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APR 2 3 2011

DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
200 SOUTH HIGH STREET
WAILUKU, MAUI, HAWAII 96793-2155
www.mauiwater.org

March 3, 2011

Gary L. Hooser, Director
Office of Environmental Quality Control
235 South Beretania Street, Room 702
Honolulu, Hawaii 96813

Subject: Draft Environmental Assessment for Proposed Wailuku Exploratory Well, Wailuku, Maui, Hawaii at TMK No. (2)3-5-001:100 (por)

Dear Mr. Hooser:

The County of Maui, Department of Water Supply has reviewed the attached Draft Environmental Assessment (Draft EA) prepared for the Proposed Wailuku Exploratory Well project and anticipates a Finding of No Significant Impact determination for the project. We respectfully request publication of the Draft EA in the next available Environmental Notice. Attached please find the following items:

1. One (1) CD containing a PDF of the Draft EA and a Word Version of the OEQC Publication Form
2. One (1) hardcopy of the Draft EA
3. One (1) hardcopy of the OEQC Publication Form

Should you have any questions regarding the Draft EA, please call Thomas (Tom) Ochwat, Project Manager, at (808) 270-7835 or Leilani Pulmano of Munekiyo & Hiraga, Inc. at (808) 244-2015.

Sincerely,

David Taylor, P.E.
Director

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"By Water All Things Find Life"

Draft Environmental Assessment

PROPOSED WAILUKU EXPLORATORY WELL WAILUKU, MAUI, HAWAII

TMK (2)3-5-001:100(POR.)

(DWS Job No. 09-12)

Prepared for the Approving Agency:

County of Maui,
Department of Water Supply

April 2011

MUNEKIYO HIRAGA, INC.

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Executive Summary

Project Name:	Proposed Wailuku Exploratory Well
Type of Document:	Draft Environmental Assessment
Legal Authority:	Chapter 343, Hawaii Revised Statutes
Agency Determination:	Anticipated Finding of No Significant Impact (FONSI)
Applicable Environmental Assessment Review "Trigger":	Use of County Funds
Location:	Island of Maui Wailuku TMK (2)3-5-001:100(por.)
Applicant:	County of Maui Department of Water Supply 200 South High Street, 5th Floor Wailuku, Hawaii 96793 Contact: Thomas Ochwat Phone: (808) 270-7816
Approving Agency:	County of Maui Department of Water Supply 200 South High Street, 5th Floor Wailuku, Hawaii 96793
Consultant:	Munekiyo & Hiraga, Inc. 305 High Street, Suite 104 Wailuku, Hawaii 96793 Contact: Leilani Pulmano Phone: (808) 244-2015
Project Summary:	The Maui County, Department of Water Supply (DWS) plans to construct an exploratory well in Wailuku, Maui within the Iao Aquifer System to replace an existing water source. Wailuku Exploratory Well is being developed in anticipation of the closure of Wailuku Shaft 33 (Well No. 5330-05) and as part of DWS's continuing efforts to spread out the pumping within the Iao Aquifer System to prevent water quality reduction associated with concentrated pumping at a few locations.

The proposed Wailuku Exploratory Well is located within the Kehalani Mauka development above old Wailuku Town on a portion of an undeveloped parcel identified by Tax Map Key (2)3-5-001:100. The well site lies approximately 1,000 feet to the south of the intersection of Main Street, Alu Road, and Iao Valley Road, and is about 200 feet to the northwest of the end of the Kehalani Mauka Parkway.

Approximately 12,000 square feet of land will be acquired by DWS for the well site. Interim site improvements for the exploratory well project include grading of the immediate work area to create a gently sloping pad and construction of a chain link security fence around the site. To access the site, a temporary roadway will be constructed from the end of Kehalani Mauka Parkway. Upon completion of the site improvements, the exploratory well will be drilled, cased, and tested. Design of the exploratory well will conform to requirements of the Commission on Water Resource Management (CWRM), State Department of Health (DOH) wellhead protection protocols, and DWS standards. The Wailuku Exploratory Well is anticipated to produce good quality groundwater at an installed capacity of 1,400 gallons per minute (gpm) or approximately 2 million gallons per day. Pump and water quality tests will be performed to determine if the exploratory well will be suitable as a new potable water source. Should the tests confirm its suitability, the subject property would also accommodate the future construction of a pumping station consisting of a pump pad and piping, a pump control enclosure, and a service driveway.

The Wailuku Exploratory Well will be funded by the County of Maui. The use of public funds is a trigger for the preparation of an Environmental Assessment (EA) pursuant to Chapter 343, Hawaii Revised Statutes (HRS) and Section 11-200-6, Hawaii Administrative Rules (HAR). It should be noted that if the exploratory well is suitable as a new potable water source, the County will prepare a separate EA for the future construction of a pumping station and other improvements associated with the permanent Wailuku Well.

I. PROJECT OVERVIEW

I. PROJECT OVERVIEW

A. PROPERTY LOCATION, EXISTING USE, AND LAND OWNERSHIP

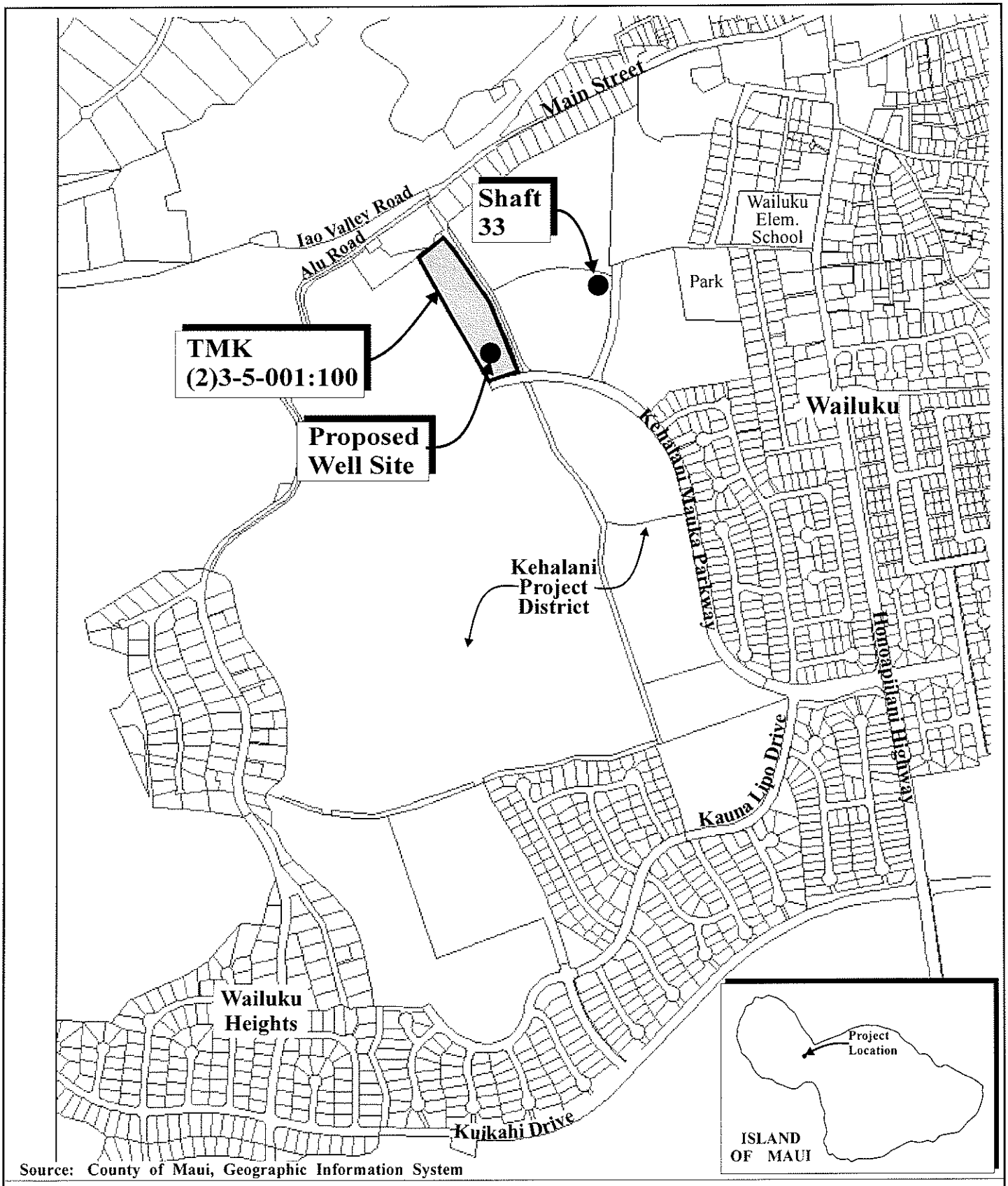
The Maui County Department of Water Supply (DWS) plans to construct an exploratory well in Wailuku, Maui within the Iao Aquifer System to replace an existing water source. The proposed Wailuku Exploratory Well is located within the Kehalani Mauka development above old Wailuku Town on a portion of an undeveloped parcel. See **Figure 1**. The well site lies approximately 1,000 feet to the south of the intersection of Main Street, Alu Road, and Iao Valley Road, and is about 200 feet to the northwest of the end of the Kehalani Mauka Parkway. The well site is located on a portion of the newly designated Tax Map Key (2)3-5-001:100. The previous designation was Tax Map Key (2)3-5-001:067.

The proposed well site is located on existing undeveloped lands and within a future park. Existing single-family residential development borders the future park site to the south and east. The Kehalani Project District master plan calls for future multi-family development to border the park site to the north and west. Phasing of the proposed multi-family development has not yet been determined.

Kehalani Mauka LLC currently owns the property. DWS will acquire about 12,000 square feet of land for the well site.

B. PROJECT NEED

Wailuku Exploratory Well is being proposed as one (1) of six (6) replacement wells DWS has or will construct in anticipation of the closure of Wailuku Shaft 33 (Well No. 5330-05). Shaft 33, which began operation in 1948 to provide irrigation for Wailuku Sugar Company's sugar cane operations, has an installed capacity of 27.75 million gallons per day (MGD). However, actual pumpage peaked at 11.7 MGD in 1971 and DWS currently pumps an average of 5 MGD of groundwater from Shaft 33 through an agreement with the landowner, Kehalani Mauka LLC. DWS's use of Shaft 33 was intended to be an interim measure until development of other new wells could be completed. Due to the impending closure of Shaft 33, DWS is drilling two (2) replacement wells and is planning to drill four (4) additional replacement wells, including the proposed project, Wailuku Exploratory Well. The total capacity anticipated for the two (2) wells currently under construction and four (4) planned



Source: County of Maui, Geographic Information System

Figure 1 Proposed Wailuku Exploratory Well

Regional Location Map

0 0.05 0.1 0.2 Mile

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Prepared for: County of Maui, Department of Water Supply

RFE\Waikapu Well\REGIONAL

wells is 12.98 MGD, which represents less than half the installed capacity of Shaft 33. The Preliminary Design Report for the proposed Wailuku Exploratory Well details the need for the project (see **Appendix "A"**).

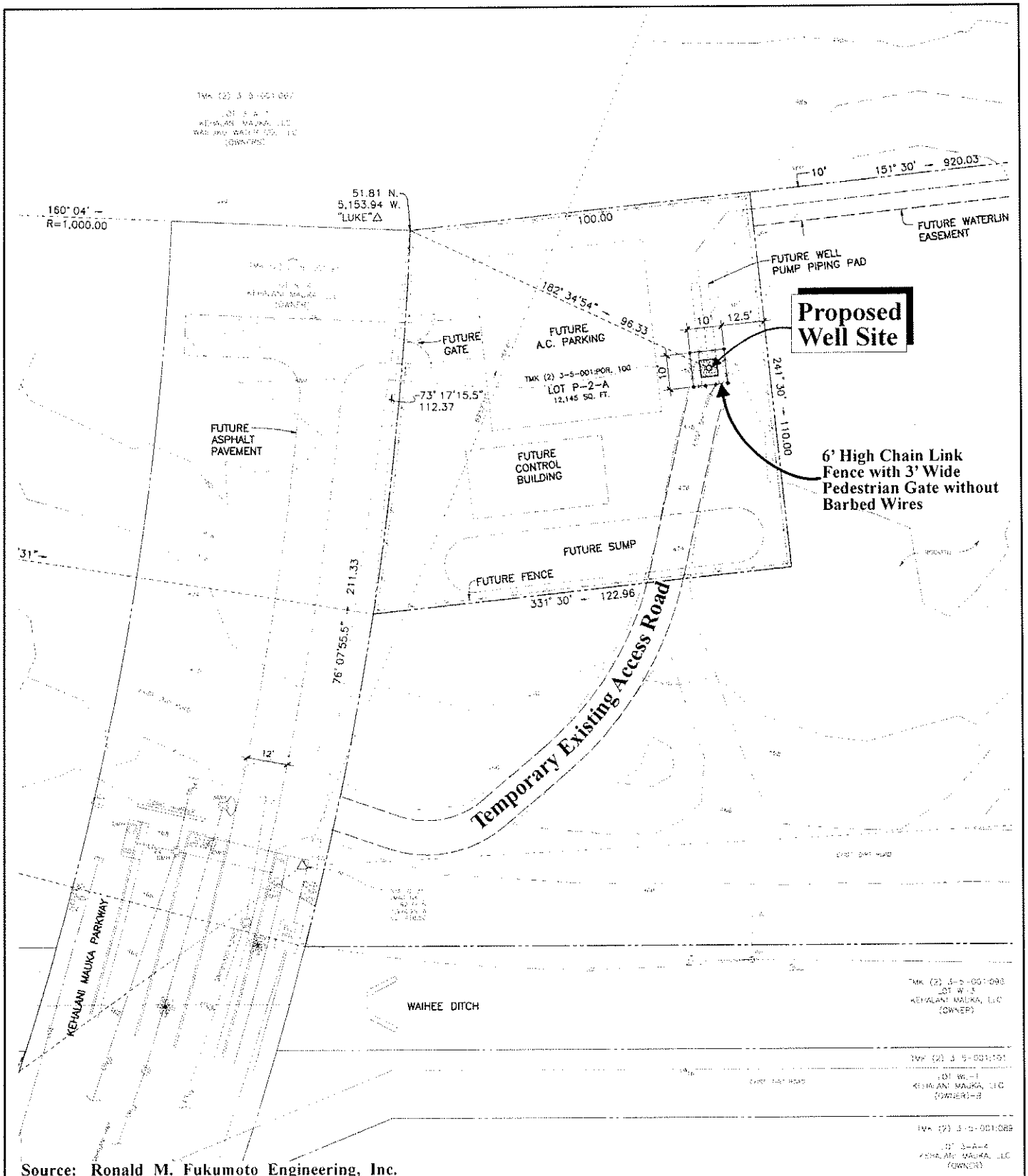
The State Commission on Water Resource Management (CWRM) estimated a sustainable yield of 20 MGD for the Iao Aquifer System. However, the spacing of existing wells within the Iao Aquifer System and their depths may be detrimental to the sustainability of the aquifer. There is a concentration of wells on the north side of Iao Stream, with these sources withdrawing approximately 70 percent of the groundwater from the aquifer. Pumping on the south side of Iao Stream is concentrated at Shaft 33.

The proposed Wailuku Exploratory Well is consistent with DWS's efforts to disperse the pumping within the Iao Aquifer System to prevent reduction of water quality due to concentrated pumping at a few locations. The development of the proposed Wailuku Exploratory Well, along with the five (5) other replacement wells, will not concentrate pumping at one (1) location as is presently the case at Shaft 33. According to a recent study, *Ground-Water Availability in the Wailuku Area, Maui, Hawaii,* prepared by Stephen B. Gingerich, redistributing withdrawal from the Iao Aquifer would be beneficial (refer to **Appendix "A"**).

C. PROPOSED ACTION

DWS proposes to construct an exploratory well to replace an existing water source. The proposed Wailuku Exploratory Well will not represent a new water source. Approximately 12,000 square feet of the subject parcel will be acquired by DWS for the well site. Interim site improvements for the exploratory well project include grading of the immediate work area to create a gently sloping pad and construction of a chain link security fence around the site. Access to the site will be provided by an existing temporary roadway from the end of Kehalani Mauka Parkway. See **Figure 2**.

Upon completion of the site improvements, the exploratory well will be drilled, cased, and tested. The drilling process will involve drilling a pilot hole with a small-diameter bit, and enlarging or reaming the hole with larger bits. The exploratory well will be approximately 582 feet deep, with a bottom elevation of -102 feet mean sea level (msl). The casing process will involve welding sections of casing, installing the sections in the drilled hole, and placing gravel or grout in the space between the drilled hole and the casing. The testing process will involve installing a test pump in the well, performing a step-drawdown test and constant-rate



Source: Ronald M. Fukumoto Engineering, Inc.

Figure 2 Proposed Wailuku Exploratory Well Site Plan

0 20 Feet
10 40

Prepared for: County of Maui, Department of Water Supply

MUNEKIYO & HIRAGA, INC.

RFE\Waikapu Well\siteplan

test, taking water samples and performing water quality tests, and removing the test pump. Design of the exploratory well will conform to requirements of the CWRM, State Department of Health (DOH) wellhead protection protocols, and DWS standards.

Table 1 below summarizes the design data for the exploratory well. This data is an update of the preliminary design data presented in **Appendix "A"**. **Figure 3** illustrates the design for the Wailuku Exploratory Well. **Appendix "B"** provides the construction plans for the proposed Wailuku Exploratory Well.

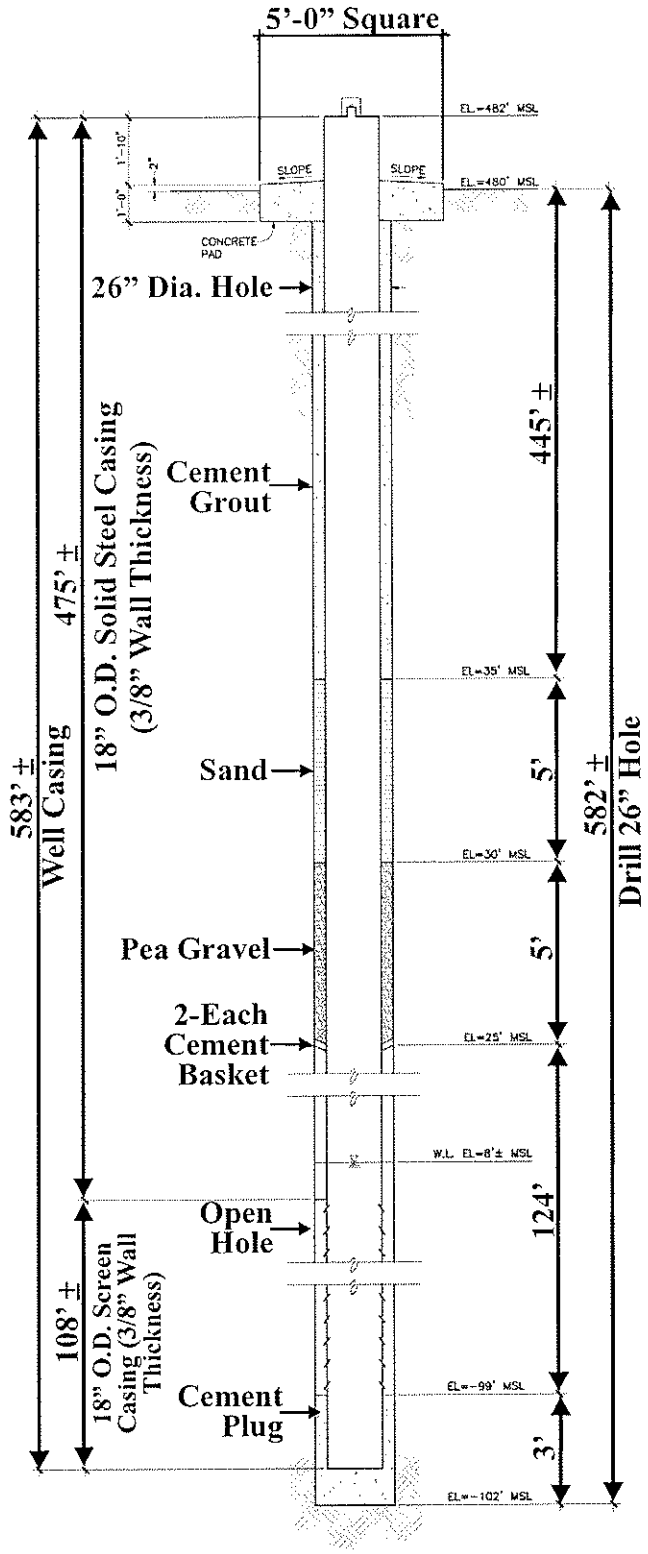
Table 1. Wailuku Exploratory Well Design Data

Description	Value	Unit
Installed Peak Capacity	1,400	Gallons per minute
24-hour Capacity	2.0	Million gallons per day (MGD)
16-hour Capacity	1.3	MGD
Well Diameter	26	Inches
Casing Diameter	18	Inches
Surface Elevation	480	Feet above mean sea level
Bottom Elevation	-102	Feet above mean sea level
Total Depth	582	Feet
Solid Casing with Grout Seal	474	Feet
Louvered Casing with Open Hole	108	Feet

The Wailuku Exploratory Well is anticipated to produce good quality groundwater at an installed capacity of 1,400 gallons per minute (gpm) or approximately 2.0 MGD. Pump and water quality tests will be performed to determine if the exploratory well will be suitable as a new potable water source. Should the tests confirm its suitability, the subject property would also accommodate the future construction of a pumping station consisting of a pump pad and piping, a pump control enclosure, and a service driveway.

D. PROJECT COSTS AND IMPLEMENTATION

The cost of the proposed project is estimated to be $675,000.00. Construction and testing of the exploratory well are anticipated to take 270 calendar days to complete.



Source: Ronald M. Fukumoto Engineering, Inc.

Figure 3 Proposed Wailuku Exploratory Well
Well Design

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Prepared for: County of Maui, Department of Water Supply

E. CHAPTER 343, HAWAII REVISED STATUTES (HRS) REQUIREMENTS

The Wailuku Exploratory Well will be funded by the County of Maui. The use of public funds triggers compliance with the Hawaii Revised Statutes (HRS), Chapter 343 requirements. Therefore, this Environmental Assessment (EA) is being prepared pursuant to Title 11, Chapter 200, Hawaii Administrative Rules (HAR), Environmental Impact Statement Rules to evaluate the proposed project's technical characteristics, environmental and socio-economic impacts, and alternatives, as well as to advance findings relative to the significance of the project's potential impacts and proposed mitigation measures. The Approving Agency for the EA will be the Maui County, DWS. It should be noted that if the exploratory well is suitable as a new potable water source, the County will prepare a separate EA for the future construction of a pumping station and other improvements associated with the permanent Wailuku Well.

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

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

A. PHYSICAL SETTING

1. Surrounding Land Uses

a. Existing Conditions

The proposed project is located west of Old Wailuku Town within the Kehalani Mauka development. Kehalani Mauka is part of the larger Kehalani master-planned community, a 550-acre development that will have 2,400 homes when completed. The subject property and surrounding area is currently vacant and undeveloped. The proposed well will be located within a future 5-acre park, which will be completed as adjacent developments are built. Existing single-family development borders the future park site on the south and east. The Kehalani Project District Master Plan calls for future multi-family development for areas north and west of the park and well site. These developments are part of the last phase of Kehalani and may be as far as ten (10) years until completion. Refer to **Figure 1**.

Wailuku Town is located further north and east of the project site, beyond the Kehalani Mauka development. Wailuku serves as the County seat and the primary location of many State and Federal offices. Wailuku Town is also characterized by a mix of commercial uses, including offices, shops, and restaurants.

b. Potential Impacts and Mitigation Measures

The proposed exploratory well will be confined to an area of about 12,000 square foot within the Kehalani Mauka development. Although the well site is located within a future residential development, its specific siting within a future park provides a buffer between the proposed well and residential homes. Furthermore, the construction and testing of the proposed well is

expected to be completed prior to the construction of the proposed multi-family development and park at Kehalani Mauka.

The proposed project is intended to replace Shaft 33, an existing water source that is also located within the Kehalani Mauka development, and provide potable water to existing and new development in the Wailuku area. Due to the replacement nature of the proposed project, the limited site area, and well location within a future park, the Wailuku Exploratory Well will have no adverse impacts to existing land uses in the vicinity.

2. Climate

a. Existing Conditions

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

Historically, in the region, September is the warmest month with an average in the high 80 degrees Fahrenheit (measured at Kahului Airport), while the coolest month is February with an average in the low 60s (Maui County Data Book, 2010).

Rainfall in the region is seasonal, with most precipitation occurring between October and March. Annual rainfall data for Central Maui shows an average of 18.68 inches (Maui County Data Book, 2010).

The winds in the region are predominantly tradewinds from the north-northeast. In general, tradewinds blow stronger in the afternoon. The tradewinds blow onshore toward the warmer land mass during the day; during the evening, the tradewinds blow offshore toward the relatively warmer ocean.

b. Potential Impacts and Mitigation Measures

The construction and testing of the exploratory well is a preliminary step for a permanent water source. Given the preliminary nature of the proposed action, it is not anticipated to alter local micro-climates. As previously discussed, if the exploratory well is suitable as a potable water source, the County will prepare a separate EA for future construction and long-term operations of the permanent Wailuku Well.

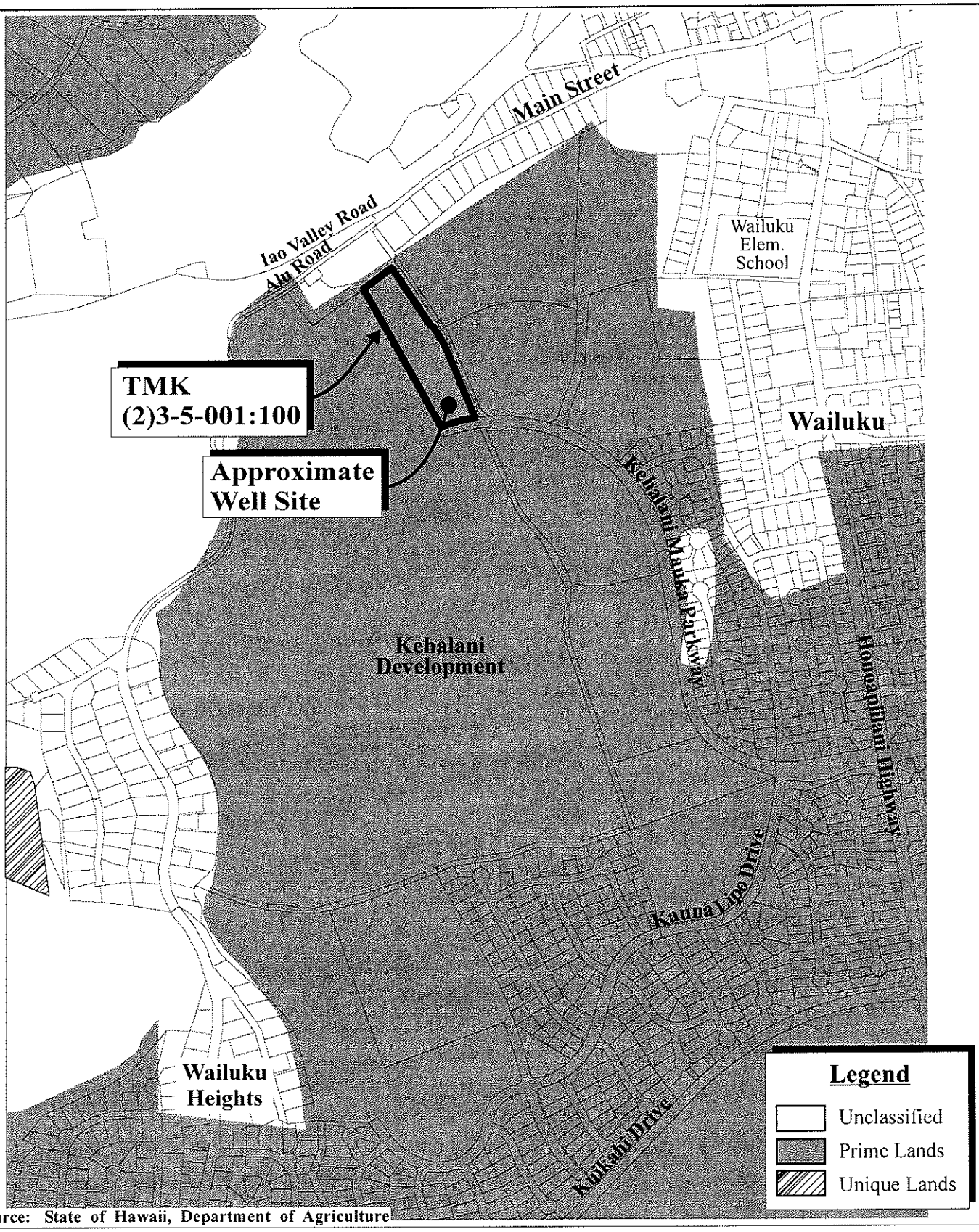
3. Agricultural Lands

a. Existing Conditions

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

The project site, as reflected by the ALISH map, is located on lands designated as "Prime" agricultural lands. See **Figure 4**.

Additionally, the University of Hawaii, Land Study Bureau (LSB) developed the Overall Productivity Rating, which classified soils according to five (5) levels, with "A" representing the class of highest productivity soils and "E" representing the lowest. These letters are followed by numbers which further classify the soil types by conveying such information as texture, drainage and stoniness. The LSB classification for the proposed project area is "A80i". See **Figure 5**. The "A80i" classification reflects an Overall Productivity Rating of A, the highest possible rating. The soils are characterized as non-stony with inclusions of stony areas. Soil depths are over 30 inches and an



Source: State of Hawaii, Department of Agriculture

Figure 4 Proposed Wailuku Exploratory Well

Agricultural Land of Importance to the State of Hawaii

0 0.05 0.1 0.2 Mile

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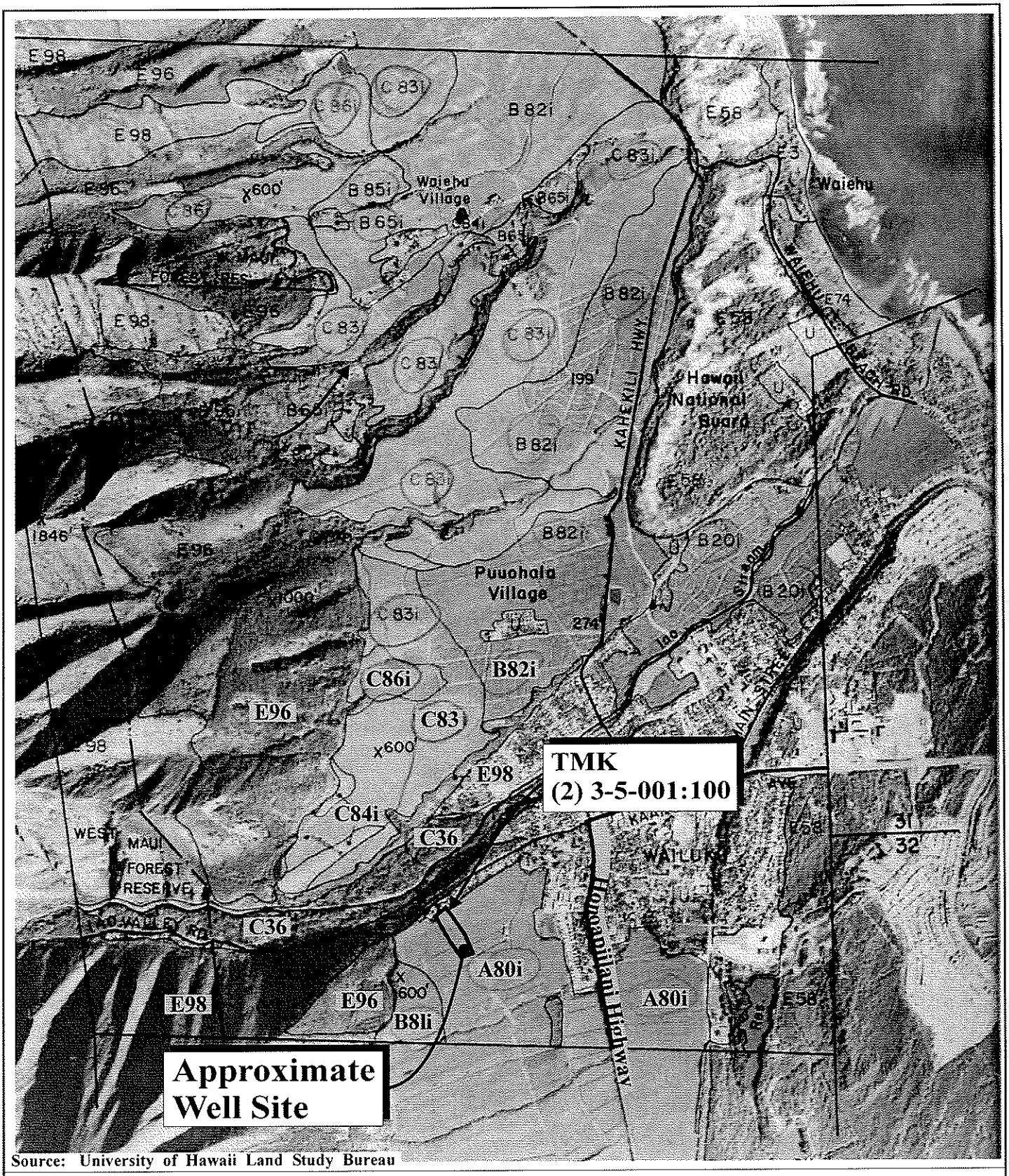
RFE\Waikapu Well\ALISH



Source: University of Hawaii Land Study Bureau

Figure 5 Proposed Wailuku Exploratory Well

Land Study Bureau Productivity Rating

0 6,950 Feet/Inch
3,475 13,900

MUNEKIYO & HIRAGA, INC.

Prepared for: County of Maui, Department of Water Supply

RFE\Waikapu Well\LSBProductivity

average slope of 0 to 10 percent. The soil is of fine grain and well-drained. This land type is typically found at an elevation of 100 to 1,500 feet and experiences a mean annual rainfall of 25 to 40 inches. The soils are dark reddish brown in color and are part of the Waikapu series (UH Land Study Bureau, 1967).

The project site and surrounding areas were cultivated with sugar cane from the mid-1800s through the 1990s. When sugar production ended in the 1990s, the area was converted to cattle grazing. Grazing activity ended approximately eight (8) years ago. In 1991, this area was urbanized from agricultural to Project District 3 (Wailuku) as the Kehalani Master Planned Development. Since that time, the project site has been vacant and undeveloped.

b. Potential Impacts and Mitigation Measures

Although the site is designated as "Prime" agricultural, it has not been in active agricultural production since the 1990s and the area is slated for residential development as part of the Kehalani Mauka development. Given the discontinued agricultural use at the site and proposed urban development plans for the area, along with the limited project size in terms of square footage, adverse impacts to agricultural productivity is not anticipated as a result of the proposed project.

4. Topography and Soils Characteristics

a. Existing Conditions

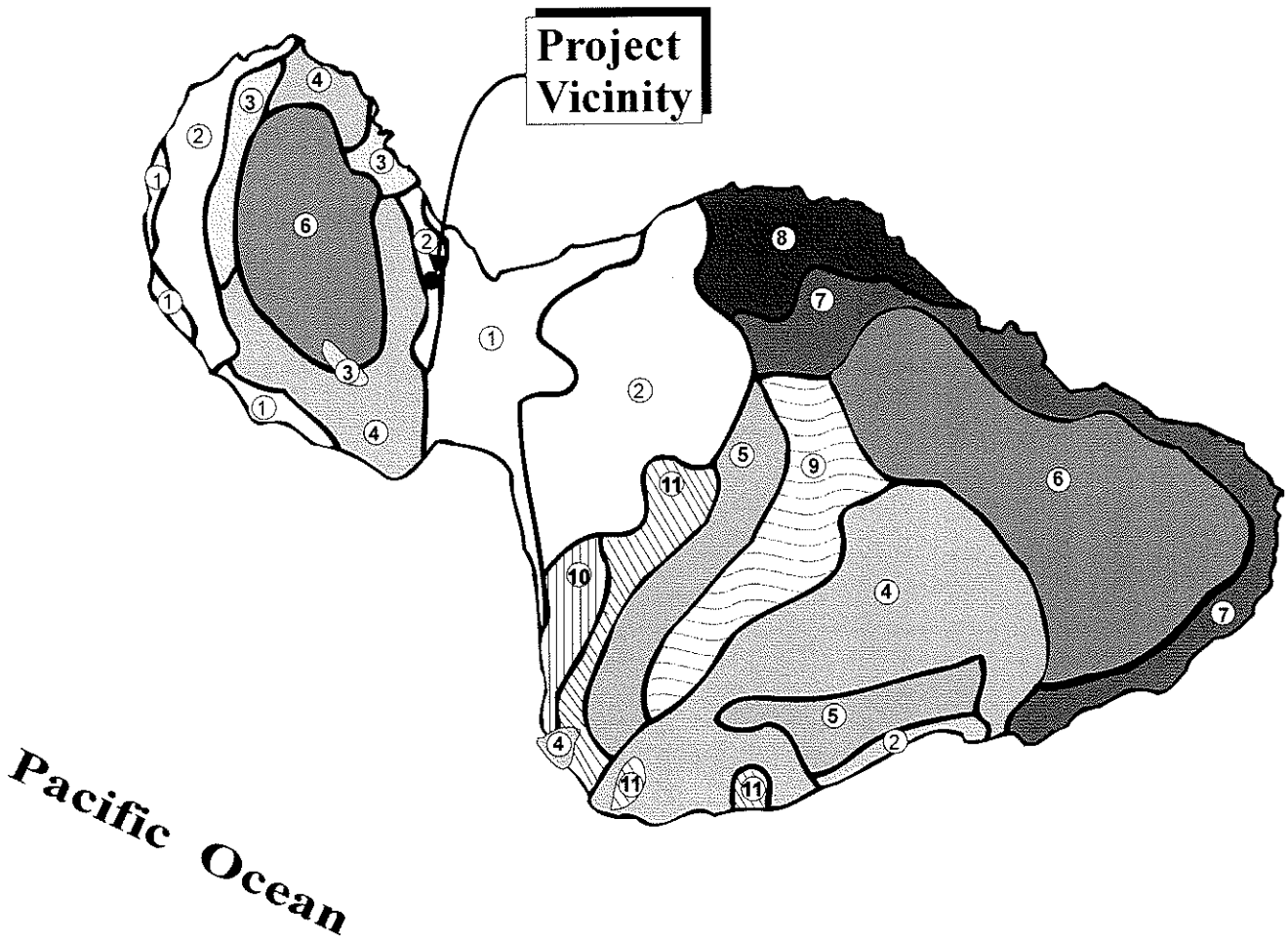
The project site is about 480 feet above mean sea level, generally sloping down from west to east with a surface slope of about eight (8) percent.

The project site consists of soils within the Waiakoa-Keahua-Molokai association, which is found on low uplands and is characterized by moderately deep and deep, nearly level to moderately steep, well-drained soils that have a moderately fine textured subsoil (USDA, 1972). See **Figure 6.** Underlying the project site is Wailuku Silty Clay, 3 to 7 percent slopes (WvB). See **Figure 7**.

Wailuku Silty Clay, 3 to 7 percent slopes (WvB) is a dark reddish-brown silty

LEGEND

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



Map Source: USDA Soil Conservation Service

Figure 6 Proposed Wailuku Exploratory Well
Soil Association Map

NOT TO SCALE

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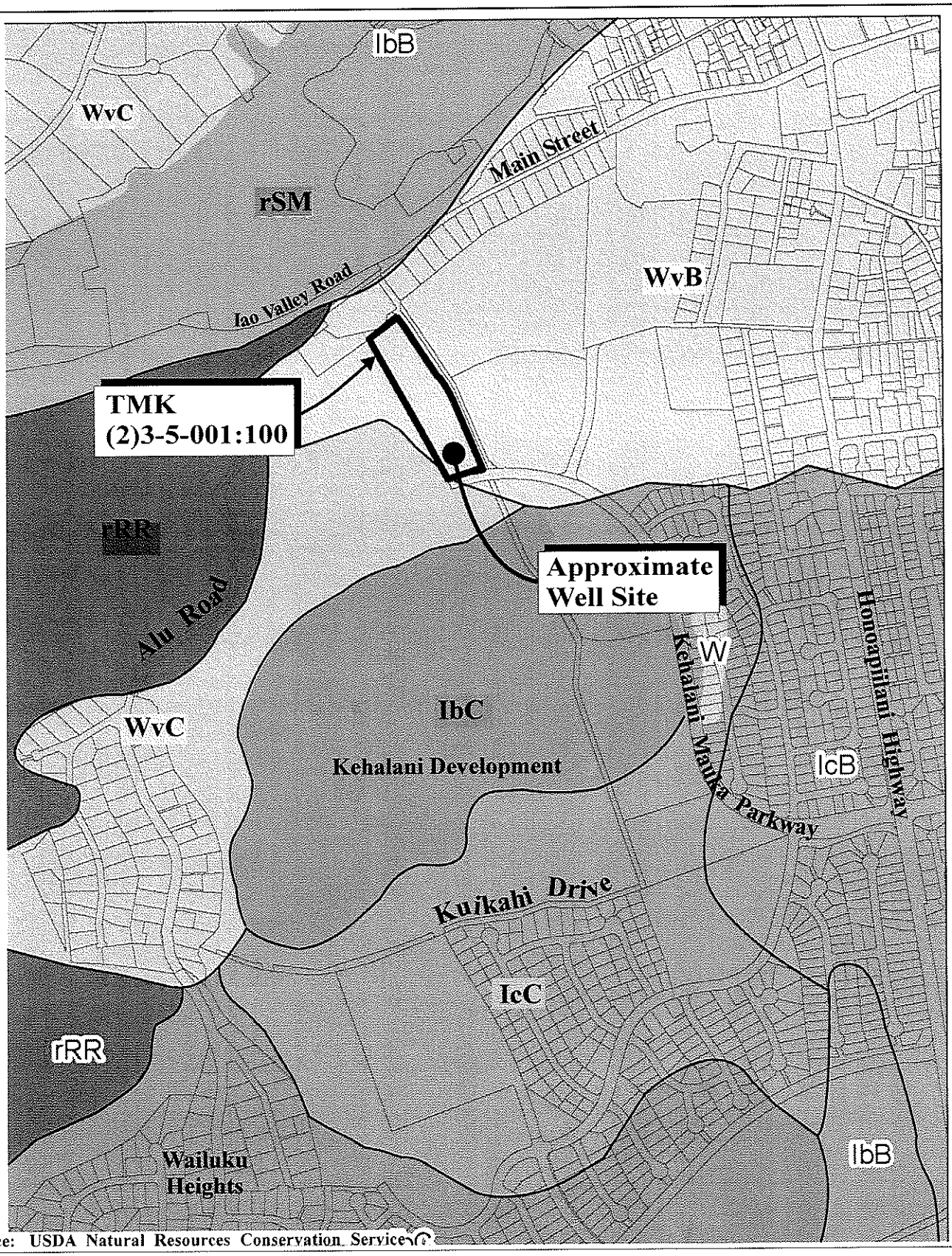
RFE/WailukuWell/Soils



Source: USDA Natural Resources Conservation Service

Figure 7 Proposed Wailuku Exploratory Well

Soil Classification Map

Approx. 0 0.1 0.05 0.2 Mile

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RFE\Waikapu Well\soilclass

clay that is about 12 inches thick. Permeability is moderate, runoff is slow and the erosion hazard is slight (USDA, 1972).

b. Potential Impacts and Mitigation Measures

The proposed exploratory well will be approximately 582 feet deep, with a bottom elevation of -102 feet mean sea level. Adverse impacts to underlying soil conditions and topography are not anticipated to result from the proposed drilling of the exploratory well.

5. Flood and Tsunami Hazards

a. Existing Conditions

The project site is located near the eastern base of the West Maui Mountains. As indicated by the Flood Insurance Rate Map for the County of Maui, the project site is located within Zone X. Zone X is the flood insurance rate zone that corresponds to areas of minimal flooding or areas determined to be outside the 0.2 percent annual chance flood plain. See **Figure 8**.

The project site is located inland and outside the tsunami inundation zone.

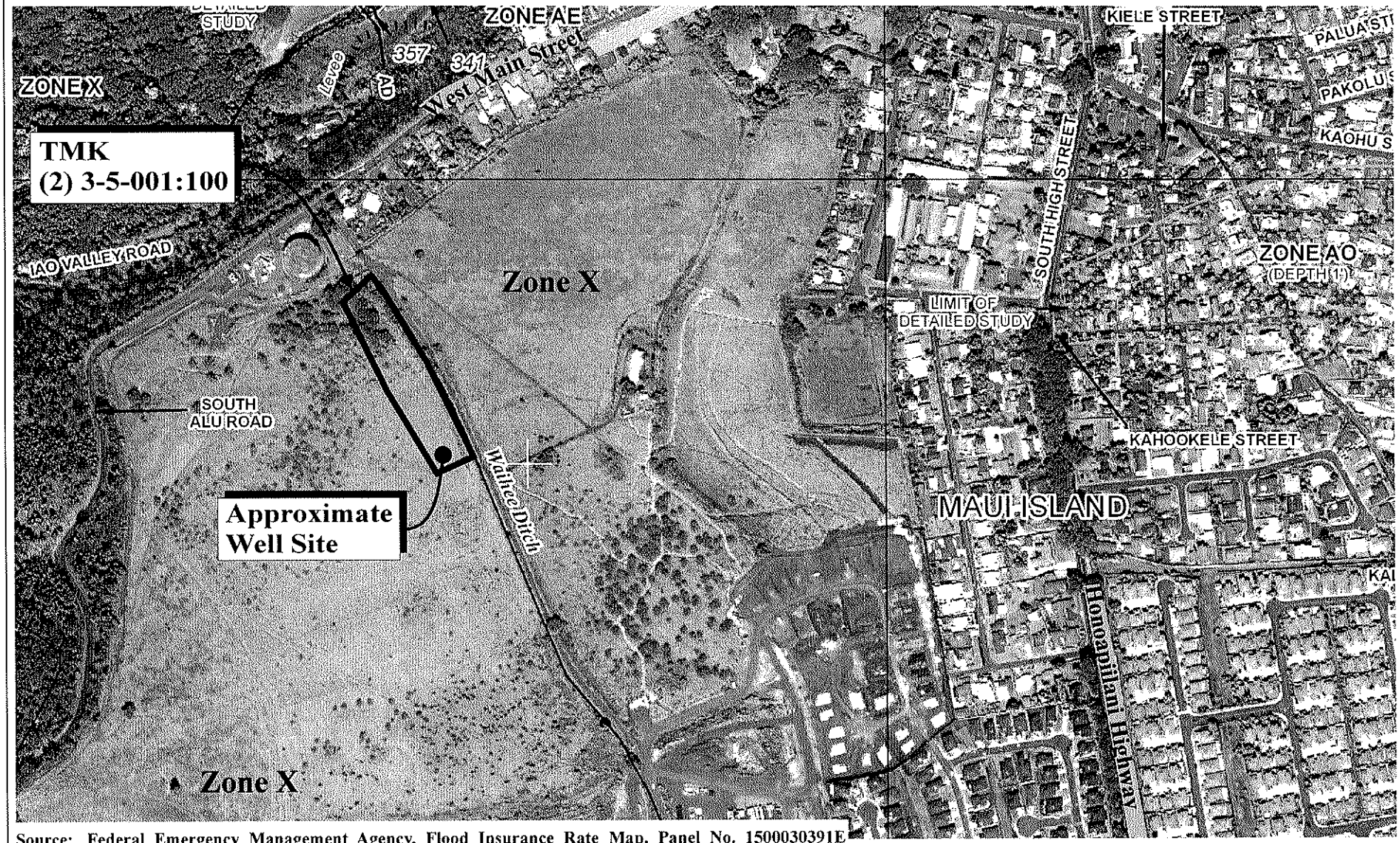
b. Potential Impacts and Mitigation Measures

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

6. Streams and Wetlands

a. Existing Conditions

There are no streams or wetlands within the project site. Iao Stream is located approximately 1,800 feet north of the site. The stream is north of Iao Valley Road and generally runs west to east. This stream is listed by the State of Hawaii, Department of Health as impaired water, indicating that the water quality within the stream may not meet State of Hawaii water quality criteria for streams. Iao Stream is one (1) of the four (4) streams in the Wailuku District that comprises Na Wai Eha. The three (3) other streams are



Source: Federal Emergency Management Agency, Flood Insurance Rate Map, Panel No. 1500030391E

Figure 8

Proposed Wailuku Exploratory Well

Flood Insurance Rate Map

0 250 Feet
125 500

MUNEKIYO & HIRAGA, INC.

Prepared for: County of Maui, Department of Water Supply

RFE/WailukuWell/FIRM

Waikapu, Waiehu, and Waihee. In March 2008, Na Wai Eha was designated as a surface water management area, the first such designation in the state. Any person who is making or wanting to make a withdrawal, diversion, impoundment, or consumptive use of surface water in the area is required to apply for a Surface Water Use Permit (WUP) from the Commission on Water Resource Management. However, no WUP is required for domestic consumption of surface water by individuals, for users of any Maui Department of Water Supply water system, and for the use of rain catchment systems to gather water.

The Kanaha Pond Wildlife Sanctuary is a wetland located approximately 3.5 miles northwest of the project site.

Waihee Ditch, an irrigation canal built in the early 1900s, is located to the east of the property. The irrigation canal flows in a southerly direction and ends at a reservoir in Maalaea. If the reservoir overflows, it discharges into Pohakea Gulch, which terminates in Kealia Pond, a wetland in Kihei.

b. Potential Impacts and Mitigation Measures

As indicated, there are no streams or wetlands on the project site. No adverse impacts to Iao Stream are anticipated to result from the proposed exploratory well. Adverse impacts to Waihee Ditch are also not anticipated as a result of the project. The proposed well site is located on the western portion of the property, further away from Waihee Ditch.

7. Flora and Fauna

a. Existing Conditions

The project site lies on former agricultural lands that slope gently down to the east from the West Maui Mountains. Original vegetation in the area consisted of a dense low saturated native forest and shrubland. However, the area was cleared for sugar cane cultivation in the mid 1800s and the land was plowed, planted, burned, and harvested in continuous cycles for over 100 years. When sugar production ended in the 1990s, the area was converted to cattle grazing. These agricultural practices, along with recent fires, have resulted in an environment that is nearly lacking native plants and animal species.

A biological survey of the project site was conducted by Robert Hobdy in 2010 (see **Appendix "C"**). The vegetation within the well site is a nearly monotypic stand of Guinea grass (*Megathyrsus maximus*) which can grow in dense stands to eight (8) feet deep. Other species of significance included Castor bean (*Ricinus communis*), glycine (*Neonotonia wightii*), opiuma (*Pithecellobium dulce*) and false mallow (*Malvastrum coromandelianum*). Of the 51 plant species recorded during the survey, just one (1) was a common dry land native plant, the uhaloa (*Waltheria indica*), which is widespread in Hawaii and many other Pacific Islands. The remaining species were pasture plants or agricultural weeds (Hobdy, 2010).

The wildlife within and around the project area is composed almost entirely of non-native species. Of a total of two (2) mammals, five (5) birds, one (1) reptile, five (5) insects, and one (1) mollusk, only one (1) indigenous dragonfly, the green darner (*Anax junius*) was recorded. This dragonfly is widespread in Hawaii and also occurs on the American mainland (Hobdy, 2010).

b. Potential Impacts and Mitigation Measures

Under the existing site conditions, there are no federally listed endangered or threatened species of flora or fauna on the project site, largely due to former agricultural activity. The biological survey also did not identify any special wildlife habitats. As a result, the proposed project is not anticipated to have any significant negative impacts on botanical or wildlife resources in the area.

While no protected seabirds were found on the property, the *uau* and *ao*, are known to fly over the area at dawn and dusk to their burrows high in the mountains between March and November each year. The young birds are easily confused by bright lights; therefore, all temporary project lighting will be shielded to direct the light downward. Night operations will be limited to the testing period only, when the continuous test pump will operate during the day and night. There will be no construction work during the night.

8. Archaeological Resources

a. Existing Conditions

An Archaeological Field Inspection was conducted for the proposed well site

in November 2010 by Scientific Consultants Services, Inc. See **Appendix "D"**. The Field Inspection consisted of a 100 percent pedestrian survey to determine the presence or absence of architecture, midden deposits, and/or artifact deposits on the surface of the area, as well as assess the potential for the presence of subsurface cultural deposits. The ground surface and subterranean reaches of the study area have been heavily disturbed over time as a result of intensive industrial sugar cane plantation cultivation, as well as recent construction storage activities. No historic sites, features, midden scatters, or artifacts were documented and the survey was negative for both surface materials and areas thought to potentially contain subsurface cultural materials.

b. Potential Impacts and Mitigation Measures

No surface or subsurface cultural remains were identified during the field inspection. Repeated instances of modern era clearing, grubbing, and agricultural activities at the project site have extensively disturbed the area, making the likelihood of encountering any remaining surface features almost non-existent. The Archaeological Field Inspection concluded that the development of the proposed exploratory well would not have an adverse impact on any significant historic properties and no further archaeological work is needed for the parcel. The Archaeological Field Survey was submitted to the State Historic Preservation Division (SHPD) for review and approval.

Should any archaeological resources or human burials be encountered during ground-altering activities, all work in the vicinity of the find will cease, and SHPD will be notified.

9. Cultural Resources

a. Existing Conditions

A Cultural Impact Assessment (CIA) for the proposed project, dated September 2009, was prepared by Scientific Consultant Services, Inc. See **Appendix "E"**. The purpose of the CIA is to identify any traditional or contemporary native Hawaiian or other cultural practices, resources, sites, and beliefs associated with the project site and surrounding lands. The CIA

was prepared in part by archival and documentary research, including review of Mahele (land division of 1848), as well as communication with organizations having knowledge of the project area, its cultural resources, and its practices and beliefs.

Within the Hawaiian cultural context, the project site is located within Wailuku *ahupuaa*, which translated means "water [of] destruction," referring to the battle of Ke Pani Wai, between Kamehameha I and Kalanikupule.

The Wailuku area is one of the *Na Wai Eha,* or "the four waters," known for the occupancy of chiefly individuals, with many chiefs and much of the area's population residing near or within portions of Iao Valley and lower Wailuku. The Wailuku District and Wailuku *ahupuaa* are frequently mentioned in historical texts and oral-tradition accounts as being politically, ceremonially, and geographically important areas during traditional times. The area was likely settled between c. A.D. 1100 and A.D. 1200. Scattered amongst the agricultural and habitation sites were other places of cultural significance. The Wailuku District was a center of political power often at war with its rival in Hana.

During the Great Mahele of 1848, the Wailuku District was declared Crown Land. Approximately 180 Land Commission Awards (LCA) were granted in Wailuku *ahupuaa* and 100 were granted in the neighboring Waikapu *ahupuaa*. While a handful of foreigners gained control of large parcels of land that would later be used for commercial sugar cane production, the majority of LCAs were awarded to Native Hawaiians, suggesting that the area was densely populated in the mid-19th century. The project site falls under LCA 387, which was awarded to the American Board of Commissioners for Foreign Missions.

Land use in and around the project area in the mid-19th and early 20th centuries was largely devoted to commercial sugar cane and pineapple production. Sugar plantations and mills have been located in the Wailuku and Waikapu area since the 1860s. The Hopoi Sugar Camp, which shows up on maps dated to 1922, was located just south of the project area near the Hopoi Reservoir.

b. Potential Impacts and Mitigation Measures

The CIA concludes that the exercise of native Hawaiian rights, or any other ethnic group, related to gathering, access or other customary activities will not be affected by the proposed project. Because there were no on-going cultural activities identified within the project area, there are no adverse impacts.

10. Air Quality

a. Existing Conditions

The project site, in general, does not experience adverse air quality conditions. There are no point sources of airborne emissions within close proximity to the project site. Point sources in the surrounding Central Maui region include the Maalaea Power Plant, Puunene Sugar Mill, and rock quarry at Puunene, all of which are well over two (2) miles from the project site. Non-point sources of pollution in the vicinity of the project site include: vehicular exhaust from Honoapiilani Highway and other nearby roadways; dust generated by construction activities in the Kehalani Mauka development; and/or burning activities from sugar cane harvesting and cultivation operations conducted in the central valley area. Emissions from these sources, however, are quickly dispersed by prevailing tradewinds. Overall, Maui's air quality index is rated good, with 97 percent of days with good air quality and 3 percent with moderate air quality (Scorecard, 2010).

b. Potential Impacts and Mitigation Measures

During construction, airborne particulates as a result of construction-related activities may temporarily affect the ambient air quality within the immediate vicinity of the project site. Mitigative measures will include utilization of water wagons and sprinklers to control dust, as well as other appropriate Best Management Practices to ensure that fugitive dust from the project area is minimized. By effectively employing these mitigative measures, construction-related activities are not anticipated to pose a significant impact to the air quality in the surrounding area.

Given the preliminary nature of the exploratory well, the proposed project is not anticipated to have a long-term adverse impact on air quality parameters.

As indicated, if the well is suitable as a new potable water source, the County will prepare a separate EA for the construction and long-term operations of a permanent Wailuku Well.

11. Noise

a. Existing Conditions

The predominant source of noise in the vicinity of the project site stems from traffic traveling along Kehalani Mauka Parkway and other residential roadways in the Kehalani development. The lands abutting the north and west of the proposed site are former agricultural lands that are currently vacant and undeveloped. Single-family homes located to the south and east of the project site are not major noise-generators.

b. Potential Impacts and Mitigation Measures

Ambient noise conditions may be temporarily affected by construction- and drilling-related activities. Heavy construction machinery, necessary for drilling and casing the exploratory replacement well, are anticipated to be the dominant noise-generating sources during the construction period. Mitigation measures for construction-related activities will include using proper equipment and conducting regular vehicle maintenance, both of which are anticipated to reduce noise levels. Equipment mufflers or other noise attenuating equipment may also be employed as required. Noisy construction activities will be restricted to hours between 7:00 a.m. and 3:30 p.m., Monday through Friday, excluding holidays. By effectively employing these measures, potential noise-related impacts from construction-related activities will be mitigated to an acceptable level. Ambient noise impacts associated with the project will be limited to a 270-calendar day time frame during which the construction and testing of the exploratory well will be completed.

As mentioned previously, if the exploratory well is determined to be suitable as a potable water source, a separate EA will be prepared for the construction and operation of a permanent pumping station at the site. Therefore, any potential noise impacts related to the long-term operation of the site as a pumping station will be analyzed separately.

12. Scenic and Open Space Resources

a. Existing Conditions

There are two (2) County-identified view corridors in the vicinity of the project site. Iao Valley Road, to the northwest of the proposed well site, is rated as an exceptional scenic corridor in the Draft Maui Island Plan while Honoapiilani Highway, to the southeast of the well, is identified as a medium and high scenic corridor. Open space resources in the region include the slopes of the West Maui Mountains and Haleakala.

b. Potential Impacts and Mitigation Measures

The proposed project will not affect views from Wailuku, Honoapiilani Highway, or Iao Valley Road. As a proposed exploratory well, much of the improvements associated with the project will occur below ground. Preliminary design of the exploratory replacement well indicates the well casing will extend two (2) feet above ground. As such, the proposed project will not negatively affect scenic resources. Further, with the proposed well site occupying about 12,000 square feet, the project will not adversely affect open space resources.

13. Beach and Mountain Access

a. Existing Conditions

The project site is located approximately 2.5 miles from the nearest beach and approximately a quarter of a mile from the foot of the West Maui mountains. Further, a Cultural Impact Assessment (CIA) was completed for the proposed project by Scientific Consultant Services, Inc., and concluded that the exercise of native Hawaiian rights, or any other ethnic group, related to gathering, access, or other customary activities would not be affected by the proposed project. Refer to **Appendix "E"**.

b. Potential Impacts and Mitigation Measures

There are no traditional access corridors identified by the CIA within the project site and due to the distances to the nearest beach and mountain, there are no anticipated adverse impacts to beach and mountain access from the proposed project.

B. SOCIO-ECONOMIC ENVIRONMENT

1. Population

a. Existing Conditions

The population of residents and visitors in the County on any given day (de facto population) is projected to increase from 169,499 persons in 2000 to 262,264 persons in 2030, a gain of more than 54 percent. The County's resident population is expected to grow at nearly an identical rate with the resident population of the County of Maui reaching 199,550 persons by 2030 (SMS, 2006).

b. Potential Impacts and Mitigation Measures

The proposed Wailuku Exploratory Well, if determined to be suitable as a new water source, will potentially provide potable water to existing and new users of DWS's Central Maui Water System which services Central Maui, South Maui, and Paia areas. However, in this exploratory stage, no impacts to population are anticipated to result from project implementation.

2. Economy

a. Existing Conditions

The Wailuku region is Maui County's center of governmental activity. Along with neighboring Kahului, the region encompasses a broad range of commercial, service, and public sector activities. In addition, the region is surrounded by approximately 32,000 acres of sugar cane. This vast expanse of agricultural land, managed by Hawaiian Commercial & Sugar Company (HC&S), are key contributors to the local economy.

Not-seasonally-adjusted unemployment rates for both Maui County and the Island of Maui in February 2011, were 7.9 percent and 7.8 percent, respectively. These rates both decreased from the February 2010 unemployment rates of 8.5 percent and 8.4 percent, respectively (DLIR, March 2011). The current economic recession has affected Maui County's major industries of tourism, construction and real estate due to, among other factors, reduction in discretionary income and tightening of credit. However,

as previously noted, employment has improved slightly since 2010.

b. Potential Impacts and Mitigation Measures

In the short term, the proposed project will provide construction-related revenue and employment. Accordingly, the project will have a beneficial impact on the local economy during the construction phase. The estimated cost of the project is $675,000.00.

In the long term, the exploratory well is not anticipated to have a significant impact on the economy of Maui County. Again, if the well is deemed suitable as a potable water source, a separate EA will be prepared for construction and long-term operations of a permanent well. Therefore, any potential impacts on the economy related to a permanent well will be analyzed separately.

C. PUBLIC SERVICES

1. Police and Fire Protection

a. Existing Conditions

Police protection for the Wailuku and Waikapu region is provided by the Maui County Police Department headquartered on Mahalani Street, approximately 1.5 miles north of the project site. The region is served by the Department's Central Maui station, which is divided in three (3) sectors. Each sector is divided into three (3) beats, each patrolled by a single officer.

Fire prevention, suppression, and protection services for the Waiehu, Waihee, and Wailuku regions are provided by the County Department of Fire and Public Safety's Wailuku station, located on Kinipopo Street in Wailuku Town, approximately 0.9 mile northeast of the project site. The region is also served by the Department's Kahului Station, located on Dairy Road, approximately 3.5 miles east of the project site.

b. Potential Impacts and Mitigation Measures

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

2. Medical Services

a. Existing Conditions

The island's major medical facility is Maui Memorial Medical Center, located approximately 3.0 miles north of the project site, midway between Wailuku and Kahului. Acute, general, and emergency care services are provided at the 201-bed facility. Other private medical service providers in the Central Maui region, which have regular hours, include Maui Medical Group and Kaiser Permanente.

b. Potential Impacts and Mitigation Measures

As a non-habitable project, the proposed Wailuku Exploratory Well will not affect requirements for medical services. As with police and fire protection services, service area limits for medical emergency responders will also not be affected by the proposed project.

3. Solid Waste

a. Existing Conditions

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

Maui Demolition and Construction Landfill, a privately owned facility, accepts solid waste and concrete from demolition and construction activities. This facility is located at Maalaea, south of the project site, near Honoapiilani Highway's junction with North Kihei Road and Kuihelani Highway.

b. Potential Impacts and Mitigation Measures

The project site is currently vacant and undeveloped. Construction waste which may be generated from implementation of the project will be recycled or disposed of at the appropriate construction waste disposal location. With these solid waste management measures, the contribution of construction

waste to the landfills will be minimized. Thus, the proposed action is not anticipated to adversely affect capacity parameters of the County's solid waste system. After project construction, the proposed exploratory well will generate no solid waste.

4. Recreational Resources

a. Existing Conditions

The Wailuku Exploratory Well is proposed at the site of a future park. In addition, the County's Wailuku Elementary School Park is located less than a quarter of a mile from the site, providing baseball/softball fields, basketball courts, a volleyball court, and a playground.

b. Potential Impacts and Mitigation Measures

The proposed project will not create a need for additional recreational facilities. Therefore, the proposed project is not anticipated to adversely impact existing public recreational facilities.

5. Schools

a. Existing Conditions

The Wailuku-Kahului region is served by the State Department of Education's (DOE) public school system and by several privately operated schools. Public schools operated by DOE in the Kahului area include Lihikai, Kahului, and Pomaikai Elementary Schools (Grades K-5); Maui Waena Intermediate School (Grades 6-8); and Maui High School (Grades 9-12). Existing DOE public schools in the Wailuku area include Wailuku Elementary School (Grades K-5); Iao Intermediate School (Grades 6-8); and Baldwin High School (Grades 9-12). The University of Hawaii-Maui College, located north of the project site in Kahului, serves as the island's primary higher education institution.

b. Potential Impacts and Mitigation Measures

Inasmuch as the proposed Wailuku Exploratory Well is a non-residential project that will be testing the capacity and quality of a potential potable water source, the proposed project is not anticipated to impact school

enrollments or facility requirements.

D. INFRASTRUCTURE

1. Roadways

a. Existing Conditions

The well site is within an undeveloped parcel approximately 200 feet from the end of the improved section of Kehalani Mauka Parkway. Access to the well site will be provided by an existing temporary access road from the end of the improved Kehalani Mauka Parkway.

Kehalani Mauka Parkway is a two-lane roadway that serves as the primary collector road throughout the Kehalani Mauka development west of Honoapiilani Highway. Kehalani Mauka Parkway currently ends south of the proposed well site. However, as future development of the Kehalani Mauka subdivision continues, the roadway will be extended, forming a loop that begins and ends near the intersection of Kehalani Parkway and Honoapiilani Highway.

Access to Kehalani Mauka Parkway is provided by Honoapiilani Highway, a north-south, two-way, two-lane, undivided State-owned arterial road. Honoapiilani Highway begins as the continuation of South High Street near Kahookele Street, and continues southward through Waikapu, Maalaea, and wraps around the "Pali" towards West Maui. The intersection of Honoapiilani Highway and Kehalani Parkway is signalized, with left-turn and right-turn lanes from Honoapiilani Highway onto Kehalani Parkway.

b. Potential Impacts and Mitigation Measures

There will be a short-term increase in traffic in the vicinity of the proposed well site associated with construction workers and equipment entering and leaving the project site. A maximum of five (5) construction and DWS employees are expected to work at the project site. Parking for construction employees will be located on the project site to minimize additional traffic impacts. Limited construction access use will be confined to the 270-day construction and testing period. As discussed previously, long-term traffic impacts associated with the establishment of a permanent pumping station

and well at this location would be evaluated in a separate Environmental Assessment.

2. Water

a. Existing Conditions

Water to the Wailuku-Kahului region is provided by the Maui County, DWS Central Maui System which also serves the South Maui and Paia areas. The main sources of water for this system include the Iao and Waihee aquifers, the Iao Tunnel, and the Iao-Waikapu Ditch.

The project site is located within the Iao Aquifer System, which has a sustainable yield of 20 million gallons per day (MGD). In 2003, the CWRM designated the Iao Aquifer System as a groundwater management area and limited groundwater withdrawal from the aquifer to 90 percent of its sustainable yield or 18 MGD, on a 12-month moving average basis.

Shaft 33, the existing well located to the northeast of the project area, was constructed in 1946 and put into operation in 1948 to provide irrigation water for Wailuku Sugar Company's sugar cane operations. Through an agreement with Kehalani Mauka LLC, the landowner, the DWS has pumped groundwater from Shaft 33 for a number of years. DWS uses one (1) of the three (3) wells at the site equipped with a 3,900-gallons-per-minute pump and pumps an average of nearly 5 MGD. The use of Shaft 33 was intended to be an interim measure until the development of other new wells. Water pumped from Shaft 33 provides water to the Central Maui Water System.

b. Potential Impacts and Mitigation Measures

The proposed Wailuku Exploratory Well is one (1) of six (6) wells intended to replace Shaft 33. Two (2) DWS well development projects - the Waikapu Tank Site Well and Iao Tank Site Well - in the Iao Aquifer System are under construction and three (3) additional wells are planned in response to the anticipated closure of Shaft 33. As discussed previously, the exploratory well, along with the additional replacement wells, is consistent with the DWS ongoing efforts to spread out the pumping within the aquifer to prevent a degradation of water quality due to concentrated pumping at a few locations. The proposed project constitutes exploration of a replacement water source

rather than a new water source. The proposed exploratory well will not increase the total amount of pumping from the Iao Aquifer System. As such, the project is not anticipated to have negative impacts to the Iao Aquifer system, and thus the County's water system.

Pump testing at the proposed exploratory well may result in a temporary drop in the water table level. However, the water level is expected to stabilize during the continuous pump test. Following testing, the water level is expected to rise back to its initial level.

The project contractor will discharge the pump testing water in an appropriate manner. Discharge and disposal options include containing the water in a sump, spreading the water and allowing it to percolate, discharging the water into Waihee Ditch, discharging water into the storm drain system, or collecting the water in a tanker truck. The Department of Army has indicated that the discharge of ground water into the Waihee Ditch would not require a Department of Army permit. The project contractor will implement appropriate measures to mitigate potential impacts resulting from the discharge of pump test water.

As previously discussed, long-term impacts to water resources will be analyzed separately for a permanent Wailuku Well, if the proposed exploratory well is deemed a suitable potable water source.

3. Wastewater

a. Existing Conditions

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

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

b. Potential Impacts and Mitigation Measures

The proposed project is limited in scope to the drilling, casing, and testing of an exploratory replacement water well and is not anticipated to impact regional wastewater treatment facilities.

4. Drainage

a. Existing Conditions

The proposed project site slopes from west to east with a surface slope of about eight percent. There are no drainageways at the site and storm runoff generally sheet flows into adjacent downstream properties.

b. Potential Impacts and Mitigation Measures

The proposed project involves the grading and clearing of the immediate work area to create a gently sloping pad. Because the proposed exploratory well involves minimal land alteration activities, it is not anticipated to alter the existing drainage pattern in the area.

Nevertheless, during the drilling and testing of the proposed exploratory well, best management practices will be implemented to mitigate potential erosion. Specifically, a grated drain inlet filter will be installed at the end of Kehalani Mauka Parkway near the temporary existing access road to the well site. The filter will be inspected weekly and after storm events and sediment will be removed and disposed of. In addition, silt fences will be installed along the eastern, down-slope border of the project site. The silt fences will be inspected weekly and after storms. Sediment will be removed and stabilized when it reaches a height of eight inches at the fence.

As discussed previously, the project contractor will discharge the pump testing water in an appropriate manner. Several options exist for the discharge and disposal of testing water as noted in the above water section. The contractor will implement appropriate measures to mitigate potential impacts from the disposal of discharge waters.

The long-term impacts to drainage will be further analyzed in a separate EA if the exploratory well is determined to be a suitable potable water source.

5. Electricity and Telephone Systems

a. Existing Conditions

There are underground electrical and telephone lines located along Kehalani Mauka Parkway. There are no electrical or telephone utilities currently serving the project site.

b. Potential Impacts and Mitigation Measures

Well construction generally does not require any electrical energy from the local power company. Drill rigs are often diesel operated equipment. The testing of the exploratory well generates the highest energy consumption needs. The test pump will need to be capable of pumping 1,400 gpm for a continuous testing period of 96 hours. Power for the pump is usually from diesel operated equipment. Following the 270-day construction and testing period, all equipment will be removed and there will be no energy consumption at the site. Telephone services are also not needed for the exploratory well. As such, the proposed project is not anticipated to have adverse impacts on the electrical and telephone services in the area.

If the well site is deemed a suitable potable water source, permanent power would be brought in for the long-term operation of a permanent Wailuku Well. However, the impacts of permanent electrical needs for the well would be analyzed in a separate EA.

E. CUMULATIVE AND SECONDARY IMPACTS

Cumulative impacts are defined by Title 11, Chapter 200, Hawaii Administrative Rules (HAR), Environmental Impact Statement Rules as"

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

A "secondary impact" or "indirect effect" from the proposed action are defined by Title 11, Chapter 200, HAR as

> *"effects which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable."*

As mentioned previously, the proposed project is one (1) of six (6) water wells planned to replace the existing Shaft 33. Two (2) replacement wells, the Waikapu Tank Site Well and the Iao Tank Site Well, are currently under construction. The locations of the three (3) remaining exploratory wells have not yet been identified. Upon completion, the six (6) replacement wells will replace groundwater pumping that is currently concentrated at Shaft 33. The dispersal of pumping throughout the Iao Aquifer System will positively impact the quality of water pumped and the sustainability of the aquifer. The proposed Wailuku Exploratory Well along with the five (5) other replacement wells are not anticipated to cumulatively have a negative impact on the physical environment. Refer to **Appendix "A"**.

The project is not anticipated to have a significant adverse impact on the physical environment. Consequently, the proposed action is not anticipated to result in significant adverse secondary impacts.

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

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

A. STATE LAND USE DISTRICTS

Pursuant to Chapter 205, Hawaii Revised Statutes (HRS), all lands in the State have been placed into one (1) of four (4) land use districts by the State Land Use Commission. These land use districts have been designated "Urban", "Rural", "Agricultural", and "Conservation". The project site is classified "Urban" and wells are a permitted use within Urban Districts. See **Figure 9**.

B. CHAPTER 226, HRS, HAWAII STATE PLAN

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

1. Objectives and Policies of the Hawaii State Plan

The proposed action is consistent with the following objectives and policies of the Hawaii State Plan:

Chapter 226-11, HRS, Objectives and Policies for the Physical Environment - Land-Based, Shoreline, and Marine Resources.

226-11(b)(1), HRS: Exercise an overall conservation ethic in use of Hawaii's natural resources.

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

226-11(b)(4), HRS: Manage natural resources and environs to encourage their beneficial and multiple use without generating costly or

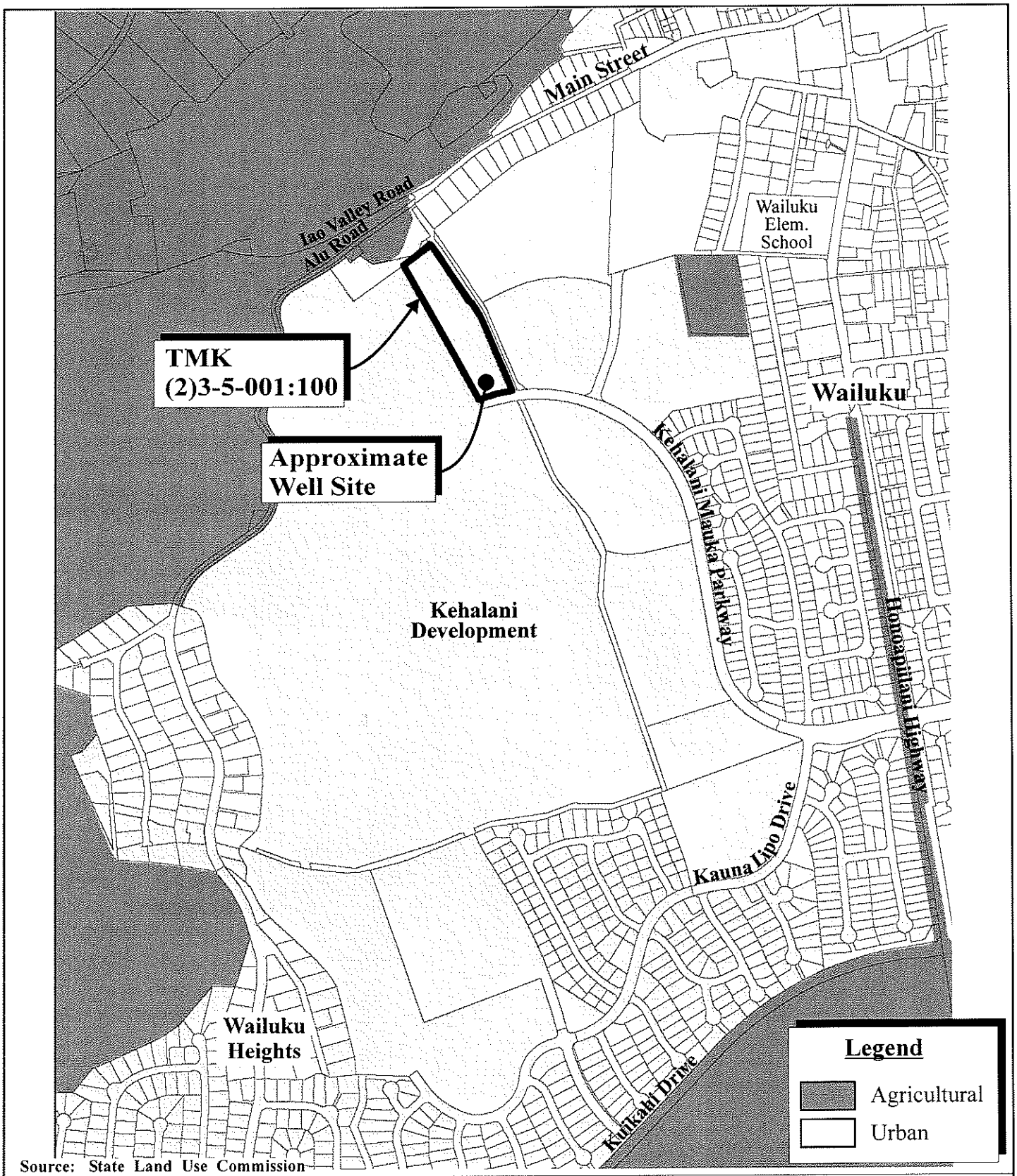


Figure 9 Proposed Wailuku Exploratory Well

State Land Use District Map

Approx 0 0.1 Mile 0.05 0.2

MUNEKIYO & HIRAGA, INC.

Prepared for: County of Maui, Department of Water Supply

RFE\Waikapu Well\SLUD

irreparable environmental damage.

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

Chapter 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)(3), HRS: Promote effective measures to achieve desired quality in Hawaii's surface, ground, and coastal waters.

Chapter 226-14, HRS, Objectives and Policies for the Facility Systems - In General.

226-14(b)(1), HRS: Accommodate the needs of Hawaii's people through coordination of facility systems and capital improvement priorities in consonance with state and county plans.

Chapter 226-16, HRS, Objectives and Policies for the Facility Systems - Water.

226-16(b)(1), HRS: Coordinate development of land use activities with existing and potential water supply.

226-16(b)(2), HRS: Support research and development of alternative methods to meet future water requirements well in advance of anticipated needs.

226-16(b)(4), HRS: Assist in improving the quality, efficiency, service, and storage capabilities of water systems for domestic and agricultural use.

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

The proposed action coincides with the following priority guidelines of the Hawaii State Plan.

Chapter 226-103, HRS, Economic Priority Guidelines:

226-103(e)(3), HRS: Increase the support for research and development of economically feasible alternative water sources.

226-103(e)(4), HRS: Explore alternative funding sources and approaches to support future water development programs and water system improvements.

C. GENERAL PLAN OF THE COUNTY OF MAUI

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.*

Chapter 2.80B of the Maui County Code, relating to the General Plan and Community Plans, implements the foregoing Charter provision through enabling legislation which calls for a Countywide Policy Plan and a Maui Island Plan (MIP). The Countywide Policy Plan was adopted as Ordinance No. 3732 on March 24, 2010. The MIP is currently in the process of review and formulation by the Maui County Council.

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

> *The countywide policy plan shall provide broad policies and objectives which portray the desired direction of the County's future. The countywide policy plan shall include:*
>
> *1. A vision for the County;*
> *2. A statement of core themes or principles for the County; and*
> *3. A list of countywide objectives and policies for population, land use, the environment, the economy, and housing.*

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

1. Excellence in the stewardship of the natural environment and cultural resources;

2. Compassion for and understanding of others;

3. Respect for diversity;

4. Engagement and empowerment of Maui County residents;

5. Honor for all cultural traditions and histories;

6. Consideration of the contributions of past generations as well as the needs of future generations;

7. Commitment to self-sufficiency;

8. Wisdom and balance in decision making;

9. Thoughtful, island appropriate innovation; and

10. Nurturance of the health and well-being of our families and our communities.

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

1. Natural environment

2. Local cultures and traditions

3. Education

4. Social and healthcare services

5. Housing opportunities for residents

6. Local economy

7. Parks and public facilities

8. Transportation options

9. Physical infrastructure

10. Sustainable land use and growth management

11. Good governance

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

IMPROVE PHYSICAL INFRASTRUCTURE

Goal: Maui County's physical infrastructure will be maintained in optimum condition and will provide for and effectively serve the needs of the County through clean and sustainable technologies.

Objective:

Improve water systems to assure access to sustainable, clean, reliable, and affordable sources of water.

Policy:

- Ensure that adequate supplies of water are available prior to approval of subdivision or construction documents.
- Develop and fund improved water-delivery systems.
- Retain and expand public control and ownership of water resources and delivery systems.
- Improve the management of water systems so that surface-water and groundwater resources are not degraded by overuse or pollution.
- Seek reliable long-term sources of water to serve developments that achieve consistency with the appropriate Community Plans.

Objective:

Improve the planning and management of infrastructure systems.

Policies:

- Provide a reliable and sufficient level of funding to enhance and maintain infrastructure system.
- Maintain inventories of infrastructure capacity, and project future infrastructure needs.
- Ensure that infrastructure is built concurrent with or prior to development.

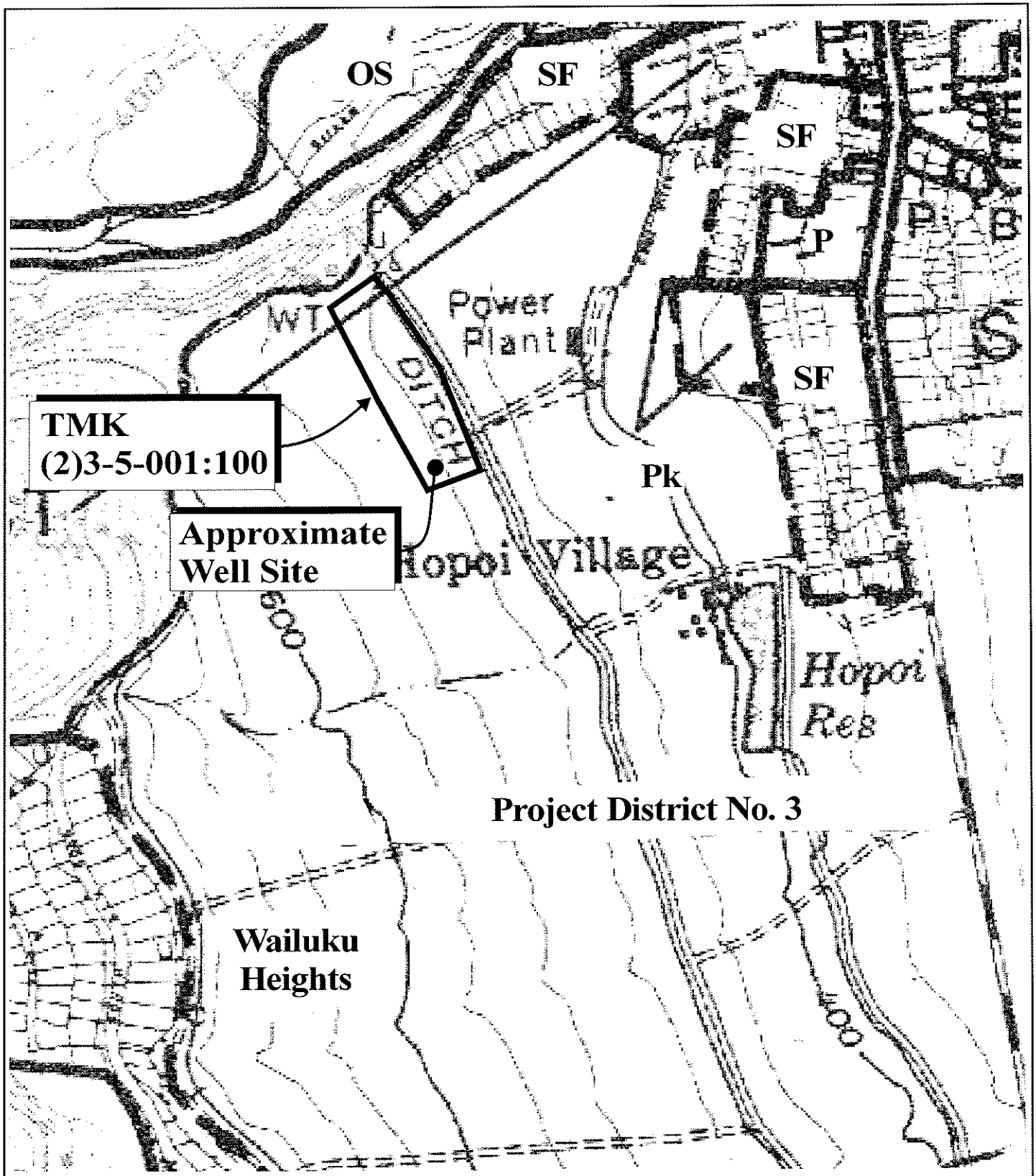
In summary, the proposed Wailuku Exploratory Well project is consistent with the above-noted themes and principles of the Countywide Policy Plan.

D. WAILUKU-KAHULUI COMMUNITY PLAN

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

The Wailuku-Kahului Community Plan was adopted by the County of Maui and took effect in 2002. Land use guidelines are set forth by the Wailuku-Kahului Community Plan Land Use Map. The project area is designated "Project District 3" by the Wailuku-Kahului Community Plan Map. See **Figure 10**. The guidelines for Project District 3 calls for:

> *...units of all types, including single family detached, attached and various forms of multi-family units including townhouses and garden apartments. Alternatives to promote affordable housing such as experimental and demonstration housing shall be considered in the residential development.*
>
> *A neighborhood commercial center of at least 20 acres should be provided with convenient access for residences of the project district and adjacent residential areas. Public amenities should include a continuous system of parks and open space areas which would include pedestrian ways and green-belts with buffer zones along the highway.*
>
> *Public use areas should be reserved within the Project District to accommodate a school, park use and any other public facilities that may be required should the need arise in the future.*
>
> *The immediate construction of the Waiale Road extension, from Honoapiilani Highway to its intersection with the Mahalani Road extension, will facilitate access between Kahului and Wailuku.*
>
> *Recommended guidelines for spatial allocations within the project district are:*



Source: County of Maui, Planning Department

Figure 10 Proposed Wailuku Exploratory Well

Wailuku-Kahului Community Plan Map

NOT TO SCALE

Prepared for: County of Maui, Department of Water Supply

MUNEKIYO & HIRAGA, INC.

RFE\Waikapu Well\CommPlanMap

School (elementary)	*10 acres*
Park	*20 acres*
Community center	*5 acres*
Open space, and drainage	*94 acres*
Neighborhood commercial center	*20 acres*
Residential use	*396 acres*
Residential units based on an average density of 5.1 units per acre	*2,000 units*

Wells are an allowed use within the Wailuku-Kahului Community Plan. Further, the proposed action is consistent with the following goals, objectives, and policies of the Wailuku-Kahului Community Plan.

CULTURAL RESOURCES

Goal:

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

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

Objectives and Policies:

- Recognize the importance of historically and archaeologically sensitive sites and encourage their preservation through development project review.

- Require development projects to identify all cultural resources located within the project area as part of initial project studies. Further, require that all proposed activity include recommendations to mitigate potential adverse impacts on cultural resources.

GOVERNMENT

Goal:

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

Objectives and Policies:

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

INFRASTRUCTURE

Goal:

Timely and environmentally sound planning, development and maintenance of infrastructure systems which serve to protect and preserve the safety and health of the region's residents, commuters and visitors through the provision of clean water, effective waste disposal and drainage systems, and efficient transportation systems which meet the needs of the community.

Objectives and Policies:

- Coordinate water system improvement plans with growth areas to ensure adequate supply and a program to replace deteriorating portions of the distribution system. Future growth should be phased to be in concert with the service capacity of the water system.

- Improve the quality of domestic water.

- Protect water resources in the region from contamination, including protecting ground water recharge areas, and wellhead protection areas within a 1.25-mile radius from the wells.

- Coordinate the construction of all water and public roadway and utility improvements to minimize construction impacts and inconveniences to the public.

E. COUNTY ZONING

The project site is located within the "Wailuku-Kahului Project District 3 (Wailuku)",

according to Maui County zoning. The purpose of this project district is to "*provide for a flexible and creative approach to development which considers physical, environmental, social, and economic factors in a comprehensive manner*". And, the intent of this project district is to "*establish a residential community along with an integrated open space and recreation system, future school sites, and community shopping facilities to serve the expanding Wailuku-Kahului population*". The project site is allocated the Open Space (OS) Subdistrict within the Park/Open Space (PD-WK/3) District. Wells are a permitted accessory use within the OS Subdistrict.

F. COASTAL ZONE MANAGEMENT OBJECTIVES AND POLICIES

Pursuant to Chapter 205-A, Hawaii Revised Statutes, projects should be evaluated with respect to Coastal Zone Management (CZM) objectives, policies and guidelines. The project area is approximately 2.5 miles away from the coastline and will not involve work within the County of Maui's Special Management Area (SMA). However, the applicability of coastal zone management considerations has been reviewed and assessed.

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 use of county, state, and federally owned or controlled shoreline lands and waters having recreational value consistent with public safety standards and conservation of natural resources;

(vi) Adopting water quality standards and regulating point and non-point sources of pollution to protect, and where feasible, restore the recreational value of coastal waters;

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

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

Response: The project site is located inland, approximately 2.5 miles from the coastline. Based on the limited scope of the project, there are no anticipated impacts on coastal recreational opportunities or existing public access to the shoreline.

2. **Historic Resources**

Objective:

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

Policies:

(A) Identify and analyze significant archeological resources;

(B) Maximize information retention through preservation of remains and artifacts or salvage operations; and

(C) Support state goals for protection, restoration, interpretation, and display of historic resources.

Response: A Cultural Impact Assessment (CIA) was prepared for the project site. As discussed previously, the CIA did not identify any cultural activities within the project area and concluded that the exercise of native Hawaiian rights, or any ethnic group, related to gathering, access or other customary activities will not be affected by the proposed project. Refer to **Appendix "E"**.

An Archaeological Field Inspection of the project site also did not identify any surface or subsurface cultural remains, historic surface features, or architecture. As such, the proposed exploratory well is not anticipated to have an adverse impact on any significant historic properties. Refer to **Appendix "D"**.

3. **Scenic and Open Space Resources**

Objective:

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

Policies:

(A) Identify valued scenic resources in the coastal zone management area;

(B) Ensure that new developments are compatible with their visual environment by designing and locating such developments to minimize the alteration of natural landforms and existing public views to and along the shoreline;

(C) Preserve, maintain, and, where desirable, improve and restore shoreline open space and scenic resources; and

(D) Encourage those developments which are not coastal dependent to locate in inland areas.

Response: The project site does not lie within a coastal scenic view corridor nor along the shoreline. The proposed project is for an exploratory well, with most of the work occurring below ground. Preliminary design of the exploratory well indicates the well casing will extend just two (2) feet above ground. For these reasons, no adverse impacts on scenic or open space resources are anticipated.

4. **Coastal Ecosystems**

Objective:

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

Policies:

(A) Improve the technical basis for natural resource management;

(B) Preserve valuable coastal ecosystems, including reefs, of significant biological or economic importance;

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

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

Response: The proposed project involves minimal grading and only a small area will be cleared for construction operations. Because the proposed exploratory well involves minimal land alteration activities, it is not anticipated to alter the existing drainage pattern in the area. Nevertheless, best management practices (BMPs) will be implemented during the drilling and testing of the proposed exploratory well to mitigate potential erosion. BMPs include the installation of a grated drain inlet filter at the end of Kehalani Mauka Parkway near the temporary existing access road to the well site and silt fences along the eastern, down-slope border of the project site.

5. **Economic Uses**

Objective:

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

Policies:

(A) Concentrate coastal dependent development in appropriate areas;

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

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

(i) Use of presently designated locations is not feasible;

(ii) Adverse environmental effects are minimized; and

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

Response: The proposed project will generate short-term construction-related employment and spending which will benefit the local economy. The proposed action does not contradict the objectives and policies for economic uses. Furthermore, the proposed project is part of the County's efforts to maintain and improve potable water service to businesses and residents in the area.

6. Coastal Hazards

Objective:

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

Policies:

(A) Develop and communicate adequate information about storm wave, tsunami, flood, erosion, subsidence, and point and nonpoint source pollution hazards;

(B) Control development in areas subject to storm wave, tsunami, flood, erosion, hurricane, wind, subsidence, and point and nonpoint pollution hazards;

(C) Ensure that developments comply with requirements of the Federal Flood Insurance Program;

(D) Prevent coastal flooding from inland projects; and

(E) Develop a coastal point and nonpoint source pollution control program.

Response: The project site falls within Zone X, an area of minimal flooding, as indicated by the Flood Insurance Rate Map for the County of Maui. Refer to **Figure 8**. Best Management Practices (BMPs) will be implemented during the construction and testing of the exploratory replacement well to mitigate potential erosion and stormwater impacts. BMPs include the installation of a drain inlet filter at the end of Kehalani Mauka Parkway near the temporary existing access road to the well site and silt fences along the eastern, down-slope border of the project site.

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 of 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: The HRS Chapter 343 EA involves review by governmental agencies and provide for public involvement opportunities to comment on the project. Applicable State and County requirements will be adhered to in the design and construction of the project. Further, opportunities for review of the proposed action are offered through the regulatory review process for construction and development permits.

8. Public Participation

Objective:

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

Policies:

(A) Maintain a public advisory body to identify coastal management problems and to provide policy advice and assistance to the coastal zone management program;

(B) Disseminate information on coastal management issues by means of educational materials, published reports, staff contact, and public workshops for persons and organizations concerned with coastal-related issues, developments, and government activities; and

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

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

9. Beach Protection

Objective:

Protect beaches for public use and recreation.

Policies:

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

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

(C) Minimize the construction of public erosion-protection structures seaward of the shoreline.

Response: The proposed project is located inland, approximately 2.5 miles from the shoreline. As a result, there are no anticipated adverse impacts on beach resources.

10. Marine Resources

Objective:

Implement the State's ocean resources management plan.

Policies:

(A) Exercise an overall conservation ethic, and practice stewardship in the protection, use, and development of marine and coastal resources;

(B) Assure that the use and development of marine and coastal resources are ecologically and environmentally sound and economically beneficial;

(C) Coordinate the management of marine and coastal resources and activities management to improve effectiveness and efficiency;

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

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

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

Response: As previously stated, the project site is located inland, 2.5 miles away from the ocean and is, therefore, not anticipated to have any adverse impact on marine or coastal resources.

In addition to the foregoing objectives and policies, HRS Section 205A-30.5 Prohibitions, provides specifications for the limitation of lighting in coastal shoreline areas in relation to the granting of SMA permits:

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

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

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

(b) Subsection (a) shall not apply to special management area use permits for structures with:

- - -

(2) Artificial lighting provided by a government agency or its authorized users for government operations, security, public safety, or navigational needs; provided that a government agency or its authorized users shall make reasonable efforts to properly position or shield lights to minimize adverse impacts.

Response: The proposed project is not located on or near the shoreline. Furthermore, the proposed project does not involve lighting that would illuminate surrounding properties.

IV. UNAVOIDABLE ADVERSE ENVIRONMENTAL EFFECTS AND IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

IV. UNAVOIDABLE ADVERSE ENVIRONMENTAL EFFECTS AND IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

In the short term, the proposed Wailuku Exploratory Well project will result in unavoidable construction-related impacts, including noise impacts generated by construction equipment and activities. In addition, there may be temporary air quality impacts associated with dust generated from site work and exhaust emissions from construction equipment and vehicles. These noise and air quality impacts will be temporary in nature, occurring only during the 270-day construction and testing period, and will be mitigated to the extent practicable through implementation of Best Management Practices (BMPs).

The proposed project commits a small area of land, about 12,000 square feet, for the construction of the exploratory well. Other resources which will be committed in the implementation of the proposed action include material and fuel resources. The project will result in short-term beneficial impacts related to temporary construction employment and spending.

If the testing of the exploratory well is successful, the long-term impacts of a permanent well and pumping station at the site would be assessed in a separate Environmental Assessment.

V. ALTERNATIVES TO THE PROPOSED ACTION

V. ALTERNATIVES TO THE PROPOSED ACTION

Alternatives to the preferred alternative, which is the proposed action, include the "no action", "restoration of Shaft 33 alternative," and "alternative site location". These alternatives are addressed below.

A. NO ACTION ALTERNATIVE

The spacing of existing wells within the Iao Aquifer System and their depths may be detrimental to the sustainability of the aquifer. There is a concentration of wells on the north side of Iao Stream, with these sources withdrawing approximately 70 percent of the groundwater from the aquifer. Pumping on the south side of Iao Stream is concentrated at Shaft 33. According to a recent study, *Ground-Water Availability in the Wailuku Area, Maui, Hawaii,* prepared by Stephen B. Gingerich, redistributing withdrawal from the Iao Aquifer would be beneficial (refer to **Appendix "A"**). The proposed Wailuku Exploratory Well is one (1) of six (6) wells that would replace Shaft 33 and de-concentrate pumping.

A no action alternative would deter the DWS's efforts to spread pumping throughout the Iao Aquifer System and could result in water quality degradation of the Iao Aquifer.

B. RESTORATION OF SHAFT 33 ALTERNATIVE

The DWS has pumped groundwater from Shaft 33 for a number of years. However, the County's use of Shaft 33 was intended to be an interim measure until development of other new wells were completed. The well was built in 1946 and is in need of repair and maintenance. Because of its design, the well is difficult to access for repairs and maintenance. Further, Shaft 33 is not owned by the County DWS, but privately owned.

To incorporate Shaft 33 as a permanent water source, DWS would need to obtain ownership of the land. In addition, restoration of the system to acceptable DWS standards would require reconfiguration of the entire system due to the existing design of Shaft 33. As a result of these factors, the use of Shaft 33 as a permanent DWS water source is infeasible.

C. ALTERNATIVE SITE LOCATION ALTERNATIVE

The Preferred Alternative (the proposed action) supports DWS's efforts to disperse pumping throughout the Iao Aquifer System to prevent water quality degradation associated with concentrated pumping. The location of the proposed Wailuku Exploratory Well was selected based on a consideration of numerous factors, including site topography, proximity to existing DWS, and the relationship to other wells within the Iao Aquifer System. The project site is close to an existing utility lot that runs between Kehalani Mauka Parkway and the Iao Tank Site to the north. If the exploratory well is successful, this utility lot can serve as a possible corridor for a future water transmission line between the well and the Iao Tank. Furthermore, the site is suitable for construction of a future pumping station. The Wailuku Exploratory Well is expected to produce good quality groundwater at an installed capacity of 1,400 gallons per minute or approximately 2 million gallons per day. Given the foregoing factors, an alternate site location is not desirable.

VI. SIGNIFICANCE CRITERIA ASSESSMENT

VI. SIGNIFICANCE CRITERIA ASSESSMENT

The proposed project involves the construction and testing of the Wailuku Exploratory Well in Wailuku. The exploratory well is one (1) of six (6) proposed to replace the existing Shaft 33.

Since the proposed action will involve the use of County funds, compliance with Chapter 343, Hawaii Revised Statutes (HRS), and Chapter 200 (Title 11), Hawaii Administrative Rules, Environmental Impact Statement Rules is necessary. Every aspect of the proposed action, expected primary and secondary consequences, and the cumulative as well as the short-term and long-term effects of the action have been evaluated in accordance with the Significance Criteria of Section 11-200-12 of the Administrative Rules. Discussion of project conformance to the Significance Criteria is as follows:

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

   The historic agricultural practices at the project site and in the surrounding areas, along with recent brush fires, have resulted in an environment that is nearly totally lacking in native plants and animal species. There are no endangered or threatened flora or fauna on the site, nor are there any archaeological, historic or cultural resources that may be affected by the proposed project. No impacts to streams or wetlands are anticipated to result from the proposed action.

   As discussed previously, a Cultural Impact Assessment prepared for the project did not identify any on-going cultural activities within the project area and concluded that the exercise of native Hawaiian rights, or any ethnic group, related to gathering, access or other customary activities will not be affected by the proposed project. Refer to **Appendix "E"**.

   The Archaeological Field Inspection did not identify surface or subsurface cultural remains or historic surface features or architecture. The proposed exploratory well is not anticipated to have an adverse impact on any historic properties. Refer to **Appendix "D"**.

Based on the discussion provided above, the proposed project is not anticipated to involve an irrevocable commitment to loss or destruction of any natural or cultural resource.

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

There are no adverse impacts to climate, topography, or soils anticipated to result from the proposed project. There are also no known rare, threatened, or endangered species of flora, fauna, or avifauna located within the project site.

The proposed Wailuku Exploratory Well project involves lands designated for urban uses. While the project site was historically used for sugar cane cultivation, active cultivation ended in the 1990s. Furthermore, the project commits a small area of land amounting to about 12,000 square feet. Based on the foregoing facts, the proposed project will not curtail the beneficial use of the site.

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 proposed project does not conflict with the State's Environmental Policy and Guidelines as set forth in Chapter 344, Hawaii Revised Statutes (HRS).

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. Therefore, the proposed project will have a positive short-term effect on economic and social welfare. If the exploratory well is found to be successful, long-term impacts to economic and social welfare associated with a permanent well and pumping station would be analyzed in a separate EA. The CIA did not identify any ongoing cultural practices occurring within the project site. As such, adverse impacts to cultural practices are not anticipated.

5. **Substantially affects public health.**

During the 270-day construction and testing period, appropriate best management practices will be implemented to mitigate potential air quality and noise impacts.

Following construction and testing, there will be no long-term public health impacts resulting from the proposed project.

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

The proposed project is not anticipated to result in significant adverse secondary impacts. No significant population changes are anticipated as a result of the proposed project. There are no anticipated adverse effects on public services, such as police, fire, medical, educational, or solid waste collection, as service limits or service capacities will not be affected.

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

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

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

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

Once the construction and testing of the exploratory well is completed, no equipment generating noise or affecting the air quality will be left on the site. If the exploratory well is successful, a separate EA would be prepared for a permanent well and pumping station at the site.

The proposed project is one (1) of six (6) water wells planned to replace the existing Shaft 33. The resulting dispersal of pumping throughout the Iao Aquifer System will positively impact the quality of water pumped and the sustainability of the aquifer. The proposed Wailuku Exploratory Well, along with the five (5) other replacement wells are anticipated to cumulatively have a positive impact on the physical environment.

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 affected by the proposed project, due to the fact that there are no rare, threatened, or endangered species or their habitats found on or in the vicinity of the project site.

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

Construction activities will result in short-term air quality and noise impacts. Best Management Practices (BMPs) for dust control measures, such as regular watering and sprinkling, and erection of dust screens will be implemented to minimize construction-related air quality impacts. 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 and other BMPs are anticipated to mitigate noise from construction activities. Erosion control measures, including the installation of a grated drain inlet filter and silt fences, will reduce the amount of silt and stormwater runoff flowing into downstream properties.

The proposed project may result in a temporary drop in the water table level during the testing phase of the exploratory well. However, water levels are expected to return to its initial level following testing. The project contractor will dispose of pump testing discharge water in an appropriate manner and mitigate potential impacts resulting from the disposal.

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

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 within any environmentally sensitive areas and, as such, there are no anticipated adverse effects as a result of the proposed project.

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

The proposed project is not anticipated to adversely affect scenic view corridors. The well, once completed, will be capped approximately two (2) feet above ground surface.

13. **Requires substantial energy consumption.**

Well construction generally does not require any electrical energy from the local power company. Drill rigs are often diesel operated equipment. The testing of the exploratory well generates the highest energy consumption needs. The test pump will need to be capable of pumping 1,400 gpm for a continuous testing period of 96 hours. Power for the pump is usually from diesel operated equipment. Following the 270-day construction and testing period, all equipment will be removed and there will be no energy consumption at the site.

Based on the aforementioned findings, it is anticipated that the proposed project will result in a Findings of No Significant Impact (FONSI).

VII. LIST OF PERMITS AND APPROVALS

VII. LIST OF PERMITS AND APPROVALS

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

State of Hawaii

1. Hawaii Administrative Rules, Chapter 343 Compliance
2. National Pollutant Discharge Elimination System (NPDES) Permit, as applicable
3. Commission on Water Resource Management
4. Department of Health Wellhead Protection Protocols
5. Community Noise Permit, as applicable

County of Maui

1. Construction Permits (i.e., grading permit), as applicable

VIII. AGENCIES TO BE 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 presented herein.

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Department of Transportation
200 South High Street
Wailuku, Hawaii 96793

19. Honorable Mike Victorino
Maui County Council
200 South High Street
Wailuku, Hawaii 96793

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

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

22. Rik Papa, President
Attention: Tiana Raymondo
Kehalani Community Association
P.O. Box 1530
Wailuku, Hawaii 96793

23. Jacob W. Verkerke, Chair
Glenn M. Adolpho, Development Monitoring Committee Chair
Waikapu Community Association
P.O. Box 3046
Wailuku, Hawaii 96793

24. **Waikapu Gardens Homeowners Association**
67 East Waiko Road
Wailuku, Hawaii 96793

25. **Wailuku Community Association**
40 Hoauna Street
Wailuku, Hawaii 96793

26. Jocelyn Perreira, Executive Director
Wailuku Main Street Association
1942 Main Street, Unit 101
Wailuku, Hawaii 96793

27. Joseph G. Blackburn II
Waiolani Community Association
P.O. Box 1067
Wailuku, Hawaii 96793

JAN 18 2011

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

REPLY TO
ATTENTION OF:

January 11, 2011

Regulatory Branch

File Number POH-2011-00019

Munekiyo & Hiraga, Inc.
Attention: Leilani Pulmano
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Pulmano:

This office has received your early consultation request dated January 5, 2011 for Department of the Army (DA) review and comment in preparation of a Draft Environmental Assessment for the proposed construction of the Wailuku Exploratory Well at TMK (2) 3-5-001:100 (portion), Wailuku, Island of Maui, Hawaii. We have assigned the project the reference number **POH-2011-00019**. Please cite the reference number in any future correspondence concerning this project.

We completed our review of the submitted document pursuant to Section 10 of the Rivers and Harbors Act of 1899 (Section 10) and Section 404 of the Clean Water Act (Section 404). For your information, Section 10 requires that a DA permit be obtained from the U.S. Army Corps of Engineers (the Corps) prior to undertaking any construction, dredging, or other activity occurring in, over, or under or affecting navigable waters of the U.S. For tidal waters, the shoreward limit of the Corps' jurisdiction extends to the Mean High Water Mark. Section 404 requires that a DA permit be obtained for the discharge (placement) of dredged and/or fill material into waters of the U.S., including wetlands. For tidally influenced waters, in the absence of adjacent wetlands, the shoreward limit of the Corps' jurisdiction extends to the High Tide Line, which in Hawai'i may be approximated by reference to the Mean Higher High Water Mark. For non-tidal waters, the lateral limits of the Corps' jurisdiction extend to the Ordinary High Water Mark or the approved delineated boundary of any adjacent wetlands.

It appears the project site consists entirely of uplands and is absent of waters of the U.S. under the regulatory jurisdiction of the Corps. Therefore, **a DA permit will not be required.**

Resources available to the Corps identify the Waihee Ditch borders the subject parcel to the East. The Waihee Ditch, with end terminus in the Pacific Ocean via Kealia Pond, a wetland adjacent to a navigable water, is as such, a water of the U.S., subject to Corps jurisdiction. We encourage the landowner of the subject property contact the Corps to request a formal jurisdictional determination during development of future plans involving work in close proximity to this aquatic feature and/or its associated tributaries and wetlands. We can at that time determine whether or not the proposed activity involving that resource will require a DA permit. The property owner is solely responsible for requesting a jurisdictional determination

and for obtaining authorization from the Corps prior to work in or discharge of dredged or fill material into such water bodies.

Thank you for contacting us regarding this project and providing us with the opportunity to comment. Should you have any questions, please contact Ms. Jessie Pa'ahana at *808.438.0391* or via email at *Jessie.K.Paahana@usace.army.mil*. You are encouraged to provide comments on your experience with the Honolulu District Regulatory Branch by accessing our web-based customer survey form at *http://www.per2.nwp.usace.army.mil/survey.html*.

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

April 4, 2011

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

SUBJECT Draft Environmental Assessment for the Proposed Wailuku Exploratory Well at TMK (2)3-5-001:100 (por.), Wailuku, Maui, Hawaii, POH-2011-00019

Dear Mr. Young:

Thank you for your letter, dated January 11, 2011, providing early consultation comments on the subject project. On behalf of the applicant, County of Maui, Department of Water Supply (DWS), we offer the following information in response to the comments provided.

We acknowledge your determination that a Department of Army (DA) permit will not be required as the project site consists entirely of uplands and is absent of waters under the regulatory jurisdiction of the U. S. Army Corps of Engineers.

We thank you for the information provided on the Waihee Ditch. Improvements for the proposed project will not be located in close proximity to the Ditch. The proposed well site is located over 150 feet west of Waihee Ditch.

305 High Street, Suite 104 · Wailuku, Hawaii 96793 · ph: (808)244-2015 · fax: (808)244-8729 · planning@mhplanning.com · www.mhplanning.com

We appreciate the input provided by your department. A copy of your comment letter will be included in the Draft EA for the proposed project. Should you have any questions, please feel free to contact me at (808) 244-2015.

Sincerely,

Leilani Pulmano
Program Manager

LP:tn
cc: Tom Ochwat, County of Maui, Department of Water Supply
Ronald Fukumoto, Ronald M. Fukumoto Engineering, Inc.
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Leilani Pulmano

From: Ronald Fukumoto [ronald@rfemaui.com]
Sent: Wednesday, January 26, 2011 12:19 PM
To: Paahana, Jessie K POH
Cc: thomas.ochwat@co.maui.hi.us; Leilani Pulmano
Subject: RE: POH-2011-00019 Wailuku Exploratory Well (UNCLASSIFIED)

Jessie,

Thank you for discussing this matter with us yesterday, for performing further reviews, and for sending us your response. We appreciate the quick turnaround. We are copying our client and planning sub-consultant to inform them of this updated information.

Ron

Ronald M. Fukumoto, PE, LS
Ronald M. Fukumoto Engineering, Inc.
1721 Wili Pa Loop, Suite 203
Wailuku, Hawaii 96793
Phone: 808-242-8611
Fax: 808-244-7510
Cell: 808-280-8732
E-mail: ron@rfemaui.com

-----Original Message-----
From: Paahana, Jessie K POH [mailto:Jessie.K.Paahana@usace.army.mil]
Sent: Wednesday, January 26, 2011 9:45 AM
To: Ronald Fukumoto
Subject: POH-2011-00019 Wailuku Exploratory Well (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Good Morning, Ron:

Per our telephone conversation yesterday I am following up with you on our
jurisdiction in regards to the Waihee Ditch.

Upon further review on Google Earth and an in-office survey of past jurisdictional determinations in this region, I found that the reservoir that
the Waihee Ditch discharges into feeds the Pohakea Gulch which terminates in
the Kealia Pond, an adjacent wetland to a navigable water (the Pacific Ocean). As such, it is a Water of the United States, subject to Corps jurisdiction.

Per our letter to Munekiyo & Hiraga (January 11, 2011) we described our jurisdiction pursuant to Section 404 of the Clean Water Act and Section 10 of
the Rivers and Harbors Act of 1899. As this water body is within our jurisdiction, we regulate the discharge of fill material into waters of the
U.S. Based on what you proposed to me over the phone, unless you are installing a support structure along the banks of the Ditch, we would not
require a permit through this office for the discharge of groundwater into
the Ditch system. You may however require a permit with from the State of

Hawaii Clean Water Branch. We suggest you consult with the regarding their
permitting and approvals processes.

The land owner may request an approved jurisdictional determination valid for
five years from this office regarding the Waihee Ditch for documentation
purposes.

Please contact me if you have any questions or concerns.

Thanks,
Jessie K Paahana, Biologist
US Army Corps of Engineers, Regulatory
Ft. Shafter, Bldg. 214
ph: 808.438.0391

Classification: UNCLASSIFIED
Caveats: NONE

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRAGA
KAREYNN E. ...
MARK ALEXANDER ...

April 5, 2011

Jessie K. Paahana, Biologist
Department of the Army
U.S. Army Engineer District, Honolulu
Fort Shafter, Hawaii 96858-5440

SUBJECT Draft Environmental Assessment for the Proposed Wailuku Exploratory Well at TMK (2)3-5-001:100 (por.), Wailuku, Maui, Hawaii, POH-2011-00019

Dear Ms. Paahana:

Thank you for your email, dated January 26, 2011, providing additional comment and information on the proposed project. On behalf of the applicant, the County of Maui, Department of Water Supply (DWS), we offer the following information in response to the comments provided.

We acknowledge that the reservoir which the Waihee Ditch discharges into feeds the Pohakea Gulch, which terminates in Kealia Pond, an adjacent wetland to a navigable water (the Pacific Ocean). We understand that the water body is subject to Army Corps jurisdiction and you regulate the discharge of fill material into waters of the U.S. Furthermore, we acknowledge that discharge of groundwater from pump testing into the Waihee Ditch would not require a Department of Army permit if the contractor pursues this alternative for disposal of pump testing water and if no support structure is installed along the banks of the ditch. The applicant will consult with the State Department of Health Clean Water Branch to determine whether they would require a permit for such groundwater discharge, if this alternative is pursued.

We appreciate the input provided by your department. A copy of your email will be included in the Draft EA for the proposed project. Should you have any questions, please feel free to contact me at (808) 244-2015.

Sincerely,

Leilani Pulmano
Program Manager

LP:tn
cc: Tom Ochwat, County of Maui, Department of Water Supply
Ronald Fukumoto, Ronald M. Fukumoto Engineering, Inc.
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JAN 14 2011

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

KEITH R. RIDLEY
Acting Director of Health

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

In reply, please refer to:
File:
EPO-I-3501

January 12, 2011

Ms. Leilani Pulmano, Program Manager
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Pulmano:

SUBJECT: Early Consultation Request for the Preparation of a Draft Environmental Assessment for the Proposed Wailuku Exploratory Well, Wailuku, Maui, Hawaii; (DWS Job No. 09-12)
TMK: (2)3-5-001:100 (por)

Thank you for allowing us to review and comment on the subject document. The document was routed to the various branches of the Environmental Health Administration. We have no comments at this time, but reserve the right to future comments. We strongly recommend that you review all of the Standard Comments on our website: www.hawaii.gov/health/environmental/env-planning/landuse/landuse.html. Any comments specifically applicable to this application should be adhered to.

The same website also features a Healthy Community Design Smart Growth Checklist (Checklist). The Hawaii State Department of Health, Built Environment Working Group, recommends that State and county planning departments, developers, planners, engineers and other interested parties apply the healthy built environment principles in the Checklist whenever they plan or review new developments or redevelopments projects. We also ask you to share this list with others to increase community awareness on healthy community design.

If there are any questions about these comments please contact the Environmental Planning Office at 586-4337.

Sincerely,

Genevieve Salmonson

GENEVIEVE SALMONSON, Acting Manager
Environmental Planning Office

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GLEN OSHIRO HIRAGA
MEISURU "MICH" HIRAGA
KARLYNN FUKUDA

MARK ALEXANDER BEAL

April 4, 2011

Genevieve Salmonson
Acting Manager, Environmental Planning Office
Department of Health
State of Hawaii
P.O. Box 3378
Honolulu, HI 96801-3378

SUBJECT Draft Environmental Assessment for the Proposed Wailuku Exploratory Well at TMK (2)3-5-001:100 (por.), Wailuku, Maui, Hawaii, EPO-I-3501

Dear Ms. Salmonson:

Thank you for your letter, dated January 12, 2011, providing early consultation comments on the subject project. On behalf of the applicant, County of Maui, Department of Water Supply (DWS), we offer the following information in response to the comments provided.

We have reviewed the standard comments on your department's website. We are enclosing a list of applicable comments as well as the applicant's response to each. See **Exhibit "A"**.

305 High Street, Suite 104 · Wailuku, Hawaii 96793 · ph: (808)244-2015 · fax: (808)244-8729 · planning@mhplanning.com · www.mhplanning.com

We appreciate the input provided by your department. A copy of your comment letter will be included in the Draft EA for the proposed project. Should you have any questions, please feel free to contact me at (808) 244-2015.

Sincerely,

Leilani Pulmano
Program Manager

LP:tn
Enclosure
cc: Tom Ochwat, County of Maui, Department of Water Supply
Ronald Fukumoto, Ronald M. Fukumoto Engineering, Inc.
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EXHIBIT "A"

REVIEW OF STANDARD COMMENTS RELATING TO STATE ENVIRONMENTAL HEALTH PROGRAMS

Environmental Planning Office

- *Identify the waterbody type and class, as defined in Hawaii Administrative Rules Chapter 11-54 (http://www.state.hi.us/health/about/rules/11-54.pdf), of all potentially affected water bodies.*

  Response:

  There are no streams or wetlands on the project site. No adverse impacts to Iao Stream, which is located over 1,000 feet away from the site, are anticipated as a result of the proposed project.

- *Identify any existing National Pollutant Discharge Elimination System (NPDES) permits and related connection permits (issued by permittees) that will govern the management of water that runs off or is discharged from the proposed project site or facility. Please include NPDES and other permit numbers; names of permittees, permitted facilities, and receiving waters (including waterbody type and class as in 1. above); diagrams showing drainage/discharge pathways and outfall locations; and note any permit conditions that may specifically apply to the proposed project*

  Response:

  There are no existing NPDES permits or related connection permits governing water quality management at the project site.

- *Identify any planning documents, groups, and projects that include specific prescriptions for water quality management at the proposed project site and in the potentially affected waterbodies. Please note those prescriptions that may specifically apply to the proposed project.*

  Response:

  There are no existing water quality actions being undertaken at the project site.

- *Identify all potentially affected water bodies that appear on the current List of Impaired Waters in Hawaii Prepared under Clean Water Act.*

Response:

There are no potentially affected water bodies that appear on the current list of Impaired Waters.

- *We suggest that each submittal identify and analyze potential project impacts at a watershed scale by considering the potential contribution of the proposed project to cumulative, multi-project watershed effects on hydrology, water quality, and aquatic and riparian ecosystems. We also suggest that each submittal broadly evaluate project alternatives by identifying more than one engineering solution for proposed projects. In particular, we suggest the consideration of "alternative," "soft," and "green" engineering solutions for channel modifications that would provide a more environmentally friendly and aesthetically pleasing channel environment and minimize the destruction of natural landscapes.*

Response:

With implementation of BMPs during construction of the exploratory well, the proposed project is not expected to significantly adversely impact hydrology, water quality and aquatic and riparian ecosystems in vicinity of the project site. There are no channel modifications proposed as part of the project.

Hazard Evaluation and Emergency Response Office

- *A Phase I Environmental Site Assessment (ESA) should be conducted for developments or redevelopments. If the investigation shows that a release of petroleum, hazardous substance, pollutants or contaminants occurred at the site, the site should be properly characterized through an approved Hawaii State Department of Health (DOH)/Hazard Evaluation and Emergency Response Office (HEER) soil and or groundwater sampling plan. If the site is found to be contaminated, then all removal and remedial actions to clean up hazardous substance or oil releases by past and present owners/tenants must comply with chapter 128D, Environmental Response Law, HRS, and Title 11, Chapter 451, HAR, State Contingency Plan.*

Response:

In 2002, Clayton Group Services, Inc. conducted a Phase I Environmental Site Assessment (Phase I ESA) that included about 719 acres of land in Wailuku, Maui. The Phase I ESA area included the current Kehalani Development and the proposed exploratory well site. Since the area was used for sugarcane production for at least 150 years, it was considered a "recognized environmental condition" (REC) because of evidence of historical application of agricultural chemicals. A baseline surface soil investigation was recommended to assess the presence or absence of agricultural chemicals.

In 2010, Bureau Veritas North America, Inc. (Bureau Veritas) conducted an environmental investigation of the Kehalani Development in Wailuku, Maui. The purpose of the investigation was to assess potential environmental impacts resulting from past agricultural use of the site. For reporting purposes, the area was divided into two sites: one for proposed residential use with an area of about 210.5 acres and the other for proposed non-residential use with an area of about 38.5 acres. The exploratory well site, a portion of Lot P-2, is part of the non-residential site. Details are contained in the report, *Multi-Increment Sampling Investigation Report, 210.5 Acres of Proposed Residential Use and 38.5 Acres of Proposed Non-Residential Use, Kehalani Development, Wailuku, Maui, Hawaii*, dated February 1, 2011.

In February and March 2010, Bureau Veritas collected soil samples and sent the soil samples to a testing laboratory for analysis of arsenic, 22 organochlorine pesticides, and dioxin. The following are the test results of the soil samples from Lot P-2:

- Arsenic – not detected
- Organochlorine Pesticides – not detected
- Dioxin – toxicity equivalent (TEQ) of 47.8 nanograms per kilogram (ng/kg)

The dioxin TEQ of 47.8 ng/kg is less than the 2010 State of Hawaii Department of Health (HDOH) Dioxin Soil Action Level of 240 ng/kg. The dioxin TEQ of 47.8 ng/kg also falls within Soil Category B (Minimally Impacted) with a TEQ range of 20 ng/kg to 240 ng/kg of the HDOH Dioxin Soil Management Category.

Based on these results, Bureau Veritas concluded that the surface soil, to a depth of 18 inches, in the non-residential site has not been significantly impacted by historical agricultural land uses and that the surface soil at the site is suitable for unrestricted land use. Additionally, Bureau Veritas recommended no further investigation of the non-residential site.

Clean Air Branch

- *A significant potential for fugitive dust emissions exists during all phases of construction and operations. Proposed activities that occur in proximity to existing residences, businesses, public areas or thoroughfares, exacerbate potential dust problems. It is recommended that a dust control management plan be developed which identifies and addresses all activities that have a potential to generate fugitive dust. The plan, which does not require DOH approval, would help with recognizing and minimizing the dust problems from the proposed project.*

  Activities must comply with the provisions of Hawaii Administrative Rules, § 11-60-1-33 on Fugitive Dust. In addition, for cases involving mixed land use, we

strongly recommend that buffer zones be established, wherever possible, in order to alleviate potential nuisance problems.

The contractor should provide adequate measures to control the fugitive dust from the road areas and during the various phases of construction. Examples of measures that can be implemented to control dust include, but are not limited to, the following:

a) *Planning the different phases of construction, focusing on minimizing the amount of dust-generating materials and activities, centralizing on-site vehicular traffic routes, and locating potential dust-generating equipment in areas of the least impact;*
b) *Providing an adequate water source at the site prior to start-up of construction activities;*
c) *Landscaping and providing rapid covering of bare areas, including slopes, starting from the initial grading phase;*
d) *Minimizing dust from shoulders and access roads;*
e) *Providing adequate dust control measures during weekends, after hours, and prior to daily start-up of construction activities; and*
f) *Controlling dust from debris being hauled away from the project site.*

Response:

Best Management Practices will be implemented to minimize the potential for dust-related impacts from the construction of the proposed exploratory well. Project-related activities will comply with applicable provisions of Section 11-60-1.33, HAR.

Clean Water Branch

- *Any project and its potential impacts to State waters must meet the State's: 1) Antidegradation policy, 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; 2) Designated uses, as determined by the classification of the receiving State waters; and 3) water quality criteria (Hawaii Administrative Rules (HAR), Chapter 11-54).*

Response:

The proposed project will comply with the State's antidegradation, designated uses, and water quality criteria.

- *The Army Corps of Engineers should be contacted at (808) 438-9258 to see if this 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.

Response:

The Army Corps of Engineers concluded that the proposed project does not require a Department of the Army permit.

- *National Pollutant Discharge Elimination System (NPDES) permits are required 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, NPDES general permit coverage may be applied for by submitting a Notice of Intent (NOI) form: 1) storm water associated with industrial activities, as defined in Title 40, Code of Federal Regulations, Sections 122.26(b)(14)(i) through 122.26(b)(14)(ix) and 122.26(b)(14)(xi); 2) storm water associated with construction activities, including excavation, grading, clearing, demolition, uprooting of vegetation, equipment staging, and storage areas that result in the disturbance of equal to or greater than one (1) acre of total land area*; 3) treated effluent from leaking underground storage tank remedial activities; 4) once through cooling water less than one (1) million gallons per day; 5) hydrotesting water; 6) dewatering effluent; 7) treated effluent from petroleum bulk stations and terminals; 8) treated effluent from well drilling activities; 9) treated effluent from recycled water distribution systems; 10) storm water and certain non-storm water from a small municipal separate storm sewer system; and 11) circulation water from decorative ponds or tanks.*
  **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.*

Response:

An NPDES permit is not anticipated to be required for the proposed project. The proposed construction area will be less than one (1) acre in size. The applicant will discuss permit requirements for the proposed project with the Department of Health Clean Water Branch.

- *A separate NOI form for each type of discharge must be submitted 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.*

Response:

The applicant acknowledges that a separate NOI form must be submitted for each type of discharge, if applicable, at least 30 calendar days prior to the start of discharge activity.

- *For types of wastewater discharges not listed above or wastewater discharging into Class 1 or Class AA waters, you may need to obtain an NPDES individual permit. Class 1 waters include, but is not limited to, all State waters in natural reserves, preserves, sanctuaries, and refuges established by the Department of Land and Natural Resources (DLNR) under Hawaii Revised Statutes (HRS), Chapter 195, or similar reserves for the protection of aquatic life established under HRS, Chapter 195.*

Response:

No discharges into Class 1 or Class AA waters are anticipated.

- *An application for an NPDES individual permit must be submitted at least 180 calendar days before the commencement of the discharge or start of construction activities. 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.*

Response:

The applicant acknowledges that an NPDES individual permit application, if applicable, must be submitted at least 180 calendar days before the commencement of discharge or construction activities.

- *You must also submit a copy of the NOI or NPDES permit application to the State DLNR, 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.*

Response:

The applicant acknowledges that a copy of the NOI or NPDES permit application, if applicable, must be submitted to the SHPD.

- *Please note that all discharges related to the project construction or operation activities, whether or not NPDES permit coverage and/or Section 401 WQC are required, must comply with the State's Water Quality Standards.*

Response:

The applicant acknowledges that all discharges related to project construction and operation 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.*

Response:

The applicant acknowledges that compliance with water quality and permitting requirements are subject to Chapter 11-54 and 11-55, HAR.

Safe Drinking Water Branch

- *Federal and state regulations define a public water system as a system that serves 25 or more individuals at least 60 days per year or has at least 15 service connections. All public water system owners and operators are required to comply with Hawaii Administrative Rules, Title 11, Chapter 20, titled Rules Relating to Potable Water Systems.*

Response:

The proposed project represents the preliminary exploratory phase of the Wailuku Well. The project is limited to the construction and testing of the well site. Water from the well will not serve any DWS customers. As such, the proposed project does not constitute a public water system under federal and state regulations. If the testing determines that the well is a suitable potable water source, a separate Environmental Assessment would be prepared for a permanent Wailuku Well.

- *All new public water systems are required to demonstrate and meet minimum capacity requirements prior to their establishment. This requirement involves demonstration that the system will have satisfactory technical, managerial and financial capacity to enable the system to comply with safe drinking water standards and requirements.*

Response:

The proposed project is not a new public water system. See response above.

- *Projects that propose development of new sources of potable water serving or proposed to serve a public water system must comply with the terms of Section 11-20-29 of Chapter 20. This section requires that all new public water system*

sources be approved by the Director of Health prior to its use. Such approval is based primarily upon the submission of a satisfactory engineering report which addresses the requirements set in Section 11-20-29.

Response:

The proposed exploratory well will not serve a public water system.

- *The engineering report must identify all potential sources of contamination and evaluate alternative control measures which could be implemented to reduce or eliminate the potential for contamination, including treatment of the water source. In addition, water quality analyses for all regulated contaminants, performed by a laboratory certified by the State Laboratories Division of the state of Hawaii, must be submitted as part of the report to demonstrate compliance with all drinking water standards. Additional parameters may be required by the Director for this submittal or additional tests required upon his or her review of the information submitted.*

Response:

The proposed project will involve the testing of water quality conditions of a potential new water source. Water quality analyses will be conducted following the construction of the proposed exploratory well to determine the site's suitability as a permanent potable water source.

- *All sources of public water systems must undergo a source water assessment which will delineate a source water protection area. This process is preliminary to the creation of a source water protection plan for that source and activities which will take place to protect the source of drinking water.*

Response:

The proposed exploratory well will not serve a public water system.

- *Projects proposing to develop new public water systems or proposing substantial modifications to existing public water systems must receive approval by the Director of Health prior to construction of the proposed system or modification. These projects include treatment, storage and distribution systems of public water systems. The approval authority for projects owned and operated by a County Board or Department of Water or Water Supply has been delegated to them.*

Response:

The proposed project does not involve the construction or substantial modification of a public water system.

- *All public water systems must be operated by certified distribution system and water treatment plant operators as defined by Hawaii Administrative Rules, Title 11, Chapter 11-25 titled; Rules Pertaining to Certification of Public Water System Operators.*

Response:

The proposed project is not a new public water system.

- *All projects which propose the use of dual water systems or the use of a non-potable water system in proximity to an existing potable water system to meet irrigation or other needs must be carefully designed and operated to prevent the cross-connection of these systems and prevent the possibility of backflow of water from the non-potable system to the potable system. The two systems must be clearly labeled and physically separated by air gaps or reduced pressure principle backflow prevention devices to avoid contaminating the potable water supply. In addition backflow devices must be tested periodically to assure their proper operation. Further, all non-potable spigots and irrigated areas should be clearly labeled with warning signs to prevent the inadvertent consumption on non-potable water. Compliance with Hawaii Administrative Rules, Title 11, Chapter 11-21 titled; Cross-Connection and Backflow Control is also required.*

Response:

The proposed project does not propose the use of dual water systems or the use of a non-potable water system in proximity to an existing water system.

- *All projects which propose the establishment of a potentially contaminating activity (as identified in the Hawai`i Source Water Assessment Plan) within the source water protection area of an existing source of water for a public water supply should address this potential and activities that will be implemented to prevent or reduce the potential for contamination of the drinking water source.*

Response:

The proposed project does not propose the establishment of a potentially contaminating activity within the source water protection area of an existing public water source.

Solid and Hazardous Waste Branch

- *The state regulations for hazardous waste are in Chapters 11-260 to 11- 280, Hawaii Administrative Rules (HAR). These rules apply to the identification, handling, transportation, storage and disposal of regulated hazardous waste. Generators, transporters and treatment, storage and disposal facilities of hazardous waste must adhere to these requirements or be subject to fines and penalties.*

  Response:

  The proposed project will comply with applicable requirements of HAR, Chapters 11-260 to 11-280.

- *Generators of solid waste are required to ensure that their wastes are properly delivered to permitted solid waste management facilities. Managers of construction and demolition projects should require their waste contractors to submit disposal receipts and invoices to ensure proper disposal of wastes.*

  Response:

  Construction waste for the project will be properly disposed of at an approved construction waste disposal facility. Following project construction, the proposed exploratory well will generate minimal solid waste, if any.

- *HRS Chapter 342G encourages the reduction of waste generation, reuse of discarded materials, and the recycling of solid waste. Businesses, property managers and developers, and government entities are highly encouraged to develop solid waste management plans to ensure proper handling of wastes. Solid waste management plans should also seek to maximize waste diversion and minimize disposal. Such plans should include designated areas to promote the collection of reusable and recyclable materials.*

  Response:

  The proposed exploratory well will generate minimal solid waste, if any.

Noise, Radiation, and Indoor Air Quality Branch

- *Project activities shall comply with Chapter 11-39 (Air Conditioning and Ventilating), Chapter 11-45 (Radiation Control) and 11-46 (Community Noise Control) of the Administrative Rules of the Department of Health.*

Response:

The proposed project will comply with applicable requirements of HAR, Chapter 11-46, community noise control. HAR, Chapter 11-39 (Air Conditioning and Ventilating) and Chapter 11-45 (Radiation Control) do not apply to the proposed project.

JAN 20 2011

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

KEITH R. RIDLEY
ACTING DIRECTOR OF HEALTH

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

In reply, please refer to:
File:

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

January 19, 2011

Ms. Leilani Pulmano
Program Manager
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Pulmano:

Subject: **Early Consultation Request for Preparation of Draft Environmental Assessment for Proposed Wailuku Exploratory Well, Wailuku, Hawaii**
TMK: (2) 3-5-001:100 (por.)
DWS Job # 09-12

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

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

2. All lands formerly in the production of sugarcane should be characterized for arsenic contamination. If arsenic is detected above the US EPA Region Preliminary Remediation Goal (PRG) for non-cancer effects, then a removal and/or remedial plan must be submitted to the Hazard Evaluation and Emergency Response (HEER) Office of the State Department of Health for approval. Please contact them at 808 586-4249.

3. The Safe Drinking Water Branch should be contacted at 808 586-4258.

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.

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

Sincerely,

Patti Kitkowski

Patti Kitkowski
District Environmental Health Program Chief

c EPO

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GLEN OSHIRO HIRAGA
MITSURU "MICH" HIRAGA
KAPILYNN FUKUDA

MARK ALEXANDER ROY

April 4, 2011

Patti Kitkowski
District Environmental Health Program Chief
Department of Health
State of Hawaii
54 High Street
Wailuku, Hawaii 96793

SUBJECT Draft Environmental Assessment for the Proposed Wailuku Exploratory Well at TMK (2)3-5-001:100 (por.), Wailuku, Maui, Hawaii

Dear Ms. Kitkowski:

Thank you for your letter, dated January 19, 2011, providing early consultation comments on the subject project. On behalf of the applicant, County of Maui, Department of Water Supply (DWS), we offer the following information in response to the comments provided.

1. We acknowledge that a National Pollutant Discharge Elimination (NPDES) permit may be required for the proposed project. Coordination will be carried out with the Department of Health, Clean Water Branch prior to project implementation to assess the requirements of the NPDES permit.
2. Arsenic was not detected in a recent environmental investigation of the site. See detailed response in **Exhibit "A"**.
3. Ronald Fukumoto of Ronald M. Fukumoto Engineering, Inc., applicant's engineering consultant, contacted the Safe Drinking Water Branch (SDWB) on January 31, 2011 to discuss the proposed project and to confirm the applicant's intent to comply with SDWB requirements.
4. We have reviewed the standard comments on your department's website. We are enclosing a list of applicable comments, as well as the applicant's response to each. See **Exhibit "A"**.

We appreciate the input provided by your department. A copy of your comment letter will be included in the Draft EA for the proposed project. Should you have any questions, please feel free to contact me at 244-2015.

Sincerely,

Leilani Pulmano
Program Manager

LP:tn
Enclosure
cc: Tom Ochwat, County of Maui, Department of Water Supply
Ronald Fukumoto, Ronald M. Fukumoto Engineering, Inc.
F:\DATA\RFE\WailukuWell\ResponseLetters ECL\DOHMauiresp.ltr.doc

EXHIBIT "A"

REVIEW OF STANDARD COMMENTS RELATING TO STATE ENVIRONMENTAL HEALTH PROGRAMS

Environmental Planning Office

- *Identify the waterbody type and class, as defined in Hawaii Administrative Rules Chapter 11-54 (http://www.state.hi.us/health/about/rules/11-54.pdf), of all potentially affected water bodies.*

Response:

There are no streams or wetlands on the project site. No adverse impacts to Iao Stream, which is both located over 1,000 feet away from the site, are anticipated as a result of the proposed project.

- *Identify any existing National Pollutant Discharge Elimination System (NPDES) permits and related connection permits (issued by permittees) that will govern the management of water that runs off or is discharged from the proposed project site or facility. Please include NPDES and other permit numbers; names of permittees, permitted facilities, and receiving waters (including waterbody type and class as in 1. above); diagrams showing drainage/discharge pathways and outfall locations; and note any permit conditions that may specifically apply to the proposed project*

Response:

There are no existing NPDES permits or related connection permits governing water quality management at the project site.

- *Identify any planning documents, groups, and projects that include specific prescriptions for water quality management at the proposed project site and in the potentially affected waterbodies. Please note those prescriptions that may specifically apply to the proposed project.*

Response:

There are no existing water quality actions being undertaken at the project site.

- *Identify all potentially affected water bodies that appear on the current List of Impaired Waters in Hawaii Prepared under Clean Water Act.*

Response:

There are no potentially affected water bodies that appear on the current List of Impaired Waters.

- *We suggest that each submittal identify and analyze potential project impacts at a watershed scale by considering the potential contribution of the proposed project to cumulative, multi-project watershed effects on hydrology, water quality, and aquatic and riparian ecosystems. We also suggest that each submittal broadly evaluate project alternatives by identifying more than one engineering solution for proposed projects. In particular, we suggest the consideration of "alternative," "soft," and "green" engineering solutions for channel modifications that would provide a more environmentally friendly and aesthetically pleasing channel environment and minimize the destruction of natural landscapes.*

Response:

With implementation of BMPs during construction of the exploratory well, the proposed project is not expected to significantly adversely impact hydrology, water quality and aquatic and riparian ecosystems in vicinity of the project site. There are no channel modifications proposed as part of the project.

Hazard Evaluation and Emergency Response Office

- *A Phase I Environmental Site Assessment (ESA) should be conducted for developments or redevelopments. If the investigation shows that a release of petroleum, hazardous substance, pollutants or contaminants occurred at the site, the site should be properly characterized through an approved Hawaii State Department of Health (DOH)/Hazard Evaluation and Emergency Response Office (HEER) soil and or groundwater sampling plan. If the site is found to be contaminated, then all removal and remedial actions to clean up hazardous substance or oil releases by past and present owners/tenants must comply with chapter 128D, Environmental Response Law, HRS, and Title 11, Chapter 451, HAR, State Contingency Plan.*

Response:

In 2002, Clayton Group Services, Inc. conducted a Phase I Environmental Site Assessment (Phase I ESA) that included about 719 acres of land in Wailuku, Maui. The Phase I ESA area included the current Kehalani Development and the proposed exploratory well site. Since the area was used for sugarcane production for at least 150 years, it was considered a "recognized environmental condition" (REC) because of evidence of historical application of agricultural

chemicals. A baseline surface soil investigation was recommended to assess the presence or absence of agricultural chemicals.

In 2010, Bureau Veritas North America, Inc. (Bureau Veritas) conducted an environmental investigation of the Kehalani Development in Wailuku, Maui. The purpose of the investigation was to assess potential environmental impacts resulting from past agricultural use of the site. For reporting purposes, the area was divided into two sites: one for proposed residential use with an area of about 210.5 acres and the other for proposed non-residential use with an area of about 38.5 acres. The exploratory well site, a portion of Lot P-2, is part of the non-residential site. Details are contained in the report, *Multi-Increment Sampling Investigation Report, 210.5 Acres of Proposed Residential Use and 38.5 Acres of Proposed Non-Residential Use, Kehalani Development, Wailuku, Maui, Hawaii*, dated February 1, 2011.

In February and March 2010, Bureau Veritas collected soil samples and sent the soil samples to a testing laboratory for analysis of arsenic, 22 organochlorine pesticides, and dioxin. The following are the test results of the soil samples from Lot P-2:

- Arsenic – not detected
- Organochlorine Pesticides – not detected
- Dioxin – toxicity equivalent (TEQ) of 47.8 nanograms per kilogram (ng/kg)

The dioxin TEQ of 47.8 ng/kg is less than the 2010 State of Hawaii Department of Health (HDOH) Dioxin Soil Action Level of 240 ng/kg. The dioxin TEQ of 47.8 ng/kg also falls within Soil Category B (Minimally Impacted) with a TEQ range of 20 ng/kg to 240 ng/kg of the HDOH Dioxin Soil Management Category.

Based on these results, Bureau Veritas concluded that the surface soil, to a depth of 18 inches, in the non-residential site has not been significantly impacted by historical agricultural land uses and that the surface soil at the site is suitable for unrestricted land use. Additionally, Bureau Veritas recommended no further investigation of the non-residential site.

Clean Air Branch

- *A significant potential for fugitive dust emissions exists during all phases of construction and operations. Proposed activities that occur in proximity to existing residences, businesses, public areas or thoroughfares, exacerbate potential dust problems. It is recommended that a dust control management plan be developed which identifies and addresses all activities that have a potential to generate fugitive dust. The plan, which does not require DOH approval, would help with recognizing and minimizing the dust problems from the proposed project.*

Activities must comply with the provisions of Hawaii Administrative Rules, § 11-60-1-33 on Fugitive Dust. In addition, for cases involving mixed land use, we strongly recommend that buffer zones be established, wherever possible, in order to alleviate potential nuisance problems.

The contractor should provide adequate measures to control the fugitive dust from the road areas and during the various phases of construction. Examples of measures that can be implemented to control dust include, but are not limited to, the following:

a) *Planning the different phases of construction, focusing on minimizing the amount of dust-generating materials and activities, centralizing on-site vehicular traffic routes, and locating potential dust-generating equipment in areas of the least impact;*
b) *Providing an adequate water source at the site prior to start-up of construction activities;*
c) *Landscaping and providing rapid covering of bare areas, including slopes, starting from the initial grading phase;*
d) *Minimizing dust from shoulders and access roads;*
e) *Providing adequate dust control measures during weekends, after hours, and prior to daily start-up of construction activities; and*
f) *Controlling dust from debris being hauled away from the project site.*

Response:

Best Management Practices will be implemented to minimize the potential for dust-related impacts from the construction of the proposed exploratory well. Project-related activities will comply with applicable provisions of Section 11-60-1.33, HAR.

Clean Water Branch

- *Any project and its potential impacts to State waters must meet the State's: 1) Antidegradation policy, 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; 2) Designated uses, as determined by the classification of the receiving State waters; and 3) water quality criteria (Hawaii Administrative Rules (HAR), Chapter 11-54).*

Response:

The proposed project will comply with the State's antidegradation, designated uses, and water quality criteria.

- *The Army Corps of Engineers should be contacted at (808) 438-9258 to see if this 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.*

  Response:

  The Army Corps of Engineers concluded that the proposed project does not require a Department of the Army permit.

- *National Pollutant Discharge Elimination System (NPDES) permits are required 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, NPDES general permit coverage may be applied for by submitting a Notice of Intent (NOI) form: 1) storm water associated with industrial activities, as defined in Title 40, Code of Federal Regulations, Sections 122.26(b)(14)(i) through 122.26(b)(14)(ix) and 122.26(b)(14)(xi); 2) storm water associated with construction activities, including excavation, grading, clearing, demolition, uprooting of vegetation, equipment staging, and storage areas that result in the disturbance of equal to or greater than one (1) acre of total land area*; 3) treated effluent from leaking underground storage tank remedial activities; 4) once through cooling water less than one (1) million gallons per day; 5) hydrotesting water; 6) dewatering effluent; 7) treated effluent from petroleum bulk stations and terminals; 8) treated effluent from well drilling activities; 9) treated effluent from recycled water distribution systems; 10) storm water and certain non-storm water from a small municipal separate storm sewer system; and 11) circulation water from decorative ponds or tanks.*
  **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.*

  Response:

  An NPDES permit is not anticipated to be required for the proposed project. The proposed construction area will be less than one (1) acre in size. The applicant will discuss permit requirements for the proposed project with the Department of Health Clean Water Branch.

- *A separate NOI form for each type of discharge must be submitted 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.

Response:

The applicant acknowledges that a separate NOI form must be submitted for each type of discharge, if applicable, at least 30 calendar days prior to the start of discharge activity.

- *For types of wastewater discharges not listed above or wastewater discharging into Class 1 or Class AA waters, you may need to obtain an NPDES individual permit. Class 1 waters include, but is not limited to, all State waters in natural reserves, preserves, sanctuaries, and refuges established by the Department of Land and Natural Resources (DLNR) under Hawaii Revised Statutes (HRS), Chapter 195, or similar reserves for the protection of aquatic life established under HRS, Chapter 195.*

Response:

No discharges into Class 1 or Class AA waters are anticipated.

- *An application for an NPDES individual permit must be submitted at least 180 calendar days before the commencement of the discharge or start of construction activities. 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.*

Response:

The applicant acknowledges that an NPDES individual permit application, if applicable, must be submitted at least 180 calendar days before the commencement of discharge or construction activities.

- *You must also submit a copy of the NOI or NPDES permit application to the State DLNR, 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.*

Response:

The applicant acknowledges that a copy of the NOI or NPDES permit application, if applicable, must be submitted to the SHPD.

- *Please note that all discharges related to the project construction or operation activities, whether or not NPDES permit coverage and/or Section 401 WQC are required, must comply with the State's Water Quality Standards.*

Response:

The applicant acknowledges that all discharges related to project construction and operation 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.*

Response:

The applicant acknowledges that compliance with water quality and permitting requirements are subject to Chapter 11-54 and 11-55, HAR.

Safe Drinking Water Branch

- *Federal and state regulations define a public water system as a system that serves 25 or more individuals at least 60 days per year or has at least 15 service connections. All public water system owners and operators are required to comply with Hawaii Administrative Rules, Title 11, Chapter 20, titled Rules Relating to Potable Water Systems.*

Response:

The proposed project represents the preliminary exploratory phase of the Wailuku Well. The project is limited to the construction and testing of the well site. Water from the well will not serve any DWS customers. As such, the proposed project does not constitute a public water system under federal and state regulations. If the testing determines that the well is a suitable potable water source, a separate Environmental Assessment would be prepared for a permanent Wailuku Well.

- *All new public water systems are required to demonstrate and meet minimum capacity requirements prior to their establishment. This requirement involves demonstration that the system will have satisfactory technical, managerial and*

financial capacity to enable the system to comply with safe drinking water standards and requirements.

Response:

The proposed project is not a new public water system. See response above.

- *Projects that propose development of new sources of potable water serving or proposed to serve a public water system must comply with the terms of Section 11-20-29 of Chapter 20. This section requires that all new public water system sources be approved by the Director of Health prior to its use. Such approval is based primarily upon the submission of a satisfactory engineering report which addresses the requirements set in Section 11-20-29.*

Response:

The proposed exploratory well will not serve a public water system.

- *The engineering report must identify all potential sources of contamination and evaluate alternative control measures which could be implemented to reduce or eliminate the potential for contamination, including treatment of the water source. In addition, water quality analyses for all regulated contaminants, performed by a laboratory certified by the State Laboratories Division of the state of Hawaii, must be submitted as part of the report to demonstrate compliance with all drinking water standards. Additional parameters may be required by the Director for this submittal or additional tests required upon his or her review of the information submitted.*

Response:

The proposed project will involve the testing of water quality conditions of a potential new water source. Water quality analyses will be conducted following the construction of the proposed exploratory well to determine the site's suitability as a permanent potable water source.

- *All sources of public water systems must undergo a source water assessment which will delineate a source water protection area. This process is preliminary to the creation of a source water protection plan for that source and activities which will take place to protect the source of drinking water.*

Response:

The proposed exploratory well will not serve a public water system.

- *Projects proposing to develop new public water systems or proposing substantial modifications to existing public water systems must receive approval by the Director of Health prior to construction of the proposed system or modification. These projects include treatment, storage and distribution systems of public water systems. The approval authority for projects owned and operated by a County Board or Department of Water or Water Supply has been delegated to them.*

  Response:

  The proposed project does not involve the construction or substantial modification of a public water system.

- *All public water systems must be operated by certified distribution system and water treatment plant operators as defined by Hawaii Administrative Rules, Title 11, Chapter 11-25 titled; Rules Pertaining to Certification of Public Water System Operators.*

  Response:

  The proposed project is not a new public water system.

- *All projects which propose the use of dual water systems or the use of a non-potable water system in proximity to an existing potable water system to meet irrigation or other needs must be carefully designed and operated to prevent the cross-connection of these systems and prevent the possibility of backflow of water from the non-potable system to the potable system. The two systems must be clearly labeled and physically separated by air gaps or reduced pressure principle backflow prevention devices to avoid contaminating the potable water supply. In addition backflow devices must be tested periodically to assure their proper operation. Further, all non-potable spigots and irrigated areas should be clearly labeled with warning signs to prevent the inadvertent consumption on non-potable water. Compliance with Hawaii Administrative Rules, Title 11, Chapter 11-21 titled; Cross-Connection and Backflow Control is also required.*

  Response:

  The proposed project does not propose the use of dual water systems or the use of a non-potable water system in proximity to an existing water system.

- *All projects which propose the establishment of a potentially contaminating activity (as identified in the Hawai`i Source Water Assessment Plan) within the source water protection area of an existing source of water for a public water supply should address this potential and activities that will be implemented to prevent or reduce the potential for contamination of the drinking water source.*

Response:

The proposed project does not propose the establishment of a potentially contaminating activity within the source water protection area of an existing public water source.

Solid and Hazardous Waste Branch

- *The state regulations for hazardous waste are in Chapters 11-260 to 11- 280, Hawaii Administrative Rules (HAR). These rules apply to the identification, handling, transportation, storage and disposal of regulated hazardous waste. Generators, transporters and treatment, storage and disposal facilities of hazardous waste must adhere to these requirements or be subject to fines and penalties.*

Response:

The proposed project will comply with applicable requirements of HAR, Chapters 11-260 to 11-280.

- *Generators of solid waste are required to ensure that their wastes are properly delivered to permitted solid waste management facilities. Managers of construction and demolition projects should require their waste contractors to submit disposal receipts and invoices to ensure proper disposal of wastes.*

Response:

Construction waste for the project will be properly disposed of at an approved construction waste disposal facility. Following project construction, the proposed exploratory well will generate minimal solid waste, if any.

- *HRS Chapter 342G encourages the reduction of waste generation, reuse of discarded materials, and the recycling of solid waste. Businesses, property managers and developers, and government entities are highly encouraged to develop solid waste management plans to ensure proper handling of wastes. Solid waste management plans should also seek to maximize waste diversion and minimize disposal. Such plans should include designated areas to promote the collection of reusable and recyclable materials.*

Response:

The proposed exploratory well will generate minimal solid waste, if any.

Noise, Radiation, and Indoor Air Quality Branch

- *Project activities shall comply with Chapter 11-39 (Air Conditioning and Ventilating), Chapter 11-45 (Radiation Control) and 11-46 (Community Noise Control) of the Administrative Rules of the Department of Health.*

Response:

The proposed project will comply with applicable requirements of HAR, Chapter 11-46, community noise control. HAR, Chapter 11-39 (Air Conditioning and Ventilating) and Chapter 11-45 (Radiation Control) do not apply to the proposed project.

FEB 09 2011

NEIL ABERCROMBIE
GOVERNOR

GLENN M. OKIMOTO
INTERIM DIRECTOR

Deputy Directors
Ford N. Fuchigami
Jan S. Gouveia
Randy Grune
Jadine Urasaki

IN REPLY REFER TO:

STP 8.0341

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

February 2, 2011

Ms. Leilani Pulmano, Program Manager
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Pulmano:

Subject: Wailuku Exploratory Well
Pre-Consultation for Draft Environmental Assessment (DEA)

Thank you for requesting the State Department of Transportation's (DOT) review of the subject project. DOT understands that the Maui County Department of Water Supply (DWS) proposes to construct an exploratory well within the Kehalani Mauka development on a portion of an undeveloped parcel. Access to the project will be from a temporary roadway that connects to Kehalani Mauka Parkway.

Given the subject project location, it is not anticipated that State highway facilities will be impacted.

DOT appreciates the opportunity to provide comment. If there are any questions, please contact Mr. David Shimokawa of the DOT Statewide Transportation Planning Office at telephone number (808) 831-7976.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Interim Director of Transportation

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

FEB 01 2011

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

HRD11/5509

January 25, 2011

Leilani Pulmano, Program Manager
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawai'i 96793

RE: Pre-Draft Environmental Assessment Consultation
Wailuku Exploratory Well
Wailuku, Island of Maui

Aloha e Ms. Pulmano,

The Office of Hawaiian Affairs (OHA) is in receipt of your January 5, 2011 initiating consultation ahead of a draft environmental assessment (DEA) which will be prepared for the construction and operation of an exploratory well (project) proposed County of Maui-Department of Water Supply (DWS). The project is being developed as part of a larger effort to replace an existing water source as the closure of Wailuku Shaft 33 (Shaft 33) is anticipated to prevent water quality degradation associated with pumping water from concentrated locations. The project will occur within 12, 000 square feet of land acquired by the DWS from a private landowner. The use of County of Maui (County) lands and funds is proposed and thus, preparation of this DEA is required pursuant to Chapter 343, Hawaii Revised Statutes (HRS). OHA also sees the DEA as a support document for necessary State of Hawai'i and County approvals and permits which will be required for the project.

The project will draw water from the Iao Aquifer, which has been designated a Ground Water Management Area by the State of Hawai'i-Commission on Water Resource Management. Your commitment to ensure this project conforms to applicable laws related to well construction and operation is appreciated. This project is one of six wells (2 have already been completed and 4 new wells including this one are proposed) which are intended to provide the water currently pumped from Shaft 33. Only the location of this project is depicted in the information included with your letter and we are interested to see the locations of all six wells to gain an understanding of the extent of this larger effort. Your letter details that this DEA only covers the construction and operation of an exploratory well and that should pump and water quality tests confirm this site's potential as a source well, separate Chapter 343, HRS compliance documents will be prepared.

OHA sees this project in the larger context of contributing to the development of a water system (system) which will pump a total of nearly 13 million gallons of water per day. With this in mind, we look forward to discussions on whether this project and the larger system intends to only serve the needs of existing DWS customers or if the needs of future customers are also being considered. We also note that Chapter 174C, HRS requires a specific process for the "closure" or abandonment of wells to ensure public safety and protect water quality. This process may be applicable to the proposed closure of Shaft 33 detailed in your letter.

Thank you for the initiating consultation at this early stage. We look forward to reviewing the DEA and providing additional comments at that time. Should you have any questions, please contact Keola Lindsey at 594-0244 or keolal@oha.org.

'O wau iho nō me ka 'oia'i'o,

Clyde W. Nāmu'o
Chief Executive Officer

C: Maui Community Outreach Coordinator

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRAGA
KAREN S. BERG
MARK ALEXANDER ROY

April 5, 2011

Clyde W. Nāmu'o, Chief Executive Officer
State of Hawaii
Office of Hawaiian Affairs
711 Kapiolani Boulevard, Suite 500
Honolulu, Hawaii 96813

SUBJECT: Draft Environmental Assessment for the Proposed Wailuku Exploratory Well at TMK (2)3-5-001:100 (por.), Wailuku, Maui, Hawaii

Dear Mr. Nāmu'o:

Thank you for your letter, dated January 25, 2011, providing early consultation comments on the subject project. On behalf of the applicant, County of Maui, Department of Water Supply (DWS), we offer the following information in response to the comments provided.

This is a response to your question about the locations of other planned wells. The exact locations of other planned wells have not been determined at this time. As previously stated, DWS intends to spread pumping within the Iao Aquifer to prevent potential water quality degradation associated with concentrated pumping at a few locations. DWS is currently negotiating with landowners to select additional well sites to fulfill its intent to spread pumping. DWS would like these sites to be located between the proposed Wailuku Exploratory Well and the existing Waikapu Tank Site Well on Waiko Road; however, the exact locations are subject to ongoing negotiations with landowners.

This is a response to your comments about viewing this project in the larger context of contributing to the development of a water system with a substantial capacity upon completion of future additional wells. Development of this project and future additional wells will not increase water production capability. These projects will prevent potential degradation of the aquifer by spreading pumping and will improve the reliability of DWS's water system. The State of Hawaii Commission on Water Resource Management (CWRM) adopted a sustainable yield of 20 million gallons per day (mgd) for the Iao Aquifer. In 2003, the CWRM designated the Iao Aquifer as a groundwater management area and limited groundwater withdrawal to 90 percent of its sustainable yield or 18 mgd on a 12-month moving average basis. In July 2009, the 12-month

305 High Street, Suite 104 · Wailuku, Hawaii 96793 · ph: (808)244-2015 · fax: (808)244-8729 · planning@mhplanning.com · www.mhplanning.com

moving average was 16.1 mgd. Groundwater withdrawal from the aquifer is, therefore, within management thresholds established by the CWRM.

Thank you for the information on Chapter 174C, Hawaii Revised Statutes, regarding closure or abandonment of existing wells. We acknowledge that applicable regulations will be followed when Shaft 33 is closed in the future.

We appreciate the input provided by your department. A copy of your comment letter will be included in the Draft EA for the proposed project. Should you have any questions, please feel free to contact me at (808) 244-2015.

Sincerely,

Leilani Pulmano
Program Manager

LP:yp
cc: Tom Ochwat, County of Maui, Department of Water Supply
Ronald Fukumoto, Ronald M. Fukumoto Engineering, Inc.
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ALAN M. ARAKAWA
MAYOR

JEFFREY A. MURRAY
CHIEF

ROBERT M. SHIMADA
DEPUTY CHIEF

JAN 14 2011

COUNTY OF MAUI

DEPARTMENT OF FIRE AND PUBLIC SAFETY
FIRE PREVENTION BUREAU

313 MANEA PLACE • WAILUKU, HAWAII 96793
(808) 244-9161 • FAX (808) 244-1363

Date : **January 13, 2011**

To : **Munekiyo & Hiraga, Inc.**
Leilani Pulmano
305 High Street, suite 104
Wailuku , Hawaii 96793

RE : **Early Consultation Request for the Preparation of a DEA for the Proposed Wailuku Exploratory Well**
DWS Job No. 09-12
TMK (2) 3-5-001:100(por)
Wailuku , Maui

Dear Leilani,

Thank you for the opportunity to comment on this early consultation for a DEA. At this time, our office has no comment or objections to the early comments of this DEA. DWS handles our Fire Flows from County Water and we handle Private Water at this time for future reference. *It was nice to finally get in touch with the "Leilani" from the M&H company that Nate Viste mentioned.*

If there are any questions or comments, please feel free to contact me at 244-9161 ext. 25.

Sincerely,

Kono Davis

Kono Davis
Lieutenant, Fire Prevention Bureau
313 Manea Place
Wailuku, HI 96793

MUNEKIYO & HIRAGA, INC.

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

MARK ALEXANDER BEAL

April 4, 2011

Kono Davis
Lieutenant, Fire Prevention Bureau
Department of Fire and Public Safety
County of Maui
313 Manea Place
Wailuku, Hawaii 96793

SUBJECT Draft Environmental Assessment for the Proposed Wailuku Exploratory Well at TMK (2)3-5-001:100 (por.), Wailuku, Maui, Hawaii

Dear Mr. Davis:

Thank you for your letter, dated January 13, 2011, providing early consultation comments on the subject project. On behalf of the applicant, County of Maui, Department of Water Supply (DWS), we acknowledge that you have no comment or objections at this time.

We appreciate the input provided by your department. A copy of your comment letter will be included in the Draft EA for the proposed project. Should you have any questions, please feel free to contact me at 244-2015.

Sincerely,

Leilani Pulmano
Program Manager

LP:tn
cc: Tom Ochwat, County of Maui, Department of Water Supply
Ronald Fukumoto, Ronald M. Fukumoto Engineering, Inc.
F:\data\fe\wailukuWell\responseLetters ECL\MFD resp.ltr.doc

305 High Street, Suite 104 · Wailuku, Hawaii 96793 · ph: (808)244-2015 · fax: (808)244-8729 · planning@mhplanning.com · www.mhplanning.com

FEB 02 2011

DEPARTMENT OF
HOUSING AND HUMAN CONCERNS
HOUSING DIVISION
COUNTY OF MAUI

ALAN M. ARAKAWA
Mayor
JO-ANN T. RIDAO
Director
JAN SHISHIDO
Deputy Director

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

January 24, 2011

Ms. Leilani Pulmano
Program Manager
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Pulmano:

Subject: **Early Consultation Request for the Preparation of a Draft Environmental Assessment for the Proposed Wailuku Exploratory Well (DWS Job No. 09-12) located at Wailuku, Maui, Hawaii.**
TMK (2)3-5-001:100(por.)

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

Please call Mr. Buddy Almeida of our Housing Division at (808) 270-7356 if you have any questions.

Sincerely,

Wayde T. Oshiro

WAYDE T. OSHIRO
Housing Administrator

cc: Director of Housing and Human Concerns

ALAN M. ARAKAWA
Mayor

JAN 25 2011

GLENN T. CORREA
Director

PATRICK T. MATSUI
Deputy Director

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

DEPARTMENT OF PARKS & RECREATION

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

January 18, 2011

Munekiyo & Hiraga, Inc.
Attn: Leilani Pulmano, Program Manager
305 High Street, Suite 104
Wailuku, HI 96793

SUBJECT: Early Consultation Request for the Preparation of a Draft Environmental Assessment for the Proposed Wailuku Exploratory Well (DWS Job No. 09-12) at TMK No. (2) 3-5-001:100 (por.), Wailuku, Maui, Hawaii

Dear Ms. Pulmano:

Thank you for notifying the Department of Parks & Recreation about the subject project. We have no comments at this time, and look forward to reviewing the Environmental Assessment when it is available.

Please feel free to contact me or Robert Halvorson, Chief of Parks Planning and Development, TA, at 270-7931, should you have any questions.

Sincerely,

GLENN T. CORREA
Director of Parks & Recreation

GTC:RH:ca
cc: Robert Halvorson, Chief of Parks Planning and Development, TA
S:\PLANNING\CSA\County Reviews\EA & EIS Reviews\Wailuku Exploratory Well Draft EA Prep.doc

JAN 18 2011

POLICE DEPARTMENT

COUNTY OF MAUI

ALAN M. ARAKAWA
MAYOR

OUR REFERENCE

YOUR REFERENCE

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

GARY A. YABUTA
CHIEF OF POLICE

CLAYTON N.Y.W. TOM
DEPUTY CHIEF OF POLICE

January 13, 2011

Ms. Leilani Pulmano
Program Manager
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, HI 96793

Dear Ms. Pulmano:

SUBJECT: Early Consultation Request for the Preparation of a Draft Environmental Assessment for the Proposed Wailuku Exploratory Well (DWS Job No. 09-12) at TMK No. (2) 3-5-001:100 (por.)

Thank you for your letter of January 5, 2011, requesting comments on the above subject.

We have reviewed the information submitted and have no comments or recommendations to make at this time. Thank you for giving us the opportunity to comment on this project.

Very truly yours,

A D. Matsuura

Assistant Chief Danny Matsuura
for: Gary A. Yabuta
Chief of Police

c: William Spence, Planning Department

JAN 27 2011

ALAN M. ARAKAWA
Mayor

DAVID C. GOODE
Director

ROWENA M. DAGDAG-ANDAYA
Deputy Director

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

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

CARY YAMASHITA, P.E.
Engineering Division

BRIAN HASHIRO, P.E.
Highways Division

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

January 24, 2011

Ms. Leilani Pulmano
MUNEKIYO & HIRAGA, INC.
305 High Street, Suite 104
Wailuku, Maui, Hawaii 96793

Dear Ms. Pulmano:

SUBJECT: EARLY CONSULTATION REQUEST FOR THE PREPARATION OF A DRAFT ENVIRONMENTAL ASSESSMENT FOR THE PROPOSED WAILUKU EXPLORATORY WELL (DWS JOB NO. 09-12); TMK: (2) 3-5-001:100 (POR.)

We reviewed your early consultation request and have no comments to add at this time.

Please call Rowena M. Dagdag-Andaya at 270-7845 if you have any questions regarding this letter.

Sincerely,

pp DAVID C. GOODE
Director of Public Works

DCG:RMDA:ls
xc: Highways Division
Engineering Division
S:\LUCA\CZM_prop_wailuku_exploratory_well_ec_35001100ls.wpd

ALAN M. ARAKAWA
Mayor

KYLE K. GINOZA, P.E.
Director

MICHAEL M. MIYAMOTO
Deputy Director

JAN 25 2011
TRACY TAKAMINE, P.E.
Solid Waste Division

Wastewater Reclamation Division

COUNTY OF MAUI
DEPARTMENT OF
ENVIRONMENTAL MANAGEMENT
2200 MAIN STREET, SUITE 100
WAILUKU, MAUI, HAWAII 96793

January 21, 2011

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

SUBJECT: WAILUKU EXPLORATORY WELL (DWS JOB NO. 09-12)
EARLY CONSULTATION
TMK (2) 3-5-001:100 (POR.), WAILUKU

We reviewed the subject application and have the following comments:

1. Solid Waste Division comments:

   a. None.

2. Wastewater Reclamation Division (WWRD) comments:

   a. None.

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

Sincerely,

KYLE K. GINOZA, P.E.
Director of Environmental Management

ALAN M. ARAKAWA
MAYOR

JAN 25 2011

JO ANNE JOHNSON
Director
MARC I. TAKAMORI
Deputy Director
Telephone (808) 270-7511

DEPARTMENT OF TRANSPORTATION

COUNTY OF MAUI
200 South High Street
Wailuku, Hawaii, USA 96793-2155

January 20, 2011

Ms. Leilani Pulmano
Munekiyo & Hiraga Inc.
305 High Street, Suite 104
Wailuku, Maui, Hawaii 96793

Subject: DEA for the Proposed Wailuku Exploratory Well

Dear Ms. Pulmano,

Thank you for the opportunity to comment on this project. We have no comments to make at this time.

Please feel free to contact me if you have any questions.

Sincerely,

Jo Anne Johnson
Director

Maui Electric Company, Ltd. • 210 West Kamehameha Avenue • PO Box 398 • Kahului, Maui, HI 96733-6898 • (808) 871-8461

JAN 12 2011

January 10, 2011

Ms. Leilani Pulmano, Program Manager
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Subject: Early Consultation Request for the Proposed Wailuku Exploratory Well
(DWS Job. No. 09-12)
Wailuku, Maui, Hawaii
Tax Map Key: (2) 3-5-001:100

Dear Ms. Pulmano,

Thank you for allowing us to comment on Early Consultation Request for the subject project.

In reviewing our records and the information received, should your exploratory well project or permanent well project require an electrical service, Maui Electric Company may require a maintained vehicle acces to our facilities at all times. Additionally, the project's anticipated electrical demands may have a substantial impact to our system, so we highly encourage the customer's electrical consultant to submit the electrical demand requirements, electrical service request, and project time schedule as soon as practical so that service can be provided on a timely basis.

Should you have any questions or concerns, please call me at 871-2341.

Sincerely,

Kyle Tamori
Staff Engineer

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRAGA
KAREN S. BERG
MARK ALEXANDER BEAL

April 4, 2011

Kyle Tamori, Staff Engineer
Maui Electric Company, Ltd.
210 West Kamehameha Avenue
Kahului, Hawaii 96733

SUBJECT Draft Environmental Assessment for the Proposed Wailuku Exploratory Well at TMK (2)3-5-001:100 (por.), Wailuku, Maui, Hawaii

Dear Mr. Tamori:

Thank you for your letter, dated January 10, 2011, providing early consultation comments on the subject project. On behalf of the applicant, County of Maui, Department of Water Supply (DWS), we offer the following information in response to the comments provided.

We acknowledge that the Maui Electric Company (MECO) may require a maintained vehicle access to its facilities at all times.

We note your comment that the project's anticipated electrical demands may have a substantial impact on your system. However, at this preliminary exploratory phase, electrical demands from MECO are not anticipated. Well construction and testing generally does not require any electrical energy from the local power company. Drill rigs and test pumps are often diesel operated equipment. If the exploratory well site is deemed a suitable potable water source, permanent power would be brought in for the long-term operation of a permanent Wailuku Well. A separate Environmental Assessment would be prepared for a permanent well and at that time, DWS would submit electrical demand requirements to MECO.

305 High Street, Suite 104 · Wailuku, Hawaii 96793 · ph: (808)244-2015 · fax: (808)244-8729 · planning@mhplanning.com · www.mhplanning.com

We appreciate the input provided by your department. A copy of your comment letter will be included in the Draft EA for the proposed project. Should you have any questions, please feel free to contact me at 244-2015.

Sincerely,

Leilani Pulmano
Program Manager

LP:tn
cc: Tom Ochwat, County of Maui, Department of Water Supply
Ronald Fukumoto, Ronald M. Fukumoto Engineering, Inc.
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JAN 14 2011

Network Engineering and Planning
OSP Engineering - Maui

Hawaiian Telcom

60 South Church St.
Wailuku, HI 96793
Phone 808 242-5102
Fax 808 242-8899

January 11, 2010

Munekiyo & Hiraga, Inc.
305 High St., Suite 104
Wailuku, HI 96793

Attention: Leilani Pulmano, Program Manager

Subject: Proposed Wailuku Exploratory Well
DWS Job No. 09-12 @ TMK No. (2)3-5-001:100 (por.) Wailuku

Dear Leilani,

Thank you for allowing us to review and comment on the subject project. Your plans have been received and put on file.

Hawaiian Telcom, Inc. has no comment, nor do we require any additional information at this time.

Should you require further assistance, please call me at 242-5107.

Sincerely,

Tom Hutchison
OSP Engineer

cc: Lynette Yoshida, Network Engineering Senior Manager

BICS File # 1101-001 (3080)

Tracy Nakamoto

From: Rik Papa [rpapa@stanfordcarr.com]
Sent: Friday, February 18, 2011 10:11 AM
To: Leilani Pulmano
Cc: 'Doug Jorg'; Gary Elster; Richard B. Riegels
Subject: RE: Proposed Wailuku exploratory well Early consultant comment letter

Leilani,
Thank you for allowing us the additional time to review. We did discuss at our monthly board meeting. There are no comments from the KCA. We feel that this is an issue that should be directed to the Master developer.

Please feel free to contact me directly should you have any further questions.

RIK PAPA
PRESIDENT
The Kehalani Community Association
OFFICE : (808) 537 - 5220 ext.247
FAX : (808) 537 -1801
E-MAIL : rpapa@stanfordcarr.com

-----Original Message-----
From: Leilani Pulmano [mailto:leilani@mhplanning.com]
Sent: Wednesday, February 09, 2011 7:48 PM
To: Rik Papa
Subject: RE: Proposed Wailuku exploratory well

Aloha Rik,

Thank you, I appreciate your follow through.

Mahalo,

Leilani Pulmano
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793
Telephone: (808)244-2015
Facsimile: (808)244-8729
Email: leilani@mhplanning.com

From: Rik Papa [rpapa@stanfordcarr.com]
Sent: Wednesday, February 09, 2011 5:36 PM
To: Leilani Pulmano
Cc: Doug Jorg
Subject: RE: Proposed Wailuku exploratory well

We should be able to comment following the meeting.
I will ask our property manager to prompt the board members to review in advance of our meeting next week and be ready to discuss.

thanks

RIK PAPA
VICE PRESIDENT / PROJECT MANAGER

STANFORD CARR DEVELOPMENT, LLC
1100 ALAKEA STREET, 27TH FLOOR
HONOLULU, HAWAII 96813
OFFICE : (808) 537 - 5220 ext.247
FAX : (808) 537 -1801
E-MAIL : rpapa@stanfordcarr.com

-----Original Message-----
From: Leilani Pulmano [mailto:leilani@mhplanning.com]
Sent: Wednesday, February 09, 2011 3:58 PM
To: Rik Papa
Cc: Doug Jorg
Subject: RE: Proposed Wailuku exploratory well

Aloha Rik,

Do you think it would be possible to send us comments shortly after? We are ready to publish the Draft EA. Sorry for the rush. Another option would be to comment during the Draft EA which will be published shortly.

Mahalo,

Leilani Pulmano
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793
Telephone: (808) 244-2015
Facsimile: (808) 244-8729
Email: leilani@mhplanning.com

-----Original Message-----
From: Rik Papa [mailto:rpapa@stanfordcarr.com]
Sent: Tuesday, February 08, 2011 5:36 PM
To: Leilani Pulmano
Cc: Doug Jorg
Subject: RE: Proposed Wailuku exploratory well

Note: our meeting is February 15th, we will discuss and send a response following our meeting.

Thank you

RIK PAPA
VICE PRESIDENT / PROJECT MANAGER
STANFORD CARR DEVELOPMENT, LLC
1100 ALAKEA STREET, 27TH FLOOR
HONOLULU, HAWAII 96813
OFFICE : (808) 537 - 5220 ext.247
FAX : (808) 537 -1801
E-MAIL : rpapa@stanfordcarr.com

-----Original Message-----
From: Leilani Pulmano [mailto:leilani@mhplanning.com]
Sent: Thursday, January 27, 2011 4:44 PM
To: Rik Papa
Cc: Doug Jorg; Gary Elster; Richard B. Riegels
Subject: RE: Proposed Wailuku exploratory well

Aloha Rik,

Sorry for the delay in my response. Sorry we got the incorrect PO Box. Yes, please send us your comments by February 15.

Mahalo,

Leilani Pulmano
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793
Telephone: (808) 244-2015
Facsimile: (808) 244-8729
Email: leilani@mhplanning.com

-----Original Message-----
From: Rik Papa [mailto:rpapa@stanfordcarr.com]
Sent: Wednesday, January 26, 2011 11:15 AM
To: Leilani Pulmano
Cc: Doug Jorg; Gary Elster; Richard B. Riegels
Subject: Proposed Wailuku exploratory well

Leilani,

I recently received your letter dated January 5, 2011. (it appears that you had an incorrect PO box address)

However, based on the fact that we just received the letter today,January 26th, we will not be able to provide our comments by the January 28th deadline. Therefore, I request to extend the dead line 30 days to February 28th. This will allow time for review and discussion with my fellow board members at our regularly scheduled monthly meeting on February 15th.

Please confirm receipt of our request and please confirm extention timeline via email.

Sincerely,

RikPapa
President
KehalaniCommunity Association

IX. REFERENCES

IX. REFERENCES

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

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

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

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

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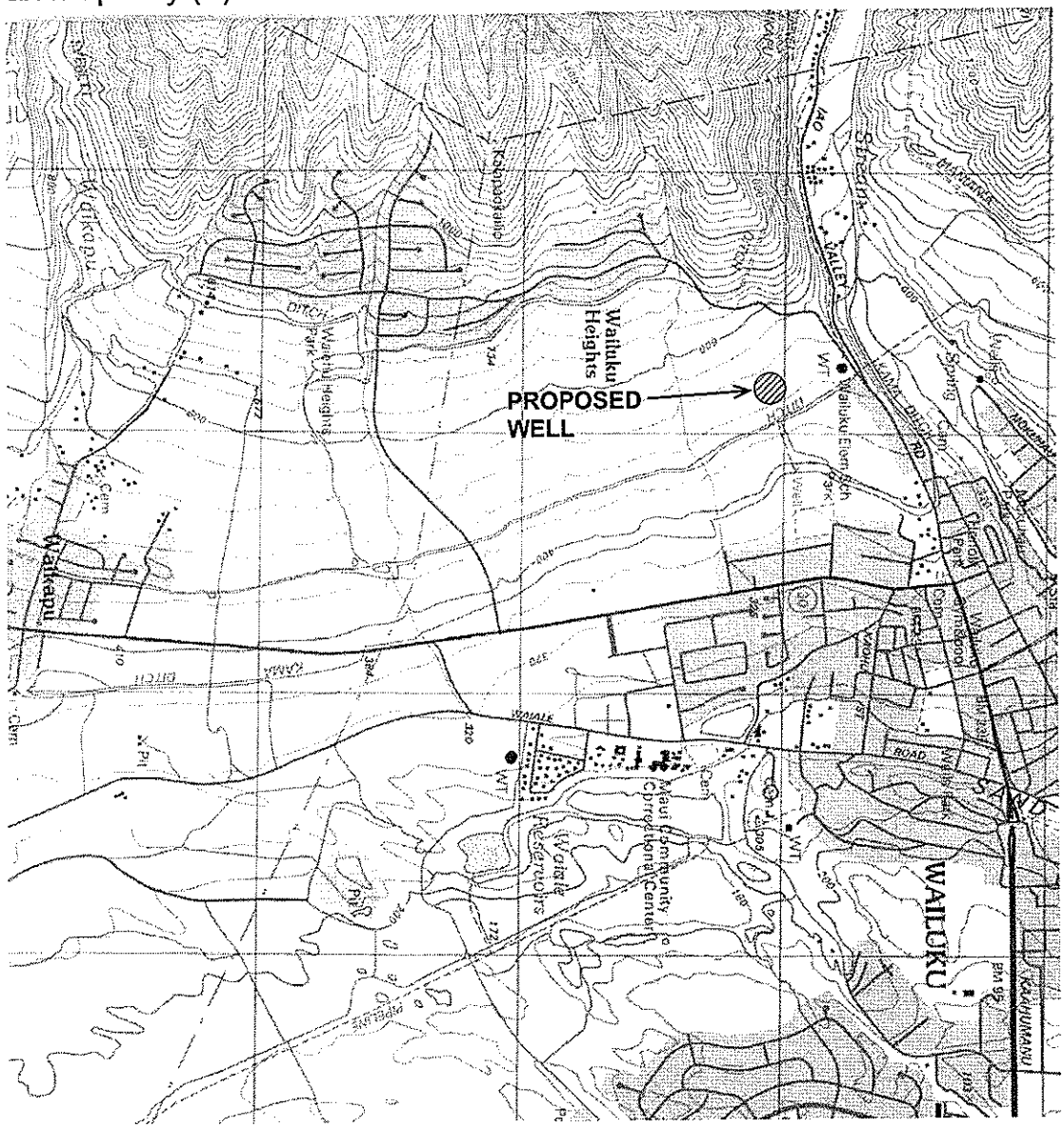
APPENDIX A.

Preliminary Design Report

PRELIMINARY DESIGN REPORT
For Wailuku Exploratory Well

Wailuku, Maui, Hawaii
Tax Map Key (2) 3-5-001: 067



Prepared for:

Department of Water Supply
County of Maui
200 South High Street
Wailuku, Hawaii 96793

Date: August 28, 2009

Prepared by:

Ronald M. Fukumoto Engineering, Inc.
1721 Wili Pa Loop, Suite 203
Wailuku, Hawaii 96793
Phone: (808) 242-8611
Fax: (808) 244-7510
E-Mail: office@rfemaui.com

TABLE OF CONTENTS

I. PURPOSE

The purpose of this report is to provide recommendations on the location, size, and capacity of the proposed exploratory well. This report will consider sustainability of the aquifer, the effects of spreading pumping within the aquifer, and other hydrogeological factors. In addition, the report will consider the well's proximity to water infrastructure and projects in the area.

II. DESCRIPTION

The Maui County Department of Water Supply (DWS) plans to construct an exploratory well in Wailuku, Maui within the Iao Aquifer System. (See Figure 1 - CWRM Hydrologic Units Map, page 9.) This project is part of the department's continuing efforts to spread out the pumping within the aquifer to prevent a reduction of water quality due to concentrated pumping at a few locations.

The proposed exploratory well is located above old Wailuku Town within the Kehalani Mauka development. The Maui County zoning designation of this area is Wailuku-Kahului Project District 3. The well site, a portion of an undeveloped parcel, lies about 1,000 feet to the south of the intersection of Main Street, Alu Road, and Iao Valley Road, and is about 200 feet to the northwest of the end of the Kehalani Mauka Parkway. The well site is a portion of Tax Map Key (2) 3-5-001: 067. (See Figure 2 - Location Map, page 10 and Figure 3 - Vicinity Map, page 11.)

III. BACKGROUND

A. Groundwater Hydrologic Units

The State Commission on Water Resource Management (CWRM) established groundwater hydrologic units or sustainable yields for each island to manage groundwater resources. CWRM divided each island into broad regions or sectors, and further divided each region into sub-regions or systems. These dividing lines serve as management tools and do not necessarily represent subsurface boundaries as evidenced by communication of groundwater between these areas.

As shown on the hydrologic units map, the proposed exploratory well falls within the Iao Aquifer System which is a part of the Wailuku Sector. Also within the Wailuku Sector are the Waihee Aquifer System to the northwest of the Iao Aquifer System and the Waikapu Aquifer System to the south of the Iao Aquifer System.

B. Iao Aquifer

The Iao Aquifer System has a sustainable yield of 20 million gallons per day (mgd). In 2003, CWRM designated the Iao Aquifer System as a groundwater management area and limited groundwater withdrawal from the aquifer to 90 percent of its sustainable yield (on

a 12-month moving average basis) or 18 mgd. At the present time, the 12-month moving average is 16.1 mgd. Pumping is concentrated at Waihee Wells, Waiehu Heights Wells, Mokuhau Wells, and Shaft 33, with the majority of withdrawals north of Iao Stream. (Mink & Yuen, *Replacement Well No. 2*, July 2009.) (See Figure 5 - Well Field Map, page 13.)

C. Shaft 33

Shaft 33 (State Well No. 5330-05), constructed in 1946 and put into operation in 1948, provided irrigation water for Wailuku Sugar Company's sugar cane operations. The installation consists of a portal at an elevation of about 400 feet above mean sea level (amsl), a 730-foot long tunnel inclined at 30 degrees from horizontal, and a pump chamber at an elevation of about 31 feet amsl. The pump chamber is approximately 20 feet wide, 30 feet long, and 30 feet high, with three 310-foot deep wells drilled ten feet apart. Based on available records, the horizontal location of the pump chamber is close to or just mauka of the Waihee Ditch. The approximate surface elevation of this point is about 460 feet amsl.

Through an agreement with the landowner, Kehalani Mauka LLC, DWS has pumped groundwater from Shaft 33 for a number of years. DWS uses one of the three wells equipped with a 3,900-gallons-per-minute pump and pumps an average of nearly 5 mgd. The use of Shaft 33 was intended to be an intern measure until development of other new wells. (Mink & Yuen, *Replacement Well No. 2*, July 2009.)

D. Waikapu Tank Site Well and Iao Tank Site Well

Two DWS well development projects in the Iao Aquifer System are under construction. The construction work involves installation of pumps, controls, and piping for the Waikapu Tank Site Well (State Well No. 5131-01) and the Iao Tank Site Well (State Well No. 5230-03). DWS initiated these projects to phase out the use of Shaft 33 and to spread out the withdrawals from the aquifer. The final environmental assessments were issued and findings of no significant impact for the Waikapu project and the Iao project were published in 2005 and in 2009, respectively. These two projects were preceded by successful exploratory well projects at those locations. Pump tests at each location established an installed peak capacity of 1,400 gallons per minute for each well.

DWS is updating its *Maui County Water Use and Development Plan* (WUDP). State law mandates each county to adopt such a plan to serve as a long-range planning document for water use. The draft of the *Central District Final Candidate Strategies Report* (Haiku Design & Analysis, June 17, 2009), one of the WUDP chapters, places the Waikapu Tank Site Well and the Iao Tank Site Well on a list of "committed, short term, and backup well resources." The report also identifies a replacement well for Shaft 33 as one of those resources. Since these wells are within the Iao Aquifer System, the report states that although the new wells would not add to water production capability, such resources would provide equipment redundancy and contribute towards system reliability.

IV. ANALYSIS

A. Hydrogeological Factors

A geologic map of the region of the Iao Aquifer System south of Iao Stream shows that exposed volcanic rock consists of Wailuku Basalt (QTwl). The exposed rock is visible along the ridges above the developed areas of Wailuku Heights. Wailuku Basalt is very permeable. Most of the DWS wells within the aquifer draw water from this geologic layer. Overlying the Wailuku Basalt formation are older alluvial deposits (QTao) that form a thick, relatively impermeable, sedimentary wedge. Overlying the old alluvial deposits are older dune deposits (Qdo) and recent alluvium (Qa) from Iao and Waikapu Streams. (See Figure 1 on page 6 of Mink & Yuen report, *Replacement Well No. 2,* July 2009, in Appendix A.)

Shaft 33, Waikapu Tank Site Well, and Iao Tank Site Well draw water from the Wailuku Basalt formation. A recent groundwater availability study for the Wailuku area indicates that Shaft 33 penetrates the alluvial deposits and enters the Wailuku Basalt formation at an elevation of 68± feet amsl. (Gingerich, 2008.) Shaft 33's pump chamber at an elevation of 31± feet amsl and its three 310-foot deep wells below the chamber are within this formation. A single well, equipped with a 3,900 gpm pump with an average withdrawal of nearly 5 mgd, confirms the permeability of the aquifer.

Pump test results of the Waikapu Tank Site Well and the Iao Tank Site Well also confirm the permeability of the aquifer. The constant-rate test for four days for the Waikapu Tank Site Well at 1,425 gpm yielded a drawdown of 5.54 feet. A similar test for the Iao Tank Site Well at 1,400 gpm yielded a drawdown of 3.0 feet. These results indicate high transmissivity values and a permeable aquifer.

The chloride values determined as part of the constant-rate test for the Waikapu Tank Site Well and the Iao Tank Site Well were 31 milligrams per liter (mg/L) and 25 mg/L, respectively. These low chloride values are due in part to compliance with CWRM's well construction standards for basal aquifers. The standards require that the bottom elevation of the well not exceed one-fourth of the theoretical thickness of the basal freshwater lens or 41 times the basal head. (Mink & Yuen, *Replacement Well No. 2*, July 2009)

B. Aquifer Sustainability

CWRM adopted an estimated sustainable yield of 20 mgd for the Iao Aquifer System for basal groundwater sources. This figure was based on the Robust Analytical Model (RAM) developed by John Mink. RAM is a volumetric model that accounts for average amount of recharge, the initial water level in the aquifer, and an equilibrium water level as a result of pumping at a given rate. It assumes that wells are optimally spaced within an aquifer and that wells extract water from the freshwater core of the aquifer. However, RAM does not account for the spatial distribution of wells within the aquifer, the effect of one well upon another, or the sustainable capacities of individual wells or well fields.

The spacing of existing wells within the Iao Aquifer System and their depths may be detrimental to the sustainability of the aquifer. There is a concentration of wells on the north side of Iao Stream. These sources withdraw about 70 percent of the total amount of groundwater from the aquifer. Other potentially detrimental characteristics include wells that are drilled too deep, are spaced too closely, or concentrate pumping at a single location.

A recent study, *Ground-Water Availability in the Wailuku Area, Maui, Hawaii,* prepared by Stephen B. Gingerich, and commissioned by DWS and the United States Geological Survey, presented a groundwater flow model for the Wailuku Sector including the Waihee, Iao, and Waikapu Aquifer Systems. The study considered a number of scenarios based on different recharge conditions and pumping conditions. The first two simulate the present well configuration with different pumping rates. Scenario 3 simulates redistributed withdrawal from the aquifer. Results of these three scenarios are summarized below. (Mink & Yuen, *Addendum Report,* July 2009.)

TABLE 1
Simulation Scenarios and Results
(adapted from Gingerich, 2008)

Scenario	Recharge Condition (over West Maui and Central Maui)	Pumping Condition in Iao Aquifer	Results After 150 Years
1	350 mgd: 2000-2004 land use condition with 1926-2004 rainfall	2006 withdrawal rate: 16.8 mgd	Water levels 2-3 feet lower than present; 50% salinity at Waiehu Deep Monitor Well rises 250 feet
2	350 mgd: 2000-2004 land use condition with 1926-2004 rainfall	1996 withdrawal rate: 20.1 mgd	Water levels in some well fields decline more than 5 feet; 50% salinity at Waiehu Deep Monitor Well rises 300 feet
3	350 mgd: 2000-2004 land use condition with 1926-2004 rainfall	Using withdrawal rate near CWRM sustainable yield 19.14 mgd	Water levels decline more than 5 feet at new well fields and 1 foot higher (relative to Scenario 1) at existing well fields; 50% salinity at Waiehu Deep Monitor Well rises 240-250 feet

The following trends can be inferred from these simulations. Comparison of Scenario 1 and Scenario 2 indicates that a lower withdrawal rate causes less stress on the aquifer. Stressing the aquifer results in lowering of the well's water level and rising of the well's 50-percent salinity depth. Comparison of Scenario 3 and Scenario 1 indicates that redistributing withdrawal from the aquifer is beneficial. Despite an increase in withdrawal from 16.8 mgd to 19.14 mgd, the lowering of the well's water level is not severe and the 50-percent salinity depth remains unchanged. The validity of the model can be tested by implementing a beneficial scenario, such as redistributing withdrawals, and by monitor-

ing water levels and salinity.

C. Spreading Pumpage

Various factors affect the lowering of the water level or drawdown due to wells in close proximity to each other. These factors include pumping rate, aquifer transmissivity, and distance between the wells. Mink & Yuen's *Addendum Report* includes a detailed explanation of this formula for steady-state drawdown. (See pages 6 and 7 of Mink & Yuen, *Addendum Report*, July 2009 in Appendix B.) Low pumping rates, high aquifer transmissivity, and large distances between the wells result in less drawdown.

D. Existing Water System

The exploratory well's proximity to existing DWS facilities allows for easy connection to those facilities. The proposed exploratory well is close to an existing utility lot (Lot WL-1) that runs between Kehalani Mauka Parkway and the Iao Tank Site. (See Figure 6 - Parcel Map, page 14.) This lot consists of a dirt road that adjoins the Waihee Ditch. An existing 16-inch pipeline runs within this lot and connects the Iao Tank to the Kehalani development. If the exploratory well is successful, this utility lot can serve as the corridor for a future water transmission line between the well and the Iao Tank.

E. Other Factors

The well site is suitable for construction of a future pumping station. The elevation of the site is about 505 feet above mean sea level. The site generally slopes down from West to East with a surface slope of about 8 percent. There are no flood hazards at the site. The flood insurance rate map of the area shows that the area is within Zone C, an area subject to minimal flooding.

According to the Soil Conservation Service, the on-site soil consists of Wailuku silty clay, 3 to 7 percent slopes (WvB). The Wailuku series includes well-drained soils on alluvial fans on the island of Maui derived from weathered basic igneous rock. The survey characterizes the soil as having a dark reddish-brown surface layer approximately 12 inches thick, a subsoil layer approximately 48 inches thick, moderate permeability, slow runoff, and slight erosion hazard. (See Figure 4 - Soil Map, page 12.)

V. RECOMMENDATIONS

A. Site Construction

The well site is within an undeveloped parcel close to the end of the improved section of Kehalani Mauka Parkway. To access the site, a temporary roadway will be constructed from the end of the improved street to the site. Approximately 10,000 square feet of land will be acquired for the well site. This land area allows for future construction of a pumping station consisting of pump pad and piping, pump control enclosure, and service driveway. Interim

site improvements for the exploratory well project include grading of the immediate work area to create a gently sloping pad and constructing a chain link security fence around the site.

B. Exploratory Well Construction

After preparation of the site, the exploratory well will be drilled, cased, and tested. The drilling process involves drilling a pilot hole with a small-diameter bit, and enlarging or reaming the hole with larger bits. The casing process involves welding sections of casing, installing the sections in the drilled hole, and placing gravel or grout in the space between the drilled hole and the casing. The testing process involves installing a test pump in the well, performing a step-drawdown test and constant-rate test, taking water samples and performing water quality tests, and removing the test pump. The pump test and water quality data will then be analyzed to determine the feasibility of developing the exploratory well as a new potable water source.

Design of the exploratory well will conform to requirements of the CWRM, State Department of Health (DOH) wellhead protection protocols, and DWS standards. CWRM standards will limit the depth of the well to one-fourth the thickness of the theoretical thickness of the basal freshwater lens or 41 times the basal head. Assuming the basal head is 10 feet amsl, the bottom elevation is -102± feet amsl. DOH wellhead protection standards include grouting of the annular space between the drilled hole and the solid well casing, protecting the well from flooding, and preventing polluting activities around the site and upstream of the site. Due to penetration into the permeable Wailuku Basalt formation at an elevation of 68± feet amsl, DWS anticipates an installed peak capacity of 1,400 gpm. A well with a drilled diameter of 24 inches and a casing diameter of 18 inches will accommodate such a pump. (See Figure 1 on page 8 of Mink & Yuen, *Addendum Report*, July 2009 in Appendix B.)

The following is a summary of preliminary design data for the exploratory well.

TABLE 2
Wailuku Exploratory Well
Preliminary Design Data

Description	Value	Unit
Installed Peak Capacity	1,400	gallons per minute
24-hour Capacity	2.0	million gallons per day (mgd)
16-hour Capacity	1.3	mgd
Well Diameter	24	inches
Casing Diameter	18	inches
Surface Elevation	505	feet above mean sea level
Bottom Elevation	-102	feet above mean sea level
Total Depth	607	feet
Solid Casing with Grout Seal	515	feet
Louvered Casing with Open Hole	92	feet

C. Construction Costs

Summarized below are anticipated costs for the site construction and exploratory well construction.

TABLE 3
Wailuku Exploratory Well
Preliminary Opinion of Probable Construction Costs

Description	Quantity	Unit	Unit Price	Total
Site Preparation	1	each	$70,000	$70,000
12-inch Pilot Hole Drilling	607	lin. ft.	170	103,190
18-inch Hole Reaming	607	lin. ft.	200	121,400
24-inch Hole Reaming	607	lin. ft.	220	133,540
18-inch Solid Casing	515	lin. ft.	90	46,350
18-inch Louvered Casing	92	lin. ft.	100	9,200
Annular Space Grouting	515	lin. ft.	60	30,900
Test Pump Installation	1	each	33,000	33,000
Pump Tests	1	each	29,000	29,000
Chain Link Fence	1	each	10,000	10,000
Subtotal				586,580
Contingencies @ 15%				87,987
Total				674,567
Total (rounded off)				**$675,000**

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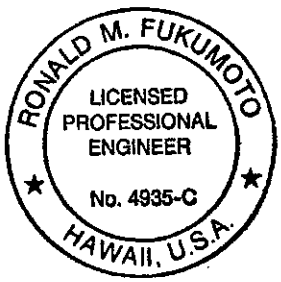
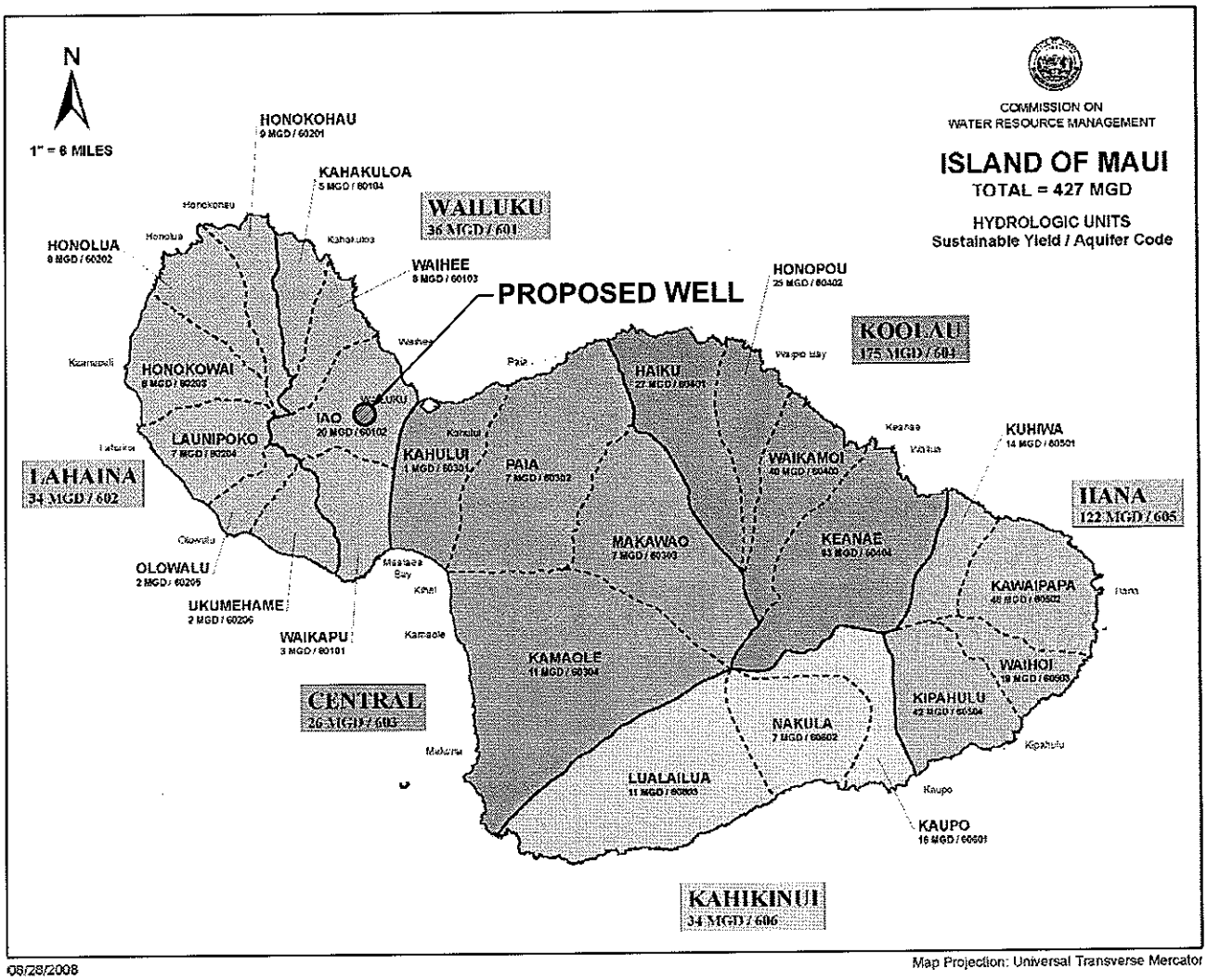


This work was prepared by
me or under my supervision.

Ronald M. Fukumoto

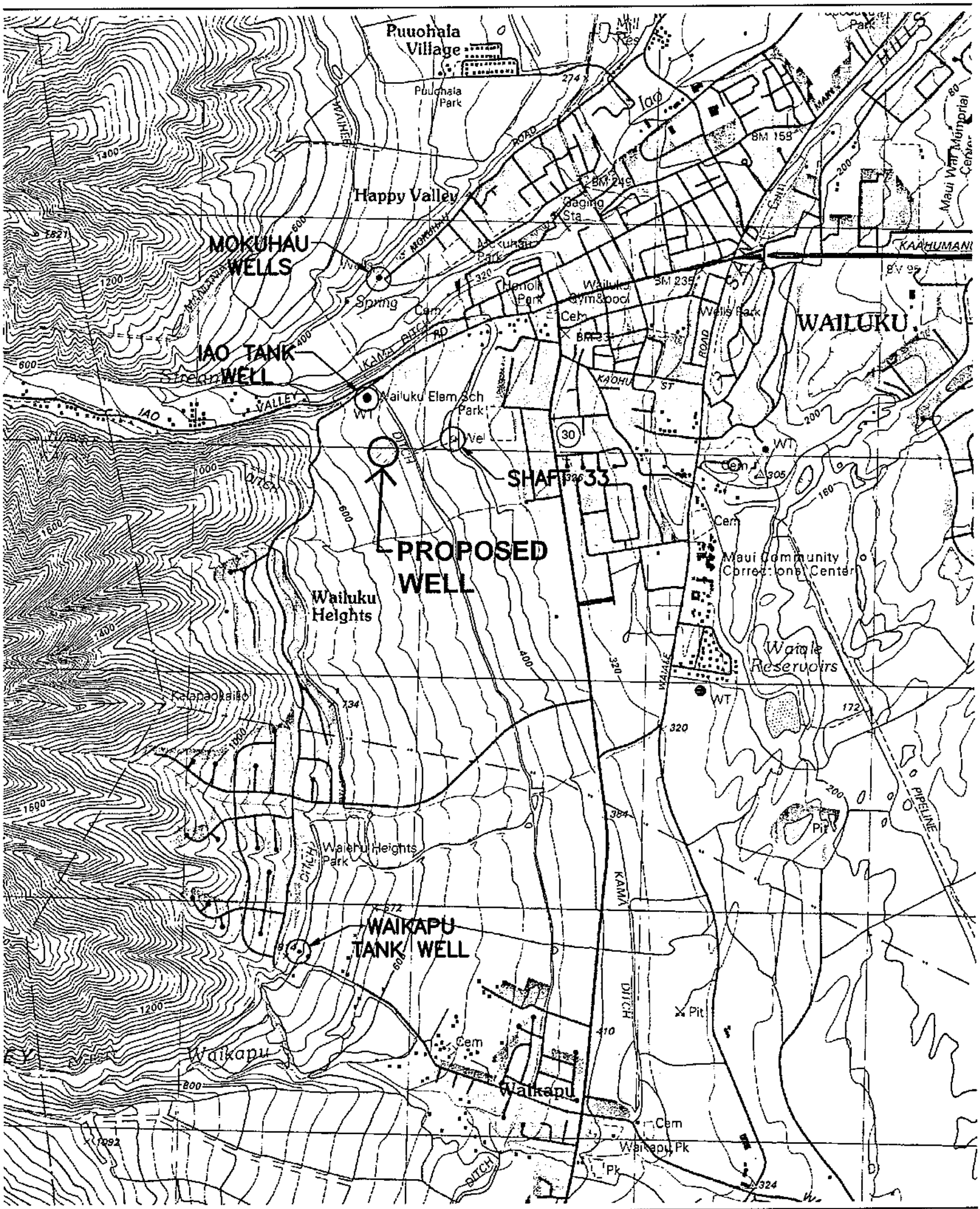


CWRM HYDROLOGIC UNITS MAP Figure 1

SCALE IN MILES

NORTH 0 4 8 16 24

SOURCE: COMMISSION ON WATER RESOURCE MANAGEMENT



LOCATION MAP (USGS Map)

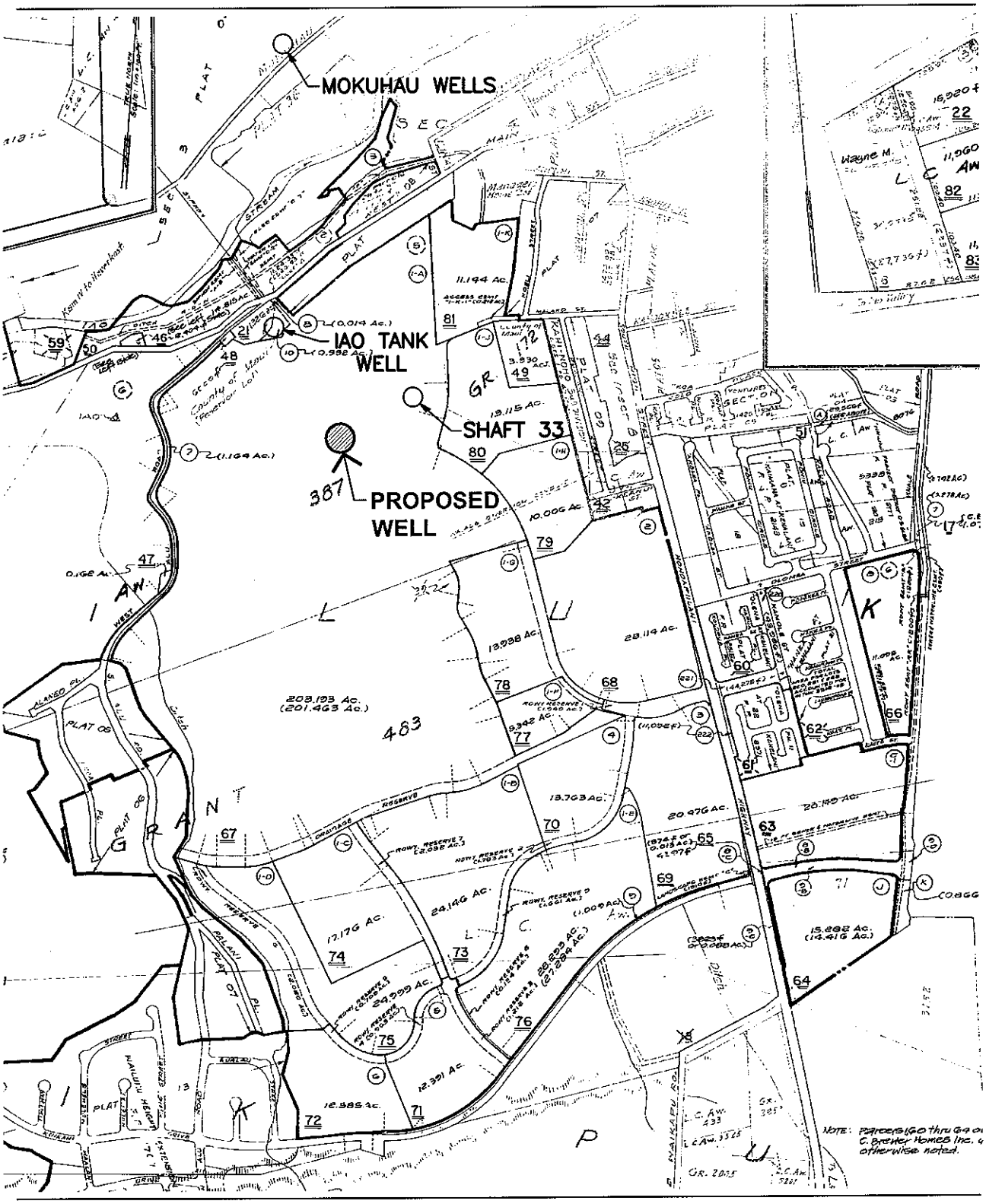
SCALE IN FEET

0 1000 2000 4000 6000

Figure 2

SOURCE: USGS WAILUKU QUADRANGLE MAP

RFE



VICINITY MAP (Tax Map)

SCALE IN FEET

NORTH 0 500 1000 1500 2000

Figure 3

SOURCE: TAX MAP KEY (2) 3-5-001

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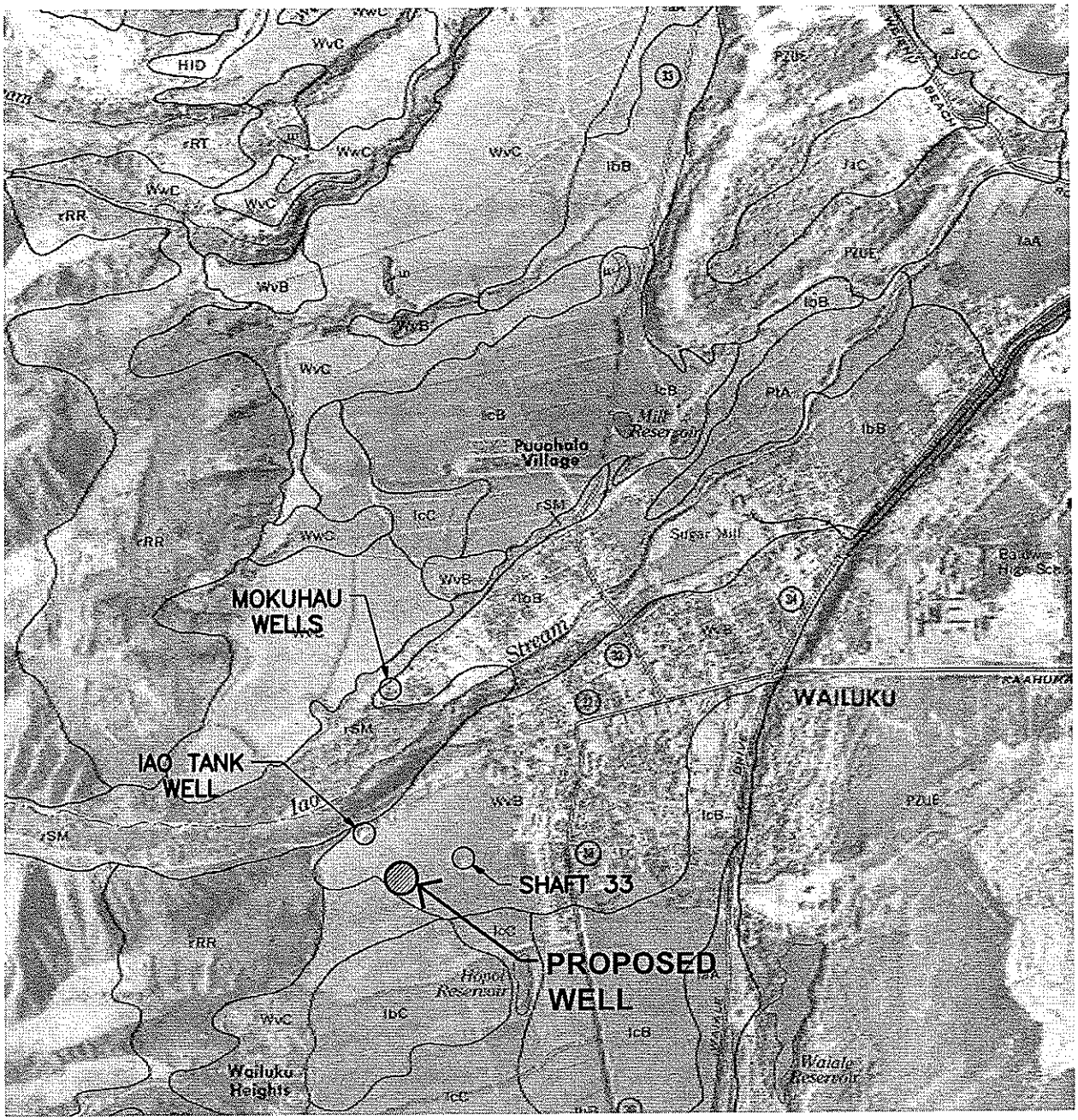

SOIL MAP

SCALE IN FEET

NORTH 0 1000 2000 4000 6000

Figure 4

SOURCE: SOIL SURVEY

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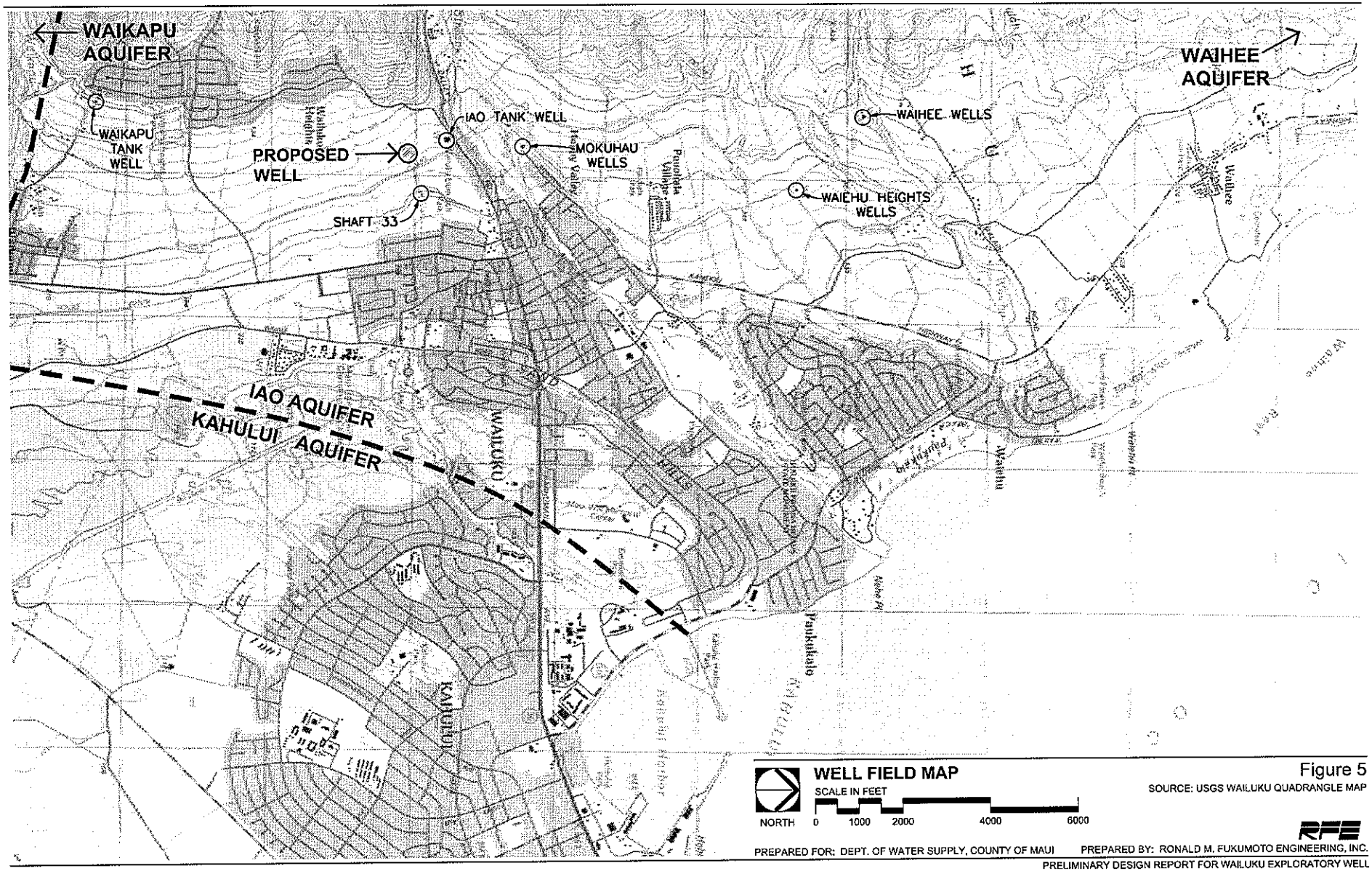
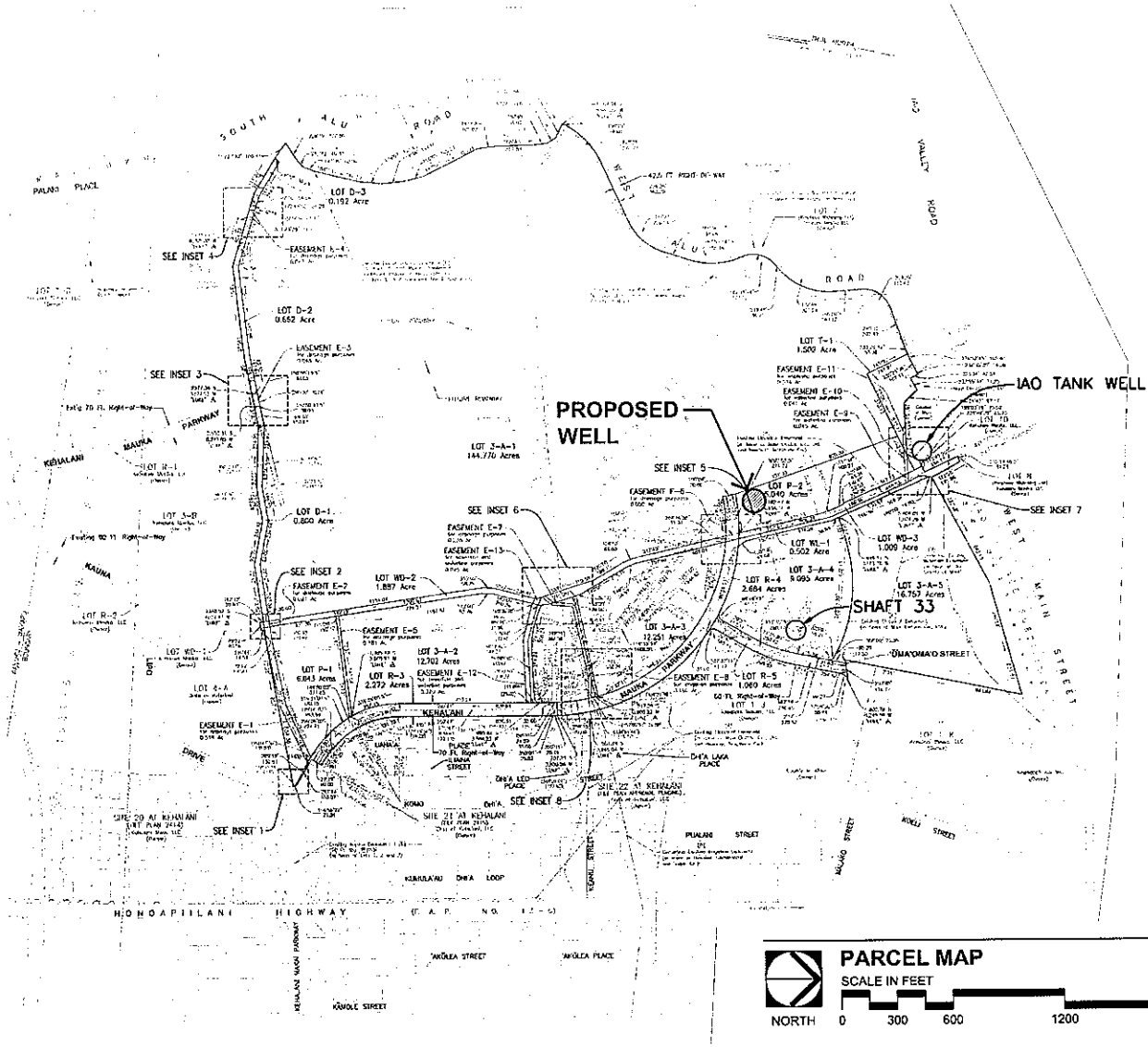


Figure 5

SOURCE: USGS WAILUKU QUADRANGLE MAP

PREPARED FOR: DEPT. OF WATER SUPPLY, COUNTY OF MAUI

PREPARED BY: RONALD M. FUKUMOTO ENGINEERING, INC.



PARCEL MAP

SCALE IN FEET

Figure 6

SOURCE: KEHALANI MAUKA (LARGE-LOT) SUBDIVISION NO. 3-B WARREN S. UNEMORI ENGINEERING, INC.

PREPARED FOR: DEPT. OF WATER SUPPLY, COUNTY OF MAUI

PREPARED BY: RONALD M. FUKUMOTO ENGINEERING, INC.

APPENDIX A

Replacement Well No. 2
Iao Aquifer System
Wailuku, Maui, Hawaii

REPLACEMENT WELL NO. 2
IAO AQUIFER SYSTEM
WAILUKU, MAUI, HAWAII

PREPARED FOR:

Maui Department of Water Supply
County of Maui
200 South High Street
Wailuku, Maui, Hawaii 96793-2155

PREPARED BY:

Mink & Yuen, Inc.
1670 Kalakaua Ave., Suite 605
Honolulu, Hawaii 96826

July 2009

Background

Maui Department of Water Supply (DWS) is anticipating the closure of Wailuku Shaft 33 (well no. 5330-05). Because of that, DWS has drilled two wells and is planning to drill four additional new replacement wells for a total installed capacity of 12.98 million gallons per day (mgd). These wells will be spaced out south of Iao Stream and will not concentrate pumping at one location as is presently the case at Shaft 33. The two drilled wells are at the north and south ends of the portion of the Iao Aquifer System that is south of Iao Stream. The Iao Tank site well (well no. 5230-03) is at the northern end and the Waikapu Tank site well (well no. 5131-01) is at the southern. DWS has applied to the Commission on Water Resource Management (CWRM) for 2 mgd capacity pumps for each well.

Since 1991, Shaft 33 supplies an average of almost 5 mgd into the DWS' Central Maui (Wailuku) Water System. The 30° inclined shaft was constructed in 1946 and put into operation in 1948 supplying additional irrigation water to sugarcane. Instead of a skimming tunnel developing the top of the basal aquifer, the shaft has three pumping wells, each 310 ft. deep, drilled ten feet apart in a pump chamber (Wissmar, 1981). The portal elevation is 400± ft., msl and the inclined shaft is 730 ft. long to the pump chamber. The floor elevation is 31.09 feet above mean sea level (ft., msl). Wissmar (1981) shows that the pump chamber is situated slightly mauka of the surface location of Iao Ditch. The ditch elevation is 457 ft., msl.

Originally the installed capacity of Shaft 33 was 27.75 mgd, although the average pumpage in 1953 was 9.7 mgd and peaking at 11.7 mgd in 1971 (Mink, 1986, p. 4). DWS utilizes the shaft using one well with a 3900 gallon per minute

(gpm) pump. The chlorides remain relatively stable at 60± mg/L (DWS reports chlorides to the CWRM) despite pumping almost 5 mgd.

Geology and Hydrology of the Iao Aquifer South of Iao Stream

The sustainable yield of the Iao Aquifer System is 20 mgd (George A. L. Yuen and Assoc., 1990; CWRM, 2008). The Iao aquifer was designated a Ground-Water Management Area on June 30, 2003. Total groundwater pumpage on a 12-month moving average basis is not to exceed 90 percent of the sustainable yield or 18 mgd. At the present time, the 12-month moving average is 16.1 mgd. The majority of DWS pumpage occurs north of Iao Stream. Only Shaft 33 and about 1 mgd of treated surface water supplies the DWS system south of Iao Stream.

Figure 1 is a geologic map (Sherrod and others, 2007) of the area. The digital geologic map is based on pioneering work by Stearns and Macdonald (1942). The new nomenclature for rock units is from Langenheim and Clague (1987). Figure 1 shows that in the region of the Iao Aquifer System south of Iao Stream, the volcanic rocks exposed belong to the shield-building lava flows of the Wailuku Basalt (QTwl). These thin-bedded pahoehoe and aa lava flows make up the very permeable basal aquifer from which most of the DWS sources pump from. Inland volcanic dikes are exposed (depicted as red lines in Figure 1) which create high-level dike impounded aquifers that are developed by high-level tunnels and the Kepaniwai Well (well no. 5332-05) north of Iao Stream. The post-caldera Honolua Volcanics (Qul) are not exposed here, but are exposed south of Waikapu Stream near the recently drilled Maalaea 4 well (well no. 5030-01).

Overlying the Wailuku Basalt are older alluvial deposits (QTao), which form a thick, relatively impermeable, sedimentary wedge. Overlying the old

alluvial deposits are older dune deposits (Qdo) and recent alluvium (Qa) from Iao and Waikapu streams.

Wailuku Basalt is first exposed in Shaft 33 at elevation 68 ft., msl (Gingerich, 2008, Table A-1). Using the elevation of Iao Ditch at 457 ft., msl, it is roughly 389 ft. to the basalt/alluvium contact below the ground's surface.

DWS wells drilled into the dike-free basal aquifer of the Wailuku Basalt are good producers, as evidenced by high discharge rates and low drawdowns. The constant rate aquifer test for the Iao Tank Well pumped 1,400 gpm (2± mgd) four days (5760 minutes) with only 3 ft. of drawdown. A computer-calculated transmissivity value taken from the time-drawdown curve is 104,000 ft^2/day. A similar test for the Waikapu Tank Well yielded a drawdown of 5.54 ft. at a pumping rate of 1,425 gpm. The calculated transmissivity is 117,000 ft^2/day (CWRM well data files). These high transmissivity values indicate a permeable aquifer.

The chloride values for the Iao Tank and the Waikapu Tank wells were 25 mg/L and 31 mg/L, respectively. The low chloride values are due in part to the design of the wells and adherence to the CWRM's Section 2.2 of the "Hawaii Well Construction and Pump Installation Standards" (2004). New wells exploiting basal aquifers are designed to keep the bottom elevation from not exceeding one-fourth the theoretical thickness of the basal lens (41 times the basal head). By constructing wells this way, upconing of more saline water from depth is minimized as well as the long-term optimization of the aquifer.

Water levels in the Iao aquifer are depressed due to pumping. Large pumping centers such as Mokuhau, Waiehu Heights, Waihee, and Shaft 33 create drawdown cones in the vicinity of the pumps. For example, the water level

measured in the Iao Tank Well prior to testing was 8.67 ft., msl, which is influenced by Shaft 33 pumpage, and to a lesser extent, by heavy pumpage north of Iao Stream. These drawdown cones lower water levels throughout the aquifer system. These drawdown water levels do not reflect the actual water level in the aquifer that is in balance with the mid-point of the transition zone (50 percent seawater concentration). In 2000, DWS in conjunction with CWRM and the USGS turned off all the pumps for seven hours within the Iao and North Waihee aquifer systems. The measured recovery at Shaft 33 was 1.5 ft. within the first half hour. Recovery continued to 2 ft. at the end of seven hours. Mink (unpublished February 8, 2000 memorandum to CWRM) calculated that full recovery in Iao would take place in less than three months. Full recovery would occur when the water level is in balance with the mid-point of the transition zone of the basal lens.

Location of Replacement Well No. 2

Replacement Well No. 2 is located at a future county park site, south of the Iao Tank Well. To accurately locate the well and to determine the distance between the wells, the existing Iao Tank Well and the replacement well were located using a Garmin 60Cx GPS. The Iao Tank Well is located about 80 ft. south of the Iao Tank, with a benchmark elevation of 505.55 ft., msl. A Suunto altimeter was set at the well site. The GPS location is: 20° 52′ 58.0″N and 156° 30′ 46.9″W with an error of ±9 ft.

Replacement Well No. 2 is situated in an area where a drilling rig would have easy access to the site and enough room for drill operations. The site selected is located at: 20° 52′ 48.4″N and 156° 30′ 41.5″W with an error of ±12 ft. The Suunto altimeter elevation is 505± ft., msl. Figure 2 shows the location of Replacement Well No. 2 in relation to the Iao Tank Well. The distance between

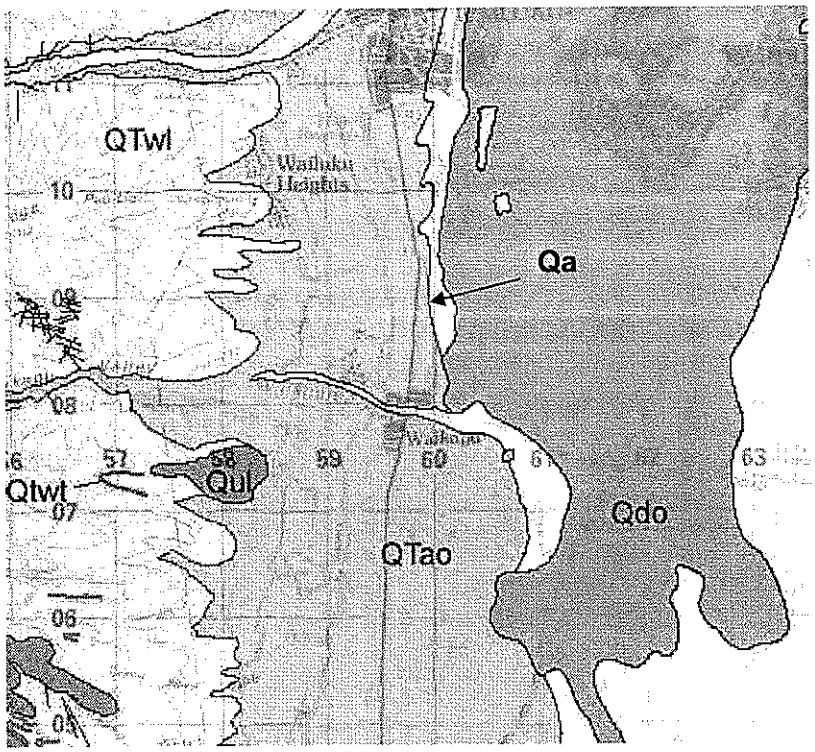
the two well sites is approximately 1,000 ft. A more accurate measurement can be made by employing the haversine formula to determine distance between two GPS locations. The resulting distance between the two sites is 1,096± ft. The location of the new well places it several hundred feet southwest of Shaft 33 pump chamber (see Figure 2). Because of its location near the Shaft 33 pump, the replacement well may have chloride greater than the 25 mg/L encountered at the Iao Tank Site well.

The replacement well should also be drilled so that the bottom hole elevation is within the optimization standard prescribed by CWRM's well standards, which is one quarter of the thickness of the lens (41 times the head). Assuming the head is 10 ft., msl, then the bottom elevation is -102.5 ft., msl.

All other CWRM, DOH Wellhead Protection protocols, and County Water System Standards shall be followed. The well casing and louvered screen shall be 18 inches in diameter with a 3-inch annulus. This well diameter is the same as the Waikapu Tank Well but less than the Iao Tank Well. A well of this diameter will easily accommodate a 1,400 gpm pump. The grout seal shall be to the bottom of the solid casing and louvered screen below to the bottom of the hole. The bottom elevation can be adjusted to conform to geological conditions encountered during drilling.

Wailuku Basalt should be encountered at an elevation greater than 68 ft., msl as in Shaft 33. The replacement well should have no trouble producing good quality groundwater at an installed capacity of 1,400 gpm.

The feasibility of drilling three additional wells (replacement wells 1, 3, and 4) in the vicinity of the existing wells cannot be determined at this time. More studies will be necessary before a firm conclusion can be reached.



Qf	**Fill (Holocene)**
Qa	**Alluvium (Holocene)**
Qbd	**Beach deposits (Holocene)**
Qdy	**Younger dune deposits (Holocene)**
Qls	**Landslide deposits (Holocene)**
Qtc	**Talus and colluvium (Holocene)**
Qdo	**Older dune deposits (Holocene and Pleistocene)**
Qcbc	**Calcareous breccia and conglomerate (Pleistocene)**
QTao	**Older alluvium (Pleistocene and Pliocene)**

Honolua Volcanics (Pleistocene)—Divided into:

Qul	**Lava flows**
Qud	**Domes**
Quv	**Vent deposits**
Qui	**Intrusive rocks**

Wailuku Basalt (Pleistocene and Pliocene(?))—Divided into:

QTwl	**Lava flows**
QTwv	**Vent deposits**
QTwt	**Tuff**
QTwpc	**Pit crater deposits**
QTwlc	**Lava cone**
QTwp	**Phreatic explosion debris**
QTwdc	**Dike complex**
QTwcc	**Caldera complex**
QTwi	**Intrusive rocks**

——— **Contact—Approximately located**

——— **Fault—Approximately located; dotted where concealed**

Figure 1

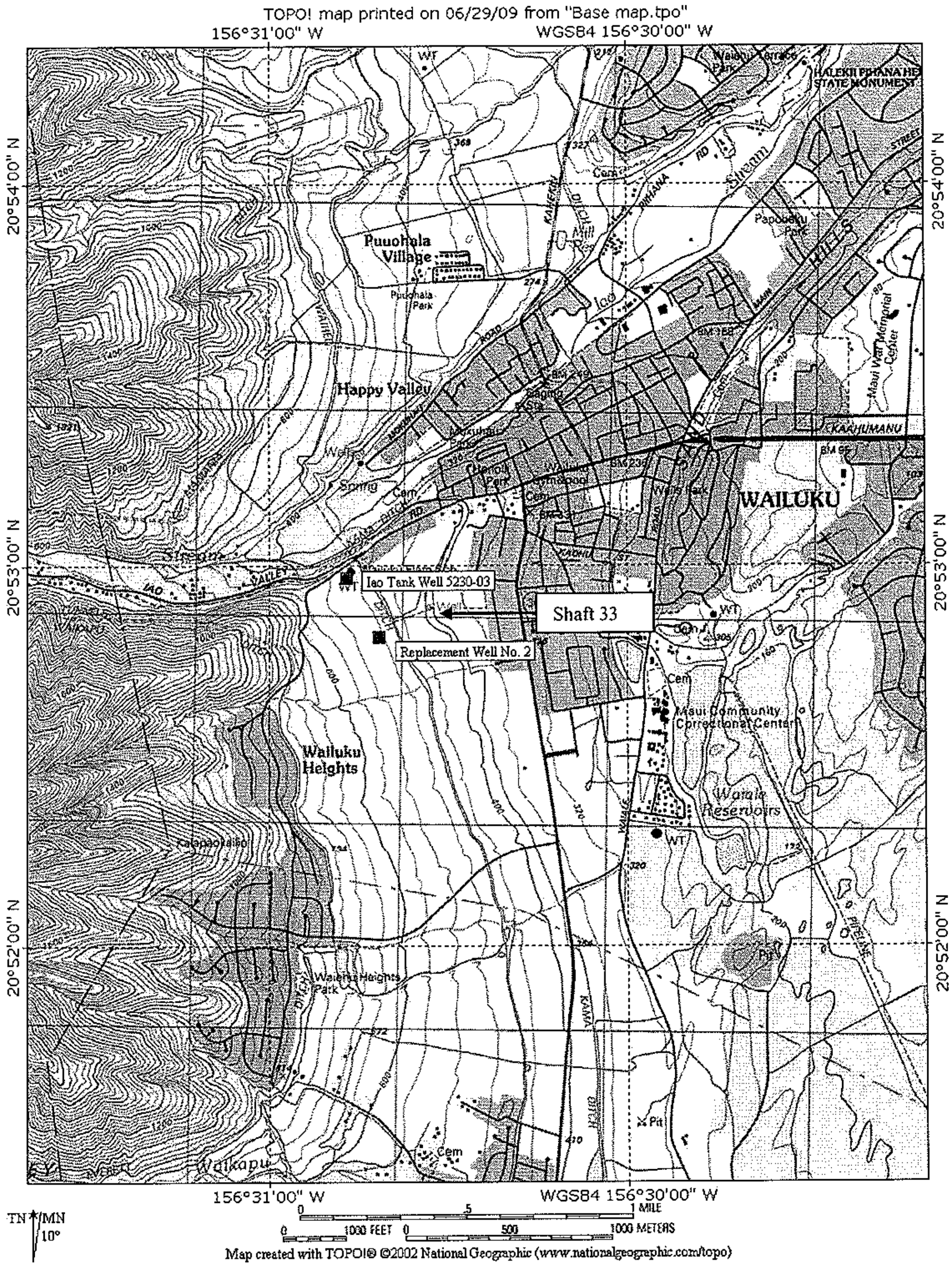

TOPO! map printed on 06/29/09 from "Base map.tpo"
156°31'00" W
WGS84 156°30'00" W
20°54'00" N
20°53'00" N
20°52'00" N
Puuohala Village
Happy Valley
WAILUKU
Iao Tank Well 5230-03
Shaft 33
Replacement Well No. 2
Wailuku Heights
Maui Community Correctional Center
Waiale Reservoirs
KAAHUMANU
Waikapu
TN MN 10°
0 .5 1 MILE
0 1000 FEET 0 500 1000 METERS
Map created with TOPO!® ©2002 National Geographic (www.nationalgeographic.com/topo)

Figure 2

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APPENDIX B

Addendum Report
Replacement Well No. 2
Iao Aquifer System
Wailuku, Maui, Hawaii

ADDENDUM REPORT
REPLACEMENT WELL NO. 2
IAO AQUIFER SYSTEM
WAILUKU, MAUI, HAWAII

PREPARED FOR:

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PREPARED BY:

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JULY, 2009

Introduction

This report is an Addendum to a report, entitled, "Replacement Well No. 2, Iao Aquifer System, Wailuku, Maui, Hawaii" that was submitted to Maui Department of Water Supply (DWS) on July 10, 2009. Subsequently, the DWS requested more information. This report will discuss three topics: 1) location, capacity, and preliminary design of the replacement well; 2) the sustainability of the aquifer; and 3) the need of spreading pumpage from one large source (Wailuku Shaft 33) to several smaller sources. This report only considers the area of the Iao Aquifer System that is south of Iao Stream.

Location, Capacity, and Design of Replacement Well No. 2

In the earlier report, Figure 2 shows the location of Replacement Well No. 2 (herein referred to as Well 2) in relation to the existing unused Iao Tank Well (State well no. 5230-03) and Shaft 33 (State well no. 5330-05). The location of Well 2 in NAD83 datum is: 20° 52′ 48.4″N and 156° 30′ 41.5″W with an error of ±12 ft. The approximate elevation is 505± feet mean sea level (ft., msl). The topographic map depicted in Figure 2 shows the location of Well 2 at several hundred feet from the existing Shaft 33's pump room and wells. A more accurate land survey needs to be completed to determine the actual distance from the existing pump room to Well 2.

Wells drilled in the Iao Aquifer System, south of Iao Stream, develop potable groundwater from a very permeable basal aquifer within the thin-bedded pahoehoe and aa lava flows of the Wailuku Basalt. Shaft 33 currently pumps about 5 million gallons per day (mgd) with a steady chloride

concentration of 60± mg/L. The existing Iao Tank Well and the Waikapu Tank Well at the north and south ends of this portion of the aquifer, respectively, each have been tested up to 1,400 gallons per minute (gpm) or 2 mgd, with measured drawdowns of 3 and 5.5 ft., respectively. In late 1995 the pump room in Shaft 33 flooded and shorted out the pump. At the time of the short, the pump was producing about 5.5 mgd. A water level recorder at the shaft recorded the groundwater recovery to be over 6 ft. When pumping resumed at the end of July 1996 at a pumping rate of about 4.5 mgd, there was almost 6 ft. drawdown (Meyer and Presley, 2001, Figure 17). Given these data, the new Well 2 should exhibit similar hydrologic characteristics; that is, a well that can produce 1,400 gpm with low drawdown and relatively low chlorides. In a 16-hour maximum day the installed capacity of 2 mgd is equivalent to 1.32 mgd or 176,470 ft^3/day.

Figure 1 of this report is a generalized cross-section of the proposed design of Well 2. The design reflects conditions for new wells as determined by the Commission on Water Resource Management (CWRM) revised "Hawaii Well Construction and Pump Installation Standards" (CWRM, 2004). To accommodate a 1,400-gpm pump, the well's casing diameter should be 18 inches. This would require a 24-inch diameter well to comply with the 3-inch annulus requirement of the well standards. The casing thickness should be at least 0.375 inches to conform to public water supply standards and Hawaii well construction standards. The bottom elevation of the well should be consistent with CWRM requirement to optimize the utility of the aquifer by limiting the depth of the well to one quarter of the thickness of the freshwater portion of the basal lens. In the report submitted to DWS, the bottom elevation is -102.5 ft, msl. Obviously, this elevation can be adjusted due the geologic conditions encountered during drilling. Notification of changes to well depth need to be communicated to CWRM.

In addition to the design standards described above, Department of Health requirement regarding wellhead protection protocols of the source are adhered to. For example, providing adequate protection of the well site by construction of a well pad that is high and large enough to protect the well from flooding. Any polluting activities in and around the drill site, as well as up gradient from the site, should be identified.

Sustainability of the Aquifer

The estimated sustainable yield of the Iao Aquifer System as adopted by CWRM is 20 mgd (George Yuen and Assoc., 1990, CWRM, 2008). This estimate is for the basal sources only. The 20 mgd is a global number that was based upon the methodology developed by John Mink for his Robust Analytical Model (RAM). RAM is employed by CWRM to determine amount of water that can be safely withdrawn indefinitely (steady-state). The model is volumetric and based upon the average amount of recharge, the original water level in the aquifer, and an equilibrium water level as a result of pumping at a given rate. RAM does not take into account the spatial geometry of wells within an aquifer, the effect of one well upon another, or the sustainable capacities of individual wells or well fields, as this is determined by operational history. It does assume that wells are distributed optimally within an aquifer and that the wells extract water from the freshwater core.

In the Iao Aquifer System, there is a concentration of DWS well fields on the north side of Iao Stream. These sources pump about 70 percent of the total DWS withdrawal from the Iao Aquifer System. Some of these sources, for example the Mokuhau and the Waiehu Heights wells, are drilled either too deep, are too closely spaced or both so that their utility has been compromised over the

years (Mink, 1986). Groundwater production south of Iao Stream is concentrated at Shaft 33.

Recently, the U. S. Geological Survey (USGS) attempted to refine the sustainable yield (which the USGS calls "groundwater availability") using a three-dimensional groundwater flow model (Gingerich, 2008) of the Wailuku Sector (Waihee, Iao, and Waikapu aquifer systems). Of the seven scenarios investigated by Gingerich (2008), the first two illustrate the present well configuration and Scenario 3 represents redistributed pumping. Each scenario was taken out for 150 years (54,788 days) to simulate equilibrium or steady-state. Table 6 of Gingerich's report provides the conditions for each scenario. The first three scenarios and their results are summarized below in Table 1:

Table 1 (adapted from Gingerich, 2008)

Scenario	Recharge Condition[1]	Pumping Condition In Iao Aquifer	Results After 150 Years
1	350 mgd: 2000-04 land use condition with 1926-2004 rainfall	2006 withdrawal rate: 16.8 mgd	Water levels 2-3 ft. lower than present; 50% salinity at Waiehu Deep Monitor Well rises 250 ft.
2	350 mgd: 2000-04 land use condition with 1926-2004 rainfall	1996 withdrawal rate: 20.1 mgd	Water levels in some well fields decline more than 5 ft.: 50% salinity at Waiehu Deep Monitor Well rises 300 ft.
3	350 mgd: 2000-04 land use condition with 1926-2004 rainfall	Using withdrawal rate near CWRM sustainable yield: 19.14 mgd	Water levels decline more than 5 ft. at new well fields & 1 ft. higher (relative to Scenario 1) at existing well fields: 50% salinity at Waiehu Deep Monitor Well rises 240-250 ft.

[1]350 mgd recharge over West Maui and Central Maui.

Though Scenario 3 shows an increase in salinity and a decline in water levels, Gingerich (2008) does not use salinity profile data from the new Iao Deep Monitor Well (5230-02). This well is located between Shaft 33 and the DWS Waikapu Tank Well (5131-01) on Kuikahi Drive adjacent to the DWS reservoir. Since May 2006 CWRM has done eight salinity profiles. The transition zone in this well is about 300 ft. thick with the top of the transition zone (2 percent salinity) is at -650± ft., msl and the mid-point of the transition zone (50 percent salinity) is at -950± ft., msl (CWRM data). Although the measured water level at Iao Deep Monitor Well reflects the pumpage within the Iao Aquifer System generally and Shaft 33 particularly, the actual equilibrium water level that is in balance with the transition zone mid-point elevation (Ghyben-Herzberg conditions) is about 23± ft., msl.

Gingerich (2008, Figure 46) also notes that if streamflow were restored in streams where irrigation ditches presently remove water for agricultural purposes, the effect of redistributed pumping south of Iao Stream would be a water level decline on the order of 2 ft.

Effects of Spreading Pumpage

At the present time, Shaft 33 pumps almost 5 mgd. In the redistributed pumpage scenario (Gingerich, 2008, Table 8), only 58 percent of the total pumpage (19.14 mgd) comes from source north of Iao Stream and 7 mgd of that is from wells replacing Shaft 33. This is less than the 16-hour day for the anticipated installed capacity of 12.98 mgd for the Shaft 33 replacement wells. However, interference between these wells is beyond the scope of this report.

Spreading the pumpage over a larger area will have less of an effect on the aquifer than concentrating in one place. Although the USGS report (2008) shows

water level declines of 5 ft. south of Iao Stream in Scenario 3, the upconing of the transition zone is measured at Waiehu Deep Monitor Well and not at Iao Deep Monitor Well. In addition to locating the wells far enough apart to minimize well interference, the bottom elevations should be within the CWRM (2004) prescribed upper quarter of the freshwater aquifer to minimize upconing below the well bore.

To estimate the steady-state drawdown at some distance from the pumping well the following relationship is used:

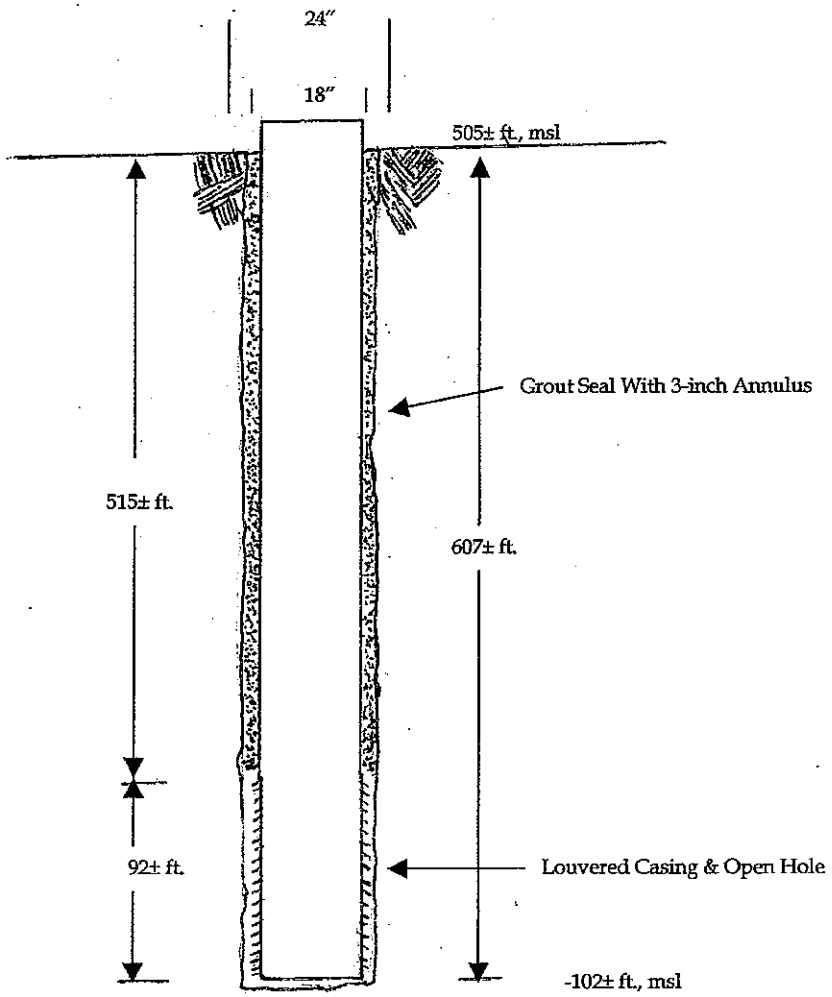
$$s = Q/2\pi T \ln\{1.5/R\,(Tt/S)^{0.5}\}$$

Where s is steady-state drawdown assuming t is 150 years or 54,788 days, aquifer transmissivity or T is 110,500 ft^2/day (average of T values for the Iao Tank Well and the Waikapu Tank Well reported in Replacement Well report), Q is or 176,470 ft^3/day (maximum day or 16-hour day with an installed pump capacity of 1,400 gpm), R is the distance between Well 2 and Iao Tank well or 1,096 ft., and S or specific yield taken at 0.10.

This relationship assumes no recharge or leakage into the aquifer, that it is infinite and homogeneous, and that the aquifer in the vicinity of these wells is unconfined. The resulting steady-state drawdown at the Iao Tank Well is 1.49 ft. If the Iao Tank Well were also pumping at the same Q, then the drawdown at a location midway between the wells (548 ft.) would be 3.34 ft. (1.67 ft. if one well pumping), as the drawdowns would be additive. If the Q were 2 mgd (269,519 ft^3/day) and all other parameters the same, the steady-state at Iao Tank Well would be 2.26 ft.

Assuming Shaft 33 pump room is located where Well 2 will be sited and pumping 5 mgd or 668,021 ft^3/day, the resulting steady-state drawdown at Iao

Tank Well will be 5.60 ft. Clearly, spreading the pumpage throughout the aquifer will have less of an effect on steady-state water level decline. If a greater T value (670,000 ft^2/day) is used, as suggested by aquifer tests in wells north of Iao Stream (Mink, 1977), then the stead-steady water level decline would be lessened considerably.



Preliminary Design for Replacement Well 2

Figure 1

References

Commission on Water Resource Management, 2004, Hawaii Well Construction and Pump Installation Standards: revised February 2004, Dept. of Land and Natural Resources, State of Hawaii.

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Commission on Water Resource Management, 2009, Online data at: (http://hawaii.gov/dlnr/cwrm/resources_monitoringdata.htm)

George A. L. Yuen and Associates, 1990, State Water Resources Protection Plan, Vol. II, Appendix: prepared for the State Water Resources Management Commission, Dept. of Land and Natural Resources, State of Hawaii, 233 p.

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APPENDIX B.

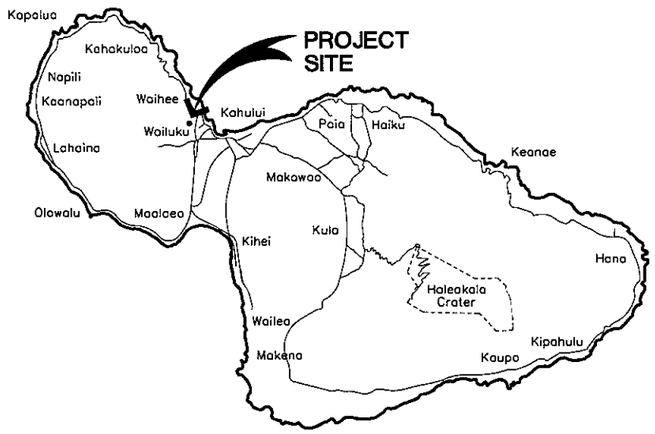
Construction Plans

WAILUKU EXPLORATORY WELL

TAX MAP KEY (2) 3-5-001: POR. 100

DWS JOB NO. 09-12

WAILUKU, MAUI, HAWAII



MAP OF MAUI
SCALE IN MILES
NORTH 5 0 5 10 15

PREPARED FOR:

DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
200 SOUTH HIGH STREET
WAILUKU, HAWAII 96793

PREPARED BY:

RONALD M. FUKUMOTO ENGINEERING, INC.
Civil Engineering & Land Surveying Consultants
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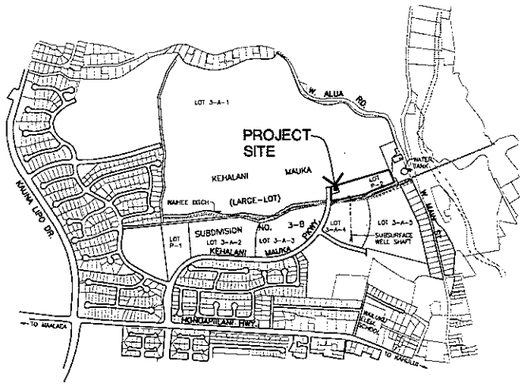

VICINITY MAP
SCALE IN FEET
NORTH 1000 0 1000 2000 3000

APPROVALS:

DIRECTOR, DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
(APPROVAL LIMITED TO WATER IMPROVEMENTS WHICH WILL BE DEDICATED TO THE DEPARTMENT OF WATER SUPPLY)

DATE

INDEX OF DRAWINGS

WAILUKU EXPLORATORY WELL
DWS JOB NO. 09-12

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WAILUKU EXPLORATORY WELL
TAX MAP KEY (2) 3-5-001:POR. OF 100
DWS JOB NO. 09-12
WAILUKU, MAUI, HAWAII

TITLE SHEET

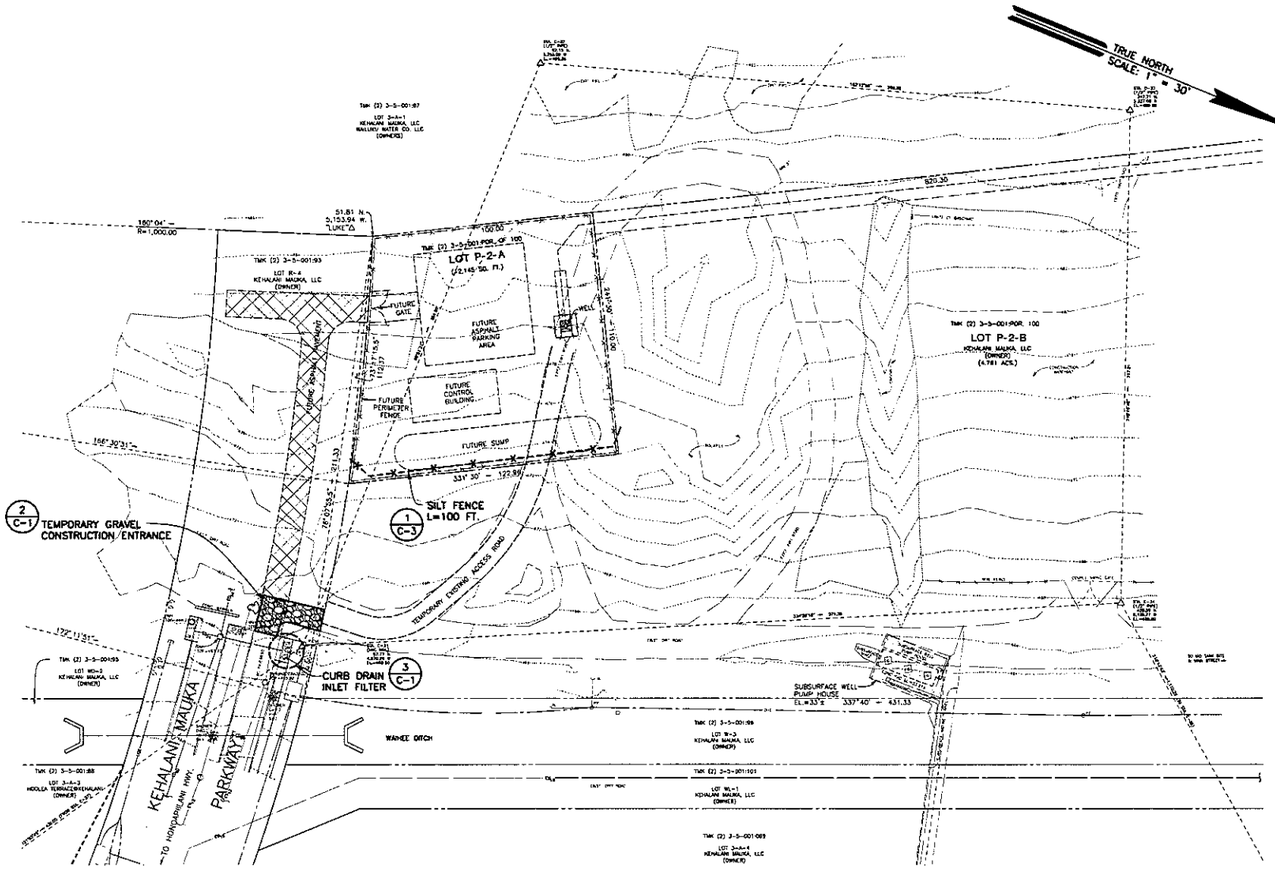
RONALD M. FUKUMOTO
LICENSED PROFESSIONAL ENGINEER
No. 4935-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION, AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN HAR 16-115-2.
Ronald M Fukumoto
LICENSE EXPIRES: 4/30/2012

DESIGN BY:	J.F./H.K.
DRAWN BY:	N.M./S.W.
CHECKED BY:	R.F.
DATE:	NOVEMBER 18, 2010
FILE NO:	COM36

SHEET T-1
1 OF 6

WAILUKU EXPLORATORY WELL DWS JOB NO. 09-12



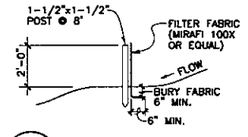
BEST MANAGEMENT PRACTICES PLAN
SCALE: 1" = 30'

GRAPHIC SCALE IN FEET
0 15 30 60 90

EROSION CONTROL NOTES

THE FOLLOWING IS AN OUTLINE OF THE EROSION CONTROL MEASURES THAT WILL BE IMPLEMENTED FOR THIS PROJECT.

1. GENERAL EROSION CONTROL MEASURES
   - A. MINIMIZE TIME OF CONSTRUCTION.
   - B. RETAIN EXISTING GROUND COVER UNTIL THE LATEST DATE TO COMPLETE CONSTRUCTION.
   - C. PROVIDE TEMPORARY GRAVEL APRON(S) (APPROXIMATELY 50' LONG BY 20' WIDE) AT POINT OF CONNECTION TO PAVED STREET TO PREVENT TRACKING OF SEDIMENTS ONTO STREET.
   - D. CONTROL DUST BY SPRINKLING WITH WATER WAGONS OR OTHER SUITABLE METHODS. GRADED AREAS SHALL BE THOROUGHLY WATERED AFTER CONSTRUCTION ACTIVITY HAS CEASED FOR THE DAY AND ON WEEKENDS.
   - E. USE TEMPORARY BERMS AND CUT-OFF DITCHES, WHERE NEEDED, FOR CONTROL OF EROSION.
   - F. CONSTRUCT PERMANENT EROSION AND DRAINAGE CONTROL FEATURES AS EARLY AS POSSIBLE. ALL CUT AND FILL SLOPES SHALL BE SODDED OR PLANTED IMMEDIATELY AFTER GRADING WORK HAS BEEN COMPLETED.
   - G. MAINTAIN EROSION CONTROL MEASURES UNTIL ESTABLISHMENT OF GRASS AND LANDSCAPE PLANTING.
2. SITE-SPECIFIC EROSION CONTROL MEASURES
   - A. INSTALL SILT FENCES AS NOTED ON PLAN. INSPECT FENCES WEEKLY AND AFTER STORMS. REMOVE AND STABILIZE SEDIMENT WHEN IT REACHES A HEIGHT OF 8 INCHES AT THE FENCE.
   - B. INSTALL GRATED DRAIN INLET FILTER AS NOTED ON PLAN. INSPECT FILTER WEEKLY AND AFTER STORMS. REMOVE AND DISPOSE OF SEDIMENT AFTER EACH STORM EVENT.
3. ADDITIONAL EROSION CONTROL NOTES
   - A. ALL CONTROL MEASURES SHALL BE CHECKED AND REPAIRED AS NECESSARY WEEKLY IN DRY PERIODS AND WITHIN 24 HOURS AFTER ANY RAINFALL OF 1/2 INCH OR GREATER WITHIN A 24-HOUR PERIOD. DURING PROLONGED PERIODS OF RAINFALL, DAILY CHECKING IS NECESSARY. THE PERMITTEE SHALL MAINTAIN RECORDS OF THE DURATION AND ESTIMATED VOLUME OF STORM WATER DISCHARGE(S), CHECKS, AND REPAIRS.
   - B. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IN PLACE AND FUNCTIONAL BEFORE EARTH MOVING OPERATIONS BEGIN. THESE MEASURES SHALL BE PROPERLY CONSTRUCTED AND MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD.
   - C. A SPECIFIC INDIVIDUAL SHALL BE DESIGNATED TO BE RESPONSIBLE FOR EROSION AND SEDIMENT CONTROLS ON EACH PROJECT.
   - D. TEMPORARY SOIL STABILIZATION WITH APPROPRIATE VEGETATION SHALL BE APPLIED ON AREAS THAT WILL REMAIN UNFINISHED FOR MORE THAN 30 CALENDAR DAYS.
   - E. PERMANENT SOIL STABILIZATION WITH PERENNIAL VEGETATION OR PAVEMENT SHALL BE APPLIED AS SOON AS PRACTICAL AFTER FINAL GRADING. IRRIGATION AND MAINTENANCE OF THE PERENNIAL VEGETATION SHALL BE PROVIDED FOR 30 DAYS OR UNTIL THE VEGETATION TAKES ROOT, WHICHEVER IS SHORTER.



1 / C-1 SILT FENCE SECTION
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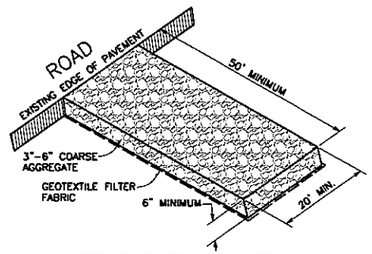

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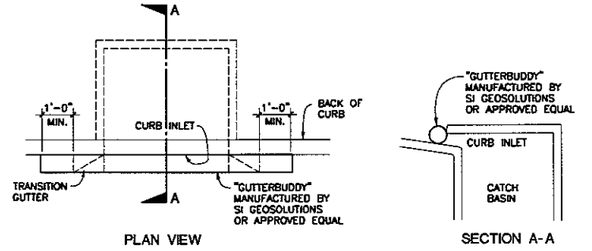

3 / C-1 CURB DRAIN INLET FILTER
NOT TO SCALE

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Contact: T. Ochwat, P.E.

WAILUKU EXPLORATORY WELL

TAX MAP KEY (2) 3-05-001:POR. OF 100
DWS JOB NO. 09-12
WAILUKU, MAUI, HAWAII

CONSTRUCTION EROSION CONTROL BEST MANAGEMENT PRACTICES PLAN

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HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION, AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN HAR 16-115-2.

Ronald M. Fukumoto
LICENSE EXPIRES: 4/30/2012

DESIGN BY:	J.F./M.K.
DRAWN BY:	N.M./S.W.
CHECKED BY:	R.F.
DATE:	NOVEMBER 16, 2010
FILE NO:	CDM36

SHEET C-1
2 OF 6

CONSTRUCTION NOTES

WATER SYSTEM

1. THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF WATER SUPPLY (DWS), IN WRITING, ONE (1) WEEK PRIOR TO COMMENCEMENT OF WORK.
2. ALL MATERIALS USED AND METHOD OF CONSTRUCTION OF WATER SYSTEM FACILITIES SHALL BE IN ACCORDANCE WITH THE LATEST REVISIONS OF DWS STANDARDS. CONTRACTOR SHALL OBTAIN THE LATEST REVISIONS OF THE DWS STANDARD DETAILS BEFORE COMMENCING CONSTRUCTION.
3. ALL WATER SYSTEM WORK SHALL BE PERFORMED BY CONTRACTORS POSSESSING VALID STATE OF HAWAII CONTRACTOR'S LICENSES, REGARDLESS OF THE VALUE OF THE WORK.
4. THE EXACT DEPTH AND LOCATION OF EXISTING WATERLINES, SERVICE LATERALS AND OTHER UTILITIES ARE NOT KNOWN. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO LOCATE SAME PRIOR TO TRENCHING FOR THE NEW WATERLINE. THE COST OF LOWERING, RELOCATING OR ADJUSTING EXISTING WATERLINES, SERVICE LATERALS AND OTHER UTILITIES SHALL BE CONSIDERED INCIDENTAL TO THE COST OF THE NEW WATERLINE, UNLESS NOTED OTHERWISE, AND WILL NOT BE PAID FOR SEPARATELY.
5. CONCRETE FOR REACTION BLOCKS AND ANCHOR BLOCKS SHALL BE DWS CLASS 2500.
6. THE MAXIMUM DISTANCE BETWEEN VALVE NUT AND TOP OF VALVE MANHOLE COVER SHALL BE THREE (3) FEET.
7. THE CONTRACTOR SHALL SUBMIT A MATERIALS LIST TO DWS FOR APPROVAL PRIOR TO CONSTRUCTION.
8. CONNECTION TO DWS SYSTEM:
   A. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FURNISHING ALL NECESSARY FITTINGS AND OTHER MATERIALS AND EQUIPMENT REQUIRED FOR THE HOOK-UP. HE SHALL VERIFY THE EXACT LOCATION, DEPTH, TYPE, AND CONDITION OF THE EXISTING LINE BEFORE ORDERING MATERIALS FOR THE HOOK-UP. HE SHALL, HOWEVER, CHECK WITH DWS BEFORE EXCAVATING FOR VERIFICATION PURPOSES.
   B. WHENEVER FEASIBLE, MECHANICAL JOINT FITTINGS SHALL BE USED FOR BURIED APPLICATIONS, AND FLANGED JOINT FITTINGS SHALL BE USED FOR EXPOSED APPLICATIONS.
   C. AUTHORIZED DWS PERSONNEL MAY BE REQUIRED TO MAKE THE FINAL CONNECTION TO THE EXISTING LINE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS INCURRED BY DWS FOR SAID WORK, INCLUDING THE COST OF PRESSURE TESTING AND DISINFECTION.
   D. IF THE DWS PROVIDES ONLY INSPECTION AND SUPERVISING OPERATORS, AND DOES NOT PROVIDE PERSONNEL FOR THE ACTUAL CONNECTION, THE CONTRACTOR SHALL PROVIDE ALL PIPEFITTERS AND LABORS TO MAKE THE CONNECTION.
   E. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FURNISHING ALL MATERIAL, EQUIPMENT AND LABOR FOR TRENCH EXCAVATION, BACKFILLING, CLEANING AND CHLORINATION, PAVING, AND OTHER WORK NECESSARY TO COMPLETE THE HOOK-UP, AS DIRECTED BY AND TO THE SATISFACTION OF DWS.
9. MINIMUM COVER OVER WATER MAIN, 6" DIAMETER OR LARGER, SHALL BE 3'-0". MINIMUM COVER FOR 4" DIAMETER SHALL BE 2'-6". MINIMUM COVER FOR DIAMETERS LESS THAN 4" SHALL BE 1'-6".
10. BOLTS FOR EXPOSED FLANGED DUCTILE IRON PIPE JOINTS SHALL BE EITHER SILICON BRONZE BOLTS AND NUTS OR 316 STAINLESS STEEL BOLTING WITH THE HEAVY DUTY STAINLESS STEEL NUTS (ONLY) FURNISHED WITH TRIPAC 2000 BLUE COATING SYSTEM. ANTI-SEIZE SHALL NOT BE USED. T-BOLTS FOR DUCTILE IRON MECHANICAL JOINT (MJ) PIPE AND FITTING CONNECTIONS IN UNDERGROUND SITUATIONS SHALL BE ONE OF THE FOLLOWING SYSTEMS:
    A. 316 STAINLESS STEEL T-BOLTS WITH THE HEAVY DUTY STAINLESS STEEL NUTS (ONLY) FURNISHED WITH TRIPAC 2000 BLUE COATING SYSTEM. ANTI-SEIZE SHALL NOT BE USED.
    B. COR-TEN T-BOLTS AND NUTS WITH HIGH GRADE ZINC SACRIFICIAL ANODES, EQUIVALENT TO "DURATRON" SACRIFICIAL "SAC-NUT" MODULES, INSTALLED ON THE NUTS FOR ALL STANDARD COR-TEN T-BOLTS.
    C. COR-TEN T-BOLTS AND NUTS BOTH FACTORY COATED WITH TRIPAC 2000 BLUE COATING SYSTEM BY "TRIPAC FASTENERS".
11. ALL BURIED METALS SHALL BE WRAPPED WITH POLY-WRAP. FOR ALL BURIED INSTALLATIONS OF DUCTILE IRON PIPE AND FITTINGS, POLY-WRAP IS REQUIRED EXCEPT WITHIN CONCRETE JACKETS.
12. LUBRICATE HYDRANT NOZZLE THREADS WITH NON-TOXIC GREASE.
13. THE CONTRACTOR SHALL PAINT AND NUMBER THE FIRE HYDRANT. NUMBERING TO BE FURNISHED BY DWS.
14. WATER MAINS AND APPURTENANCES SHALL BE SUBJECT TO HYDROSTATIC TESTING IN ACCORDANCE WITH THE LATEST REVISION OF AWWA C600, UNDER THE "HYDROSTATIC TESTING" SECTION, TO A PRESSURE OF AT LEAST 1.5 TIMES THE WORKING PRESSURE. UNLESS OTHERWISE STATED IN THE CONSTRUCTION DOCUMENTS OR LIMITED BY THE PRESSURE RATING OF EQUIPMENT, THE PRESSURE TEST AND LEAKAGE TEST SHALL BE PERFORMED AT 225 POUNDS PER SQUARE INCH PRESSURE.
15. THE DEVELOPER SHALL SUBMIT A COST LIST ALONG WITH AN AFFIDAVIT FOR THE WATER SYSTEM PRIOR TO ACCEPTANCE.
16. THE CONTRACTOR SHALL SUBMIT TWO SETS OF RECORD DRAWINGS VIA A CONSULTANT PRIOR TO ACCEPTANCE OF THE WATER SYSTEM. AN ELECTRONIC IMAGE FILE IN TIFF FORMAT SHALL BE PROVIDED TO THE DWS FOR ALL PROJECTS.

DRILLING / TESTING NOTES

1. DRILL TAILINGS TO BE SPREAD EVENLY ONSITE AFTER DRILLING OPERATIONS ARE COMPLETED.
2. CONTRACTOR TO COORDINATE WITH DWS AND ADJACENT PROPERTY OWNERS FOR DISPOSAL/DISPERSAL OF WELL PUMP TESTING DISCHARGE WATERS.

HISTORIC PRESERVATION

NOTE: SHOULD HISTORIC SITES SUCH AS WALLS, PLATFORMS, PAVEMENTS AND MOUNDS, OR REMAINS SUCH AS ARTIFACTS, BURIALS, CONCENTRATION OF CHARCOAL OR SHELLS ARE ENCOUNTERED DURING CONSTRUCTION WORK, WORK SHALL CEASE IN THE IMMEDIATE VICINITY OF THE FIND AND THE FIND SHALL BE PROTECTED FROM FURTHER DAMAGE. THE CONTRACTOR SHALL IMMEDIATELY CONTACT THE STATE HISTORIC PRESERVATION DIVISION (243-5169), WHICH WILL ASSESS THE SIGNIFICANCE OF THE FIND AND RECOMMEND AN APPROPRIATE MITIGATION MEASURE, IF NECESSARY.

PURSUANT TO CHAPTER 6E OF THE HAWAII REVISED STATUTES, ALL CONTRACTORS SHALL ENSURE THAT IN THE EVENT THAT ANY HUMAN SKELETAL REMAINS ARE INADVERTENTLY DISCOVERED DURING CONSTRUCTION, THE REMAINS SHALL NOT BE MOVED AND ANY ACTIVITY IN THE IMMEDIATE AREA THAT COULD DAMAGE THE REMAINS OR THE POTENTIAL HISTORIC SITE SHALL CEASE AND THE DEPARTMENT OF LAND AND NATURAL RESOURCES' HISTORIC PRESERVATION DIVISION (243-5169). THE APPROPRIATE MEDICAL EXAMINER OR CORONER, AND THE POLICE DEPARTMENT (TEL: 244-6400), SHALL BE CONTACTED.

RFE
RONALD M. FUKUMOTO ENGINEERING, INC.
Civil Engineering & Land Surveying Consultants
1721 Wili Pa Loop, Suite 203
Wailuku, Hawaii 96793
Phone: (808) 242-8611
Fax: (808) 244-7510
E-mail: office@rfemaui.com
Contact: Jacob Freeman, P.E.

Prepared for:
Department of Water Supply
County of Maui
200 South High Street
Wailuku, Maui, Hawaii 96793
Contact: T. Ochwat, P.E.

WAILUKU EXPLORATORY WELL
TAX MAP KEY (2) 3-05-001POR. OF 100
DWS JOB NO. 09-12
WAILUKU, MAUI, HAWAII

CONSTRUCTION NOTES

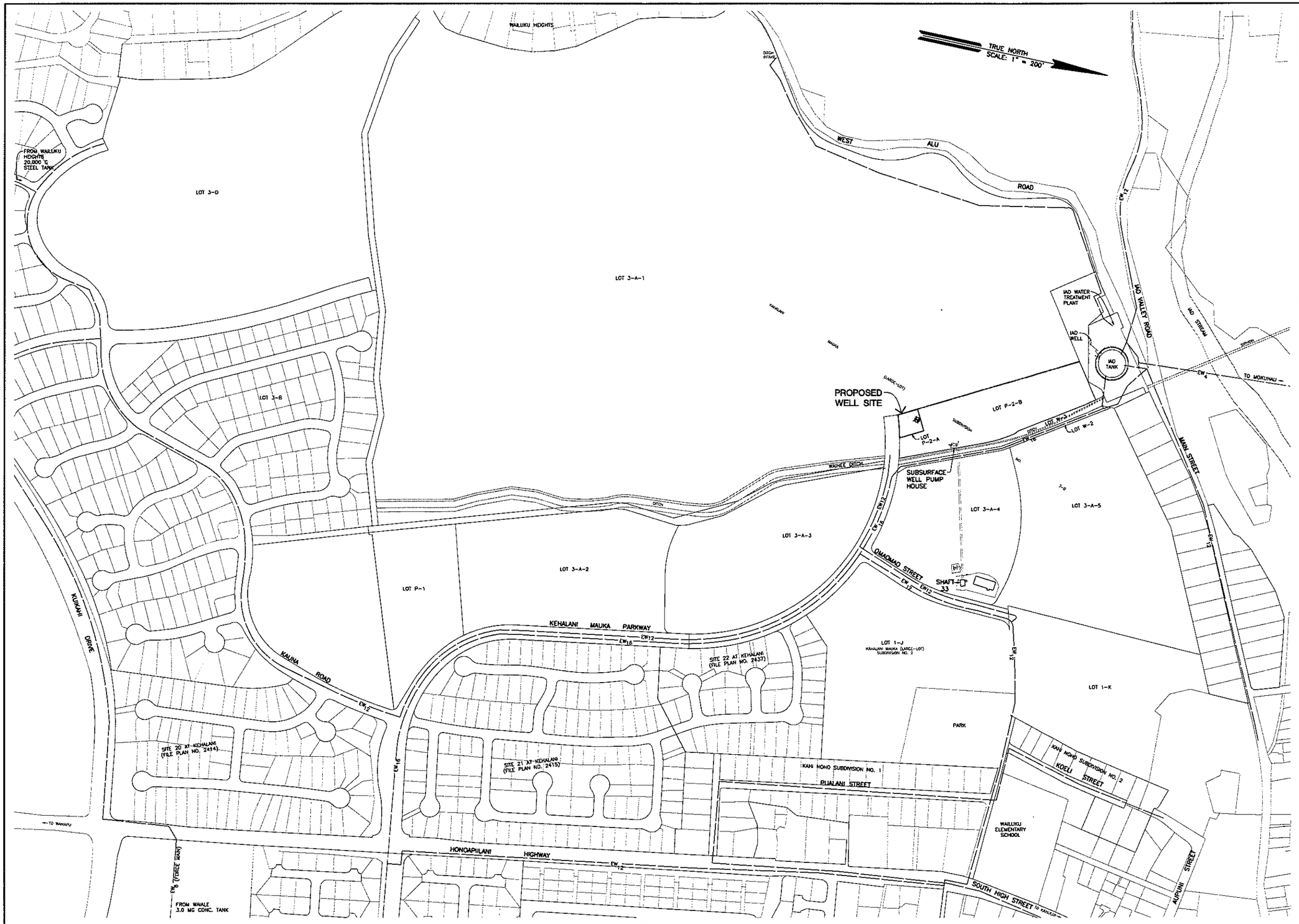
RONALD M. FUKUMOTO LICENSED PROFESSIONAL ENGINEER No. 4935-C HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION, AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN HAR 16-115-2.

Ronald M. Fukumoto
LICENSE EXPIRES: 4/30/2012

DESIGN BY:	J.F./H.K.
DRAWN BY:	N.M./S.W.
CHECKED BY:	R.F.
DATE:	NOVEMBER 18, 2010
FILE NO:	COM36

SHEET C-2
3 OF 6



GENERAL PLAN
SCALE: 1" = 200'

RONALD M. FUKUMOTO ENGINEERING, INC.
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WAILUKU EXPLORATORY WELL

TAX MAP KEY (2) 3-05-001:POR. OF 100
DWS JOB NO. 09-12
WAILUKU, MAUI, HAWAII

GENERAL PLAN

RONALD M. FUKUMOTO
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HAWAII, U.S.A.

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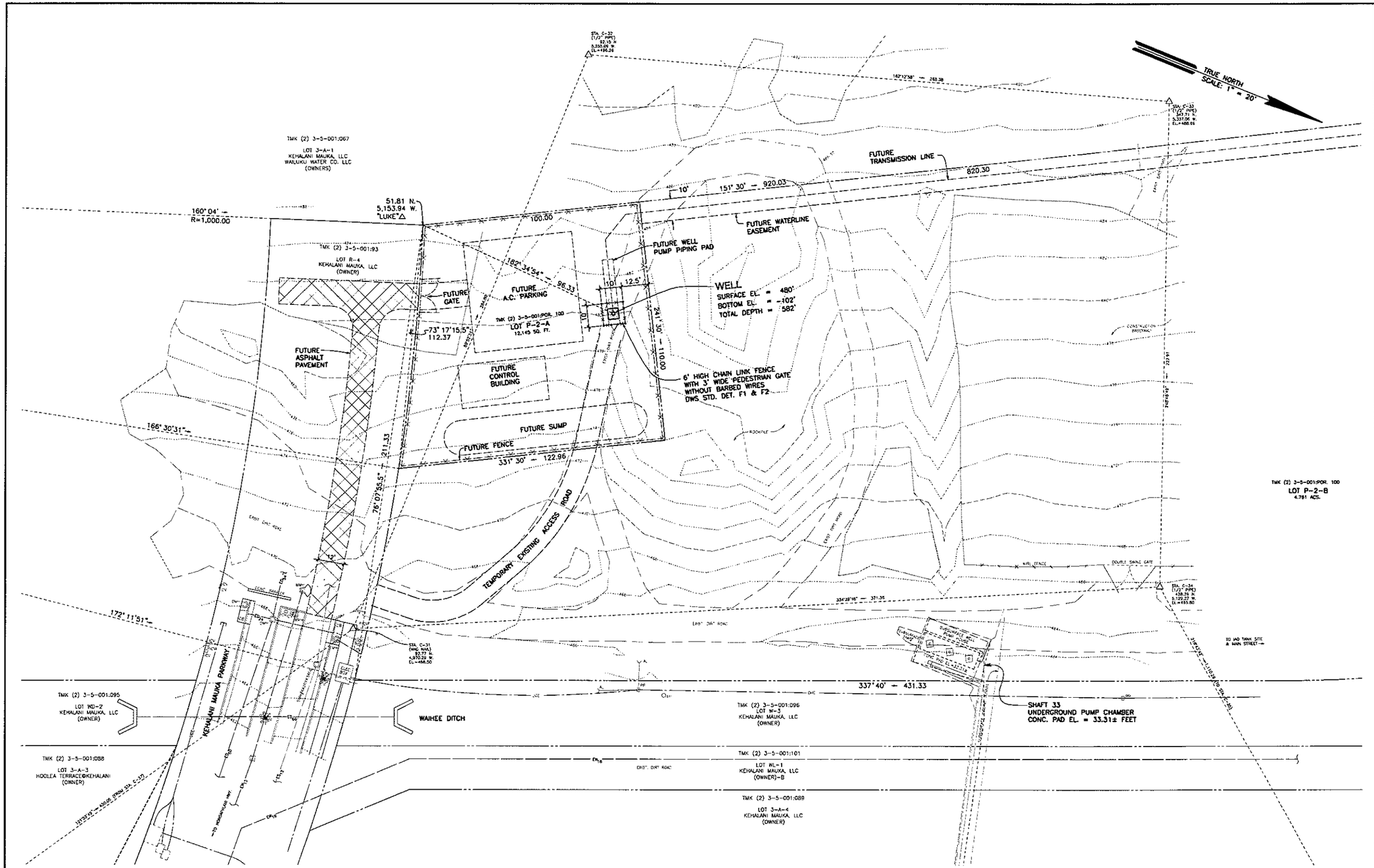
DATE:	NOVEMBER 18, 2010
FILE NO:	COM36

SHEET C-3
4 OF 6



SITE & GRADING PLAN
SCALE: 1" = 20'

RONALD M. FUKUMOTO ENGINEERING, INC.
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WAILUKU EXPLORATORY WELL
TAX MAP KEY (2) 3-05-001:POR. OF 100
DWS JOB NO. 09-12
WAILUKU, MAUI, HAWAII

SITE & GRADING PLAN

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Ronald M. Fukumoto
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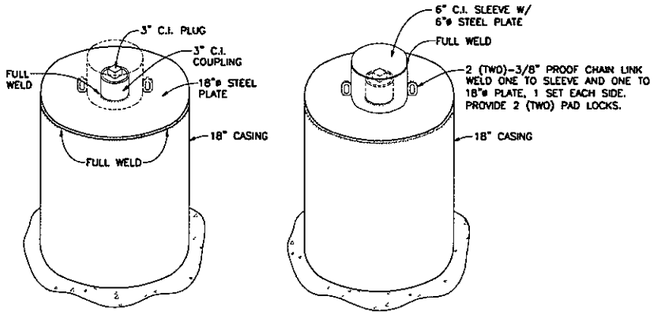
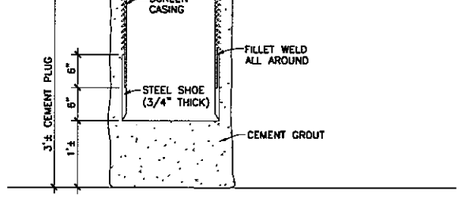
CHECKED BY:	R.F.
DATE:	NOVEMBER 18, 2010
FILE NO:	COM36

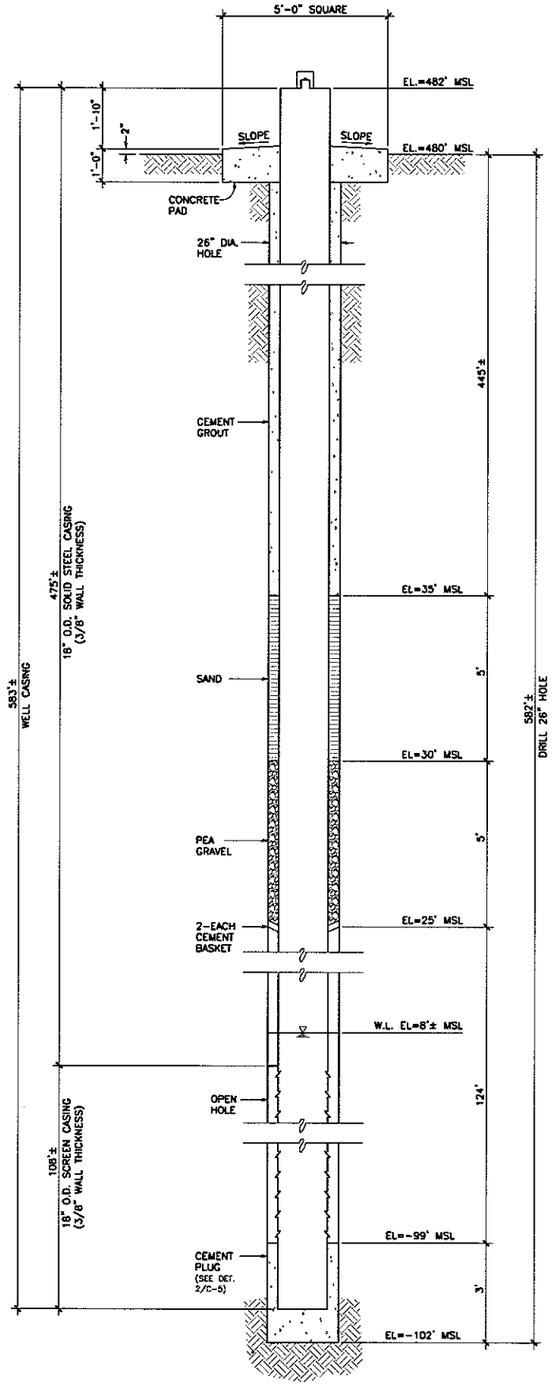
SHEET C-4
5 OF 6



1 / C-5 **WELL CAPPING DETAIL**
NOT TO SCALE



2 / C-5 **STEEL SHOE WITH CEMENT PLUG**
SCALE: 1" = 1'-0"



3 / C-5 **WELL SECTION**
SCALE: 1/2" = 1'-0

SEQUENCE OF WORK

1. DRILL 12-INCH PILOT HOLE. MEASURE WATER LEVELS WHEN AQUIFER IS ENCOUNTERED. CLEAN AND VIDEO LOG PILOT HOLE. CONTINUOUSLY CHECK PLUMBNESS WHILE DRILLING HOLE.
2. REAM PILOT HOLE TO 25 INCHES AND BAIL TO REMOVE SEDIMENT TO BOTTOM OF REAMED HOLE.
3. DETERMINE AQUIFER HEAD AND SALINITY.
4. RUN PRELIMINARY PLUMBNESS AND ALIGNMENT TEST OF COMPLETED DRILLED HOLE AS DEEMED NECESSARY TO ASSURE HOLE ALIGNMENT AND PLUMBNESS.
5. RUN VIDEO LOG AFTER WELL WATER HAS CLEARED.
6. INSTALL WELL CASING AND DOUBLE CEMENT BASKETS.
7. SET WELL CASING TO FINAL DEPTH AND POUR CEMENT PLUG. RUN PRELIMINARY PLUMBNESS AND ALIGNMENT TEST OF CASED HOLE AS DEEMED NECESSARY.
8. INSTALL 1,600 GPM TEST PUMP.
9. FILL ANNULAR SPACE WITH AGGREGATE, SAND AND CEMENT GROUT. OPERATE TEST PUMP WHILE FILLING THE ANNULAR SPACE.
10. MEASURE STATIC WATER LEVEL.
11. DEVELOP THE WELL BY PUMP SURGING THE WELL.
12. CONDUCT STEP DRAWDOWN TEST AS DIRECTED BY DWS.
13. CONDUCT CONSTANT RATE (96 HOURS) TEST AS DIRECTED BY DWS.
14. OBTAIN WATER QUALITY SAMPLES DURING THE CONTINUOUS PUMP TEST.
15. RUN PLUMBNESS AND ALIGNMENT TEST OF THE CASED WELL IN THE PRESENCE OF DWS.
16. CAP WELL, CLEAN UP, AND DEMOBILIZE. ESTABLISH A PERMANENT BENCH MARK ADJACENT TO THE WELL AND DETERMINE THE TOP OF CASING ELEVATION. BENCH MARK ELEVATION AND TOP OF CASING ELEVATION SHALL BE ESTABLISHED BY A LICENSED PROFESSIONAL LAND SURVEYOR LICENSED IN THE STATE OF HAWAII.

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WAILUKU EXPLORATORY WELL

TAX MAP KEY (2) 3-05-001:POR. OF 100
DWS JOB NO. 09-12
WAILUKU, MAUI, HAWAII

WELL SECTION AND DETAILS

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Ronald M. Fukumoto
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SHEET C-5
6 OF 6

APPENDIX C.

Biological Resources Survey

BIOLOGICAL RESOURCES SURVEY

for the

WAILUKU EXPLORATORY WELL

at Kehalani Mauka

WAILUKU, MAUI, HAWAII

by

ROBERT W. HOBDY
ENVIRONMENTAL CONSULTANT
Kokomo, Maui
December 2010

Prepared for:
Department of Water Supply
County of Maui

BIOLOGICAL RESOURCES SURVEY
WAILUKU EXPLORATORY WELL
At Kehalani Mauka Wailuku, Maui, Hawaii

INTRODUCTION

The Wailuku Exploratory Well Project is situated on the upper west edge of Wailuku Town and below South Alu Road which leads to Wailuku Heights. It consists of a 0.28 acre well site plot and a future 920 foot long x 10 foot wide transmission line corridor totaling another 0.21 acres, TMK (2) 3-5-01:067 (por.), (see Figure 1). This study was initiated in fulfillment of environmental requirements of the planning process.

SITE DESCRIPTION

The project site lies on former agricultural lands that slope gently down to the east from the West Maui Mountains. Vegetation consists of tall grasses with a few trees and shrubs. The well site plot is at an elevation of about 500 feet as is the transmission line corridor which travels north on a contour towards the Iao Water Tank near Iao Valley Road. Soils within the project area are uniformly of the Wailuku Silty Clay, 3-7 % slopes Series which is a deep, well-drained, dark reddish brown alluvial soil (Foote et al, 1972). Annual rainfall averages 25 inches to 28 inches, with most of this falling during the winter months (Armstrong, 1983).

BIOLOGICAL HISTORY

The original vegetation in this area consisted of a dense low statured native forest and shrubland with such components as ʻōhiʻa (*Metrosideros polymorpha*), ʻaʻaliʻi (*Dodonaea viscosa*), olopua (*Nestegis sandwicensis*), lama (*Diospyros sandwicensis*), halapepe (*Pleomele auwahiensis*), and a variety of ferns, vines and herbaceous plants.

Hawaiians lived in the area for several centuries, farming in the valley bottoms and lowlands and utilizing forest plants for food, construction materials, weapons, fiber and medicines. They altered the landscape somewhat through cultivation and burning.

During the mid 1800s this area was cleared for sugar cane agriculture and the area was cleared, plowed, planted, burned and harvested in continuous cycles for over 100 years. Native ecosystems were replaced by sugar cane and increasing numbers of agricultural weeds.

When sugar production ended in the 1990s this area was converted to cattle grazing. All of these practices, along with recent fires that have swept through the grass lands, have resulted in an environment that is now nearly totally lacking in native plants and animal species.

SURVEY OBJECTIVES

This report summarizes the findings of a flora and fauna survey of the proposed Wailuku Exploratory Well project at Kehalani Mauka which was conducted in November 2010. The objectives of the survey were to:

1. Document what plant, and animal species occur on the property or may likely occur in the existing habitat.

2. Document the status and abundance of each species.

3. Determine the presence or likely occurrence of any native flora and fauna, particularly any that are Federally listed as Threatened or Endangered. If such occur, identify what features of the habitat may be essential for these species.

4. Determine if the project area contains any special habitats which if lost or altered might result in a significant negative impact on the flora and fauna in this part of the island.

5. Note which aspects of the proposed development pose significant concerns for plants or for wildlife and recommend measures that would mitigate or avoid these problems.

BOTANICAL SURVEY REPORT

SURVEY METHODS

A walk-through botanical survey method was used within the well site plot as well as along a future 920 foot long by 40 foot wide corridor covering the entire project area. Notes were made on plant species, distribution and abundance as well as on terrain and substrate.

DESCRIPTION OF THE VEGETATION

The vegetation within the well site and along the transmission line corridor is nearly a monotypic stand of Guinea grass (*Megathyrsus maximus*) which can grow in dense stands to 8 feet deep. Other species of significance included Castor bean (*Ricinus communis*), glycine (*Neonotonia wightii*), opiuma (*Pithecellobium dulce*) and false mallow (*Malvastrum coromandelianum*).

A total of 51 plant species were recorded during the survey. Just one of these was a common dry land native plant, the ʻuhaloa (Waltheria indica), which is widespread in Hawaii and many other Pacific islands. The remaining 50 species were pasture plants or agricultural weeds. Most of the smaller species grew along roadways or in small clearings.

DISCUSSION AND RECOMMENDATIONS

The vegetation throughout the project area is dominated by non-native species that are of no particular environmental interest or concern. Just one common indigenous plant, ʻuhaloa, was found growing in a recently disturbed area. No federally listed Endangered or Threatened plant species (USFWS, 2009) were found, nor do any plants that are candidates for such status occur on the project area. No special plant habitats occur on or near the project and no potential wetlands occur in this dry upland site.

This project is not expected to have any significant negative impacts on the botanical resources in this part of West Maui. No recommendations regarding botanical resources are deemed necessary or appropriate.

PLANT SPECIES LIST

Following is a checklist of all those vascular plant species inventoried during the field studies. Plant families are arranged alphabetically within each of two groups: Monocots and Dicots. Taxonomy and nomenclature of the flowering plants (Monocots and Dicots) are in accordance with Wagner et al. (1999).

For each species, the following information is provided:

1. Scientific name with author citation
2. Common English or Hawaiian name.
3. Bio-geographical status. The following symbols are used:
   endemic = native only to the Hawaiian Islands; not naturally occurring anywhere else in the world.
   indigenous = native to the Hawaiian Islands and also to one or more other geographic area(s).
   Polynesian = all those plants brought to Hawaii during the course of Polynesian migrations.
   non-native = all those plants brought to the islands intentionally or accidentally after western contact.
4. Abundance of each species within the project area:
   abundant = forming a major part of the vegetation within the project area.
   common = widely scattered throughout the area or locally abundant within a portion of it.
   uncommon = scattered sparsely throughout the area or occurring in a few small patches.
   rare = only a few isolated individuals within the project area.

SCIENTIFIC NAME	COMMON NAME	STATUS	ABUNDANCE
MONOCOTS			
CYPERACEAE (Sedge Family)			
Cyperus rotundus L.	nut sedge	non-native	uncommon
POACEAE (Grass Family)			
Brachiaria subquadripara (Trin.) Hitchc.	----------	non-native	rare
Chloris barbata (L.) Sw.	swollen fingergrass	non-native	rare
Chloris radiata (L.) Sw.	plush grass	non-native	rare
Cynodon dactylon (L.) Pers.	Bermuda grass	non-native	rare
Eleusine indica (L.) Gaertn.	wiregrass	non-native	uncommon
Eragrostis pectinacea (Michx.) Nees	Carolina lovegrass	non-native	uncommon
Megathyrsus maximus (Jacq.) Simon & Jacobs	Guinea grass	non-native	abundant
DICOTS			
AMARANTHACEAE (Amaranth Family)			
Amaranthus spinosus L.	spiny amaranth	non-native	uncommon
Chenopodium carinatum R. Br.	keeled goosefoot	non-native	rare
ASTERACEAE (Sunflower Family)			
Bidens pilosa L.	Spanish needle	non-native	rare
Conyza bonariensis (L.) Cronq.	hairy horseweed	non-native	rare
Emilia fosbergii Nicolson	red pualele	non-native	rare
Sonchus oleraceus L.	pualele	non-native	rare
Tridax procumbens L.	coat buttons	non-native	rare
Verbesina encelioides (Cav.) Benth. & Hook.	golden crown-beard	non-native	uncommon
Xanthium strumarium L.	kikania	non-native	rare
BORAGINACEAE (Borage Family)			
Heliotropium amplexicaule Vahl	summer heliotrope	non-native	rare
Heliotropium procumbens Mill.	fourspike heliotrope	non-native	rare
BRASSICACEAE (Myrtle Family)			
Lepidium africanum (Burm.f.) DC.	pepperwort	non-native	rare
CONVOLVULACEAE (Morning Glory Family)			
Ipomoea triloba L.	little bell	non-native	rare
CUCURBITACEAE (Gourd Family)			
Cucumis dipsaceus Erenb. ex Spach	hedgehog gourd	non-native	rare
EUPHORBIACEAE (Spurge Family)			
Euphorbia hirta L.	hairy spurge	non-native	rare
Euphorbia hypericifolia L.	graceful spurge	non-native	rare
Ricinus communis L.	Castor bean	non-native	uncommon
FABACEAE (Pea Family)			
Chamaecrista nictitans (L.) Moench	partridge pea	non-native	uncommon
Crotalaria incana L.	fuzzy rattlepod	non-native	rare
Crotalaria pallida Aiton	smooth rattlepod	non-native	uncommon
Crotalaria retusa L.	rattlepod	non-native	rare
Desmanthus pernambucanus (L.) Thellung	slender mimosa	non-native	rare
Desmodium triflorum (L.) DC.	three-flowered beggarweed	non-native	rare

SCIENTIFIC NAME	COMMON NAME	STATUS	ABUNDANCE
Indigofera hendecaphylla Jacq.	creeping indigo	non-native	uncommon
Leucaena leucocephala (Lam.) de Wit	koa haole	non-native	rare
Macroptilium lathyroides (L.) Urb.	wild bean	non-native	rare
Neonotonia wightii (Wight & Arnott) Lackey	glycine	non-native	uncommon
Pithcellobium dulce (Roxb.) Benth.	öpiuma	non-native	uncommon
Prosopis pallida (Humb.&Bonpl.ex Willd.) Kunth	kiawe	non-native	rare
Samanea saman (Jacq.) Merr.	monkeypod	non-native	rare
LAMIACEAE (Mint Family)			
Leonotis nepetifolia (L.) R.Br.	lion's ear	non-native	rare
MALVACEAE (Mallow Family)			
Abutilon grandifolium (Willd) Sweet	hairy abutilon	non-native	rare
Malva parviflora L.	cheese weed	non-native	rare
Malvastrum cormandelianum (L.) Garcke	false mallow	non-native	uncommon
Sida rhombifolia L.	Cuban jute	non-native	rare
Sida spinosa L.	prickly sida	non-native	rare
Waltheria indica L.	'uhaloa	indigenous	rare
MYRTACEAE (Myrtle Family)			
Psidium guajava L.	common guava	non-native	rare
NYCTAGINACEAE (Four-o'clock Family)			
Boerhavia coccinea Mill.	scarlet spiderling	non-native	rare
OXALIDACEAE (Wood Sorrel Family)			
Oxalis corniculata L.	'ihi'ai	Polynesian	rare
PLANTAGINACEAE (Plantain Family)			
Plantago lanceolata L.	narrow-leaved plantain	non-native	uncommon
PORTULACACEAE (Purslane Family)			
Portulaca olercea L.	pigweed	non-native	rare
SOLANACEAE (Nightshade Family)			
Nicandra physalodes (L.) Gaertn.	apple of Peru	non-native	rare

FAUNA SURVEY REPORT

SURVEY METHODS

A walk-through survey method was conducted in conjunction with the botanical survey. All parts of the project area were covered. Field observations were made with the aid of binoculars and by listening to vocalizations. Notes were made on species abundance, activities and location as well as observations of trails, tracks scat and signs of feeding. In addition an evening visit was made to the area to record crepuscular activities and vocalizations and to see if there was any evidence of occurrence of the Hawaiian hoary bat (*Lasiurus cinereus semotus*) in the area.

RESULTS

MAMMALS

Just two mammal species were observed during two site visits to the project area. Taxonomy and nomenclature follow Tomich (1986).

Mongoose (*Herpestes auropunctatus*) – One mongoose was seen darting into the underbrush from a small clearing at the well site.

Domestic dog (*Canis familiaris*) – Dog tracks and scat were seen along a dirt road where nearby residents walk their dogs.

Other mammals one would expect to find here include rats (*Rattus* spp.), mice (*Mus domesticus*) and cats (*Felis catus*). Rats and mice feed on seeds, fruits, herbaceous vegetation and insects and the cats would prey on these rodents.

A special effort was made to look for the native Hawaiian hoary bat by making an evening survey of the area. When present in an area these bats can be easily identified as they forage for insects, their distinctive flight patterns clearly visible in the flow of twilight. No evidence of such activity was observed though visibility was excellent. In addition a bat detecting device was used, set to the frequency of 27,000 to 28,000 hertz which is the typical range within which these bats are known to echolocate. No activity was detected using this device.

BIRDS

Birdlife was rather sparse in and around the project area due to the lack of habitat diversity and food. Just five species of non-native birds were recorded during two site visits. Taxonomy and nomenclature follow American Ornithologists' Union (2009).

Zebra dove (*Geopelia striata*) – These small doves were common in small flocks in flight and on the ground in clearings.

Common myna (*Acridotheres tristis*) – Several pairs of mynas were seen in flight over the project area.

Spotted dove (*Streptopelia chinensis*) – A few of these large doves were seen in flight over the project area and on the ground in clearings.

Chestnut mannikin (*Lonchura malacca*) – One flock of these small chestnut brown birds was seen feeding on seeds in the grasslands.

Japanese bush-warbler (*Cettia diphone*) – One of these secretive birds was heard calling from the underbrush.

A number of other non-native bird species might be expected in this area and at different times of year. These include the gray francolin (*Francolinus pondicerianus*), cattle egret (*Bubulcus ibis*) and the northern mockingbird (*Mimus polyglottos*) and a few others. Migratory Pacific golden-plovers (*Pluvialis fulva*) can be seen during the fall and winter months when they are here during their non-breeding phase. This habitat is not suitable for Hawaii's native forest birds that occur only at higher elevations beyond the range of mosquitoes and the diseases they transmit.

REPTILES

One reptile, the mourning gecko (Lepidodactylus lugubris) was heard calling at dusk during the evening survey. This gecko is common in rural areas. It is considered to be an inadvertent Polynesian introduction.

INSECTS

A few insect species were seen on the property during two site visits. Taxonomy and nomenclature follow Nishida et al (1992).

Long-tailed blue (*Lampides boeticus*) – This small, non-native, bluish-gray butterfly was common in vegetation around the proposed well site.

Common housefly (*Musca domestica*) – A few of these ubiquitous flies were seen around the project area.

Argentine ant (*Linepithema humile*) – A few colonies of these common ants were seen in soft soil in clearings.

Monarch butterfly (*Danaus plexippus*) – One monarch was seen feeding on flowers in the project area.

Green darner (*Anax junius*) – One of these medium-large, blue and green, indigenous dragonflies was seen in flight over the well site. This dragonfly is also native to the American mainland.

The habitat in this project area is not suitable for Maui's two Endangered insects. Blackburn's sphinx moth (*Manduca blackburni*) has very specialized host species in the nightshade family. None of these host plants were found on or near the project area and no Blackburn's sphinx moths or their larvae were seen. The other Endangered insect (*Drosophila neoclavisetae*) occurs in wet native forests in upper elevations of the West Maui Mountains and could not survive in this drier disturbed habitat in Wailuku.

MOLLUSKS

Just one mollusk, the African snail (Achatina fulica) was found in small numbers in the project. This large snail is an agricultural pest.

DISCUSSION AND RECOMMENDATIONS

The wildlife within and around this project area is composed almost entirely of non-native species. Of a total of 2 mammals, 5 birds, 1 reptile, 5 insects and 1 mollusk, only one indigenous dragonfly, the green darner (Anax junius), was recorded. This dragonfly which is widespread in Hawaii also occurs on the American mainland.

No Endangered or Threatened native animals were found during the survey, nor were any found that are candidates for such status. No special wildlife habitats were found either.

As a result of these findings, it is determined that there is little of environmental concern with regard to animal life within the proposed project. The development of this well and transmission line is not expected to have a significant negative impact on the native wildlife resources in this part of West Maui.

While no protected seabirds were found on the property, the ua'u and 'a'o are known to overfly the area at dawn and dusk to their burrows high in the mountains between the months of March and November. In late fall young birds fledge from their burrows to take their first tentative flights out to sea. These inexperienced birds are easily confused and distracted by bright lights and often crash to the ground where they are particularly vulnerable to being run over by vehicles or killed by predators.

It is recommended that any significant outdoor lighting such as street lights or flood lights that are incorporated into the project design be shielded to direct the light downward so that it is not visible from above.

ANIMAL SPECIES LIST

Following is a checklist of the animal species inventoried during the field work. Animal species are arranged in descending abundance within five groups: Mammals, Birds, Reptiles, Insects and Mollusks. For each species the following information is provided:

1. Common name

2. Scientific name

3. Bio-geographical status. The following symbols are used:

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   indigenous = native to the Hawaiian Islands and also to one or more other geographic area(s).
   non-native = all those animals brought to Hawaii intentionally or accidentally after western contact.
   migratory = spending a portion of the year in Hawaii and a portion elsewhere. In Hawaii the migratory birds are usually in the overwintering/non-breeding phase of their life cycle.

4. Abundance of each species within the project area:

   abundant = many flocks or individuals seen throughout the area at all times of day.
   common = a few flocks or well scattered individuals throughout the area.
   uncommon = only one flock or several individuals seen within the project area.
   rare = only one or two seen within the project area.

COMMON NAME	SCIENTIFIC NAME	STATUS	ABUNDANCE
MAMMALS			
Mongoose	*Herpestes auropunctatus*	non-native	rare
Dog	*Canis familiaris*	non-native	rare
BIRDS			
Zebra dove	*Geopelia striata*	non-native	common
Common myna	*Acridotheres tristis*	non-native	common
Spotted dove	*Streptopelia chinensis*	non-native	uncommon
Chestnut mannikin	*Lonchura malacca*	non-native	uncommon
Japanese bush-warbler	*Cettia diphone*	non-native	rare
REPTILES			
Mourning gecko	*Lepidodactylus lugubris*	Polynesian	uncommon
INSECTS			
Long-tailed blue	*Lampides boeticus*	non-native	common
Common housefly	*Musca domestica*	non-native	uncommon
Argentine ant	*Linepithema humile*	non-native	uncommon
Monarch butterfly	*Danaus plexippus*	non-native	rare
Green darner	*Anax junius*	indigenous	rare
MOLLUSKS			
African snail	*Achatina fulica*	non-native	uncommon

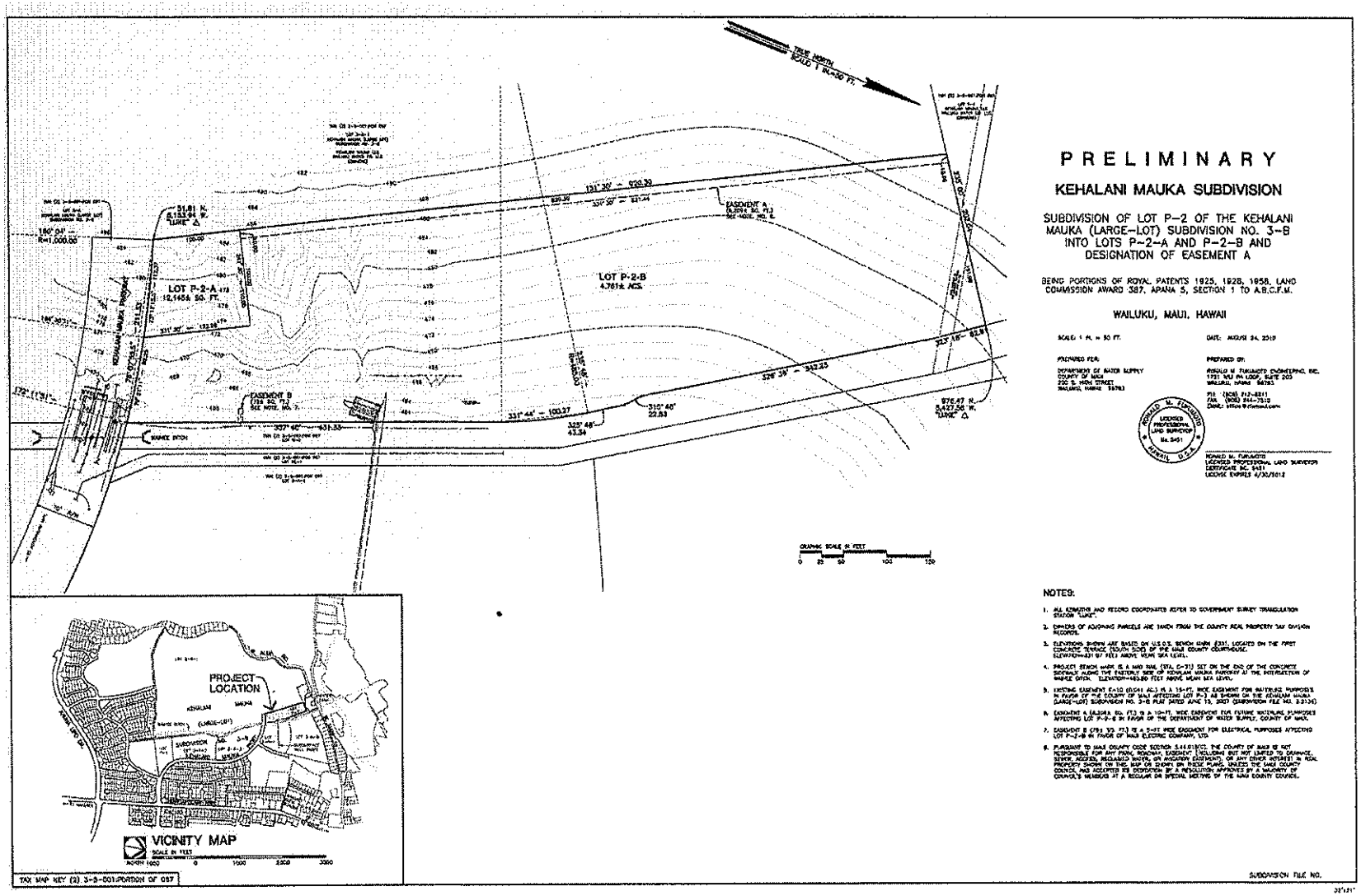
PRELIMINARY
KEHALANI MAUKA SUBDIVISION
SUBDIVISION OF LOT P-2 OF THE KEHALANI MAUKA (LARGE-LOT) SUBDIVISION NO. 3-8 INTO LOTS P-2-A AND P-2-B AND DESIGNATION OF EASEMENT A
BEING PORTIONS OF ROYAL PATENTS 1925, 1928, 1958, LAND COMMISSION AWARD 387, APANA 5, SECTION 1 TO A.B.C.F.M.
WAILUKU, MAUI, HAWAII
LOT P-2-A
12,145± SQ. FT.
LOT P-2-B
4.761± ACS.
EASEMENT A
EASEMENT B
PROJECT LOCATION
VICINITY MAP
NOTES:
TAX MAP KEY (2) 3-9-001:PORTION OF 057
SUBDIVISION FILE NO.

Figure 1

Literature Cited

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Nishida, G.M. & G.A. Samuelson, J.S. Strazanac & K.S. Kami. 1992. Hawaiian Terrestrial Arthropod Checklist. Hawaiian Biological Survey.

Tomich, P.Q. 1986. Mammals in Hawaii. Bishop Museum Press, Honolulu.

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APPENDIX D.

Archaeological Field Inspection

Ms. Morgan Davis
SHPD-Maui
130 Mahalani Street
Wailuku, HI 96793

January 7, 2011

Re: Field Inspection of a 0.28-acre Lot in Wailuku Ahupua`a, Wailuku District, Island of Maui [TMK:(2) 3-5-01:067 (por.)]

Dear Ms. Conte:

At the request of Ronald M. Fukumoto Engineering, Inc., Scientific Consultant Services, Inc. (SCS) conducted an Archaeological Field Inspection of a 0.28 acre lot and a 10-foot wide by 820-foot long easement in Wailuku Ahupua`a, Wailuku District, Island of Maui, Hawai`i [TMK: (2) 3-5-01:067 (por.)] (Figures 1-3). The lot is the site of the proposed Wailuku Exploratory Well. The purpose of the Field Inspection was to determine the presence or absence of architecture, midden deposits, and/or artifact deposits on the surface of the project area, as well as assess the potential for the presence of subsurface cultural deposits.

Location and Current Status

The project area is located at the end of Kehalani Mauka Parkway on a 0.28 acre parcel located at an elevation of 480 feet A.M.S.L. that is bounded agricultural fields that are not in production (Figures 4-7). The parcel is relatively flat and contains several mostly non-native invasive species including guinea grass, opiuma and *koa haole*.. Within the parcel are several piles of construction debris and a dirt access road.). Lot P-2 has recently been assigned a new tax map key (2) 3-5-001:100; however, the tax map has not yet been updated.

Field Methods

The Field Inspection was conducted by SCS archaeologist David Perzinski on November 19, 2010 under the direction of Michael Dega, Ph.D (Principal Investigator). The purpose of the pedestrian survey was to assess the parcel for the presence or absence of surface features and deposits. A 100% pedestrian survey was conducted and numerous photographs were taken to document the current condition of the parcel. No subsurface testing was conducted during the Field Inspection.

Results

A 100% pedestrian survey of the parcel documented no historic sites, features, midden scatters or artifacts. The parcel is currently used for the storage of construction supplies with approximately 70% of the project area covered in invasive guinea grass. The ground surface and subterranean reaches of the parcel have been heavily modified through time, given intensive industrial sugar cane plantation cultivation in the area, as well as recent construction storage activities. The survey was negative for both surface materials and areas thought to potentially contain subsurface cultural materials.

Conclusions

No surface or subsurface cultural remains were identified during the Field Inspection. A full inspection of the parcel failed to lead to the identification of historic surface features or architecture. Repeated instances of modern era clearing, grubbing and agricultural activities in the parcel have extensively disturbed the area, further making the likelihood of encountering any remaining surface features almost non-existent.

It is our estimation, based on this Field Inspection, that the development of the proposed well would not have an adverse impact on any significant historic properties. No further work is needed for this land parcel. However, should the inadvertent discovery of significant cultural materials and/or burials occur during construction, all work in the immediate area of the find must cease and the SHPD be notified to discuss mitigation, if necessary.

Thank you again for reviewing this document. Please call (597-1182) if you have any questions or concerns about this letter.

Best Regards,
David Perzinski B.A.,
Michael Dega, Ph.D.
Scientific Consultant Services, Inc.

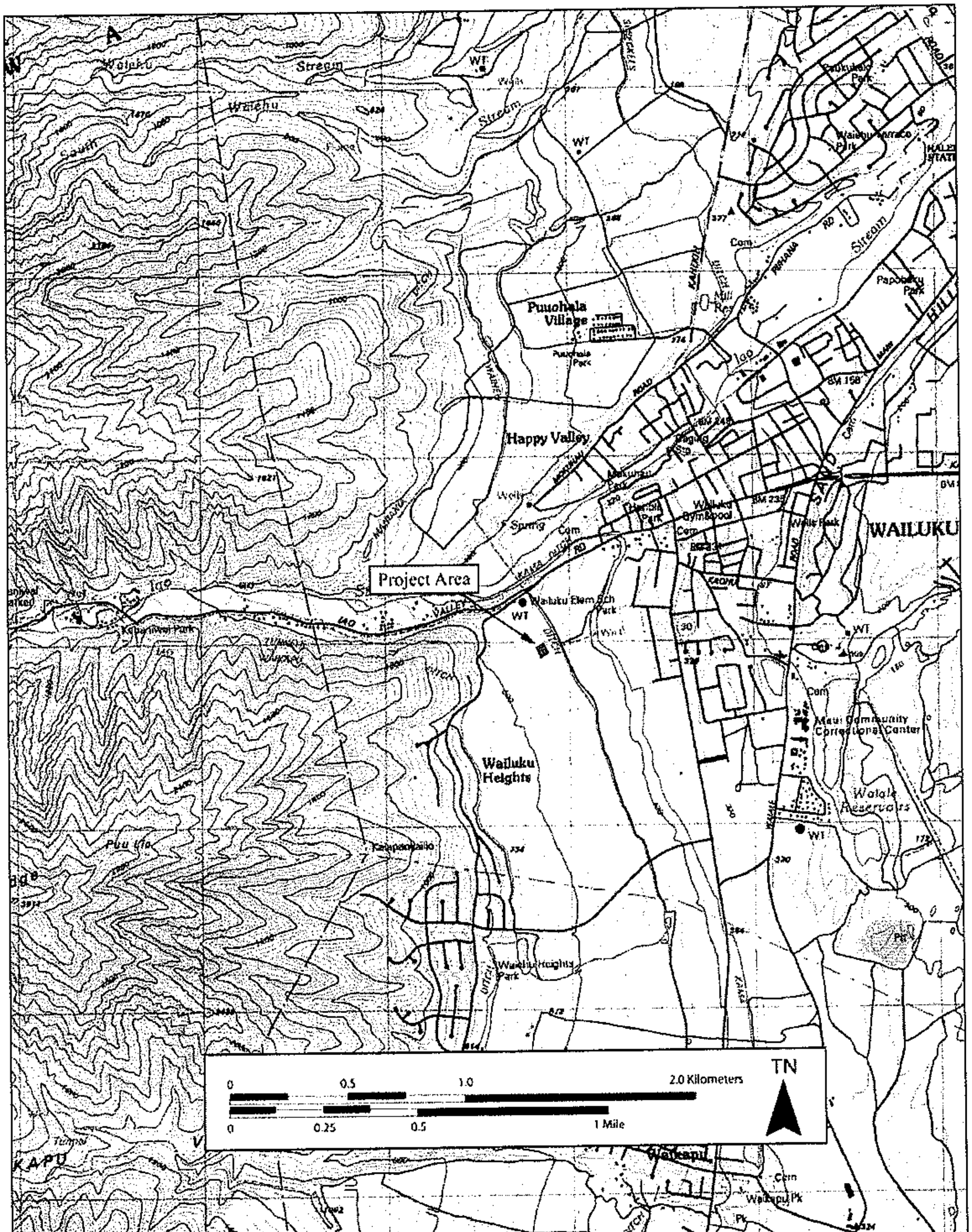

Figure 1: USGS Map Showing Location of Project Area.

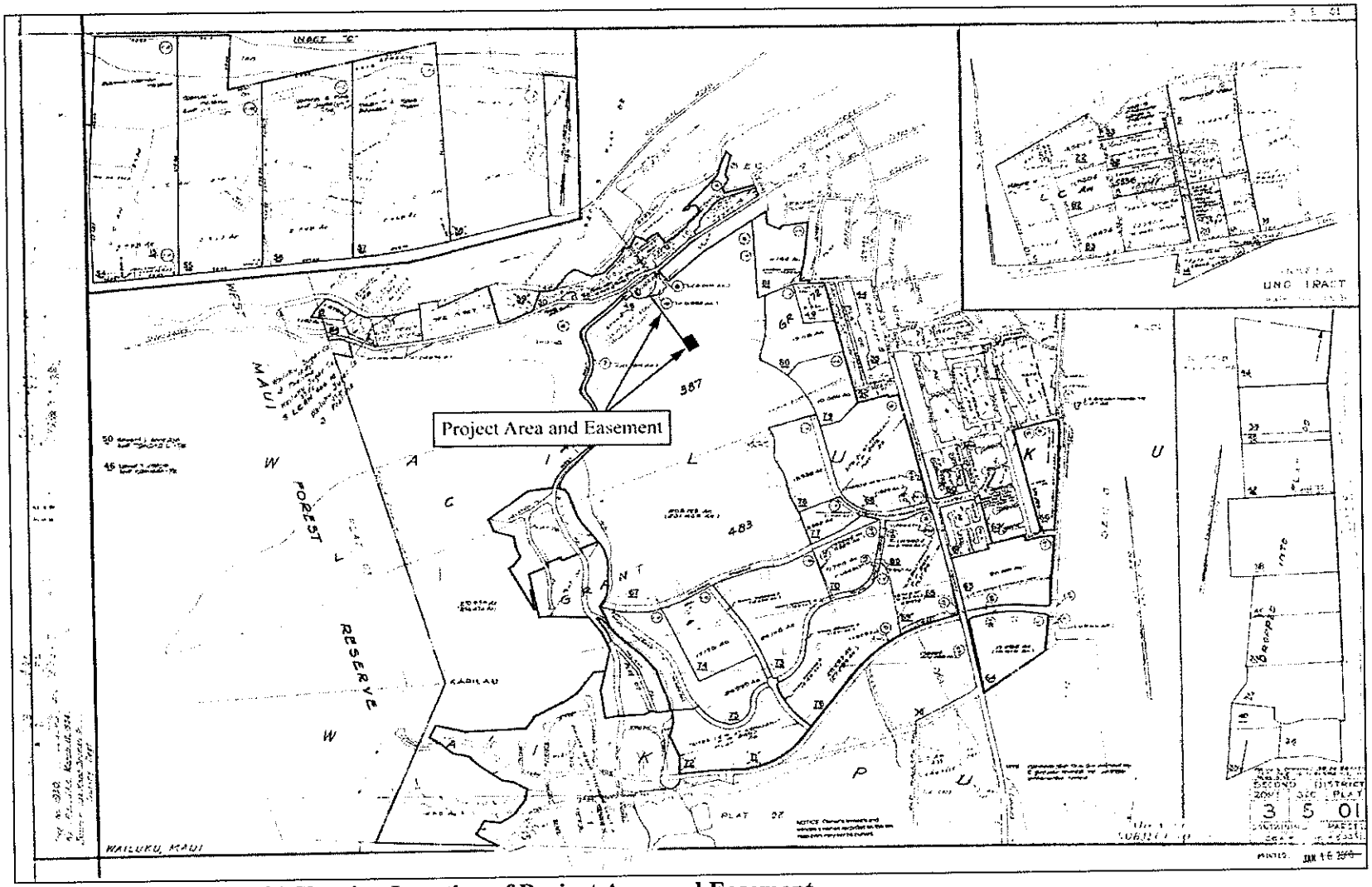

Figure 2: TMK (2) 3-5-01 Showing Location of Project Area and Easement.

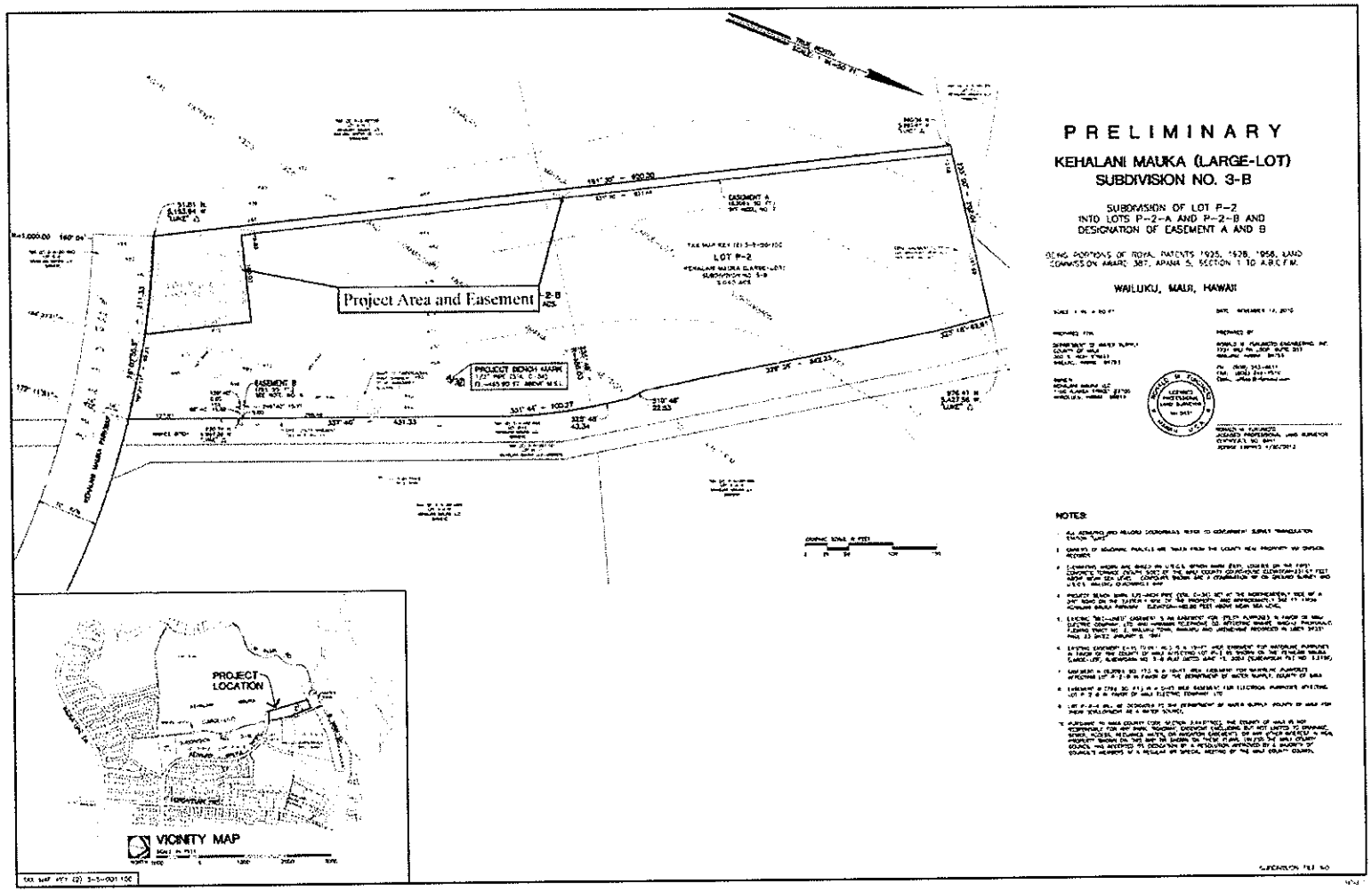

Figure 3: Plan View of Project Area Showing Proposed Well Site (plan courtesy of client).

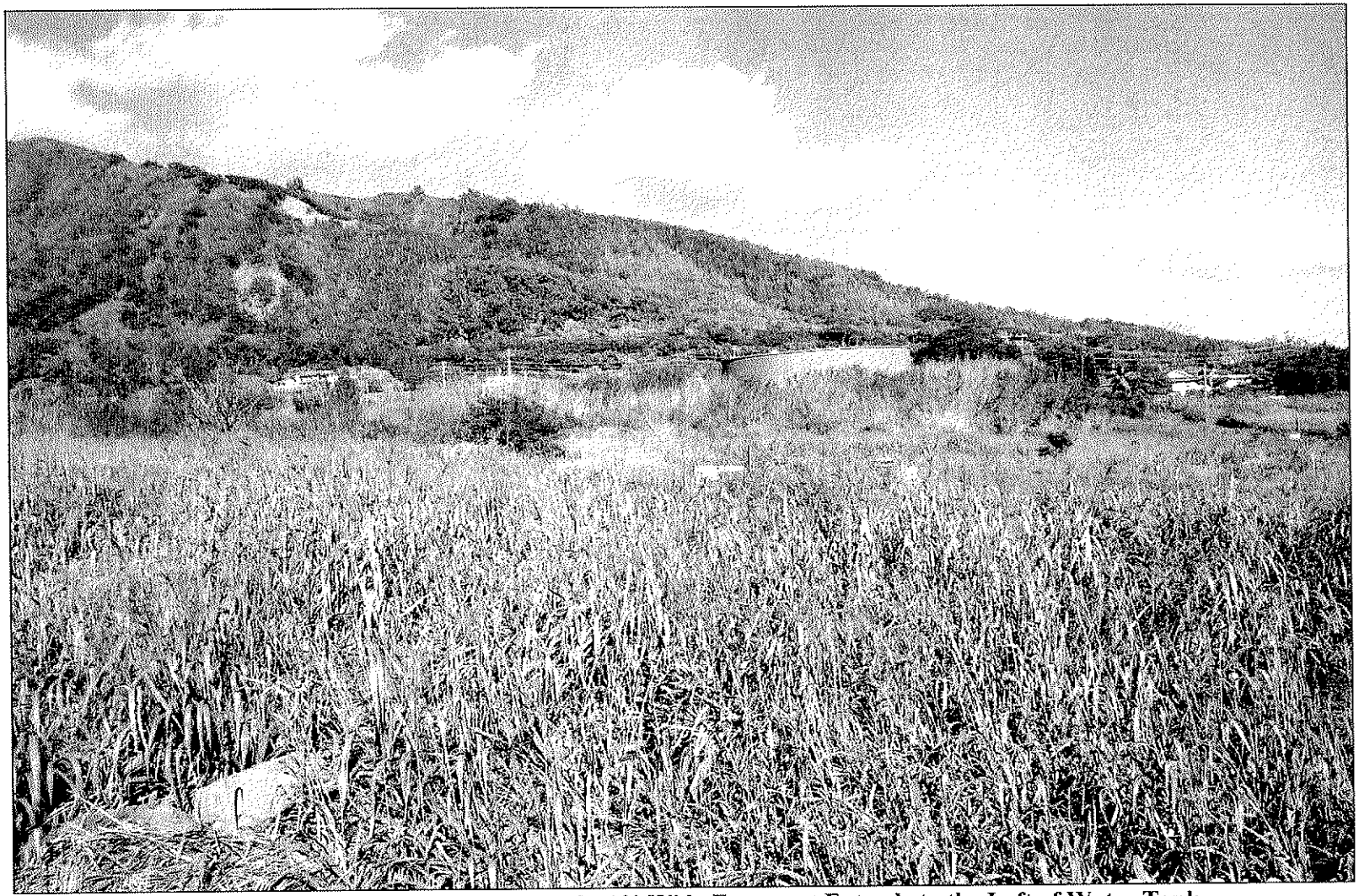

Figure 4: View North of Project Area (in foreground), 10' Wide Easement Extends to the Left of Water Tank.

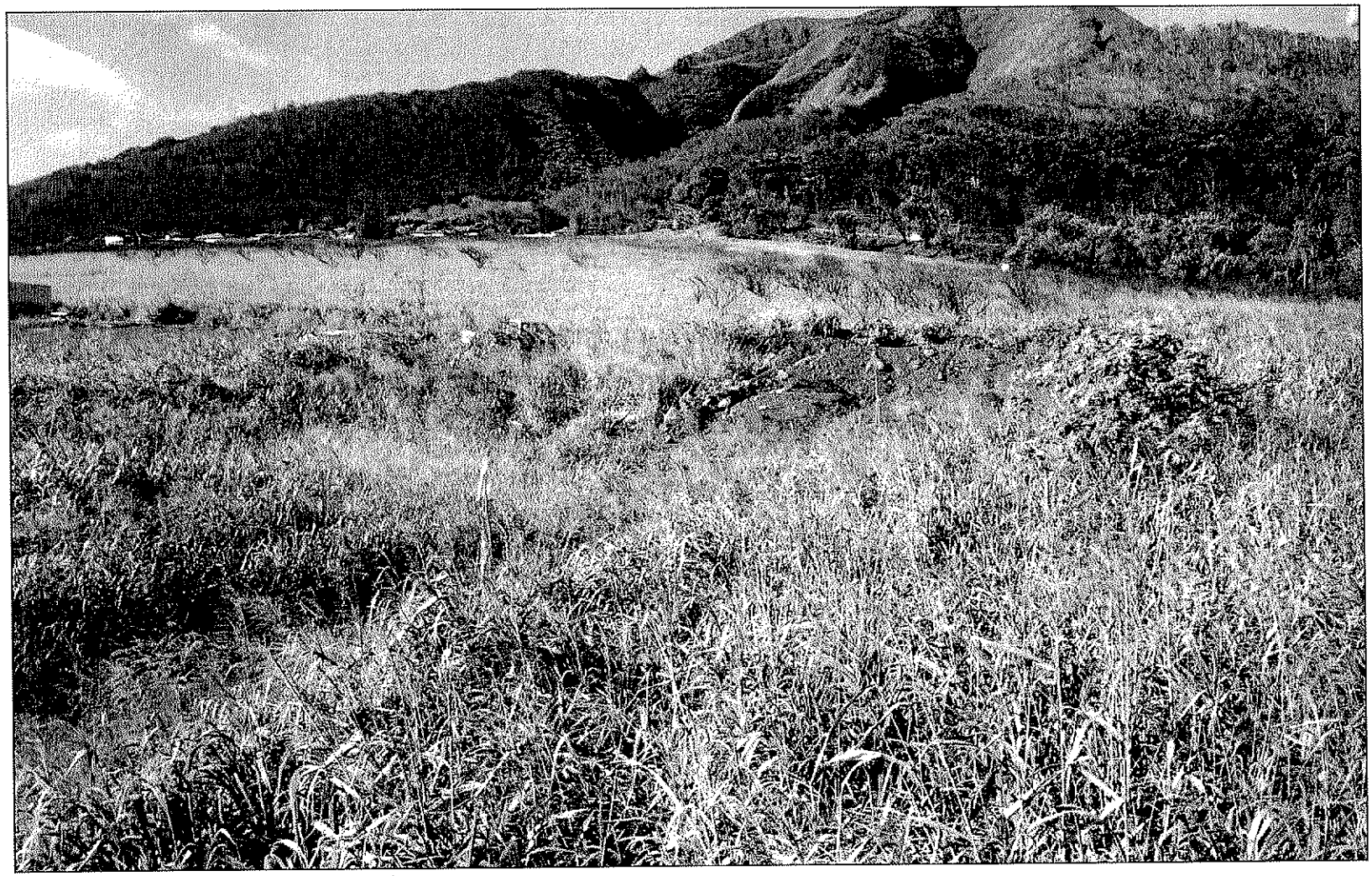

Figure 5: View West of Well Location.

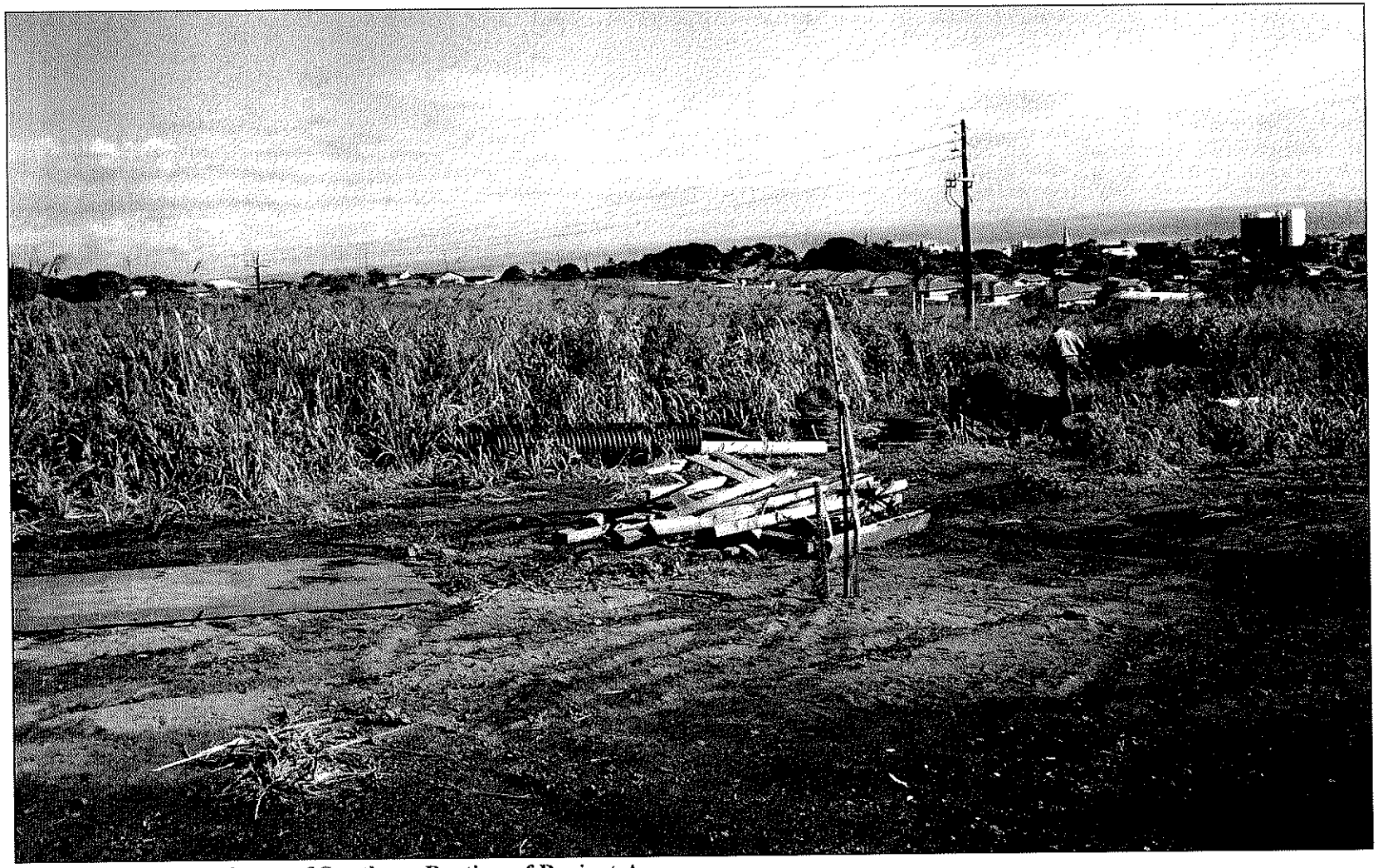

Figure 6: View Northeast of Southern Portion of Project Area.

Figure 7: View North Along Corridor Showing Guinea Grass and Recently Burned Opiuma.

APPENDIX E.

Cultural Impact Assessment

A CULTURAL IMPACT ASSESSMENT OF THE WAILUKU EXPLORATORY WELL PROJECT, WAILUKU DISTRICT, MAUI ISLAND, HAWAI`I [TMK (2) 3-5-001:100 por.]

Prepared by:
Leann McGerty, B.A.
and
Robert L. Spear, Ph.D.
September 2009

Prepared for:
Ronald M. Fukumoto Engineering, Inc.
1721 Wili Pa Loop, Suite 203
Wailuku, HI 96793

SCIENTIFIC CONSULTANT SERVICES Inc.

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

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INTRODUCTION

Scientific Consultant Services, Inc. (SCS) has been contracted by Ronald M. Fukumoto Engineering, Inc., to conduct a Cultural Impact Assessment of the Wailuku Exploratory Well project, Wailuku District, Maui Island [TMK: (2) 3-5-001:100 por.] (Figures 1 and 2). The project involves constructing an exploratory well on a 0.25-acre site plus an access easement to the public street within the existing Kehalani Subdivision.

The Constitution of the State of Hawai`i clearly states the duty of the State and its agencies is to preserve, protect, and prevent interference with the traditional and customary rights of native Hawaiians. Article XII, Section 7 requires the State to "protect all rights, customarily and traditionally exercised for subsistence, cultural and religious purposes and possessed by ahupua`a tenants who are descendants of native Hawaiians who inhabited the Hawaiian Islands prior to 1778" (2000). In spite of the establishment of the foreign concept of private ownership and western-style government, Kamehameha III (Kauikeaouli) preserved the peoples traditional right to subsistence. As a result in 1850, the Hawaiian Government confirmed the traditional access rights to native Hawaiian ahupua`a tenants to gather specific natural resources for customary uses from undeveloped private property and waterways under the Hawaiian Revised Statutes (HRS) 7-1. In 1992, the State of Hawai`i Supreme Court, reaffirmed HRS 7-1 and expanded it to include, "native Hawaiian rights...may extend beyond the ahupua`a in which a native Hawaiian resides where such rights have been customarily and traditionally exercised in this manner" (Pele Defense Fund v. Paty, 73 Haw.578, 1992).

In Section 1 of Act 50, enacted by the Legislature of the State of Hawai`i (2000) with House Bill 2895, it is stated that:

> ...there is a need to clarify that the preparation of environmental assessments or environmental impact statements should identify and address effects on Hawaii's culture, and traditional and customary rights...[H.B. NO. 2895].

Articles IX and XII of the state constitution, other state laws, and the courts of the State impose on government agencies a duty to promote and protect cultural beliefs and practices, and resources of native Hawaiians as well as other ethnic groups. Act 50 also requires state agencies and other developers to assess the effects of proposed land use or shore line developments on the "cultural practices of the community and State" as part of the HRS Chapter 343 environmental review process (2001).

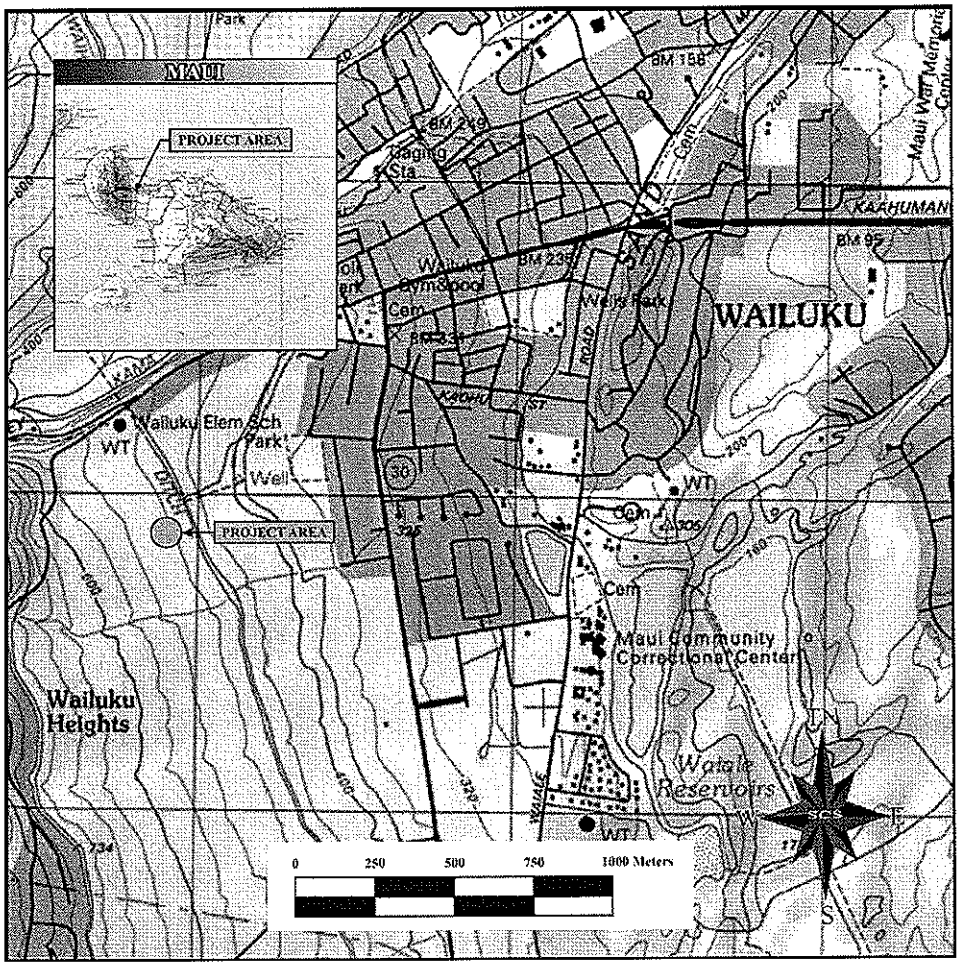

Figure 1: USGS Quadrangle Map Showing Project Area.

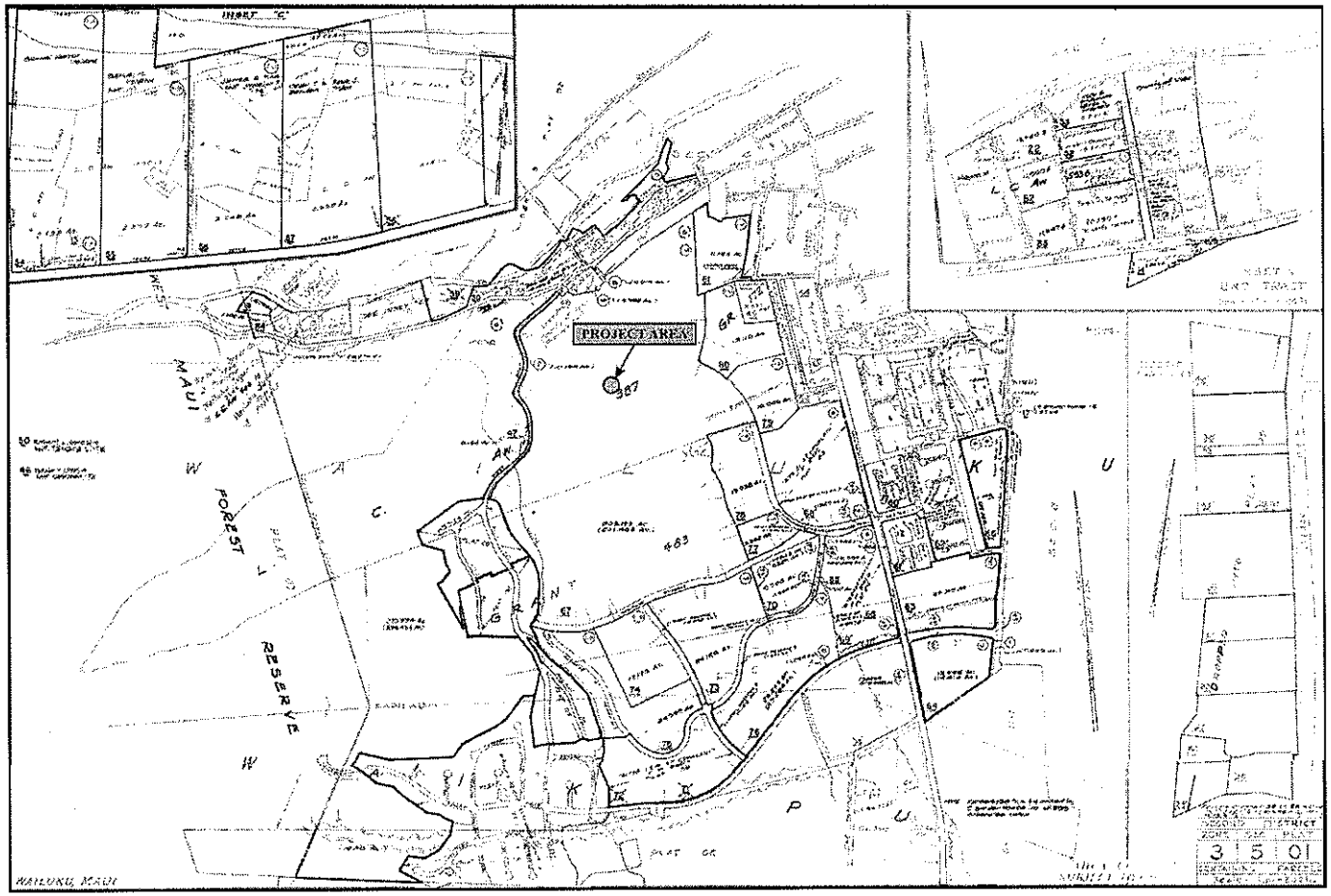

Figure 2: Tax Map Key [TMK] Showing Project Area.

It also re-defined the definition of "significant effect" to include "the sum of effects on the quality of the environment including actions impact a natural resource, limit the range of beneficial uses of the environment, that are contrary to the State's environmental policies. . . or adversely affect the economic welfare, social welfare or cultural practices of the community and State" (H.B. 2895, Act 50, 2000). Cultural resources can include a broad range of often overlapping categories, including places, behaviors, values, beliefs, objects, records, stories, etc. (H.B. 2895, Act 40, 2000).

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

Therefore, the purpose of a Cultural Impact Assessment is to identify the possibility of cultural activities and resources within a project area, or its vicinity, and then assessing the potential for impacts on these cultural resources. The CIA is not intended to be a document of in depth archival-historical land research, or a record of oral family histories, unless these records contain information about specific cultural resources that might be impacted by a proposed project.

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

The types of cultural practices and beliefs subject to assessment may include subsistence, commercial, residential, agricultural, access-related, recreational, and religions and spiritual customs. The types of cultural resources subject to assessment may include traditional cultural properties or other types of historic sites, both manmade and natural, which support such cultural beliefs.

The meaning of "traditional" was explained in National Register Bulletin:

Traditional" in this context refers to those beliefs, customs, and practices of a living community of people that have been passed down through the generations', usually orally or

through practice. The traditional cultural significance of a historic property, then is significance derived from the role the property plays in a community's historically rooted beliefs, customs, and practices [Parker and King 1990:1].

METHODOLOGY

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

> "...information may be obtained through scoping, community meetings, ethnographic interviews and oral histories..." (1997).

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

> (1) a discussion of the methods applied and results of consultation with individuals and organizations identified by the preparer as being familiar with cultural practices and features associated with the project area, including any constraints of limitations which might have affected the quality of the information obtained;
>
> (2) a description of methods adopted by the preparer to identify, locate, and select the persons interviewed, including a discussion of the level of effort undertaken;
>
> (3) ethnographic and oral history interview procedures, including the circumstances under which the interviews were conducted, and any constraints or limitations which might have affected the quality of the information obtained;
>
> (4) biographical information concerning the individuals and organizations consulted, their particular expertise, and their historical and genealogical relationship to the project area, as well as information concerning the persons submitting information or being interviewed, their particular knowledge and cultural expertise, if any, and their historical and genealogical relationship to the project area;
>
> (5) a discussion concerning historical and cultural source materials consulted, the institutions and repositories searched, and the level of effort undertaken, as well as the particular perspective of the authors, if appropriate, any opposing views, and any other relevant constraints, limitations or biases;
>
> (6) a discussion concerning the cultural resources, practices and beliefs identified, and for the resources and practices, their location within the broad geographical area in which the

proposed action is located, as well as their direct or indirect significance or connection to the project site;

(7) a discussion concerning the nature of the cultural practices and beliefs, and the significance of the cultural resources within the project area, affected directly or indirectly by the proposed project;

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

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

(10) an analysis of the potential effect of any proposed physical alteration on cultural resources, practices, or beliefs; the potential of the proposed action to isolate cultural resources, practices, or beliefs from their setting; and the potential of the proposed action to introduce elements which may alter the setting in which cultural practices take place, and;

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

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

ARCHIVAL RESEARCH

Archival research focused on a historical documentary study involving both published and unpublished sources. These included legendary accounts of native and early foreign writers; early historical journals and narratives; historic maps and land records such as Land Commission

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

INTERVIEW METHODOLOGY

Interviews are conducted in accordance with Federal and State laws, and guidelines, when knowledgeable individuals are able to identify cultural practices in, or in close proximity to the project area. If they have knowledge of traditional stories, practices and beliefs associated with a project area or if they know of historical properties within the project area, they are sought out for additional consultation and interviews. Individuals who have particular knowledge of traditions passed down from preceding generations and a personal familiarity with the project area are invited to share their relevant information concerning particular cultural resources. Often

people are recommended for their expertise, and indeed, organizations, such as Hawaiian Civic Clubs, the Island Branch of Office of Hawaiian Affairs (OHA), historical societies, Island Trail clubs, and Planning Commissions are depended upon for their recommendations of suitable informants. These groups are invited to contribute their input, and suggest further avenues of inquiry, as well as specific individuals to interview. It should be stressed that this process does not include formal ethnographic interviews or oral histories as described in the OEQC's Guidelines for Assessing Cultural Impacts (1997). The assessments are intended to identify potential impacts to ongoing cultural practices or resources within a project area or in its close vicinity.

No interviews were conducted for the present project as there were no responses from any of the contacted organizations and/or individuals. There was one inquiry as to the exact location of the project area brought about from the announcement in the Maui News, from the Waikapū Community Association.

If knowledgeable individuals are identified, personal interviews are sometimes taped and then transcribed. These draft transcripts are returned to each of the participants for their review and comments. After corrections are made, each individual signs a release form, making the information available for this study. When telephone interviews occur, a summary of the information is usually sent for correction and approval, or dictated by the informant and then incorporated into the document. If no cultural resource information is forthcoming and no knowledgeable informants are suggested for further inquiry, interviews are not conducted.

Letters were sent to organizations whose jurisdiction included knowledge of the area. Consultation was sought from Thelma Shimaoka of the Maui Branch of the Office of Hawaiian Affairs; Ke`eaumoku and U`i Kapu; Central Maui Hawaiian Civic Club; the County of Maui Cultural Resources Commission; Hinano Rodrigues, SHPD Island Historian; Charles Maxwell of the Island Burial Council; and Kamika Kepa`a of the Native Hawaiian Preservation Council (Appendix A). In addition, a Cultural Impact Assessment Notice was published on August 5, 6, 9, 2009 in The Honolulu Advertiser and The Maui News, and in the August issue if the OHA newspaper, Na Wai Ola (Appendix B). These notices requested information of cultural resources or activities in the area of the proposed project, gave the TMK number and where to respond with information. Based on the responses, an assessment of the potential effects on cultural resources in the project area and recommendations for mitigation of these effects can be proposed.

PROJECT AREA AND VICINITY

The project area is located within the Kehalani subdivision in Wailuku and encompasses 0.25 acre plus an access easement over the parcel to the nearest public street. The access easement would probably follow existing dirt roads from the well site to the Kehalani Mauka Parkway (see Figure 2).

CULTURAL HISTORICAL CONTEXT

The island of Maui ranks second in size of the eight main islands in the Hawaiian Archipelago. Pu`u Kukui, forming the west end of the island (1,215m above mean sea level), is composed of large, heavily eroded amphitheater valleys that contain well-developed permanent stream systems that watered fertile agricultural lands extending to the coast. The deep valleys of West Maui and their associated coastal regions have been witness to many battles in ancient times and were coveted productive landscapes.

PAST POLITICAL BOUNDARIES

Traditionally, the division of Maui's lands into districts (moku) and sub-districts was performed by a kahuna (priest, expert) named Kalaiha` ō hia, during the time of the ali`I Kaka`alaneo (Beckwith 1940:383; Fornander places Kaka`alaneo at the end of the 15 th century or the beginning of the 16 th century [Fornander 1919-20, Vol. 6:248]). Land was considered the property of the king or ali`i `ai moku (the ali`i who eats the island/district), which he held in trust for the gods. The title of ali`i `ai moku ensured rights and responsibilities pertaining to the land, but did not confer absolute ownership. The king kept the parcels he wanted, his higher chiefs received large parcels from him and, in turn, distributed smaller parcels to lesser chiefs. The maka` ainana (commoners) worked the individual plots of land.

In general, several terms, such as moku, ahupua`a, `ili or `ili`~ ina were used to delineate various land sections. A district (moku) contained smaller land divisions (ahupua`a) which customarily continued inland from the ocean and upland into the mountains. Extended household groups living within the ahupua`a were therefore, able to harvest from both the land and the sea. Ideally, this situation allowed each ahupua`a to be self-sufficient by supplying needed resources from different environmental zones (Lyons 1875:111). The `ili `~ina or `ili were smaller land divisions next to importance to the ahupua`a and were administered by the chief who controlled the ahupua`a in which it was located (ibid:33; Lucas 1995:40). The mo`o`~ina were narrow strips of land within an `ili. The land holding of a tenant or hoa `~ina residing in a ahupua`a was called a kuleana (Lucas 1995:61). The project area is located in the

ahupua`a of Wailuku, which translated means literally "water [of] destruction," referring to the battle of *Ke pani wai*, between Kamehameha I and Kalanikupule (Pukui et al.:225).

TRADITIONAL SETTLEMENT PATTERNS

The Hawaiian economy was based on agricultural production and marine exploitation, as well as raising livestock and collecting wild plants and birds. Extended household groups settled in various ahupua`a. During pre-Contact times, there were primarily two types of agriculture, wetland and dry land, both of which were dependent upon geography and physiography. River valleys provided ideal conditions for wetland kalo (Colocasia esculenta) agriculture that incorporated pond fields and irrigation canals. Other cultigens, such as kō (sugar cane, Saccharum officinaruma) and mai`a (banana, Musa sp.), were also grown and, where appropriate, such crops as `uala (sweet potato, Ipomoea batatas) were produced. This was the typical agricultural pattern seen during traditional times on all the Hawaiian Islands (Kirch and Sahlins 1992, Vol. 1:5, 119; Kirch 1985). Agricultural development on Maui was likely to have begun early in what is known as the Expansion Period (AD 1200-1400, Kirch 1985).

The Wailuku area is one of the Na Wai `Ehu or "the four waters," known for the occupancy of chiefly individuals (Kame`eleihiwa 1992; Pukui and Elbert 1974; Creed 1993), with many chiefs and much of the area's population residing near or within portions of `Iao Valley and lower Wailuku (Sterling 1998). Wailuku District and Wailuku Ahupua`a are frequently mentioned in historical texts and oral-tradition accounts as being politically, ceremonially, and geographically important areas during traditional times (Cordy 1981, 1996; Kirch 1985). The area was likely settled between c.A.D. 1100 (Kirch 1985) and A.D. 1200.

Scattered amongst the agricultural and habitation sites were other places of cultural significance to the kama`āina of the district. The Wailuku District was a center of political power often at war with its rival in Hana. By the end of the 18th century, Kahekili resided with his entourage in Wailuku and it was on the sand dunes that Kahekili and his warriors engaged those of Kalani`ōpu`ū, Chief from Hawai`i Island.

In his bid to conquer Kahekili and obtain Maui, Kalani`opu`u brought his famous, and fearless, `Ālapa warriors who were slaughtered by Kahekili's men. "The dead lay in heaps strewn like kukui branches; corpses lay heaped in death; they were slain like fish enclosed in a net..." (Kamakau1961:85-89).

George W. Bates recounted his journey from Wailuku to Kahului in 1854:

Leaving Wai-lu-ku [town], and passing along toward the village Kahului, a distance of three miles, the traveler passes over the old battle-ground named after the village. It is distinctly marked by moving sand-hills, which owe their formation to the action of the northeast trades. Here these winds blow almost with the violence of a sirocco, and clouds of sand are carried across the northern side of the isthmus to a height of several hundred feet. These sand-hills constitute a huge "Golgotha" for thousands of warriors who fell in ancient battles. In places laid bare by the action of the winds, there were human skeletons projecting, as if in the act of struggling for resurrection from their lurid sepulchers. In many portions of the plain who cart-loads were exposed in this way. Judging of the numbers of the dead, the contest of the old Hawaiians must have been exceedingly bloody. . . .[Sandwich Island Notes, 309]

The1776 encounter between Kahekili and Kalani`ōpu`ū resulted in a temporary truce which was broken in 1790 by the battle of Kepaniwai (`Īao Valley) when Kamehameha I consolidated his control over Maui Island. There were so many warriors and canoes invading from Hawai`i Island that it was called the Great Fleet. During Kamehameha's campaign, it was recorded that the bay from Kahului to Hopukoa was filled with war canoes and they extended to Kalae`ili`ili at Waihe`e and below Pu`uhele and Kamakailima:

Kamehameha and his chiefs went on to the principal encounter at Wailuku. The bay from Kahului to Hopukoa was filled with war canoes. For two days there was constant fighting in which many of the most skilful warriors of Maui took

part, but Kamehameha brought up the cannon, Lopaka, with men to haul it and the white men, John Young and Isaac Davis, to handle it; and there was great slaughter. (Kamakau 1961: 148).

`Īao Valley, just north of the project area, had a large population base with most people residing near the `Īao Needle (Connolly 1974). The subsistence base consisted of fish and taro, with lo`i systems lining `Īao Valley's stream banks. Prehistoric ditches or `auwai were utilized in taro cultivation (Connolly 1974; Sterling 1998). Several important heiau are located in the `Īao Valley area near its seaward terminus. For example, the Halekii-Pihana heiau complex (State Site No. 50-50-04-522), supposedly designed by a Hawaiian named Kiha, was constructed in the mid- to late-18th century (Sterling 1998). While populations were predominantly centered in `Īao Valley and Waikapū Valley, there was agricultural and habitation activity in the open grasslands of the current project area above the coastal flats. Unfortunately, much of this evidence has been destroyed by historical-era activities (e.g., sugar cane farming).

THE GREAT MĀHELE

In the 1840s, traditional land tenure shifted drastically with the introduction of private land ownership based on western law. While it is a complex issue, many scholars believe that in order to protect Hawaiian sovereignty from foreign powers, Kauikeaouli (Kamehameha III) was forced to establish laws changing the traditional Hawaiian economy to that of a market economy (Kame`eleihiwa 1992:169-70, 176; Kelly 1983:45, 1998:4; Daws 1962:111; Kuykendall 1938 Vol. I:145). The Great Māhele of 1848 divided Hawaiian lands between the king, the chiefs, the government, and began the process of private ownership of lands. The subsequently awarded parcels were called Land Commission Awards (LCAs). Once lands were thus made available and private ownership was instituted, the maka`āinana (commoners), if they had been made aware of the procedures, were able to claim the plots on which they had been cultivating and living. These claims did not include any previously cultivated but presently fallow land, `okipū (on O`ahu), stream fisheries, or many other resources necessary for traditional survival (Kelly 1983; Kame`eleihiwa 1992:295; Kirch and Sahlins 1992). If occupation could be established through the testimony of two witnesses, the petitioners were awarded the claimed LCA and issued a Royal Patent after which they could take possession of the property (Chinen 1961:16).

During the Māhele, Wailuku District was declared Crown Land. Approximately 180 Land Commission Awards (LCA) were granted in Wailuku Ahupua`a, and 100 were granted in the neighboring Waikapū Ahupua`a (Creed 1993). A handful of foreigners gained control of large parcels of land that would later be used for commercial sugarcane production. The majority of LCAs, however, were awarded to Native Hawaiians (Creed 1993), suggesting that the area was densely populated in the mid-19 th century. The project area falls under LCA 387 that was awarded to the American Board of Commissioners for Foreign Missions (Waihona `Aina Data Base 2009).

HISTORIC LAND USE

Historically, land use in and around the project area in the mid-19th and early-20th centuries was largely devoted to commercial production of sugar cane and pineapple. Sugar plantations and mills have been located in the Wailuku and Waikapū area since the 1860s (Denham et al. 1992). Hopoi Sugar Camp, which shows up on maps dated to 1922, occurred south of the project area, near Hopoi Reservoir (Monahan 2003). Water was channeled from mountain streams and springs to plantation lands.

SUMMARY

The "level of effort undertaken" to identify potential effect by a project to cultural resources, places or beliefs (OEQC 1997) has not been officially defined and is left up to the investigator. A good faith effort can mean contacting agencies by letter, interviewing people

who know of cultural resources and activities that may be affected by the project or who know its history, conducting research identifying sensitive areas and previous land use, holding meetings in which the public is invited to testify, notifying the community through the media, and other appropriate strategies based on the type of project being proposed and its impact potential. Sending inquiring letters to organizations concerning development of a piece of property that has already been totally impacted by previous activity and is located in an already developed industrial area may be a "good faith effort". However, when many factors need to be considered, such as in coastal or mountain development, a good faith effort might mean an entirely different level of research activity.

In the case of the present parcel, letters were sent to organizations whose jurisdiction included knowledge of the area. Consultation was sought from Thelma Shimaoka of the Maui Branch of the Office of Hawaiian Affairs; Ke`eaumoku and U`i Kapu; Central Maui Hawaiian Civic Club; the County of Maui Cultural Resources Commission; Hinano Rodrigues, SHPD Island Historian; Charles Maxwell of the Island Burial Council; and Kamika Kepa`a of the Native Hawaiian Preservation Council. In addition, a Cultural Impact Assessment Notice was published on August 5, 6, 9, 2009 in The Honolulu Advertiser and The Maui News, and in the August issue if the OHA newspaper, Na Wai Ola.

These notices requested information of cultural resources or activities in the area of the proposed project, gave the TMK number and where to respond with information.

Historical and cultural source materials were extensively used and can be found listed in the References Cited portion of the report. Such scholars as I`i, Kamakau, Malo, Beckwith, Chinen, Kame`eleihiwa, Fornander, Kuykendall, Kelly, Handy and Handy, Puku`i and Elbert, Thrum, Sterling, and Cordy have contributed, and continue to contribute to our knowledge and understanding of Hawai`i, past and present. The works of these and other authors were consulted and incorporated in the report where appropriate. Land use document research was supplied by the Waihona `Aina 2009 Data base.

In addition, archaeological reports specific to the project vicinity were reviewed. The impact of cultivating historic cane and pineapple has greatly disturbed the archaeological record.

Archaeological work in nearby Waikapã Ahupua`a (e.g., Folk and Hammatt 1989; Haun 1989; Kennedy 1989; Donham 1991; Brisbin et al. 1991) has revealed sites ranging in function from habitation to agriculture. Other work just south of the project area includes two reconnaissance surveys (Donham 1991, 1995) and two Archaeological Inventory Surveys

(Kennedy 1988, 1989; Buffum and Dega 2001). These studies suggest that commercial agricultural activities have most likely destroyed or disturbed any and all potentially significant traditional cultural resources in and around the project area. Significant cultural deposits representing traditional Native Hawaiian activities, including burial grounds, have been documented in Wailuku Ahupua'a, but these all occur in Pu'uone sand deposits east, north, and south of the project area (e.g., Burgett and Spear 1995; Dunn and Spear 1995; Pantaleo and Sinoto 1996; Fredericksen and Fredericksen 1997).

Dega's (2003) Archaeological Inventory Survey of approximately 100 acres bordering the present project area to the west documented two historic sites and one site of indefinite age. The historic sites (State Site Nos. 50-50-04-5473 and -5474) are the Hopoi Reservoir and, connected to the reservoir and running north-south to Waikapu, the Kama Ditch, an 'auwai (water conduit) draining the reservoir to southern dry lands. A single basalt adze (Site 50-50-04-5478) was recovered from the northern flank of Lot 21. No other significant features or sites were located.

CIA INQUIRY RESPONSE

No responses were received from any of the above listed organizations or news periodical announcements. The letter of inquiry that had been sent to the Central Maui Hawaiian Civic Club was returned marked, "Person no longer here, please remove from your mailing list". Analysis of the potential effect of the project on cultural resources, practices or beliefs, its potential to isolate cultural resources, practices or beliefs from their setting, and the potential of the project to introduce elements which may alter the setting in which cultural practices take place is a requirement of the OEQC (No. 10, 1997). To our knowledge, the project area has not been used for traditional cultural purposes within recent times.

CULTURAL ASSESSMEMNT

Based on, no additional suggestions or information from the contacted organizations, newspapers, and negative results of the archival research, it is reasonable to conclude that, pursuant to Act 50, the exercise of native Hawaiian rights, or any ethnic group, related to gathering, access or other customary activities will not be affected by development activities. Because there were no cultural activities identified within the project area, there are no adverse effects.

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APPENDIX A: LETTER INQUIRIES

(enclosures not included)

SCIENTIFIC CONSULTANT SERVICES, INC.
711 Kapiolani Blvd., Suite 975 Honolulu, Hawai'i 96813

July 30, 2009

County of Maui
Department of Planning
Cultural Resources Commission
250 S. High Street
Wailuku, HI 96793

Dear Sir or Madam:

Scientific Consultant Services, Inc. (SCS) has been contracted by Ronald M. Fukumoto Engineering, Inc., to conduct a Cultural Impact Assessment (CIA) of the Wailuku Well project in Wailuku, Maui (TMK:3-5-001 :067 por.). According to documents supplied by Ronald M. Fukumoto Engineering, Inc, the project proposes the replacement of well, No. 2. The entire area of impact will be 1.0 acre, plus an access easement over the parcel to the nearest public street. The access easement will probably follow existing dirt roads from the project area. SCS has been asked to assess the probability of impacting cultural values and rights within the project area and its vicinity. According to the *Guidelines for Assessing Cultural Impacts* (Office of Environmental Quality Control, Nov. 1997):

> The types of cultural practices and beliefs subject to assessment may include subsistence, commercial, residential, agricultural, access-related, recreational, and religious and spiritual customs...The types of cultural resources subject to assessment may include traditional cultural properties or other types of historic sites, both man made and natural which support such cultural beliefs...

We are asking you for any information that might contribute to the knowledge of traditional activities, or traditional rights that might be impacted by development of the property. The assessment results are dependent on the response and contributions made by individuals and organizations such as yours. Enclosed are maps showing the proposed project area. Please contact me at our SCS Honolulu office at (808) 597-1182; my cell phone, 225-2355; or home, (808) 637-9539, with any information or recommendations concerning this Cultural Impact Assessment.

Sincerely yours,

Leann McGerty

Leann McGerty,
Senior Archaeologist
Enclosure (2)

Ph: 808-597-1182 SCS... SERVING ALL YOUR *ARCHAEOLOGICAL* NEEDS Fax: 808-597-1193
Neighbor Island Offices • Hawai'i Island • Maui • Kaua'i

SCIENTIFIC CONSULTANT SERVICES, Inc.
711 Kapiolani Blvd., Suite 975 Honolulu, Hawai'i 96813

July 30, 2009

Hinano Rodrigues, Cultural Historian
DLNR Maui Office
130 Mahalani Street
Wailuku, HI 96791

Dear Hinano:

Scientific Consultant Services, Inc. (SCS) has been contracted by Ronald M. Fukumoto Engineering, Inc., to conduct a Cultural Impact Assessment (CIA) of the Wailuku Well project in Wailuku, Maui (TMK:3-5-001 :067 por.). According to documents supplied by Ronald M. Fukumoto Engineering, Inc. the project proposes the replacement of well, No. 2. The entire area of impact will be 1.0 acre, plus an access easement over the parcel to the nearest public street. The access easement will probably follow existing dirt roads from the project area. SCS has been asked to assess the probability of impacting cultural values and rights within the project area and its vicinity. According to the *Guidelines for Assessing Cultural Impacts* (Office of Environmental Quality Control, Nov. 1997):

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Sincerely yours,

Leann McGerty

Leann McGerty,
Senior Archaeologist
Enclosure (2)

SCIENTIFIC CONSULTANT SERVICES, Inc.
711 Kapiolani Blvd., Suite 575 Honolulu, Hawai'i 96813

July 30, 2009

Central Maui
Hawaiian Civic Club
310 Ka'ahumanu Ave.
Kahului, Maui 96732

Dear Members:

Scientific Consultant Services, Inc. (SCS) has been contracted by Ronald M. Fukumoto Engineering, Inc., to conduct a Cultural Impact Assessment (CIA) of the Wailuku Well project in Wailuku, Maui (TMK:3-5-001 :067 por.). According to documents supplied by Ronald M. Fukumoto Engineering, Inc, the project proposes the replacement of well, No. 2. The entire area of impact will be 1.0 acre, plus an access easement over the parcel to the nearest public street. The access easement will probably follow existing dirt roads from the project area. SCS has been asked to assess the probability of impacting cultural values and rights within the project area and its vicinity. According to the *Guidelines for Assessing Cultural Impacts* (Office of Environmental Quality Control, Nov. 1997):

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Sincerely yours,

Leann McGerty

Leann McGerty,
Senior Archaeologist
Enclosure (2)

SCIENTIFIC CONSULTANT SERVICES, Inc
711 Kapiolani Blvd., Suite 975 Honolulu, Hawai'i 96813

July 30, 2009

Kamika Kepa'a
Native Hawaiian Preservation Council
606 Kalo Place
Lahaina, HI 96761

Dear Mr. Kepa'a:

Scientific Consultant Services, Inc. (SCS) has been contracted by Ronald M. Fukumoto Engineering, Inc., to conduct a Cultural Impact Assessment (CIA) of the Wailuku Well project in Wailuku, Maui (TMK:3-5-001 :067 por.). According to documents supplied by Ronald M. Fukumoto Engineering, Inc, the project proposes the replacement of well, No. 2. The entire area of impact will be 1.0 acre, plus an access easement over the parcel to the nearest public street. The access easement will probably follow existing dirt roads from the project area. SCS has been asked to assess the probability of impacting cultural values and rights within the project area and its vicinity. According to the *Guidelines for Assessing Cultural Impacts* (Office of Environmental Quality Control, Nov. 1997):

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Sincerely yours,

Leann McGerty

Leann McGerty,
Senior Archaeologist
Enclosure (2)

SCIENTIFIC CONSULTANT SERVICES, Inc.
711 Kapiolani Blvd., Suite 975 Honolulu, Hawai'i 96813

July 30, 2009

Mr. Charles Maxwell
157 Aiea Place
Pukalani, HI 96768

Dear Mr. Maxwell:

Scientific Consultant Services, Inc. (SCS) has been contracted by Ronald M. Fukumoto Engineering, Inc., to conduct a Cultural Impact Assessment (CIA) of the Wailuku Well project in Wailuku, Maui (TMK:3-5-001 :067 por.). According to documents supplied by Ronald M. Fukumoto Engineering, Inc, the project proposes the replacement of well, No. 2. The entire area of impact will be 1.0 acre, plus an access easement over the parcel to the nearest public street. The access easement will probably follow existing dirt roads from the project area. SCS has been asked to assess the probability of impacting cultural values and rights within the project area and its vicinity. According to the *Guidelines for Assessing Cultural Impacts* (Office of Environmental Quality Control, Nov. 1997):

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Sincerely yours,

Leann McGerty

Leann McGerty,
Senior Archaeologist
Enclosure (2)

Ph: 808-597-1182 / SCS... SERVING ALL YOUR ARCHAEOLOGICAL NEEDS / Fax: 808-597-1193
Neighbor Island Offices • Hawai'i Island • Maui • Kaua'i

SCIENTIFIC CONSULTANT SERVICES, Inc
711 Kapiolani Blvd., Suite 975 Honolulu, Hawai'i 96813

July 30, 2009

Ke`eaumoku and U`i Kapu
Kuleana Kuikahi, LLC.
P.O. Box 11524
Lahaina, Maui 96791

Dear Mr. and Ms. Kapu:

Scientific Consultant Services, Inc. (SCS) has been contracted by Ronald M. Fukumoto Engineering, Inc., to conduct a Cultural Impact Assessment (CIA) of the Wailuku Well project in Wailuku, Maui (TMK:3-5-001 :067 por.). According to documents supplied by Ronald M. Fukumoto Engineering, Inc, the project proposes the replacement of well, No. 2. The entire area of impact will be 1.0 acre, plus an access easement over the parcel to the nearest public street. The access easement will probably follow existing dirt roads from the project area. SCS has been asked to assess the probability of impacting cultural values and rights within the project area and its vicinity. According to the *Guidelines for Assessing Cultural Impacts* (Office of Environmental Quality Control, Nov. 1997):

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Sincerely yours,

Leann McGerty

Leann McGerty,
Senior Archaeologist
Enclosure (2)

SCIENTIFIC CONSULTANT SERVICES, INC.
711 Kapiolani Blvd., Suite 975 Honolulu, Hawai'i 96813

July 30, 2009

Thelma Shimaoka
c/o Office of Hawaiian Affairs
140 Hoohana St.
Suite 206
Kahului, HI 96732

Dear Ms. Shimaoka:

Scientific Consultant Services, Inc. (SCS) has been contracted by Ronald M. Fukumoto Engineering, Inc., to conduct a Cultural Impact Assessment (CIA) of the Wailuku Well project in Wailuku, Maui (TMK:3-5-001 :067 por.). According to documents supplied by Ronald M. Fukumoto Engineering, Inc, the project proposes the replacement of well, No. 2. The entire area of impact will be 1.0 acre, plus an access easement over the parcel to the nearest public street. The access easement will probably follow existing dirt roads from the project area. SCS has been asked to assess the probability of impacting cultural values and rights within the project area and its vicinity. According to the *Guidelines for Assessing Cultural Impacts* (Office of Environmental Quality Control, Nov. 1997):

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Sincerely yours,

Leann McGerty

Leann McGerty,
Senior Archaeologist
Enclosure (2)

APPENDIX B: PUBLIC NOTIFICATIONS AFFIDAVITS

AFFIDAVIT OF PUBLICATION

1078

STATE OF HAWAII. } ss.
County of Maui. }

Kamery A. Lee III being duly sworn deposes and says,that he is in Advertising Sales of the Maui Publishing Co., Ltd., publishers of THE MAUI NEWS, a newspaper published in Wailuku, County of Maui, State of Hawaii; that the ordered publication as to

CULTURAL IMPACT ASSESSMENT NOTICE

of which the annexed is a true and correct printed notice, was published 3 times in THE MAUI NEWS, aforesaid, commencing on the 5th day of August, 2009, and ending on the 9th day of August, 2009, (both days inclusive), to-wit: on

August 5, 6, 9. 2009

and that affiant is not a party to or in any way interested in the above entitled matter.

Kamery A. Lee

This 1 page Cultural Impact, dated August 5, 6, 9, 2009, was subscribed and sworn to before me this 10th day of August, 2009, in the Second Circuit of the State of Hawaii, by Kamery A. Lee III.

Notary Public, Second Judicial Circuit, State of Hawaii

LEILA ANN L. LEONG
My commission expires 11-23-11

LEILA ANN L. LEONG NOTARY PUBLIC No. 03-331 STATE OF HAWAII

CULTURAL IMPACT ASSESSMENT NOTICE:

Information requested by SCS of cultural resources or on-going cultural activities on or near this parcel in Wailuku, Maui. TMK: 3-5-001:067 por. Please respond within 30 days to SCS at (808) 597-1182 (MN: Aug. 5, 6, 9, 2009)

IN THE MATTER OF

CULTURAL IMPACT ASSESSMENT NOTICE

1076

CULTURAL IMPACT ASSESSMENT NOTICE:
Information requested by SCS of cultural resources or ongoing cultural activities on or near this parcel in Wailuku, Maui, TMK: 3-5-001:067 por. Please respond within 30 days to SCS at (808) 597-1182.
(Hon. Adv.: Aug. 5, 6, 9, 2009) (A-711525)

AFFIDAVIT OF PUBLICATION

STATE OF HAWAII
City and County of Honolulu ss.

Grace Santos being duly sworn deposes and says that she is a clerk, duly authorized to execute this affidavit of THE HONOLULU ADVERTISER, a division of GANNETT PACIFIC CORPORATION, that said newspaper is a newspaper of general circulation in the State of Hawaii, and that the attached notice is a true notice as was published in the aforereferenced newspaper as follows

08/05/2009 The Honolulu Advertiser
08/06/2009 The Honolulu Advertiser
08/09/2009 The Honolulu Advertiser

and that affiant is not a party to or in any way interested in the above entitled matter.

Grace Santos

Subscribed and sworn to before me this 9th day of August A.D. 2009

JEANETTE T. CHING NOTARY PUBLIC No. 98-321 STATE OF HAWAII

Notary Public of the First Judicial Circuit
State of Hawaii
My commission expires _____

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August 9, 2009 was subscribed
13th day
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JEANETTE T. CHING NOTARY PUBLIC No. 98-321 STATE OF HAWAII

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