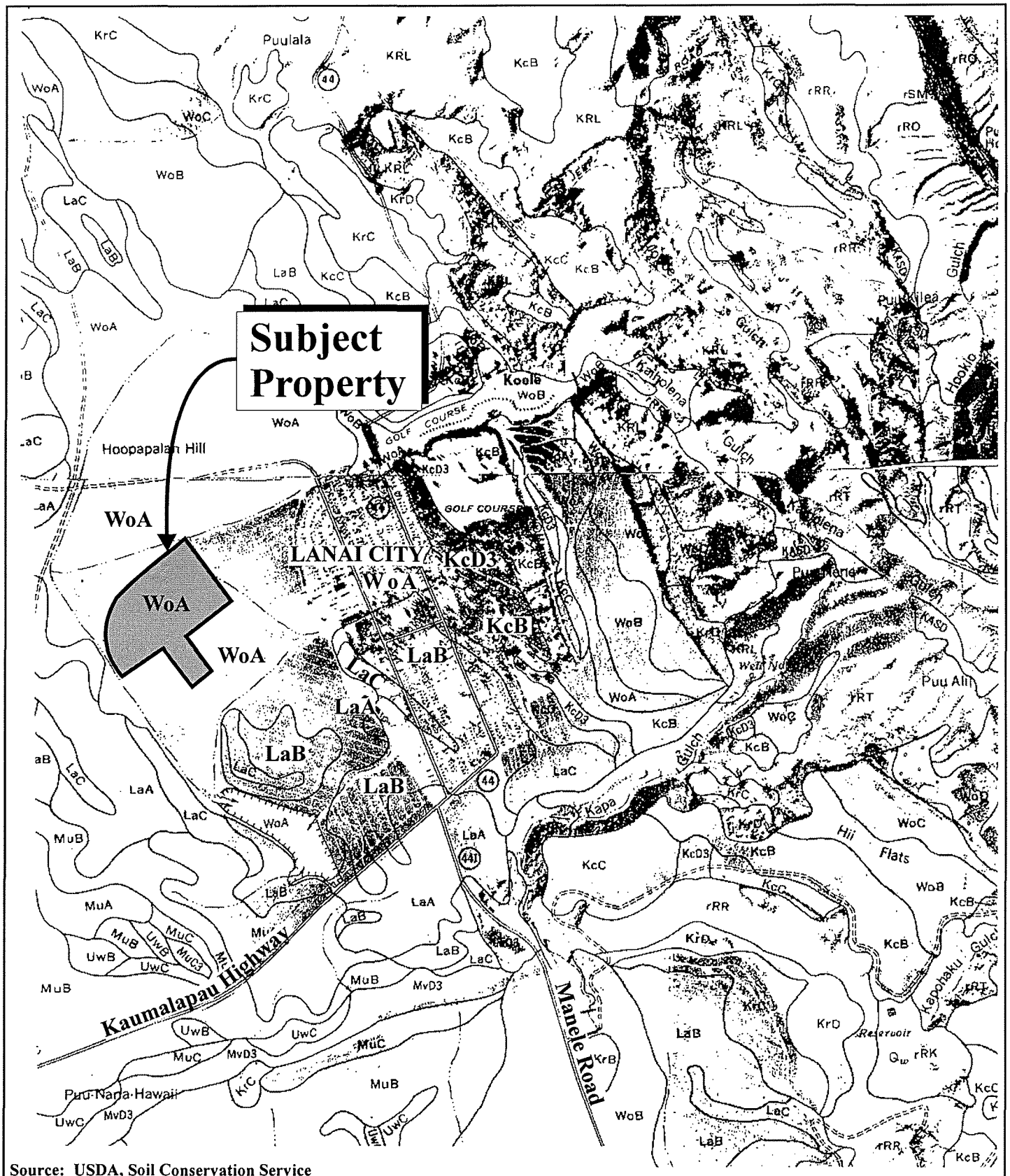
"Unique" lands have similar crop specific characteristics, while lands rated "Other" are not classified as "Prime" or "Unique", but are of Statewide or local agricultural importance. Lands not rated "Prime", "Unique", or "Other" are "Unclassified". According to the ALISH map, the lands underlying the project site are designated "Prime". See **Figure 10.**

The University of Hawaii, Land Study Bureau (LSB) developed the Overall Productivity Rating, in association with the Detailed Land Classification for the island of Lanai, 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 subject property is located on lands primarily designated as "C" by the LSB. The "C" designation reflect lands in the moderate range of productivity. The specific designation of "C6" indicates that these lands are non-stony, fine textured and moderately well-drained. See **Figure 11**.

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

The proposed project is not anticipated to have any substantial adverse impacts on climate, topography or soil conditions. Erosion control measures and Best Management Practices (BMPs) will be implemented during the construction period to minimize soil erosion and control sedimentation. An application for a National Pollutant Discharge Elimination System (NPDES) permit for construction-related activities will



Source: USDA, Soil Conservation Service

Figure 9

Proposed Lanai Affordable Housing Project

Soil Classification Map

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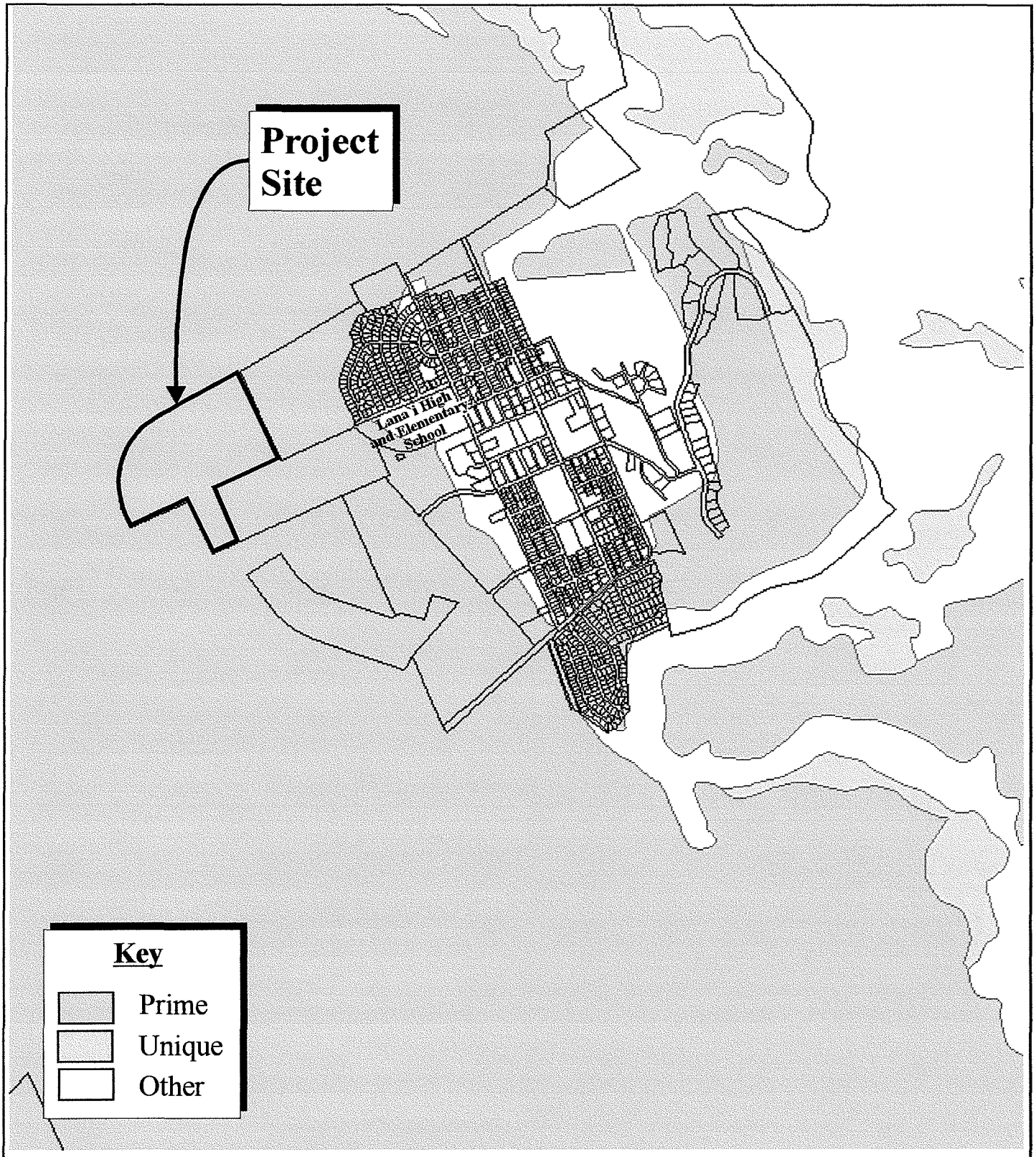

Source: State Department of Agriculture

Figure 10

Proposed Lanai Affordable Housing Project

Agricultural Lands of Importance to the State of Hawaii

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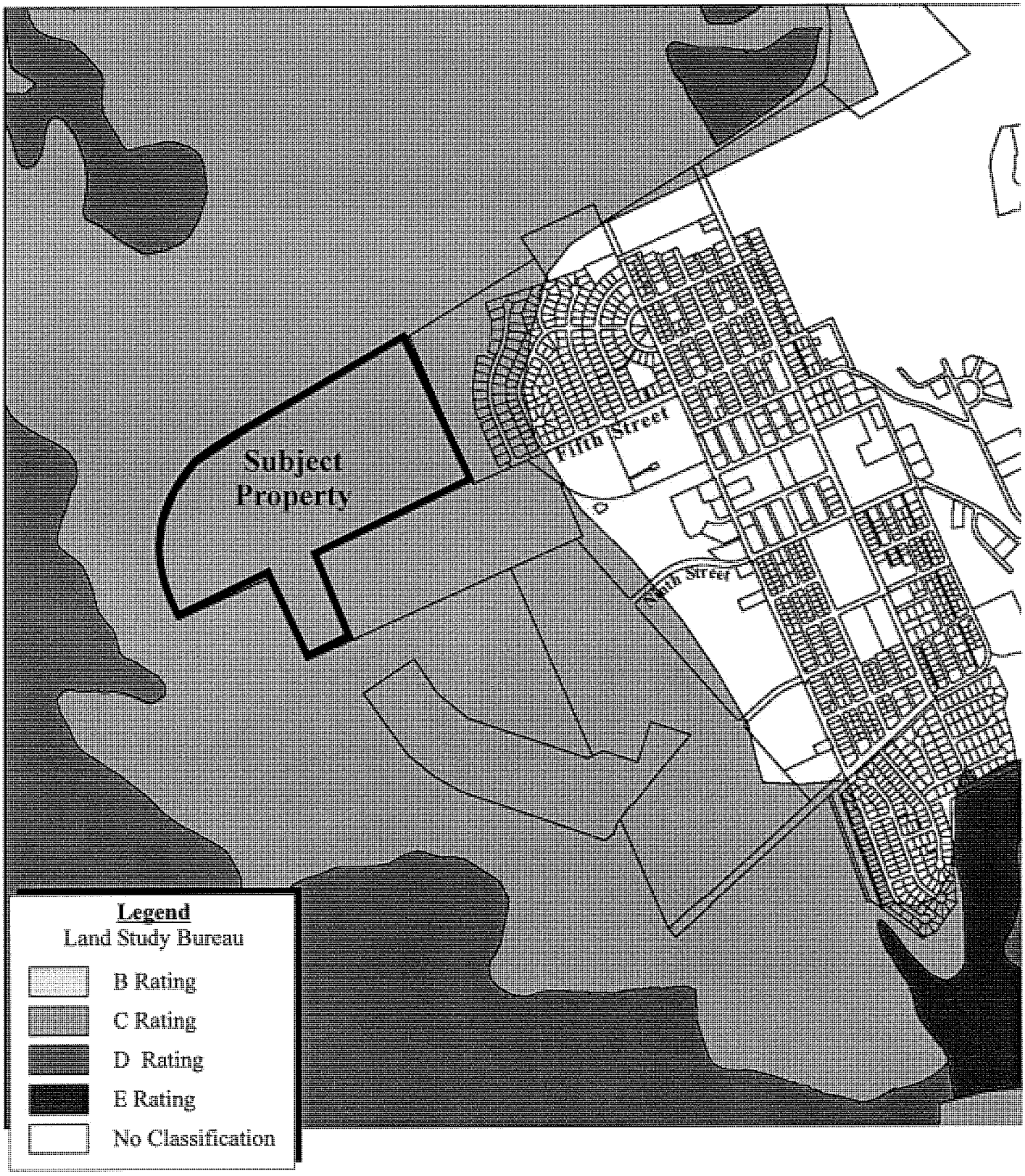

Source: Land Study Bureau, University of Hawaii

Figure 11

Proposed Lanai Affordable Housing Project

Detailed Land Classification Map

NOT TO SCALE

Prepared for: County of Maui, Dept. Of Housing and Human Concerns

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be submitted to the State Department of Health for review and approval as applicable.

3. Flood and Tsunami Hazards

a. Existing Conditions

The Flood Insurance Rate Maps dated September 25, 2009 for the island of Lanai identifies the subject property in Zone X, an area of minimal flooding. See **Figure 12**. Lanai City is located at an elevation of approximately 1,620 feet above mean sea level (amsl). The tsunami evacuation map for this area of Lanai indicates that the project site is located beyond the limits of coastal flooding.

b. Potential Impacts and Proposed Mitigation

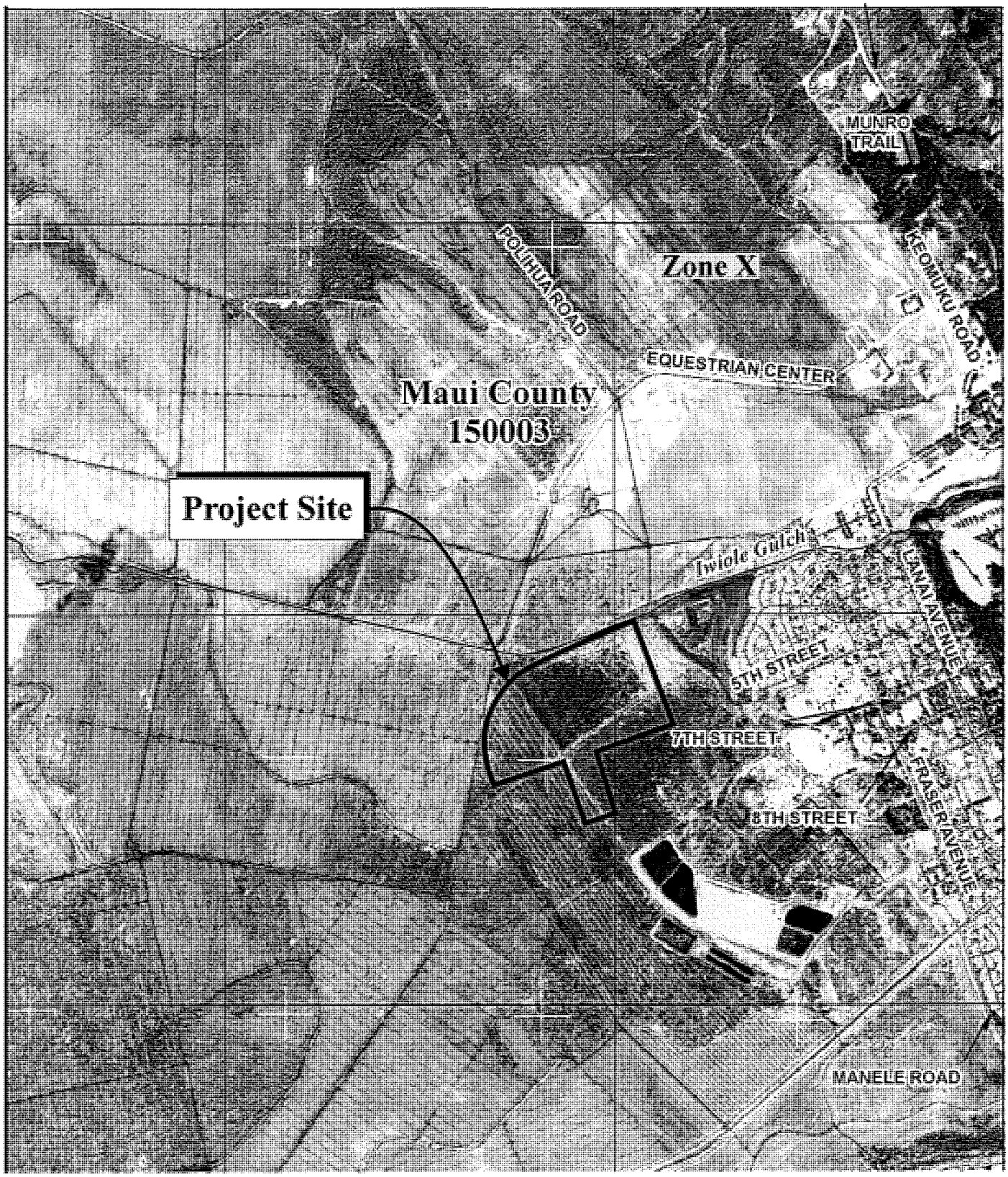
The use of the subject property for residential use is not anticipated to create adverse flood hazard conditions. Post-development drainage mitigation measures will be implemented to ensure that adjacent and downstream properties will not be adversely affected by the proposed action. Because the project site is located in an upland region of the island, there are no threats to the surrounding area from coastal wave action.

4. Flora and Fauna

a. Existing Conditions

The Flora and Fauna Study conducted for the property indicates that all vestiges of any native flora and fauna have since disappeared from the vicinity of the project site. The vegetation in the project area is dominated by non-native species. No endangered, threatened or candidate plant species or their habitat were found on the property. See **Appendix "B"**.

During a walk-through of the site, four (4) species of mammals were detected which included the Axis deer, mouse, cat, and horse. No evidence was found of the native Hawaiian hoary bat. Eleven non-native birds were identified within the project area. The habitat on the property is not suitable for Lanai's native forest birds or seabirds.



Source: FEMA, Panel No. 1500030500E

Figure 12 Proposed Lanai Affordable Housing Project

Flood Insurance Rate Map

NOT TO SCALE

Prepared for: County of Maui, Dept. of Housing and Human Concerns

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A range of insects were observed on the property. The host plant species for the endangered Blackburn's sphinx moth was not found on the property and no Blackburn's sphinx moths or their larvae were observed. Refer to **Appendix "B"**.

b. Potential Impacts and Proposed Mitigation

The Lanai Affordable Housing project will not have a significant negative impact on any endangered, threatened or candidate species or their habitats. However, it is recommended that any outdoor lights in the proposed project should be shielded to direct the light downward.

5. Noise and Air Quality

a. Existing Conditions

The project site does not experience significant adverse noise or air quality conditions. Noise and airborne pollutants that do exist can largely be attributed to noise and exhaust from occasional construction activities or vehicle traffic in the area. The nearest source of airborne pollutants is the sewage treatment plant located approximately 3,000 feet southeast of the project. The prevailing winds are northeasterly trades which blow away from the project site and minimizes any potential impacts from odors.

b. Potential Impacts and Proposed Mitigation

Air quality impacts associated with the project include dust generated by short-term construction related activities. Site work, such as grading and grubbing as well as excavation and fill, are associated with the generation of airborne particulates. BMPs, such as regular watering and sprinkling, will be implemented to minimize fugitive dust.

In the long term, there will be no significant impacts to air quality associated with the proposed project.

As with air quality, ambient noise conditions will be impacted by construction activities. Noise from construction activities will be unavoidable during the construction period. To aid in the mitigation of

noise impacts, construction activities will be conducted only during daylight hours. In addition, the use of sound attenuating equipment and proper vehicle and equipment maintenance will be utilized, as necessary, to minimize impacts to ambient noise levels during construction.

In general, the project will not generate adverse long-term noise conditions.

6. Scenic and Open Space Resources

a. Existing Conditions

The project area is not a part of, nor does it lie within a scenic view corridor. Lanai City is located approximately 1,575 feet in elevation and stands in the shadow of Lanai Hale, Lanai's highest mountain. Norfolk pines that line the streets give the city a park-like appearance. The houses within the vicinity of the project site maintain a plantation-style architecture with neatly trimmed landscaping.

b. Potential Impacts and Proposed Mitigation

The project area is former pineapple cultivated lands located on the outskirts of the city and is not part of a scenic corridor and would not affect views from inland vantage points.

The proposed project will not alter the essential country town ambiance of the city and is consistent and compatible with existing surrounding land uses.

7. Chemical and Fertilizer Use

a. Existing Conditions

The property is agricultural lands previously used for pineapple cultivation. A visual site survey of the property and records review conducted by EnviroQuest, Inc. revealed nothing unusual to indicate any environmental concerns due to the previous agricultural use of the property or illegal dumping. There was no visible staining to indicate release of hazardous

materials, nor were there any observed illegal dump sites on the property. See **Appendix "C"**.

b. Potential Impacts and Proposed Mitigation

A Phase 1 Environmental Site Assessment prepared by EnviroQuest, Inc. in conformance with accepted American Society for Testing and Materials (ASTM) standards, revealed no evidence of recognized environmental conditions in connection with the property. With implementation of the proposed Lanai Affordable Housing Project, no adverse effects to surface, underground and marine resources are anticipated. Refer to **Appendix "C"**.

8. Archaeological Resources

a. Existing Conditions

The subject property for the Lanai Affordable Housing project and the proposed extension of Fifth Street to the project site was previously disturbed during its former commercial agricultural use during pineapple cultivation. Portions of the future Ninth Street extension was also disturbed during its former commercial agricultural use.

An Archaeological Inventory Survey (AIS) has been prepared by Cultural Surveys Hawaii. See **Appendix "D"**. Results of the AIS, discussed below, revealed no significant finds.

b. Potential Impacts and Proposed Mitigation

The project site has been heavily modified by agriculture activities associated with pineapple cultivation and recent bulldozing. No surface indications of significant historic properties were identified on the project site. Due to the dense vegetation growth and low overhead shrubbery, subsurface testing of the project site was not feasible. Previous intensive cultivation of the site indicates little to no potential for encountering *in situ* significant subsurface cultural deposits.

The AIS also studied the proposed access corridor for the future extension of Ninth Street to the project site which included subsurface testing of the undisturbed northeastern portion of the proposed access corridor. One historic property identified as SIPH 50-40-98-6649 (6649) was identified. Site 6649 is a historic era culvert headwall likely associated with the expansion of Lanai City and development of the drainage system. Site 6649 is considered significant under Criterion D because of the potential to yield information important for understanding the history of the region. The AIS has recorded the information through location documentation, written descriptions, and photographs and no further historic preservation work is recommended.

Due to the potential for undiscovered Hawaiian stone artifacts, the AIS recommends that precautionary archaeological monitoring of the initial grubbing and grading activities associated with the proposed project will be conducted. Refer to **Appendix "D"**.

9. Historic and Cultural Resources

a. Existing Condition

A Cultural Impact Assessment was completed by Cultural Surveys Hawaii, Inc. on July 2009. See **Appendix "E"**. The project area is noted for past agricultural uses from its early historic period to the present. It is a common occurrence for Hawaiian stone artifacts such as *ulu maika*, *pohaku ma'a*, and *imu* stones to be discovered in formerly cultivated pineapple fields. According to several respondents, it is highly likely that such stone artifacts will be uncovered during development of the Lanai Affordable Housing project.

Game mammals and birds populate the island. Axis deer are known to use the project site. Lanai residents hunt as a subsistence practice which is a strong tradition in the community.

The nearby Lanai High and Elementary School is the center of community activities, such as sports, dances, and social events. Several women interviewed at the Lanai Senior Center spoke fondly of their memories of

activities at the school which continues to be the center of the community. Refer to **Appendix "E"**.

b. Potential Impacts and Proposed Mitigation

According to the Cultural Impact Assessment prepared for the project, it is believed that the affordable housing project will not adversely impact traditional/cultural practices. On the contrary, some individuals consulted believe that additional affordable housing units will enhance and benefit the community. As a result of the consultation process, it was found that no traditional or cultural resources will be adversely impacted by the proposed project. Refer to **Appendix "E"**.

B. SOCIO-ECONOMIC ENVIRONMENT

1. Regional Land Use and Community Character

The island of Lanai is the sixth largest island of the populated Hawaiian Islands, with a land area of about 90,000 acres or 141.3 square miles. Of this total area, lands within the State "Agricultural" District occupy 72.9 square miles, while lands within the "Conservation" District encompass 59.7 square miles. "Urban" and "Rural" designated lands comprise 5.0 and 3.7 square miles, respectively.

Historically, Castle & Cooke, Inc. acquired more than 98 percent of the island and had established a 16,000-acre pineapple plantation surrounding its company town, Lanai City by the 1920s. For most of the 20th century, Lanai remained a plantation community. In the early 1990s, the declining profitability from pineapple cultivation resulted in a transition from an agricultural to visitor industry-based economy.

The island of Lanai is accessible by commercial inter-island flights, barge and ferry services, and private boats and aircraft. Lanai City is the island's town center and its residential and commercial core. Lanai Airport, located 3.2 miles southeast of the project site, is the island's only airport linking Lanai to Oahu and other neighbor islands. Kaumalapau Harbor is a privately owned small barge harbor located approximately seven (7) miles southwest of the property on the southwest coast of Lanai. It is the island's only commercial seaport. Fuel and commodities for the island's residents come through this harbor. The Manele Small Boat Harbor

accommodates various recreational and commercial boating activities, and a daily ferry shuttle service to and from Lahaina, Maui.

Lanai's attraction to visitors is attributed to its comfortable year-round climate and its world renown, first class golf course resorts, which include The Lodge at Koele and the Manele Bay Hotel. Hotel Lanai in Lanai City also offers accommodations for visitors to the island.

2. Population and the Economy

a. Existing Conditions

The resident population of Lanai has grown steadily within the past 20 years. This gain was particularly evident during the period from 1990 to 2000 as the island's emerging visitor industry attracted new employees for its resort operations.

In 1990, the resident population of Lanai was at 2,426. In 2000, the population was 3,193, an increase of 31.6 percent (Maui County Data Book, 2008).

Growth on Lanai is expected to continue with the resident population projected to 3,735 by 2010, 4,046 by 2015 and 4,308 by 2020 (Maui Planning Department, 2006).

With its shift to a visitor industry-based economy, the island of Lanai has emerged as one of the foremost luxury golf resort destination areas in the world. Conde Nast Travel magazine has ranked in the past the Manele Bay Hotel and the Challenge at Manele number one and the Lodge and The Experience at Koele number four in golf resorts in North America and the Carribean.

The Hawaii jobless rate (seasonally adjusted) in November 2008 was 5.0 percent statewide and 4.4 percent on Lanai. In November 2009, the statewide jobless rate was 7.0 percent and 9.2 percent for Lanai, an increase of 2.8 percent and 4.8 percent, respectively (State Department of Labor and Industrial Relations Labor and Occupational Information Hawaii, December 2009).

According to the Hawaii Workforce Informer (HIWI), Lanai has a civilian labor force of 1,600 persons of which 150, or 10.1 percent, are unemployed. Of the 1,450 employed civilian labor force, approximately 50 percent, or 700 persons, were employed in the Leisure and Hospitality Industry. Six hundred (600) of these workers were in accommodations and food service (HIWI, December 2009). The other two (2) major employers were professional and business services, and government which employed 200 persons each.

The Island of Lanai experienced a 26 percent drop in visitor arrivals, 22.7 percent drop in visitor days, and 29.1 percent drop in spending in 2009 (Hawaii Tourism Authority, December 2009). The reduction in tourism has resulted in layoffs, as well as reduction of hours at the resorts.

b. Potential Impacts and Proposed Mitigation

On a short-term basis, the project will support construction and construction-related employment. Accordingly, the project will have a beneficial impact on the local economy during the period of construction.

As the economic outlook for the nation and internationally improves, it is anticipated that the economic outlook for tourism on the island will improve. Since recovery of the local economy is difficult to predict, the project is being phased with a targeted 17-year build out. This build-out duration is subject to change and will be responsive to market conditions. As the visitor industry recovers towards achieving optimal occupancy, the County of Maui will consider market conditions in establishing implementation timeframes for subsequent phases of development.

With regard to impacts to public services, the County of Maui will address future needs via a coordinated budget programming process. Over time, new property taxes incrementally generated by the project may be used to offset the costs of County-provided public service requirements. Additionally, the County has been coordinating the planning of the affordable housing project with the State Department of Education's (DOE) current plans for the adjacent proposed school expansion project and the State Department of Hawaiian Home Lands (DHHL) for DHHL's future development of adjacent lands. Both land planning and infrastructure

development requirements are being actively coordinated with DOE and DHHL staff.

The proposed project is not anticipated to have an adverse impact upon the population. In the long-term, the proposed project will provide both direct and indirect economic benefits to the island's economy.

3. Housing

a. Existing Conditions

Currently, Lanai lacks enough resident housing affordable to the community. Although the real estate industry had been robust on Lanai before the economic downturn, much of the housing sales have been to off-island buyers seeking vacation homes primarily in Koele and Manele Resorts as evidenced by the historic condominium sales and sales prices for the island. Similarly, the median sale prices of single-family residences in recent years have been above $400,000.00 and well out of the affordable range of most residents. The scarcity of affordable housing for residents has resulted in multiple families living under one roof.

The Lanai Housing Survey conducted with the Lanai Community and interviews with individuals familiar with the housing situation on Lanai indicated the following:

- Fifty (50) single-family housing units would be appropriate for the initial phase.
- Housing demand on Lanai is directly influenced by tourism, as the hotels need more workers when it is busy.
- Many current and former Castle & Cooke employees have subsidized rent; therefore, they may not want a mortgage.
- Affordable rental units should see good demand.
- Multi-family housing units may not be as readily accepted as single-family housing units.

The preferred housing unit has been concluded to be a three-bedroom and two-bathroom single-family home, between 1,200 to 1,400 square feet in size. See **Appendix "F"**, Market Study.

b. Potential Impacts and Mitigation Measures

If sales for the Lanai Affordable Housing project were to be initiated today, its absorption rate would likely be low, reflecting current economic down-side conditions. However, there are numerous pre-construction entitlement requirements that need to be addressed before any housing units could be built. While this work is being conducted, it is anticipated that the economic climate will improve. Many economists have estimated 2011 to be a possible turning point. If so, the project may be well positioned to capture a potential upswing in the real estate market, provided the entitlement process is completed by that time. Refer to **Appendix "F"**.

With the help of the Lanai Community, the first increment of the project was identified through meetings with a steering committee of Lanai residents and a community meeting. The first increment is proposed to include approximately 58 single-family lots and 23 multi-family units. It is anticipated that 15 to 20 additional units will be constructed annually after completion of the first increment.

The construction of the Lanai Affordable Housing project will enable the Island's residents to purchase or rent housing units and relieve the existing problem of multiple families living in the same unit.

C. PUBLIC SERVICES

1. Police, Fire Protection and Medical Services

a. Existing Conditions

Police and security services for island residents are provided by the Maui County Police Department (MPD). The Lanai Police Station is situated in Lanai City and is staffed by two (2) Commanders, six (6) patrol officers, and a school resource officer.

Fire prevention, protection, and suppression services for the island of Lanai are provided by the Maui County Department of Fire and Public Safety. Located in Lanai City, the Lanai Fire Station is staffed by fire fighters on alternating work shifts and is equipped with two (2) vehicles with a storage capacity of 700 gallons per vehicle. The station is manned by three (3) Captains, six (6) drivers, and 12 firefighters.

The Lanai Community Hospital is the only major medical facility on the island. The 14-bed facility provides acute and long-term medical care, as well as 24-hour emergency medical service.

Also in Lanai City is the Straub Lanai Family Health Center which provides out-patient medical care for the island's residents including Kaiser Permanente members. In addition, air ambulance service is provided by Mercy Air Hawaii, Inc., while surface ambulance and emergency medical care services are provided by American Medical Response, Inc.

There are no adult residential care homes on the island. Persons needing long-term residential care are accommodated off-island.

b. Potential Impacts and Proposed Mitigation

Police, fire protection and medical services are not expected to be adversely impacted by the proposed project. The project will not extend existing service area limits. The project will be implemented over an anticipated 17 year horizon.

It is noted that the Department of Defense, Office of the Director of Civil Defense has recommended the installation of an omni-directional solar powered 118 Dbc siren within the project to provide ample coverage to the project area.

The length of time to complete the project will allow the County of Maui and State of Hawaii to plan for the incremental increase in demand for police, fire, and medical service. Such services may be funded through additional real property and income taxes attributed to the proposed action.

2. Recreational Facilities

a. Existing Conditions

Public parks and recreational facilities in Maui County are administered and maintained by the Department of Parks and Recreation (DPR). DPR parks and facilities in Lanai City include: the Lanai Community Center, the Lanai Gym and Tennis Courts, and the Lanai Little League Field, Fraser Avenue Park and Kaumalapau Highway/Fraser Avenue Park.

There are also a number of privately owned and maintained recreational facilities that are available for public use. Situated in Lanai City, Dole Park is a privately owned park utilized by the public. Additional privately owned parks utilized by the public include Waialua Park and Hulopoe Beach Park. Olopua Woods Park and Waialua Park are located in Lanai City, while Hulopoe Beach Park is situated near Manele Small Boat Harbor in the Manele Project District.

The Lanai Recreation Center is a privately owned and maintained recreational complex which is utilized by the public. The Center encompasses a heated swimming pool, basketball court, exercise track, fitness course, softball fields, recreational building, and playground.

Other privately operated recreational facilities on Lanai include two (2) 18-hole championship golf courses and a 9-hole golf course. The Experience at Koele and the Challenge at Manele adjoin The Lodge at Koele and the Manele Bay Hotel, respectively. In addition to guests, these privately operated facilities are also available for use by the public. The 9-hole Cavendish Golf Course is a privately operated facility in Lanai City which provides recreational opportunities for Lanai residents at no cost.

b. Potential Impacts and Proposed Mitigation

The master plan for the project includes two (2) park sites consisting of 2.83 acres and 2.08 acres. The 2.83-acre park site is planned to be constructed as part of the first increment of the project. The two (2) park sites will provide a recreational area for the project as well as for residents in nearby neighborhoods.

3. Educational Facilities

a. Existing Conditions

The Lanai region is served by the State Department of Education's (DOE's) public school system.

Located in Lanai City, Lanai High and Elementary School provides elementary and secondary educational facilities and services for children from kindergarten through the twelfth grade. The 2009-2010 enrollment for the school is 542 students.

b. Potential Impacts and Mitigation Measures

The project will be implemented over an anticipated 17 year horizon which allows the State of Hawaii to plan for the increase in students. The State of Hawaii is in the process of developing a Master Plan for the Lanai High and Elementary School and has funds budgeted for the first increment of the Master Plan. The County of Maui is in the process of donating 42 acres to the DOE for expansion of the school. The DHHC and DOE along with the Department of Hawaiian Home Lands (DHHL) are in discussions relative to the coordination of their master plans and infrastructure needs for their respective projects.

4. Solid Waste Disposal

a. Existing Conditions

Single-family solid waste disposal on Lanai is provided by the Maui County Department of Environmental Management (DEM) on a weekly basis, while commercial disposal service is provided by a private disposal service. According to the DEM, the Lanai Landfill as of February, 2009 has a remaining capacity of 178,000 cubic yards and an annual capacity usage of 13,400 cubic yards or 5,127 tons per year. It is estimated that the landfill can accommodate the solid waste needs of the Lanai Community until year 2020 (Department of Environmental Management, Integrated Solid Waste Management Plan, 2009). DEM projects the estimated solid waste for Lanai as indicated in **Table 3** below:

Table 3. Estimated Solid Waste Projections for Lanai - In Tons

	2005	2010	2015	2020	2025	2030
Residential	2,174	2,394	2,631	2,843	3,075	3,308
Commercial	2,864	3,089	3,341	3,532	3,746	3,966
Total	**5,038**	**5,484**	**5,972**	**6,375**	**6,821**	**7,275**

In addition, programs for recycling diverted waste, such as glass, tires, cardboard, green waste, scrap metal, used oil, newspapers, and aluminum, have been undertaken by individuals, school students, the 4-H Club, and the Castle & Cooke Resorts, LLC.

b. Potential Impacts and Proposed Mitigation

The DEM uses a per capita waste disposal rate of nine (9) pounds per person per day. The average household size for Lanai Island is projected for 2015 as 2.60 persons per household (County of Maui, Planning Department, 2006). Based on household size, it is estimated that a population of 1,071 persons will be located within the 412 units and will generate 9,639 pounds of solid waste per day and 3,518,235 pounds or 1,759 tons of solid waste per year at full buildout. Phase 1, which is anticipated to be constructed in 2015 consisting of 81 units, will accommodate approximately 211 persons and generate approximately 693,135 pounds or 347 tons of solid waste per year. The phased construction of the project will allow modest increases in solid waste over the anticipated life of the landfill as well as allow the County of Maui to implement waste reduction measures and plan for the expansion of the facility, as may be necessary.

As applicable, coordination will be undertaken with the Solid Waste Division of the County Department of Environmental Management (DEM) for the disposal of construction waste for the project.

D. INFRASTRUCTURE

1. Roadway System

a. Existing Conditions

Vehicular access to the property is off of Fifth Avenue, a two-lane, two-way County road. Traffic circulation within the Lanai City is provided by a system of connecting streets. The Lanai Community Plan identifies a future by-pass road along the northern and western perimeter of Lanai City, connecting Kaumalapau Highway and Keomoku Road. The master plan for the project includes a future connection of Fifth Street to the proposed by-pass roadway. The master plan includes a central roadway traversing the Fifth Street extension that is proposed to connect to a future corridor that extends Ninth Street to the project area which will provide a future alternative access roadway to the project, as well as Lanai High and Elementary School.

The following are brief descriptions of the existing roadway network in the vicinity of the Project:

Fifth Street is a two-lane, east-west, County roadway. Fifth Street is a connector road that provides a link between the two (2) major north-south roadways, Lanai Avenue and Fraser Avenue. All intersections along Fifth Street, except at Lanai Avenue and Fraser Avenue, are two-way stop-controlled intersections with the intersecting streets being the stop-controlled approach. At Lanai Avenue and Fraser Avenue, it is a two-way stop-controlled intersection with Fifth Street as the stop-controlled approach.

Fraser Avenue is a two-lane, primary north-south, County roadway. All intersections are two-way stop-controlled with the intersecting streets being stop-controlled, with the exception of its intersection with Kaumalapau Highway in which Fraser Avenue is the stop-controlled approach.

Lanai Avenue is a two-lane, primary north-south, County roadway. All intersections along Lanai Avenue are two-way stop-controlled intersections with the intersecting streets being stop-controlled, with the exception of its

intersection with Kaumalapau Highway in which Lanai Avenue is the stop controlled approach.

Currently, at the Fraser Avenue/Fifth Street and Lanai Avenue/Fifth Street intersections, vehicles experience minimal delays at the stop-controlled approaches.

b. Potential Impacts and Proposed Mitigation

A Traffic Impact Analysis Report (TIAR) was prepared by Austin, Tsutsumi & Associates, Inc. dated October 16, 2009. See **Appendix "G"**. The TIAR selected Year 2017 and 2026 as the base years to reflect the Project Phase I and Phase II projected completion years, respectively. Projects identified to be completed within the base years included the proposed Department of Hawaiian Home Lands (DHHL) residential subdivision and the Lanai High and Elementary School expansion.

As the population of Lanai continues to grow and housing opportunities increase, an increase in traffic volumes in Lanai City will gradually increase. According to the TIAR at buildout year 2026, it is estimated that approximately 260 trips during the AM peak hour of traffic and 326 trips during the PM peak hour of traffic will occur. The Fraser Avenue/Fifth Street intersection is projected to increase in traffic volumes approximately 260 percent during the AM and PM peak hours of traffic. Without mitigation, the Level of Service (LOS) for this intersection will reach LOS E.

The following **Table 4** shows the LOS for the project without mitigation:

Table 4. Level of Service Without Mitigation

	Existing Conditions		Year 2017				Year 2026			
	AM Peak	PM Peak	AM Peak		PM Peak		AM Peak		PM Peak	
	LOS	LOS	LOS		LOS		LOS		LOS	
Fraser Avenue/5th Street			W/O	W	W/O	W	W/O	W	W/O	W
East Bound LT/TH/RT	A	A	B	B	B	B	C	E	B	E
West Bound LT/TH/RT	B	B	B	B	B	C	C	C	C	E
Lanai Avenue/ 5th Street										
East Bound LT/TH/RT	A	A	B	B	B	B	B	B	B	B
West Bound LT/TH/RT	B	B	B	B	B	B	B	B	B	B

The TIAR analyzed mitigation measures to accommodate the increased traffic volumes. Restriping the intersection would mitigate the AM peak hour traffic volumes but would minimally improve the intersection during PM peak hour traffic. The all-way stop controlled intersection would accommodate the projected increase in traffic during both AM and PM peak hours of traffic with LOS B or better. The following **Table 5** shows the LOS for both mitigation measures:

Table 5. Level of Service With Mitigation at Fraser Avenue/Fifth Street Intersection

	AM Peak	PM Peak
With Restriped Eastbound Approach		
East Bound LT/TH	C	E
East Bound/RT	B	A
West Bound LT/TH/RT	C	E
With All-Way Stop-Control		
East Bound LT/TH	B	B
East Bound/RT	A	A
West Bound LT/TH/RT	B	B
North Bound LT/TH/RT	B	B
South Bound LT/TH/RT	B	B

The TIAR recommends that a warrant study be conducted prior to installation of an all-way stop control to verify that it is warranted at the Fraser Avenue/Fifth Street intersection at the appropriate time.

Alternatively, to accommodate the project and other known developments if the master planned bypass road with a second connection to Ninth Street can be implemented by Year 2026, a secondary connection would provide an alternate route and restriping of the eastbound approach and an all-way stop-control may not be needed.

The TIAR recommended the following by Year 2026:

1. Restripe the Fraser Avenue/Fifth Street intersection eastbound approach to provide a shared left-turn/through lane and an exclusive right-turn lane.

2. Perform an all-way stop-controlled warrant at the Fraser Avenue/Fifth Street intersection.

The DOE has expressed a preference for an all-way stop controlled intersection at Fraser Avenue and Fifth Street.

Construction of Phase 1 of the project will be initiated after all land use entitlements and funding have been obtained. As the project nears a construction start date, the County of Maui will have more specific information of the types of construction vehicles and heavy equipment that will be used at the job site. The project contractor will coordinate any oversized and overweight vehicles with the Highways Division, Maui District Office and, if necessary, obtain the necessary permits. Further, Best Management Practices (BMPs) will be implemented to avoid or minimize impacts or inconveniences to the motoring public, bicyclists, pedestrians, etc. Construction activity hours will likely be limited to normal construction hours from 7:00 a.m. to 3:30 p.m., Monday through Friday.

2. Water System

a. Existing Conditions

A Preliminary Engineering Study has been completed for the project by Okahara & Associates, Inc. See **Appendix "H"**. Domestic water service for the island of Lanai is provided by the Lanai Water Company (LWC), a privately owned utility regulated by the Public Utilities Commission. Service to the Lanai City service area consists of two (2) reservoirs: the Koele Reservoir and the Lanai City Reservoir.

The Koele Reservoir has a capacity of 0.75 million gallons (MG) and is fed by Well No. 8 and will also be fed by Well No. 3 when it is back on line. A portion of this system connects to Kaunaoa Drive serving the residences on the street, as well as the Villas at Koele. This line tees off at Ninth Street and connects to a pressure reducing valve (PRV) which is normally closed and serves as an emergency backup for Lanai City.

Another portion of this system connects to the Lalakoa Subdivision and heads away from Lanai City and eventually services the Palawai Basin and the Hii Reservoir which has a capacity of 0.5 MG. The valve to the Hii Reservoir is normally closed, and is used as an emergency backup for the reservoir.

The Lanai City Reservoir has a capacity of 2.0 MG and is located near the eastern edge of the Koele Project District and is fed by Well No. 6. This system provides service to the Lodge at Koele and services Lanai City through a PRV located along Ninth Street and a valve located near the Cavendish Golf Course. Under normal operating conditions, the Lanai City Reservoir will provide service to the project, with the Koele Reservoir serving as a back-up water supply. Refer to **Appendix "H"**.

The Lanai Water Advisory Committee was established by the Board of Water Supply to assist in the development of the Water Use and Development Plan. The Draft Water Use and Development Plan for Lanai (February 1997), estimated the future demand for potable water for residential use as 0.494 million gallons per day (MGD). According to the Lanai Water Use and Development Plan dated July 12, 2006, the existing usage for the Koele and Lanai City Reservoirs was estimated as 0.658 MGD.

b. **Potential Impacts and Proposed Mitigation**

It is estimated that the proposed project will need approximately 0.278 MGD from the LWC. Combined with estimated usage, the water demand is below the 2.75 MG storage capacity of the Koele and Lanai City Reservoirs. The project will be serviced by extending the existing 8-inch water line on Fifth Street to the project site. Maui County regulations require that any development greater than 100 parcels need a second feed into the system. If this requirement is to be followed, the Ninth Street water line may need to be utilized as the second connection route.

The water line requirements for the project are being coordinated by DHHC, DOE, and DHHL to meet the requirements of the three (3) projects. Preliminary findings indicate that both peak hour flow and fire flow show

favorable pressure and velocity values in the 8-inch water line. Refer to **Appendix "H"**.

3. Wastewater Systems

a. Existing Conditions

Wastewater on the island is treated at the County of Maui's Lanai Wastewater Treatment Facility (WWTF) located in Lanai City approximately 3,000 feet southeast of the project site. The WWTF has a design capacity of 0.5 MGD. The current usage is 0.297 MGD. The Lanai sewerage system is a gravity flow system serving Lanai City. The WWTF and treatment ponds are located southwest of Lanai City and provide secondary (R-2) treatment of incoming flows. The Auxiliary Wastewater Treatment Facility (AWWTF) takes the R-2 effluent from the County WWTF and treats it to R-1 quality which allows for unrestricted reuse for irrigation. The R-1 system was completed in November 1994 by Castle & Cooke Resorts, LLC and is located to the east of the County WWTF. Since the time it was put into operation, R-1 effluent has been the sole source of irrigation supply for The Experience at Koele Golf Course. The AWWTF is owned and operated privately by Castle & Cooke Resorts, LLC.

The closest sewer line to the project site is located in the Waialua Annex Subdivision and Phases 1 and 2A of the Lanai Residence Lots. This sewer line is located on Fifth Street and consist of an 8-inch line that increases to a 10-inch diameter pipe, and increases again to a 12-inch diameter pipe that connects to the main sewer trunk line that conveys wastewater to the WWTF. The existing 8-inch sewer line is estimated at 45 percent capacity. Refer to **Appendix "H"**.

b. Potential Impacts and Proposed Mitigation

According to County of Maui regulations, when actual sewer usage exceeds 75 percent of the WWTF's capacity, an implementation plan for additional capacity needs to be performed, and when the actual usage exceeds 90 percent of capacity, the plan needs to be initiated. The projected 0.135 MGD to be generated by this project will theoretically bring the sewer usage to 0.432 MGD, or 86 percent of capacity which will require

development of the implementation plan. As a project projected to take approximately 17 years to complete, this threshold will not be met in the near future and allows the County of Maui adequate time to plan for the incremental increases in sewage.

The Lanai Affordable Housing project is being targeted to existing Lanai City residents, and it is anticipated that the system sewage load will remain relatively constant. It is difficult to predict when these thresholds will be met in the projected 17 years for build-out and action needs to be taken only when actual usage exceeds these thresholds.

To accommodate the projected 0.135 MGD of sewage to be generated by the project, 8- to 10-inch PVC pipes connected to the existing 10-inch sewer line is proposed. The existing 10-inch sewer line has a capacity of approximately 2.126 MGD, and with full build-out of the proposed project 63 percent of its capacity will be utilized. Elevation differences between the existing sewer manhole and the project site will require a lift station and force main, which is planned for the first increment of the project. Refer to **Appendix "H"**.

The Lanai High and Elementary School Expansion, as well as the future phases of the Lanai Residence Lots Subdivision proposed by DHHL, will have the same lift station requirements as the project. The DHHC, DOE, and DHHL are in discussions to have one (1) sewer lift station designed to service all three (3) projects. Discussions among the three (3) agencies involve timing, costs, and other related design and integration parameters.

4. Drainage

a. Existing Conditions

A low trough runs through the middle of the site in which nearly all of the on-site runoff generated collects and exits the site in a southeasterly direction. The runoff flows past the WWTF and collects in an area known as "Mississippi", which acts as a natural retention basin. Although Iwiole Gulch is located north of the project site, very little runoff is directed to that location. Refer to **Appendix "H"**.

Currently, off-site runoff is entering the project site from the DHHL and Lanai High and Elementary School parcels. Based on a 50-year storm occurrence, the amount of runoff currently entering the site from the DHHL and Lanai High and Elementary School parcels is approximately 24 cubic feet per second (cfs) and 14 cfs, respectively.

b. Potential Impacts and Proposed Mitigation

It is estimated that the post-development runoff from the proposed project for a 50-year, 1-hour rainfall occurrence will be approximately 137.75 cfs which equates to a one hour volume of 496,000 cubic feet (cf). To handle the estimated storm water runoff, a 4.0-acre site has been included in the project for an on-site retention basin. Based on County of Maui standards, the retention basin will be a six (6) foot deep trapezoidal basin with a top area of 3.26 acres. The basin will be able to handle the required volume, including two (2) feet of freeboard. The total volume on the basin will be 800,000 cf. The capacity of the basin exceeds the storm water volume from the project. An overflow pipe will be provided to allow any runoff exceeding this volume to discharge to the natural outfall point. Refer to **Appendix "H"**.

As the DHHL and Lanai High and Elementary School parcels are developed, off-site runoff entering the project will eventually diminish. In the interim, mitigative measures may need to be implemented in case either or both projects are delayed. While the quantities of storm runoff is not large, it could cause roadway flooding and place extra burden on the on-site drainage structures. Ditches, berms, culverts, or a combination of these, may need to be considered to direct this runoff around the site, or allow it to pass through safely and effectively. Drainage requirements for the three (3) projects are being coordinated between DHHC, DOE, and DHHL.

5. Electrical, Telephone Systems, and Cable Television Systems

a. Existing Conditions

Electrical and telephone services on Lanai are provided by Maui Electric Company and Hawaiian Telcom, Inc., respectively. There are no electrical and telephone services to the property. Cable television service is available

in Lanai City through Time Warner Cable, Cox and Charter Communications.

b. Potential Impact and Proposed Mitigation

Electrical and telephone distribution systems will be upgraded to accommodate the housing project. Cable television service will be coordinated with a local vendor. Development of the project site is not expected to adversely impact or disrupt services being provided by these utilities.

E. CUMULATIVE AND SECONDARY IMPACTS

Cumulative impacts are defined as impacts on the environment which result 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. In addition to the Lanai Affordable Housing project, the DOE and DHHL are in the process of developing their master plans. Although each agency proposes to process an environmental assessment for their projects, the agencies are in discussions relative to the coordination of their master plans and infrastructure requirements. The studies prepared for the projects include the potential impacts that can be reasonably anticipated from these projects. Although the Lanai Affordable Housing project is anticipated to be completed in various phases over a 17-year period, the infrastructure requirements for total build out have been considered and will be implemented as the project progresses.

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. The secondary impacts associated with the proposed action relate to future infrastructure requirements, as well as public service and environmental elements which may be affected by development in the vicinity of the project. As previously noted, DHHC is in coordination with DOE and DHHL relative to each agency's master plan and infrastructure and public service requirements. Through this cooperative effort, the provision of infrastructure and public service in advance or concurrent with the development of each project is envisioned.

III. RELATIONSHIP TO LAND USE PLANS, POLICIES AND CONTROLS

III. RELATIONSHIP TO LAND USE PLANS, POLICIES AND CONTROLS

A. STATE LAND USE DISTRICTS

Chapter 205A, Hawaii Revised Statutes, relating to the State Land Use Commission (SLUC), establishes the four (4) major land use districts in which all lands in the State are placed. These districts have been designated "Urban", "Rural", "Agricultural" and "Conservation". The SLUC classifies the majority of lands on Lanai for "Agricultural" and "Conservation" uses. The island of Lanai encompasses a total land area of approximately 90,000 acres. Of this total area, "Agricultural" lands occupy 46,639 acres, "Conservation" lands encompass 38,197 acres, "Urban" lands comprise 3,257 acres, and "Rural" lands consist of 2,407 acres (Maui County Data Book, 2008). The lands underlying the subject property are presently designated "Agriculture". See **Figure 13**.

A State Land Use District Boundary Amendment from the "Agricultural" District to the "Urban" District will be requested as part of the entitlement requirements to bring consistency between the State Land Use District boundaries and the Lanai Affordable Housing project. Refer to **Figure 4**. This 73-acre area will contain an affordable housing component integrated with two (2) park sites, a 4.9-acre public/quasi-public site and 4.0-acre detention pond.

Criteria considered in the reclassification of lands are set forth in the State Land Use Commission Rules (Chapters 15-15-58 and 15-15-21, Hawaii Administrative Rules). The proposed reclassification of the 73 acres within the project area from "Agricultural" to "Urban" has been analyzed with respect to the criteria, as discussed below.

B. LAND USE COMMISSION RULES, CHAPTER 15-15, HAWAII ADMINISTRATIVE RULES (HAR)

The proposed reclassification of the subject property has been analyzed with respect to standards of the Urban District set forth in Chapter 15-15-18, HAR.

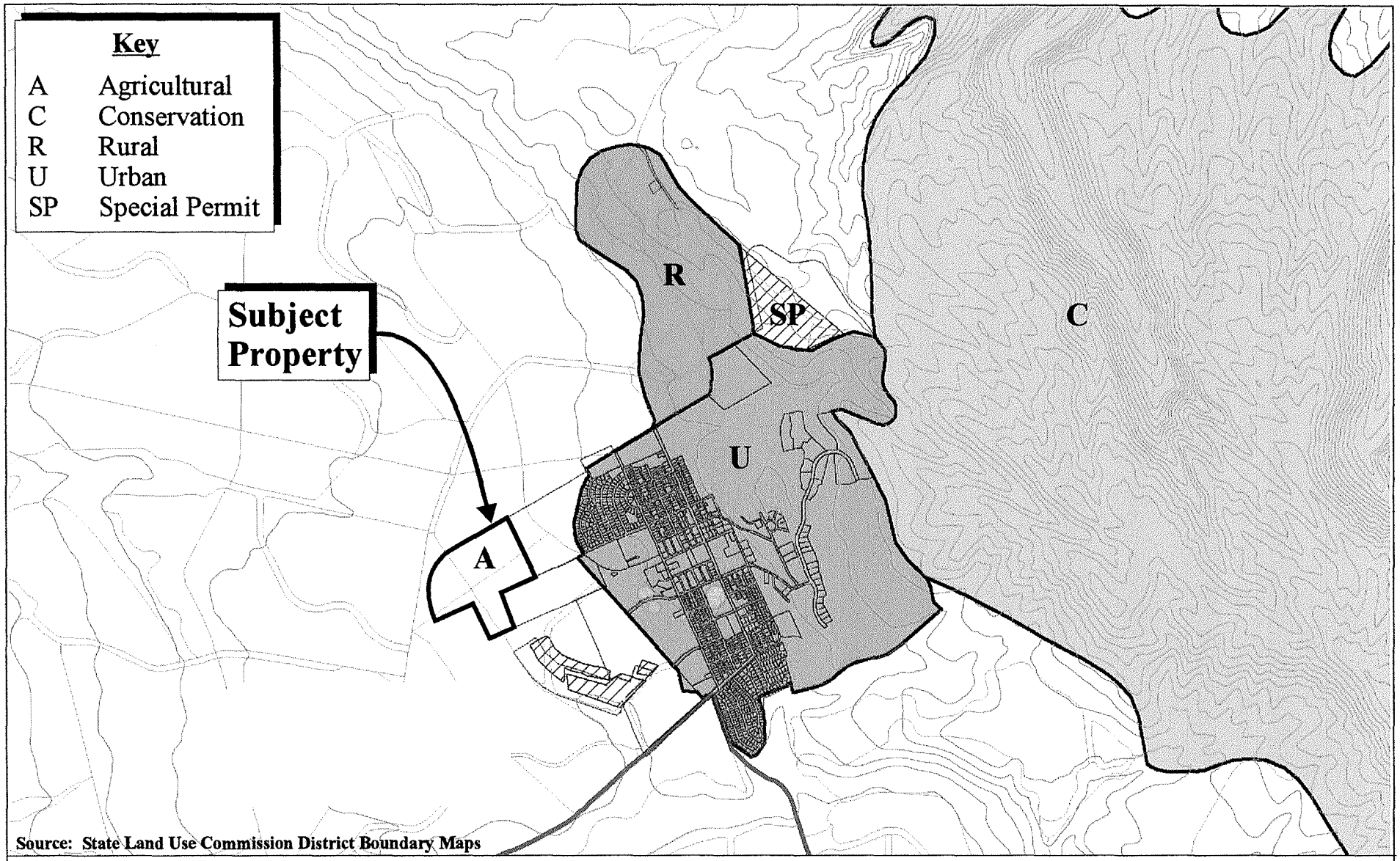


Figure 13

Proposed Lanai Affordable Housing Project

State Land Use District Classifications

NOT TO SCALE

Prepared for: County of Maui, Dept. of Housing and Human Concerns

MUNEKIYO & HIRAGA, INC.

PAI/LanaiCityHousing/SLUD

Urban District Standards (Chapter 15-15-18, HAR)

Chapter 15-15-18, HAR pertains to standards for determining Urban District Boundaries.

(1) It shall include lands characterized by "city-like" concentrations of people, structures, streets, urban level of services and other related land uses.

Response: The subdivision property is in proximity to residential subdivisions of a similar character and the Lanai High and Elementary School, with structures, streets, and services of an urban type. In this context, the subject property is in immediate proximity to developed residential and public/quasi-public areas.

(2) It shall take into consideration the following specific factors:

A. Proximity to centers of trading and employment except where the development would generate new centers of trading and employment.

Response: The area proposed for reclassification is located at the outskirts of Lanai City. The proposed Lanai Affordable Housing project will provide a residential community in close proximity to the key employment centers of Lanai City and the Koele Resort, as well as generate employment opportunities associated with home building and maintenance services.

B. Availability of basic services such as schools, parks, wastewater systems, solid waste disposal, drainage, water, transportation systems, public utilities, and police and fire protection.

Response: The area proposed for reclassification will be serviced by infrastructure and public services without creating capacity and operational constraints. Appropriate onsite and offsite infrastructure improvements will be provided by the applicant as reported in the Preliminary Engineering Report. Refer to **Appendix "H"**. The area is located in close proximity to existing roadways, such as Fraser Avenue, Fifth and Ninth Streets, and includes a planned internal system of collector and local roads.

The project area requiring reclassification will be served by neighboring Lanai High and Elementary School and facilities located in Lanai City. Fire and police protection services are also available nearby.

C. Sufficient reserve areas for foreseeable urban growth.

Response: The project site is identified on the Lanai Community Plan as future urban lands for single-family residential use.

(3) It shall include lands with satisfactory topography, drainage, and reasonably free from the danger of any flood, tsunami, unstable soil conditions, and other adverse environmental effects.

Response: The project site has satisfactory topography, drainage, and is reasonably free from the danger of any flood, tsunami, unstable soil conditions, and other adverse environmental effects.

(4) Land contiguous with existing urban areas shall be given more consideration than non-contiguous land, and particularly when indicated for future urban use on state or county general plans.

Response: The 73-acre site proposed to be reclassified is in close proximity with existing Urban district lands to the east. This area contains the Lanai High and Elementary School, Department of Hawaiian Home Lands residential subdivision and Olopua Woods Subdivision.

(5) It shall include lands in appropriate locations for new urban concentrations and shall give consideration to areas of urban growth as shown on the state and county plans.

Response: This 73-acre site lies in close proximity to areas of public/quasi-public and single-family residential uses designated in the Lanai Community Plan. The Lanai Community Plan designates the project site as "Single Family". The proposed area for reclassification is in close proximity to other urban uses, which include the Lanai High and Elementary School, Department of Hawaiian Home Lands residential subdivision, and Olopua Woods Subdivision.

(6) It may include lands which do not conform to the standards in paragraphs (1) to (5):

A. When surrounded by or adjacent to existing urban development; and

B. Only when those lands represent a minor portion of this district.

Response: The area proposed for reclassification is in close proximity to existing urban development and activity. The 73 acres proposed for reclassification represent a minor portion of the 46,639 acres of Agricultural classified lands on the island of Lanai (Maui County Data Book, 2008).

(7) It shall not include lands, the urbanization of which will contribute toward scattered spot urban development, necessitating unreasonable investment in public infrastructure or support services.

Response: The area proposed for reclassification will be implemented as an affordable housing project meeting the intent of the Lanai Community Plan for future housing. The property's location in close proximity to developed and future urban lands does not contribute to spot development or burdensome infrastructure investments.

(8) It may include lands with a general slope of twenty percent or more if the commission finds that those lands are desirable and suitable for urban purposes and that the design and construction controls, as adopted by any federal, state, or county agency, are adequate to protect the public health, welfare and safety, and the public's interest in the aesthetic quality of the landscape.

Response: The proposed affordable housing units will be developed on lands that are relatively flat with slopes ranging from flat to 10 percent. County grading regulations will be followed to ensure the protection of public health, safety and welfare.

(9) The extent to which the proposed reclassification conforms to the applicable goals, objectives, and policies of the Hawaii State Plan and relates to the applicable priority guidelines of the Hawaii State Plan and adopted functional plans.

Response: The proposal to incorporate the land uses as envisioned in the Lanai Affordable Housing project is in alignment with overall theme, goals, objectives and policies of Chapter 226, Hawaii Revised Statutes, relating to Hawaii State Planning Act. The applicable objectives, policies and priority guidelines are set forth in Section C of this Chapter.

(10) The extent to which the proposed reclassification conforms to the applicable district standards.

Response: The proposed reclassification conforms to Urban District standards as identified in Chapter 205-2 and in keeping with the Maui County General Plan.

(11) The impact of the proposed reclassification on the following areas of State concern:

A. Preservation or maintenance of important natural systems or habitats.

Response: There are no important systems or habitats within the reclassification area.

B. Maintenance of valued cultural, historical or natural resources.

Response: An archaeological inventory survey was carried out on the subject property. An archaeological monitoring plan for the property will be developed, reviewed and approved by SHPD and implemented during construction. Additionally, the Cultural Impact Assessment prepared for the project concluded that no traditional or cultural resources will be adversely impacted by the proposed action.

C. Maintenance of other natural resources relevant to Hawaii's economy, including, but not limited to, agricultural resources.

Response: The use of the subject property for affordable housing purposes will not compromise agricultural productivity for the island. The subject property has been used historically for pineapple cultivation, but is currently fallow. Moreover, other natural resources are not anticipated to be adversely affected by the proposed action.

D. Commitment of State funds and resources.

Response: The proposed reclassification will not require commitment of State funds or resources.

E. Provision for employment opportunities and economic development.

Response: The Lanai Affordable Housing project as a whole will provide new employment opportunities for Lanai residents. The residential projects will provide construction and service-related employment.

F. Provision for housing opportunities for all income groups, particularly the low, low-moderate, and gap groups.

Response: The Lanai Affordable Housing project as a whole will provide a variety of housing types, including affordable single-family "starter" homes and multi-family units for rent and purchase.

C. HAWAII STATE PLAN

Chapter 226, HRS, also known as the Hawaii State Plan, is a long-range comprehensive planning document which serves as a guide for the future long-term development of the State by identifying goals, objectives, policies and priorities, as well as implementation mechanisms. The proposed Lanai Affordable Housing Project is in concert with the following goals of the Hawaii State Plan:

- A strong, viable economy, characterized by stability, diversity, and growth, that enables the fulfillment of the needs and expectations of Hawaii's present and future generations.
- A desired physical environment, characterized by beauty, cleanliness, quiet, stable natural systems, and uniqueness, that enhances the mental and physical well-being of the people.
- Physical, social and economic well-being for individuals and families in Hawaii that nourishes a sense of community responsibility, of caring and of participation in community life.

1. Objectives and Policies of the Hawaii State Plan

The proposed reclassification is in conformance with the following objectives and policies of the Hawaii State Plan:

Chapter 226-5, HRS, Objectives and Policies for Population

226-5(b) (1), HRS: Manage population growth statewide in a manner that provides increased opportunities for Hawaii's people to pursue their physical, social and economic aspirations while recognizing the unique needs of each county.

226-5(b)(3), HRS: Promote increased opportunities for Hawaii's people to pursue their socio-economic aspirations throughout the islands.

226-6, HRS, Objectives and Policies for the Economy—in General

226-6 (b)(6), HRS: Strive to achieve a level of construction activity responsive to, and consistent with, State growth objectives.

226-11, HRS, Objectives and Policies for the Physical Environment—Land-based, Shoreline and Marine Resources

226-11 (a)(2), HRS: Effective protection of Hawaii's unique and fragile environmental resources.

226-11 (b)(3), HRS: Take into account the physical attributes of areas when planning and designing activities and facilities.

226-11(b)(8), HRS: Pursue compatible relationships among activities, facilities and natural resources.

226-12, HRS, Objectives and Policies for the Physical Environment—Scenic, Natural Beauty and Historic Resources

226-13(b)(5), HRS: Encourage the design of developments and activities that complement the natural beauty of the islands.

226-13, HRS, Objectives and Policies for the Physical Environment—Land, Air and Water Quality

226-13(b)(2), HRS: Promote the proper management of Hawaii's land and water resources.

226-13(b)(6), HRS: Encourage design and construction practices that enhance the physical qualities of Hawaii's communities.

226-13(b)(7), HRS: Encourage urban developments in close proximity to existing services and facilities.

226-19, HRS, Objectives and Policies for Socio-Cultural Advancement—Housing

226-19(a)(2), HRS: The orderly development of residential areas sensitive to community needs and other land uses.

226-19(b)(1), HRS: Effectively accommodate the housing needs of Hawaii's people.

226-19(b)(3), HRS: Increase homeownership, rental opportunities and choices in terms of quality, location, cost, densities, style and size of housing.

226-19(b)(5), HRS: Promote design and location of housing developments taking into account the physical setting, accessibility to public facilities and services, and other concerns of existing communities and surrounding areas.

226-19(b)(7), HRS: Foster a variety of lifestyles traditional to Hawaii through the design and maintenance of neighborhoods that reflect the culture and values of the community.

Chapter 226-23, HRS, Objectives and Policies for Socio-Cultural Advancement—Leisure

226-23(b)(4), HRS: Promote the recreational and educational potential of natural resources having scenic, open space, cultural, historical, geological, or biological values while ensuring that their inherent values are preserved.

2. **Priority Guidelines of the Hawaii State Plan**

The proposed action is in keeping with the following priority guidelines of the Hawaii State Plan:

Chapter 226-103, HRS, Economic Priority Guidelines:

226-103(1), HRS: Seek a variety of means to increase the availability of investment capital for new and expanding enterprises.

A. Encourage investments which:

(i) Reflect long-term commitments to the State;

(ii) Rely on economic linkages within the local economy;

(iii) Diversify the economy;

(iv) Reinvest in the local economy;

(v) Are sensitive to community needs and priorities; and

(vi) Demonstrate a commitment to management opportunities to Hawaii residents.

Chapter 226-104, HRS, Population Growth and Land Resources Priority Guidelines

226-104(a)(1), HRS: Encourage planning and resource management to ensure that population growth rates throughout the State are consistent with available and planned resource capacities and reflect the needs and desires of Hawaii's people.

226-104(b)(1), HRS: Encourage urban growth primarily to existing urban areas where adequate public facilities are already available or can be provided with reasonable public expenditures and away from areas where other important benefits are present, such as protection of important agricultural land or preservation of lifestyles.

226-104(b)(2), HRS: Make available marginal or non-essential agricultural lands for appropriate urban uses while maintaining agricultural lands of importance in the agricultural district.

226-104(b)(12), HRS: Utilize Hawaii's limited land resources wisely, providing adequate land to accommodate projected population and economic growth needs while ensuring the protection of the environment and the availability of the shoreline conservation lands, and other limited resources for future generations.

Chapter 226-106, HRS, Affordable Housing Priority Guidelines

226-106(1), HRS: Seek to use marginal or nonessential agricultural land and public land to meet housing needs of low- and moderate-income and gap-group households.

226-106(8), HRS: Give higher priority to the provision of quality housing that is affordable for Hawaii's residents and less priority to development of housing intended primarily for individuals outside of Hawaii.

D. STATE FUNCTIONAL PLANS

The State Functional Plans implement the Hawaii State Plan by identifying needs, problems and issues, and by recommending policies and priority actions which address the identified areas of concern. The proposed reclassification request is consistent with the following State Functional Plans:

1. State Agricultural Functional Plan

The proposed action will reclassify approximately 73 acres of land from the State Agricultural district to the State Urban district. Agricultural pursuits associated with

pineapple cultivation are no longer economically viable. The proximity of the subject property to existing and planned urban land uses provide a reasonable nexus and an appropriate foundation for the proposed reclassification request, particularly in the context of meeting affordable housing needs of the Lanai community.

2. State Housing Functional Plan

The growing public demand for affordable housing indicate a current shortage of single-family and multi-family housing on Lanai. The affordable housing units proposed by the project will help to address a critical community need.

3. State Recreational Functional Plan

Outdoor recreation is recognized by the Hawaii State Plan as an important part of life for Hawaii's residents. As the population rises and residential land uses increase, creating areas dedicated to outdoor recreation becomes increasingly vital. The State Functional Plan for Recreation urges the improvement and expansion of recreational facilities in urban areas and local communities. The proposed action for the affordable housing project includes provisions to provide two (2) park sites and a public/quasi-public site for a community center to address this need.

E. 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 indicated by the Maui County Charter, the purpose of the general plan shall be to:

> *... 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 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 developed five (5) major themes that focus on the overall goals of the plan. These themes were devised to reflect the general scope and priorities of the Maui County General Plan. The proposed project responds to the following theme:

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 relating to population, land use, economic activity, housing and urban design:

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.

Policies

a. Manage population growth so that the County's economic growth will be stable and the development of public and private infrastructures will not expand beyond growth limits specified in the appropriate community plans or negatively impact our natural resources.

b. 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

Objective

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.

Policies

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

Objective

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

Policies

a. Encourage land use patterns that foster a pedestrian oriented environment to include such amenities as bike paths, linear parks, landscaped buffer areas and mini-parks.

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

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

ECONOMIC ACTIVITY (General)

Objective

Utilize an equitable growth management program which will guide the economic well-being of the community.

Policies

a. Encourage the adoption of a resource allocation program which gives a high priority to affordable residential projects.

HOUSING

Objective

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

Policies

a. Provide or require adequate physical infrastructure to meet the demands of present and planned future affordable housing needs.

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

c. Encourage the use of innovative performance standards and building methods to reduce housing costs to the consumer.

d. Streamline or "fast-track" the governmental review process for affordable single-family housing projects.

e. Make full use of State and Federal programs that provide financial assistance to renters and homebuyers.

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

URBAN DESIGN

Objective

To encourage development that reflects the character and culture of Maui County's people.

Policies

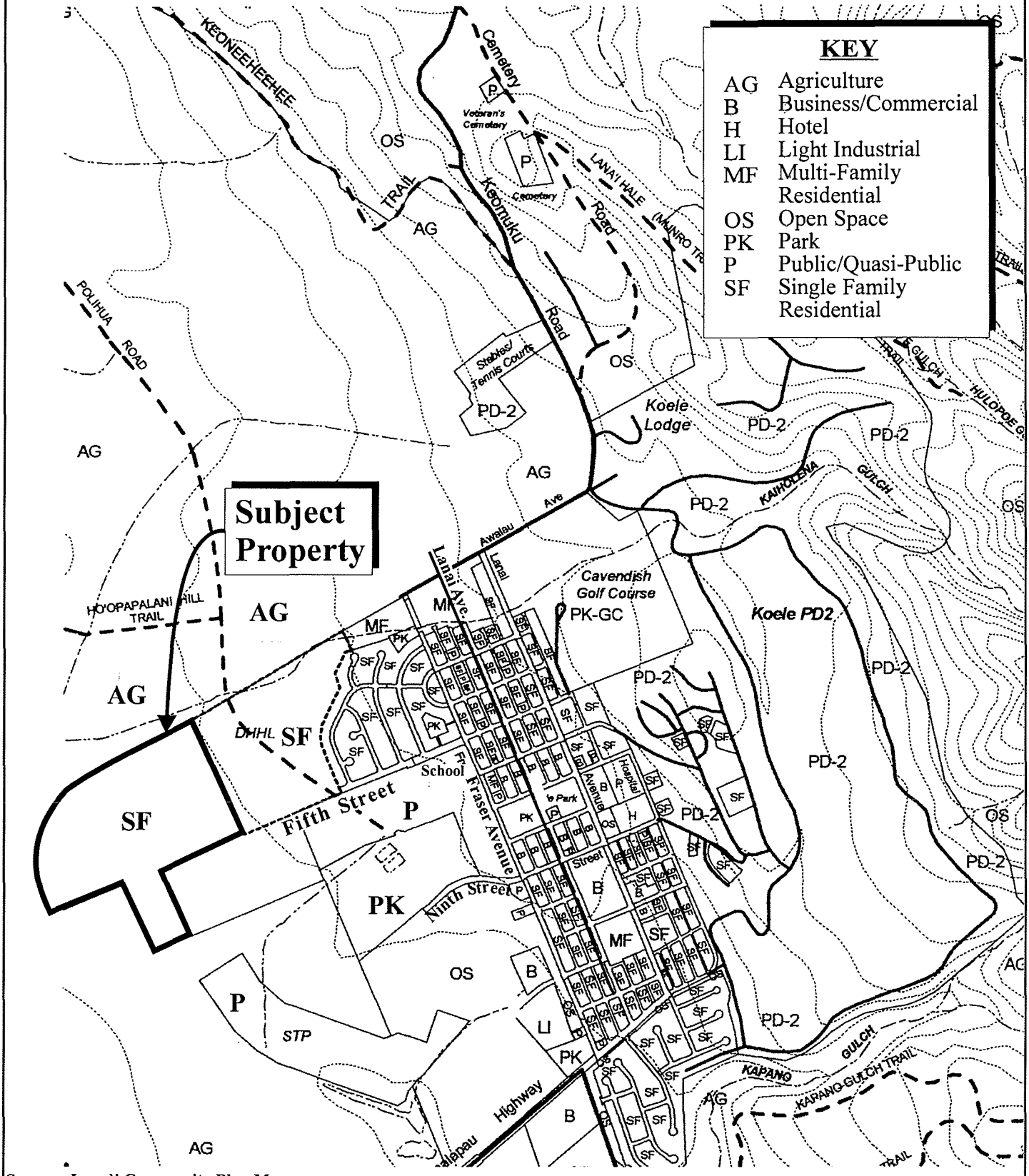
a. Encourage community design that establishes a cohesive identity.

b. Encourage the establishment of continuous green areas, bike-paths, active and passive recreation areas and mini-parks in new subdivision development.

F. LANAI COMMUNITY PLAN

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

Land use guidelines are established by the Lanai Community Plan land use map. The subject property is designated for "Single-Family" use. See **Figure 14**. One of the problems identified in the Community Plan is a need to provide a range of affordable housing opportunities, the lack of inventory, high cost of renting, and the limited choice of housing choices.



Source: Lana`i Community Plan Map

Figure 14 Proposed Lanai Affordable Housing Project

Community Plan Designations Map

0 375 750 1800 Feet

Prepared for: County of Maui, Dept. of Housing and Human Concerns

MUNEKIYO & HIRAGA, INC.

PA\LanaiCityHousing\Community Plan Designation

The Lanai Community Plan sets forth goals, objectives and policies which are statements identifying preferred future conditions. Goals, objectives and policies associated with the proposed use of the subject property include the following:

LAND USE

Goal

Maintain and enhance Lanai's rural atmosphere, respecting its vast open space character and small island town environment which are unique in the State of Hawaii.

Objectives and Policies

- Limit State Urban District boundary expansion to areas which are designated for urban uses on the Lanai Community Plan Land Use map.
- Recognize and respect the Community Plan land use map as an expression of residents' needs and desires.
- Provide an adequate supply of accessible fee-simple lands designated for residential use to address the housing needs of local residents.
- Provide for a mix of multi-family land use and single-family land use designations, sensitively integrated to provide a range of housing opportunities for Lanai residents.

CULTURAL RESOURCES

Goal

Identify, preserve, and where appropriate, restore and promote cultural resources and practices which reflect the rich and diverse heritage found on Lanai.

Objectives and Policies

- Recognize the importance of historically and archaeologically sensitive sites and encourage their preservation.

URBAN DESIGN

Goal

Preserve and enhance the unique urban design character of Lanai through consideration of planning, land use and design standards which respect the island's rural plantation history.

Objectives and Policies

- Establish design standards in the commercial/civic center area of Lana'i City to provide special treatment in the maintenance and/or enhancement of the unique visual and physical identity of the town. Design standards should be based on the following guidelines:
    - Maintain the existing scale and street layout pattern of Lanai City.
- Encourage the use of wood construction for residential and commercial projects.
- Minimize urban design restrictions for single family residential projects.
- Maintain existing road rights-of-way within Lanai City.
- Encourage the development and utilization of subdivision and roadway design criteria and standards which are compatible with the rural character of Lanai.
- Promote the appropriate use of street lighting to ensure public safety and to preserve the rural ambiance of Lanai.
- Utilize strategically placed and designed neighborhood parks as a key element in preserving the unique design character of Lanai.
- Ensure that proposed land use patterns in Lanai City will preserve and complement the existing town design qualities.

PHYSICAL INFRASTRUCTURE

Goal

Provide adequate, reliable and well-designed public infrastructure systems in a timely fashion to meet the social, economic and public safety and welfare needs of the Lanai community.

Transportation

Objectives and Policies

- Support and construct a paved by-pass road along the northern and western perimeter of Lanai City, connecting Kaumalapau Highway and Keomoku Road.

- Establish safe pathways connecting schools, recreation facilities, and commercial and residential areas for use by walkers, joggers and bicyclists.

Water

Objectives and Policies

- Encourage and support comprehensive planning and management of Lanai's water resources, consistent with the Water Use and Development Plan for Lanai as approved by law, to ensure long-term economic stability and diversification, and sufficient water allocated for, but not limited to:

    a. the agricultural park;

    b. the Hawaiian Home Lands;

    c. those lands designated for affordable housing;

    d. the community gardens; and

    e. the Lanai Horse Owner's Association paddock.

Housing

Goal

Provide for the housing needs of all Lanai residents in order to ensure a healthy and vibrant social and economic environment.

Objectives and Policies

- Provide sufficient land area in appropriate areas to promote the development of affordable housing and elderly care homes for Lanai residents.

- Support self-help housing as a means of addressing affordable housing needs for Lanai residents.

- Recognize and address the social implications associated with the lack of decent and affordably priced housing.

- Provide housing types which are consistent with Lanai's rural community lifestyle.

SOCIAL INFRASTRUCTURE

Goal

Provide a public facilities and services system which is responsive to the needs of Lanai's rural island environment and lifestyle.

Recreation

Objectives and Policies

- Provide neighborhood parks which serve a variety of needs, including, but not limited to, active play fields and passive areas which may be used for community gardens.

G. COUNTY ZONING

The proposed affordable housing site is zoned "Interim" by Maui County zoning. While the current zoning does not allow for the proposed Lanai Affordable Housing project, the Section 201H-38, HRS application, which will be filed with the Maui County Council, will include an exemption from the County's Title 19 zoning provisions which would allow for the proposed project.

When evaluated based on the housing shortage that exists on Lanai, coupled with the scarcity of entitled, undeveloped residential lands on Lanai island, the conversion of the project's County designated interim lands into residential development presents a beneficial opportunity. The expansion of the urban district boundary in Lanai City will allow residential use and supply additional housing units at a site deemed less than optimal for sustained, long-term agricultural use.

H. COASTAL ZONE MANAGEMENT OBJECTIVES AND POLICIES

As set forth in Chapter 205A, HRS, this section addresses the project's relationship to applicable coastal zone management considerations. It is noted that the project site is not located within the County's Special Management Area or SMA.

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 value consistent with public safety standards and conservation of natural resources;

vi. Adopting water quality standards and regulating point and nonpoint sources of pollution to protect, and where feasible, restore the recreational value of coastal waters;

vii. Developing new shoreline recreational opportunities, where appropriate, such as artificial lagoons, artificial beaches, and artificial reefs for surfing and fishing; and

viii. Encouraging reasonable dedication of shoreline areas with recreational value for public use as part of discretionary approvals or permits by the land use commission, board of land and natural resources, and county authorities; and crediting such dedication against the requirements of section 46-6.

Response: The proposed project will not affect access to the shoreline as it is not a shoreline property, nor is it in the near vicinity of the island's shoreline.

2. **Historic Resources**

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

Policies:

a. Identify and analyze significant archaeological resources;

b. Maximize information retention through preservation of remains and artifacts or salvage operations; and

c. Support state goals for protection, restoration, interpretation, and display of historic resources.

Response: An archaeological inventory survey has been conducted within the subject property. Archaeological monitoring will be carried out during ground altering activities. Should cultural materials be found during construction, work shall stop in the area of the find and the State Historic Preservation Division shall be notified to determine appropriate mitigation measures. It is further noted that the Cultural Impact Assessment prepared for the project concludes that no traditional or cultural resources will be adversely impacted by the proposed action. Refer to **Appendix "E"**.

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 proposed project will be developed to ensure visual compatibility with the surrounding environs. The project site is not a shore-fronting property. The proposed project is not anticipated to negatively impact coastal and scenic open space resources.

4. **Coastal Ecosystems**

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

Policies:

a. 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: Proposed improvements to the subject property are not expected to adversely impact coastal ecosystems. Drainage improvements will be engineered to meet County standards. Drainage improvements will also be designed to include a detention basin for storm water runoff. Mitigative measures for soil erosion control will be implemented during and after construction. Storm water runoff will be captured in drainage systems to minimize adverse impacts to adjacent and downstream properties.

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 proposed housing project is located in Lanai City and is not a coastal dependent development.

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 subject property is not located in any tsunami, flood, erosion, or subsidence area. The master plan for the project includes a 4.0-acre detention pond to reduce point and non-point pollution from storm water runoff.

7. **Managing Development**

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

Policies:

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

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

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

Response: Opportunities for public review and consideration of the proposed action is provided through the EA, 201H-38 and State District Boundary Amendment processes. In this connection, DHHC presented an overview of the project to the Lanai Planning Commission on February 18, 2009. The Lanai Planning Commission recommended that the Lanai Community be involved in the planning for the project. The project team assembled a steering committee of Lanai residents to obtain initial

input from the community on preliminary plans for the project. Based on the comments of the steering committee, the preliminary plans were revised and phasing of the first increment was developed. The revised plans and first increment were presented to the Lanai community at a community meeting held on June 16, 2009. At the community meeting the Lanai community expressed their support of the revised plans presented.

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: Opportunities for public awareness, education, and participation pertaining to significant resources attributes of the coastal zone are provided through the EA, 201H-38 and State District Boundary Amendment processes. As noted above, meetings with community members have been initiated as part of the project planning 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: The proposed project is situated inland, away from the shoreline and no adverse effect on beach processes is anticipated. Appropriate Best Management Practices (BMPs) will be implemented to mitigate storm water runoff associated with the project and to ensure that downstream and adjoining properties will not be adversely affected.

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: The proposed project is not located on or near the shoreline and is not anticipated to adversely affect marine resources.

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 uses 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 project site is located in Lanai City, a significant distance from the shoreline. No impacts on the shoreline or ocean waters will occur. The project will comply with applicable requirements of the County's Outdoor Lighting Ordinance.

IV. ALTERNATIVES TO THE PROPOSED ACTION

IV. ALTERNATIVES TO THE PROPOSED ACTION

A. MASTER PLAN ALTERNATIVES

The master plan formulation process involved a study of topographic conditions to recognize drainage constraints, as well as access connection considerations to ensure that an appropriate and viable long-term circulation pattern could be assured. Similarly, the relationship of the 73-acre property to the adjacent DHHL subdivision and DOE school site were considered to provide required connectivity among the three (3) parcels. The master plan concepts also involved the study of spatial delineations and relationships among the residential components and park, public/quasi-public, and drainage functions of the site. Basic plan components were compiled and organized for presentation to a steering committee comprised of Lanai residents. The steering committee worked with the DHHC, project architect, civil engineer, and project planner to develop a plan which best met the needs of the local community.

The plan presented in Chapter I of this report represents the plan developed in coordination with the steering committee, with the concurrence of the general community, as discussed at the community meeting held on June 16, 2009.

B. NO ACTION ALTERNATIVE

This alternative means the property which was transferred to the County of Maui as part of a zoning condition placed on Castle & Cooke Resorts, LLC in 1992 for housing purposes will continue to remain vacant. Under this alternative scenario, the current lack of affordable housing will continue to remain a problem on Lanai island.

C. DEFERRED ACTION ALTERNATIVE

This alternative would yield the same result as the No Action Alternative.

V. SUMMARY OF ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED

V. SUMMARY OF ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED

The proposed project may result in unavoidable construction-related impacts which include noise generated impacts occurring from the proposed improvements. In addition, there may be temporary air quality impacts associated with dust generated from site work and exhaust emissions discharged by construction equipment. These impacts will be mitigated by erosion control measures and Best Management Practices (BMPs) to minimize dust and erosion control. Construction of the proposed project will be carried out in compliance with applicable State Department of Health Community Noise control standards.

VI. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

VI. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

The proposed project will result in the irreversible and irretrievable commitment of certain natural and fiscal resources. Major resource commitments include the land on which the project will be developed, as well as fuel, labor, funding, and material resources. Impacts relating to the use of these resources should be weighed against the expected positive socio-economic benefits to be derived from the project versus the consequences of taking no action.

The commitment of resources required for the development of the project includes building materials and labor, both of which are non-renewable and irretrievable. The proposed project will require a commitment for government services or facilities. In general, the proposed action will place additional requirements upon public services and infrastructure. However, these commitments will enable the County of Maui to provide much needed affordable housing to the Lanai community. There are no other irreversible commitment of resources associated with the proposed action.

VII. SIGNIFICANCE CRITERIA ASSESSMENT

VII. SIGNIFICANCE CRITERIA ASSESSMENT

Since the proposed action is on County lands and County funds would be utilized, an Environmental Assessment (EA) has been prepared pursuant to Chapter 343, Hawaii Revised Statutes (HRS), and Chapter 200 of Title 11, Administrative Rules of the State Department of Health.

Every phase of the proposed action, expected consequences, both primary and secondary, and the cumulative, as well as the short-term 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. Based on the analysis, the proposed project is not anticipated to result in any significant impacts. Discussion of project conformance to the criteria is noted as follows:

1. **Involves an irrevocable commitment to loss or destruction of any natural or cultural resource**

   Lands bordering the project are vegetated vacant former pineapple lands or contain ornamental landscaping typical of residential communities and public school sites. No wetlands will be impacted by the proposed action.

   From an archaeological standpoint, the lands underlying and immediately surrounding the project site have been previously altered during past pineapple cultivation. An archaeological monitoring plan for the property will be developed, reviewed and approved by SHPD and implemented during construction.

   According to the Cultural Impact Assessment prepared for the project (refer to **Appendix "E"**), no traditional or cultural resources will be adversely impacted by the proposed affordable housing project.

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

   The project encompasses lands which are designated for single-family residential use in the Lanai Community Plan. The proposed action also includes multi-family uses and uses to support the residential component. As a proposed 201H-38 Affordable Housing project, Maui County Council (Council) review and approval is required. Any approval by the

Council will ensure it is beneficial to the environment, and that it meets the needs of its Lanai citizens.

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

The State Environmental Policy and Guidelines are set forth in Chapter 344, HRS. The proposed action is in consonance with the following policies and guidelines:

Environmental Policy:

Enhance the quality of life by:

(C) Establishing communities which provide a sense of identity, wise use of land, efficient transportation, and aesthetic and social satisfaction in harmony with the natural environment which is uniquely Hawaiian.

Guidelines:

Land, water, mineral, visual, air, and other natural resources.

(F) Maintain an integrated system of state land use planning which coordinates the state and county general plans.

Community life and housing.

(A) Foster lifestyles compatible with the environment; preserve the variety of lifestyles traditional to Hawaii through the design and maintenance of neighborhoods which reflect the culture and mores of the community;

(B) Develop communities which provide a sense of identity and social satisfaction in harmony with the environment and provide internal opportunities for shopping, employment, education, and recreation;

(D) Foster safe, sanitary, and decent homes;

(E) Recognize community appearances as major economic and aesthetic assets of the counties and the State; encourage green belts, plantings, and landscape plans and designs in urban areas; and preserve and promote mountain-to-ocean vistas.

Citizen participation.

(B) Provide for expanding citizen participation in the decision making process so it continually embraces more citizens and more issues.

4. Substantially affects the economic welfare, social welfare and cultural practices of the community or State

The proposed project will directly benefit the local economy by providing construction and construction-related employment. The proposed project will also have a beneficial effect upon the socio-economic fabric of the community by providing single-family and multi-family affordable housing on Lanai island.

Although the property is used for limited traditional and cultural practices (hunting), the affordable housing will not adversely affect these practices. The hunting practices in the project area will continue in other areas of the island.

5. Substantially affects public health.

No adverse impacts to the public's health and welfare are anticipated. Further, the provision of single-family and multi-family housing affordable to the Lanai community will help to alleviate over-crowding experienced in existing housing units.

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

No significant population changes are anticipated as a result of the proposed project. The project is to provide affordable housing to the existing Lanai community. As may be necessary, the DHHC will coordinate infrastructure improvements with County of Maui agencies, the Department of Education (DOE), and Department of Hawaiian Home Lands (DHHL).

7. **Involves a substantial degradation of environmental quality**

Construction activities will create temporary short-term nuisance related to noise and dust. Appropriate dust control and noise mitigation measures will be implemented during construction activities.

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

The proposed project is being coordinated with the State of Hawaii's planned expansion of the Lanai High and Elementary School and the DHHL regional master plan. Preliminary discussions have been held to determine infrastructure needs for the three (3) projects, coordination of the improvements, and opportunities for cost sharing.

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

Rare, threatened or endangered species of flora, fauna, avifauna or their habitats are not expected to be impacted by the proposed project. The subject property is former pineapple cultivated land. A flora and fauna survey assessment of the property was prepared and no rare, threatened, or endangered species were identified. Refer to **Appendix "B"**.

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

Construction activities will result in short-term air quality and noise impacts. Dust control measures, such as regular watering and sprinkling, and erection of dust screens will be implemented to minimize wind-blown emissions. Further, a detention basin will be constructed to handle any increase in storm water runoff and appropriate Best Management Practices (BMPs) will be utilized to reduce impacts on water quality from storm water runoff and its effects on adjacent and downstream properties, as well as any runoff that may exit into gulches and streams and eventually into the ocean. Short-term noise impacts will occur primarily from construction equipment. Equipment mufflers or other noise attenuating equipment, as well as proper equipment and vehicle maintenance, are anticipated to mitigate noise from construction activities. There are no long-term impacts on air, water, or ambient noise levels anticipated after construction has been completed.

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

The proposed project is not located in an environmentally sensitive area and is not anticipated to adversely impact fresh or coastal waters.

12. Substantially affects scenic vistas and viewplanes identified in county or state plans or studies

The proposed project will not affect scenic and open space resources and will not affect scenic viewplanes.

13. Requires substantial energy consumption

The proposed project will involve the commitment of fuel from construction equipment, vehicles, and machinery during construction activities. As a new housing project, additional energy consumption will result from the occupancy of the units. Coordination with Maui Electric Company will be undertaken to ensure that electrical power requirements for the project can be addressed in a timely manner.

Based on the foregoing findings, the proposed action is not anticipated to result in any significant adverse impacts. Accordingly, this Final Environmental Assessment is being processed with a Finding of No Significant Impact (FONSI) determination by the DHHC.

VIII. LIST OF PERMITS AND APPROVALS

VIII. LIST OF PERMITS AND APPROVALS

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

State of Hawaii

1. State Section 201H-38 District Boundary Amendment

2. State Department of Health

    a. National Pollutant Discharge Elimination Permit, as applicable

    b. Noise Permit, as applicable

County of Maui

1. Section 201H-38, HRS Approval

2. Subdivision Approval

3. Construction Permits (grading permit, building permit)

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

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The following agencies were consulted during preparation of the Draft Environmental Assessment (EA). Agency comments and responses to substantive comments are indicated herein:

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

2. Ranae Ganske-Cerizo, Soil Conservationist
Natural Resources Conservation Service
U.S. Department of Agriculture
700 Hookele Street, Suite 202
Kahului, Hawaii 96732

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

4. Gordan Furutani, Field Office Director
U. S. Department of Housing and Urban Development
500 Ala Moana Boulevard, Suite 3A
Honolulu, Hawaii 96813-4918

5. Patrick Leonard
Field Supervisor
U. S. Fish and Wildlife Service
300 Ala Moana Blvd., Rm. 3-122
Box 50088
Honolulu, Hawaii 96813

6. Russ K. Saito, State Comptroller
Department of Accounting and General Services
1151 Punchbowl Street, #426
Honolulu, Hawaii 96813

7. Sandra Lee Kunimoto, Chair
Department of Agriculture
1428 South King Street
Honolulu, Hawaii 96814-2512

8. Karen Seddon
Executive Director
Hawaii Housing Finance and Development Corporation
677 Queen Street
Honolulu, Hawaii 96813

9. Theodore E. Liu, Director
State of Hawaii
Department of Business, Economic Development & Tourism
P.O. Box 2359
Honolulu, Hawaii 96804

10. Patricia Hamamoto, Superintendent
State of Hawaii
Department of Education
P.O. Box 2360
Honolulu, Hawaii 96804

11. Heidi Meeker
Planning Division
Office of Business Services
Department of Education
c/o Kalani High School
4680 Kalanianaole Highway, #T-B1A
Honolulu, Hawaii 96821

cc: Lindsay Ball, Complex Area Superintendent (Lanai/Molokai/ Hana/Lahaina)

12. Micah Kane, Chairman
Department of Hawaiian Home Lands
P. O. Box 1879
Honolulu, Hawaii 96805

13. Chiyome Fukino, M.D., Director
State of Hawaii
Department of Health
919 Ala Moana Blvd., Room 300
Honolulu, Hawaii 96814

14. Alec Wong, P.E., Chief
Clean Water Branch
State of Hawaii
Department of Health
919 Ala Moana Blvd., Room 300
Honolulu, Hawaii 96814

15. Herbert Matsubayashi
District Environmental Health
Program Chief
State of Hawaii
Department of Health
54 High Street
Wailuku, Hawaii 96793

16. Laura Thielen, Chairperson
State of Hawaii
Department of Land and Natural Resources
P. O. Box 621
Honolulu, Hawaii 96809

17. Dr. Puaalaokalani Aiu, Administrator
State of Hawaii
Department of Land and Natural Resources
State Historic Preservation Division
601 Kamokila Blvd., Room 555
Kapolei, Hawaii 96707

18. **Maui/Lanai Islands Burial Council**
130 Mahalani Street
Wailuku, Hawaii 96793

19. Brennon Morioka, Director
State of Hawaii
Department of Transportation
869 Punchbowl Street
Honolulu, Hawaii 96813

cc: Fred Cajigal

20. Major General Robert G.S. Lee, Director
Hawaii State Civil Defense
3949 Diamond Head Road
Honolulu, Hawaii 96816-4495

21. Katherine Kealoha, Director
Office Of Environmental Quality Control
235 S. Beretania Street, Suite 702
Honolulu, Hawaii 96813

22. Haunani Apoliona, Board of Trustees Chair
Office of Hawaiian Affairs
711 Kapiolani Boulevard, Suite 500
Honolulu, Hawaii 96813

23. Mary Lou Kobayshi, Planning Program Administrator
State of Hawaii
Office of Planning
P.O. Box 2359
Honolulu, Hawaii 96804

24. Charmaine Tavares, Mayor
County of Maui
200 South High Street
Wailuku, Hawaii 96793

25. Deidre Tegarden, Director
County of Maui
Office of Economic Development
2200 Main Street, Suite 305
Wailuku, Hawaii 96793

26. Gen Iinuma, Administrator
Maui Civil Defense Agency
200 South High Street
Wailuku, Hawaii 96793

27. Jeffrey A. Murray, Fire Chief
County of Maui
Department of Fire and Public Safety
200 Dairy Road
Kahului, Hawaii 96732

28. Tamara Horcajo, Director
County of Maui
Department of Parks and Recreation
700 Halia Nakoa Street, Unit 2
Wailuku, Hawaii 96793

29. Jeffrey Hunt, Director
County of Maui
Department of Planning
250 South High Street
Wailuku, Hawaii 96793

30. Thomas Phillips, Chief
County of Maui
Police Department
55 Mahalani Street
Wailuku, Hawaii 96793

31. Milton Arakawa, Director
County of Maui
Department of Public Works
200 South High Street
Wailuku, Hawaii 96793

32. Cheryl Okuma, Director
County of Maui
Department of Environmental Management
One Main Plaza
2200 Main Street, Suite 100
Wailuku, Hawaii 96793

33. Jeffrey Eng, Director
County of Maui
Department of Water Supply
200 South High Street
Wailuku, Hawaii 96793

34. Sol Kahoohalahala, Councilmember
Maui County Council
200 South High Street
Wailuku, Hawaii 96793

35. Danny Mateo, Council Chair
Maui County Council
200 South High Street
Wailuku, Hawaii 96793

36. **Hawaiian Telcom**
60 South Church Street
Wailuku, Hawaii 96793

37. Greg Kauhi, Manager, Customer Operations
Maui Electric Company, Ltd.
P.O. Box 398
Kahului, Hawaii 96733

38. **ILWU Local 142**
896 Lower Main Street
Wailuku, Hawaii 96793

40. **Lanai Community Association**
735 Lanai Avenue 108
Lanai City, Hawaii 96763

41. **Lanai Seniors**
c/o Maggie Masicampo (County)
Margaret Ann Mascicampo
P.O. Box 630867
Lanai City, Hawaii 96763

42. **Lanai Community Hospital**
P.O. Box 630650
625 Seventh Street
Lanai City, Hawaii 96763

43. **Hawaii Government Employees Association**
Maui Division Office
2145 Kaohu Street
Wailuku, Hawaii 96793-2257

44. Dayton M. Nakanelua, State Director
United Public Workers
1426 North School Street
Honolulu, Hawaii 96817-1914

45. **United Public Workers**
Maui Division
841 Kolu Street
Wailuku, Hawaii 96793-1436

46. **Lanai Retail Merchants Association**
Len Gambla
c/o Ohana Pottery
Lanai City, Hawaii 96763

MAR 2 5 2009

United States Department of Agriculture

NRCS

Natural Resources Conservation Service
P.O. Box 5004 Rm. 4-118
Honolulu, HI 96850
808-541-2600

March 17, 2009

Ms. Colleen Suyama, Project Manager
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms Suyama,

Thank you for providing the NRCS the opportunity to review the early consultation on 201-H Lana`i Housing Project in Lana`i City Hawaii. Please find enclosed the NRCS Soil Survey Map, soil reports, and a map indicating areas of Important Farmlands. The important Farmlands map has been enclosed for your aid in determining if an AD-1006 form, Farmland Impact Conversion Rating Form is needed for this project. Typically, this form is required on projects that convert farmlands into non-farmland uses, and have federal dollars attached to the project. See the website link below for more information on the Farmland Protection Policy Act, and a copy of the AD-1006 form, with instructions. The soil mapping does not identify any hydric soils in this project area. Hydric soils identify potential areas of wetlands. If wetlands do exist, any proposed impacts to these wetlands would need to demonstrate compliance with the "Clean Water Act", and may need an Army Corp of Engineers 404 permit.

The enclosed Soil Survey Map identifies all soil map units in the project area. The soil reports provide selected soil properties and interpretations, i.e. dwellings without basements, soil layers with USDA textures, and engineering classifications. The limitation ratings for the selected uses, i.e. dwellings without basements and local roads and streets are severe and very limited respectively for map unit WoA, and slight and somewhat limited for soil map units LaA and LaB. These ratings do not preclude the intended land use, however they do identify potential limitations for the use, which may require corrective measures, increase costs, and/or require continued maintenance.

The NRCS Soil Survey is a general planning tool and does not eliminate the need for an onsite investigation. If you have any questions concerning the soils or interpretations for this project please call, Tony Rolfes, Assistant State Soil Scientist, (808) 541-2600 x129, or email, Tony.Rolfes@hi.usda.gov.

Helping People Help the Land

NRCS - Farmland Protection Policy Act Website:
http://www.nrcs.usda.gov/programs/fppa/

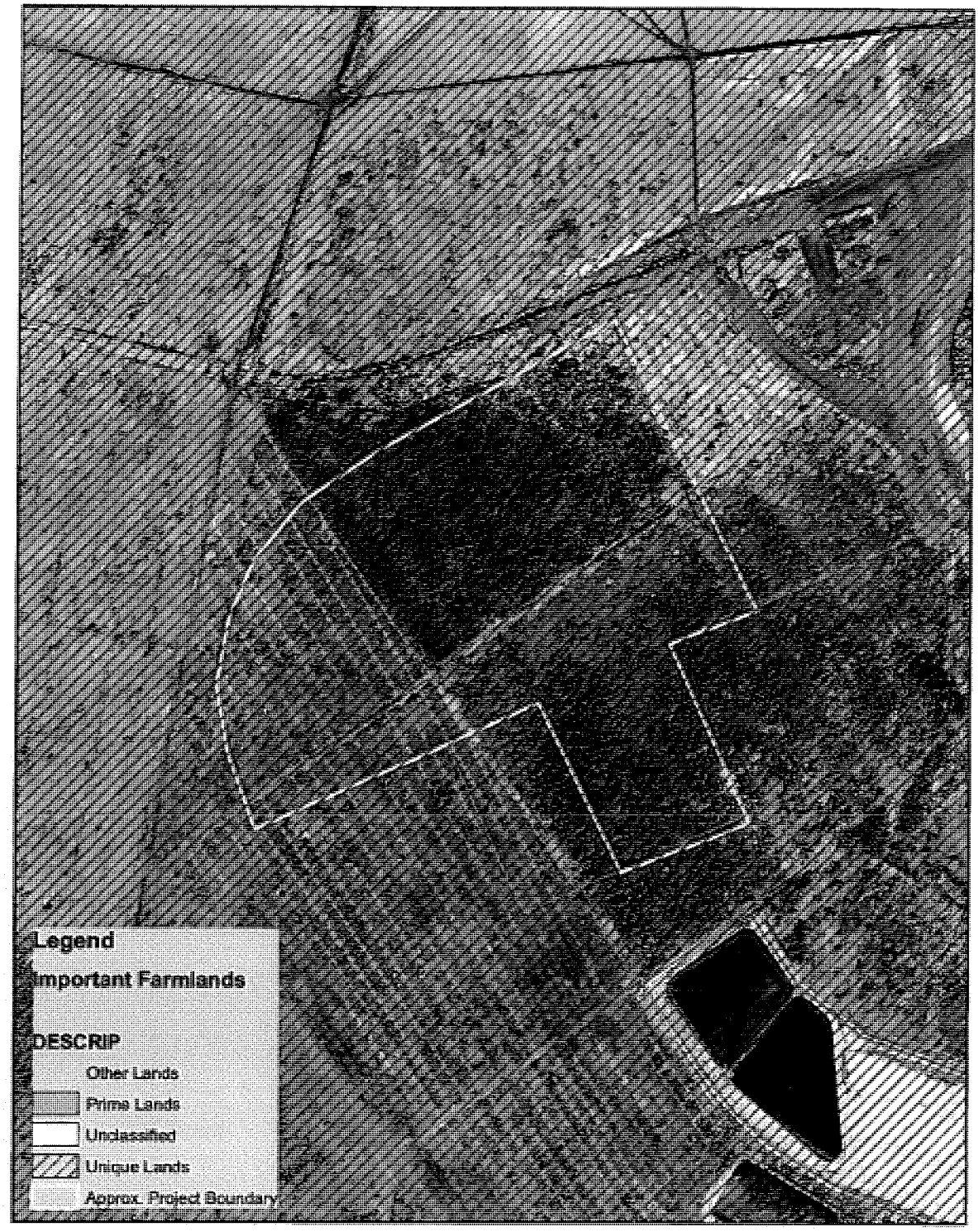
Sincerely,

LAWRENCE T. YAMAMOTO
Director
Pacific Islands Area

cc: Michael Robotham, Asst. Director for Soil Science and Natural Resource Assessments, USDA-NRCS, Honolulu, HI

Enclosures:

Important Farmland Map for Lana`i Housing Project



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0 212.5 425 850 1,275 1,700
Feet

NRCS 3/09

Map Unit Legend

Island of Lanai, Hawaii

Map symbol	Map unit name
LaA	Lahaina silty clay, 0 to 3 percent slopes
LaB	Lahaina silty clay, 3 to 7 percent slopes
WoA	Waihuna clay, 0 to 3 percent slopes

Selected Soil Interpretations

Island of Lanai, Hawaii

[The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The table shows only the top five limitations for any given soil. The soil may have additional limitations]

*This soil interpretation was designed as a "limitation" as opposed to a "suitability". The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation.

Map symbol and soil name	Pct. of map unit	ENG - Dwellings W/O Basements (RI) *		ENG - Local Roads and Streets *		ENG - Lawn, Landscape, Golf Fairway *	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
LaA:							
Lahaina	100	Slight		Somewhat limited		Very limited	
				Low strength	0.10	Too clayey	1.00
LaB:							
Lahaina	100	Slight		Somewhat limited		Very limited	
				Low strength	0.10	Too clayey	1.00
WoA:							
Waihuna	100	Severe		Very limited		Very limited	
		Ponded (any duration)	1.00	Low strength	1.00	Too clayey	1.00
				Ponding	1.00	Ponding	1.00
				Shrink-swell	0.89	Droughty	0.01

Engineering Properties

Island of Lanai, Hawaii

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percent passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				*Pct*	*Pct*					*Pct*	
LaA:												
Lahaina	0-15	Silty clay	ML-K (proposed)	A-7	0	0	100	100	95-100	90-100	40-50	10-20
	15-31	Silty clay	ML-K (proposed)	A-7	0	0	100	100	95-100	90-100	40-50	10-20
	31-60	Silty clay, Stony silty clay, Stony silty clay loam	ML-K (proposed)	A-7	0-10	5-10	100	95-100	95-100	85-95	40-50	10-20
LaB:												
Lahaina	0-15	Silty clay	ML-K (proposed)	A-7	0	0	100	100	95-100	90-100	40-50	10-20
	15-31	Silty clay	ML-K (proposed)	A-7	0	0	100	100	95-100	90-100	40-50	10-20
	31-60	Silty clay, Stony silty clay, Stony silty clay loam	ML-K (proposed)	A-7	0-10	5-10	100	95-100	95-100	85-95	40-50	10-20
WoA:												
Waihuna	0-1	Clay	CH	A-7	0	0	95-100	95-100	85-95	75-95	60-70	35-45
	1-6	Clay	CH	A-7	0	0	95-100	95-100	85-95	75-95	60-70	35-45
	6-12	Clay	CH	A-7	0	0	95-100	95-100	85-95	75-95	60-70	35-45
	12-18	Clay	CH	A-7	0	0	95-100	95-100	85-95	75-95	60-70	35-45
	18-25	Clay	CH	A-7	0	0	90-100	85-95	75-95	70-90	50-60	30-40
	25-41	Clay	CH	A-7	0	0	90-100	85-95	75-95	70-90	50-60	30-40
	41-53	Clay	CH	A-7	0	0	90-100	85-95	75-95	70-90	50-60	30-40
	53-65	Clay	CH	A-7	0	0	90-100	85-95	75-95	70-90	50-60	30-40

Water Features

Island of Lanai, Hawaii

Map symbol and soil name	Hydrologic group	Surface runoff	Month	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface depth	Duration	Frequency	Duration	Frequency
				Ft	*Ft*	*Ft*				
LaA:										
Lahaina	B	Low	Jan-Dec			—	—	None	—	None
LaB:										
Lahaina	B	Low	Jan-Dec			—	—	None	—	None
WoA:										
Wahiawa	D	Low	January	—	—	0.0-0.1	Brief	Rare	—	None
			February	—	—	0.0-0.1	Brief	Rare	—	None
			March	—	—	0.0-0.1	Brief	Rare	—	None
			April	—	—	0.0-0.1	Brief	Rare	—	None
			October	—	—	—	—	Rare	—	None
			November	—	—	0.0-0.1	Brief	Rare	—	None
			December	—	—	0.0-0.1	Brief	Rare	—	None

Soil Map for Lana`i Housing Project

N

0 170 340 680 1,020 1,360
Feet

NRCS 3/09

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

August 18, 2009

Lawrence T. Yamamoto, Director
Pacific Islands Area
U. S. Department of Agriculture
Natural Resources Conservation Service
P. O. Box 5004, Room 4-118
Honolulu, Hawai`i 96850

SUBJECT: Early Consultation on the Draft Environmental Assessment (EA) for the Lana`i Affordable Housing Project at TMK (2) 4-9-002:058 (por.), Lana`i City, Lanai

Dear Mr. Yamamoto:

In response to your letter dated March 17, 2009, please be advised that the Draft Environmental Assessment (EA) will reference the soil information provided and identification of the property as important farmlands. We acknowledge the subject property does not include any hydric soils which identify potential areas of wetlands. A detailed botanical study is being prepared for the project to address potential environmental impacts on fauna and flora, including wetlands.

Should you require additional clarification please call me at (808) 244-2015 or email planning@mhplanning.com. A copy of the Draft EA will be forwarded to your agency.

Very truly yours,

Colleen Suyama
Project Manager

CS:yp
cc: JoAnn Ridao, Deputy Director, Department of Housing and Human Concerns
Dwight Mitsunaga, Pacific Architects
Donald Okuhara, Okuhara & Associates
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MAR 2 3 2009

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

REPLY TO
ATTENTION OF:

March 19, 2009

Regulatory Branch

POH-2009-00084

Colleen Suyama
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, HI 96793

Dear Ms. Suyama:

We are submitting these comments in response to your February 26, 2009 letter requesting comments on the proposed 201-H Lana'i City Housing Project in the County of Maui on the Island of Lana'i (TMK (2)4-9-002:058(por)).

A preliminary review of maps, aerial photographs and other data resources indicate the housing project and Ninth Avenue extension will both impact tributaries (drainageways) carrying water from Mauka of the project site to the ocean. Preparation for your Environmental Assessment (EA) needs to include a detailed mapping of any wetlands or other waterways on the project site. If the waterways can be traced all the way to the ocean, it is likely ground disturbing activities may need a Department of the Army (DA) permit from the Honolulu District, U.S. Army Corps of Engineers. Any discharge of dredged or fill material into Waters of the U.S. (WOUS) will require a DA permit under the Authority of Section 404 of the Clean Water Act. Available maps in our office are somewhat contradictory, thereby requiring an on-the-ground verification of these waterways.

If it is determined that a DA permit is required, you will be required to take an in-depth look at all available alternatives which would minimize impacts to WOUS. Such alternatives will include avoidance, minimization and, should impacts be unavoidable, mitigation. If a DA permit is not required, we recommend you review Best Management Practices to ensure minimal environmental impacts and/or potential runoff impacts to any WOUS.

Thank you for the opportunity to comment. If you have any questions, please contact Mr. Robert Deroche, of my Regulatory staff at 808-438-2039 (FAX: 808-438-2039) or by email at robert.d.deroche2@usace.army.mil. Please include File No. POH-2009-00084 in any future correspondence regarding this project.

Sincerely,

George P. Young, P.E.
Chief, Regulatory Branch

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

August 18, 2009

George P. Young, Chief
Regulatory Branch
Department of Army
Honolulu District
Fort Shafter, Hawai`i 96858-5440

SUBJECT: Early Consultation on the Draft Environmental Assessment (EA) for the Lana`i Affordable Housing Project at TMK (2) 4-9-002:058 (por.), Lana`i City, Lanai

Dear Mr. Young:

In response to your letter dated March 19, 2009, please be advised that the Draft Environmental Assessment (EA) will provide a detailed mapping of any wetlands or other waterways on the project site. Further, the Draft EA will analyze the impacts of the improvements on the environment, including areas under the jurisdiction of the U.S. Army Corps of Engineers, as applicable. We are aware that a Department of Army permit may be required for the project prior to the initiation of construction.

Should you require additional clarification please call me at (808) 244-2015 or email planning@mhplanning.com. A copy of the Draft EA will be forwarded to your agency.

Very truly yours,

Colleen Suyama
Project Manager

CS:yp
cc: JoAnn Ridao, Deputy Director, Department of Housing and Human Concerns
Dwight Mitsunaga, Pacific Architects
Donald Okuhara, Okuhara & Associates
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MAR 19 2009

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Pacific Islands Fish and Wildlife Office
300 Ala Moana Boulevard, Room 3-122, Box 50088
Honolulu, Hawaii 96850

TAKE PRIDE IN AMERICA

In Reply Refer To:
2009-TA-0138

MAR 18 2009

Ms. Colleen Suyama
Project Manager
Munekiyo and Hiraga, Inc.
305 High Street
Wailuku, Hawaii 96793

Subject: Early Comments for the 201-H Lanai Housing Project, Lanai City

Dear Ms. Suyama:

Thank you for your letter dated February 26, 2009, requesting information regarding threatened and endangered species and designated critical habitat that may occur in the vicinity of a proposed residential housing unit in Lanai City, Lanai [TMK (2)4-9-002:058]. The project will be implemented by the County of Maui, Department of Housing and Human Concerns and entails the development of an affordable housing project on 73 acres of land.

We reviewed the information you provided and pertinent information in our files, including data compiled by the Hawaii Biodiversity and Mapping Program. The federally endangered Hawaiian petrel (*Pterodroma sandwichensis*), federally threatened Newell's shearwater (*Puffinus auricularis newelli*), collectively referred to as seabirds, have been observed in the project vicinity. There is no federally designated critical habitat in the project vicinity.

We offer the following comments to aide in avoiding and minimizing impacts to listed species. Outdoor lighting could result in seabird disorientation, fallout, and injury or mortality. Potential impacts to seabirds can be minimized by: 1) shielding outdoor lights associated with the project, particularly when used during each year's peak fledging period (September 15 through December 15); 2) avoiding night-time construction; and 3) providing all project staff with information regarding seabird fallout.

We hope this information assists you in determining potential impacts to listed species and avoiding and minimizing these impacts. If you have any additional questions, please contact Megan Laut, Fish and Wildlife Biologist, Consultation and Technical Assistance Program (phone: 808/792-9400; fax: 808/792-9581).

Sincerely,

Patrick Leonard
Field Supervisor

12

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

August 18, 2009

Patrick Leonard, Field Supervisor
U. S. Department of the Interior
Fish and Wildlife Service
300 Ala Moana Boulevard, Room 3-122
Box 50088
Honolulu, Hawai`i 96850

SUBJECT: Early Consultation on the Draft Environmental Assessment (EA) for the Lana`i Affordable Housing Project at TMK (2) 4-9-002:058 (por.), Lana`i City, Lanai

Dear Mr. Leonard:

In response to your letter dated March 18, 2009, please be advised that the Draft Environmental Assessment (EA) will reference the biological information and comments provided. A detailed botanical study is being prepared for the project to address potential environmental impacts on flora and fauna, including federally endangered species.

Should you require additional clarification please call me at (808) 244-2015 or email planning@mhplanning.com. A copy of the Draft EA will be forwarded to your agency.

Very truly yours,

Colleen Suyama
Project Manager

CS:yp
cc: JoAnn Ridao, Deputy Director, Department of Housing and Human Concerns
Dwight Mitsunaga, Pacific Architects
Donald Okuhara, Okuhara & Associates
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MAR 2 3 2009

LINDA LINGLE
GOVERNOR

RUSS K. SAITO
COMPTROLLER

BARBARA A. ANNIS
DEPUTY COMPTROLLER

(P)1088.9

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

MAR 19 2009

Ms. Colleen Suyama, Project Manager
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Suyama:

Subject: Early Consultation on 201-H Lanai Housing Project in Lanai City, Hawaii TMK (2)4-9-003:058(por.)

Thank you for the opportunity to provide comments on the Early Consultation for the 201-H Lanai Housing Project in Lanai City. The project does not impact any of the Department of Accounting and General Services' projects or existing facilities, and we have no comments to offer at this time.

If you have any questions, please call me at 586-0400 or have your staff call Mr. Clarence Kubo of the Public Works Division at 586-0488.

Sincerely,

RUSS K. SAITO
State Comptroller

MAR 1 8 2009

LINDA LINGLE
GOVERNOR
THEODORE E. LIU
DIRECTOR
MARK K. ANDERSON
DEPUTY DIRECTOR
ABBEY SETH MAYER
DIRECTOR
OFFICE OF PLANNING

DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT & TOURISM

OFFICE OF PLANNING

235 South Beretania Street, 6th Floor, Honolulu, Hawaii 96813
Mailing Address: P.O. Box 2359, Honolulu, Hawaii 96804

Telephone: (808) 587-2846
Fax: (808) 587-2824

Ref. No. P-12473

March 16, 2009

Ms. Colleen Suyama, Project Manager
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Suyama:

Subject: Early Consultation on 201-H Lanai Housing Project in Lanai City
Environmental Assessment
TMK: 4-9-002: por. 58
Lanai City, Lanai

Thank you for sending the Office of Planning (OP) an Early Consultation for the above referenced proposal to reclassify 73 acres of land from the State Agricultural District to the State Urban District to develop an affordable housing project by the County of Maui, Department of Housing and Human Concerns (DHHC). The project will be a mix of rental and for-sale housing. The Environmental Assessment is being developed in order to prepare an application under the requirements of Chapter 201-H, Hawaii Revised Statutes. The 73 acres are part of a 115-acre parcel donated to the County of Maui by Castle & Cooke Resorts to satisfy a condition imposed by the Land Use Commission (LUC) in LUC Docket No. A90-662.

The Office of Planning will be coordinating the State's position on areas of State concern. The Environmental Assessment (EA) should consider the impacts of the proposed project on the following issues:

1. **Water Resources** – Water resource protection and water quality are critical State issues. Please discuss the water requirements of the proposed project, the proposed potable and non-potable water sources to be used for the project, and what measures are proposed to reduce water demand and promote water reuse in the project. Please identify the impact of the project on the sustainable yield of affected aquifer, and the impact of the project on projected water use and system improvements contained in the County's water use and development plan.

2. **Agricultural Lands** – Preservation of Important Agricultural Lands (IAL) is a priority for the State and Counties. Please discuss how the loss of these lands can be justified or how other lands of equal importance can be protected.

3. **Public Health** – Please quantify the volume of solid waste likely to be generated by the project, and describe the impact the project will have on the County's existing and planned capacity for managing solid waste as represented in the County's solid waste management plan. The EA should discuss any mitigation measures to be incorporated in the project to reduce solid waste generation. Please identify and discuss any potential health and environmental threats that may be present due to contamination from past or current use of the site, including findings from Phase I or Phase II environmental site assessments conducted at the site.

4. **Cultural, Archaeological, and Historic Resources** – Please include an inventory of archaeological and historic sites on the subject property. Please also identify the status of any monitoring and preservation plans being prepared for or approved by the State Historic Preservation Division. Please identify and describe any cultural resources and cultural practices, including visual landmarks, if applicable, on the subject property and within the ahupua`a in which the property is situated. Please discuss the impact of the proposed project on identified cultural resources and practices, alternatives considered, and proposed mitigation measures.

5. **Environmental, Recreational, and Scenic Resources** – Please include an inventory of flora and fauna, including invertebrates, found on or in proximity to the project site and in any lava tubes and caves on the property. Flora and fauna of concern should not be limited to listed threatened or endangered species or those under consideration for listing, and should include those species and ecosystems identified as "rare" by The Nature Conservancy of Hawai`i. The EA should discuss measures to be taken to protect rare, threatened or endangered species or ecosystems of concern. You should consider in the design of your field observations including both wet and dry season surveys to capture the fullest range of flora and fauna. Please include a description of recreational uses on or near the project site. A description of scenic resources should also be included.

6. **Coastal Zone Management (CZM)** – The State oversees protection of natural, cultural, and economic resources within the coastal zone, which is defined as all lands of the State and the area extending seaward from the shoreline to the limit of the State's police power and management authority, including the United States territorial sea (§205A-1, Hawaii Revised Statutes). Please discuss how the

proposed project will balance the competing values of economic development and preservation of coastal resources, including the following CZM objective areas.

a. **Coastal and Ocean Resources** –The EA should discuss the impact of the project on existing site and offsite hydrology and how the project will manage stormwater and runoff. OP recommends the use of best management practices (BMP) that promote onsite infiltration and minimize runoff from storm events. More information on stormwater BMPs can be found at http://hawaii.gov/dbedt/czm/initiative/lid.php.

7. **Energy Use and Impacts** – The EA should quantify the projected energy requirements of the project by type of use, and discuss measures to be taken to reduce energy demand, promote energy efficiency, and to promote use of alternative, renewable energy sources. OP recommends the project's projected energy use and performance be discussed in relation to the U.S. Green Building Council's LEED rating systems for new construction and neighborhood development, the Hawaii Built Green, and Zero-Net Energy Green Homes programs for energy efficiency. Please identify any generating or transmission capacity constraints that may arise as a result of the proposed project and other projects planned for the region. The EA should also discuss the degree to which the project promotes transportation energy savings for project residents and users.

8. **Impact on State Facilities** – The EA should include a discussion on the impacts on State-funded facilities, including schools, highways, harbors, and airports. The EA should cite the mitigation measures proposed to be used in the development of the project.

9. **Conformance with County Plan Designations and Urban Growth or Rural Community Boundaries** – Act 26, Session Laws of Hawaii 2008, reaffirmed the Land Use Commission's duty to consider any proposed reclassification with respect to the Counties' adopted general, community, or development plans. Thus, the EA should discuss the proposed project's consistency with the County land use plans. If the proposed project is not consistent with the County plans, would require a County plan amendment, or lies outside a County urban growth or rural community boundary, then the EA should provide an analysis and discussion of the impact the project will have on surrounding lands.

10. **Development Timetable** –The State Land Use Commission (LUC) requires that projects seeking reclassification be substantially completed within ten years or seek incremental approvals. The EA should reference LUC rules (Section 15-15-

50, *Hawaii Administrative Rules*), and provide a schedule of development for each phase of the total project and a map showing the location and timing of each increment of development.

The Office recommends that the EA/EIS process be used as a means to identify and incorporate sustainable design and development practices, including green building practices, in the proposed project. The adoption of sustainable building and development practices has long-term environmental, social, and economic benefits to Hawaii's residents and communities. The Office of Environmental Quality Control's *Guidelines for Sustainable Building Design in Hawai'i* and the U.S. Green Building Council's (U.S. GBC) Leadership in Energy and Environmental Design (LEED) programs for new construction and its pilot program for neighborhood development (LEED-ND) offer guidelines and checklists for this purpose.

The LEED-ND rating system is especially useful in profiling how a project protects and enhances the overall health, natural environment, and quality of life of communities. The rating system provides a range of development features and strategies that promote efficient water, energy, and resource use, including waste reduction, as well as location and design elements to reduce transportation impacts. OP recommends that the EA include a preliminary overview of LEED features that could be incorporated into the project, based on the U.S. GBC LEED checklists available. This information would assist agencies, decision makers, and the public in reviewing the project application.

The Office of Planning looks forward to receiving the EA with the potential impacts and mitigation measures for the above issues addressed. If you have any questions, please call Lorene Maki in the Land Use Division at 587-2888.

Sincerely,

Abbey Seth Mayer
Director

c: Orlando Davidson, LUC
Katherine Kealoha, OEQC

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

August 20, 2009

Abbey Seth Mayer, Director
Department of Business,
Economic Development and Tourism
Office of Planning
P. O. Box 2359
Honolulu, Hawai`i 96804

SUBJECT: Early Consultation on the Draft Environmental Assessment (EA) for the Lana`i Affordable Housing Project at TMK (2) 4-9-002:058 (por.), Lana`i City, Lanai

Dear Mr. Mayer:

In response to your letter dated March 16, 2009, please be advised as follows:

1. The Draft Environmental Assessment (EA) will include a discussion on the water requirements for the project and its potential impacts on water resources. The Department of Housing and Human Concerns (DHHC) will coordinate its project with the Lanai Water Company who operates the water system for Lana`i island.

2. Although the preservation of Important Agricultural Lands is a priority for both the State and Counties, it should be noted that affordable housing is also a priority. Although the project will decrease the availability of vacant important agricultural land, it will provide a public benefit in the form of affordable housing.

3. The Draft EA will address solid waste for the project and its potential impacts. A Phase I Environmental Site Assessment was completed and found no contaminants. A copy of the Phase I Environmental Site Assessment will be included in the Draft EA.

4. An Archaeological Inventory Survey report has been prepared for the project and will be included in the Draft EA. The report has been sent to the State Historic Preservation Division for review and approval. A Cultural Impact Assessment has been prepared and concluded no impacts on cultural resources and practices will occur. A copy of the Cultural Impact Assessment will be included in the Draft EA.

5. A Biological Survey has been prepared for the project which will be included in the Draft EA. The survey includes discussion of listed threatened or endangered species and recommendations for mitigation.

6. Although the subject property is located outside of the Special Management Area for the island of Lana`i, the Draft EA will incorporate an evaluation of Chapter 205A, Hawai`i Revised Statutes (HRS). Further, a Preliminary Engineering Report has been prepared for the project to be included in the Draft EA which addresses drainage issues and potential mitigation measures.

7. To the extent practicable, the DHHC will consider energy efficiency measures provided it does not significantly decrease the ability of the County of Maui to provide affordable housing to the residents of Lana`i. Sustainability-related design measures will be addressed in the Draft EA.

8. The Draft EA includes discussion of the impacts of the project on public facilities.

9. The subject property is located within the State Agricultural District and the DHHC will file a petition for a State Section 201H, District Boundary Amendment to the State Urban District. The subject property is also designated for single family residential use on the Lana`i Community Plan and zoned Interim District. The DHHC will be processing the housing project in accordance with Section 201H-38, HRS, requesting exemptions from the County's General Plan and Zoning provisions. Information relating to the proposed action's relationship to plans, policies and controls will be addressed in the Draft EA.

10. We acknowledge the State Land Use Commission's requirement that projects seeking reclassification be substantially completed within ten (10) years or seek incremental approvals.

As noted above the DHHC will consider sustainable design and development measures in keeping with project affordability objectives.

Should you require additional clarification please call me at (808) 244-2015 or email planning@mhplanning.com. A copy of the Draft EA will be forwarded to your agency.

Very truly yours,

Colleen Suyama
Project Manager

CS:yp
cc: JoAnn Ridao, Deputy Director, Department of Housing and Human Concerns
Dwight Mitsunaga, Pacific Architects
Donald Okuhara, Okuhara & Associates
Keith Niiya, Austin, Tsutsumi & Associates, Inc.
Hallett Hammatt, Cultural Surveys Hawaii
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MAR 0 9 2009

LINDA LINGLE
GOVERNOR

ORLANDO "DAN" DAVIDSON
EXECUTIVE DIRECTOR

STATE OF HAWAII

DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT AND TOURISM
HAWAII HOUSING FINANCE AND DEVELOPMENT CORPORATION
677 QUEEN STREET, SUITE 300
Honolulu, Hawaii 96813
FAX: (808) 587-0600

IN REPLY REFER TO:

09:PEO/17

March 5, 2009

Ms. Colleen Suyama
Project Manager
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Suyama:

Re: Early Consultation on 201-H Lana'i Housing Project, Lana'i City, Hawaii
TMK (2)4-9-002:058(por.)

Thank you for consulting the Hawaii Housing Finance and Development Corporation on the above-referenced project.

We look forward to reviewing the draft Environmental Assessment for the proposed project.

Sincerely,

Karen Seddon
Executive Director

MAR 1 9 2009

LINDA LINGLE
GOVERNOR

PATRICIA HAMAMOTO
SUPERINTENDENT

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

OFFICE OF THE SUPERINTENDENT

March 16, 2009

Ms. Colleen Suyama, Project Manager
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawai`i 96793

Dear Ms. Suyama:

Subject: Early Consultation on the Lana`i Housing Project
Lana`i City, Maui, TMK: 4-9-002: 058

The Department of Education (DOE) has been involved in some of the planning efforts for the County of Maui's affordable housing project and the expansion of Lana`i High and Elementary School.

As neighbors to the proposed project, we would like the environmental assessment (EA) to include a thorough discussion of proposed traffic patterns and street improvements that will serve the school and the housing project. We will be looking closely at what type of development is planned immediately adjacent to the DOE's 42-acre expansion area.

We would also like to see safe and direct pedestrian routes between the proposed homes and the school identified in the EA.

Thank you for the opportunity to comment. If you have any questions, please call Heidi Meeker of the Facilities Development Branch at (808) 377-8301.

Very truly yours,

Patricia Hamamoto

Patricia Hamamoto
Superintendent

PH:jmb

c: Randolph Moore, Assistant Superintendent, OSFSS
Lindsey Ball, CAS, Hana/Lahainaluna/Lanai/Molokai Complex Areas

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

August 18, 2009

Patricia Hamamoto, Superintendent
Department of Education
P. O. Box 2360
Honolulu, Hawai`i 96804

SUBJECT: Early Consultation on the Draft Environmental Assessment (EA) for the Lana`i Affordable Housing Project at TMK (2) 4-9-002:058 (por.), Lana`i City, Lanai

Dear Ms. Hamamoto:

In response to your letter dated March 16, 2009, please be advised that a Traffic Impact Analysis Report has been prepared for the project which addresses traffic in the project area, including the nearby Lana`i High and Elementary School. Your comment regarding safe and direct pedestrian routes between the project and school will be incorporated within the project plans to encourage walkable communities.

We note that the County's Department of Housing and Human Concerns has initiated discussions with Department of Education and Department of Hawaiian Home Lands to ensure that the respective project planning efforts are properly coordinated.

Should you require additional clarification please call me at (808) 244-2015 or email planning@mhplanning.com. A copy of the Draft Environmental Assessment will be forwarded to your agency.

Very truly yours,

Colleen Suyama
Project Manager

CS:yp
cc: JoAnn Ridao, Deputy Director, Department of Housing and Human Concerns
Dwight Mitsunaga, Pacific Architects
Donald Okuhara, Okuhara & Associates
Keith Niiya, Austin, Tsutsumi & Associates, Inc.
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MAR 2 0 2009

LINDA LINGLE
GOVERNOR OF HAWAII

CHIYOME L. FUKINO, M.D.
DIRECTOR OF HEALTH

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

In reply, please refer to:
EMD / CWB

03073PMT.09

March 18, 2009

Ms. Colleen Suyama
Project Manager
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Suyama:

Subject: Early Consultation Request – Draft Environmental Assessment (DEA)
Proposed 201-H Lana`i Housing Project in Lana`i City
TMK: (2)4-9-002: 058 (por.)
Lana`i City, Island of Lanai, Hawaii

The Department of Health, Clean Water Branch (CWB), has reviewed your letter dated February 26, 2009, regarding the subject project and offers these comments. Please note that our review is based solely on the information provided in your letter for the subject project and its compliance with Hawaii Administrative Rules (HAR), Chapters 11-54 and 11-55. You may be responsible for fulfilling additional requirements related to our program. We recommend that you also read our standard comments on our website at http://www.hawaii.gov/health/environmental/env-planning/landuse/CWB-standardcomment.pdf.

1. Any project and its potential impacts to State waters must meet the following criteria:

   a. Antidegradation policy (HAR, Section 11-54-1.1), which requires that the existing uses and the level of water quality necessary to protect the existing uses of the receiving State water be maintained and protected.

   b. Designated uses (HAR, Section 11-54-3), as determined by the classification of the receiving State waters.

   c. Water quality criteria (HAR, Sections 11-54-4 through 11-54-8).

2. You are required to obtain a National Pollutant Discharge Elimination System (NPDES) permit for discharges of wastewater, including storm water runoff, into State surface waters (HAR, Chapter 11-55). For the following types of discharges into Class A or Class 2 State waters, you may apply for NPDES general permit coverage by submitting a Notice of Intent (NOI) form:

   a. Storm water associated with construction activities, including clearing, grading, and excavation, that result in the disturbance of equal to or greater than one (1) acre of total land area. The total land area includes a contiguous area where multiple separate and distinct construction activities may be taking place at different times on different schedules under a larger common plan of development or sale. An NPDES permit is required before the start of the construction activities.

   b. Hydrotesting water.

   c. Construction dewatering effluent.

   You must submit a separate NOI form for each type of discharge at least 30 calendar days prior to the start of the discharge activity, except when applying for coverage for discharges of storm water associated with construction activity. For this type of discharge, the NOI must be submitted 30 calendar days before to the start of construction activities. The NOI forms may be picked up at our office or downloaded from our website at http://www.hawaii.gov/health/environmental/water/cleanwater/forms/genl-index.html.

3. For other types wastewater not listed in Item 2 above or wastewater discharging into Class 1 or Class AA waters, will need to be covered under an NPDES individual permit. An application for an NPDES individual permit must be submitted at least 180 calendar days before the commencement of the discharge. The NPDES application forms may be picked up at our office or downloaded from our website at http://www.hawaii.gov/health/environmental/water/cleanwater/forms/indiv-index.html.

4. You must also submit a copy of the NOI or NPDES permit application to the State Department of Land and Natural Resources, State Historic Preservation Division (SHPD), or demonstrate to the satisfaction of the CWB that SHPD has or is in the process of evaluating your project. Please submit a copy of your request for review by SHPD or SHPD's determination letter for the project along with your NOI or NPDES permit application, as applicable.

5. Please call the Army Corps of Engineers at (808) 438-9258 to see if this subject project requires a Department of the Army (DA) permit. Permits may be required for work performed in, over, and under navigable waters of the United States. Projects requiring a DA permit also require a Section 401 Water Quality Certification (WQC) from our office.

6. Please note that all discharges related to the project construction or operation activities, whether or not NPDES permit coverage and/or 401 WQC are required, must comply with the State's Water Quality Standards. Noncompliance with water quality requirements contained in HAR, Chapter 11-54, and/or permitting requirements, specified in HAR, Chapter 11-55, may be subject to penalties of $25,000 per day per violation.

If you have any questions, please visit our website at http://www.hawaii.gov/health/environmental/water/cleanwater/index.html, or contact the Engineering Section, CWB, at 586-4309.

Sincerely,

Alec Wong

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

MT:cu

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

August 20, 2009

Alec Wong, P.E., Chief
Clean Water Branch
Department of Health
State of Hawaii
P. O. Box 3378
Honolulu, Hawai`i 96801-3379

SUBJECT: Early Consultation on the Draft Environmental Assessment (EA) for the Lana`i Affordable Housing Project at TMK (2) 4-9-002:058 (por.), Lana`i City, Lanai

Dear Mr. Wong:

Thank you for the detailed list of regulations that may be applicable to the proposed project. As the project continues to move forward through the various regulatory requirements, the County of Maui will ensure that compliance with applicable Department of Health regulations are met. We are aware that a National Pollutant Discharge Elimination System (NPDES) permit will be required for the project prior to the initiation of construction.

Should you require additional clarification please call me at (808) 244-2015 or email planning@mhplanning.com. A copy of the Draft EA will be forwarded to your agency.

Very truly yours,

Colleen Suyama
Project Manager

CS:yp
cc: JoAnn Ridao, Deputy Director, Department of Housing and Human Concerns
Dwight Mitsunaga, Pacific Architects
Donald Okuhara, Okuhara & Associates
F:\DATA\PA\LanaiCityHousing\DOHCWB.ECres.doc

MAR 1 3 2009

LINDA LINGLE
GOVERNOR OF HAWAII

CHIYOME L. FUKINO, M. D.
DIRECTOR OF HEALTH

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

STATE OF HAWAII
DEPARTMENT OF HEALTH
MAUI DISTRICT HEALTH OFFICE
54 HIGH STREET
WAILUKU, MAUI, HAWAII 96793-2102

March 12, 2009

Ms. Colleen Suyama
Project Manager
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawai`i 96793

Dear Ms. Suyama:

Subject: Early Consultation on 201-H Lana`i Housing Project
Lana`i City, Hawai`i
TMK: (2) 4-9-002:058 (por.)

Thank you for the opportunity to comment on the 201-H Lana`i Housing Project. The following comments are offered:

1. National Pollutant Discharge Elimination System (NPDES) permit coverage may be required for this project. The Clean Water Branch should be contacted at 808 586-4309.

2. The noise created during the construction phase of the project may exceed the maximum allowable levels as set forth in Hawaii Administrative Rules, Chapter 11-46 "Community Noise Control". A noise permit may be required and should be obtained before the commencement of this project.

It is strongly recommended that the Standard Comments found at the Department's website: http://hawaii.gov/health/environmental/env-planning/landuse/landuse.html be reviewed, and any comments specifically applicable to this project should be adhered to.

Sincerely,

Patti Kitkowski

Patti Kitkowski
Acting District Environmental Health Program Chief

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

August 18, 2009

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

SUBJECT: Early Consultation on the Draft Environmental Assessment (EA) for the Lana`i Affordable Housing Project at TMK (2) 4-9-002:058 (por.), Lana`i City, Lanai

Dear Ms. Kitkowski:

In response to your letter dated March 12, 2009, we are aware of the regulatory requirements of the Department of Health and will ensure compliance prior to and during construction of the proposed housing project.

Should you require additional clarification please call me at 244-2015 or email planning@mhplanning.com. A copy of the Draft Environmental Assessment will be forwarded to your agency.

Very truly yours,

Colleen Suyama
Project Manager

CS:yp
cc: JoAnn Ridao, Deputy Director, Department of Housing and Human Concerns
Dwight Mitsunaga, Pacific Architects
Donald Okuhara, Okuhara & Associates
F:\DATA\PA\LanaiCityHousing\DOHMaui.ECres.doc

MAR 17 2009

LINDA LINGLE
GOVERNOR OF HAWAII

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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

March 16, 2009

Munekiyo & Hiraga, Inc.
305 High Street Suite 104
Wailuku, Hawaii 96793

Attention: Ms. Colleen Suyama, Project Manager

Ladies and Gentlemen:

Subject: Early Consultation on 201-H Lanai Housing Project in Lanai City

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

Other than the comments from Engineering Division, Commission on Water Resource Management, the Department of Land and Natural Resources has no other comments to offer on the subject matter. Should you have any questions, please feel free to call our office at 587-0433. Thank you.

Sincerely,

for Morris M. Atta
Administrator

LINDA LINGLE
GOVERNOR OF HAWAII

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

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LAND DIVISION
2009 MAR 10 A 8:39
DEPT. OF LAND & NATURAL RESOURCES
STATE OF HAWAII

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

March 2, 2009

MEMORANDUM

TO: **DLNR Agencies:**
x Div. of Aquatic Resources
__ Div. of Boating & Ocean Recreation
x Engineering Division
__ Div. of Forestry & Wildlife
__ Div. of State Parks
x Commission on Water Resource Management
x Office of Conservation & Coastal Lands
x Land Division –Gavin/Barbara

FROM: Morris M. Atta
SUBJECT: Early Consultation on 201-H Lanai Housing Project
LOCATION: Lanai City, Lanai, TMK: (2) 4-9-2:portion 58
APPLICANT: County of Maui, Department of Housing & Human Concerns

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by March 14, 2009.

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact my office at 587-0433. Thank you.

Attachments

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

Signed:
Date: 3/10/09

DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

LD/MorrisAtta
Ref.: EarlyConsultation201HLanaiHousing
Maui.450

COMMENTS

( ) We confirm that the project site, according to the Flood Insurance Rate Map (FIRM), is located in Zone ___.

(X) **Please take note that flood zone designation for the project site is unavailable, as the Federal Emergency Management Agency has not prepared a Flood Insurance Rate Maps for the Island of Lanai.**

( ) Please note that the correct Flood Zone Designation for the project site, according to the Flood Insurance Rate Map (FIRM), is ___.

( ) Please note that the project must comply with the rules and regulations of the National Flood Insurance Program (NFIP) presented in Title 44 of the Code of Federal Regulations (44CFR), whenever development within a Special Flood Hazard Area is undertaken. If there are any questions, please contact the State NFIP Coordinator, Ms. Carol Tyau-Beam, of the Department of Land and Natural Resources, Engineering Division at (808) 587-0267.

Please be advised that 44CFR indicates the minimum standards set forth by the NFIP. Your Community's local flood ordinance may prove to be more restrictive and thus take precedence over the minimum NFIP standards. If there are questions regarding the local flood ordinances, please contact the applicable County NFIP Coordinators below:

( ) Mr. Robert Sumimoto at (808) 768-8097 or Mr. Mario Siu Li at (808) 768-8098 of the City and County of Honolulu, Department of Planning and Permitting.

( ) Mr. Kelly Gomes at (808) 961-8327 (Hilo) or Mr. Kiran Emler at (808) 327-3530 (Kona) of the County of Hawaii, Department of Public Works.

( ) Mr. Francis Cerizo at (808) 270-7771 of the County of Maui, Department of Planning.

( ) Mr. Mario Antonio at (808) 241-6620 of the County of Kauai, Department of Public Works.

( ) The applicant should include project water demands and infrastructure required to meet water demands. Please note that the implementation of any State-sponsored projects requiring water service from the Honolulu Board of Water Supply system must first obtain water allocation credits from the Engineering Division before it can receive a building permit and/or water meter.

( ) The applicant should provide the water demands and calculations to the Engineering Division so it can be included in the State Water Projects Plan Update.

( ) Additional Comments:_____

_____

( ) Other: _____

_____

Should you have any questions, please call Ms. Suzie S. Agraan of the Planning Branch at 587-0258.

Signed: _____
ERIC T. HIRANO, CHIEF ENGINEER

Date: 3/10/09

LINDA LINGLE
GOVERNOR OF HAWAII

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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

RECEIVED
09 MAR 3 P12:03

March 2, 2009

MEMORANDUM

From: ~~TO:~~

DLNR Agencies:
x Div. of Aquatic Resources
__Div. of Boating & Ocean Recreation
x Engineering Division
__Div. of Forestry & Wildlife
__~~Div. of State Parks~~
x Commission on Water Resource Management
x ~~Office of Conservation & Coastal Lands~~
x Land Division –Gavin/Barbara

To: ~~FROM:~~ Morris M. Atta Marlene
SUBJECT: Early Consultation on 201-H Lanai Housing Project
LOCATION: Lanai City, Lanai, TMK: (2) 4-9-2:portion 58
APPLICANT: County of Maui, Department of Housing & Human Concerns

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by March 14, 2009.

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact my office at 587-0433. Thank you.

Attachments

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

Signed: Kyle K. Kawa
Date: March 10, 2009

LINDA LINGLE
GOVERNOR OF HAWAII

LAURA H. THIELEN
CHAIRPERSON
MEREDITH J. CHING
JAMES A. FRAZIER
NEAL S. FUJIWARA
CHIYOME L. FUKINO, M.D.
DONNA FAY K. KIYOSAKI, P.E.
LAWRENCE H. MIIKE, M.D., J.D.
KEN C. KAWAHARA, P.E.
DEPUTY DIRECTOR

RECEIVED
LAND DIVISION
2009 MAR 10 P 3:11
DEPT. OF LAND & NATURAL RESOURCES
STATE OF HAWAII

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

March 10, 2009

REF: Lanai Housing.Pre-EA.dr

TO: Morris Atta, Administrator
Land Division

FROM: Ken C. Kawahara, P.E., Deputy Director
Commission on Water Resource Management

SUBJECT: Early Consultation on 201-H Lanai Housing Project, Lanai City, Lanai

FILE NO.: NA
TMK NO.: (2) 4-9-2:portion 58

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

Our comments related to water resources are checked off below.

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

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

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

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

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

☒ 6. We recommend the use of alternative water sources, wherever practicable.

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

Permits required by CWRM:
Additional information and forms are available at http://hawaii.gov/dlnr/cwrm/resources_permits.htm.

☐ 8. The proposed water supply source for the project is located in a designated water management area, and a Water Use Permit is required prior to use of water.

☐ 9. A Well Construction Permit(s) is (are) required any well construction work begins.

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

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

☐ 12. Ground water withdrawals from this project may affect streamflows, which may require an instream flow standard amendment.

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

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

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

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

☒ OTHER:
We recommend that the environmental assessment quantify the potable and non-potable needs of the project, the planned water supply source, and identify any alternative water sources.

If there are any questions, please contact Lenore Ohye at 587-0216.

LO:sd

MAR 2 3 2009

LINDA LINGLE
GOVERNOR OF HAWAII

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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

March 19, 2009

Munekiyo & Hiraga, Inc.
305 High Street Suite 104
Wailuku, Hawaii 96793

Attention: Ms. Colleen Suyama, Project Manager

Ladies and Gentlemen:

Subject: Early Consultation on 201-H Lanai Housing Project in Lanai City

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

The Department of Land and Natural Resources has no other comments to offer on the subject matter. Should you have any questions, please feel free to call our office at 587-0433. Thank you.

Sincerely,

Charlene E. Unoki
for Morris M. Atta
Administrator

LINDA LINGLE
GOVERNOR OF HAWAII

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

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LAND DIVISION
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DEPT. OF LAND & NATURAL RESOURCES
STATE OF HAWAII

AQUATIC RESOURCES: 2135

DIRECTOR	
COMM. FISH.	
AQ RES/ENV	
AQ REC	
PLANNER	
STAFF SVCS	
RCUH/UH	
STATISTICS	
AFRC/FED AID	
EDUCATION	
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STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

March 2, 2009

MEMORANDUM

TO: ~~DLNR Agencies:~~
x Div. of Aquatic Resources
__Div. of Boating & Ocean Recreation
x Engineering Division
__Div. of Forestry & Wildlife
__*Div. of State Parks*
x Commission on Water Resource Management
x Office of Conservation & Coastal Lands
x Land Division –Gavin/Barbara

RECEIVED
MAR 4 2009
AQUATIC RESOURCES

FROM: Morris M. Atta
SUBJECT: Early Consultation on 201-H Lanai Housing Project
LOCATION: Lanai City, Lanai, TMK: (2) 4-9-2:portion 58
APPLICANT: County of Maui, Department of Housing & Human Concerns

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by March 14, 2009.

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact my office at 587-0433. Thank you.

Attachments

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

Signed: Francis Ontai
Date: 3-18-09

LINDA LINGLE
GOVERNOR OF HAWAII

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

AQUATIC RESOURCES: 2135

DIRECTOR	
COMM. FISH.	
AQ RES/ENV	
AQ REC	
PLANNER	
STAFF SVCS	
RCUH/UH	
STATISTICS	
AFRC/FED AID	
EDUCATION	
SECRETARY	
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STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

March 2, 2009

MEMORANDUM

RECEIVED MAR 4 2009 AQUATIC RESOURCES

TO: DLNR Agencies:
x Div. of Aquatic Resources
__Div. of Boating & Ocean Recreation
x Engineering Division
__Div. of Forestry & Wildlife
__Div. of State Parks
x Commission on Water Resource Management
x Office of Conservation & Coastal Lands
x Land Division –Gavin/Barbara

Darlene

FROM: Morris M. Atta
SUBJECT: Early Consultation on 201-H Lanai Housing Project
LOCATION: Lanai City, Lanai, TMK: (2) 4-9-2:portion 58
APPLICANT: County of Maui, Department of Housing & Human Concerns

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by March 14, 2009.

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact my office at 587-0433. Thank you.

Attachments

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

Signed: Skippy Hau
Date: 3/17/09

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

August 18, 2009

Morris Atta, Administrator
Department of Land and Natural Resources
Land Division
P. O. Box 621
Honolulu, Hawai`i 96809

SUBJECT: Early Consultation on the Draft Environmental Assessment (EA) for the Lana`i Affordable Housing Project at TMK (2) 4-9-002:058 (por.), Lana`i City, Lanai

Dear Mr. Atta:

Thank you for your letters dated March 16, and 19, 2009. We acknowledge that flood zone information for the project site is unavailable, as the Federal Emergency Management Agency has not prepared a Flood Insurance Rate Map for the island of Lana`i. Further, we will work with the Department of Water Supply and the Lanai Water Company to address comments of the Commission on Water Resource Management.

Should you require additional clarification please call me at (808) 244-2015 or email planning@mhplanning.com. A copy of the Draft Environmental Assessment will be forwarded to your agency.

Very truly yours,

Colleen Suyama
Project Manager

CS:yp
cc: JoAnn Ridao, Deputy Director, Department of Housing and Human Concerns
Dwight Mitsunaga, Pacific Architects
Donald Okuhara, Okuhara & Associates
F:\DATA\PA\LanaiCityHousing\DLNR.ECres.doc

JUL 2 4 2009

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

July 20, 2009

Ms. Colleen Suyama, Project Manager
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawai'i 96793
planning@mhplanning.com

LOG NO: 2009.1076
DOC NO: 0907PC32
Archaeology

SUBJECT: **Chapter 6E-8 Historic Preservation Review –**
Early Consultation for the Proposed 201-H Lana'i Affordable Housing Project
Palawai Ahupua'a, Lahaina (Lana'i) District, Island of Lana'i
TMK: (2) 4-9-002:058 por.

Thank you for the opportunity to comment on the aforementioned project, correspondence for which we received on February 27 of 2009. Please accept our apologies for the lengthy delay in responding.

Based on the submitted information, the project involves the construction of an affordable housing project on a 73 acre portion of a 115 acre parcel of land owned by the County of Maui. The project will also involve extending the existing Fifth and Ninth Avenues in Lana'i City.

A search of our records indicates that an archaeological inventory survey of the proposed area of effect has not yet occurred. Therefore, upon review of any permit involving ground altering disturbance within the subject parcel, we will recommend that the following condition be attached:

An archaeological inventory survey shall be conducted by a qualified archaeological consultant with a report of the findings, significance assessments and recommended mitigation submitted to this office for review and acceptance prior to issuance of the permit.

A list of those meeting the requirements to perform such work can be obtained on the SHPD's website at http://hawaii.gov/dlnr/hpd/pdfs/2009-Permittee.pdf or by contacting our main office at (808) 692-8015.

If you have any questions or comments regarding this letter, please contact the SHPD's Lead Maui Archaeologist, Ms. Patty Conte (Patty.J.Conte@hawaii.gov).

Aloha,

Nancy A. McMahon

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

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

August 20, 2009

Nancy McMahon, Deputy SHPO
State Archaeologist
State Historic Preservation Division
Department of Land and Natural Resources
601 Kamokila Boulevard, Room 555
Kapolei, Hawai`i 96707

SUBJECT: Early Consultation on the Draft Environmental Assessment (EA) for the Lana`i Affordable Housing Project at TMK (2) 4-9-002:058 (por.), Lana`i City, Lanai

Dear Ms. McMahon:

In response to your letter dated July 20, 2009, an archaeological inventory survey has been prepared by Cultural Surveys Hawaii for the project and included in the Draft Environmental Assessment (EA).

Should you require additional clarification please call me at (808) 244-2015 or email colleen@mhplanning.com. A copy of the Draft EA will be forwarded to your agency.

Very truly yours,

Colleen Suyama
Project Manager

CS:yp
cc: JoAnn Ridao, Deputy Director, Department of Housing and Human Concerns
Dwight Mitsunaga, Pacific Architects
Donald Okuhara, Okuhara & Associates
Hallett Hammett, Cultural Surveys Hawaii
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MAR 2 3 2009

LINDA LINGLE
GOVERNOR

BRENNON T. MORIOKA
DIRECTOR

Deputy Directors
MICHAEL D. FORMBY
FRANCIS PAUL KEENO
BRIAN H. SEKIGUCHI
JIRO A. SUMADA

IN REPLY REFER TO:

STP 8.3170

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

March 17, 2009

Ms. Colleen Suyama
Project Manager
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Suyama:

Subject: Lanai 201-H Housing Project
Early Consulation (EC)
TMK: 4-9-002: 058 (por.)

Thank you for requesting the State Department of Transportation's (DOT) review of the subject project.

DOT understands that the subject EC addresses a 73-acre, affordable housing project on the island of Lanai. The 73 acres are part of larger 115-acre parcel that was donated to the County of Maui by Castle and Cooke Resorts. The remaining 42 acres will be utilized by the Department of Education for the expansion of Lanai High and Elementary School. Access to the site will be from proposed extensions of both Fifth Avenue and Ninth Avenue.

The subject project's contribution to the cumulative traffic flow could potentially impact the State highway, Kaumalapau Highway. The Draft Environmental Assessment (DEA) should thus discuss and evaluate project impacts to Kaumalapau Highway in accordance with the following DOT Highways Division Planning Branch comments. Please call the Planning Branch at telephone number (808) 587-1830 to discuss these comments.

1. The DEA should address the additional traffic generated by the project.

2. The DEA should address the types of construction vehicles and heavy equipment that will be used at the job site. The project contactor will need to contact the Highways Division Maui District Office to discuss the need for an Oversize and Overweight Vehicle Permit if the transport of very large construction vehicles and equipment will occur on the State highway facility.

3. During the project construction, DOT expects that the County and its project contractor will exercise all reasonable best management practices to avoid or minimize impacts or inconveniences to the motoring public, bicyclists, pedestrians, etc.

4. The DEA should address construction activity hours.

DOT appreciates the opportunity to provide comments and requests four (4) copies of the project DEA be provided. If there are any other questions, please contact Mr. David Shimokawa of the DOT Statewide Transportation Planning Office at (808) 587-2356.

Very truly yours,

BRENNON T. MORIOKA, PH.D., P.E.
Director of Transportation

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

August 18, 2009

Brennon Morioka, Director
Department of Transpotation
869 Punchbowl Street
Honolulu, Hawai`i 96813-5097

SUBJECT: Early Consultation on the Draft Environmental Assessment (EA) for the Lana`i Affordable Housing Project at TMK (2) 4-9-002:058 (por.), Lana`i City, Lanai

Dear Mr. Morioka:

In response to your letter dated March 17, 2009, a Traffic Impact Analysis Report has been prepared by Austin Tsutsumi & Associates, Inc. for the project and your comments regarding traffic generation and construction impacts will be addressed in the Draft Environmental Assessment (EA). Further, we acknowledge that during construction, the County of Maui and its project contractor will exercise reasonable best management practices to avoid or minimize impacts or inconveniences to the motoring public, bicyclists, pedestrians, etc.

Should you require additional clarification please call me at (808) 244-2015 or email planning@mhplanning.com. As requested, four (4) copies of the Draft EA will be forwarded to your agency.

Very truly yours,

Colleen Suyama
Project Manager

CS:yp
cc: JoAnn Ridao, Deputy Director, Department of Housing and Human Concerns
Dwight Mitsunaga, Pacific Architects
Donald Okuhara, Okuhara & Associates
Keith Niiya, Austin, Tsutsumi & Associates, Inc.
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MAR 1 7 2009

LINDA LINGLE
GOVERNOR

MAJOR GENERAL ROBERT G. F. LEE
DIRECTOR OF CIVIL DEFENSE

EDWARD T. TEIXEIRA
VICE DIRECTOR OF CIVIL DEFENSE

PHONE (808) 733-4300
FAX (808) 733-4287

STATE OF HAWAII
DEPARTMENT OF DEFENSE
OFFICE OF THE DIRECTOR OF CIVIL DEFENSE
3949 DIAMOND HEAD ROAD
HONOLULU, HAWAII 96816-4495

March 16, 2009

Ms. Colleen Suyama
Project Manager
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Suyama:

Early Consultation Request
Lana'i Housing Project, Lana'i City, County of Maui, Hawaii

Thank you for the opportunity to comment on this project. After review of your letter and the maps sent for this project, we have no suggestions to make at this time.

We anticipate reviewing the Environmental Assessment when it is completed and will make any appropriate recommendations at that time.

If you have any questions, please call Mr. Richard Stercho, Hazard Mitigation Planner, at 733-4300, extension 583.

Sincerely,

EDWARD T. TEIXEIRA
Vice Director of Civil Defense

c: JoAnne Ridao, Deputy Director,
Department of Housing and Human Concerns
Dwight Mitsunaga, Pacific Architects, Inc.

PHONE (808) 594-1888 FAX (808) 594-1865

STATE OF HAWAI'I
OFFICE OF HAWAIIAN AFFAIRS
711 KAPI'OLANI BOULEVARD, SUITE 500
HONOLULU, HAWAI'I 96813

HRD09/4203

March 13, 2009

Colleen Suyama
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, HI 96793

RE: Request for early input for the 201-H Lāna'i Housing Project in Lāna'i City, Lāna'i; TMK: (2)4-9-002:058(por.)

Aloha e Colleen Suyama,

The Office of Hawaiian Affairs (OHA) is in receipt of the above-mentioned letter, dated February 26, 2009. The County of Maui, Department of Housing and Human Concerns (DHHC) is proposing an affordable housing project in Lāna'i City. The project will make use of 73 acres of land owned by Maui County, and involve extending both Fifth and Ninth Avenues to provide access to the proposed property. A community meeting will be held in the near future based upon the public comments that have been received thus far.

OHA has substantive obligations to protect the cultural and natural resources of Hawai'i for its beneficiaries, the people of this land. The Hawaii Revised Statutes mandate that OHA "[s]erve as the principal public agency in the State of Hawaii responsible for the performance, development, and coordination of programs and activities relating to native Hawaiians and Hawaiians; . . . and [t]o assess the policies and practices of other agencies impacting on native Hawaiians and Hawaiians, and conducting advocacy efforts for native Hawaiians and Hawaiians." (HRS § 10-3)

Chapter 343 of the Hawaii Revised Statues (HRS) requires that the Draft EA include a Cultural Impact Assessment (CIA). The CIA should include information relating to the traditional and customary practices and beliefs of the area's Native Hawaiians, and the community should be involved in this assessment. Consideration must also be afforded to any individuals accessing the project area for constitutionally protected traditional and customary purposes, in accordance with the Hawai'i State Constitution, Article XII, Section 7.

OHA requests clarification whether an archaeological inventory survey for the project will be submitted to the State Historic Preservation Division for review and approval. If so, OHA should be allowed the opportunity to comment on the criteria assigned to any cultural or archaeological sites identified within the archaeological inventory survey.

We request the applicant's assurances that should iwi kūpuna or Native Hawaiian cultural or traditional deposits be found during the construction of the project, work will cease, and the appropriate agencies will be contacted pursuant to applicable law.

In addition, OHA recommends that the applicant use native vegetation in its landscaping plan for the subject parcel. Landscaping with native plants furthers the traditional Hawaiian concept of mālama 'āina and creates a more Hawaiian sense of place.

Thank you for the opportunity to comment, and we look forward to a further, more detailed review of your forthcoming Draft EA. If you have further questions, please contact Heidi Guth by phone at (808) 594-1962 or e-mail her at heidig@oha.org.

'O wau iho nō me ka 'oia'i'o,

Clyde W. Nāmu'o
Administrator

C: OHA Lāna'i CRC Office

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

August 20, 2009

Clyde W. Nāmu`o, Administrator
Office of Hawaiian Affairs
State of Hawaii
711 Kapiolani Boulevard, Suite 500
Honolulu, Hawai`i 96813

SUBJECT: Early Consultation on the Draft Environmental Assessment (EA) for the Lana`i Affordable Housing Project at TMK (2) 4-9-002:058 (por.), Lana`i City, Lanai

Dear Mr. Nāmu`o:

In response to your letter dated March 13, 2009, please be advised that Cultural Surveys Hawai`i has prepared an Archaeological Inventory Survey and Cultural Impact Assessment to be included in the Draft Environmental Assessment (EA), as well as sent to the State Historic Preservation Division (SHPD) for review and approval. Please be assured that during construction of the project, if inadvertent iwi kupuna or native Hawaiian cultural or traditional deposits be found, work will cease in the immediate area, and SHPD shall be contacted for appropriate analysis and recommended mitigation.

Your recommendation to use native vegetation in the project landscaping to create a more Hawaiian sense of place will be considered as the plans for the project progresses.

Should you require additional clarification please call me at (808) 244-2015 or email planning@mhplanning.com. A copy of the Draft EA will be forwarded to your agency.

Very truly yours,

Colleen Suyama
Project Manager

CS:yp
cc: JoAnn Ridao, Deputy Director, Department of Housing and Human Concerns
Dwight Mitsunaga, Pacific Architects
Donald Okuhara, Okuhara & Associates
Hallett Hammatt, Cultural Surveys Hawai`i
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MAR 0 0 2009

CHARMAINE TAVARES
Mayor

TAMARA HORCAJO
Director

ZACHARY Z. HELM
Deputy Director

(808) 270-7230
Fax (808) 270-7934

DEPARTMENT OF PARKS & RECREATION

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

March 3, 2009

Colleen Suyama, Project Manager
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

SUBJECT: Early Consultation on 201-H Lanai Housing Project, Lanai City, Hawaii; TMK (2) 4-9-002:058 (por.)

Dear Ms. Suyama:

This is in response to your request for comments for the above referenced project. We would like to request information on what is being proposed for the project for parks and recreational facilities as well as for bikeways and pedestrian paths.

Please feel free to contact me or Mr. Patrick Matsui, Chief of Parks Planning and Development at 270-7387 should you have any other questions on this matter.

Sincerely,

Tamara Horcajo

TAMARA HORCAJO
Director of Parks & Recreation

xc: Patrick Matsui, Chief of Planning & Development

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

August 20, 2009

Patrick Matsui, Chief of Planning
Department of Parks and Recreation
County of Maui
700 Hali`a Street, Unit 2
Wailuku, Hawai`i 96793

SUBJECT: Early Consultation on the Draft Environmental Assessment (EA) for the Lana`i Affordable Housing Project at TMK (2) 4-9-002:058 (por.), Lana`i City, Lanai

Dear Mr. Matsui:

In response to your letter dated March 3, 2009, please be advised that the preliminary site plan for the project includes two (2) park sites and a 4.9-acre "public/quasi-public" site for a future community center. The two (2) park sites will be 2.83-acre and 2.06-acre. In keeping with the character of Lana`i City and the desires of the Lana`i community, generous grassed shoulders are being proposed that will accommodate pedestrian access within the project. The Department of Housing and Human Concerns will coordinate the proposed parks with the Department of Parks and Recreation.

Should you require additional clarification please call me at (808) 244-2015 or email planning@mhplanning.com. A copy of the Draft Environmental Assessment will be forwarded to your agency.

Very truly yours,

Colleen Suyama
Project Manager

CS:lh
cc: JoAnn Ridao, Deputy Director, Department of Housing and Human Concerns
Dwight Mitsunaga, Pacific Architects
Donald Okuhara, Okuhara & Associates
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CHARMAINE TAVARES
Mayor

JEFFREY S. HUNT
Director

KATHLEEN ROSS AOKI
Deputy Director

MAR 2 4 2009

COUNTY OF MAUI
DEPARTMENT OF PLANNING

March 19, 2009

Mrs. Colleen Suyama
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mrs. Suyama:

SUBJECT: COMMENTS ON AN EARLY CONSULTATION REQUEST (EAC) FOR THE PROPOSED 201-H LANAI HOUSING PROJECT LOCATED AT IN LANAI CITY, ISLAND OF LANAI, HAWAII, TMK: (2) 4-9-002:058 (EAC 2009/0012)

The Department of Planning (Department) is in receipt of the above-referenced document for the proposed affordable housing project in Lanai City. The Department understands the proposed action includes the following:

1. The County of Maui, Department of Housing and Human Concerns is preparing an application for an affordable housing project on 73 acres of the 115 acre parcel donated to the County by Castle & Cooke Resorts;

2. The Department of Education will utilize the remaining 42 acres for expansion of the Lanai High and Elementary School (the school project is not within the scope of the environmental review); and

3. The proposed extension of Fifth Avenue will provide access to the property and separate the housing and school sites.

Based on the foregoing, the Department provides the following comments:

1. The land use designations for the 115-acre project site are as follows:

State Land Use:	Urban
Lanai Community Plan:	Single Family and Public/Quasi Public
County Zoning:	Interim; P-1 Public/Quasi Public; and PK-3 Regional Park District

(These designations have not been verified by the County's Zoning Administration & Enforcement Division)

2. The Department concurs that the use of county lands or funds is a "trigger" that requires compliance with Chapter 343, Hawaii Revised Statutes (HRS);

3. The Draft Environmental Assessment (EA) should contain a thorough discussion on how the proposed project is consistent with the objectives and polices of Chapter 205A, Coastal Zone Management, HRS;

4. The Lanai Planning Commission may want to know the timeline for development of this project as well as the expansion to the school; and

5. The Draft EA must evaluate the pertinent goals, objectives and policies listed in the Lanai Community Plan. Please note that the Community Plan is scheduled to be updated in the very near future and any revisions or updates to the plan could affect your project.

Thank you for the opportunity to comment. Should you require further clarification, please contact Staff Planner Joseph Prutch via email at joseph.prutch@mauicounty.gov or by phone at 270-7512.

Sincerely,

Clayton I. Yoshida

CLAYTON I. YOSHIDA, AICP
Planning Program Administrator

For: JEFFREY S. HUNT, AICP
Planning Director

xc: Joseph M. Prutch, Staff Planner
General File
Project File

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MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

August 18, 2009

Jeffrey S. Hunt, Director
Department of Planning
250 South High Street
Wailuku, Hawai`i 96793

SUBJECT: Early Consultation on the Draft Environmental Assessment (EA) for the Lana`i Affordable Housing Project at TMK (2) 4-9-002:058 (por.), Lana`i City, Lanai

Dear Mr. Hunt:

Thank you for your letter of March 19, 2009 regarding the proposed Lana`i Affordable Housing Project. The following responses are provided to address your noted comments.

1. The portion of the 115 acre parcel to be developed as the Lana`i Affordable Housing project is situated on the portion of the property identified as single family on the Lana`i Community Plan and zoned interim district. A zoning confirmation form will be obtained from the Planning Department's Zoning Administration and Enforcement Division.

2. The Draft Environmental Assessment (EA) is being prepared due to the use of county lands and funds in accordance with Chapter 343, Hawai`i Revised Statutes (HRS).

3. The Draft EA will be evaluated with respect to the objectives and policies of Chapter 205A, HRS.

4. The project was presented to the Lana`i Planning Commission at its meeting on February 18, 2009. As the project progresses through the entitlement process the project team will periodically update the Commission on the status of the project.

5. The Draft EA has evaluated the pertinent goals, objectives and policies listed in the Lana`i Community Plan.

Should you require additional clarification please call me at 244-2015 or email planning@mhplanning.com. A copy of the Draft EA will be forwarded to your agency.

Very truly yours,

Colleen Suyama
Project Manager

CS:yp
cc: JoAnn Ridao, Deputy Director, Department of Housing and Human Concerns
Dwight Mitsunaga, Pacific Architects
Donald Okuhara, Okuhara & Associates
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MAR 1 8 2009

POLICE DEPARTMENT
COUNTY OF MAUI

CHARMAINE TAVARES
MAYOR

OUR REFERENCE
YOUR REFERENCE

55 MAHALANI STREET
WAILUKU, HAWAII 96793
(808) 244-6400
FAX (808) 244-6411

THOMAS M. PHILLIPS
CHIEF OF POLICE

GARY A. YABUTA
DEPUTY CHIEF OF POLICE

March 12, 2009

Ms. Colleen Suyama
Project Manager
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, HI 96793

Dear Ms. Suyama:

SUBJECT: Early Consultation on 201-H Lana'i Housing Project in Lana'i City, Hawaii; TMK (20 4-9-002:058(por.)

Thank you for your letter of February 26, 2009, requesting comments on the above subject.

We have reviewed the information submitted for this project and have enclosed a copy of our comments. Thank you for giving us the opportunity to comment on this project.

Very truly yours,

AC Wayne T. Ribao

Assistant Chief Wayne T. Ribao
for: Thomas M. Phillips
Chief of Police

c: Jeffrey Hunt, Planning Department

COPY

TO : THOMAS PHILLIPS, CHIEF POLICE, MAUI POLICE DEPARTMENT

CONCUR WITH OFC. SANG'S REVIEW. AC Wayne ... 03/12/09

VIA : CHANNELS

FROM : JOHN K. SANG, POLICE OFFICER II, LANAI PATROL DIVISION

SUBJECT : EARLY CONSULTATION ON 201-H LANA'I PROJECT IN LANA'I CITY, HAWAI'I, TMK (2)4-9-002:058 (POR.)

Sir, this TO/FROM is written in response to the aforementioned subject. Following is a preliminary assessment of the project from a Policing point of view. It is important to note that the materials and information provided are sparse. Many of the necessary details with regards to this project and the impact on the community have not been outlined. Presented is a general concept with little or no details beyond the intent to move forward on this project.

The Department of Housing and Human Concerns is proposing an affordable housing project on the island of Lana'i. The project envisions an as yet unknown amount of residential units on a 73 acre parcel of land located west of the current Hawaiian Homelands Subdivision. The project expects access to this residential area through the extension of existing roadways which include Fifth Street and Ninth Street. The request also references a proposed expansion of the Lana'i High and Elementary School grounds westward along Fifth Street.

At present the best assessment I can provide is in line with the general request provided. Much of it still leaves questions unasked and thus unanswered.

DESIGN PHASE:

Police role during the design phase should be very limited. Questions designers could answer include the impact of increased traffic along Fifth Street fronting the school grounds. Keeping in mind the planned expansion of the school. Currently the posted speed limit on Fifth Street is 20 MPH. Fifth Street is a straight uninterrupted two-lane road. This roadway currently lends itself to excessive speed. The construction of speed mitigating devices such as speed bumps should be considered. This project would add on a stretch of roadway which from the map provided nearly doubles the current length of this roadway.

Addition of school crossing zones and signage to provide for safe travel of students to and from the school grounds.

Also to be considered is this project in relation to another proposed project on the island. The Lana'i wind project is expected to require the construction of service roads. The idea is the modification of older pineapple field roads. I suggest looking into this as it may or may not prove beneficial during the construction phase of this project.

CONSTRUCTION PHASE:

Impact on the community during construction phase depends on the intensity with which the project is undertaken. The area in question is likely to need considerable ground work thus requiring the use of heavy equipment. I suggest that those equipment not be allowed to use the surface streets of Lana'i City. However they should be relegated to the use of an unimproved roadway which leads from Kaumalapau Highway at its intersection with Manele Highway and runs northward toward the project site. This would minimize the impact of the heavy vehicles traveling through the city and thus its impact on the community. Some improvements to this roadway as well as access rights will need to be addressed however in the long run the potential negative impact of heavy equipment moving through the city streets can be avoided.

Depending on who the general contractor plans to use during construction the island can expect an increase in its population due to the construction crews. Historically this has been accompanied by an increase in Disorderly Conduct type incidents. Though these are not problems that can be definitively predicted it is something that should be expected.

Security for the equipment may also become a concern. Depending on the access roads used by the construction company police or emergency services response will be dependent on four wheel drive until such time as the roadways are completed.

LONG TERM ISSUES:

At present it is difficult to assess the long term effects of this project on the community and its draw on Police and emergency services. With the assumption that this increase in housing is followed by an increase in population the potential long term issues would be calls for police and emergency services.

CONCLUSION:

Sir, provided above is a very preliminary assessment of this proposed housing project. Only with the addition of more specific information can a better response be provided. If you have any questions regarding this matter please feel free to contact me.

Respectfully Submitted,

SANG, JOHN K. E#11799
ON 030909 AT 1132 HOURS

Officer SANG addressed some important points regarding vehicular traffic on Fifth Street and should be considered. The traffic impact will have to be re-evaluated once the design is completed.

202
031009/0830

GOOD POINTS ARE BROUGHT UP BY OFFICER JOHN SANG, WHICH SHOULD BE CONSIDERED IN THIS PROJECT.

LT. [illegible] 0321

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

August 20, 2009

Gary Yabuta, Chief
Police Department
55 Mahalani Street
Wailuku, Hawai`i 96793

SUBJECT: Early Consultation on the Draft Environmental Assessment (EA) for the Lana`i Affordable Housing Project at TMK (2) 4-9-002:058 (por.), Lana`i City, Lanai

Dear Chief Yabuta:

Thank you for your department's letter dated March 12, 2009. Your comments concerning safe pedestrian access to the Lana`i High and Elementary School and traffic impacts during construction will be addressed in the Draft Environmental Assessment (EA).

With respect to impacts to police services, we note that the project will be implemented over an anticipated 17-year time horizon. With this in mind, we believe that the incremental increase in demand for police services can be addressed through new property taxes generated by the project.

Should you require additional clarification please call me at 244-2015 or email planning@mhplanning.com. A copy of the Draft EA will be forwarded to your agency.

Very truly yours,

Colleen Suyama
Project Manager

CS:yp
cc: JoAnn Ridao, Deputy Director, Department of Housing and Human Concerns
Dwight Mitsunaga, Pacific Architects
Donald Okuhara, Okuhara & Associates
Keith Niiya, Austin Tsutsumi & Associates, Inc.
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MAR 0 9 2009

CHARMAINE TAVARES
Mayor

MILTON M. ARAKAWA, A.I.C.P.
Director

MICHAEL M. MIYAMOTO
Deputy Director

RALPH M. NAGAMINE, L.S., P.E.
Development Services Administration

DAVID TAYLOR, P.E.
Wastewater Reclamation Division

CARY YAMASHITA, P.E.
Engineering Division

BRIAN HASHIRO, P.E.
Highways Division

TRACY TAKAMINE, P.E.
Solid Waste Division

COUNTY OF MAUI
DEPARTMENT OF PUBLIC WORKS
AND ENVIRONMENTAL MANAGEMENT
DEVELOPMENT SERVICES ADMINISTRATION
250 SOUTH HIGH STREET
WAILUKU, MAUI, HAWAII 96793

March 5, 2009

Colleen Suyama, Project Manager
MUNEKIYO & HIRAGA, INC.
305 High Street, Suite 104
Wailuku, Maui, Hawaii 96793

Subject: **EARLY CONSULTATION ON 201-H LANAI HOUSING PROJECT IN LANAI CITY**
TMK (2) 4-9-002:058 (por.)

Dear Ms. Suyama:

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

Please call Michael Miyamoto at 270-7845 if you have any questions regarding this letter.

Sincerely,

Milton M. Arakawa, A.I.C.P.
Director of Public Works

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xc: Highways Division
Engineering Division

APR 0 9 2009

CHARMAINE TAVARES
Mayor
CHERYL K. OKUMA, Esq.
Director
GREGG KRESGE
Deputy Director

TRACY TAKAMINE, P.E.
Solid Waste Division
DAVID TAYLOR, P.E.
Wastewater Reclamation
Division

COUNTY OF MAUI
DEPARTMENT OF
ENVIRONMENTAL MANAGEMENT
2200 MAIN STREET, SUITE 100
WAILUKU, MAUI, HAWAII 96793

April 7, 2009

Ms. Colleen Suyama
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

SUBJECT: 201-H LANAI HOUSING PROJECT
EARLY CONSULTATION FOR ENVIRONMENATAL ASSESSMENT
TMK (2) 4-9-002:058 (POR,), LANAI CITY, LANAI

We reviewed the subject application and have the following comments:

1. Solid Waste Division comments:

   a. Include a proposed plan for construction waste recycling or reuse to minimize disposal in the local landfill.

2. Wastewater Reclamation Division (WWRD) comments:

   a. Although wastewater system capacity is currently available as of 4/7/2009, the developer should be informed that wastewater system capacity cannot be ensured until the issuance of the building permit.
   b. Developer is not required to pay assessment fees for this area at the current time.
   c. Developer is required to fund any necessary off-site improvements to collection system and wastewater pump stations.
   d. Show or list minimum slope of new sewer laterals.
   e. Plans should show the installation of a single service lateral and advanced riser for each lot.
   f. Indicate on the plans the ownership of each easement (in favor of which party). Note: County will not accept sewer easements that traverse private property.
   g. Kitchen facilities within the proposed project shall comply with pre-treatment requirements (including grease interceptors, sample boxes, screens etc.)

h. Non-contact cooling water and condensate should not drain to the wastewater system.

If you have any questions regarding this memorandum, please contact Gregg Kresge at 270-8230.

Sincerely,

Cheryl Okuma, Director

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

August 18, 2009

Cheryl Okuma, Director
Department of Environmental Management
One Main Plaza
2200 Main Street, Suite 100
Wailuku, Hawai`i 96793

SUBJECT: Early Consultation on the Draft Environmental Assessment (EA) for the Lana`i Affordable Housing Project at TMK (2) 4-9-002:058 (por.), Lana`i City, Lanai

Dear Ms. Okuma:

Thank you for your letter dated April 7, 2009. We acknowledge your comments regarding solid waste and the County's wastewater system. Our engineering consultant will work closely with your Department to ensure compliance to all county requirements.

Should you require additional clarification please call me at 244-2015 or email planning@mhplanning.com. A copy of the Draft Environmental Assessment will be forwarded to your agency.

Very truly yours,

Colleen Suyama
Project Manager

CS:yp
cc: JoAnn Ridao, Deputy Director, Department of Housing and Human Concerns
Dwight Mitsunaga, Pacific Architects
Donald Okuhara, Okuhara & Associates
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MAR 2 6 2009

CHARMAINE TAVARES
Mayor

JEFFREY K. ENG
Director

ERIC H. YAMASHIGE, P.E., L.S.
Deputy Director

DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
200 SOUTH HIGH STREET
WAILUKU, MAUI, HAWAII 96793-2155
www.mauiwater.org

March 20, 2009

Ms. Colleen Suyama, Project Manager
Munekiyo & Hiraga, Inc.
305 High Street
Wailuku, Hawaii 96793

Dear Ms. Suyama:

SUBJECT: Early Consultation on 201-H Lanai Housing Project in Lanai City
TMK: (2) 4-9-002:058–Development of an Affordable Housing on a 73-acre Lot

Thank you for the opportunity to provide comments on this project proposal.

The EA should address: 1) anticipated potable and non-potable water source, 2) estimated potable and non-potable water use, 3) intended density per acre and, 4) an anticipated build out schedule (2010, 2015, 2020, 2025, 2030 and beyond 2030). The 1997 Water Working Group Report (WWGR) is the existing working document used in determining water use allocations. Table A6 of this report indicates that 518 housing units can be constructed on the 115-acre county housing lot assuming a maximum density of 4.5units/acre. Using this assumption, the estimated daily demand for the 73-acre project would be around 197,000 gallons based on system standards.

In order to reduce demand on potable water systems, we encourage the applicant consider the following water conservation measures in the project design and construction:

Use Climate -adapted Plants: The project is located in the Maui County Planting Plan - Plant Zones 3 & 5. We encourage the applicant to utilize appropriate native and non invasive species and avoid the use of potentially invasive plants. Native plants adapted to the area, conserve water and protect the watershed from degradation due to invasive alien species. Attached is a list of appropriate plants for the zones as well as potentially invasive plants to avoid.

Utilize Low-Flow Fixtures and Devices: Maui County Code Subsection 16.20A.680 requires the use of low-flow water fixtures and devices in faucets, showerheads, urinals, water closets, and hose bibs. Water conserving washing machines, ice-makers and other units are also available.

Toilets that meet the EPA Water Sense criteria are recommended. These toilets use on average 1.28 gallons per flush or less. The Department of Water Supply has tried these in a county owned facility and found substantial savings.

Maintain Fixtures to Prevent Leaks: A simple, regular program of repair and maintenance can prevent the loss of hundreds or even thousands of gallons a day. Refer to the attached handout, "The Costly Drip".

Eliminate Single-Pass Cooling: Single-pass, water-cooled systems should be eliminated per Maui County Code Subsection 14.21.20. Although prohibited by code, single-pass water cooling is still manufactured into some models of air conditioners, freezers, and commercial refrigerators.

Look for Opportunities to Conserve Water: A few examples of these are as follows: When clearing driveways, etc. of debris, use a broom instead of a hose; check for leaks in faucets and toilet tanks.

In order to protect groundwater resources, we recommend that the applicant utilize Best Management Practices designed to minimize infiltration and runoff during construction.

Should you have any questions, please contact our Water Resources and Planning Division at (808) 244-8550.

Sincerely,

Jeffrey K. Eng
Director

eam
c: Lanai Water Advisory Committee
Applicant, with attachments:
The Costly Drip
Maui County Planting Plan-Saving Water in the Yard - What and How to Plant in Your Area

ORDINANCE NO. 2108

BILL NO. 6 (1992)

Draft 1

A BILL FOR AN ORDINANCE AMENDING CHAPTER 16.20 OF THE MAUI COUNTY CODE, PERTAINING TO THE PLUMBING CODE

BE IT ORDAINED BY THE PEOPLE OF THE COUNTY OF MAUI:

SECTION 1. Title 16 of the Maui County Code is amended by adding a new section to Chapter 10 of the Uniform Plumbing Code to be designated and to read as follows:

"16.20.675 Section 1050 added. Chapter 10 of the Uniform Plumbing Code is amended by adding a new section, pertaining to low-flow water fixtures and devices, to be designated and to read as follows:

Sec. 1050 Low-flow water fixtures and devices. (a) This section establishes maximum rates of water flow or discharge for plumbing fixtures and devices in order to promote water conservation.

(b) For the plumbing fixtures and devices covered in this section, manufacturers or their local distributors shall provide proof of compliance with the performance requirements established by the American National Standards Institute (ANSI) and such other proof as may be required by the director of public works. There shall be no charge for this registration process.

(c) Effective December 31, 1992, only plumbing fixtures and devices specified in this section shall be offered for sale or installed in the County of Maui, unless otherwise indicated in this section. All plumbing fixtures and devices which were installed before December 31, 1992, shall be allowed to be used, repaired or replaced after December 31, 1992.

(1) Faucets (kitchen): All kitchen and bar sink faucets shall be designed, manufactured, installed or equipped with a flow control device or aerator which will prevent a water flow rate in excess of two and two-tenths gallons per minute at sixty pounds per square inch of water pressure.

(2) Faucets (lavatory): All lavatory faucets shall be designed, manufactured, installed or equipped with a flow control device or aerator which will prevent a water flow rate in excess of two and two tenths gallons per minute at sixty pounds per square inch of water

pressure.

(3) Faucets (public rest rooms): In addition to the lavatory requirements set forth in paragraph (2), lavatory faucets located in rest rooms intended for use by the general public shall be of the metering or self-closing types.

(4) Hose bibbs: Water supply faucets or valves shall be provided with approved flow control devices which limit flow to a maximum three gallons per minute.

EXCEPTIONS: (A) Hose bibbs or valves not used for fixtures or equipment designated by the director of public works.

(B) Hose bibbs, faucets, or valves serving fixed demand, timing, or water level control appliances, and equipment or holding structures such as water closets, pools, automatic washers, and other similar equipment.

(5) Showerheads: Showerheads, except where provided for safety or emergency reasons, shall be designed, manufactured, or installed with a flow limitation device which will prevent a water flow rate in excess of two and one-half gallons per minute at eighty pounds per square inch of water pressure. The flow limitation device must be a permanent and integral part of the showerhead and must not be removable to allow flow rates in excess of two and one-half gallons per minute or must be mechanically retained requiring force in excess of eight pounds to remove.

(6) Urinals: Urinals shall be designed, manufactured, or installed so that the maximum flush will not exceed one gallon of water. Adjustable type flushometer valves may be used provided they are adjusted so the maximum flush will not exceed one and six tenths gallons of water.

(7) Water closets (toilets): Water closets shall be designed, manufactured, or installed so that the maximum flush will not exceed one and six tenths gallons of water.

(d) Beginning December 31, 1992, it is unlawful to sell or install any plumbing fixtures or devices not specified in this section, except as permitted under this section.

(e) The director of public works may exempt the use of low-flow water fixtures and devices if there is a finding that the use of such fixtures and devices would not be consistent with accepted engineering practices and would be detrimental to the public health, safety and welfare.

(f) Any person violating this section shall be fined $250 for each violation and shall correct all instances of non-compliance for which a citation is issued. Violation of this section shall constitute a violation as defined in section 701-107 Hawaii Revised Statutes and shall be enforceable by employees of the department of public works. The foregoing fine may also be imposed in a civil, administrative proceeding pursuant to Rules and Regulations adopted by the department of public works in accordance with chapter 91 Hawaii Revised Statutes."

SECTION 2. New material is underscored. In printing this bill, the County Clerk need not include the underscoring.

SECTION 3. This ordinance shall take effect upon its approval.

APPROVED AS TO FORM
AND LEGALITY:

HOWARD M. FUKUSHIMA
Deputy Corporation Counsel
County of Maui
c:\wp51\ords\flows4\pk

I HEREBY CERTIFY that the foregoing BILL NO. 6 (1992), Draft 1

1. Passed FINAL READING at the meeting of the Council of the County of Maui, State of Hawaii, held on the 1st day of May, 1992, by the following votes:

Howard S. KIHUNE Chair	Patrick S. KAWANO Vice-Chair	Vince G. BAGOYO, Jr.	Goro HOKAMA	Alice L. LEE	Ricardo MEDINA	Wayne K. NISHIKI	Joe S. TANAKA	Leinaala TERUYA DRUMMOND
Aye	Aye	Excused	Excused	Aye	Aye	Aye	Aye	Aye

2. Was transmitted to the Mayor of the County of Maui, State of Hawaii, on the 1st day of May, 1992.

DATED AT WAILUKU, MAUI, HAWAII, this 1st day of May, 1992.

HOWARD S. KIHUNE, CHAIR
Council of the County of Maui

DARYL T. YAMAMOTO, COUNTY CLERK
County of Maui

THE FOREGOING BILL IS HEREBY APPROVED THIS 5th DAY OF MAY, 1992.

LINDA CROCKETT LINGLE, MAYOR
County of Maui

I HEREBY CERTIFY that upon approval of the foregoing BILL by the Mayor of the County of Maui, the said BILL was designated as ORDINANCE NO. 2108 of the County of Maui, State of Hawaii.

DARYL T. YAMAMOTO, COUNTY CLERK
County of Maui

Passed First Reading on January 17, 1992.
Effective date of Ordinance May 5, 1992.

I HEREBY CERTIFY that the foregoing is a true and correct copy of Ordinance No. 2108, the original of which is on file in the Office of the County Clerk, County of Maui, State of Hawaii.

Dated at Wailuku, Hawaii, on

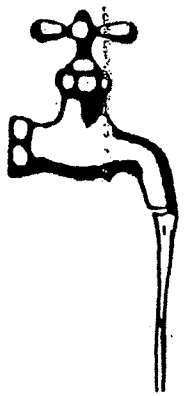
County Clerk, County of Maui

"THE COSTLY DRIP"

Slowly Dripping
Spigot Wastes
15 Gallons a day.

1/32" Leak Wastes
25 Gallons a day.

1/16" Stream Wastes
100 Gallons a Day.



1/8" Stream Wastes
400 Gallons a day.

United States Environmental Protection Agency
Office of Water Washington, DC 20460
840-B-92-002 January 1993

EPA

Guidance Specifying Management Measures For Sources Of Nonpoint Pollution In Coastal Waters

Issued Under the Authority of
Section 6217(g) of the Coastal Zone Act
Reauthorization Amendments of 1990

III. CONSTRUCTION ACTIVITIES

A. Construction Site Erosion and Sediment Control Management Measure

(1) Reduce erosion and, to the extent practicable, retain sediment onsite during and after construction, and

(2) Prior to land disturbance, prepare and implement an approved erosion and sediment control plan or similar administrative document that contains erosion and sediment control provisions.

1. Applicability

This management measure is intended to be applied by States to all construction activities on sites less than 5 acres in areas that do not have an NPDES permit[3] in order to control erosion and sediment loss from those sites. This management measure does not apply to: (1) construction of a detached single family home on a site of 1/2 acre or more or (2) construction that does not disturb over 5,000 square feet of land on a site. (NOTE: All construction activities, including clearing, grading, and excavation, that result in the disturbance of areas greater than or equal to 5 acres or are a part of a larger development plan are covered by the NPDES regulations and are thus excluded from these requirements.) Under the Coastal Zone Act Reauthorization Amendments of 1990, States are subject to a number of requirements as they develop coastal NPS programs in conformity with this management measure and will have flexibility in doing so. The application of management measures by States is described more fully in *Coastal Nonpoint Pollution Control Program: Program Development and Approval Guidance*, published jointly by the U.S. Environmental Protection Agency (EPA) and the National Oceanic and Atmospheric Administration (NOAA) of the U.S. Department of Commerce.

2. Description

The goal of this management measure is to reduce the sediment loadings from construction sites in coastal areas that enter surface waterbodies. This measure requires that coastal States establish new or enhance existing State erosion and sediment control (ESC) programs and/or require ESC programs at the local level. It is intended to be part of a comprehensive land use or watershed management program, as previously detailed in the Watershed and Site Development Management Measures. It is expected that State and local programs will establish criteria determined by local conditions (e.g., soil types, climate, meteorology) that reduce erosion and sediment transport from construction sites.

Runoff from construction sites is by far the largest source of sediment in urban areas under development (York County Soil and Water Conservation District, 1990). Soil erosion removes over 90 percent of sediment by tonnage in urbanizing areas where most construction activities occur (Canning, 1988). Table 4-14 illustrates some of the

[3] On May 27, 1992, the United States Court of Appeals for the Ninth Circuit invalidated EPA's exemption of construction sites smaller than 5 acres from the storm water permit program in *Natural Resources Defense Council* v. *EPA*, 965 F.2d 759 (9th Cir. 1992). EPA is conducting further rulemaking proceedings on this issue and will not require permit applications for construction activities under 5 acres until further rulemaking has been completed.

measured sediment loading rates associated with construction activities found across the United States. As seen in Table 4-14, erosion rates from natural areas such as undisturbed forested lands are typically less than one ton/acre/year, while erosion from construction sites ranges from 7.2 to over 1,000 tons/acre/year.

Table 4-14. Erosion and Sediment Problems Associated With Construction

Location	Problem	Reference
United States	Sediment loading rates vary from 36.5 to 1,000 ton/ac/yr. These are 5 to 500 times greater than those from undeveloped land. Approximately 600 million tons of soil erodes from developed sites each year. Construction site sediment in runoff can be 10 to 20 times greater than that from agricultural lands.	York County Soil and Water Conservation District, 1990
Franklin County, FL	Sediment yield (ton/ac/yr): forest < 0.5 rangeland < 0.5 tilled 1.4 construction site 30 established urban < 0.5	Franklin County, FL
Wisconsin	Erosion rates range from 30 to 200 ton/ac/yr (10 to 20 times those of cropland).	Wisconsin Legislative Council, 1991
Washington, DC	Erosion rates range from 35 to 45 ton/ac/yr (10 to 100 times greater than agriculture and stabilized urban land uses).	MWCOG, 1987
Anacostia River Basin, VA, MD, DC	Sediment yields from portions of the Anacostia Basin have been estimated at 75,000 to 132,000 ton/yr.	U.S. Army Corps of Engineers, 1990
Washington	Erosion rates range from 50 to 500 ton/ac/yr. Natural erosion rates from forests or well-sodded prairies are 0.01 to 1.0 ton/ac/yr.	Washington Department of Ecology, 1989
Anacostia River Basin, VA, MD, DC	Erosion rates range from 7.2 to 100.8 ton/ac/yr.	USGS, 1978
Alabama	1.4 million tons eroded per year.	Woodward-Clyde, 1991
North Carolina	6.7 million tons eroded per year.	
Louisiana	5.1 million tons eroded per year.	
Oklahoma	4.2 million tons eroded per year.	
Georgia	3.8 million tons eroded per year.	
Texas	3.5 million tons eroded per year.	
Tennessee	3.3 million tons eroded per year.	
Pennsylvania	3.1 million tons eroded per year.	
Ohio	3.0 million tons eroded per year.	
Kentucky	3.0 million tons eroded per year.	

roded sediment from construction sites creates many problems in coastal areas including adverse impacts on water uality, critical habitats, submerged aquatic vegetation (SAV) beds, recreational activities, and navigation (APWA, 991). For example, the Miami River in Florida has been severely affected by pollution associated with upland rosion. This watershed has undergone extensive urbanization, which has included the construction of many ommercial and residential buildings over the past 50 years. Sediment deposited in the Miami River channel ontributes to the severe water quality and navigation problems of this once-thriving waterway, as well as Biscayne Bay (SFWMD, 1988).

ESC plans are important for controlling the adverse impacts of construction and land development and have been required by many State and local governments, as shown in Table 4-13 (in the Site Development section of this chapter). An ESC plan is a document that explains and illustrates the measures to be taken to control erosion and sediment problems on construction sites (Connecticut Council on Soil and Water Conservation, 1988). It is intended that existing State and local erosion and sediment control plans may be used to fulfill the requirements of this management measure. Where existing ESC plans do not meet the management measure criteria, inadequate plans may be enhanced to meet the management measure guidelines.

Typically, an ESC plan is part of a larger site plan and includes the following elements:

- Description of predominant soil types;
- Details of site grading including existing and proposed contours;
- Design details and locations for structural controls;
- Provisions to preserve topsoil and limit disturbance;
- Details of temporary and permanent stabilization measures; and
- Description of the sequence of construction.

ESC plans ensure that provisions for control measures are incorporated into the site planning stage of development and provide for the reduction of erosion and sediment problems and accountability if a problem occurs (York County Soil and Water Conservation District, 1990). An effective plan for urban runoff management on construction sites will control erosion, retain sediments on site, to the extent practicable, and reduce the adverse effects of runoff. Climate, topography, soils, drainage patterns, and vegetation will affect how erosion and sediment should be controlled on a site (Washington State Department of Ecology, 1989). An effective ESC plan includes both structural and nonstructural controls. Nonstructural controls address erosion control by decreasing erosion potential, whereas structural controls are both preventive and mitigative because they control both erosion and sediment movement.

Typical nonstructural erosion controls include (APWA, 1991; York County Soil and Water Conservation District, 1990):

- Planning and designing the development within the natural constraints of the site;
- Minimizing the area of bare soil exposed at one time (phased grading);
- Providing for stream crossing areas for natural and man-made areas; and
- Stabilizing cut-and-fill slopes caused by construction activities.

Structural controls include:

- Perimeter controls;
- Mulching and seeding exposed areas;
- Sediment basins and traps; and
- Filter fabric, or silt fences.

Some erosion and soil loss are unavoidable during land-disturbing activities. While proper siting and design will help prevent areas prone to erosion from being developed, construction activities will invariably produce conditions where erosion may occur. To reduce the adverse impacts associated with construction, the construction management measure suggests a system of nonstructural and structural erosion and sediment controls for incorporation into an

ESC plan. Erosion controls have distinct advantages over sediment controls. Erosion controls reduce the amount of sediment transported off-site, thereby reducing the need for sediment controls. When erosion controls are used in conjunction with sediment controls, the size of the sediment control structures and associated maintenance may be reduced, decreasing the overall treatment costs (SWRPC, 1991).

3. Management Measure Selection

This management measure was selected to minimize sediment being transported outside the perimeter of a construction site through two broad performance goals: (1) **reduce** erosion and (2) **retain** sediment onsite, to the extent practicable. These performance goals were chosen to allow States and local governments flexibility in specifying practices appropriate for local conditions.

While several commentors responding to the draft (May 1991) guidance expressed the need to define "more measurable, enforceable ways" to control sediment loadings, other commentors stressed the need to draft management measures that do not conflict with existing State programs and allow States and local governments to determine appropriate practices and design standards for their communities. These management measures were selected because virtually all coastal States control construction activities to prevent erosion and sediment loss.

The measures were specifically written for the following reasons:

(1) Predevelopment loadings may vary greatly, and some sediment loss is usually inevitable;

(2) Current practice is built on the use of systems of practices selected based on site-specific conditions; and

(3) The combined effectiveness of erosion and sediment controls in systems is not easily quantified.

4. Erosion Control Practices

As discussed more fully at the beginning of this chapter and in Chapter 1, the following practices are described for illustrative purposes only. State programs need not require implementation of these practices. However, as a practical matter, EPA anticipates that the management measure set forth above generally will be implemented by applying one or more management practices appropriate to the source, location, and climate. The practices set forth below have been found by EPA to be representative of the types of practices that can be applied successfully to achieve the management measure described above.

Erosion controls are used to reduce the amount of sediment that is detached during construction and to prevent sediment from entering runoff. Erosion control is based on two main concepts: (1) disturb the smallest area of land possible for the shortest period of time, and (2) stabilize disturbed soils to prevent erosion from occurring.

a. *Schedule projects so clearing and grading are done during the time of minimum erosion potential.*

Often a project can be scheduled during the time of year that the erosion potential of the site is relatively low. In many parts of the country, there is a certain period of the year when erosion potential is relatively low and construction scheduling could be very effective. For example, in the Pacific region if construction can be completed during the 6-month dry season (May 1 - October 31), temporary erosion and sediment controls may not be needed. In addition, in some parts of the country erosion potential is very high during certain parts of the year such as the spring thaw in northern areas. During this time of year, melting snowfall generates a constant runoff that can erode soil. In addition, construction vehicles can easily turn the soft, wet ground into mud, which is more easily washed offsite. Therefore, in the north, limitations should be placed on grading during the spring thaw (Goldman et al., 1986).

b. Stage construction.

id areawide clearance of construction sites. Plan and stage land disturbance activities so that only the area ently under construction is exposed. As soon as the grading and construction in an area are complete, the area uld be stabilized.

clearing only those areas immediately essential for completing site construction, buffer zones are preserved and remains undisturbed until construction begins. Physical markers, such as tape, signs, or barriers, indicating the its of land disturbance, can ensure that equipment operators know the proposed limits of clearing. The area of watershed that is exposed to construction is important for determining the net amount of erosion. Reducing the ent of the disturbed area will ultimately reduce sediment loads to surface waters. Existing or newly planted getation that has been planted to stabilize disturbed areas should be protected by routing construction traffic around l protecting natural vegetation with fencing, tree armoring, retaining walls, or tree wells.

c. Clear only areas essential for construction.

ten areas of a construction site are unnecessarily cleared. Only those areas essential for completing construction ivities should be cleared, and other areas should remain undisturbed. Additionally, the proposed limits of land turbance should be physically marked off to ensure that only the required land area is cleared. Avoid disturbing getation on steep slopes or other critical areas.

d. Locate potential nonpoint pollutant sources away from steep slopes, waterbodies, and critical areas.

aterial stockpiles, borrow areas, access roads, and other land-disturbing activities can often be located away from tical areas such as steep slopes, highly erodible soils, and areas that drain directly into sensitive waterbodies.

e. Route construction traffic to avoid existing or newly planted vegetation.

here possible, construction traffic should travel over areas that must be disturbed for other construction activity. his practice will reduce the area that is cleared and susceptible to erosion.

f. Protect natural vegetation with fencing, tree armoring, and retaining walls or tree wells.

ree armoring protects tree trunks from being damaged by construction equipment. Fencing can also protect tree unks, but should be placed at the tree's drip line so that construction equipment is kept away from the tree. The ee drip line is the minimum area around a tree in which the tree's root system should not be disturbed by cut, fill, r soil compaction caused by heavy equipment. When cutting or filling must be done near a tree, a retaining wall r tree well should be used to minimize the cutting of the tree's roots or the quantity of fill placed over the tree's oots.

g. Stockpile topsoil and reapply to revegetate site.

Because of the high organic content of topsoil, it cannot be used as fill material or under pavement. After a site is leared, the topsoil is typically removed. Since topsoil is essential to establish new vegetation, it should be tockpiled and then reapplied to the site for revegetation, if appropriate. Although topsoil salvaged from the existing ite can often be used, it must meet certain standards and topsoil may need to be imported onto the site if the existing opsoil is not adequate for establishing new vegetation.

h. Cover or stabilize topsoil stockpiles.

Unprotected stockpiles are very prone to erosion and therefore stockpiles must be protected. Small stockpiles can be covered with a tarp to prevent erosion. Large stockpiles should be stabilized by erosion blankets, seeding, and/or mulching.

i. Use wind erosion controls.

Wind erosion controls limit the movement of dust from disturbed soil surfaces and include many different practices. Wind barriers block air currents and are effective in controlling soil blowing. Many different materials can be used as wind barriers, including solid board fence, snow fences, and bales of hay. Sprinkling moistens the soil surface with water and must be repeated as needed to be effective for preventing wind erosion (Delaware DNREC, 1989); however, applications must be monitored to prevent excessive runoff and erosion.

j. Intercept runoff above disturbed slopes and convey it to a permanent channel or storm drain.

Earth dikes, perimeter dikes or swales, or diversions can be used to intercept and convey runoff above disturbed areas. An earth dike is a temporary berm or ridge of compacted soil that channels water to a desired location. A perimeter dike/swale or diversion is a swale with a supporting ridge on the lower side that is constructed from the soil excavated from the adjoining swale (Delaware DNREC, 1989). These practices should be used to intercept flow from denuded areas or newly seeded areas to keep the disturbed areas from being eroded from the uphill runoff. The structures should be stabilized within 14 days of installation. A pipe slope drain, also known as a pipe drop structure, is a temporary pipe placed from the top of a slope to the bottom of the slope to convey concentrated runoff down the slope without causing erosion (Delaware DNREC, 1989).

k. On long or steep, disturbed, or man-made slopes, construct benches, terraces, or ditches at regular intervals to intercept runoff.

Benches, terraces, or ditches break up a slope by providing areas of low slope in the reverse direction. This keeps water from proceeding down the slope at increasing volume and velocity. Instead, the flow is directed to a suitable outlet, such as a sediment basin or trap. The frequency of benches, terraces, or ditches will depend on the erodibility of the soils, steepness and length of the slope, and rock outcrops. This practice should be used if there is a potential for erosion along the slope.

l. Use retaining walls.

Often retaining walls can be used to decrease the steepness of a slope. If the steepness of a slope is reduced, the runoff velocity is decreased and, therefore, the erosion potential is decreased.

m. Provide linings for urban runoff conveyance channels.

Often construction increases the velocity and volume of runoff, which causes erosion in newly constructed or existing urban runoff conveyance channels. If the runoff during or after construction will cause erosion in a channel, the channel should be lined or flow control BMPs installed. The first choice of lining should be grass or sod since this reduces runoff velocities and provides water quality benefits through filtration and infiltration. If the velocity in the channel would erode the grass or sod, then riprap, concrete, or gabions can be used.

n. Use check dams.

Check dams are small, temporary dams constructed across a swale or channel. They can be constructed using gravel or straw bales. They are used to reduce the velocity of concentrated flow and, therefore, to reduce the erosion in

swale or channel. Check dams should be used when a swale or channel will be used for a short time and therefore is not feasible or practical to line the channel or implement flow control BMPs (Delaware DNREC, 1989).

o. *Seed and fertilize.*

Seeding establishes a vegetative cover on disturbed areas. Seeding is very effective in controlling soil erosion once a dense vegetative cover has been established. However, often seeding and fertilizing do not produce as thick a vegetative cover as do seed and mulch or netting. Newly established vegetation does not have as extensive a root system as existing vegetation and therefore is more prone to erosion, especially on steep slopes. Care should be taken when fertilizing to avoid untimely or excessive application. Since the practice of seeding and fertilizing does not provide any protection during the time of vegetative establishment, it should be used only on favorable soils in very flat areas and not in sensitive areas.

p. *Use seeding and mulch/mats.*

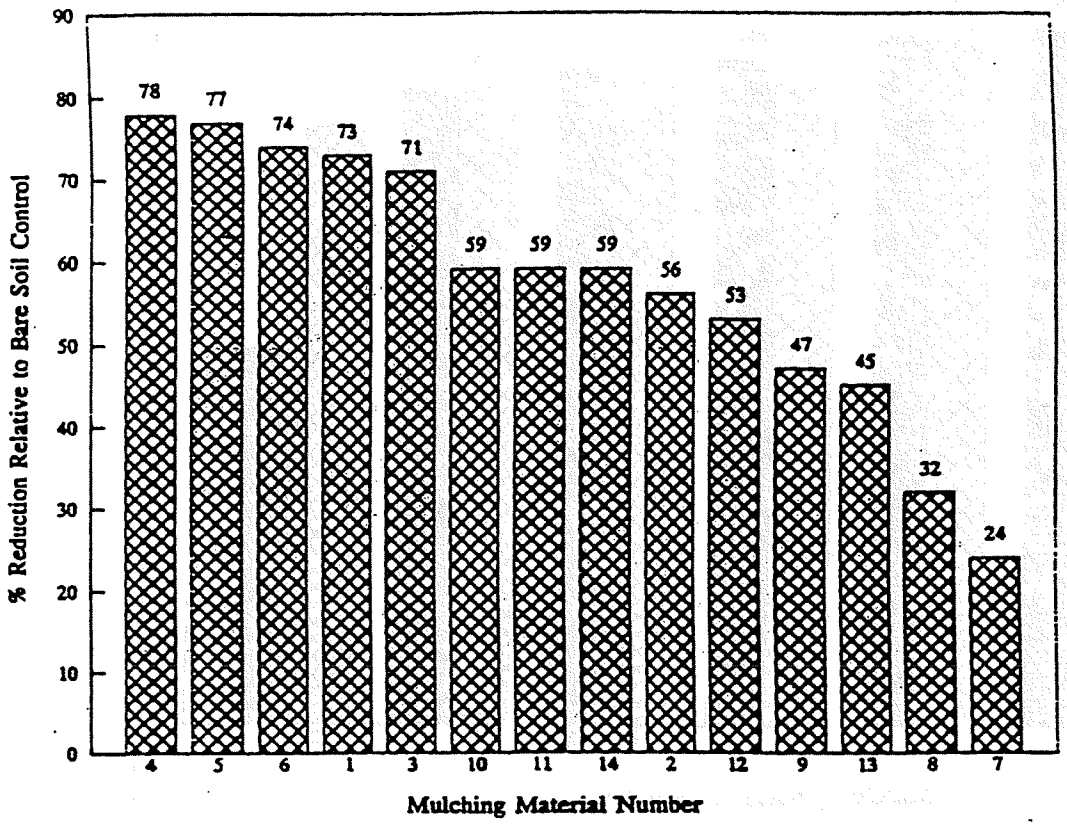
Seeding establishes a vegetative cover on disturbed areas. Seeding is very effective in controlling soil erosion once the vegetative cover has been established. The mulching/mats protect the disturbed area while the vegetation becomes established.

Wise management of land by using ground cover reduces erosion by reducing the flow rate of runoff and the raindrop impact. Bare soils should be seeded or otherwise stabilized within 15 calendar days after final grading. Denuded areas that are inactive and will be exposed to rain for 30 days or more should also be temporarily stabilized, usually by planting seeds and establishing vegetation during favorable seasons in areas where vegetation can be established. In very flat, non-sensitive areas with favorable soils, stabilization may involve simply seeding and fertilizing. Mulching and/or sodding may be necessary as slopes become moderate to steep, as soils become more erosive, and as areas become more sensitive.

q. *Use mulch/mats.*

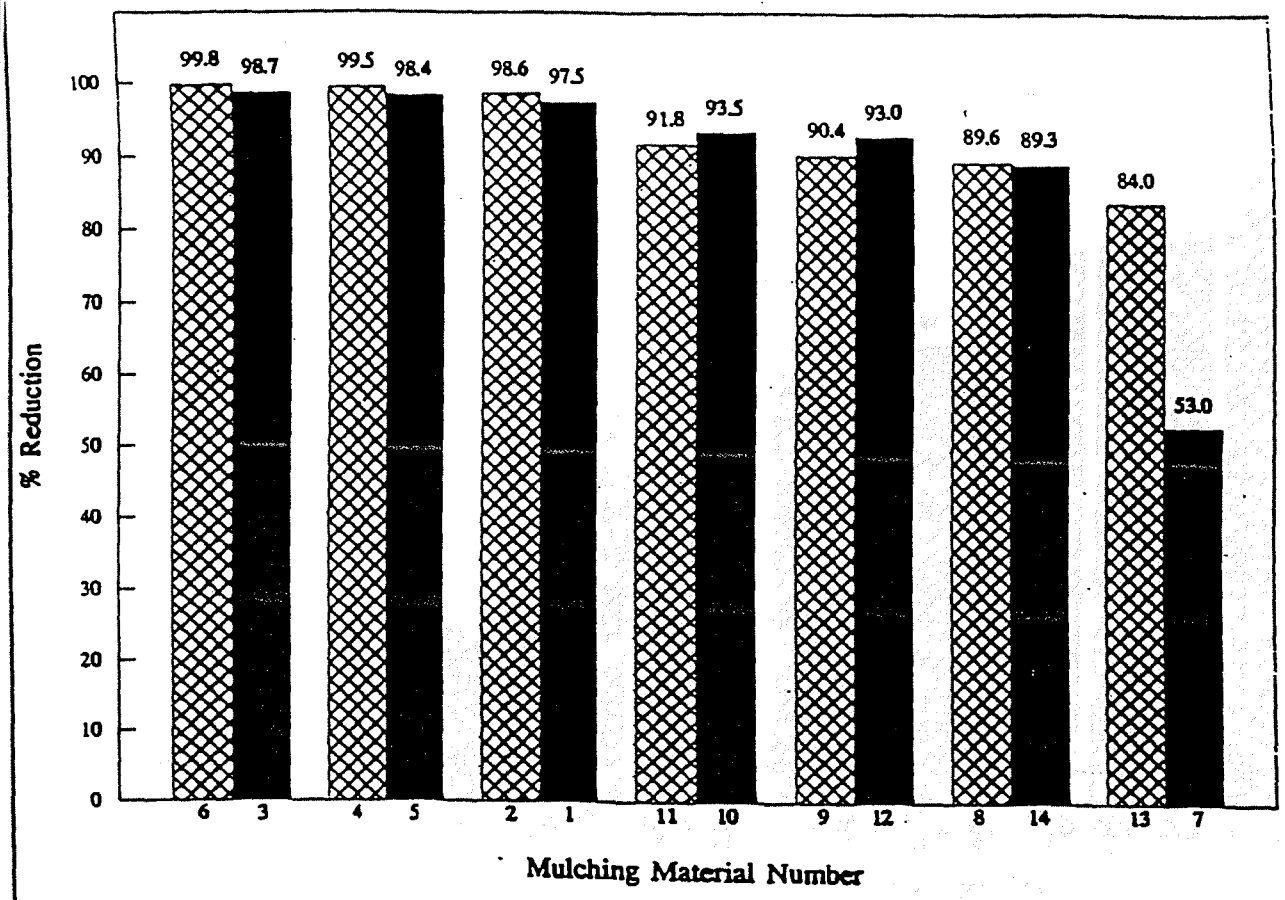
Mulching involves applying plant residues or other suitable materials on disturbed soil surfaces. Mulchs/mats used include tacked straw, wood chips, and jute netting and are often covered by blankets or netting. Mulching alone should be used only for temporary protection of the soil surface or when permanent seeding is not feasible. The useful life of mulch varies with the material used and the amount of precipitation, but is approximately 2 to 6 months. Figure 4-5 shows water velocity reductions that could be expected using various mulching techniques. Similarly, Figure 4-6 shows reductions in soil loss achievable using various mulching techniques. During times of year when vegetation cannot be established, soil mulching should be applied to moderate slopes and soils that are not highly erodible. On steep slopes or highly erodible soils, multiple mulching treatments should be used. On a high-elevation or desert site where grasses cannot survive the harsh environment, native shrubs may be planted. Interlocking ceramic materials, filter fabric, and netting are available for this purpose. Before stabilizing an area, it is important to have installed all sediment controls and diverted runoff away from the area to be planted. Runoff may be diverted away from denuded areas or newly planted areas using dikes, swales, or pipe slope drains to intercept runoff and convey it to a permanent channel or storm drain. Reserved topsoil may be used to revegetate a site if the stockpile has been covered and stabilized.

Consideration should be given to maintenance when designing mulching and matting schemes. Plastic nets are often used to cover the mulch or mats; however, they can foul lawn mower blades if the area requires mowing.



Mulch Material	Characteristics
1	100% wheat straw/top net
2	100% wheat straw/two nets
3	70% wheat straw/30% coconut fiber
4	70% wheat straw/30% coconut fiber
5	100% coconut fiber
6	Nylon monofilament/two nets
7	Nylon monofilament/rigid/bonded
8	Vinyl monofilament/flexible/bonded
9	Curled wood fibers/top net
10	Curled wood fibers/two nets
11	Antiwash netting (jute)
12	Interwoven paper and thread
13	Uncrimped wheat straw – 2,242 kg/ha
14	Uncrimped wheat straw – 4,484 kg/ha

Figure 4-5. Water velocity reductions for different mulch treatments (adapted from Harding, 1990).



Mulch Material	Characteristics
1	100% wheat straw/top net
2	100% wheat straw/two nets
3	70% wheat straw/30% coconut fiber
4	70% wheat straw/30% coconut fiber
5	100% coconut fiber
6	Nylon monofilament/two nets
7	Nylon monofilament/rigid/bonded
8	Vinyl monofilament/flexible/bonded
9	Curled wood fibers/top net
10	Curled wood fibers/two nets
11	Antiwash netting (jute)
12	Interwoven paper and thread
13	Uncrimped wheat straw – 2,242 kg/ha
14	Uncrimped wheat straw – 4,484 kg/ha

Figure 4-6. Actual soil loss reductions for different mulch treatments (adapted from Harding, 1990).

r. Use sodding.

Sodding permanently stabilizes an area. Sodding provides immediate stabilization of an area and should be used in critical areas or where establishment of permanent vegetation by seeding and mulching would be difficult. Sodding is also a preferred option when there is a high erosion potential during the period of vegetative establishment from seeding.

s. Use wildflower cover.

Because of the hardy drought-resistant nature of wildflowers, they may be more beneficial as an erosion control practice than turf grass. While not as dense as turfgrass, wildflower thatches and associated grasses are expected to be as effective in erosion control and contaminant absorption. Because thatches of wildflowers do not need fertilizers, pesticides, or herbicides, and watering is minimal, implementation of this practice may result in a cost savings (Brash et al., undated). In 1987, Howard County, Maryland, spent $690.00 per acre to maintain turfgrass areas, compared to only $31.00 per acre for wildflower meadows (Wilson, 1990).

A wildflower stand requires several years to become established; maintenance requirements are minimal once the area is established (Brash et al., undated).

5. Sediment Control Practices[4]

As discussed more fully at the beginning of this chapter and in Chapter 1, the following practices are described for illustrative purposes only. State programs need not require implementation of these practices. However, as a practical matter, EPA anticipates that the management measure set forth above generally will be implemented by applying one or more management practices appropriate to the source, location, and climate. The practices set forth below have been found by EPA to be representative of the types of practices that can be applied successfully to achieve the management measure described above.

Sediment controls capture sediment that is transported in runoff. Filtration and detention (gravitational settling) are the main processes used to remove sediment from urban runoff.

a. Sediment Basins

Sediment basins, also known as silt basins, are engineered impoundment structures that allow sediment to settle out of the urban runoff. They are installed prior to full-scale grading and remain in place until the disturbed portions of the drainage area are fully stabilized. They are generally located at the low point of sites, away from construction traffic, where they will be able to trap sediment-laden runoff.

Sediment basins are typically used for drainage areas between 5 and 100 acres. They can be classified as either temporary or permanent structures, depending on the length of service of the structure. If they are designed to function for less than 36 months, they are classified as "temporary"; otherwise, they are considered permanent structures. Temporary sediment basins can also be converted into permanent urban runoff management ponds. When sediment basins are designed as permanent structures, they must meet all standards for wet ponds.

b. Sediment Trap

Sediment traps are small impoundments that allow sediment to settle out of runoff water. Sediment traps are typically installed in a drainageway or other point of discharge from a disturbed area. Temporary diversions can be

[4]Adapted from Goldman (1986).

used to direct runoff to the sediment trap. Sediment traps should not be used for drainage areas greater than 5 acres and typically have a useful life of approximately 18 to 24 months.

c. Filter Fabric Fence

Filter fabric fence is available from many manufacturers and in several mesh sizes. Sediment is filtered out as urban runoff flows through the fabric. Such fences should be used only where there is sheet flow (i.e., no concentrated flow), and the maximum drainage area to the fence should be 0.5 acre or less per 100 feet of fence. Filter fabric fences have a useful life of approximately 6 to 12 months.

d. Straw Bale Barrier

A straw bale barrier is a row of anchored straw bales that detain and filter urban runoff. Straw bales are less effective than filter fabric, which can usually be used in place of straw bales. However, straw bales have been effectively used as temporary check dams in channels. As with filter fabric fences, straw bale barriers should be used only where there is sheet flow. The maximum drainage area to the barrier should be 0.25 acre or less per 100 feet of barrier. The useful life of straw bales is approximately 3 months.

e. Inlet Protection

Inlet protection consists of a barrier placed around a storm drain drop inlet, which traps sediment before it enters the storm sewer system. Filter fabric, straw bales, gravel, or sand bags are often used for inlet protection.

f. Construction Entrance

A construction entrance is a pad of gravel over filter cloth located where traffic leaves a construction site. As vehicles drive over the gravel, mud, and sediment are collected from the vehicles' wheels and offsite transport of sediment is reduced.

g. Vegetated Filter Strips

Vegetated filter strips are low-gradient vegetated areas that filter overland sheet flow. Runoff must be evenly distributed across the filter strip. Channelized flows decrease the effectiveness of filter strips. Level spreading devices are often used to distribute the runoff evenly across the strip (Dillaha et al., 1989).

Vegetated filter strips should have relatively low slopes and adequate length and should be planted with erosion-resistant plant species. The main factors that influence the removal efficiency are the vegetation type, soil infiltration rate, and flow depth and travel time. These factors are dependent on the contributing drainage area, slope of strip, degree and type of vegetative cover, and strip length. Maintenance requirements for vegetated filter strips include sediment removal and inspections to ensure that dense, vigorous vegetation is established and concentrated flows do not occur. Maintenance of these structures is discussed in Section II.A of this chapter.

6. Effectiveness and Cost Information

a. Erosion Control Practices

The effectiveness of erosion control practices can vary based on land slope, the size of the disturbed area, rainfall frequency and intensity, wind conditions, soil type, use of heavy machinery, length of time soils are exposed and unprotected, and other factors. In general, a system of erosion and sediment control practices can more effectively reduce offsite sediment transport than can a single system. Numerous nonstructural measures such as protecting natural or newly planted vegetation, minimizing the disturbance of vegetation on steep slopes and other highly

erodible areas, maximizing the distance eroded material must travel before reaching the drainage system, and locating ads away from sensitive areas may be used to reduce erosion.

Table 4-15 contains the available cost and effectiveness data for some of the erosion controls listed above. nformation on the effectiveness of individual nonstructural controls was not available. All reported effectiveness ata assume that controls are properly designed, constructed, and maintained. Costs have been broken down into annual capital costs, annual maintenance costs, and total annual costs (including annualization of the capital costs).

b. Sediment Control Practices

egular inspection and maintenance are needed for most erosion control practices to remain effective. The ffectiveness of sediment controls will depend on the size of the construction site and the nature of the runoff flows. Sediment basins are most appropriate for drainage areas of 5 acres or greater. In smaller areas with concentrated lows, silt traps may suffice. Where concentrated flow leaves the site and the drainage area is less than 0.5 ac/100 of flow, filter fabric fences may be effective. In areas where sheet flow leaves the site and the drainage area is greater than 0.5 acre/100 ft of flow, perimeter dikes may be used to divert the flow to a sediment trap or sediment basin. Urban runoff inlets may be protected using straw bales or diversions to filter or route runoff away from the nlets.

Table 4-16 describes the general cost and effectiveness of some common sediment control practices.

c. Comparisons

igure 4-7 illustrates the estimated TSS loading reductions from Maryland construction sites possible using a ombination of erosion and sediment controls in contrast to using only sediment controls. Figure 4-8 shows a comparison of the cost and effectiveness of various erosion control practices. As can be seen in Figure 4-8, seeding or seeding and mulching provide the highest levels of control at the lowest cost.

Table 4-15. ESC Quantitative Effectiveness and Cost Summary

Practice	Design Constraints or Purpose	Percent Removal of TSS	Useful Life (years)[a]	Construction Cost	Annual Maintenance Cost (as % construction cost)	Total Annual Cost
Sod	Immediate erosion protection where there is high erosion potential during vegetative establishment.	Average: 99% Observed range: 98% - 99% References: Minnesota Pollution Control Agency, 1989; Pennsylvania, 1983 cited in USEPA, 1991	2	Average: $0.2 per ft^2 [$11,300 per acre] Range: $0.1 - $1.1 References: SWRPC, 1991; Schueler, 1987; Virginia, 1980	Average: 5% Range: 5% Reference: SWRPC, 1991	$0.20 per ft^2 $7,500 per acre
Seed	Establish vegetation on disturbed area.	After vegetation established- Average: 90% Observed range: 50% - 100% References: SCS, 1985 cited in EPA, 1991; Minnesota Pollution Control Agency, 1989; Oberts, 1984 cited in City of Austin, 1988; Delaware Department of Natural Resources, 1989	2	Average: $400 per acre Range: $200 - $1000 per acre References: Wisconsin DOT cited in SWRPC, 1991; SWRPC, 1991; Goldman, 1986; Virginia, 1980	Average: 20% Range: 15% - 25% References: Wisconsin DOT cited in SWRPC, 1991; SWRPC, 1991	$300 per acre
Seed and Mulch	Establish vegetation on disturbed area.	After vegetation established- Average: 90% Observed range: 50% - 100% References: SCS, 1985 cited in EPA, 1991; Minnesota Pollution Control Agency, 1989; Oberts, 1984 cited in City of Austin, 1988; Delaware Department of Natural Resources, 1989	2	Average: $1,500 per acre Range: $800 - $3,500 per acre References: Goldman, 1986; Washington DOT, 1990; NC State, 1990; Schueler, 1987; Virginia, 1980; SWRPC, 1991	Average: NA[b] Range: NA References: None	$1,100 per acre

Table 4-15. (Continued)

Practice	Design Constraints or Purpose	Percent Removal of TSS	Useful Life (years)[a]	Construction Cost	Annual Maintenance Cost (as % construction cost)	Total Annual Cost
Mulch	Temporary stabilization of disturbed area.	Observed range: sand: 20% slope / 50% slope wood fiber @ 1500 lb/ac: 50-60% / 0-20% wood fiber @ 3000 lb/ac: 50-85% / 50-70% straw @ 3000 lb/ac: 90-100% / 95% Silt-loam: 20% slope / 50% slope wood fiber @ 1500 lb/ac: 20-60% / 40-60% wood fiber @ 3000 lb/ac: 60-90% / 60-70% straw @ 3000 lb/ac: 80-95% / 70-90% Silt-clay-loam: 10-30% slope / 30-50% slope wood fiber @ 1500 lb/ac: 5% / -- wood fiber @ 3000 lb/ac: 40% / -- jute netting: 30-60% / 30% straw @ 3000 lb/ac: 40-70% / 20-40% wood chips @ 10,000 lb/ac: 60-80% / 50-60% mulch blanket: 60-80% / 50-60% excelsior blanket: 60-80% / 50-60% multiple treatment (straw and jute): 90% / 90% References: Minnesota Pollution Control Agency, 1989; Kay, 1983 cited in Goldman, 1986	Straw mulch: 0.25 Wood fiber mulch: 0.33 Jute netting: 0.33 Straw and jute: 0.33	Straw mulch: Average: $1,700 per acre Range: $500 - $5,000 per acre References: Wisconsin DOT cited in SWRPC, 1991; Washington DOT, 1990; Virginia, 1980 Wood fiber mulch: Average: $1,000 per acre Range: $100 - $2,300 per acre References: Washington DOT, 1990; Virginia, 1980 Jute netting: Average: $3,700 per acre Range: $3,500-$4,100 per acre References: Washington DOT, 1990; Virginia, 1980 Straw and jute: Average: $5,400 per acre Range: $4,000-$9,100 per acre References: Washington DOT, 1990; Virginia, 1980	Average: NA[b] Range: NA References: None	Straw mulch: $7,500 per acre Wood fiber mulch: $3,500 per acre Jute netting: $12,500 per acre Straw and jute: $18,000 per acre

Table 4-15. (Continued)

Practice	Design Constraints or Purpose	Percent Removal of TSS	Useful Life (years)[a]	Construction Cost	Annual Maintenance Cost (as % construction cost)	Total Annual Cost
Terraces	Break up long or steep slopes.	Observed range: Land Slope / Reduction in Erosion 1-12% / 70% 12-18% / 60% 18-24% / 55% Additionally, if the slope steepness is halved, while other factors are held constant, the soil loss potential decreases 2-1/2 times. If both the slope and length are halved, the soil loss potential is decreased 4 times. References: Goldman, 1986; Beasley, 1972	2	Average: $5 per lin ft Range: $1 - $12 References: SWRPC, 1991; Goldman, 1986; Virginia, 1991	Average: 20% Range: 20% Reference: SWRPC, 1991	$4 per lin ft
All Erosion Controls	Reduce amount of sediment entering runoff.	Average: 85% Observed range: 85% Reference: Schueler, 1990	--	Varies but typically low	Varies but typically low	Varies but typically low

NA - Not available.
[a] Useful life estimated as length of construction project (assumed to be 2 years).
[b] For Total Annual Cost, assume Annual Maintenance Cost = 2% of construction cost.

Table 4-16. ESC Quantitative Effectiveness and Cost Summary for Sediment Control Practices

Practice	Design Constraints or Purpose	Percent Removal of TSS	Useful Life (years)[a]	Construction Cost	Annual Maintenance Cost (as % construction cost)	Total Annual Cost
Sediment basin	Minimum drainage area = 5 acres, maximum drainage area = 100 acres	Average: 70% Observed range: 55% - 100% References: Schueler, 1990; Engle, BW and Jarrett, AR, 1990; Baumann, 1990	2	Less than 50,000 ft^3 storage Average: \$0.60 per ft^3 storage (\$1,100 per drainage acre[c]) Range: \$0.20 - \$1.30 per ft^3 Greater than 50,000 ft^3 storage Average: \$0.3 per ft^3 storage (\$550 per drainage acre[c]) Range: \$0.10 - \$0.40 per ft^3 References: SWRPC, 1991	Average: 25% Range: 25% References: Denver COG cited in SWRPC, 1991; SWRPC, 1991	Less than 50,000 ft^3 storage \$0.40 per ft^3 storage \$700 per drainage acre[b] Greater than 50,000 ft^3 storage \$0.20 per ft^3 storage \$900 per drainage acre[c]
Sediment trap	Maximum drainage area = 5 acres	Average: 60% Observed range: (-7%) - 100% References: Schueler, et al., 1990; Tahoe Regional Planning Agency, 1989; Baumann, 1990	1.5	Average: \$0.60 per ft^3 storage (\$1,100 per drainage acre[c]) Range: \$0.20 - \$2.00 per ft^3 References: Denver COG cited in SWRPC, 1991; SWRPC, 1991; Goldman, 1986	Average: 20% Range: 20% References: Denver COG cited in SWRPC, 1991; SWRPC, 1991	\$0.70 per ft^3 storage \$1,300 per drainage acre[c]
Filter Fabric Fence	Maximum drainage area = 0.5 acre per 100 feet of fence. Not to be used in concentrated flow areas.	Average: 70% Observed range: 0% - 100% sand: 80% - 99% silt-loam: 50% - 80% silt-clay-loam: 0% - 20% References: Munson, 1991; Fisher et al., 1984; Minnesota Pollution Control Agency, 1989	0.5	Average: \$3 per lin ft (\$700 per drainage acre[c] Range: \$1 - \$8 per lin ft References: Wisconsin DOT cited in SWRPC, 1991; SWRPC, 1991; Goldman, 1986; Virginia, 1991; NC State, 1990	Average: 100% Range: 100% References: SWRPC, 1991	\$7 per lin ft \$850 per drainage acre[c]

Table 4-16. (Continued)

Practice	Design Constraints or Purpose	Percent Removal of TSS	Useful Life (years)[a]	Construction Cost	Annual Maintenance Cost (as % construction cost)	Total Annual Cost
Straw Bale Barrier	Maximum drainage area = 0.25 acre per 100 feet of barrier. Not to be used in concentrated flow areas.	Average: 70% Observed Range: 70% References: Virginia, 1980 cited in EPA, 1991	0.25	Average: $4 per lin ft ($1,600 per drainage acre[d] Range: $2 - $6 per lin ft References: Goldman, 1986; Virginia, 1991	Average: 100% Range: 100% References: SWRPC, 1991	$17 per lin ft $6,800 per drainage acre[d]
Inlet Protection	Protect storm drain inlet.	Average: NA Observed Range: NA References: None	1	Average: $100 per inlet Range: $50 - $150 References: SWRPC, 1991; Denver COG cited in SWRPC, 1991; Virginia, 1991; EPA cited in SWRPC, 1991	Average: 60% Range: 20% - 100% References: SWRPC, 1991; Denver COG cited in SWRPC, 1991	$150 per inlet
Construction Entrance	Removes sediment from vehicles wheels.	Average: NA Observed Range: NA References: None	2	Average: $2,000 each Range: $1,000 - $4,000 References: Goldman, 1986; NC State, 1990	Average: NA[e] Range: NA References: None	$1,500 each
				With washrack: Average: $3,000 each Range: $1,000 - $5,000 References: Virginia, 1991		$2,200 each

Table 4-16. (Continued)

Practice	Design Constraints or Purpose	Percent Removal of TSS	Useful Life (years)[a]	Construction Cost	Annual Maintenance Cost (as % construction cost)	Total Annual Cost
Vegetative Filter Strip	Must have sheet flow.	Average: 70% Observed Range: 20% - 80% References: Hayes and Hairston, 1983 cited in Casman, 1990; Dillaha et al., 1989, cited in Glick et al., 1991; Virginia Department of Conservation, 1987; Nonpoint Source Control Task Force, 1983 cited in Minnesota PCA, 1989; Schueler, 1987	2	Established from existing vegetation- Average: $0 Range: $0 References: Schueler, 1987 Established from sod- Average: $11,300 per acre Range: $4,500 - $48,000 per acre References: Schueler, 1987; SWRPC, 1991	Average: NA Range: NA References: None	NA

NA - Not available.

[a] Useful life estimated as length of construction project (assumed to be 2 years)

[c] For Total Annual Cost, assume Annual Maintenance Cost=20% of construction cost.

[b] Assumes trap volume = 1800 cf/ac (0.5 inches runoff per acre).

[c] Assumes drainage area of 0.5 acre per 100 feet of fence (maximum allowed).

[d] Assumes drainage area of 0.25 acre per 100 feet of barrier (maximum allowed).

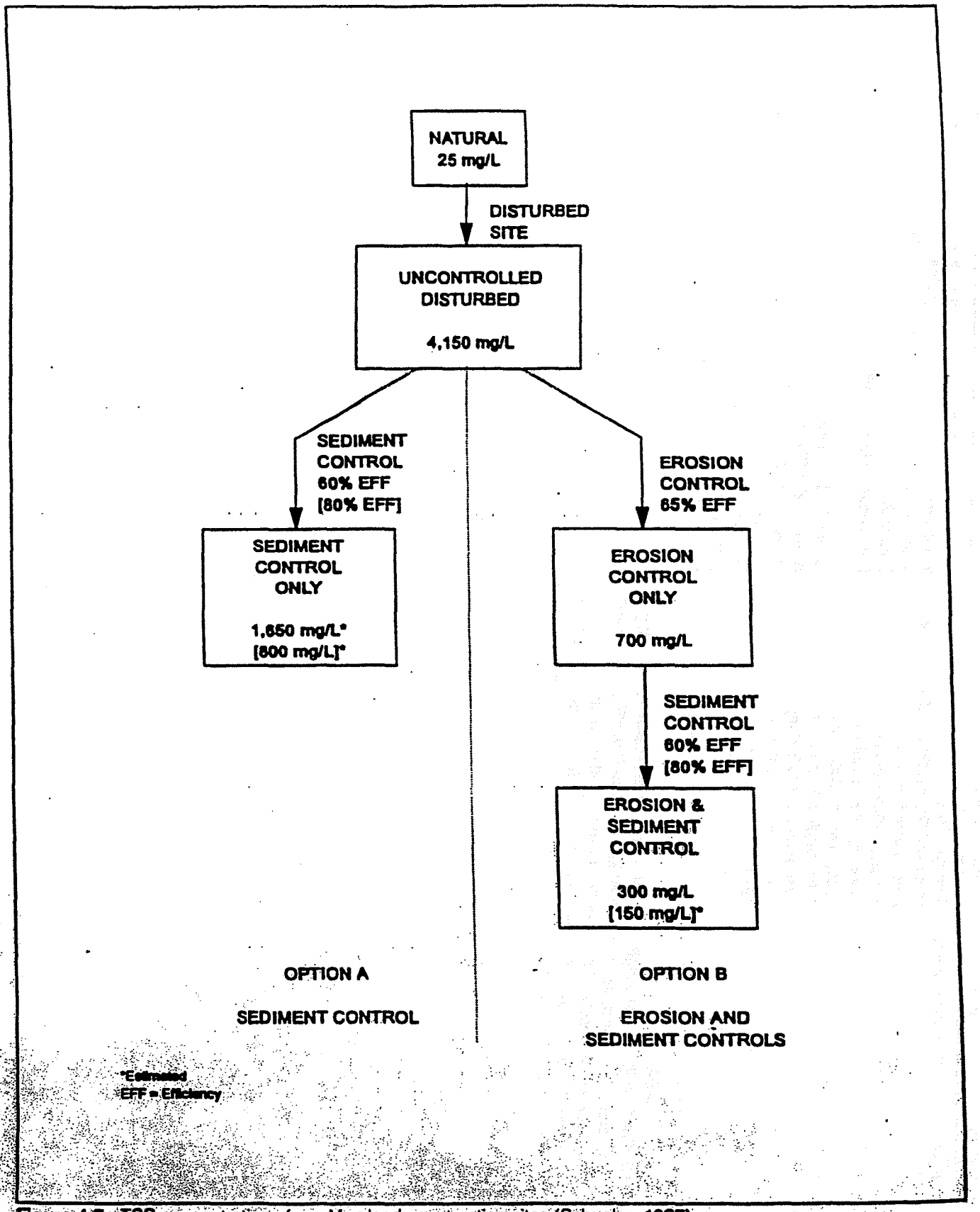


Figure 4-7. TSS concentrations from Maryland construction sites (Schueler, 1987).

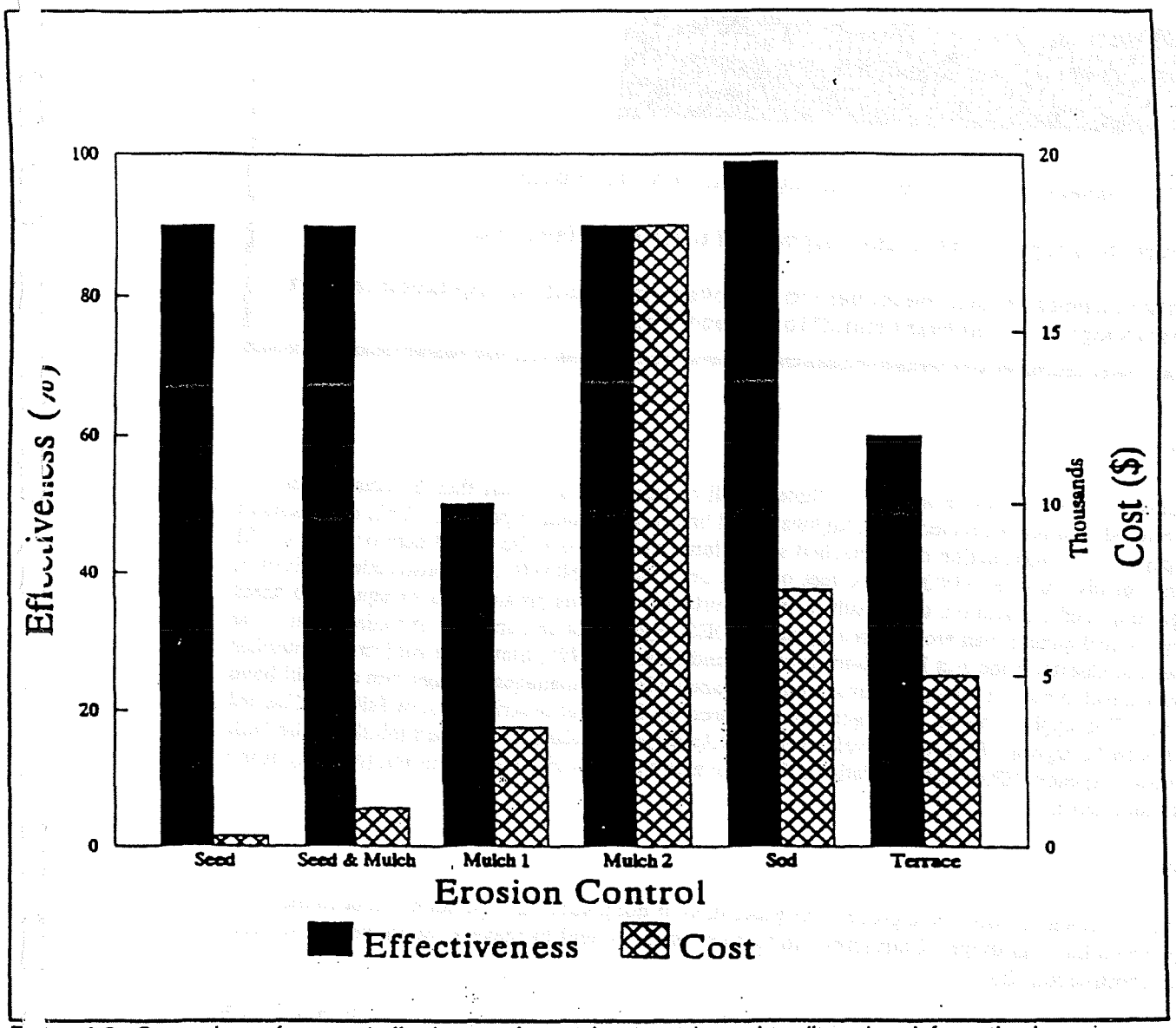


Figure 4-8. Comparison of cost and effectiveness for erosion control practices (based on information in Tables 4-15 and 4-16).

B. Construction Site Chemical Control Management Measure

(1) Limit application, generation, and migration of toxic substances;

(2) Ensure the proper storage and disposal of toxic materials; and

(3) Apply nutrients at rates necessary to establish and maintain vegetation without causing significant nutrient runoff to surface waters.

1. Applicability

This management measure is intended to be applied by States to all construction sites less than 5 acres in area and to new, resurfaced, restored, and reconstructed road, highway, and bridge construction projects. This management measure does not apply to: (1) construction of a detached single family home on a site of 1/2 acre or more or (2) construction that does not disturb over 5,000 square feet of land on a site. (NOTE: All construction activities, including clearing, grading, and excavation, that result in the disturbance of areas greater than or equal to 5 acres or are a part of a larger development plan are covered by the NPDES regulations and are thus excluded from these requirements.) Under the Coastal Zone Act Reauthorization Amendments of 1990, States are subject to a number of requirements as they develop coastal NPS programs in conformance with this management measure and will have flexibility in doing so. The application of management measures by States is described more fully in *Coastal Nonpoint Pollution Control Program: Program Development and Approval Guidance*, published jointly by the U.S. Environmental Protection Agency (EPA) and the National Oceanic and Atmospheric Administration (NOAA) of the U.S. Department of Commerce.

2. Description

The purpose of this management measure is to prevent the generation of nonpoint source pollution from construction sites due to improper handling and usage of nutrients and toxic substances, and to prevent the movement of toxic substances from the construction site.

Many potential pollutants other than sediment are associated with construction activities. These pollutants include pesticides (insecticides, fungicides, herbicides, and rodenticides); fertilizers used for vegetative stabilization; petrochemicals (oils, gasoline, and asphalt degreasers); construction chemicals such as concrete products, sealers, and paints; wash water associated with these products; paper; wood; garbage; and sanitary wastes (Washington State Department of Ecology, 1991).

The variety of pollutants present and the severity of their effects are dependent on a number of factors:

(1) **The nature of the construction activity.** For example, potential pollution associated with fertilizer usage may be greater along a highway or at a housing development than it would be at a shopping center development because highways and housing developments usually have greater landscaping requirements.

(2) **The physical characteristics of the construction site.** The majority of all pollutants generated at construction sites are carried to surface waters via runoff. Therefore, the factors affecting runoff volume,

such as the amount, intensity, and frequency of rainfall; soil infiltration rates; surface roughness; slope length and steepness; and area denuded, all contribute to pollutant loadings.

(3) **The proximity of surface waters to the nonpoint pollutant source.** As the distance separating pollutant-generating activities from surface waters decreases, the likelihood of water quality impacts increases.

a. Pesticides

Insecticides, rodenticides, and herbicides are used on construction sites to provide safe and healthy conditions, reduce maintenance and fire hazards, and curb weeds and woody plants. Rodenticides are also used to control rodents attracted to construction sites. Common insecticides employed include synthetic, relatively water-insoluble chlorinated hydrocarbons, organophosphates, carbamates, and pyrethrins.

b. Petroleum Products

Petroleum products used during construction include fuels and lubricants for vehicles, for power tools, and for general equipment maintenance. Specific petroleum pollutants include gasoline, diesel oil, kerosene, lubricating oils, and grease. Asphalt paving also can be particularly harmful since it releases various oils for a considerable time period after application. Asphalt overloads might be dumped and covered without inspection. However, many of these pollutants adhere to soil particles and other surfaces and can therefore be more easily controlled.

c. Nutrients

Fertilizers are used on construction sites when revegetating graded or disturbed areas. Fertilizers contain nitrogen and phosphorus, which in large doses can adversely affect surface waters, causing eutrophication.

d. Solid Wastes

Solid wastes on construction sites are generated from trees and shrubs removed during land clearing and structure installation. Other wastes include wood and paper from packaging and building materials, scrap metals, sanitary wastes, rubber, plastic and glass, and masonry and asphalt products. Food containers, cigarette packages, leftover food, and aluminum foil also contribute solid wastes to the construction site.

e. Construction Chemicals

Chemical pollutants, such as paints, acids for cleaning masonry surfaces, cleaning solvents, asphalt products, soil additives used for stabilization, and concrete-curing compounds, may also be used on construction sites and carried in runoff.

f. Other Pollutants

Other pollutants, such as wash water from concrete mixers, acid and alkaline solutions from exposed soil or rock, and alkaline-forming natural elements, may also be present and contribute to nonpoint source pollution.

Revegetation of disturbed areas may require the use of fertilizers and pesticides, which, if not applied properly, may become nonpoint source pollutants. Many pesticides are restricted by Federal and/or State regulations.

Hydroseeding operations, in which seed, fertilizers, and lime are applied to the ground surface in a one-step operation, are more conducive to nutrient pollution than are the conventional seedbed-preparation operations, in which fertilizers and lime are tilled into the soil. Use of fertilizers containing little or no phosphorus may be required by

local authorities if the development is near sensitive waterbodies. The addition of lime can also affect the pH of sensitive waters, making them more alkaline.

Improper fueling and servicing of vehicles can lead to significant quantities of petroleum products being dumped onto the ground. These pollutants can then be washed off site in urban runoff, even when proper erosion and sediment controls are in place. Pollutants carried in solution in runoff water, or fixed with sediment crystalline structures, may not be adequately controlled by erosion and sediment control practices (Washington Department of Ecology, 1991). Oils, waxes, and water-insoluble pesticides can form surface films on water and solid particles. Oil films can also concentrate water-soluble insecticides. These pollutants can be nearly impossible to control once present in runoff other than by the use of very costly water-treatment facilities (Washington Department of Ecology, 1991).

After spill prevention, one of the best methods to control petroleum pollutants is to retain sediments containing oil on the construction site through use of erosion and sediment control practices. Improved maintenance and safe storage facilities will reduce the chance of contaminating a construction site. One of the greatest concerns related to use of petroleum products is the method for waste disposal. The dumping of petroleum product wastes into sewers and other drainage channels is illegal and could result in fines or job shutdown.

The primary control method for solid wastes is to provide adequate disposal facilities. Erosion and sediment control structures usually capture much of the solid waste from construction sites. Periodic removal of litter from these structures will reduce solid waste accumulations. Collected solid waste should be removed and disposed of at authorized disposal areas.

Improperly stored construction materials, such as pressure-treated lumber or solvents, may lead to leaching of toxics to surface water and ground water. Disposal of construction chemicals should follow all applicable State and local laws that may require disposal by a licensed waste management firm.

3. Management Measure Selection

This management measure was selected based on the potential for many construction activities to contribute to nutrient and toxic NPS pollution.

This management measure was selected because (1) construction activities have the potential to contribute to increased loadings of toxic substances and nutrients to waterbodies; (2) various States and local governments regulate the control of chemicals on construction sites through spill prevention plans, erosion and sediment control plans, or other administrative devices; (3) the practices described are commonly used and presented in a number of best management practice handbooks and guidance manuals for construction sites; and (4) the practices selected are the most economical and effective.

4. Practices

As discussed more fully at the beginning of this chapter and in Chapter 1, the following practices are described for illustrative purposes only. State programs need not require implementation of these practices. However, as a practical matter, EPA anticipates that the management measure set forth above generally will be implemented by applying one or more management practices appropriate to the source, location, and climate. The practices set forth below have been found by EPA to be representative of the types of practices that can be applied successfully to achieve the management measure described above.

a. *Properly store, handle, apply, and dispose of pesticides.*

Pesticide storage areas on construction sites should be protected from the elements. Warning signs should be placed in areas recently sprayed or treated. Persons mixing and applying these chemicals should wear suitable protective clothing, in accordance with the law.

Application rates should conform to registered label directions. Disposal of excess pesticides and pesticide-related wastes should conform to registered label directions for the disposal and storage of pesticides and pesticide containers set forth in applicable Federal, State, and local regulations that govern their usage, handling, storage, and disposal. Pesticides and herbicides should be used only in conjunction with Integrated Pest Management (IPM) (see Chapter 2). Pesticides should be the tool of last resort; methods that are the least disruptive to the environment and human health should be used first.

Pesticides should be disposed of through either a licensed waste management firm or a treatment, storage, and disposal (TSD) facility. Containers should be triple-rinsed before disposal, and rinse waters should be reused as product.

Other practices include setting aside a locked storage area, tightly closing lids, storing in a cool, dry place, checking containers periodically for leaks or deterioration, maintaining a list of products in storage, using plastic sheeting to line the storage area, and notifying neighboring property owners prior to spraying.

☐ *b. Properly store, handle, use, and dispose of petroleum products.*

When storing petroleum products, follow these guidelines:

- Create a shelter around the area with cover and wind protection;
- Line the storage area with a double layer of plastic sheeting or similar material;
- Create an impervious berm around the perimeter with a capacity 110 percent greater than that of the largest container;
- Clearly label all products;
- Keep tanks off the ground; and
- Keep lids securely fastened.

Oil and oily wastes such as crankcase oil, cans, rags, and paper dropped into oils and lubricants should be disposed of in proper receptacles or recycled. Waste oil for recycling should not be mixed with degreasers, solvents, antifreeze, or brake fluid.

☐ *c. Establish fuel and vehicle maintenance staging areas located away from all drainage courses, and design these areas to control runoff.*

Proper maintenance of equipment and installation of proper stream crossings will further reduce pollution of water by these sources. Stream crossings should be minimized through proper planning of access roads. Refer to Chapter 3 for additional information on stream crossings.

☐ *d. Provide sanitary facilities for constructions workers.*

☐ *e. Store, cover, and isolate construction materials, including topsoil and chemicals, to prevent runoff of pollutants and contamination of ground water.*

☐ *f. Develop and implement a spill prevention and control plan. Agencies, contractors, and other commercial entities that store, handle, or transport fuel, oil, or hazardous materials should develop a spill response plan.*

Post spill procedure information and have persons trained in spill handling on site or on call at all times. Materials for cleaning up spills should be kept on site and easily available. Spills should be cleaned up immediately and the contaminated material properly disposed of. Spill control plan components should include:

- Stop the source of the spill.
- Contain any liquid.
- Cover the spill with absorbent material such as kitty litter or sawdust, but do not use straw. Dispose of the used absorbent properly.

g. Maintain and wash equipment and machinery in confined areas specifically designed to control runoff.

Thinners or solvents should not be discharged into sanitary or storm sewer systems when cleaning machinery. Use alternative methods for cleaning larger equipment parts, such as high-pressure, high-temperature water washes, or steam cleaning. Equipment-washing detergents can be used, and wash water may be discharged into sanitary sewers if solids are removed from the solution first. (This practice should be verified with the local sewer authority.) Small parts can be cleaned with degreasing solvents, which can then be reused or recycled. Do not discharge any solvents into sewers.

Washout from concrete trucks should be disposed of into:

- A designated area that will later be backfilled;
- An area where the concrete wash can harden, can be broken up, and then can be placed in a dumpster; or
- A location not subject to urban runoff and more than 50 feet away from a storm drain, open ditch, or surface water.

Never dump washout into a sanitary sewer or storm drain, or onto soil or pavement that carries urban runoff.

h. Develop and implement nutrient management plans.

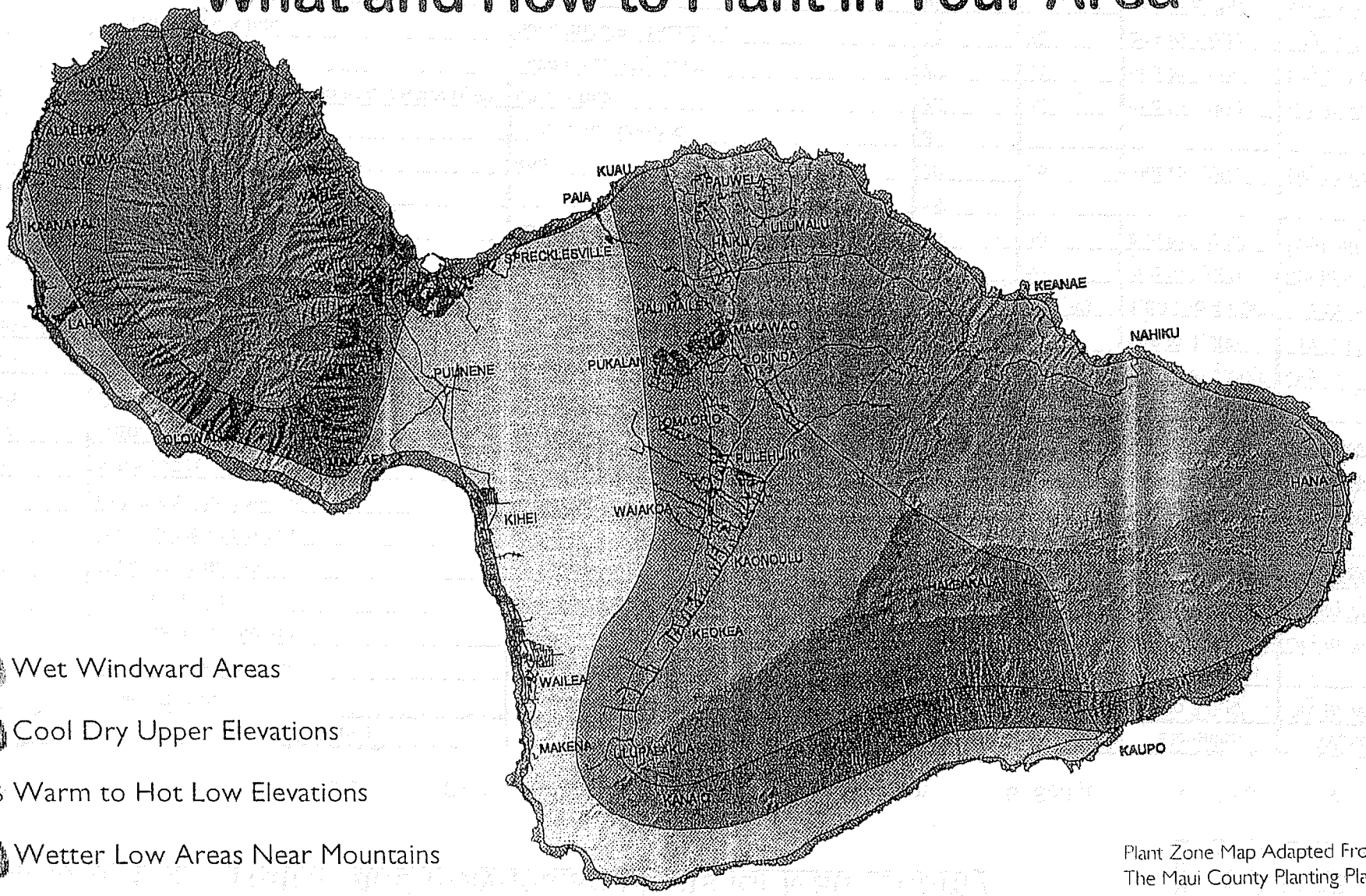
Properly time applications, and work fertilizers and liming materials into the soil to depths of 4 to 6 inches. Using soil tests to determine specific nutrient needs at the site can greatly decrease the amount of nutrients applied.

i. Provide adequate disposal facilities for solid waste, including excess asphalt, produced during construction.

j. Educate construction workers about proper materials handling and spill response procedures. Distribute or post informational material regarding chemical control.

Saving Water in The Yard

What and How to Plant in Your Area



1 Wet Windward Areas

2 Cool Dry Upper Elevations

3 Warm to Hot Low Elevations

4 Wetter Low Areas Near Mountains

5 Windward Coastal Salt Spray Zones

Plant Zone Map Adapted From
The Maui County Planting Plan

Tips From The Maui County Department of Water Supply

By Water All Things Find Life

Zone-specific Native and Polynesian plants for Maui County

Zone 1

TYPE: **F** Fern **G** Grass **Gr** Ground Cover **Sh** Shrub **P** Palm **S** Sedge **Tr** Tree **V** Vine

Type	Scientific Name	Common Name	Height	Spread	Elevation	Water req.
F	Psilotum nudum	moa, moa kula	1'	1'	sea to 3,000'	Dry to Wet
F	Sadleria cyatheoides	'ama'u, ama'uma'u				
Gr - Sh	Lipochaeta succulenta	nehe	2'	5'	sea to 1,000'	Dry to Wet
P	Cocos nucifera	coconut, niu	100'	30'	sea to 1,000'	Dry to Wet
P	Pritchardia arecina	lo'ulu, hawane	40'	10'	1,000' to 3,000'	Dry to Wet
P	Pritchardia forbesiana	lo'ulu	15'			
P	Pritchardia hillebrandii	lo'ulu, fan palm	25'	15'	sea to 1,000'	Dry to Wet
S	Mariscus javanicus	marsh cypress, 'ahu'awa	0.5'	0.5'	sea to 1,000'	Dry to Medium
Sh	Bidens hillebrandiana ssp. hillebrandiana	ko'oko'olau	1'	2'	sea to 1,000'	Dry to Wet
Sh	Cordyline fruticosa	ti, ki	6			
Sh	Hedyotis spp.	au, pilo	3'	2'	1,000' to 3,000'	Dry to Wet
Sh - Tr	Broussonetia papyrifera	wauke, paper mulberry	8'	6'	sea to 1,000'	Dry to Medium
Tr	Acacia koa	koa	50' - 100'	40' - 80'	1,500' to 4,000'	Dry to Medium
Tr	Aleurites moluccana	candlenut, kukui	50'	50'	sea to 3,000'	Medium to Wet
Tr	Calophyllum inophyllum	kamani, alexandrian laurel	60'	40'	sea to 3,000'	Medium to Wet
Tr	Charpentiera obovata		15'			
Tr	Cordia subcordata	kou	30'	25'	sea to 1,000'	Dry to Wet
Tr	Hibiscus furcellatus	'akiohala, hau-hele	8'			
Tr	Metrosideros polymorpha var. macrophylla	ohi'a lehua	25'	25'	sea to 1,000'	Dry to Wet
Tr	Morinda citrifolia	indian mulberry, noni	20'	15'	sea to 1,000'	Dry to Wet
Tr	Pandanus tectorius	hala, puhala (HALELIST)	35'	25'	sea to 1,000'	Dry to Wet
V	Alyxia oliviformis	maile	Vine		sea to 6,000'	Medium to Wet

Zone-specific Native and Polynesian plants for Maui County

Zone 2

TYPE: **F** Fern **G** Grass **Gr** Ground Cover **Sh** Shrub **P** Palm **S** Sedge **Tr** Tree **V** Vine

Type	Scientific Name	Common Name	Height	Spread	Elevation	Water req.
F	Psilotum nudum	moa, moa kula	1'	1'	sea to 3,000'	Dry to Wet
F	Sadleria cyatheoides	'ama'u, ama'uma'u				
G	Eragrostis monticola	kalamalo	1'	2'	sea to 3,000'	Dry to Medium
Gr	Ipomoea tuboides	Hawaiian moon flower, 'uala	1'	10'	sea to 3,000'	Dry to Medium
Gr	Peperomia leptostachya	'ala'ala-wai-nui	1'	1'	sea to 3,000'	Dry to Medium
Gr	Plumbago zeylanica	'ilie'e	1'			
Gr - Sh	Hibiscus calyphyllus	ma'o hau hele, Rock's hibiscus	3'	2'	sea to 3,000'	Dry to Medium
Gr - Sh	Lipochaeta rockii	nehe	2'	2'	sea to 3,000'	Dry to Medium
Sh	Argemone glauca var. decipiens	pua kala	3'	2'	sea to 3,000'	Dry to Medium
Sh	Artemisia mauiensis var. diffusa	Maui wormwood, 'ahinahina	2'	3'	1,000' to higher	Dry to Medium
Sh	Chenopodium oahuense	'aheahea, 'aweoweo	6'		sea to higher	Dry to Medium
Sh	Dianella sandwicensis	'uki	2'	2'	1,000' to higher	Dry to Medium
Sh	Lipochaeta lavarum	nehe	3'	3'	sea to 3,000'	Dry to Medium
Sh	Osteomeles anthyllidifolia	'ulei, eluehe	4'	6'	sea to 3,000'	Dry to Medium
Sh	Senna gaudichaudii	kolomana	5'	5'	sea to 3,000'	Dry to Medium
Sh	Styphelia tameiameiae	pukiawe	6'	6'	1,000' to higher	Dry to Medium
Sh	Vitex rotundifolia	pohinahina	3'	4'	sea to 1,000'	Dry to Medium
Sh - Tr	Myoporum sandwicense	naio, false sandalwood	10'	10'	sea to higher	Dry to Medium
Sh - Tr	Nototrichium sandwicense	kulu'i	8'	8'	sea to 3,000'	Dry to Medium
Sh-Tr	Dodonaea viscosa	'a'ali'i	6'	8'	sea to higher	Dry to Medium
Tr	Acacia koa	koa	50' - 100'	40' - 80'	1,500' to 4,000'	Dry to Medium
Tr	Charpentiera obovata		15'			
Tr	Erythrina sandwicensis	wiliwili	20'	20'	sea to 1,000'	Dry
Tr	Metrosideros polymorpha var. macrophylla	ohi'a lehua	25'	25'	sea to 1,000'	Dry to Wet

Zone-specific Native and Polynesian plants for Maui County

Zone 2

Type	Scientific Name	Common Name	Height	Spread	Elevation	Water req.
Tr	Nestegis sandwicensis	olopua	15'	15'	1,000' to 3,000'	Dry to Medium
Tr	Pleomele auwahiensis	halapepe	20'			
Tr	Rauvolfia sandwicensis	hao	20'	15'	sea to 3,000'	Dry to Medium
Tr	Santalum ellipticum	coastal sandalwood, 'ili-ahi	8'	8'	sea to 3,000'	Dry to Medium
Tr	Sophora chrysophylla	mamane	15'	15'	1,000' to 3,000'	Medium
V	Alyxia oliviformis	maile	Vine		sea to 6,000'	Medium to Wet

Zone-specific Native and Polynesian plants for Maui County

Zone 3

TYPE: **F** Fern **G** Grass **Gr** Ground Cover **Sh** Shrub **P** Palm **S** Sedge **Tr** Tree **V** Vine

Type	Scientific Name	Common Name	Height	Spread	Elevation	Water req.
F	Psilotum nudum	moa, moa kula	1'	1'	sea to 3,000'	Dry to Wet
G	Colubrina asiatica	'anapanapa	3'	10'	sea to 1,000'	Dry to Wet
G	Eragrostis monticola	kalamalo	1'	2'	sea to 3,000'	Dry to Medium
G	Eragrostis variabilis	'emo-loa	1'	2'	sea to 3,000'	Dry to Medium
G	Fimbristylis cymosa ssp. spathacea	mau'u'aki'aki fimbristylis	0.5'	1'	sea to 1,000'	Dry to Medium
Gr	Boerhavia repens	alena	0.5'	4'	sea to 1,000'	Dry to Medium
Gr	Chamaesyce celastroides var. laehiensis	'akoko	2'	3'	sea to 1,000'	Dry to Medium
Gr	Cressa truxillensis	cressa	0.5'	1'	sea to 1,000'	Dry to Medium
Gr	Heliotropium anomalum var. argenteum	hinahina ku kahakai	1'	2'	sea to 1,000'	Dry to Medium
Gr	Ipomoea tuboides	Hawaiian moon flower, uala	1'	10'	sea to 3,000'	Dry to Medium
Gr	Jacquemontia ovalifolia ssp. sandwicensis	pa'u o hi'iaka	0.5'	6'	sea to 1,000'	Dry to Medium
Gr	Lipochaeta integrifolia	nehe	1'	5'	sea to 1,00'	Dry to Medium
Gr	Peperomia leptostachya	'ala'ala-wai-nui	1'	1'	sea to 3,000'	Dry to Medium
Gr	Plumbago zeylanica	'ilie'e	1'			
Gr	Sesuvium portulacastrum	'akulikuli, sea-purslane	0.5'	2'	sea to 1,000'	Dry to Wet
Gr	Sida fallax	'ilima	0.5'	3'	sea to 1,000'	Dry to Medium
Gr	Tephrosia purpurea var. purpurea	'auhuhu	2'	2'	sea to 1,000'	Dry to Medium
Gr - Sh	Hibiscus calyphyllus	ma'o hau hele, Rock's hibiscus	3'	2'	sea to 3,000'	Dry to Medium
Gr - Sh	Lipochaeta rockii	nehe	2'	2'	sea to 3,000'	Dry to Medium
Gr - Sh	Lipochaeta succulenta	nehe	2'	5'	sea to 1,000'	Dry to Wet
Gr - Sh	Lycium sandwicense	'ohelo-kai, 'ae'ae	2'	2'	sea to 1,000'	Dry to Medium
P	Cocos nucifera	coconut, niu	100'	30'	sea to 1,000'	Dry to Wet
P	Pritchardia hillebrandii	lo'ulu, fan palm	25'	15'	sea to 1,000'	Dry to Wet
S	Mariscus javanicus	marsh cypress, 'ahu'awa	0.5'	0.5'	sea to 1,000'	Dry to Medium

Zone-specific Native and Polynesian plants for Maui County

Zone 3

Type	Scientific Name	Common Name	Height	Spread	Elevation	Water req.
Sh	Argemone glauca var. decipiens	pua kala	3'	2'	sea to 3,000'	Dry to Medium
Sh	Bidens mauiensis	ko'oko'olau	1'	3'	sea to 1,000'	Dry to Medium
Sh	Bidens menziesii ssp. menziesii	ko'oko'olau	1'	3'		
Sh	Bidens micrantha ssp. micrantha	ko'oko'olau	1'	3'		
Sh	Chenopodium oahuense	'aheahea, 'aweoweo	6'		sea to higher	Dry to Medium
Sh	Dianella sandwicensis	'uki	2'	2'	1,000' to higher	Dry to Medium
Sh	Gossypium tomentosum	mao, Hawaiian cotton	5'	8'	sea to 1,000'	Dry to Medium
Sh	Hedyotis spp.	au, pilo	3'	2'	1,000' to 3,000'	Dry to Wet
Sh	Lipochaeta lavarum	nehe	3'	3'	sea to 3,000'	Dry to Medium
Sh	Osteomeles anthyllidifolia	'ulei, eluehe	4'	6'	sea to 3,000'	Dry to Medium
Sh	Scaevola sericea	naupaka, naupaka-kahakai	6'	8'	sea to 1,000'	Dry to Medium
Sh	Senna gaudichaudii	kolomana	5'	5'	sea to 3,000'	Dry to Medium
Sh	Solanum nelsonii	'akia, beach solanum	3'	3'	sea to 1,00'	Dry to Medium
Sh	Styphelia tameiameiae	pukiawe	6'	6'	1,000' to higher	Dry to Medium
Sh	Vitex rotundifolia	pohinahina	3'	4'	sea to 1,000'	Dry to Medium
Sh	Wikstroemia uva-ursi kauaiensis kauaiensis	'akia, Molokai osmanthus				
Sh - Tr	Broussonetia papyrifera	wauke, paper mulberry	8'	6'	sea to 1,000'	Dry to Medium
Sh - Tr	Myoporum sandwicense	naio, false sandalwood	10'	10'	sea to higher	Dry to Medium
Sh - Tr	Nototrichium sandwicense	kulu'i	8'	8'	sea to 3,000'	Dry to Medium
Sh-Tr	Dodonaea viscosa	'a'ali'i	6'	8'	sea to higher	Dry to Medium
Tr	Aleurites moluccana	candlenut, kukui	50'	50'	sea to 3,000'	Medium to Wet
Tr	Calophyllum inophyllum	kamani, alexandrian laurel	60'	40'	sea to 3,000'	Medium to Wet
Tr	Canthium odoratum	Alahe'e, 'ohe'e, walahe'e	12'	8'	sea to 3,000'	Dry to Medium
Tr	Cordia subcordata	kou	30'	25'	sea to 1,000'	Dry to Wet
Tr	Diospyros sandwicensis	lama	12'	15'	sea to 3,000'	Dry to Medium
Tr	Erythrina sandwicensis	wiliwili	20'	20'	sea to 1,000'	Dry
Tr	Metrosideros polymorpha var. macrophylla	ohi'a lehua	25'	25'	sea to 1,000'	Dry to Wet

Zone-specific Native and Polynesian plants for Maui County

Zone 3

Type	Scientific Name	Common Name	Height	Spread	Elevation	Water req.
Tr	Morinda citrifolia	indian mulberry, noni	20'	15'	sea to 1,000'	Dry to Wet
Tr	Nesoluma polynesicum	keahi	15'	15'	sea to 3,00'	Dry
Tr	Nestegis sandwicensis	olopua	15'	15'	1,000' to 3,000'	Dry to Medium
Tr	Pandanus tectorius	hala, puhala (HALELIST)	35'	25'	sea to 1,000'	Dry to Wet
Tr	Pleomele auwahiensis	halapepe	20'			
Tr	Rauvolfia sandwicensis	hao	20'	15'	sea to 3,000'	Dry to Medium
Tr	Reynoldsia sandwicensis	'ohe makai	20'	20'	1,000' to 3,000'	Dry
Tr	Santalum ellipticum	coastal sandalwood, 'ili-ahi	8'	8'	sea to 3,000'	Dry to Medium
Tr	Thespesia populnea	milo	30'	30'	sea to 3,000'	Dry to Wet

Zone-specific Native and Polynesian plants for Maui County

Zone 4

TYPE: F Fern G Grass Gr Ground Cover Sh Shrub P Palm S Sedge Tr Tree V Vine

Type	Scientific Name	Common Name	Height	Spread	Elevation	Water req
F	Psilotum nudum	moa, moa'kula	1'	1'	sea to 3,000'	Dry to Wet
F	Sadleria cyatheoides	ama'u, ama'uma'u				
G	Coix lacryma-jobi	'anapanapa	3'	10'	sea to 1,000'	Dry to Wet
G	Eragrostis monticola	kalamalo	0'	2'	sea to 3,000'	Dry to Medium
G	Eragrostis variabilis	emo'loa	1'	2'	sea to 3,000'	Dry to Medium
G	Fimbristylis cymosa ssp. spathacea	mau'u aki'aki, fimbristylis	0.5'	1'	sea to 1,000'	Dry to Medium
Gr	Chamaesyce celastroides var. laehiensis	'akoko	2'	3'	sea to 1,000'	Dry to Medium
Gr	Ipomoea tuboides	Hawaiian moon flower, 'uala	1'	10'	sea to 3,000'	Dry to Medium
Gr	Jacquemontia ovalifolia ssp. sandwicensis	pa'u o hi'aka	0.5'	5'	sea to 1,000'	Dry to Medium
Gr	Lipochaeta integrifolia	nehe	1'	5'	sea to 1,00'	Dry to Medium
Gr	Peperomia leptostachya	'ala'ala wai nui	1'	1'	sea to 3,000'	Dry to Medium
Gr	Plumbago zeylanica	'ilie'e	1'			
Gr	Sicyos lobatus	'ilima	0.5'	3'	sea to 1,000'	Dry to Medium
Gr	Tetramolopium arenarium ssp. arenarium	'ahinahina	2'	2'	sea to 1,000'	Dry to Medium
Gr Sh	Abutilon menziesii	ko'oloa'ula	3'	2'	sea to 3,000'	Dry to Medium
Gr Sh	Argyroxiphium kauense	'ahinahina	2'	2'	sea to 3,000'	Dry to Medium
Gr Sh	Dubautia scabra	na'ena'e	2'	5'	sea to 1,000'	Dry to Wet
Gr Sh	Lipochaeta succulenta	nehe	2'	5'	sea to 1,000'	Dry to Wet
P	Cocos nucifera	coconut palm	100'	30'	sea to 1,000'	Dry to Wet
P	Pritchardia arecina	loulu, hawane	40'	10'	1,000' to 3,000'	Dry to Wet
P	Pritchardia forbesiana	loulu	15'			
P	Pritchardia hillebrandii	loulu, lau'ehu palm	25'	15'	sea to 1,000'	Dry to Wet
S	Machaerina angustifolia	mau'u kyperus, 'ahu'awa	0.5'	0.5'	sea to 1,000'	Dry to Medium
Sh	Argemone glauca var. decipiens	pua kala	3'	2'	sea to 3,000'	Dry to Medium
Sh	Artemisia australis	'ahinahina	2'	3'	sea to 3,000'	Dry to Medium