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Mayor



FILE COPY

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DEPARTMENT OF WATER SUPPLY
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DEPT. OF ENVIRONMENTAL
QUALITY CONTROL

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December 17, 2012

Mr. Gary Gill, Acting Director
Office of Environmental Quality Control
Department of Health, State of Hawaii
235 S. Beretania Street, Room 702
Honolulu, Hawaii 96813

Dear Mr. Gill:

Subject: Hamakuapoko Well Nos. 1 and 2
TMK: (2) 2-5-004:039 (por.), Makawao, Maui, Hawaii

With this letter, the County of Maui, Department of Water Supply hereby transmits the Draft Environmental Assessment and Anticipated Finding of No Significant Impact (DEA-AFONSI) for the Proposed Improvements at Hamakuapoko Well Nos. 1 and 2 situated at TMK (2)2-5-004:039 (por.), in the Makawao District on the island of Maui for publication in the next available edition of the Environmental Notice.

Enclosed is a completed OEQC Publication Form, two (2) copies of the DEA-AFONSI, an Adobe Acrobat PDF file of the same, and an electronic copy of the publication form in MS Word. Simultaneous with this letter, we have submitted the summary of the action in a text file by electronic mail to your office.

If there are any questions, please contact Mark Alexander Roy of Munekiyo & Hiraga, Inc. at (808) 244-2015.

Sincerely,

A handwritten signature in black ink, appearing to read "DT", written over a horizontal line.

Dave Taylor, P.E.
Director

Enclosures

"By Water All Things Find Life"



AGENCY ACTIONS
SECTION 343-5(B), HRS
PUBLICATION FORM (JULY 2012 REVISION)

Project Name **Proposed Improvements at Hamakuapoko Well Nos. 1 and 2**
Island: **Maui**
District: **Makawao**
TMK: **(2)2-5-004:039 (por.)**

Permits:

Proposing/Determination Agency:

County of Maui, Department of Water Supply
Kalana O Maui Building, 5th Floor
200 South High Street
Wailuku, Hawaii 96793
Contact: Curtis Eaton, P.E.
(808)270-7816

Consultant:

Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793
Contact: Mark Alexander Roy, AICP
(808)244-2015

Status (check one only):

x DEA-AFNSI

Submit the proposing agency notice of determination/transmittal on agency letterhead, a hard copy of DEA, a completed OEQC publication form, along with an electronic word processing summary and a PDF copy (you may send both summary and PDF to oeqc@doh.hawaii.gov); a 30-day comment period ensues upon publication in the periodic bulletin.

__ FEA-FONSI

Submit the proposing agency notice of determination/transmittal on agency letterhead, a hard copy of the FEA, an OEQC publication form, along with an electronic word processing summary and a PDF copy (send both summary and PDF to oeqc@doh.hawaii.gov); no comment period ensues upon publication in the periodic bulletin.

__ FEA-EISPN

Submit the proposing agency notice of determination/transmittal on agency letterhead, a hard copy of the FEA, an OEQC publication form, along with an electronic word processing summary and PDF copy (you may send both summary and PDF to oeqc@doh.hawaii.gov); a 30-day consultation period ensues upon publication in the periodic bulletin.

__ Act 172-12 EISPN

Submit the proposing agency notice of determination on agency letterhead, an OEQC publication form, and an electronic word processing summary (you may send the summary to oeqc@doh.hawaii.gov). NO environmental assessment is required and a 30-day consultation period upon publication in the periodic bulletin.

__ DEIS

The proposing agency simultaneously transmits to both the OEQC and the accepting authority, a hard copy of the DEIS, a completed OEQC publication form, a distribution list, along with an electronic word processing summary and PDF copy of the DEIS (you may send both the summary and PDF to oeqc@doh.hawaii.gov); a 45-day comment period ensues upon publication in the periodic bulletin.

__ FEIS

The proposing agency simultaneously transmits to both the OEQC and the accepting authority, a hard copy of the FEIS, a completed OEQC publication form, a distribution list, along with an electronic word processing summary and PDF copy of the FEIS (you may send both the summary and PDF to oeqc@doh.hawaii.gov); no comment period ensues upon publication in the periodic bulletin.

__ Section 11-200-23
Determination

The accepting authority simultaneously transmits its determination of acceptance or nonacceptance (pursuant to Section 11-200-23, HAR) of the FEIS to both OEQC and the proposing agency. No comment period ensues upon publication in the periodic bulletin.

OFFICE OF ENVIRONMENTAL
QUALITY CONTROL

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Section 11-200-27
Determination

The accepting authority simultaneously transmits its notice to both the proposing agency and the OEQC that it has reviewed (pursuant to Section 11-200-27, HAR) the previously accepted FEIS and determines that a supplemental EIS is not required. No EA is required and no comment period ensues upon publication in the periodic bulletin.

Withdrawal (explain)

Summary (Provide proposed action and purpose/need in less than 200 words. Please keep the summary brief and on this one page):

The County of Maui, Department of Water Supply proposes to undertake various repair and maintenance improvements at the existing Hamakuapoko Well Nos. 1 and 2 in Hamakuapoko, Maui, Hawaii. Hamakuapoko Well Nos. 1 and 2 were initially placed into operation as production wells in 2000. Due to concerns regarding the filtration of contaminants from agricultural uses, the wells were closed in October 2006. On October 13, 2011, the Maui County Council enacted Ordinance No. 3859, which allows the Hamakuapoko Well Nos. 1 and 2 to be reopened for agricultural use, use during declared drought events, and as backup to the Upcountry Water System (UCWS). During Council deliberations regarding the reopening of the wells, the State Department of Health confirmed that it stands by its 2000 approval of the Hamakuapoko Wells for drinking water use. Prior to the reopening of the wells, various repair and maintenance improvements at both well sites are necessary to address deferred maintenance of existing equipment so the wells can be placed into production and integrated with the UCWS. In addition to repair and maintenance actions, a new 150,000-gallon water tank is proposed adjacent to the Well No. 2 site.

Draft Environmental Assessment

PROPOSED IMPROVEMENTS AT HAMAKUAPOKO WELL NOS. 1 AND 2, MAUI, HAWAII (TMK (2)2-5-004:039(por.))

Prepared for:

**County of Maui,
Department of Water Supply**

December 2012

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Executive Summary

Project Name: Proposed Improvements at Hamakuapoko Well Nos. 1 and 2

Type of Document: Draft Environmental Assessment

Legal Authority: Chapter 343, Hawaii Revised Statutes

Anticipated Agency Determination: Finding of No Significant Impact (FONSI)

Applicable Environmental Assessment review “Trigger”: Use of County Funds

Location: Maui Island
Makawao Judicial District, Maui
TMK No. (2)2-5-004:039 (por.)

Landowner: Alexander & Baldwin-Hawaii, Inc.

Proposing Agency: County of Maui, Department of Water Supply
Kalana O Maui Building, 5th Floor
200 South High Street
Wailuku, Hawaii 96793
Contact: Curtis Eaton, P.E.
Phone: (808) 270-7816

Approving Agency: County of Maui, Department of Water Supply
Kalana O Maui Building, 5th Floor
200 South High Street
Wailuku, Hawaii 96793
Contact: Dave Taylor, P.E.
Phone: (808) 270-7816

Consultant: Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793
Contact: Mark Alexander Roy, AICP, Vice President
Phone: (808) 244-2015

Project Summary: The County of Maui, Department of Water Supply proposes to undertake various repair and maintenance improvements at Hamakuapoko Well Nos. 1 and 2 in Hamakuapoko, Maui,

Hawaii. Hamakuapoko Well Nos. 1 and 2 were initially placed into operation as production wells in 2000, with the capacity to draw up to 1.5 million gallons a day (mgd) from the Paia aquifer for drinking water use. Due to concerns regarding the filtration of contaminants from agricultural uses, the Maui County Council enacted Ordinance No. 3404 on October 2, 2006, which prohibited use of the well water for human consumption. Ordinance No. 3404 resulted in the closure of the Hamakuapoko Well Nos. 1 and 2 on October 3, 2006. On October 13, 2011 the Maui County Council enacted Ordinance No. 3859, which allows the Hamakuapoko Well Nos. 1 and 2 to be reopened for agricultural use, use during declared drought events, and as backup to the Upcountry Water System (UCWS). During Council deliberations regarding the reopening of the wells, the State Department of Health confirmed that it stands by its 2000 approval of the Hamakuapoko Wells for drinking water use.

Prior to the reopening of the Hamakuapoko Well Nos. 1 and 2, various repair and maintenance improvements at both well sites will be necessary to address deferred maintenance of existing equipment so the wells can be placed into production and integrated with the UCWS. The proposed improvements include the replacement of the existing motors and pumps with submersible pumps at both the Well No. 1 and Well No. 2 sites. A new 150,000-gallon water tank is also proposed adjacent to the Well No. 2 site. Various other related improvements will be completed as part of project implementation, including demolition or removal of equipment, site grading and grubbing, and the installation of process control and security systems.

As the proposed project involves the use of County funds, an Environmental Assessment (EA) has been prepared pursuant to Chapter 343, Hawaii Revised Statutes (HRS).

I. PROJECT OVERVIEW

I. PROJECT OVERVIEW

A. PROJECT LOCATION, EXISTING USE AND OWNERSHIP

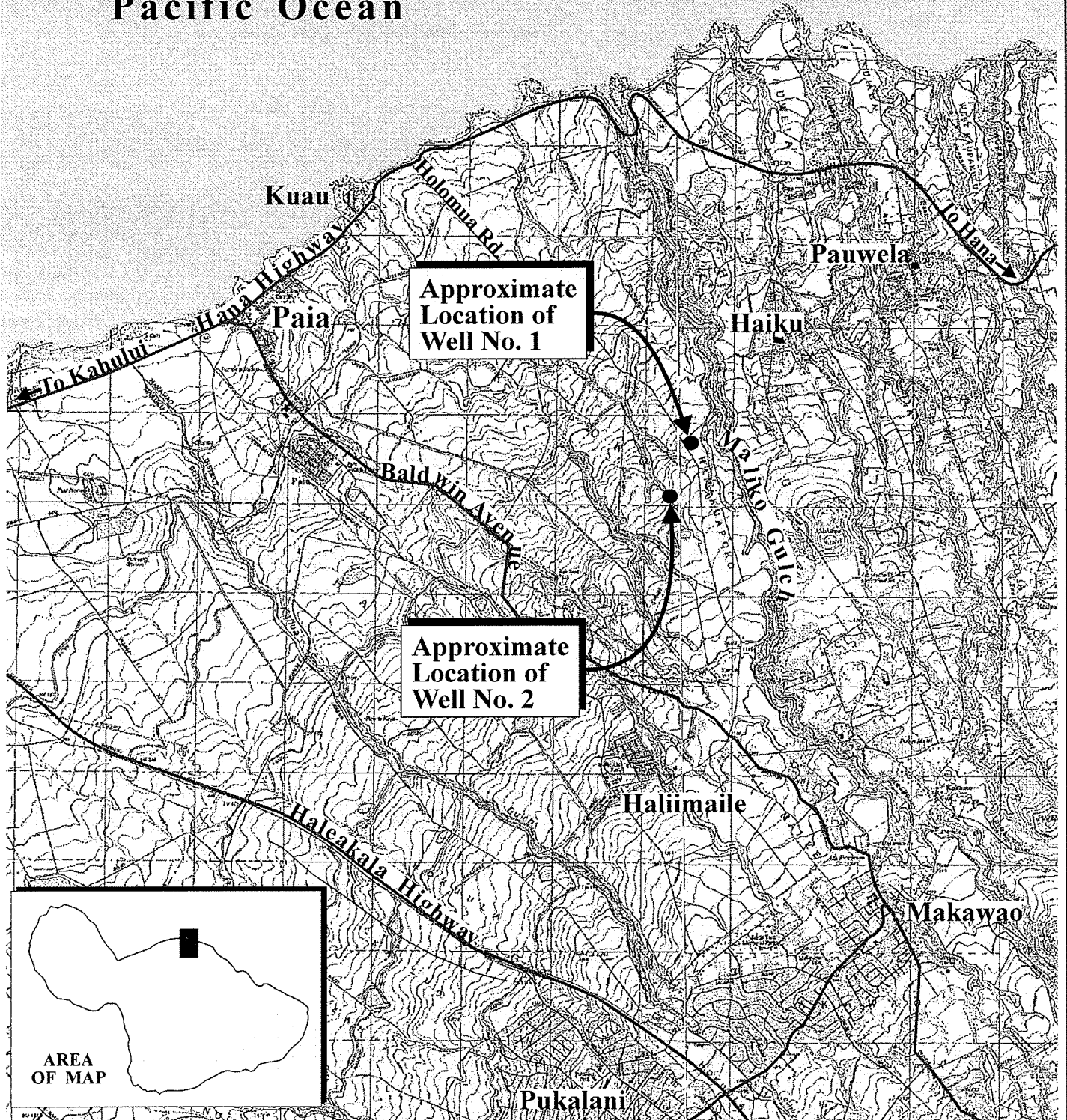
The County of Maui, Department of Water Supply (DWS) is proposing to construct various improvements at the existing Hamakuapoko Well Nos. 1 and 2, each located on separate chain link fenced sites (hereinafter referred to as project sites) at Tax Map Key (TMK) (2) 2-5-004:039 (por.) (Parcel 39), Hamakuapoko, Maui, Hawaii. See **Figure 1** and **Figure 2**. As a whole, Parcel 39 covers 2,439 acres and is actively utilized for sugarcane production by Hawaii Commercial & Sugar Company (HC&S). The Well No. 1 project site covers approximately 0.77 acre, with approximately 0.30 acre within the fenced area. The Well No. 2 project site occupies 0.35 acre. The subject property is located entirely on uplands between Maliko Gulch and Baldwin Avenue. Access to both project sites is provided via dirt cane roads that are accessible from Holomua Road off of Hana Highway.

Hamakuapoko Well No. 1 is located approximately 1,500 feet west of Maliko Gulch and consists of the well pump pad, well, and pump, a control building, a 25,000 gallon water tank, and a seepage pit. See **Figure 3**. Hamakuapoko Well No. 2 is located approximately 2,300 feet southwest of the Well No. 1 project site and consists of the well, pump, an electrical building, a Granulated Activated Carbon (GAC) facility, two (2) water tanks, and a seepage pit. The two (2) water tanks are used for storage and for backwash to clean the GAC facility. The seepage pits are used when the water tanks are drained for cleaning. See **Figure 4**. See **Appendix "A"**.

Parcel 39 is owned by Alexander & Baldwin – Hawaii, Inc. (A&B). DWS is currently in discussions with A&B to subdivide Parcel 39 and acquire the land underlying the two (2) project sites. In addition, approximately 0.14 acre of additional land will be acquired adjacent to the existing Well No. 2 project site for the construction of a new water tank.

The subject property is designated "Agricultural" by the State Land Use Commission, "Agriculture" by the Paia-Haiku Community Plan, and "Agricultural" by Maui County Zoning.

Pacific Ocean



Source: USGS, Paia Quadrangle, 1997 and Haiku Quadrangle, 1992

Figure 1

Proposed Improvements at
Hamakuapoko Well Nos. 1 and 2
Regional Location Map

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MUNEKIYO & HIRAGA, INC.

Prepared for: County of Maui, Department of Water Supply

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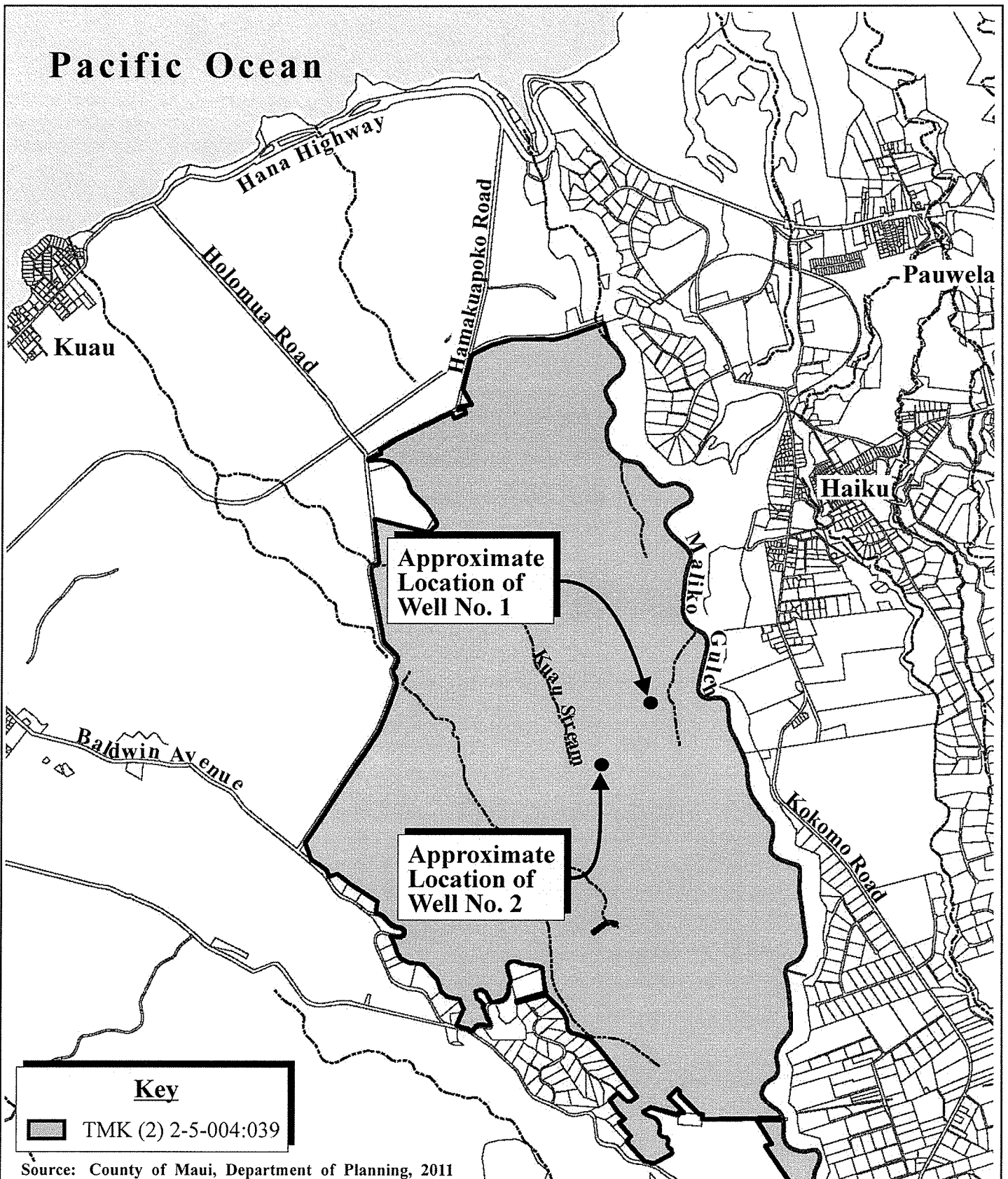
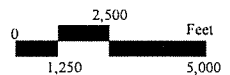
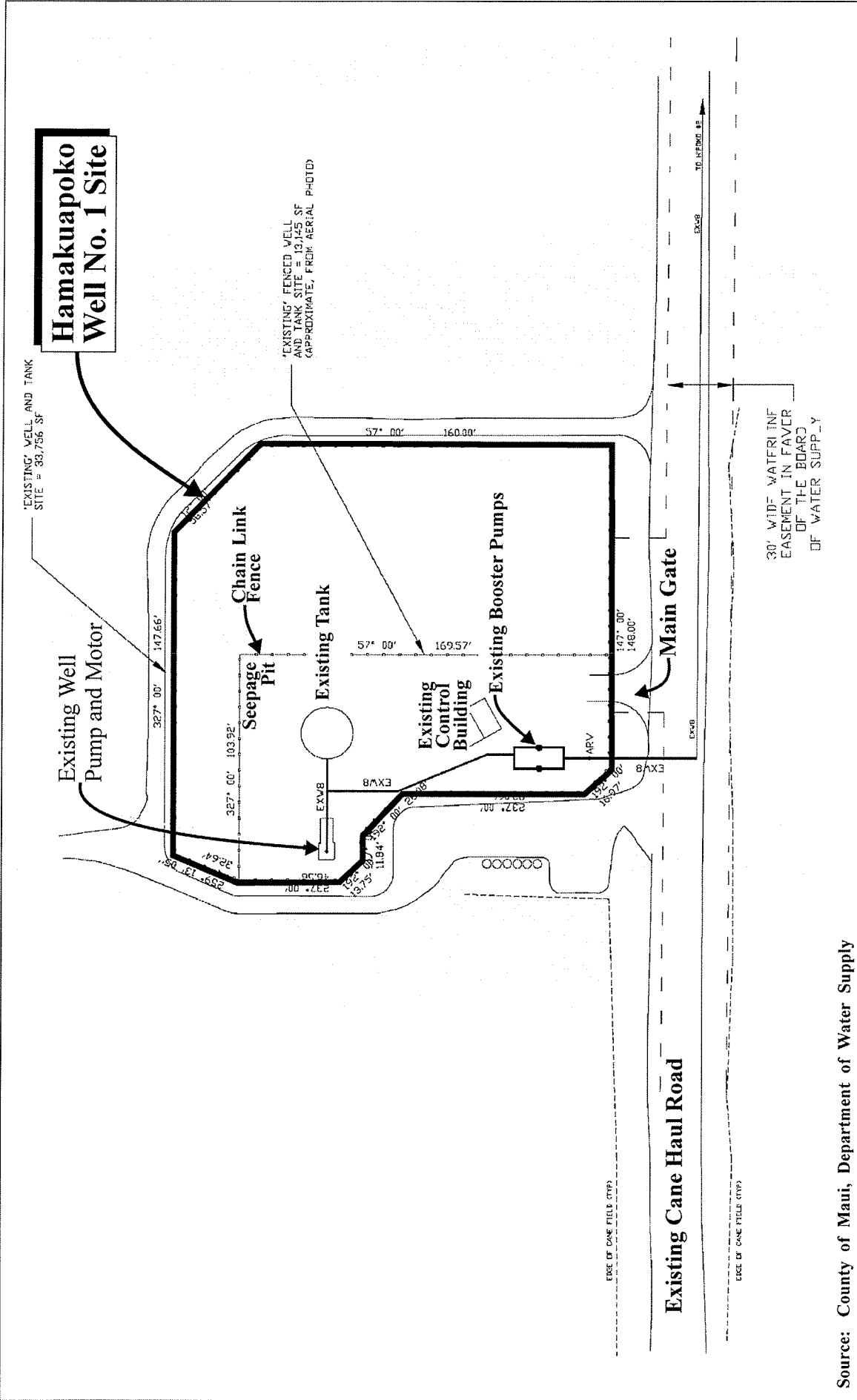


Figure 2 Proposed Improvements at
 Hamakuapoko Well Nos. 1 and 2
 Property Location Map



MUNEKIYO & HIRAGA, INC.

Prepared for: County of Maui, Department of Water Supply



Source: County of Maui, Department of Water Supply

Figure 3

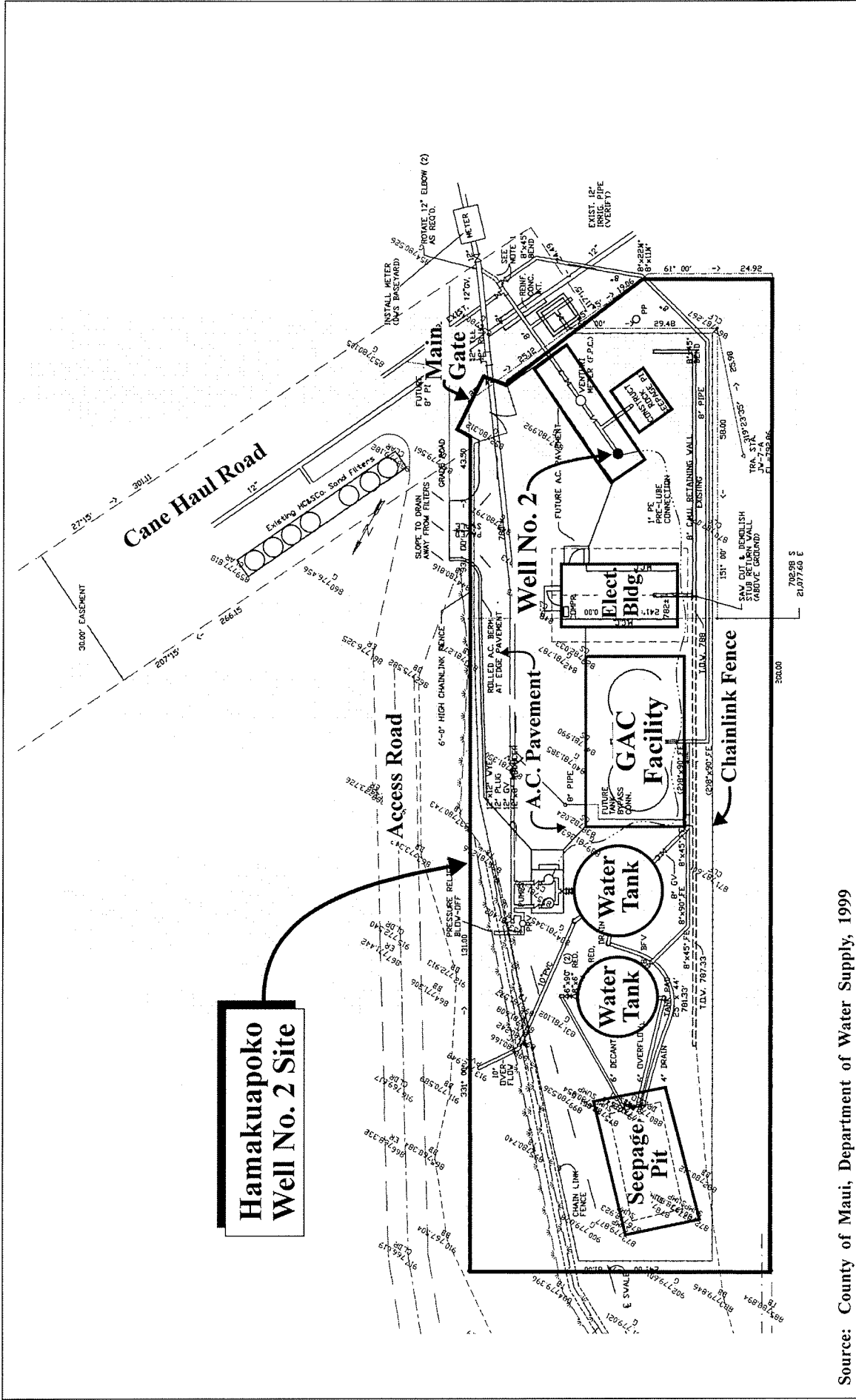
Proposed Improvements at Hamakuapoko Well Nos. 1 and 2 Existing Well No. 1 Site Plan



Prepared for: County of Maui, Department of Water Supply

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Hamakuapoko Well No. 2 Site

Source: County of Maui, Department of Water Supply, 1999

Figure 4



Proposed Improvements at Hamakuapoko Well Nos. 1 and 2 Existing Well No. 2 Site Plan

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MUNEKIYO & HIRAGA, INC.

Prepared for: County of Maui, Department of Water Supply

B. PROJECT BACKGROUND

The Upcountry Water System (UCWS) services the areas of Haiku, Makawao, Olinda, Haliimaile, Pukalani, Kula, Omaopio/Pulehu, Keokea, Ulupalakua, and Kanaio. The Hamakuapoko Well Nos. 1 and 2, which were originally drilled as exploratory wells in 1992, are part of the UCWS. Hamakuapoko Well No. 1 is identified as State Well No. 5420-02 and Hamakuapoko Well No. 2 is identified as State Well No. 5320-01. The Well Completion Reports for Well No. 1 and Well No. 2 are presented in **Appendix “B”** and **Appendix “B-1”**, respectively. A drought emergency in Upcountry, Maui was declared by Governor’s Proclamations issued in April 1998 and amended in July 28, 1999. In 1999, an Environmental Assessment (EA) was prepared for various improvements at the two (2) wells intended to address the drought emergency situation in the UCWS and the improvements were constructed to convert the Hamakuapoko Well Nos. 1 and 2 from exploratory wells into production wells. Improvements included the construction of Granulated Activated Carbon (GAC) units at the Well No. 2 project site to allow for the treatment of groundwater extracted from both wells. On December 22, 2000, Hamakuapoko Well Nos. 1 and 2 were placed into operation with the capacity to draw up to 0.75 million gallon per day (mgd) each or 1.5 mgd combined. The Department of Health conditional approval for the use of Hamakuapoko Well Nos. 1 and 2 as a drinking water source for a public water system is presented in **Appendix “C”**.

It is noted that the construction of the GAC facility at Hamakuapoko Well No. 2 was funded by a 1999 settlement agreement that required the manufacturers of the chemical 1,2 dibromo-3-chloro propane (DBCP) to reimburse the County of Maui for certain capital costs through September 1, 2039. The settlement agreement in the case of *Board of Water Supply of the County of Maui v. Shell Oil Company, et al.* (Civil Case No. 96-0370(1)) stipulated that the defendants would pay for the capital costs of GAC facilities at certain wells, including the Hamakuapoko Wells, where the levels of DBCP in the water exceeded the maximum contaminant level established by the State Department of Health. The defendants also are required to reimburse the County for operations and maintenance costs associated with the GAC facility at the Hamakuapoko Wells when the GAC is in operation for at least 10 percent of a month. As such, the County, through this 1999 settlement agreement, received funds for the construction, operation, and maintenance of the GAC facility at the Hamakuapoko Well No. 2. Once the Hamakuapoko Wells are placed back in operation and the GAC facility is in use, the County will again receive monthly operation and maintenance funds for the GAC through the year 2039 under this settlement agreement.

Due to concerns regarding contaminants from agricultural uses, the Maui County Council enacted Ordinance No. 3404 on October 2, 2006, which stated “*that water from the wells shall not be provided for human consumption due to the belief that various contaminants could not be adequately filtered*”. Ordinance No. 3404 resulted in the closure of the Hamakuapoko Well Nos. 1 and 2 on October 3, 2006. See **Appendix “D”**. It is noted that while the wells were officially closed on October 3, 2006, pumping had been inactive since October 2004.

In 2011, the Maui County Council considered reopening the Hamakuapoko Wells. In 2000, the State Department of Health had approved the Hamakuapoko Wells for use as drinking water after treatment and the Department affirmed that it continues to stand by that approval during the 2011 County Council deliberations. On October 13, 2011 the Maui County Council enacted Ordinance No. 3859, which now allows the Hamakuapoko Well Nos. 1 and 2 to be reopened for agricultural use, potable use during declared drought events, and as backup to the UCWS. See **Appendix “D-1”**.

It should be noted that the Hamakuapoko Well Nos. 1 and 2 were originally planned in the early 1990s as part of the East Maui Water Development Plan (EMPLAN). The EMPLAN focused on water source development and transmission to meet the future water requirements for the Central Maui Water System service area, which includes the areas of Wailuku, Kahului, Maalaea, Kihei, Makena, Paia, and Kuau. The EMPLAN proposed the development of ten (10) source wells in the Paia and Haiku aquifer systems, along with the design and construction of water transmission lines and storage reservoirs. Two (2) of the wells – Hamakuapoko Well Nos. 1 and 2 – were planned to utilize the Paia Aquifer system while the remaining eight (8) would have been located in the Haiku Aquifer system, east of Maliko Gulch. Development of the EMPLAN was to be completed over six (6) phases, with Phase 1 entailing the two (2) Hamakuapoko wells and the construction of a transmission line from the wells to Paia.

The Final Environmental Impact Statement (FEIS) for the EMPLAN was published in the Office of Environmental Quality Control (OEQC) Bulletin on August 8, 1993. A Supplemental EIS was prepared for the EMPLAN in 2002 and the Final Supplemental EIS was accepted by the Board of Water Supply and published in the OEQC Environmental Notice on November 8, 2002. However, a judicial proceeding challenging the acceptance of the Final Supplemental EIS was initiated in *The Coalition to Protect East Maui Water Resources, et al. v. The Board of Water Supply, et al.* The case was settled through the formulation of a Consent Decree. The terms of the Consent Decree stipulated that the

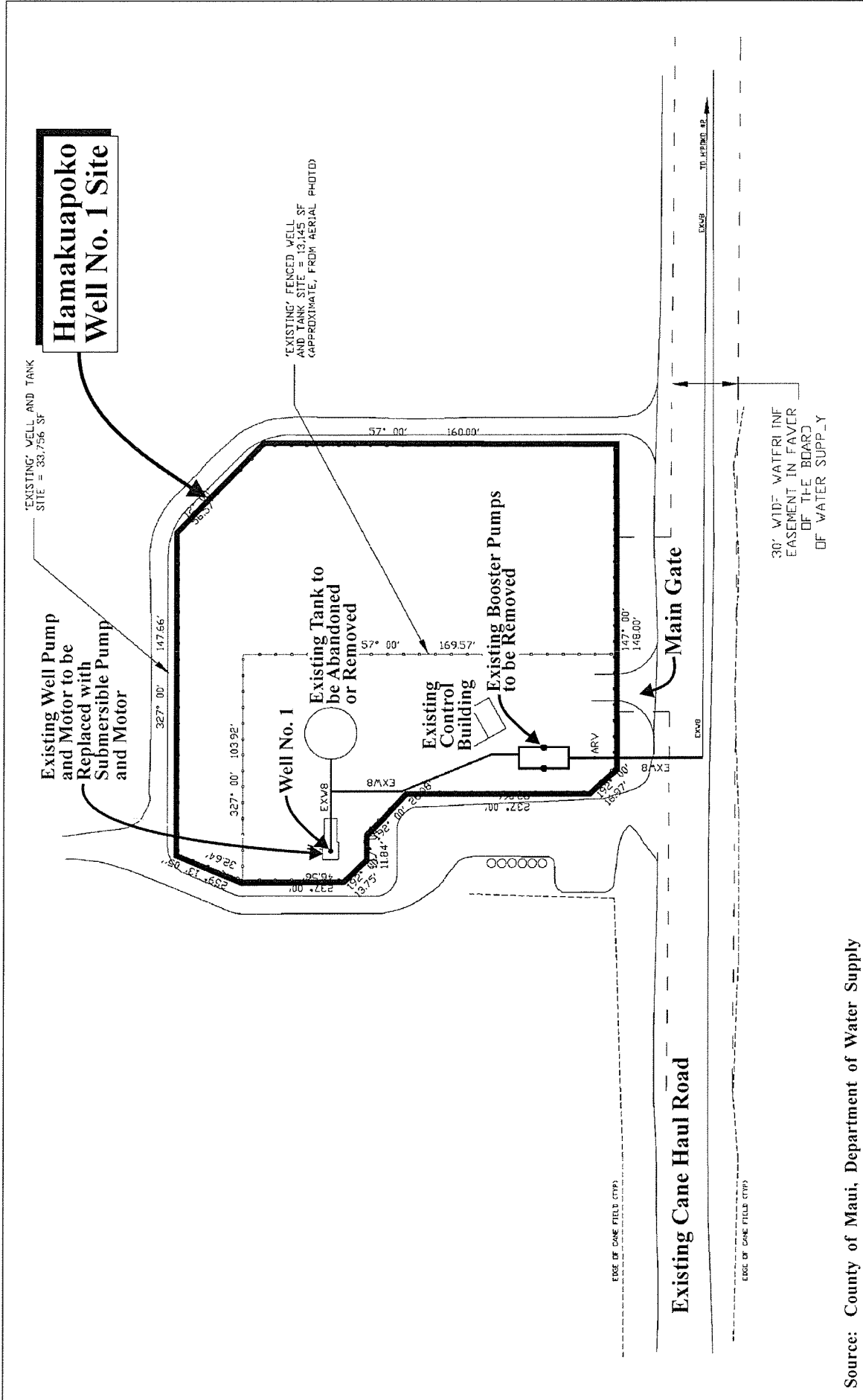
acceptance of the Final Supplemental EIS was to be valid for only Phase 1 of the EMPLAN and that the acceptance of the Final EIS and Final Supplemental EIS for all phases was to be withdrawn except for Phase 1. The County of Maui published the withdrawal of the acceptance of the Final EIS and Supplemental EIS for Phases II through VI of the EMPLAN in the January 8, 2004 OEQC Environmental Notice. As Phase 1 of the EMPLAN included the two (2) Hamakuapoko wells, the accepted Final Supplemental EIS for the Hamakuapoko Well Nos. 1 and 2 continues to be valid.

C. PROPOSED ACTION

The proposed improvements for the Hamakuapoko Well Nos. 1 and 2 include the replacement of the existing motors and pumps with submersible pumps at both project sites. See **Figure 5** and **Figure 6**. Well No. 1 currently has an above-ground 150 horsepower pump while Well No. 2 has an above-ground 250 horsepower pump. Both pumps will be replaced with submersible 175 horsepower pumps. The submersible pumps would then transport water from the Hamakuapoko Well No. 1 project site to the Well No. 2 project site through existing transmission lines so that the combined water drawn from the two (2) wells can undergo treatment via the existing GAC chambers. The GAC facility will deliver potable water that meets or surpasses drinking water standards established by Title 11, Chapter 20, Hawaii Administrative Rules. After treatment, water would flow into a new proposed storage tank adjacent to the Well No. 2 project site, with booster pumps to then transport the water through an existing 12-inch pipe to the Kamole Weir Water Treatment Plant (WTP) located approximately one (1) mile south of Hamakuapoko Well No. 2. It is noted that the treated water from the Hamakuapoko Wells will be in compliance with drinking water quality standards prior to introduction at the Kamole Weir WTP. Water quality standards will not need to be achieved through dilution with surface water from other sources. No additional treatment at the Kamole WTP will be needed.

The new water storage tank is planned to be located on a portion of Parcel 39, adjacent to the Hamakuapoko Well No. 2 site. The tank will have storage capacity of 150,000 gallons and will measure approximately 20 feet in height. Refer to **Figure 6**.

Once the new 150,000-gallon water storage tank is completed, the two (2) existing tanks at Well No. 2 will be utilized for backwash purposes to clean the GAC facility. As previously discussed, one (1) tank is currently used for storage and one (1) is used for backwash at Well



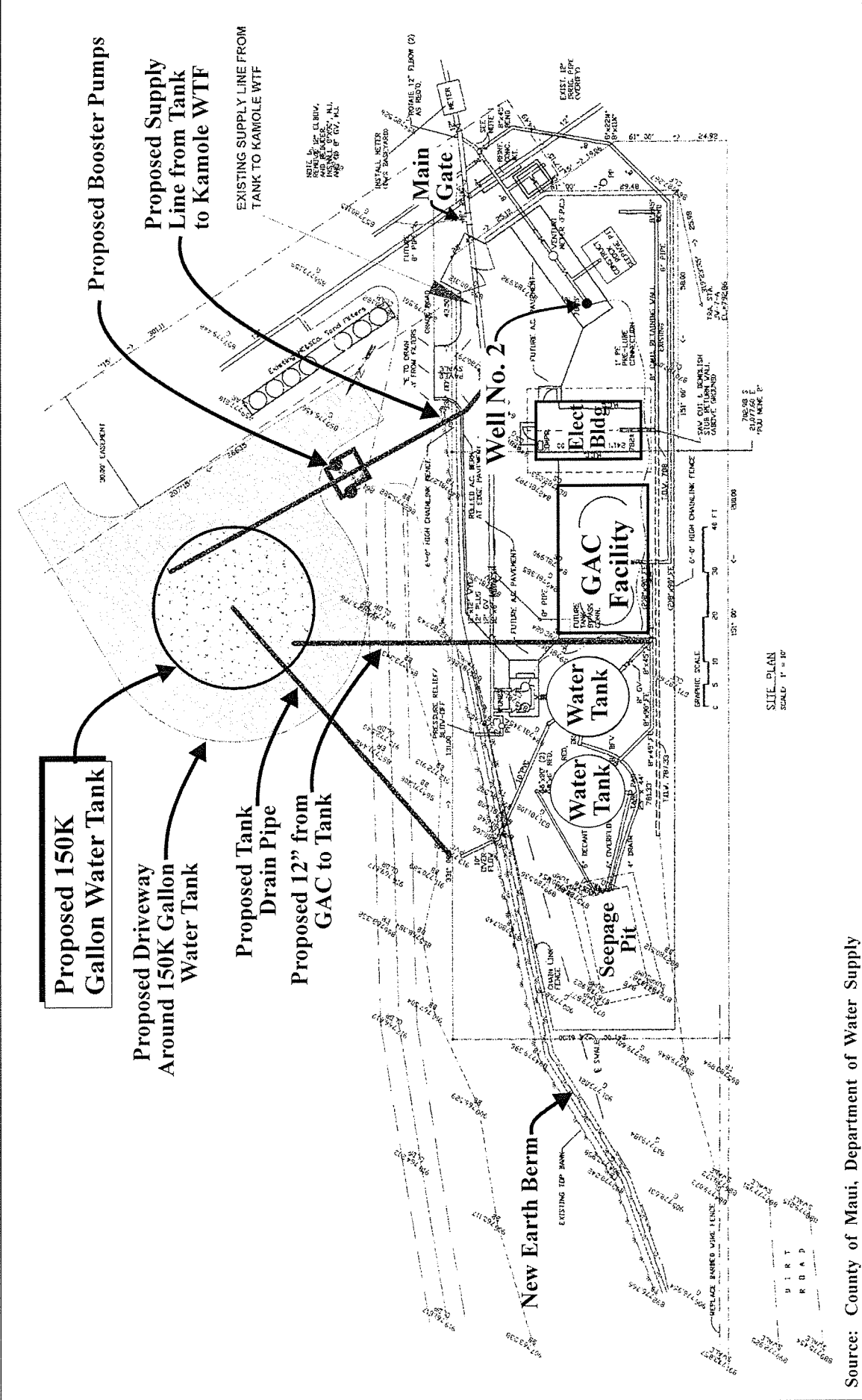
Source: County of Maui, Department of Water Supply

Figure 5 Proposed Improvements at Hamakuapoko Well Nos. 1 and 2
 Proposed Well No. 1 Improvements



Prepared for: County of Maui, Department of Water Supply

NOT TO SCALE



NOT TO SCALE

MUNEKIYO & HIRAGA, INC.

Figure 6
Proposed Improvements at
Hamakuapoko Well Nos. 1 and 2
Proposed Well No. 2 Improvements

Source: County of Maui, Department of Water Supply

Prepared for: County of Maui, Department of Water Supply

No. 2. The existing 250,000 gallon water storage tank at Well No. 1 will be demolished or abandoned in place.

A Supervisory Control and Data Acquisition (SCADA) system for process control and a security system with alarms will also be installed on both project sites. Various other related improvements will be completed as part of project implementation, including demolition or removal of equipment, site grading, and grubbing. Refer to **Figure 5** and **Figure 6**.

The proposed project would maintain the existing combined capacity of the Hamakuapoko Well Nos. 1 and 2 to draw up to 1.5 million gallons per day (mgd) of groundwater from the underlying Paia Aquifer and provide enhanced reliability to the UCWS.

As previously mentioned, the Hamakuapoko Wells will be utilized for agricultural use, use during declared drought events, and as backup to the UCWS. Pumping at the wells will occur during declared drought events or as backup to existing water sources or as needed to maintain the operation of the wells.

As previously mentioned, water intended for domestic use from the Hamakuapoko Wells, following treatment by the GAC facility, will be transported to the Kamole Weir WTP. The Kamole Weir WTP is the largest surface water treatment facility on Maui and relies primarily on surface water flow from the Wailoa Ditch. The Plant uses a microfiltration system to treat the surface water from the Wailoa Ditch. The clear well at the Kamole Weir WTP is the holding area for the filtered and treated water. It is in the clear well that the treated water from the Hamakuapoko Wells will be mixed with the treated water from the Wailoa Ditch. Water from the Kamole Weir WTP is the primary source of water for nearly all of Upcountry during times of drought. The Kamole Weir WTP's average daily production is 3.6 mgd.

D. PROJECT NEED

As previously mentioned, on October 13, 2011 the Maui County Council enacted Ordinance No. 3859, which allows the Hamakuapoko Well Nos. 1 and 2 to be reopened for agricultural use, use during declared drought events, and as backup to the UCWS. Water from the Hamakuapoko Well Nos. 1 and 2 will be effectively treated with the GAC treatment facility to meet or surpass safe drinking water standards. The State Department of Health approved the use of the Hamakuapoko Well Nos. 1 and 2 for drinking water in December 2000 and confirmed during County Council deliberations in 2011 that they continued to stand by that approval. Water quality sampling will be conducted on a regular basis to ensure that water

pumped from the two (2) wells and treated by the GAC facility are safe for use as drinking water. Prior to the reopening of the two (2) wells, the source water will be retested for all water quality contaminants regulated by DOH as required under Hawaii Administrative Rules, Section 11-20-29 as per the State Department of Health letter dated June 6, 2012.

The reopening of the Hamakuapoko Wells is necessary to provide added reliability for the UCWS. Once the Hamakuapoko Wells are reopened, the Pookela Well, which is currently used as a backup water source, will be placed into full-time production. The availability of the Pookela Well as a full-time production well will provide additional source for the UCWS which may allow for issuance of new water meters to households in Upcountry. There are currently approximately 1,470 applicants on the Upcountry Water Service list seeking issuance of a water meter.

Prior to the reopening of the Hamakuapoko Well Nos. 1 and 2, various repair and maintenance improvements at both well sites are necessary to address deferred maintenance of existing equipment so the wells can be placed into production and integrated with the UCWS.

E. REGULATORY REQUIREMENTS

The proposed improvements at the Hamakuapoko Well Nos. 1 and 2 will be funded by the County of Maui, DWS Countywide Source Development Fund. The use of County funds triggers the preparation of an Environmental Assessment (EA), pursuant to Chapter 343, Hawaii Revised States (HRS) and Section 11-200-6, Hawaii Administrative Rules (HAR). This Draft EA has been prepared to evaluate the technical characteristics, environmental impacts and alternatives, as well as advance findings relative to the significance of the project. The Approving Agency for the EA is the Department of Water Supply.

F. PROJECT FUNDING AND SCHEDULING

The total estimated construction cost of the proposed project is \$2,000,000. Assuming all necessary approvals and entitlements are obtained, construction of the proposed improvements is expected to begin in Fiscal Year 2013, with an estimated construction duration of 14 months.

As previously mentioned, the initial construction of the GAC facility at the Hamakuapoko Well No. 2 was funded through a 1999 settlement agreement in the case of *Board of Water Supply of the County of Maui v. Shell Oil Company, et al.* The settlement agreement also

provided payment of ongoing operations and maintenance costs to the County for the GAC facility through 2039. While the initial repair and maintenance improvements required to re-open the Hamakuapoko Wells would not be covered by this settlement agreement, the agreement would provide monthly operations and maintenance payments to the County for the Hamakuapoko GAC facility when the GAC is in operation. Reimbursement of varying and capped amounts for operations and maintenance costs is based on well yields and number of GAC vessels and is made to the County as set forth in the agreement. The DWS will utilize County funds for the initial repair and maintenance improvements required to re-open the wells and to construct the proposed 150,000 gallon storage tank at Hamakuapoko Well No. 2.

**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

Hamakuapoko Well Nos. 1 and 2 are located in Hamakuapoko between Paia and Haiku on Maui. Paia is a small town oriented around a commercial core at the intersection of Hana Highway and Baldwin Avenue. Residential development surrounds the restaurants, small shops, art galleries, and other resident and visitor-oriented businesses located within the Paia commercial center. Paia has gained recognition as a major windsurfing destination, situated near popular windsurfing spots such as Hookipa and Spreckelsville. The primary agricultural activity in and around Paia is sugarcane cultivation.

Compared to Paia, Haiku has a more rural character, with several small nodes servicing residences in the outlying rural and agricultural areas. Agricultural activities in Haiku include nursery operations and diversified agriculture.

The proposed project is surrounded by agricultural lands that are utilized for sugarcane cultivation by HC&S. Dirt access roads provide access to the two (2) well sites. Existing HC&S sand filter facilities are located at the edge of sugarcane fields adjacent to both the project sites to filter irrigation water.

b. Potential Impacts and Mitigation Measures

The Hamakuapoko Well Nos. 1 and 2 are existing County facilities. The repair and maintenance improvements are limited to the replacement of existing booster pumps and motors which are accessory to the wells. A new 150,000 gallon water tank will be installed adjacent to the Hamakuapoko Well No. 2 project site. The proposed tank will be approximately 35 feet in diameter and 20 feet in height. The new water tank will require

approximately 0.14 acre of additional land and will be located across an access road from the existing water infrastructure facilities at the Well No. 2 project site. The County is currently negotiating to acquire land from A&B, the landowner of Parcel 39, for the new water storage tank.

The project site is surrounded by existing sugarcane fields and will not adversely impact the surrounding agricultural uses in the vicinity. The land required for the new tank represents less than 0.01 percent of Parcel 39 and is not anticipated to present significant impacts to the agricultural yields resulting from sugarcane cultivation activities by HC&S.

2. Climate

a. Existing Conditions

Hawaii's tropical location results in uniform weather conditions throughout the year. Climatic conditions on Maui are characterized by mild year-round temperatures, moderate humidity, and steady northeasterly tradewinds. Variations in Maui's weather are attributable to regional topographic and climatic conditions.

Hamakuapoko is situated on the north coast of the island. Between 2005 and 2010, the average annual rainfall for the area, measured at Kuiaha near the Haiku area, was approximately 71.9 inches per year. Temperatures recorded at the Kahului Airport range from an average daily low of 67.3 degrees Fahrenheit to an average daily high of 83.8 degrees Fahrenheit. The warmest month in the region is August while the coolest is February (County of Maui, Office of Economic Development, 2011).

b. Potential Impacts and Mitigation Measures

The proposed project is limited to improvements to existing water infrastructure facilities at the Hamakuapoko Well Nos. 1 and 2 and the construction of a new 150,000 gallon water tank. Significant adverse impacts to climactic conditions are not anticipated with implementation of the proposed project.

3. Topography and Soils

a. Existing Conditions

The project sites are located entirely uplands in the midst of agricultural lands which are currently being utilized for sugarcane cultivation. The surrounding lands are gently to moderately sloping towards the Pacific Ocean. Topography is relatively moderate within the project sites ranging generally from 704 feet to 782 feet above mean sea level (amsl).

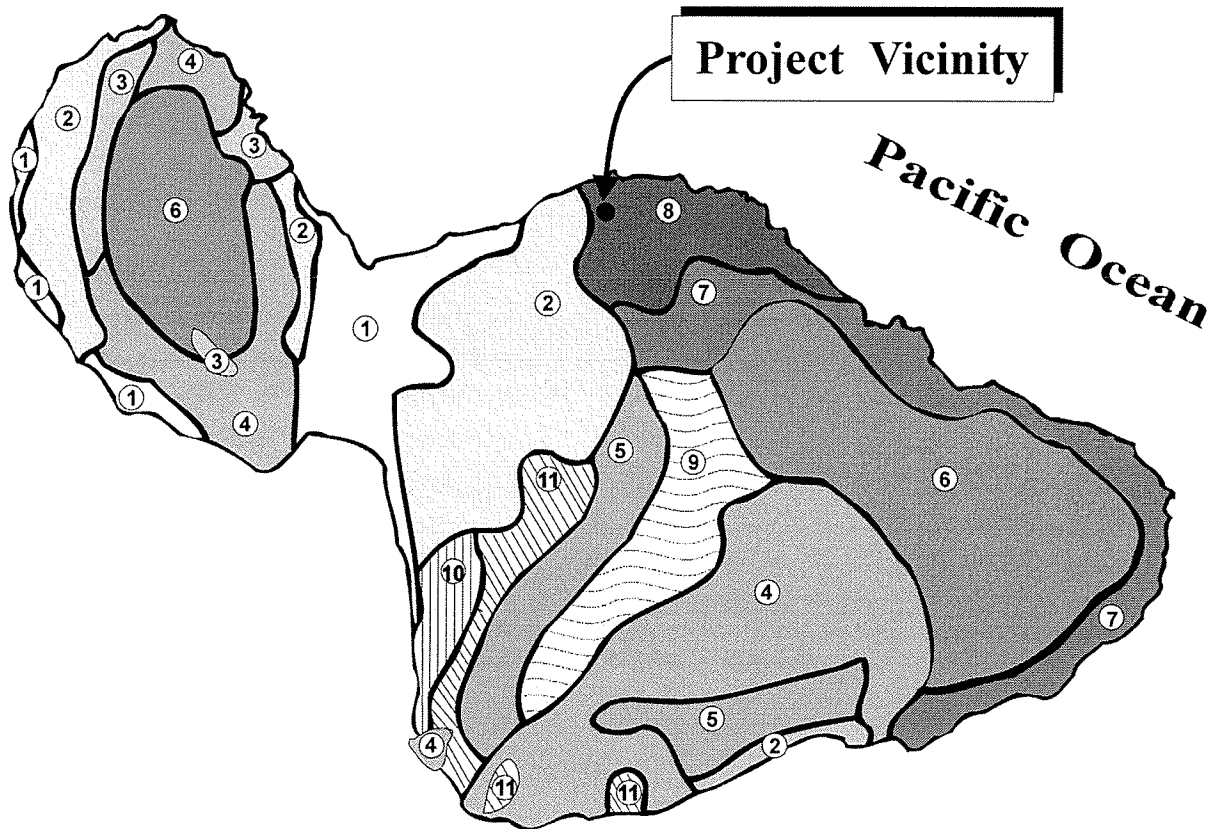
Underlying the project area are soils belonging to the Pauwela-Haiku Association. See **Figure 7**. The Pauwela-Haiku Association is characterized by well drained, fine textured soils commonly found on low uplands. These soils are gently sloping to moderately steep. The Pauwela-Haiku Association makes up about 3 percent of the island (U. S. Soil Conservation Service, 1972).

The specific soil type underlying the project site is the Hamakuapoko silty clay, 3 to 7 percent slopes (HIB). See **Figure 8**. This very deep, well drained soil is found on gently sloping uplands. The surface layer and the subsoil, both comprised of silty clay, are extremely acidic and strongly or very strongly acidic, respectively. Permeability is moderately rapid, runoff is slow, and the erosion hazard is slight (USDA Natural Resources Conservation Service, 2006).

The ground surface at the Hamakuapoko Well Nos. 1 and 2 sites consists of one (1) to two (2) feet of soil and subsoil above the in-place weathered zone of the Kula volcanic formation. The Kula formation consists of andesitic basalts and is a poor water-bearing formation. Below the Kula formation is the Honomanu volcanic formation, which forms the interior core of the island. The Honomanu formation consists of basaltic lavas and is highly permeable, constituting the principal exploitable aquifers in the region. The basal aquifer is found within the Honomanu formation (Mink & Yuen, Inc., 1999).

KEY

- | | |
|--|--|
| <ul style="list-style-type: none"> 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 | <ul style="list-style-type: none"> ⑦ Hana-Makaalae-Kailua Association ⑧ Pauwela-Haiku Association ⑨ Laumaia-Kaipoi-Olinda Association ⑩ Keawakapu-Makena Association ⑪ Kamaole-Oanapuka Association |
|--|--|



Source: USDA, Soil Conservation Service

Figure 7 Proposed Improvements at Hamakuapoko Well Nos. 1 and 2 Soil Associations Map

NOT TO SCALE



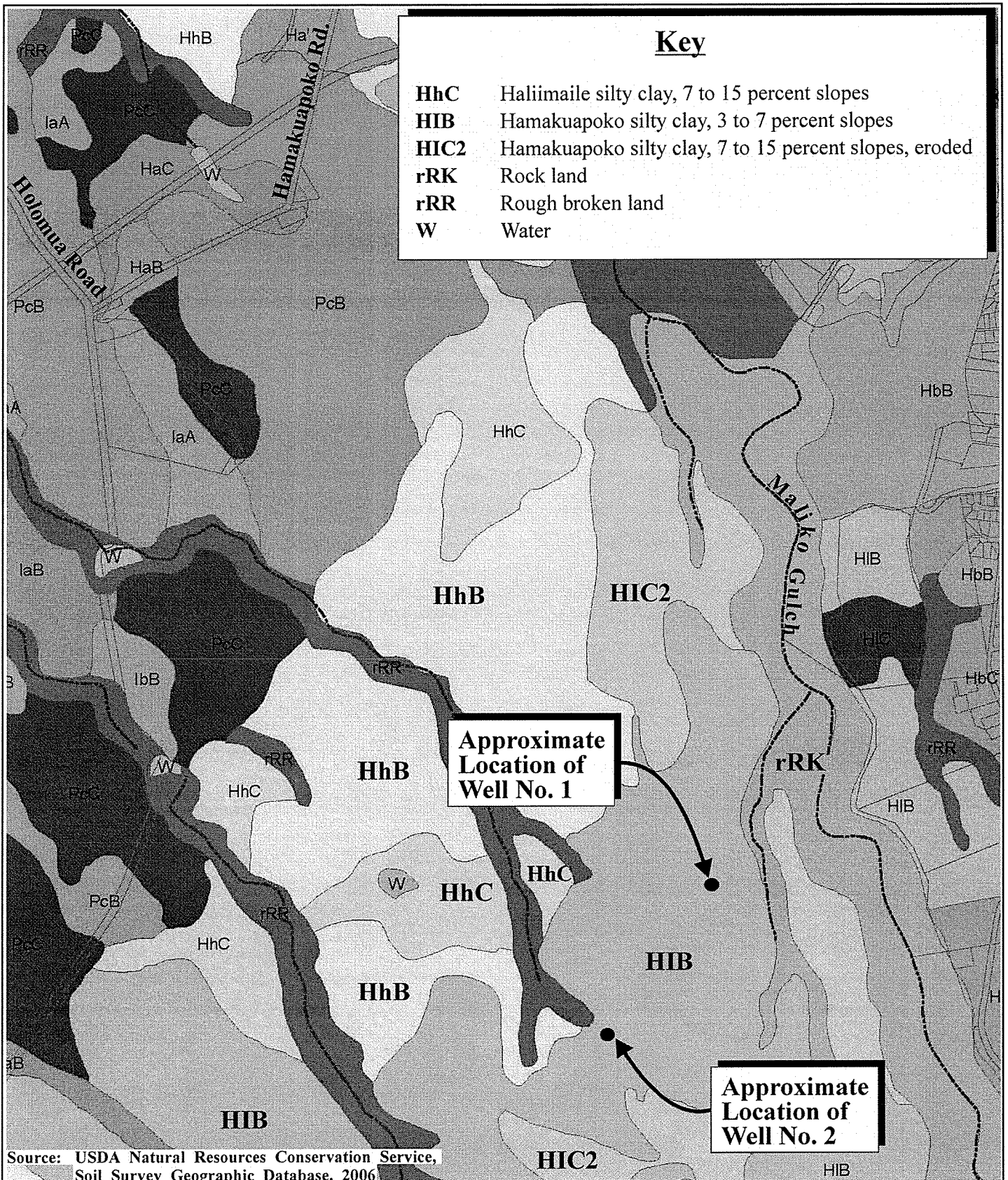
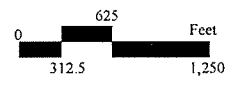


Figure 8 Proposed Improvements at Hamakuapoko Well Nos. 1 and 2 Soil Classification Map



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b. Potential Impacts and Mitigation Measures

The Hamakuapoko Well Nos. 1 and 2 were initially developed in 1992 as exploratory wells. The proposed improvements do not involve the drilling of new wells or modifications to the existing well shafts.

The proposed 150,000 gallon tank adjacent to Well No. 2 involves grading cuts limited to approximately 6 feet, allowing the tank to be completely placed on earth or cut soils. No fill will be placed in the tank footprint.

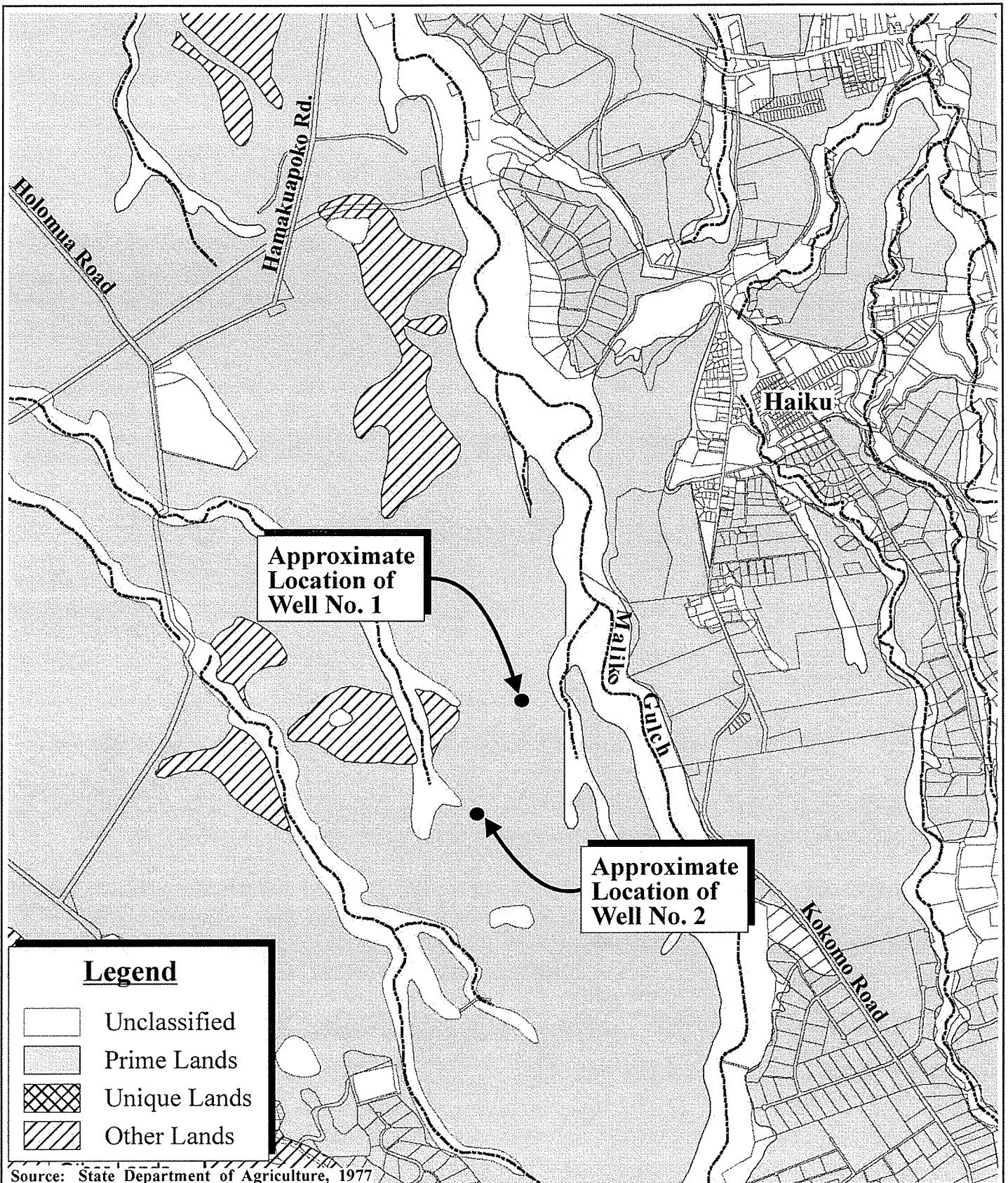
The proposed project is not anticipated to result in significant impacts on topography or soils present in the area.

4. Agriculture

a. Existing Conditions

The State Department of Agriculture has established three (3) categories of Agricultural Lands of Importance to the State of Hawaii (ALISH). The ALISH system classifies lands into “Prime”, “Unique”, and “Other Important Agricultural Land”. The remaining lands are “Unclassified”. Utilizing modern farming methods, “Prime” agricultural lands have the soil quality, growing season, and moisture supply needed to produce sustained crop yields economically, while “Unique” agricultural lands possess a combination of soil quality, location, growing season, and moisture supply currently used to produce sustained high yields of a specific crop. “Other Important Agricultural Land” includes those which have not been rated as “Prime” or “Unique”. The project sites are located on lands that have been defined as “Prime” agricultural lands by the ALISH rating system. See **Figure 9**.

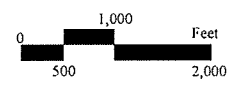
In addition, the University of Hawaii, Land Study Bureau (LSB) classifies productivity characteristics on a scale of “A” through “E”, with lands designated as “A” reflecting the highest productivity and “E” representing lands with the lowest productivity. Lands underlying the project site have been designated as “C” by the LSB. See **Figure 10**. (Land Study Bureau, 1967).



Source: State Department of Agriculture, 1977

Figure 9

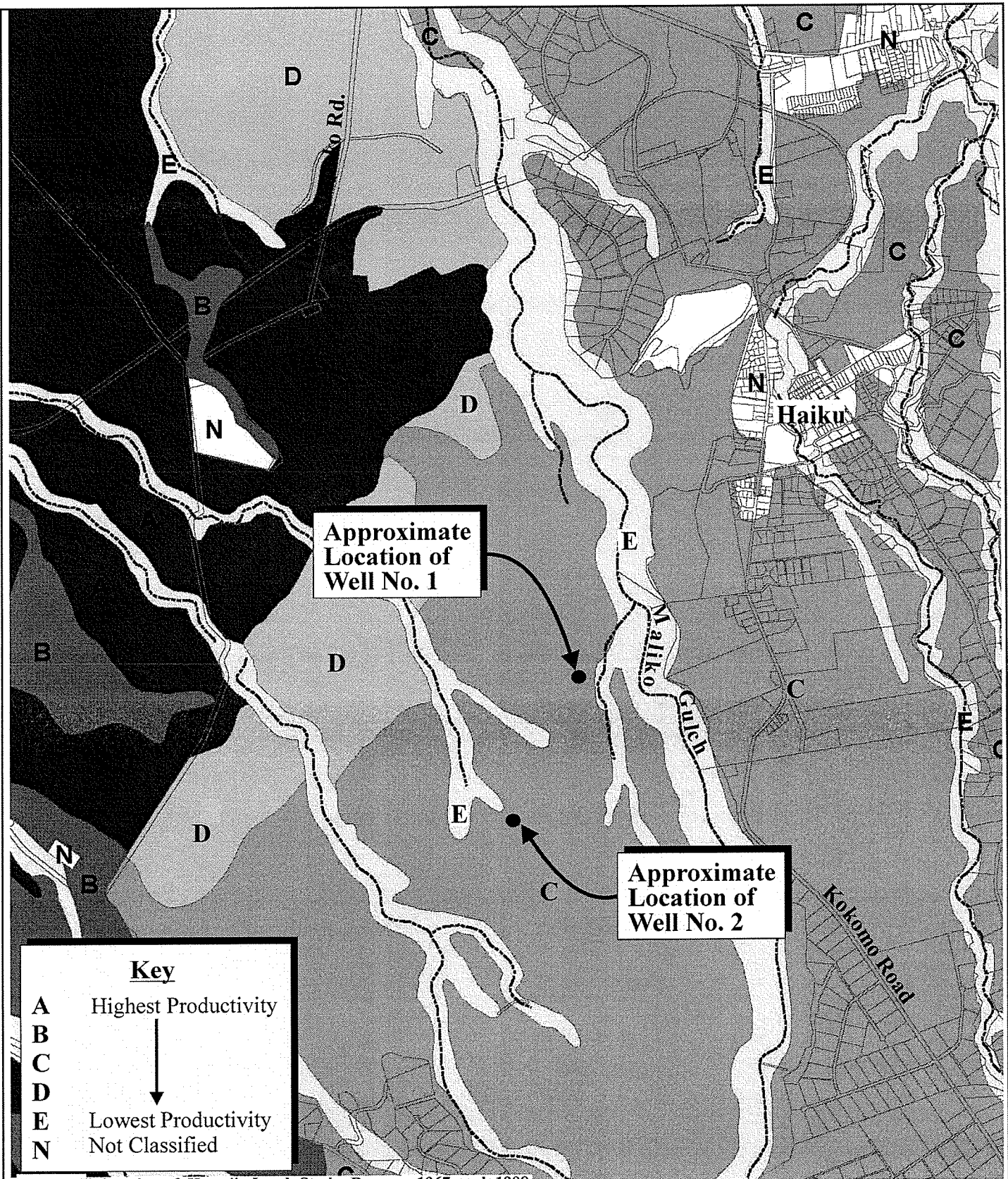
Proposed Improvements at
 Hamakuapoko Well Nos. 1 and 2
 Agricultural Lands of Importance
 to the State of Hawaii Map



Prepared for: County of Maui, Department of Water Supply

MUNEKIYO & HIRAGA, INC.

COM/DWS HamakuapokoWells/ALISH



Source: University of Hawaii, Land Study Bureau, 1967 and 1998

Figure 10 Proposed Improvements at Hamakuapoko Well Nos. 1 and 2 Overall Productivity Rating Map



When the Hamakuapoko Well Nos. 1 and 2 were initially developed, the majority of the well sites were located within existing plantation roadways and did not result in any substantial loss of lands in agricultural cultivation. The loss of less than one (1) acre of agricultural land for the development of necessary water appurtenances was considered negligible (Mink & Yuen, Inc., 1999).

b. Potential Impacts and Mitigation Measures

Hamakuapoko Well Nos. 1 and 2 are existing water infrastructure facilities that were developed primarily within plantation roadways. The proposed repair and maintenance improvements will be confined to the existing well project sites but new land is required for the proposed 150,000 gallon water storage tank adjacent to the Well No. 2 project site. DWS has undertaken consultation with HC&S to select an appropriate location for the new water tank and is currently negotiating with A&B to acquire the additional approximately 0.14 acre needed for the tank site. The land needed for the new water tank is currently utilized for sugarcane cultivation. The land required for the new tank represents less than 0.01 percent of the entire Parcel 39 and is negligible in terms of the region's vast stock of agricultural land. Development of the additional approximately 0.14 acre of land for the new tank will not result in significant adverse impacts on agricultural yields derived by HC&S through sugarcane cultivation.

5. Flood and Tsunami Conditions

a. Existing Conditions

The project area is located in Flood Zone X, an area of minimal flooding. It should be noted that the project site is located within Flood Insurance Rate Map (FIRM) panel number 1500030409E. The FIRM for this panel number is not printed as there are no special flood hazard areas within the panel.

The project area is not located within a tsunami evacuation zone.

b. Potential Impacts and Mitigation Measures

The proposed project is located within an area of minimal flooding and outside of the tsunami evacuation zone, over two (2) miles from the coast.

As such, adverse impacts related to flood and tsunami hazards are not anticipated with implementation of the project.

6. Streams and Wetlands

a. Existing Conditions

Maliko Gulch is located approximately 1,500 feet to the east of Hamakuapoko Well No. 1 and 3,000 feet from Hamakuapoko Well No. 2. Refer to **Figure 1**. Maliko Gulch is a non-perennial stream that is normally dry. Except during and immediately following storm events, stream flow in Maliko Gulch is limited to water that enters from seeps and springs in the valley walls above the stream bed. The flow in Maliko Gulch is lost a short distance downstream from the seeps due to percolation into the stream bed (Mink & Yuen, Inc., 1999). Hamakuapoko Well No. 2 is located approximately 1,000 feet east of the non-perennial Kuau Stream. As a non-perennial stream, Kuau Stream has only intermittent flow.

b. Potential Impacts and Mitigation Measures

The Hamakuapoko Well Nos. 1 and 2 pump ground water from the basal aquifer in the Honomanu formation. The basal water table is located approximately four (4) to five (5) feet above sea level while the stream channels in the region are hundreds of feet above sea level. The basal water table does not intersect with stream channels except within several hundred feet from the coast. Hamakuapoko Well Nos. 1 and 2 are located over two (2) miles from the coast. Based on this information, the 1999 Final EA for the Hamakuapoko Wells concluded that pumping at the two (2) wells are not anticipated to result in significant drawdown impacts that would affect stream flow. A 1996 U.S. Geological Survey (USGS) study on the effect of pumping at the nearby Haiku well concluded that after seven (7) days of pumping, there was no evidence of aquifer/stream interaction. The Haiku well is located on the east side of Maliko Gulch and draws from the basal aquifer water table that is approximately five (5) feet above sea level. This is the same level as the basal water table at Hamakuapoko Well Nos. 1 and 2. By comparison, the stream channel of Maliko Gulch lies 680 feet above sea level (Mink & Yuen, Inc., 1999).

On April 23, 2012, the Department of Army issued a determination letter that the project area is absent of navigable waters of the United States. See Section IX.

The proposed improvements are limited to repair and maintenance work and construction of a new tank. Implementation of these improvements will not increase the capacity of the existing wells and will, therefore, not present impacts on stream flow in the region.

7. Flora and Fauna

a. Existing Conditions

A Biological Resources Survey of the project site was completed by Robert Hobdy in June 2012. See **Appendix "G"**.

Robert Hobdy completed a walk through survey of the project area which includes Hamakuapoko Well Nos. 1 and 2. The area is significantly altered in terrain and vegetation. The survey also included the proposed water storage tank site adjacent to Well No. 2. The Hamakuapoko Well No. 1 site had 30 non-native agricultural weeds, such as the Guinea grass, Spanish needle, graceful spurge and koa Haole. The Hamakuapoko Well No. 2 site, the adjacent storage tank site, had 51 plant species. Besides sugar cane, all of the plant species were non-native agricultural weeds, such as the Napier grass, swollen fingergrass, Guinea grass, sugarcane, Christmas berry, Spanish needle, hairy spurge and graceful spurge.

b. Potential Impacts and Mitigation Measures

No Federally listed endangered or threatened plant species, any candidates for such listed status, or special plant habitats were found on the property. The vegetation on and surrounding the two (2) Hamakuapoko Well sites and the area for the proposed water tank site do not present botanical concerns. The field inspection report concludes that the proposed improvements are not expected to have a significant adverse impact on the botanical resources in this region. As such, the report finds that it is not necessary to make recommendations with reference to botanical resources. Refer to **Appendix "G"**.

8. Historical and Archaeological Resources

a. Existing Conditions

An Archaeological Field Inspection of the project area was completed by Scientific Consultant Services, Inc. (SCS) in May 2012. See **Appendix “H”**.

SCS completed a field inspection of approximately two (2) acres of land on Parcel 39, including the Hamakuapoko Well Nos. 1 and 2 project sites as well as three (3) potential locations for the water storage tank adjacent to Well No. 2. A 100 percent pedestrian survey of the project sites and potential tank locations did not lead to the identification of historic sites, features, midden scatters, or artifacts. The ground surface and subsurface soils of the areas surveyed have been heavily modified over time for intensive industrial sugarcane plantation cultivation as well as the construction of the existing infrastructure at the well project sites.

b. Potential Impacts and Mitigation Measures

As discussed above, the Archaeological Field Inspection conducted for the proposed project found no evidence of surface cultural remains. Modern era clearing, grubbing, and agricultural activities in the parcel have extensively disturbed the area, making the likelihood of encountering any remaining surface features almost non-existent. The Field Inspection concluded that the development of the proposed water storage tanks adjacent to Well No. 2 and improvements at Hamakuapoko Well Nos. 1 and 2 sites would not have an adverse impact on any significant properties. No further archaeological work is recommended for the well project sites and water storage tank locations. However, should the inadvertent discovery of significant cultural materials and/or burials occur during construction, all work in the immediate area of the find will cease and the State Historic Preservation Division (SHPD) will be notified to determine the appropriate level of mitigation. Refer to **Appendix “H”**.

9. Cultural Assessment

a. Existing Conditions

A Cultural Impact Assessment (CIA) report was completed for the proposed

project by Scientific Consultant Services, Inc. (SCS) in October 2012. See **Appendix “I”**.

The CIA, which was prepared according to the Office of Environmental Quality Control’s suggested methodology and protocol set forth in Guidelines for Assessing Cultural Impacts (1997), contains archived and documentary research as well as communication with organizations having knowledge of the project area, its cultural resources, and its practices and beliefs. SCS posted a CIA notice in the Honolulu Star-Advertiser, Maui News, and Ka Wai Ola and conducted consultations with organizations such as the Central Maui Hawaiian Civic Club, County of Maui Cultural Resources Commission, Office of Hawaiian Affairs, State Historic Preservation Division, and community members. As part of the consultation process, SCS archaeologist Cathleen Dagher attended the September 6, 2012 Maui Cultural Resource Commission monthly meeting. Also, oral interviews were conducted with several community members.

(i) Geopolitical Organization

Prior to Western contact in Hawaii, land was divided into *moku*, or districts. Each of these was further subdivided into units called *ahupuaa*. Ideally, each *ahupuaa* was self-sufficient, running from *mauka*, the mountain, to *makai*, the ocean (MacKenzie, 1991). These divisions served as both cultural and settlement systems as traditional Hawaiian life was tied intimately to the land. Hunting, gathering, cultivation, and habitation took place within three (3) zones which characterized the *ahupuaa*: the *Mauka* Zone, the Agricultural Zone, and the Coastal Zone. The *Mauka* Zone provided access to a variety of trees, plants, and herbs for various needs, customs and practices. Planting of yams, sweet potato, sugarcane, taro, and other foods took place in the Agricultural Zone, where gradual slopes of land allowed terraces to be constructed for more efficient irrigation. The Coastal Zone and low-lying areas was where most of the *kauhale*, group of houses, were found, as well as temples, fishing shrines, and fishponds (Minerbi, 1993).

Western contact brought changes to the Hawaiian land system with the introduction of private ownership of land, a concept foreign to the Native Hawaiians. A Board of Land Commissioners was established in 1845 to uphold or reject all private land claims of both foreigners and Hawaiians. The Commission adopted rules pertaining to the proof of claims, right of tenants, and commutation to the government in attempts to achieve the goal of totally partitioning undivided lands. All lands not claimed by February 1848 were to be forfeited to the government (MacKenzie, 1991).

Following the enactment of these rules, the *Mahele* division of 1848 divided all lands of Hawaii between the king, chiefs, and government and began the process of private ownership of lands. Two (2) years later the *Kuleana* act completed the *Mahele* process by authorizing the Land Commission to award fee simple titles to native tenants for their land. Once lands were made available and private ownership was instituted, the *maka ainana* were able to claim plots on which they had been cultivating and living. These *kuleana* parcels, also known as Land Commission Awards (LCA), were generally among the richest and most fertile in the islands and came from the king, government, or chief's land. All claims and awards were numbered and recorded in the *Mahele* Book (MacKenzie, 1991). In addition, government lands were sold as "Royal Patent Grants" or "Grants" in order to meet the increasing costs of government. These grants differed from LCAs, as it was not necessary for the recipients to obtain an award for their land from the Land Commission (Chinen, 1958).

(ii) **Historical Overview**

The subject project is located in the *ahupuaa* of Hamakuapoko, which was considered a part of the Hamakuapoko *moku*.

The Waihona Aina Database (2012) indicates that Hamakuapoko Well No. 2 is located within Land Grant 764, which is comprised of 150 acres. This land was purchased by Robert W. Wood on January 27, 1852 for school land as per Patent No. 764. The Waihona Aina

Database (2012) indicates that Hamakuapoko Well No. 2 is located in Land Grant 187 which is comprised of 24.61 acres. This land was purchased by John Richardson on December 21, 1849. The Tax Map Key indicates the area containing Hamakuapoko Well No. 1 and No. 2 was deeded to the Board of Directors Trustees of Oahu College in 1860. Refer to **Appendix “I”**.

During the Mahele of 1848, the eastern half of the Hamakuapoko Ahupuaa became government land while the western half was awarded to W.P. Leileiohoku, brother of Kalakaua and Liliuokalani. Leileiohoku surrendered these lands in lieu of commutation for his other lands, effectively making the entire ahupuaa a government parcel. Handy and Handy (1972) recorded that gulches in the ahupuaa contained soils amenable to cultivation and were likely used for sweet potatoes which were also grown in the Kula (upcountry) region of Hamakuapoko.

(iii) Traditional and Customary Rights

The traditional and customary rights of Native Hawaiians can be broken down into access rights, gathering rights, burial rights, and religious rights.

Access

Native Hawaiians generally share the same access rights as the general public. However, they have the unique access rights to *kuleana* parcels and between *ahupuaa*. Access to *kuleana* parcels may involve access via ancient trails or expanded access not limited to any route. Additionally, the *Kuleana* Act granted unobstructed access within the *ahupuaa* to obtain items necessary to make the *kuleana* parcel productive. Access rights between *ahupuaa* involve access to ancient or well established trails (MacKenzie, 1991).

Gathering

In terms of gathering rights, the Hawaii Supreme Court has upheld gathering rights within an *ahupuaa* for firewood, house-timber, *aho* cord, thatch, and *ki*-leaf under three (3) conditions. The tenant must physically reside within the *ahupuaa*, the right to gather can only be exercised upon undeveloped lands within the *ahupuaa*, and the right

must be exercised only for the purpose of practicing Native Hawaiian customs and traditions (MacKenzie, 1991).

Burial

According to traditional Hawaiian burial beliefs, following death, the *uhane*, or spirit, must remain near *na iwi*, or bones. Burial sites are chosen by Hawaiians for symbolic purposes in places for safekeeping. Often, bones were hidden in caves, cliffs, sand dunes, or deposited in the ocean. Today, federal and state laws protect both unmarked and marked burial sites. Island Burial Councils assist the State Historic Preservation Division with inventory and identification of unmarked Hawaiian burial sites and determine the preservation or relocation of native Hawaiian burial sites (MacKenzie, 1991).

Religious

Hawaiian religion and beliefs were intimately tied to the land. While some practices and traditions were lost over the years, basic Hawaiian religious concepts remain. The terms "*aloha aina*," love the land and "*malama aina*," care for and protect the land, convey the unity of humans, nature, and the gods in Hawaiian philosophy (Minerbi, 1993). Furthermore, Hawaiians honored and worshiped *aumakua*, deities, and *akua*, gods. There were numerous *akua* of farming, fishing, tapa making, dancing, sports, and any other activity of Hawaiian life. The concept of *mana* or sacred attachment to places, people, or things also remains as a significant aspect of Hawaiian religion (MacKenzie, 1991).

SCS conducted interviews with people familiar with the project area. It is noted, however, that many individuals who grew up in the Hamakuapoko and surrounding areas are now deceased. The following is a summary of two (2) of the interviews that were conducted during the CIA. Refer to **Exhibit "I"**.

Paul Ueoka

Mr. Ueoka is a graduate of the "Old" Maui High School at Hamakuapoko class of 1977. He is active with the Friends of Old Maui High School which is a non-profit organization that is trying to restore the school. His father, Noriyuki Ueoka, was an Agriculture Teacher, as well as Vice Principal at the "Old" Maui High School.

The elder Mr. Ueoka taught students how to raise farm produce such as corn, citrus trees, mango trees, and flowers (e.g. orchids and anthuriums).

Mr. Ueoka did not indicate that any traditional cultural practices would be affected by the proposed project.

Patsy Shishido and Leona Wilson

Ms. Shishido and Ms. Wilson are sisters whose paternal and maternal grandparents emigrated to Hawaii in the late 1800s and early 1900s, respectively, from the Azores Archipelago, Portugal. Their grandparents left their home to work for the sugarcane plantation and provide their families with a better life. The sisters grew up in the Portuguese Camp in Hamakuapoko. As children, they swam at Kookipa Park and attended Old Maui High School. They spoke extensively about the Plantation-Era life which included church activities, traditional food preparation by different ethnic groups, and the cultures of the fieldworkers.

Neither Ms. Shishido or Ms. Wilson indicated that any traditional cultural practices would be affected by the proposed project.

b. Potential Impacts and Mitigation Measures

The cultural impact assessment finds that it is reasonable to conclude that pursuant to Act 50, the exercise of cultural practices of native Hawaiian rights, or any ethnic group, related to gathering, access or other customary activities would not be affected by the proposed project, and that the project area has not been used for traditional cultural purposes in recent times. Refer to **Appendix “I”**.

10. Air and Noise Quality

a. Existing Conditions

Air quality in the vicinity of the project sites is generally good. However, temporary degradation in air quality is expected due to the surrounding

sugarcane cultivation activities. In particular, dust generation and cane burning on adjacent fields may result in degradation of air quality. Between harvests and before new crops are planted, sugarcane fields remain open for a few weeks. During this time, the fields are prone to dust generation as winds can kick up or carry dust. In addition, field preparations such as tilling prior to planting can also contribute to dust generation.

Harvesting of sugarcane also creates temporary disruptions to normal air quality in the vicinity. HC&S burns the sugarcane fields as a pre-harvest technique to get rid of dried leaves, which have accumulated over the 2-year growing period. By reducing the extraneous leafy material delivered to the mill, HC&S is able to increase the quantity and quality of sugar it recovers. It also reduces the number of hauling trucks crossing Maui's highways (HC&S, 2011). The maturation process for sugarcane is approximately 24 months. As such, sugarcane burning in the vicinity of the project sites would occur approximately every two (2) years.

There are no significant noise generators in the vicinity of the project sites. Noise generated in this locale may be attributed to agricultural activities and traffic on area roadways.

b. Potential Impacts and Mitigation Measures

Airborne particulates, including dust, may be generated during site preparation and construction activities. However, dust control measures, such as regular watering and sprinkling, will be implemented as needed to minimize wind-blown emissions. In the long term, the project will not adversely impact local and regional ambient air quality conditions.

As with air quality, ambient noise conditions will be temporarily impacted by construction activities. Heavy construction equipment, such as bulldozers, front end loaders, and dump trucks and trailers will be the dominant source of noise during site construction. Construction generated noise will be mitigated through Best Management Practices (BMPs), and construction activities will be limited to daylight work hours only. The contractor will coordinate with the State Department of Health to ensure that noise permits are obtained, as appropriate.

From a long-term perspective, replacement of the existing above-ground pumps with submersible pumps at Well Nos. 1 and 2 will reduce the amount of noise generated by the equipment. While some level of noise may be generated by the operations at the two (2) well sites, the sites are surrounded by sugarcane fields and there are no noise receptors in the vicinity of the well sites.

11. Scenic and Open Space Resources

a. Existing Conditions

The project sites are located in Hamakuapoko between Paia and Haiku. The Hamakuapoko Well Nos. 1 and 2 are existing facilities surrounded by sugarcane fields cultivated by HC&S.

Existing improvements at both well sites, including the existing water tanks, are not visible from major regional roadways such as the County-owned Baldwin Avenue and the State-owned Hana Highway. The improvements are also not visible at Holomua Road or Hamakuapoko Road. There are no designated scenic corridors in the immediate vicinity of the project sites.

b. Potential Impacts and Mitigation Measures

The proposed project primarily involves the repair and replacement of existing infrastructure at the Hamakuapoko Well Nos. 1 and 2 sites. A new 150,000 gallon water tank adjacent to the Well No. 2 site will measure approximately 35 feet in diameter and 20 feet in height. This is comparable to the height of the existing water tanks at the Well No. 2 site. Given the remote location of the sites in the midst of active sugarcane fields, there are no significant adverse impacts to the visual resources of the surrounding environment anticipated to result from implementation of the proposed project.

The proposed repair and maintenance improvements will be limited to the existing project sites for the Hamakuapoko Well Nos. 1 and 2. Development of the 150,000 gallon water tank adjacent to the Well No. 2 project site will require approximately 0.14 acre of land that is currently in the process of being negotiated for acquisition from A&B. This area is negligible

representing less than 0.01 percent of the total 2,439-acre parcel. Adverse impacts to open space resources are not anticipated as a result of the proposed improvements.

12. Chemicals and Hazardous Materials

a. Existing Conditions

The Hamakuapoko Well Nos. 1 and 2 are located in an area that has been used extensively for agricultural cultivation in the past and continues to be utilized by HC&S for sugarcane. As such, the water from Hamakuapoko Wells have been tested for potential contaminants that may be associated with the surrounding agricultural use. Water quality testing measured for 1,2-Dibromo-3-chloropropane (DBCP), Ethylene Dibromide (EDB), and Trichloropropane (TCP). DBCP was used in the past as a soil fumigant and nematocide on crops. EDB has been used in the past as an insect killer but agricultural use of EDB was banned in 1984 by the U.S. Environmental Protection Agency (EPA). TCP has been used as a pesticide in the past. DBCP was banned in the U.S. in 1977, except for pineapple, and further banned for pineapple cultivation in Hawaii in the 1980s.

In tests of untreated water conducted between 1999 and 2004, concentrations of DBCP and EDB at Well No. 2 exceeded the State Department of Health's (DOH) maximum concentration level. At Hamakuapoko Well No. 1, the concentration of DBCP was at the margin of acceptability while EDB was not detected or below the maximum concentration level. With the exception of one (1) sample at Hamakuapoko Well No. 1, the concentration of TCP fell below the maximum limits in all other test samples for Well No. 1 and No. 2. See **Appendix "J"**. After October 2004, pumping was inactive at Hamakuapoko Well Nos. 1 and 2 and on October 2, 2006, Ordinance No. 3404 resulted in the closure of the wells.

Prior to the use of the Hamakuapoko Well Nos. 1 and 2 as production wells, the County of Maui explored various methods to treat water to reduce the concentrations of DBCP and EDB. These methods included the Granular Activated Carbon (GAC) method, Powdered Activated Carbon (PAC) method, Airstripping (Packed Tower Aeration), Adsorbent Exchange Resins, and Membrane Technology. The GAC method was selected over the other

methods because of its proven performance, system reliability, enclosed operation, ease of operation, and the fact that there is no hazardous air emissions associated with it. It also has an overall superior cost effectiveness. The primary disadvantage is the high capital cost and the cost of disposing the spent carbon. The GAC method involves contaminated water flowing downward from the top of a pressurized vessel through a bed of activated carbon. Active carbon refers to an extremely porous form of carbon, which gives it a very large surface area for absorption of contaminants. The water is treated when it flows through the bed of activated carbon and is collected in an underdrain system (Mink & Yuen, Inc., 1999). The outflow from the GAC system meets State DOH standards for drinking water.

The GAC system was installed at the Hamakuapoko Well No. 2 in 1999. Water from Well No. 1 is pumped to the Well No. 2 site, where the combined flows are treated by the GAC system. Following treatment by the GAC system, DBCP and EDB were not detected in the water pumped from the Hamakuapoko Wells during tests conducted between 1999 and 2004. With the exception of one sample, TCP was not detected in the treated water. In the one sample where TCP was detected, the level of TCP was below the maximum allowable level. Refer to **Appendix "J"**. The water quality tests of the water treated by the GAC demonstrate the effectiveness of the treatment method to rid the water of these contaminants and produce water that meets the drinking water standards for safe consumption by the public.

As previously discussed, the installation of the GAC system at Hamakuapoko Well No. 2 was funded by a 1999 settlement agreement that required the manufacturers of the chemical DBCP to reimburse the County of Maui for certain capital costs through September 1, 2039. The settlement agreement in the case of *Board of Water Supply of the County of Maui v. Shell Oil Company, et al.* (Civil Case No. 96-0370(1)) stipulated that the defendants would pay for the capital costs of GAC facilities at certain wells, including the Hamakuapoko Wells, where the levels of DBCP exceeded the maximum contaminant level established by the State Department of Health. The defendants also will reimburse the County for operations and maintenance costs associated with the GAC system at the Hamakuapoko Wells when the GAC is in operation for at least 10 percent of a month. As such, the County,

through this 1999 settlement agreement, received funds for the construction, operation, and maintenance of the GAC facility at the Hamakuapoko Well No. 2.

b. Potential Impacts and Mitigation Measures

The proposed improvements to the Hamakuapoko Wells include repair and maintenance of the GAC system so that it may be returned to operation when the wells are re-opened. DWS will continue to utilize the GAC facility at the Hamakuapoko Well No. 2 site to treat the pumped water for removal of DBCP and EDB. DWS will conduct regular water quality monitoring to ensure continued effective treatment by the GAC and ensure that water produced by the two (2) wells meets or surpasses the drinking water standards for safe public consumption.

When the Hamakuapoko Wells are placed back in operation and the GAC facility is in use, the County will receive monthly operation and maintenance funds for the GAC system through the 1999 settlement agreement.

B. SOCIO-ECONOMIC ENVIRONMENT

1. Population and Economy

a. Existing Conditions

The population of the County of Maui has exhibited relatively strong growth over the past decade. In 2010, there were 154,834 residents in the County, a 21 percent increase of the resident population in 2000 of 128,094. The Paia-Haiku region has experienced more modest growth during the same time period. The approximately 12,800 residents living in Paia-Haiku in 2010 represents an eight (8) percent increase since 2000 (U.S. Census Bureau, 2000 and 2010). The population of the County is anticipated to grow to 199,850 residents by 2030, including approximately 13,860 residents in the Paia-Haiku region (County of Maui, Planning Department, 2006).

The unemployment rate (not seasonally adjusted) for Maui County was 5.7 percent in October 2012, with Maui Island's rate at 5.5 percent. These numbers represent a decrease of 2.0 percent for both the County and island

from October 2011 (Department of Labor and Industrial Relations, 2012). The State's unemployment rate for October 2012 was 5.5 percent, an improvement over the October 2011 rate of 6.7 percent.

b. Potential Impacts and Mitigation Measures

Short-term economic benefits associated with construction labor and expenditures for the well improvements are anticipated. From a long-term perspective, the proposed improvements will provide enhanced system reliability in the Upcountry Water System to better serve residents and businesses in the region. DWS does not anticipate the need for additional personnel to monitor and maintain the Hamakuapoko Well Nos. 1 and 2 once they are brought online.

The proposed project is primarily repair and maintenance improvements; it is not a direct population generator. Thus, there are no anticipated long-term impacts on population parameters and the improvements are not anticipated to adversely impact existing facilities related to the UCWS.

C. PUBLIC SERVICES

1. Police and Fire Protection

a. Existing Conditions

The County of Maui's Police Department headquarters are located in Wailuku. There are three (3) patrol divisions on the island of Maui. These are the Wailuku, Lahaina, and Hana divisions. The Wailuku division covers Central Maui, Paia-Haiku, Kihei-Makena, and Upcountry Maui. The Wailuku division utilizes 146 patrol officers and 11 motorized beats (Munekiyo & Hiraga, Inc., 2008).

Fire prevention, suppression, and protection services for the project area are provided by the County Department of Fire and Public Safety's Paia Fire Station, located approximately three (3) miles from the project site, along Hana Highway in Paia Town.

b. Potential Impacts and Mitigation Measures

Improvements to the existing Hamakuapoko Well Nos. 1 and 2 will not extend the service limits for emergency services. Police and fire protection services are not anticipated to be adversely impacted by the proposed project. As the proposed project is an existing facility in a remote location and will be unmanned, it will not adversely impact the service capabilities for emergency services.

2. Medical Facilities

a. Existing Conditions

Maui Memorial Medical Center is currently the only major medical facility on the island. Acute, general, and emergency care services are provided by the 231-bed facility. In addition, Paia has medical and dental clinics to service local community residents. Haiku has a medical office and a pharmacy.

b. Potential Impacts and Mitigation Measures

The proposed project is not anticipated to have adverse impacts on existing medical facilities or services on Maui.

3. Solid Waste

a. Existing Conditions

Except for remote areas, single family solid waste collection service is provided by the County of Maui on a weekly or twice-a-week basis. Solid waste collected by County refuse crews is disposed at the Central Maui Landfill. Commercial waste from private collection companies is also disposed of at the landfill.

b. Potential Impacts and Mitigation Measures

A solid waste management plan will be developed and implemented to minimize the volume of construction waste material being disposed of at the Central Maui Landfill by the project. Upon completion of construction, the Hamakuapoko Well Nos. 1 and 2 are not anticipated to require solid waste

collection services. As such, from a long-term perspective, the proposed project will not have a significant impact on the capacity of the Central Maui Landfill. The carbon waste from the GAC facility is not hazardous and will be disposed of in the landfill, meeting all required disposal requirements.

4. Recreational Resources

a. Existing Conditions

The main facilities catering to the recreational needs of the area include the Paia Community Center and Haiku Community Center. Both community centers provide community rooms as well as park space and athletic fields. Coastal recreational resources in the region include Baldwin Beach Park and Hookipa Beach Park, an internationally recognized park known for its excellent surf and windsurfing. Other recreational facilities include Lower Paia Park, Paia Gym, and Rainbow Park.

b. Potential Impacts and Mitigation Measures

The proposed project in and of itself is not considered a population generator. The proposed improvements are not anticipated to adversely impact the existing recreational facilities located in and around the Paia and Haiku areas.

5. Educational Facilities

a. Existing Conditions

The State of Hawaii, Department of Education operates eight (8) public schools in East Maui and Upcountry Maui. They are Makawao Elementary School, Kalama Intermediate School, Pukalani Elementary School, Kula Elementary School, Haiku Elementary School, Paia Elementary School, King Kekaulike High School, and Hana High and Elementary School.

The region is also served by the privately operated Montessori School of Maui, Doris Todd, Haleakala Waldorf School, Seabury Hall, the Maui Campus of Kamehameha Schools, and the Carden Academy of Maui.

b. **Potential Impacts and Mitigation Measures**

As previously mentioned, the project in and of itself is not considered a population generator and will not place added demands on educational facilities or services on Maui.

D. **INFRASTRUCTURE**

1. **Roadways**

a. **Existing Conditions**

The Paia-Haiku region is served by a number of arterial roadways, including Hana Highway and Baldwin Avenue. Hana Highway is a State of Hawaii roadway that serves as the main access road along the northern coast of Maui. It is a predominantly two-lane, two-way roadway generally oriented in the east-west direction. Baldwin Avenue is a County roadway that serves as the main commercial corridor of Paia. Baldwin Avenue originates at Hana Highway, northwest of the project sites, and continues south, terminating in Makawao.

Access to the existing Hamakuapoko Well Nos. 1 and 2 is provided by private agricultural roadways. Holomua Road is a two-lane roadway that runs from Hana Highway in the north to Baldwin Avenue in the south. Holomua Road runs primarily in the north-south direction and traverses through sugarcane fields. Refer to **Figure 2**. Holomua Road between Hana Highway and the Old Maui High School is a paved road; between the Old Maui High School and Baldwin Avenue, Holomua Road is a dirt gravel road. Access to the project sites is provided via cane roads off of Holomua Road.

Due to the agricultural and rural nature of the area, traffic is generally light, with minimal traffic congestion.

b. **Potential Impacts and Mitigation Measures**

The proposed improvements to facilitate the reopening of the Hamakuapoko Well Nos. 1 and 2 are not anticipated to generate significant volumes of incoming or outgoing traffic and will not affect existing traffic conditions in the area. DWS will coordinate with the Department of Public Works

regarding the use of Holomua Road during the construction phase of the project, as necessary. Upon completion, the number of DWS personnel who would visit the project site for routine monitoring and/or service activities would be limited to one (1) to two (2) employees daily. As such, the number of vehicular trips to the projects sites would be similar to the number of trips that occurred when the Hamakuapoko Well Nos. 1 and 2 were first in operation.

2. Water System

a. Existing Conditions

The Upcountry Water System (UCWS) services the areas of Haiku, Makawao, Olinda, Haliimaile, Pukalani, Kula, Omaopio/Pulehu, Keokea, Ulupalakua, and Kanaio. The UCWS is primarily dependent upon surface water sources which supply a system of reservoirs and treatment facilities. Several groundwater sources, including the Haiku Well, Kaupakula Well, and the Pookela Well, also supply the UCWS.

The Hamakuapoko Wells, which were operated as production wells from December 22, 2000 until their closure in October 3, 2006, are also currently part of the UCWS. Actual pumpage from the wells occurred between 2000 to 2004. The wells are located within the Paia Aquifer System. Maliko Gulch, located east of the wells, serves as the drawn boundary between the Paia and Haiku Aquifer Systems.

As previously mentioned, the Hamakuapoko Well Nos. 1 and 2 pump water from the basal aquifer in the Honomanu formation. The basal water table is located approximately four (4) to five (5) feet above sea level while the stream channels are hundreds of feet above sea level. The basal water table does not intersect with the stream channels except within several hundred feet of the coast. Hamakuapoko Well Nos. 1 and 2 are located over two (2) miles from the coast. Based on this information, the 1999 Final EA for the Hamakuapoko Wells concluded that there are no significant adverse impacts anticipated from pumping at the two (2) wells that would result in drawdown at these distances of a magnitude that would affect stream flow (Mink & Yuen, Inc., 1999). A 1996 U.S. Geological Survey (USGS) study on the effect of pumping at the nearby Haiku well concluded that after seven (7)

days of pumping, there was no evidence of aquifer/stream interaction. Haiku well is located on the east side of Maliko Gulch and draws from the basal aquifer water table that is approximately five (5) feet above sea level. This is the same level as the basal water table at Hamakuapoko Well Nos. 1 and 2. By comparison, the stream channel of Maliko Gulch lies 680 feet above sea level (Mink & Yuen, Inc., 1999).

b. Potential Impacts and Mitigation Measures

The proposed improvements would allow for the reinitiation of use of the Hamakuapoko Well Nos. 1 and 2. These wells pumped water for four (4) years from 2000 to 2004. Impacts to the underlying aquifer and water quality tests were assessed when the wells were drilled as exploratory wells and also when the wells were converted to production wells in 1999.

Measurements of aquifer drawdown were taken previously during a pump test and recovery following the cessation of pumping. These tests were conducted in 1992 when the wells were initially drilled as exploratory wells. The measurements are utilized to derive hydraulic conductivity, which describes the ease with which water can move through pore spaces or fractures. The tests for both Hamakuapoko Well Nos. 1 and 2 revealed high hydraulic conductivity, meaning that the wells are highly favorable for extraction of groundwater. High hydraulic conductivity allows for efficient pumpage by wells (Mink & Yuen, Inc., 1999).

The State Commission on Water Resource Management (CWRM) establishes sustainable yields for the aquifer systems in Hawaii. According to the Water Resource Protection Plan prepared for the CWRM in 2008, the sustainable yield for the Paia Aquifer is 7 mgd. It is noted that this sustainable yield of 7 mgd is based on basal groundwater only and does not account for the significant importation of surface water into Paia from outside the aquifer system area through return irrigation recharge. This explains the ability to withdraw freshwater from the aquifer at significantly higher rates than the sustainable yield without negative impacts, such as rising chloride concentrations or decreasing water levels. Generally, chloride concentration trends are used as an indicator of the influence of well pumping on aquifer conditions. For drinking water, the EPA established a maximum contaminant level of 250 mg/l for chloride. Water analysis from 2000 to 2004 when the

well pumps were operating, shows that chloride levels at the Hamakuapoko Well Nos. 1 and 2 are below the EPA maximum contaminant level, and range between 74 to 110 mg/l.

Groundwater quality tests conducted for the 1999 Final Environmental Assessment indicated that the maximum salinity reached during pump testing at both Hamakuapoko Well Nos. 1 and 2 was well within the acceptable limits for potable water. However, water from both wells exhibited contamination with volatile organic chemicals associated with the use of nematocides in pineapple cultivation. The water quality testing measured for three (3) compounds: DBCP, EDB, and TCP. Concentrations of DBCP and EDB at Well No. 2 exceeded the DOH maximum concentration level while concentrations at Hamakuapoko Well No. 1, the concentration of DBCP was at the margin of acceptability while EDB was not detected. With the exception of one (1) test sample at Well No. 1, the concentration of TCP fell below maximum limits in all other test samples for Well No. 1 and Well No. 2 (Mink & Yuen, Inc., 1999).

In 1999, DWS installed a Granular Activated Carbon (GAC) treatment facility at Well No. 2 that is capable of treating water from both well sites. Water from Hamakuapoko Well No. 1 is transported to Well No. 2 where the combined water drawn from the two (2) wells flows through the treatment process provided by the GAC chambers. The GAC method treats water when the water flows downward from the top of a pressurized vessel through a bed of activated carbon. Active carbon refers to an extremely porous form of carbon, which gives it a very large surface area for absorption of contaminants. This treatment process is completed before the water from the Hamakuapoko Well Nos. 1 and 2 are pumped into the clear well at Kamole Weir Water Treatment Plant (WTP) (Mink & Yuen, Inc., 1999). When the Hamakuapoko Wells are reopened, the pumped groundwater will again be treated by the GAC facility. The treatment process provided by the GAC system will ensure that the water meets or surpasses both Federal and State drinking water standards prior to conveyance to the Kamole Weir WTP. No further treatment of the Hamakuapoko Wells water will be necessary at the Kamole Weir WTP.

On December 22, 2000, the State of Hawaii, Department of Health (DOH)

granted conditional approval for the use of the Hamakuapoko Well Nos. 1 and 2 as a drinking water source for a public water system subject to eight (8) conditions. Refer to **Appendix “C”**. Conditions of the approval included requirements that all water from the two (2) wells be treated by the GAC treatment units and that the GAC treatment units deliver potable water of the quality in compliance with Hawaii Administrative Rules Title 11, Chapter 20, “Rules Relating to Potable Water Systems” (HAR).

DWS conducted regular water quality testing for DBCP, EDB, TCP, and Nitrate as Nitrogen during the operation of the Hamakuapoko Well Nos. 1 and 2 until pumping at the wells ended in 2004. The tests indicated that after the water was treated by the GAC facility, DBCP, EDB, and TCP were not detected or were below the maximum allowed limit for those compounds. Refer to **Appendix “J”**.

Prior to activating the wells again, DWS will retest and obtain water quality data which will be submitted to DOH for verification of the water quality in accordance with HAR, Chapter 11-20.

During the 2011 County Council deliberations regarding the reopening of the Hamakuapoko Wells, the DOH confirmed that in 2000 the DOH approved the Hamakuapoko Well Nos. 1 and 2 for use as drinking water after treatment and that the DOH stands by that approval today. Once the Hamakuapoko Wells are reopened, DWS will continue to monitor water quality measures to ensure the GAC treatment process produces drinking water in compliance with applicable Federal and State water quality standards. DWS’s water testing program applies to ground water from the time it is drawn by the Hamakuapoko Wells until it is placed into the drinking water supply.

Water quality sampling will be done by DWS staff or a sub-contractor with experience in water sampling for lab analysis and the data results will be submitted to DOH. Water samples will be drawn from the wells and will be sent to private certified laboratories on Oahu or the mainland for data analysis. A list of chemicals that are monitored can be found on the DWS website or in the DOH rules. In the event maximum contaminant levels (MCLs) are exceeded, the public will be informed immediately through public broadcasts (e.g. tv and radio), the County website and social media.

Prior to well start-up, both Hamakuapoko wells will be required by DOH to undergo testing that is equivalent to the requirements for a new well start-up in accordance with HAR, Section 11-20-29. Results of the water quality analysis will be reviewed and accepted by the DOH before any water from the Hamakuapoko Well Nos. 1 and 2 enters the DWS water system for human consumption.

3. Wastewater System

a. Existing Conditions

Wastewater generated in the Paia region is conveyed to the Wailuku-Kahului Wastewater Reclamation Facility (WKWWRf). The WKWWRf has a design capacity of 7.9 million gallons per day. There are no County wastewater facilities servicing the Haiku area. Wastewater disposal in the Haiku region is accommodated via cesspools or individual wastewater treatment systems such as septic tanks and leach fields. There are no County or private wastewater treatment facilities at the project site.

b. Potential Impacts and Mitigation Measures

The proposed improvements at the Hamakuapoko Well Nos. 1 and 2 will not generate any wastewater flow and will not affect existing wastewater collection and treatment systems in the area.

4. Drainage

a. Existing Conditions

A Preliminary Drainage Report was prepared for the proposed project by the DWS in November 2012. **See Appendix "F"**. The project site is located in Flood Zone X, an area of minimal flooding. Storm water runoff at the two (2) well sites flows downslope into the surrounding sugarcane fields following existing topographic conditions.

Under existing conditions, the 0.14-acre water storage tank site adjacent to Well No. 2 generates runoff at a rate of 0.2 cubic feet per second (cfs) during the 10-year, 1-hour storm event.

b. Potential Impacts and Mitigation Measures

The proposed project involves limited replacement, repair, and maintenance activities at the existing Hamakuapoko Well Nos. 1 and 2 sites as well as the construction of a new water tank. The 0.14-acre water storage tank site adjacent to Well No. 2 will include 0.02 acre for the proposed tank, 0.06 acre for the driving surface, and 0.06 acre that will be grassed. With these proposed improvements, the runoff rate from the site will be 0.5 cfs during the 10-year, 1-hour storm event, an increase of 0.3 cfs. The increased runoff will be captured by a perimeter concrete swale and conveyed to an existing drainage ditch in the surrounding sugarcane fields north of the existing Hamakuapoko No. 2 well site. Construction of the proposed water storage tank is not expected to cause any significant adverse effects to adjacent properties. Added storm runoff due to the construction of the new tank will be negligible when compared to the runoff from the existing parcel. Any additional runoff will follow the existing drainage patterns upon leaving the tank site. Refer to **Appendix "F"**.

5. Electrical, Telephone and Cable Services

a. Existing Conditions

A Preliminary Engineering Report was prepared by DWS for the proposed project in November 2012. Electrical services are currently provided at the two (2) existing well sites. Telephone and cable services are not required for the wells. See **Exhibit "F-1"**.

b. Potential Impacts and Mitigation Measures

The electrical demand for the re-opened wells is anticipated to be the same as demand when the wells were in operation. There may be a need for new motor control units and other wiring, but there should not be a need to increase the electrical capacity of the sites. As such, adverse impacts to electrical services are not anticipated. Refer to **Exhibit "F-1"**.

E. CUMULATIVE AND SECONDARY IMPACTS

1. Context for Cumulative Impact Analysis

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

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

A key element to understanding the requirements for assessing cumulative impacts, therefore, is the need to recognize what constitutes “reasonably foreseeable future actions.” In the context of the proposed improvements to and reopening of the Hamakuapoko Well Nos. 1 and 2, a reasonably foreseeable future action is the potential use of the Pookela Well for full-time production for consumers in the Upcountry Water System (UCWS) service area. The Pookela Well is currently utilized as a back-up to the UCWS. However, when the Hamakuapoko Well Nos. 1 and 2 are reopened and function as the back-up water source for the UCWS, the Pookela Well will be available for full-time production.

In March 1993, the UCWS was found to have insufficient water supply to meet fire protection, domestic, and irrigation needs and new meters could not be issued without detriment to the existing services in the area. As a result, starting on November 2, 1994, the DWS has maintained a priority list of applicants waiting for water service. There are currently 1,470 applicants on the priority list. When the Pookela Well is no longer needed as a back-up water source and is put into full-time production for the UCWS, it is anticipated that the DWS will have the ability to issue new water meters to households on the priority list. The issuance of new water meters will allow for new residential construction in the UCWS service area and may also serve existing residences on the priority list that are currently not serviced by the County system.

Where applicable, therefore, the analysis of cumulative impacts will consider the issuance of new water meters to households in the UCWS service area, together with the past and present actions as represented by the existing conditions in the UCWS service area.

2. Cumulative Impact Evaluation Parameters

To ensure that cumulative impacts are analyzed in a structured and systematic manner, parameters described in **Table 1** have been used to address cumulative effects. These parameters are based on cumulative analysis guidance provided under the National Environmental Policy Act.

Table 1. Criteria for Evaluating Cumulative Impacts

Assessment Criteria	Basis for Impact Evaluation
Time Crowding	Effects of frequent and repetitive actions on the environment
Time Lags	Delayed effects of a proposed action
Space Crowding	Effects of spatial density on the environment
Cross Boundary	Effects of an action occurring away from the source
Fragmentation	Effects or changes in landscape pattern
Compounding Effects	Effects arising out of multiple pathways
Indirect Effects	Secondary effects
Triggers and Thresholds	Effects defined by agency laws, policies or regulations.

3. Methodology for Addressing Cumulative Impacts

A list of cumulative impact issues and concerns were identified considering the scope of a “cumulative impact” analysis, as set forth in Section 11-200-2 of the Hawaii Administrative Rules, Chapter 200. Issues and concerns relating to cumulative impacts, as well as secondary impacts are listed below.

1. Impacts on natural resources, particularly the underlying Paia Aquifer and nearby streams
2. Impacts upon the County’s Water Use and Development Plan strategies
3. Impacts of the project upon the existing UCWS service area
4. Impacts upon infrastructure systems serving the UCWS service area

5. Impacts of the proposed action on neighboring land uses

The next step in the analysis involved the identification of applicable evaluative criteria to each of the issues and concerns identified. This step resulted in the formulation of an evaluative criteria matrix, as presented in **Table 2**.

Table 2. Cumulative Impact Issues/Concerns and Applicable Assessment Criteria

Assessment Criteria	Impact Issues/Concerns
Time Crowding	a. Impacts to natural resources
Time Lags	a. Effects on County’s Water Use and Development Plan b. Impacts to natural resources
Space Crowding	a. Impacts to existing UCWS service area
Cross Boundary	a. Impacts to existing UCWS service area
Fragmentation	a. Impacts to neighboring land uses
Compounding Effects	a. Impacts to infrastructure systems
Indirect Effects	a. Impacts to existing UCWS service area b. Impacts to infrastructure system
Triggers and Thresholds	a. Impacts to natural resources

4. Cumulative Impact Analysis

Based on the methodology described in the previous section, an analysis of each issue/concern was undertaken in the context of the applicable assessment criteria. The analysis is presented below.

a. Impacts on Natural Resources

This Draft EA has assessed the impacts of the proposed Hamakuapoko Well Nos. 1 and 2 improvements on natural resources, including the underlying aquifer system and nearby streams. From a cumulative impact perspective, the impacts on natural resources are also analyzed in the context of time crowding, time lags, and triggers and thresholds.

Time crowding refers to the repetitive and frequent effects from an action

upon a particular component of the environment. The time crowding effect associated with the reopening of the Hamakuapoko Well Nos. 1 and 2 includes potential impacts to the underlying aquifer system and nearby Maliko Gulch resulting from the repetitive pumping of groundwater at the wells. As discussed previously, impacts to the underlying aquifer and water quality tests were previously assessed when the Final Environmental Assessment was prepared to construct improvements to convert the Hamakuapoko Well Nos. 1 and 2 from exploratory wells to production wells. Tests demonstrated high hydraulic conductivity at the well sites, indicating that the wells are highly favorable for extraction of groundwater (Mink & Yuen, Inc., 1999).

Time lag effects refer to changes to the environment which may occur over a longer duration. Such effects, for example, may include changes in microclimates resulting from changes in land cover characteristics. Such changes may not be immediately identified, but may, over a period of time become apparent. The Hamakuapoko Well Nos. 1 and 2 operated from December 2000 to October 2004 when pumping ended. This four-year period of operation provided an opportunity to assess the impacts of pumping at this site over time. Generally, chloride concentration trends are used as an indicator of the influence of pumped wells on aquifer conditions. For drinking water, the EPA established a maximum contaminant level of 250 mg/l for chloride. Water analysis from 2000 to 2004 shows that chloride levels at the Hamakuapoko Well Nos. 1 and No. 2 are below the EPA maximum contaminant level, and range between 74 to 110 mg/l.

Triggers and thresholds refer to impacts which may be tied to indicators established through laws, policies, regulations, or standards. Triggers and thresholds may include standards which identify key indicators which, when exceeded, would require special study or mitigation efforts. In a traffic analysis, for example, the Level of Service "F" reflects a worst case condition in terms of traffic operations and such a level of service would require that traffic mitigation be implemented to bring conditions back within the acceptable range of operations. With regard to the proposed project, impacts to the underlying aquifer system are analyzed in the context of trigger and thresholds. The Hamakuapoko Well Nos. 1 and 2 are located within the Paia Aquifer. According to the Water Resource Protection Plan prepared for the

State Commission on Water Resource Management (CWRM) in 2008, the sustainable yield for the Paia Aquifer is 7 mgd. It is noted that this sustainable yield of 7 mgd is based on basal groundwater only and does not account for significant importation of surface water into Paia from outside the aquifer system area. This explains the ability to withdraw freshwater from the aquifer at significantly higher rates than the sustainable yield without negative impacts such as rising chloride concentrations or decreasing water levels.

b. Impacts on the County's Water Use and Development Plan Strategies

From a local planning standpoint, the future context for water use and development is established by the Water Use and Development Plan (WUDP) and the Maui County General Plan. The General Plan defines parameters for growth while the WUDP provides a means for meeting the needs of this planned growth. Maui County requires a WUDP update each time the County General Plan is amended or revised. As the County's General Plan is currently being updated, DWS is in the process of updating its WUDP. A Draft Upcountry District Final Candidate Strategies Report has been prepared to assess the major strategies to be considered for the UCWS in the Maui County WUDP. Impacts to the County WUDP are analyzed in the context of time lags.

As discussed earlier, time lag effects relate to changes to the environment which may occur over a longer duration. With regard to the WUDP, the impacts of reopening of the Hamakuapoko Well Nos. 1 and 2 may not be apparent until future source testing and development occurs in that aquifer. "The Upcountry District Final Candidate Strategies Report" identifies strategies for meeting future water needs in the Upcountry district. The final candidate strategies identified for the Upcountry District include incremental basal well development and "drought-proof" full basal well backup, along with several other strategies. The future development of basal wells will be subject to the State Water Code, Chapter 174C, Hawaii Revised Statutes, as administered by the Commission on Water Resource Management (CWRM). As such, in terms of time lag, processes are in place to ensure that the water resources of the underlying Paia Aquifer are adequately protected.

c. Impacts of the Project upon the Existing UCWS Service Area

The proposed project will allow for the use of the Pookela Well, which currently serves as a backup water source, as a full-time production well. This will allow the DWS to issue new water meters to those properties on the priority list. The issuance of new water meters will allow for new construction in the UCWS service area. New development in the existing UCWS service area resulting from the issuance of new water meters is analyzed in the context of space crowding, cross boundary impacts, and indirect or secondary effects.

Cross boundary effects refer to effects of an action occurring away from the source. In this case, cross boundary effects could include changes in the existing UCWS service area as a result of the reopening of the Hamakuapoko Wells and subsequent use of the Pookela Well for production. Space crowding refers to the effects of added density upon the existing UCWS service area. New development in the UCWS service area is guided by State and County land use planning policies and regulations. The State Land Use Commission establishes four (4) major land use districts in which all lands in the State are placed. The “Urban”, “Rural”, “Agricultural”, and “Conservation” districts guide the type of land uses allowed.

The Maui County General Plan, as set forth in Chapter 2.80B of the Maui County Code, provides for the update of the County General Plan. The General Plan is a long-term, comprehensive blueprint for the physical, economic, environmental development and cultural identity of the County through 2030. The components of the General Plan include the following:

- The Countywide Policy Plan provides broad policies and objectives which portrays the desired direction of the County’s future. It includes a countywide vision statement of core principles, and objectives and policies for population, land use, the environment, the economy, and housing. Specific countywide policies and objectives supporting the proposed project are presented in Chapter III of this EA document.
- The Maui Island Plan (MIP) provides a land use strategy, water assessment, nearshore ecosystem assessment, an implementation strategy, and milestone measurements. Within the land use strategy,

a Managed and Directed Growth Plan will identify existing and future land use patterns and determine planned growth.

- The nine (9) Community Plans provide implementing actions based on consistency with the Countywide Policy Plan and MIP's vision, goals, objectives, and policies. The Paia-Haiku Community Plan was last updated in 1995, while the Makawao-Pukalani-Kula Community Plan, which covers areas also within the UCWS, was updated in 1996.

The Directed Growth Plan, which is a key element of the MIP, provides a framework for managing outcomes of growth based on analysis of natural hazards, sensitive lands, cultural resources, scenic corridors, and related environmental and human community parameters. An important result of the Directed Growth Plan is the preparation and adoption of maps that delineate urban and rural growth areas. Referred to as Urban and Rural Growth Boundaries, these maps establish the boundaries for the physical limits of development. In doing so, the Directed Growth Plan seeks to manage the use of non-urban and non-rural resources important in sustaining the island to the year 2030. Following adoption of the MIP, the proposed Urban and Rural Growth Boundaries will provide the basis for the implementation of the General Plan, as mandated by the County Charter. The current Draft of the Maui Island Plan envisions the development of up to 1,476 new residential units in designated growth areas in the Makawao-Pukalani-Kula region and 275 new units in growth areas in Paia and Haiku through 2030. The issuance of new water meters from the full-time production at the Pookela Well will accommodate a portion of the planned growth envisioned by the General Plan.

Growth induced in the UCWS service area by the reopening of the Hamakuapoko Well Nos. 1 and 2 and issuance of new water meters based on full-time production at the Pookela Well represents a crossboundary impact, or an effect that occurs away from the source or project site. The induced growth also represents an indirect or secondary effect. As discussed above, this new growth will be undertaken in the context of objectives and policies of the County General Plan as well as the State Land Use Commission. In this regard, the crossboundary impacts and indirect and secondary effects will be managed through State and County planning policies and regulatory processes for future development actions associated with issuance of new

water meters to Upcountry residents.

d. **Impacts Upon Infrastructure Systems Serving the UCWS Service Area**

As established previously, the proposed improvements to the Hamakuapoko Well Nos. 1 and 2 will allow for the issuance of new water meters from the additional source provided by the Pookela Well, which will be available for full-time production. Growth associated with the new water meters may have impacts on the infrastructure systems serving the UCWS service area. The impacts upon infrastructure systems represents an indirect effect and is also analyzed in the context of compounding effects.

Compounding effects relate to the additive and synergistic effects of impacts arising out of multiple pathways. For example, the implementation of a new highway which will ultimately serve new residential communities must be analyzed not only in terms of the highway itself, but also the reasonably foreseeable future residential units which may develop as a result of the new highway. With respect to the Hamakuapoko Well Nos. 1 and 2 improvements, the additive effects on infrastructure systems are related to the impact of new development resulting from the issuance of new water meters.

The County General Plan and the MIP's Directed Growth Strategy in particular seeks to guide future development to manage the use of important non-urban and non-rural resources. The Urban and Rural Growth Boundaries will take into account future growth projections as well as the availability of infrastructure and services. The improvements to the Hamakuapoko Well Nos. 1 and 2 and resulting issuance of new water meters from the Pookela Well will serve to accommodate future development envisioned by the General Plan. Impacts to other infrastructure systems serving the UCWS service area will be managed through the MIP's Directed Growth Strategy.

e. **Impacts of the Proposed Action on Neighboring Land Uses**

Impacts of the proposed project on neighboring land uses is analyzed in the context of fragmentation. Fragmentation refers to changes to landscape patterns as a result of a proposed action. For example, fragmentation may result from the construction of a new highway through a habitat area, where the functional continuity of the habitat may be disrupted. In the case of the

proposed improvements to the Hamakuapoko Well Nos. 1 and 2, the well sites are existing infrastructure improvements surrounded by agricultural fields. The project is primarily limited to the repair and replacement of existing infrastructure at the well sites. However, a new water storage tank will also be developed on approximately 0.14 acre of land across an existing access road of the Well No. 2 site. This area will be adjacent to the existing Well No. 2 site and represents a minimal amount of land. Because the proposed tank will be adjacent to existing infrastructure, it will not result in the segmentation of agricultural fields cultivated by HC&S.

In conclusion, the proposed improvements to and reopening of the Hamakuapoko Well Nos. 1 and 2 are not anticipated to result in significant adverse cumulative or secondary impacts. The project is not a direct population generator and any future growth within the Upcountry area will be controlled by the Maui County General Plan and the Maui County Council and will not be due directly to allowing for the use of the Hamakuapoko wells for agricultural use, use during declared drought events, and as back-up to the UCWS.

**III. RELATIONSHIP TO
GOVERNMENTAL PLANS,
POLICIES AND
CONTROLS**

III. RELATIONSHIP TO GOVERNMENTAL PLANS, POLICIES AND CONTROLS

A. STATE LAND USE DISTRICTS

Chapter 205, Hawaii Revised Statutes, relating to the Land Use Commission (LUC), establishes the four (4) major land use districts in which lands in the State are placed. These districts are “Urban”, “Rural”, “Agricultural”, and “Conservation”.

The project sites are located within the State “Agricultural” district. See **Figure 11**. It is noted that each county may define accessory agricultural uses and services permitted in State Land Use “Agricultural” districts through their zoning ordinances (Chapter 205-5-(b), Hawaii Revised Statutes). The County of Maui Zoning Ordinance identifies “minor utility facilities”, which are defined to include water wells, tanks and distribution equipment, as a principal permitted use in the agricultural district (Maui County Code, Section 19.30.A.050, *Permitted Uses*). Thus the proposed improvements to the Hamakuapoko Well Nos. 1 and 2 are permitted within the State “Agricultural” district.

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 project 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.*
- *A desired physical environment, characterized by beauty, cleanliness, quiet, stable natural systems, and uniqueness, that enhances the mental and physical well-being of the people.*

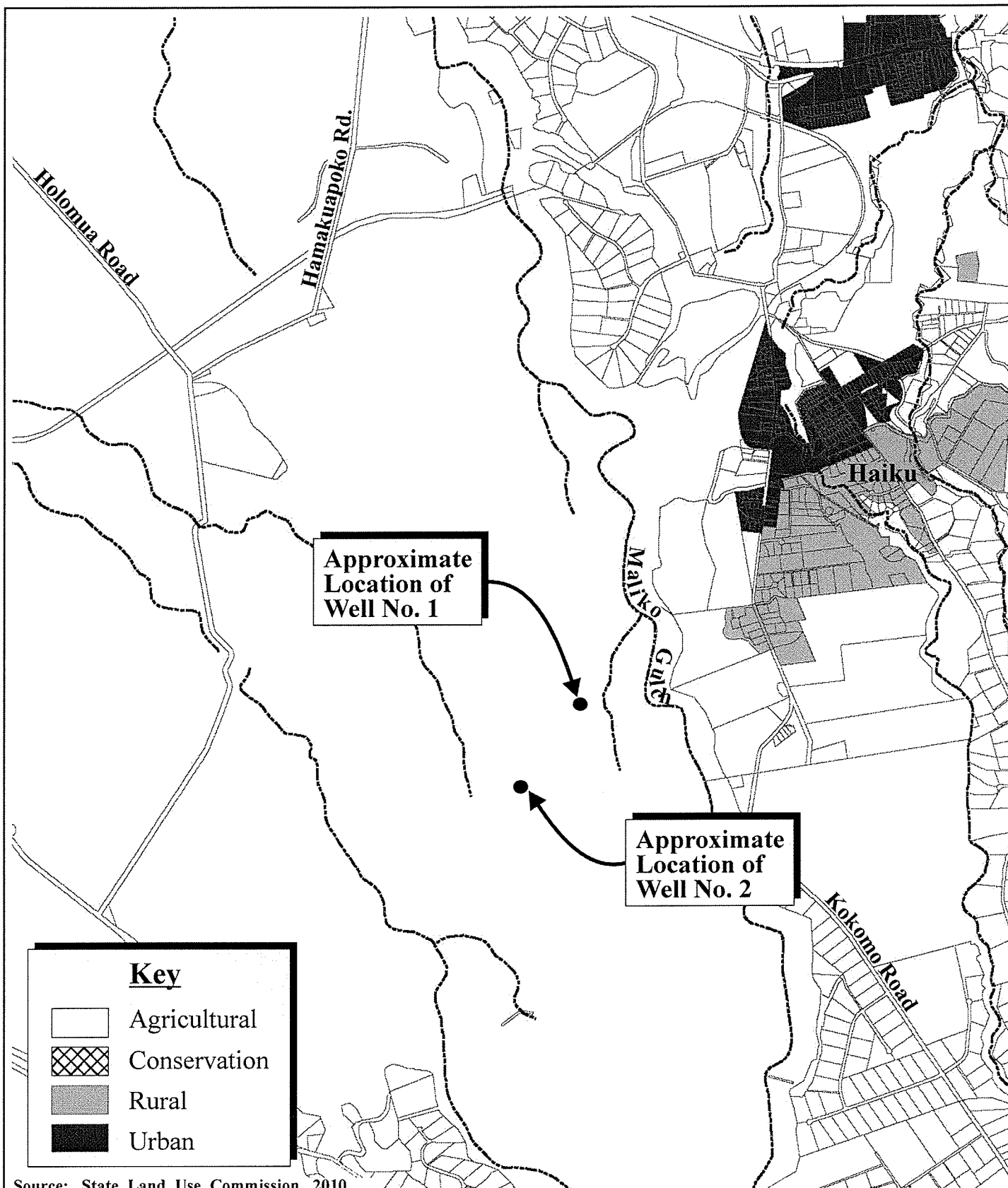
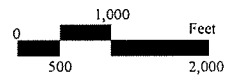


Figure 11 Proposed Improvements at Hamakuapoko Well Nos. 1 and 2
State Land Use District Map



- *Physical, social, and economic well-being, for individuals and families in Hawaii, that nourishes a sense of community responsibility, of caring, and of participation in community life.*

1. **Objectives and Policies of the Hawaii State Plan**

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

Chapter 226-14, HRS, Objective and policies for 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.

226-14 (b)(2), HRS: Encourage flexibility in the design and development of facility systems to promote prudent use of resources and accommodate changing public demands and priorities.

226-14 (b)(3), HRS: Ensure that required facility systems can be supported within resource capacities and at a reasonable cost to the user.

Chapter 226-16, HRS, Objective and policies for facility systems--water.

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

226-16 (b)(5), HRS: Support water supply services to areas experiencing critical water problems.

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

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

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

226-104(a)(1), HRS: Encourage planning and resource management to insure that population growth rates throughout the State are consistent with

available and planned resource capacities and reflect the needs and desires of Hawaii's people.

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. The Countywide Policy Plan was adopted as Ordinance No. 3732 on March 24, 2010. The Draft Maui Island Plan, which delineates areas for future urban and rural growth as part of a Directed Growth Strategy, is currently in the process of review and adoption 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 Hamakuapoko Well Nos. 1 and 2 improvements, the following goals, objectives, policies and implementing actions are illustrative of the project's compliance with the Countywide Policy Plan.

PROTECT THE NATURAL ENVIRONMENT

Goal:

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

Objective:

- *Improve the stewardship of the natural environment.*

Policies:

- *Evaluate development to assess potential short-term and long-term impacts on land, air, aquatic, and marine environments.*

IMPROVE PHYSICAL INFRASTRUCTURES

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.*

Policies:

- *Develop and fund improved water-delivery systems.*
- *Ensure a reliable and affordable supply of water for productive agricultural*

uses.

- *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:

- *Direct growth in a way that makes efficient use of existing infrastructure and to areas where there is available infrastructure capacity.*

Policy:

- *Capitalize on existing infrastructure capacity as a priority over infrastructure expansion.*

Objective:

- *Improve the planning and management of infrastructure systems.*

Policies:

- *Provide a reliable and sufficient level of funding to enhance and maintain infrastructure systems.*
- *Improve coordination among infrastructure providers and planning agencies to minimize construction impacts.*
- *Ensure that infrastructure is built concurrent with or prior to development.*

In summary, the proposed project is consistent with the themes and principles of the Countywide Policy Plan.

D. PAIA-HAIKU COMMUNITY PLAN

Within Maui County, there are nine (9) community plan regions. From a General Plan implementation standpoint, each region is governed by a Community Plan which sets forth desired land use patterns, as well as goals, objectives, policies, and implementing actions for a number of functional areas.

The project site is located within the Paia-Haiku region and occupies lands designated as “AG, Agriculture” in the Community Plan. See **Figure 12**.

The proposed project is consistent with the following goals, policies, and objectives of the Community Plan:

PHYSICAL INFRASTRUCTURE

WATER

Goal

An adequate supply of potable and irrigation water to meet the needs of the region.

Objectives and Policies

- *Increase water storage capacity with a reserve for drought periods.*
- *Ensure that adequate water capacity is available for domestic and agricultural needs of the region.*
- *Improve the existing potable water distribution system and develop new potable water sources prior to further expansion of the State Urban District boundary or major subdivision of land in the State Agricultural or Rural Districts.*

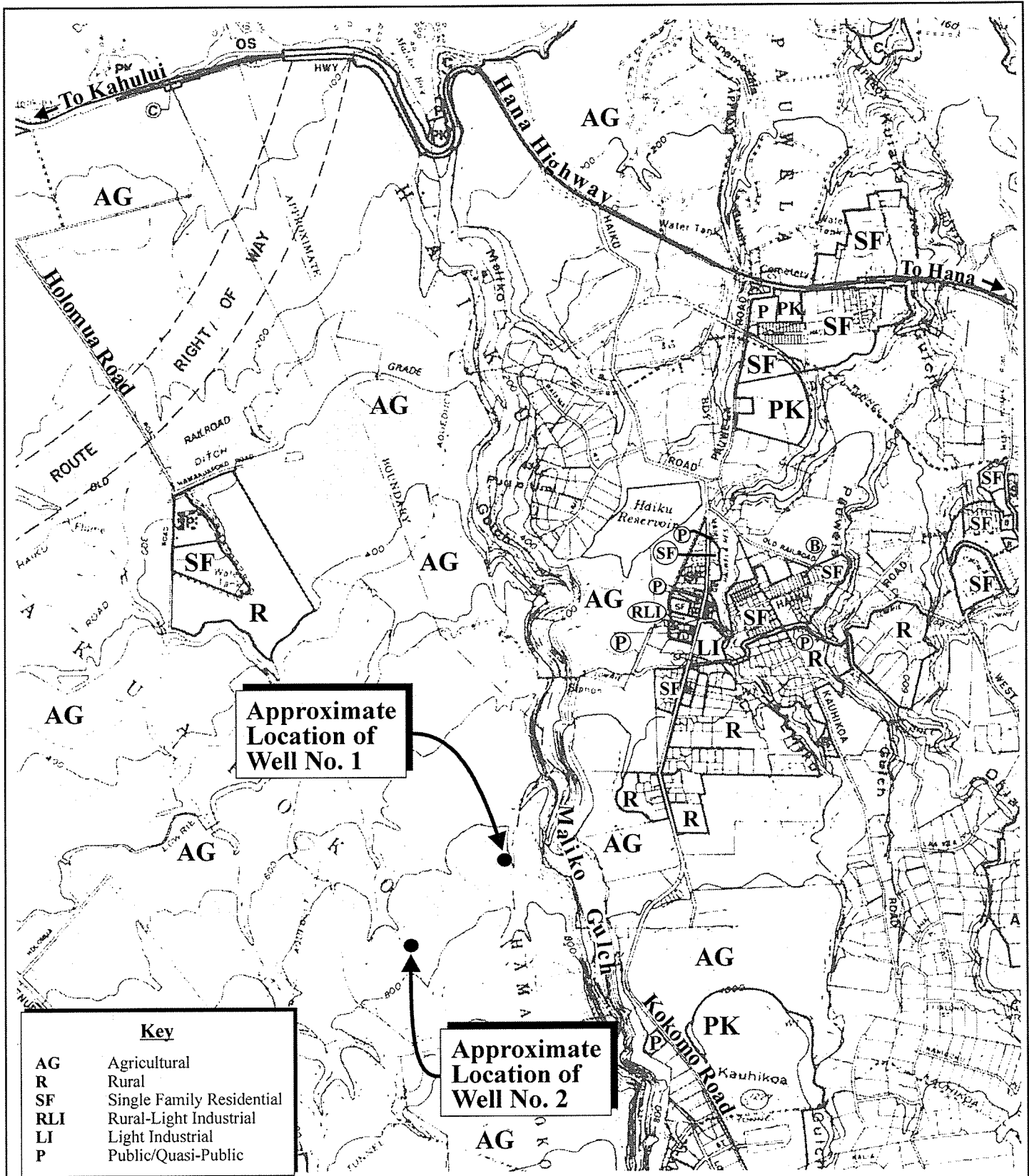
GOVERNMENT

Goal

Government that demonstrates the highest standards of fairness and is responsive to the needs of the community, fiscally responsible and prudent, effective in planning and implementing programs to accommodate anticipated growth, fair and equitable in taxation, strict in the implementation of the Community Plan, and managed efficiently to provide coordinated and timely responses and the delivery of necessary services and programs to the public.

Objectives and Policies

- *Coordinate, direct and manage future development, and provide for necessary public services and infrastructure in a more effective and timely fashion.*



Source: County of Maui, Paia-Haiku Community Plan

Figure 12 Proposed Improvements at Hamakuapoko Well Nos. 1 and 2
Paia-Haiku Community Plan Map

NOT TO SCALE



MUNEKIYO & HIRAGA, INC.

Prepared for: County of Maui, Department of Water Supply

- *Require that actions taken by public officials, boards or commissions of the County of Maui be in compliance with the goals, objectives and policies of the Community Plan.*

E. ZONING

The subject property is designated as “Agricultural” by Maui County Zoning. Minor utility facilities are permitted within the “Agricultural” district. Section 19.04.040 of the Maui County Code defines minor utility facilities as “*transmission lines used directly in the distribution of utility services that have minor impact on adjacent land uses which include, but which are not limited to, twenty-three kilovolt transmission substations, vaults, water wells, tanks and distribution equipment, sewage pump stations, and other similar type uses*”. The existing Hamakuapoko Wells Nos. 1 and 2 and proposed improvements are permitted by Maui County Zoning.

F. MAUI COUNTY WATER USE AND DEVELOPMENT PLAN

Hawaii State Law requires each County to prepare, periodically update, and adopt a Water Use and Development Plan (WUDP) to serve as the long-range planning blueprint for all water uses in each County. Maui County requires a WUDP update each time the County General Plan is amended or revised. As the County’s General Plan is currently in the process of being adopted, DWS is in the process of updating its WUDP. DWS is in the process of analyzing the major strategies to be considered for the District in the Maui County WUDP. DWS is coordinating with the CWRM to present the analysis of major strategies for public review.

According to the analysis, water consumption for the UCWS is expected to grow from 7.2 mgd in 2005 to 8.8 mgd in 2030. Water production requirements are established at approximately 10 percent higher than consumption requirements to account for unmetered uses such as fire protection and line flushing as well as system losses. The analysis presented five (5) final candidate strategies for addressing the projected water production requirements. These strategies included:

1. Incremental Basal Well Development
2. Expansion of Raw Water Storage Capacity

3. “Drought-Proof” Full Basal Well Backup
4. Improved Kamole Water Treatment Plant Capacity
5. Limited Growth with Extensive Conservation Measures

The “Drought-proof” full basal well backup strategy calls for new basal groundwater wells to provide sufficient water to meet projected UCWS water demand assuming limited or no availability of water from surface water sources. While the proposed improvements to and reopening of the Hamakuapoko Well Nos. 1 and 2 do not represent new basal well development or development of new backup wells, the reopening of the wells will provide for water for agricultural use, use during declared drought events, and as backup to the UCWS at a lower cost than any other strategy.

Analysis of the five (5) candidate strategies was conducted to develop a Recommended Upcountry District Plan. The Plan identified the pressing need for additional water production capacity. The proposed improvements to and reopening of the Hamakuapoko Wells will provide additional production capacity by making the Pookela Well, which is currently used as backup, available for production.

G. COASTAL ZONE MANAGEMENT OBJECTIVES AND POLICIES

The Hawaii Coastal Zone Management Program (HCZMP), as formalized in Chapter 205A, HRS, establishes objectives and policies for the preservation, protection, and restoration of natural resources of Hawaii’s coastal zone. The project site lies over two (2) miles away from the coast, outside of the County of Maui’s Special Management Area (SMA).

Although a SMA Use permit is not required for the project, this section addresses the project’s relationship to applicable coastal zone management considerations, set forth in Chapter 205A, Hawaii Revised Statutes.

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 a long shorelines with recreational value;*
 - iv. *Providing an adequate supply of shoreline parks and other recreational facilities suitable for public recreation;*
 - v. *Ensuring public recreational uses of county, state, and federally owned or controlled shoreline lands and waters having recreational value consistent with public safety standards and conservation of natural resources;*
 - vi. *Adopting water quality standards and regulating point and 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, and county authorities; and crediting such dedication against the requirements of Section 46-6.*

Response: The proposed project which is over two (2) miles away from the coastal area is not anticipated to result in adverse impacts to existing coastal or inland recreational resources. The project is not anticipated to limit or compromise any existing shoreline recreational activity.

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: The proposed project is not anticipated to have an adverse effect on historic or cultural resources. An archaeological field inspection conducted for the proposed project found no historic properties or surface cultural remains and concluded that the project would not have an adverse impact on any significant historic properties.

Should any cultural or historical materials be uncovered during construction-related activities, work shall be halted in the area of the find and SHPD shall be notified for determination of appropriate mitigation measures.

The Cultural Assessment Report concludes that the exercise of native Hawaiian rights, or any ethnic group, related to gathering, access or other customary activities will not be significantly affected by the proposed project, and that the project area has not been used in recent times for traditional cultural purposes.

3. Scenic and Open Space Resources

Objective:

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

Policies:

- (a) *Identify valued scenic resources in the coastal zone management area;*
- (b) *Ensure that new developments are compatible with their visual environment by designing and locating such developments to minimize the alteration of natural landforms and existing public views to and along the shoreline;*
- (c) *Preserve, maintain, and, where desirable, improve and restore shoreline open space and scenic resources; and*
- (d) *Encourage those developments that are not coastal dependent to locate in inland areas.*

Response: The proposed project primarily involves the repair and replacement of existing infrastructure at the Hamakuapoko Well Nos. 1 and 2 sites. A new 150,000 gallon water tank measuring approximately 35 feet in diameter and 20 feet in height is proposed on 0.14 acre of land at Well No. 2. Like the other existing infrastructure at the well sites, the proposed water tank will not be visible from Holomua Road or Hamakuapoko Road and is not in a scenic vista. As such, adverse impacts to scenic and open space resources are not anticipated as a result of the proposed project.

4. Coastal Ecosystems

Objective:

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

Policies:

- (a) *Exercise an overall conservation ethic, and practice stewardship in the protection, use, and development of marine and coastal resources;*
- (b) *Improve the technical basis for natural resource management;*

- (c) *Preserve valuable coastal ecosystems, including reefs, of significant biological or economic importance;*
- (d) *Minimize disruption or degradation of coastal water ecosystems by effective regulation of stream diversions, channelization, and similar land and water uses, recognizing competing water needs; and*
- (e) *Promote water quantity and quality planning and management practices that reflect the tolerance of fresh water and marine ecosystems and maintain and enhance water quality through the development and implementation of point and nonpoint source water pollution control measures.*

Response: The proposed project is not anticipated to result in significant, adverse impacts to coastal ecosystems. The Hamakuapoko Wells Nos. 1 and 2 are located over two (2) miles away from the coast. Nevertheless, Best Management Practices (BMPs) will be implemented during the construction of the proposed improvements to mitigate potential impacts to the coastal environment.

5. Economic Uses

Objective:

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

Policies:

- (a) *Concentrate coastal dependent development in appropriate areas;*
- (b) *Ensure that coastal dependent development such as harbors and ports, and coastal related development such as visitor industry facilities and energy generating facilities, are located, designed, and constructed to minimize adverse social, visual, and environmental impacts in the coastal zone management area; and*
- (c) *Direct the location and expansion of coastal dependent developments to areas presently designated and used for such developments and permit reasonable long-term growth at such areas, and permit coastal dependent development outside of presently designated areas when:*
 - i. *Use of presently designated locations is not feasible;*
 - ii. *Adverse environmental effects are minimized; and*

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

Response: The proposed project is not a coastal dependent development. There will be no coastal development in the implementation of this project. The project will provide short-term economic benefits during the construction-phase. From a long-term perspective, the proposed improvements will provide enhanced system reliability in the Upcountry Water System to better serve residents and businesses in the region.

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; and*
- (d) *Prevent coastal flooding from inland projects.*

Response: The subject property is not located in a tsunami zone. It is located in Flood Zone X, an area of minimal flooding action and without developmental restrictions. As such, adverse impacts related to flood and tsunami hazards are not anticipated as a result of the proposed project.

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: A Final EA was prepared in 1999 for conversion of the Hamakuapoko Wells from exploratory wells into production wells. Public input opportunities were provided during preparation of the 1999 Final EA and issuance of the Finding of No Significant Impact (FONSI) Determination. Further, opportunities for public involvement are being provided as part of the Chapter 343 EA review process for the current proposed well improvements.

8. Public Participation

Objective:

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

Policies:

- (a) *Promote public involvement in coastal zone management processes;*
- (b) *Disseminate information on coastal management issues by means of educational materials, published reports, staff contact, and public workshops for persons and organizations concerned with coastal issues, developments, and government activities; and*
- (c) *Organize workshops, policy dialogues, and site-specific mediations to respond to coastal issues and conflicts.*

Response: As mentioned above, public awareness and participation opportunities were provided during preparation of the 1999 Final EA and will be further facilitated through the Chapter 343, HRS process for the subject improvements.

9. Beach Protection

Objective:

Protect beaches for public use and recreation.

Policies:

- (a) *Locate new structures inland from the shoreline setback to conserve open space, minimize interference with natural shoreline processes, and minimize loss of improvements due to erosion;*
- (b) *Prohibit construction of private erosion-protection structures seaward of the shoreline, except when they result in improved aesthetic and engineering solutions to erosion at the sites and do not interfere with existing recreational and waterline activities; and*
- (c) *Minimize the construction of public erosion-protection structures seaward of the shoreline.*

Response: The proposed project is located over two (2) miles beyond the vicinity of the shoreline area and will not impact natural beach processes.

10. Marine Resources

Objective:

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

Policies:

- (a) *Ensure that the use and development of marine and coastal resources are ecologically and environmentally sound and economically beneficial;*
- (b) *Coordinate the management of marine and coastal resources and activities to improve effectiveness and efficiency;*
- (c) *Assert and articulate the interests of the State as a partner with federal agencies in the sound management of ocean resources within the United States exclusive economic zone;*
- (d) *Promote research, study, and understanding of ocean processes, marine life,*

and other ocean resources in order to acquire and inventory information necessary to understand how ocean development activities relate to and impact upon ocean and coastal resources; and

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

Response: The project is not located in the vicinity of the shoreline. The use of appropriate BMPs will be implemented during the construction of the proposed improvements to mitigate any potential impacts to marine resources.

In addition to the foregoing objectives and policies, Hawaii Revised Statutes (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:*
- (3) *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 located over two (2) miles from the shoreline. No impacts on the shoreline or ocean waters will occur with implementation of the project and its related improvements. The project will comply with applicable requirements of the County's Outdoor Lighting Ordinance.

**IV. SUMMARY OF
UNAVOIDABLE IMPACTS
ON THE ENVIRONMENT
AND RESOURCES**

IV. SUMMARY OF UNAVOIDABLE IMPACTS ON THE ENVIRONMENT AND RESOURCES

Project construction may result in certain unavoidable construction-related impacts, including noise-generated impacts and air quality impacts associated with the operation of construction equipment. Air quality may also be temporarily impacted by dust generated from site work. The construction-related impacts will be temporary and mitigated through implementation of appropriate Best Management Practices (BMPs).

The development of the proposed project will involve the commitment of approximately 0.14 acre of land currently utilized for sugarcane cultivation for construction of a new water tank. In addition, the proposed action would involve a commitment of fuel, labor, funding, and material resources. However, the commitment of resources necessary to implement the proposed project is considered justified, given the benefits associated with reopening the Hamakuapoko Wells.

In the long term, the reopening of the Hamakuapoko Well Nos. 1 and 2 is not anticipated to create any significant, long-term adverse environmental effects.

V. ALTERNATIVES TO THE PROPOSED ACTION

V. ALTERNATIVES TO THE PROPOSED ACTION

A. PREFERRED ALTERNATIVE

The proposed project involves the construction of the improvements to the existing Hamakuapoko Well Nos. 1 and 2 to allow for the wells to be reopened for agricultural use, use during declared drought events and as backup to the existing Upcountry Water System (UCWS). For these reasons, the proposed project has been selected as the preferred alternative, as it fulfills the intent of Ordinance No. 3859 (2011) passed by the Maui County Council in October 2011 and meets both the current and future needs of the UCWS region and its residents.

B. NO ACTION ALTERNATIVE

The “no action” alternative would result in the abandonment of the existing Hamakuapoko Well Nos. 1 and 2 and the loss of a readily available source of groundwater for agricultural use, use during declared drought events, and as backup for the UCWS. The Hamakuapoko Wells have already been tested and proven to be a desirable location for groundwater pumping based on drawdown tests conducted for the Paia Aquifer. The “no action” alternative would result in the under utilization of previously expended County funds that have already been invested in developing the infrastructure at the Hamakuapoko Wells. In addition, this alternative would not provide for groundwater for agricultural use, use during declared droughts and back up to the UCWS. As such, the “no action” alternative is not deemed appropriate given the recent adoption of Ordinance No. 3859 by the Maui County Council.

C. DEFERRED ACTION ALTERNATIVE

A “deferred action” alternative would have similar consequences to the “no action” alternative in terms of loss of County funds and infrastructure as well as underutilization of an available groundwater source. This alternative could also result in increased development costs due to higher costs resulting from deferred maintenance at the wells.

D. ALTERNATIVE TANK SITE LOCATION

The DWS considered several tank site alternatives for the new 150,000 gallon water storage tank at the Well No. 2 site and has consulted with Hawaiian Commercial & Sugar Company (HC&S) to identify an appropriate location for the tank. The preferred alternative involves the construction of a new water tank on 0.14 acre of land across an access road at the Well No. 2 site. Two (2) alternative tank locations were considered. Option A would have located the tank site east of the well site. However, existing utility lines and poles are located in this area and placing the new tank in this location would require the relocation of the utility poles. Option A would also have required the relocation of an existing cane access road. As such, this alternative location was not pursued. Option B, west of the well site, was also considered but was deemed inappropriate due to interference with an existing access road on the south side of the project site. The site presented in the preferred alternative (see **Figure 13**) was selected as it minimizes impacts on existing agricultural activities occurring around the site and also presents desirable topographic conditions that will require minimal grading to prepare the site for construction of the tank.

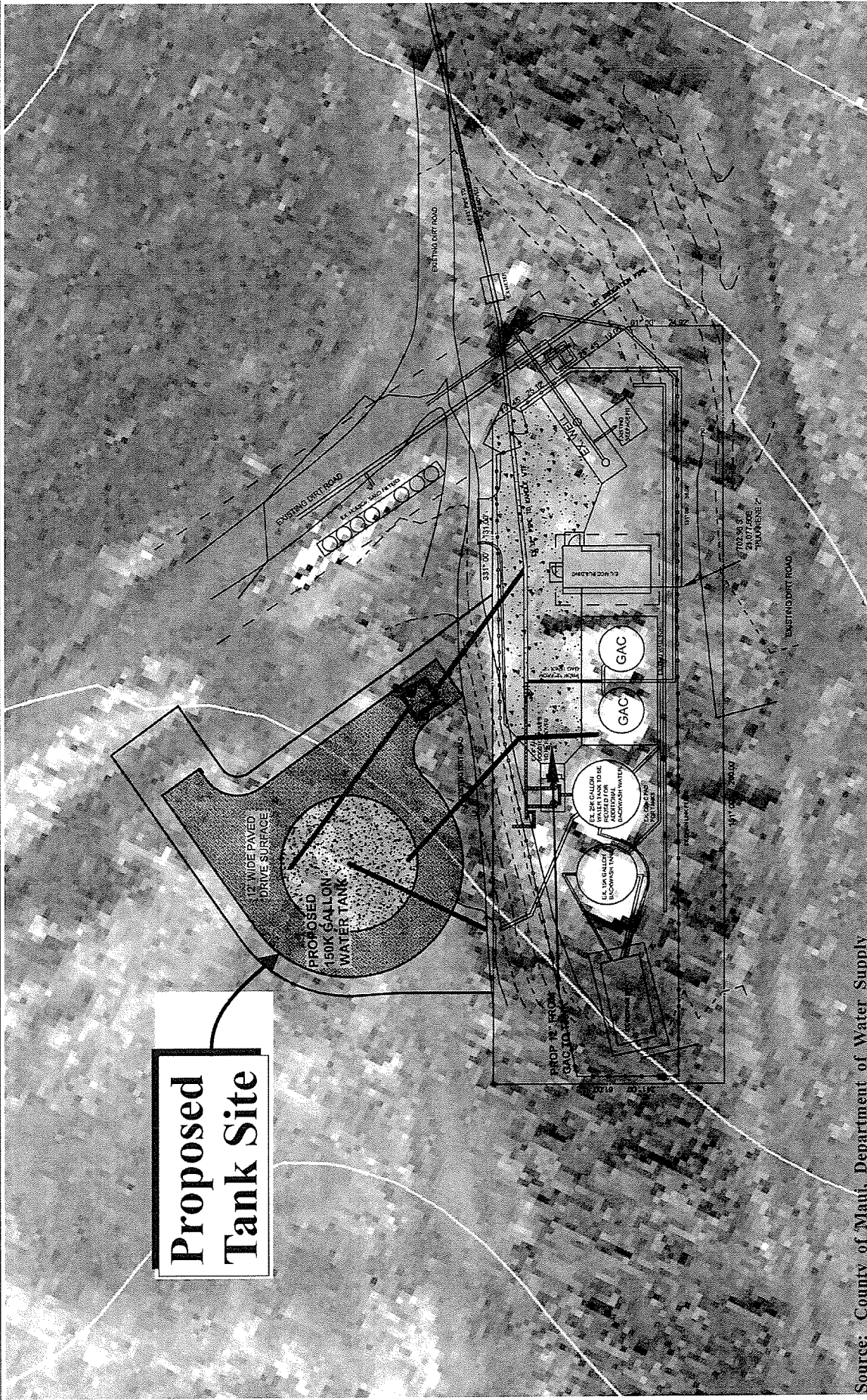
E. WATER AVAILABILITY ALTERNATIVES

The following two (2) alternatives have been evaluated by the DWS in an effort to increase water source availability for the UCWS.

1. Demand Side Management Alternative

The demand side management (DSM) alternative uses water conservation or efficiency-based measures that improve existing infrastructure to reduce or eliminate leaky pipes, reduce waste, or reduce use. The Division of Water Resources and Planning section of DWS has a number of programs to address DSM. They are listed below with a brief description:

- Leak Detection- The DWS has a proactive Leak Detection program surveying the infrastructure to locate pipe breaks, leaking pipes, leaking connections, etc.
- Annual Water System Audit- DWS conducts water audits on their own system to identify and correct areas showing high water loss.



**Proposed
Tank Site**

Source: County of Maui, Department of Water Supply

Figure 13

**Proposed Improvements at
Hamakuapoko Well Nos. 1 and 2
Tank Site Location at Well No. 2**



NOT TO SCALE

Prepared for: County of Maui, Department of Water Supply



COM/DWS Hamakuapoko Wells/Tank Site Well 2

- Residential Water Audit- DWS will provide assistance to residents with high water bills to evaluate the source of the high water use and assist in reducing the high water use areas, i.e., best management practice for irrigation use, repairing leaking customer laterals, etc.
- Fixture Retrofit- DWS has worked with high use customers to retrofit toilets and faucets to reduce water use.
- Public Education- DWS staff educates customers and keiki by visiting schools to teach students about the value of water, participates in community events, encourages water conservation by running ads in the paper and on radio, conducts a student water conservation poster contest, now in its third year.

The Division of Water Resources and Planning also helps to fund watershed protection projects for watersheds in Maui County. Projects involve restoring degraded watersheds through proper planting, eradicating invasive species, and fencing to better manage feral ungulate populations.

However, because the UCWS has been on mandatory water restrictions for years, large decreases in upcountry water use due to DSM efforts are not anticipated in the near term. The programs listed above help in many ways, but will not reduce water usage enough to be a competitive alternative to the improvements of the Hamakuapoko Wells and the utilization of Pookela Well in order to be considered a source with reliable back up for the UCWS. As such, DSM is not considered to be a viable alternative to the proposed improvements at the Hamakuapoko wells.

2. **New Source Development Alternatives**

The second alternative evaluated by DWS was the investigation of other potential sources for the UCWS including new surface water sources or groundwater sources.

a. **New Surface Water Source Development**

Surface water sources rely on rain water and the UCWS has in place surface water treatment facilities at Piiholo and Olinda along with raw water storage to maximize the water collected from surface water sources. Any alternative to increase surface water source would only increase reliability with the expansion of storage for raw water. The time and cost associated with development of new surface water sources is significantly greater than the

cost of improving an existing source facility such as the Hamakuapoko Wells due to factors such as land acquisition and planning and entitlement processing requirements. The development of a new surface water source is, therefore, not considered to be a viable alternative to the proposed action.

b. New Ground Water Source Development Alternative

DWS has also evaluated the option of pursuing new groundwater sources as an alternative to the proposed improvements at the Hamakuapoko Wells. Development of an alternate groundwater source would be similar to the surface water alternative in that it would require significant costs for planning, design, and land acquisition in comparison to the subject project. Further, there is the added risk that when developing groundwater sources the well may not yield the pumpage required for the source to be a viable operation. Regardless of the well location and elevation, operation costs would be essentially equal, based on the total height required to pump the water from sea level. Groundwater sits on top of seawater, at or near zero sea level, and the height required to pump the water to the UCWS is the same regardless of where the well is located. For any new groundwater source, a new tank for storage would be required, just as a tank will be needed for the Hamakuapoko wells improvements. Given that the Hamakuapoko wells have already been drilled and constructed, pursuit of a new alternative groundwater source development venture is not considered to be a cost effective option for the DWS at this time. DWS is prioritizing, where possible, projects that can improve existing infrastructure in order to ensure that existing sources can be utilized on a cost-effective basis. The development of a new ground water source is, therefore, not considered to be a viable alternative to the proposed action.

**VI. IRREVERSIBLE AND
IRRETRIEVABLE
COMMITMENTS OF
RESOURCES**

VI. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

The proposed improvements to the Hamakuapoko Well Nos. 1 and 2 are anticipated to result in the irreversible and irretrievable commitment of land and fiscal resources. Other resource commitments include energy, labor, and material resources. Impacts relating to the use of these resources should be minimal as pumpage of 1.5 mgd is not anticipated to present significant adverse impacts on the aquifer or degradation in water quality of the groundwater source, especially when weighed against the expected positive socio-economic benefits to be derived from the project, versus the consequences of taking no action.

In addition, the proposed project is not anticipated to require a substantial commitment of government services or facilities, nor is it anticipated to place additional demands on other services such as police, medical, and social care.

VII. SIGNIFICANCE CRITERIA ASSESSMENT

VII. SIGNIFICANCE CRITERIA ASSESSMENT

The significance criteria of Section 12, of the Administrative Rules of Title 11, Chapter 200, “Environmental Impact Statement Rules”, were reviewed and analyzed to determine whether the proposed project will have a significant adverse impact to the environment. The following analysis is provided:

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

An archaeological field inspection conducted for the proposed project found no historic properties or surface cultural remains and concluded that the project would not have an adverse impact on any significant historic properties. Refer to **Appendix “H”**. Should any cultural or historical materials be uncovered during construction-related activities, work shall be halted in the area of the find and SHPD shall be notified for determination of appropriate mitigation measures. The Cultural Impact Assessment for the project concluded that there are no impacts on cultural resources anticipated with the proposed action. Refer to **Appendix “I”**.

Impacts to the underlying aquifer and water quality tests were assessed when the wells were drilled as exploratory wells and when the wells were converted to production wells in 1999. The results of the tests at each well indicate that the basal aquifer is highly permeable and can accommodate substantial pumping rates without degrading the quality of water being pumped (Mink & Yuen, Inc., 1999).

As previously mentioned, the sustainable yield for the Paia Aquifer is 7 mgd. However, this sustainable yield is based on basal groundwater only and does not account for the significant importation of surface water into Paia from outside the aquifer system area through return irrigation recharge. This explains the ability to withdraw freshwater from the aquifer at significantly higher rates than the sustainable yield without negative impacts, such as rising chloride concentrations or decreasing water levels (Wilson Okamoto Corporation, 2008). Generally, chloride concentration trends are used as an indicator of the influence of pumped wells on aquifer conditions. For drinking water, the EPA established a maximum contaminant level

of 250 mg/l for chloride. Water analysis from 2000 to 2004 shows that chloride levels at the Hamakuapoko Well Nos. 1 and No. 2 are below the EPA maximum contaminant level and range between 74 to 110 mg/l.

The Biological Resources Study conducted by Robert Hobdy concludes that the proposed Hamakuapoko Well Nos. 1 and 2 improvements and new water tanks are not expected to have a significant adverse impact in this region. No Federally listed endangered or threatened species, any candidates for such listed status, or special plant habitats were found in the project area. Refer to **Appendix "G"**.

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

The proposed action is not anticipated to result in significant adverse environmental impacts. There will be no consequent curtailment of uses of the environment resulting from the proposed action.

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

The State's Environmental Policy and Guidelines are set forth in Chapter 344, Hawaii Revised Statutes (HRS). The proposed action is in consonance with the policies and guidelines of Chapter 344, HRS.

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

The proposed action would provide direct, short-term economic benefits during the construction phase. From a long-term perspective, the proposed improvements will provide enhanced system reliability in the Upcountry Water System to better serve residents and businesses in the region. There are no adverse long-term economic or social welfare impacts associated with the proposed action.

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

A Granular Activated Carbon (GAC), installed at Well No. 2 in 1999, treats

groundwater from both wells. In 2000, the State Department of Health approved the Hamakuapoko Well Nos. 1 and 2 for use as drinking water after treatment. Refer to **Appendix “C”**. When the wells are reopened, DWS will regularly monitor water quality to ensure that drinking water produced by the wells and treated by the GAC is in compliance with applicable water quality standards. No adverse impacts to public health are anticipated to result from the proposed action.

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

Adverse secondary or cumulative impacts are not anticipated as a result of the proposed project. The reopening of the Hamakuapoko Well Nos. 1 and 2 will allow the Pookela Wells to be used for full-time production and as a result will allow the DWS to issue new water meters in the Upcountry Water System service area. New development associated with these new water meters will be guided and managed by the County of Maui General Plan. The Directed Growth Strategy of the draft Maui Island Plan (MIP), including the Urban and Rural growth boundaries, incorporate future growth projections as well as the availability and expansion of infrastructure and services.

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

During project implementation, appropriate measures such as Best Management Practices (BMPs), will be utilized to mitigate potential adverse environmental impacts. The proposed action will have no substantial adverse impact to environmental quality.

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

As previously discussed, the Hamakuapoko Wells were initially proposed as part of the East Maui Water Development Plan (EMPLAN) to meet future water requirements for the Central Maui System. However, as previously discussed, the Final EIS and Final Supplemental EIS were ultimately accepted only for Phase 1 of the EMPLAN, which included the Hamakuapoko Wells. The two (2) wells were first put into operation to address the drought emergency in the UCWS. The proposed reopening of the wells is for agricultural use, use during declared drought event, and

as backup to the UCWS. In this context, the proposed action is not part of or linked to any larger action. The proposed project is not anticipated to create any considerable effects upon the environment.

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

The Biological Resource Survey report of the project area concludes that the proposed Hamakuapoko Well Nos. 1 and 2 improvements and new water tank are not expected to have a significant negative impact in this region. No Federally listed endangered or threatened plant species, any candidates for such listed status, or special plant habitats were found on the project areas. Refer to **Appendix "G"**.

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

During the construction of the proposed improvements, there may be short-term impacts to air and noise quality. Appropriate BMP's will be implemented to minimize these short-term impacts, which will not extend into the long term. BMPs will include a diversion ditch just mauka of the new water storage tank site to divert storm water around the construction site, a silt fence to capture sediment laden water from exiting the construction site, and waddles (or similar product) to prevent oils from the asphalt from entering the on site storm drain. No significant adverse impacts to water quality are anticipated with the proposed action.

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

The project site is not located within and would not affect environmentally sensitive areas. The project site is located in Flood Zone X, an area of minimal flooding. In addition, the project site is located entirely upland and beyond the reaches of the tsunami inundation zones. The project site is not a shoreline property, nor is it situated in close vicinity to streams, wetland areas or other areas which may pose flooding concerns. There are no geologically hazardous lands, estuaries, or coastal waters within or adjacent to the project site. Based on the relative elevations of the Hamakuapoko Well Nos. 1 and 2 and Maliko Gulch to the east, it is not anticipated that pumping at the two (2) wells would present significant adverse impacts on

streamflow in the region or the underlying Paia aquifer.

The project site is not located in or adjacent to any environmentally sensitive areas. Potential impacts to downstream properties will be mitigated through appropriate BMPs during construction-related activities.

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

The proposed project primarily involves the repair and replacement of existing infrastructure at the Hamakuapoko Well Nos. 1 and 2 sites. A new 150,000 gallon water tank will measure approximately 20 feet in height. This is comparable to the two (2) water tanks that currently exists at the Well No. 2 project site. The Hamakuapoko Wells are surrounded by agricultural fields and are not anticipated to adversely impact visual resources in the region.

13. The Proposed Action Would Not Require Substantial Energy Consumption

The proposed action will involve the short-term commitment of fuel for equipment, vehicles, and machinery during construction activities. However, this is not anticipated to result in an increase of substantial consumption of energy. Once operational, the energy requirements at the two (2) well sites will be comparable to the energy consumption when the wells were in operation between 2000 and 2006.

In conclusion, based on the analysis and findings presented in this Draft Environmental Assessment, the proposed improvements at Hamakuapoko Well Nos. 1 and 2 are anticipated to result in the issuance of a Finding of No Significant Impact (FONSI) determination.

VIII. LIST OF PERMITS AND APPROVALS

VIII. LIST OF PERMITS AND APPROVALS

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

State of Hawaii

1. Department of Health, Community Noise Permit, as applicable
2. Department of Land and Natural Resources, Commission on Water Resource Management - Installation and Operation Permits

County of Maui

1. Construction Permits (Grubbing, Grading and Work to Perform on County Highway), as applicable

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

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

The following agencies and organizations were consulted during the preparation of the Draft Environmental Assessment. Comment letters received, as well as responses to substantive comments, are contained in this chapter.

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

APR 27 2012

REPLY TO
ATTENTION OF:

April 23, 2012

Regulatory Branch

POH-2012-00110

Munekiyo and Hiraga, Inc.
Attn: Cheryl K. Okuma
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Okuma:

We have received your request for the Department of the Army to review and comment on the proposed repair and maintenance improvements at Hamakuapoko Well Nos. 1 and 2, TMK (2) 2-5-004:039, Hamakuapoko, Maui. We have assigned the project the reference number **POH-2012-00110**. Please cite this reference number in any correspondence with us concerning this project. We have completed our review of the submitted document and have the following comments:

Section 10 of the Rivers and Harbors Act of 1899 (Section 10) requires that a Department of the Army (DA) permit be obtained from the U.S. Army Corps of Engineers (Corps) prior to undertaking any construction, dredging, and other activities occurring in, over, or under navigable waters of the U.S. Navigable waters of the United States are those waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. Section 404 of the Clean Water Act (Section 404) of 1972 (33 U.S.C. 1344) requires that a DA permit be obtained for the discharge, or placement, of dredge and/or fill material into waters of the U.S., including wetlands. Fill material is any material that replaces a jurisdictional aquatic area with dry land or changes the bottom elevation of a waterbody. Fill may be temporary or permanent and often includes, but is not limited to, rock, sand, concrete, sandbags, etc.

Based on our review of the information provided in your letter dated April 17, 2012 it appears that the project location consists entirely of uplands and no navigable waters of the U.S. are present. As such, authorization under Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act do not appear to be required for the proposed project.

If the project design should change and work is to be proposed in wetlands, streams, drainage ditches, the Pacific Ocean, or other aquatic resources, (whether or not water is present in that resource during project construction) we advise you to contact our office to request a jurisdictional determination. We can then determine if any regulatory requirements apply to work that may impact those resources.

Thank you for contacting us regarding this project. We look forward to working with you on this project as well as any future projects. Should you have any questions, please contact Kaitlyn Seberger, at (808) 438-0390 or via email at Kaitlyn.R.Seberger@usace.army.mil.

Sincerely,

A handwritten signature in black ink, appearing to read "George P. Young". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

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

Copy Furnish:

County of Maui, Department of Water Supply, Attn: Curtis Eaton, 200 South High Street,
Wailuku, Maui 96793

ALAN M. ARAKAWA
Mayor



DAVID TAYLOR, P.E.
Director

PAUL J. MEYER
Deputy Director

**DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI**

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

December 14, 2012

Mr. George P. Young, P.E., Chief
Department of the Army
U.S. Army Corps of Engineers,
Honolulu District
Fort Shafter, Hawaii 96858-5440

Dear Mr. Young:

Subject: Early Consultation Request for the Proposed Improvements at
Hamakuapoko Well Nos. 1 and 2
TMK: (2) 2-5-004:039 (por.), Hamakuapoko, Maui, Hawaii
Project Reference No. POH-2012-00110

Thank you for your letter, dated April 23, 2012, providing early consultation comments on the proposed improvements at Hamakuapoko Well Nos. 1 and 2. The County of Maui, Department of Water Supply (DWS) offers the following information in response to the comments noted in your letter.

We acknowledge your determination that the Hamakuapoko Well Nos. 1 and 2 project sites consist entirely of uplands and is absent of navigable waters of the United States. Therefore, Department of Army authorization under Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act is not required for the proposed project.

We appreciate your input and will include a copy of your Department's comment letter in the Draft Environmental Assessment for the proposed project. Should you have any questions, please feel free to contact our planning consultant, Mark Alexander Roy of Munekiyo & Hiraga, Inc. at (808) 244-2015.

Sincerely,

David Taylor, P.E., Director

cc: Curtis Eaton, P.E., County of Maui, Department of Water Supply
Mark Alexander Roy, Munekiyo & Hiraga, Inc.

"By Water All Things Find Life"

NEIL ABERCROMBIE
GOVERNOR



MAY 04 2012

DEAN H. SEKI
COMPTROLLER

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

(P)1091.2

MAY - 3 2012

Ms. Cheryl K. Okuma
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Maui, Hawaii 96793

Dear Ms. Okuma:

Subject: Request for Proposed Improvements at Hamakuapoko
Well No. 1 and 2 Hamakuapoko, Maui, Hawaii
TMK: (2) 2-5-004:039 (Por)

Thank you for the opportunity to provide comments for the subject project. This project does not impact any of the Department of Accounting and General Services' projects or existing facilities in the general area and we have no comments to offer at this time.

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

Sincerely,

DEAN H. SEKI
State Comptroller

c: Mr. David Taylor, Department of Water Supply ..

ALAN M. ARAKAWA
Mayor



DAVID TAYLOR, P.E.
Director

PAUL J. MEYER
Deputy Director

**DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI**

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

December 14, 2012

Mr. Dean H. Seki, State Comptroller
Department of Accounting and General Services
State of Hawaii
P.O. Box 119
Honolulu, Hawaii 96818-0119

Dear Mr. Seki:

Subject: Early Consultation Request for the Proposed Improvements at
Hamakuapoko Well Nos. 1 and 2
TMK: (2) 2-5-004:039 (por.), Hamakuapoko, Maui, Hawaii

Thank you for your letter, dated May 3, 2012, providing early consultation comments on the proposed improvements at Hamakuapoko Well Nos. 1 and 2. The County of Maui, Department of Water Supply (DWS) acknowledges that the proposed project does not impact any of the Department of Accounting and General Services' projects or existing facilities in the area.

We appreciate your input and will include a copy of your comment letter in the Draft Environmental Assessment for the proposed project. Should you have any questions, please contact our planning consultant, Mark Alexander Roy of Munekiyo & Hiraga, Inc. at (808) 244-2015.

Sincerely,

A handwritten signature in black ink, appearing to read "D. Taylor", is written over a horizontal line.

David Taylor, P.E.
Director

cc: Curtis Eaton, P.E., County of Maui, Department of Water Supply
Mark Alexander Roy, Munekiyo & Hiraga, Inc.

"By Water All Things Find Life"

APR 26 2012

NEIL ABERCROMBIE
GOVERNOR



DARRYLL D.M. WONG
MAJOR GENERAL
ADJUTANT GENERAL

JOSEPH K. KIM
BRIGADIER GENERAL
DEPUTY ADJUTANT GENERAL

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

April 25, 2012

Munekiyo & Hiraga, Inc.
Attention: Cheryl K. Okuma
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Okuma:

Reference the April 17, 2012, letter from Mr. David Taylor, P. E., Director , Department of Water Supply, County of Maui, regarding the proposed improvements at Hamakuapoko Well Nos. 1 and 2 in Hamakuapoko, Maui, Hawaii.

We have no comments to the proposal.

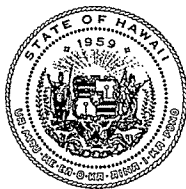
We appreciate the opportunity to comment on this project.

Sincerely,

Neal S. Mitsuyoshi, P. E.
Lieutenant Colonel
Hawaii National Guard
Chief Engineering Officer

JUN 12 2012

NEIL ABERCROMBIE
GOVERNOR OF HAWAII



LORETTA J. FUDDY, A.C.S.W., M.P.H.
DIRECTOR OF HEALTH

STATE OF HAWAII
DEPARTMENT OF HEALTH
SAFE DRINKING WATER BRANCH

919 ALA MOANA BLVD., ROOM 308
HONOLULU, HI 96814-4920

In reply, please refer to:
File: SDWB

Hamakuaapoko1.doc

June 6, 2012

Munekiyo & Hiraga, Inc.
Attention: Cheryl K. Okuma
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Okuma:

SUBJECT: EARLY CONSULTATION REQUEST FOR PROPOSED IMPROVEMENTS AT
HAMAKUAPOKO WELL NOS. 1 AND 2
HAMAKUAPOKO, MAUI, HAWAII

The Safe Drinking Water Branch (SDWB) has reviewed the subject document and has the following comments:

1. The Maui DWS in its operation of the Hamakuapoko Wells No. 1 and 2, shall comply with all relevant provisions of Hawaii Administrative Rules (HAR), Title 11, Chapter 20, "Rules Relating to Public Water Systems."
2. The Hamakuapoko Wells No. 1 and 2 shall deliver drinking water of the quality in compliance with HAR Chapter 11-20. The water quality shall be subject to verification by the SDWB.
3. Since the source has been inactive for greater than five years, the source will be subject to retesting of the source water quality as required under HAR, Section 11-20-29, "Use of New Sources of Raw Water for Public Water System."
4. Materials used in the construction shall have NSF certification. Proper procedures shall be followed for the cleaning and disinfection of the various water system components involved in the improvement project.
5. Other requirements include development and submission of an operations and maintenance manual for the GAC system.

If there are any questions, please call Craig Watanabe of the SDWB Engineering Section at (808) 586-4258.

Sincerely,

A handwritten signature in cursive script, appearing to read "Joanna L. Seto".

JOANNA L. SETO, P.E., CHIEF
Safe Drinking Water Branch
Environmental Management Division

CW:slm

c: EPO Reference No. 12-076

ALAN M. ARAKAWA
Mayor



DAVID TAYLOR, P.E.
Director

PAUL J. MEYER
Deputy Director

DEPARTMENT OF WATER SUPPLY

COUNTY OF MAUI

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

December 14, 2012

Ms. Joanna L. Seto, P.E., Chief
Safe Drinking Water Branch
Environmental Management Division
Department of Health
State of Hawaii
919 Ala Moana Boulevard, Room 308
Honolulu, Hawaii 96814-4920

Dear Ms. Seto:

Subject: Early Consultation Request for the Proposed Improvements at
Hamakuapoko Well Nos. 1 and 2
TMK: (2) 2-5-004:039 (por.), Hamakuapoko, Maui, Hawaii

Thank you for your letter, dated June 6, 2012, providing early consultation comments on the proposed improvements at Hamakuapoko Well Nos. 1 and 2. The County of Maui, Department of Water Supply (DWS) offers the following information in response to your comments:

1. DWS will comply with all relevant provisions of Hawaii Administrative Rules (HAR), Title 11, Chapter 20, "Rules Relating to Public Water Systems" in its operation of the Hamakuapoko Well Nos. 1 and 2.
2. We acknowledge that the Hamakuapoko Well Nos. 1 and 2 shall deliver drinking water of quality in compliance with HAR Chapter 11-20 and that water quality shall be subject to verification by the Safe Drinking Water Branch.
3. DWS understands that because the source has been inactive for more than five (5) years, retesting of the source water quality will be required as per HAR, Section 11-20-29, "Use of New Sources of Raw Water for Public Water System."
4. DWS confirms that materials used in construction of the proposed project will have National Sanitation Foundation (NSF) certification and proper procedures shall be followed for the cleaning and disinfection of the various water system components involved in the improvement project.

"By Water All Things Find Life"

Ms. Joanna L. Seto, P.E., Chief

December 14, 2012

Page 2

5. An operations and maintenance manual for the Granulated Activated Carbon (GAC) system is in place from earlier operations at the Hamakuapoko wells. As necessary, the plan will be resubmitted to the Safe Drinking Water Branch.

We appreciate your input and will include a copy of your comment letter in the Draft Environmental Assessment for the proposed project. Should you have any questions, please feel free to contact our planning consultant, Mark Alexander Roy of Munekiyo & Hiraga, Inc. at (808) 244-2015.

Sincerely,

A handwritten signature in black ink, appearing to read 'D. Taylor', with a long horizontal flourish extending to the right.

David Taylor, P.E.

Director

cc: Curtis Eaton, P.E., County of Maui, Department of Water Supply
Mark Alexander Roy, Munekiyo & Hiraga, Inc.



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

May 4, 2012

Ms. Cheryl K. Okuma
Planning Consultant
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Suyama:

**Subject: Early Consultation Request for Proposed
Improvements at Hamakuapoko Well Nos. 1 & 2
TMK: (2) 2-5-004:039 (por.)**

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

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

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,

A handwritten signature in cursive script that reads "Patti Kitkowski".

Patti Kitkowski
District Environmental Health Program Chief

c EPO

ALAN M. ARAKAWA
Mayor



DAVID TAYLOR, P.E.
Director

PAUL J. MEYER
Deputy Director

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

December 14, 2012

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

Dear Ms. Kitkowski:

Subject: Early Consultation Request for the Proposed Improvements at
Hamakuapoko Well Nos. 1 and 2
TMK: (2) 2-5-004:039 (por.), Hamakuapoko, Maui, Hawaii

Thank you for your letter, dated May 4, 2012, providing early consultation comments on the proposed improvements at Hamakuapoko Well Nos. 1 and 2. The County of Maui, Department of Water Supply (DWS) offers the following information in response to your comments.

1. A National Pollutant Discharge Elimination System Permit will be obtained for the project, as applicable.
2. The Clean Water Branch was sent a request for early consultation on the proposed project.

The DWS has reviewed the standard comments found on the Department of Health's website. Enclosed is a list of applicable comments as well as responses to each. See **Exhibit "A"**.

"By Water All Things Find Life"

Ms. Patti Kitkowski, District Environmental Health Program Chief
December 14, 2012
Page 2

We appreciate your input and will include a copy of your comment letter in the Draft Environmental Assessment for the proposed project. Should you have any questions, please feel free to contact our planning consultant, Mark Alexander Roy of Munekiyo & Hiraga, Inc. at 244-2015.

Sincerely,

A handwritten signature in black ink, appearing to read 'DT', with a long horizontal flourish extending to the right.

David Taylor, P.E.
Director

Enclosure

c: Curtis Eaton, P.E., County of Maui, Department of Water Supply
Mark Alexander Roy, Munekiyo & Hiraga, Inc.

EXHIBIT "A"

REVIEW OF STANDARD COMMENTS RELATING TO STATE ENVIRONMENTAL HEALTH PROGRAMS

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:

The proposed project is limited to improvements to the existing Hamakuapoko Well Nos. 1 and 2 and construction of a new water storage tank adjacent to Well No. 2. An Environmental Assessment (EA) was prepared for the construction of improvements to convert the existing Hamakuapoko wells from exploratory wells to production wells in 1999. Water quality testing was conducted and water from both wells exhibited contamination from volatile organic chemicals associated with pesticides. In 1999, DWS installed a Granular Activated Carbon (GAC) Treatment facility at Well No. 2 that is capable of treating water from both wells. Water from Hamakuapoko Well No. 1 is transported to Well No. 2 where the combined water drawn from the two (2) wells flow through the treatment process provided by the GAC facility. The GAC method treats water when the water flows downward from the top of a pressurized vessel through a bed of activated carbon. In 2000, the Department of Health granted conditional approval for the Hamakuapoko Well Nos. 1 and 2 for use as drinking water after treatment.

- *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. The plan must comply with Chapter 128D, Environmental Response Law, HRS, and Title 11, Chapter 451, HAR, State Contingency Plan.*

Response:

The existing Hamakuapoko Well Nos. 1 and 2 were constructed within former plantation roadways and did not utilize lands in active sugarcane cultivation. The installation of necessary water appurtenances within sugarcane fields was minimal and involved less than one (1) acre of land. The proposed new water storage tank adjacent to the Hamakuapoko Well No. 2 will involve the acquisition of approximately 0.14 acre of land currently utilized for sugarcane cultivation.

As previously mentioned, an EA was prepared to convert the Hamakuapoko Wells from exploratory wells into production wells. Water quality testing was conducted and a GAC treatment facility was installed to treat water from both wells. The Department of Health granted conditional approval for the Hamakuapoko Well Nos. 1 and 2 for use as drinking water after treatment in 2000.

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 pursuant to applicable requirements to minimize the potential for dust-related impacts from the construction of the proposed project.

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 will comply with the applicable provision of Hawaii Administrative Rules, Title 11, Chapter 20. The Department of Health granted conditional approval for the Hamakuapoko Well Nos. 1 and 2 as drinking water on December 22, 2000 (State Well Nos. 6-5420-02 and 6-5320-01, respectively).

- *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 improvements to the existing Hamakuapoko Well Nos. 1 and 2 do not represent development of a new public water system. DWS has the technical, managerial and financial capacity to enable the water from the Hamakuapoko Wells to comply with safe drinking water standards and requirements.

- *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 Hamakuapoko Well Nos. 1 and 2 are existing wells that were operational as production wells from 2000 to 2006, with pumping taking place between 2000 and 2004. The proposed improvements would allow for the reopening of these wells. The wells are existing facilities and do not represent the development of new sources of potable water. Prior to the operation of the Hamakuapoko Wells, the source water and GAC effluent will be tested to ensure compliance with State DOH standards.

- *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:

As previously mentioned, the Department of Health granted conditional approval for the Hamakuapoko Well Nos. 1 and 2 as a drinking water source on December 22, 2000 (State Well Nos. 6-5420-02 and 6-5320-01, respectively). An Environmental Assessment (EA) was prepared in 1999 for improvements to convert the Hamakuapoko Wells from exploratory wells to production wells. Water quality tests were conducted as part of the Final EA. In 1999, DWS installed a Granular Activated Carbon (GAC) Treatment Facility at Well No. 2 that is capable of treating both wells. Water from Hamakuapoko Well No. 1 is transported to Well No. 2 where the combined water drawn from the two (2) wells flow through the treatment process provided by the GAC chambers. This treatment process is completed before the water from the Hamakuapoko Well Nos. 1 and 2 are pumped into the clear well at Kamole Weir Water Treatment Plant. Water quality tests conducted between 1999 and 2004 determined that after treatment at the GAC facility, DBCP, EDB, and TCP were not detected in the water.

- *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:

A source water assessment was conducted for the Hamakuapoko Wells when they were first developed and a source water protection plan is in place.

- *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 Department of Health granted conditional approval for the Hamakuapoko Well Nos. 1 and 2 for drinking water on December 22, 2000 (State Well Nos. 6-5420-02 and 6-5320-01, respectively). The County of Maui, Department of Water Supply operates the Hamakuapoko Wells.

- *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 Hamakuapoko Well Nos. 1 and 2 will be part of the Department of Water Supply's Upcountry Water System. The DWS is a certified public water system operator.

- *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 project 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 Hamakuapoko Well Nos. 1 and 2 will generate minimal solid waste, if any. Any waste from the cleaning and maintenance of the GAC filters will be disposed of by approved methods.

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.

SEP 10 2012

NEIL ABERCROMBIE
GOVERNOR OF HAWAII



WILLIAM J. AILA, JR.
CHAIRPERSON
WILLIAM D. BALFOUR, JR.
SUMNER ERDMAN
LORETTA J. FUDDY, A.C.S.W., M.P.H.
NEAL S. FUJIWARA
JONATHAN STARR
TED YAMAMURA

WILLIAM M. TAM
DEPUTY DIRECTOR

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

September 10, 2012

Mr. David Taylor, Director
Department of Water Supply
County of Maui
200 South High St.
Wailuku, HI 96793-2155

Dear Mr. Taylor:

SUBJECT: Hamakuapoko Wells 1 & 2 Proposed Improvements Early Consultation
TMK No.:(2) 2-5-004:039 (por), Hamakuapoko, Maui

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

Our comments related to water resources are checked off below.

1. We recommend coordination with the county to incorporate this project into the county's Water Use and Development Plan. Please contact the respective Planning Department and/or Department of Water Supply for further information.
2. We recommend coordination with the Engineering Division of the State Department of Land and Natural Resources to incorporate this project into the State Water Projects Plan.
3. We recommend coordination with the Hawaii Department of Agriculture (HDOA) to incorporate the reclassification of agricultural zoned land and the redistribution of agricultural resources into the State's Agricultural Water Use and Development Plan (AWUDP). Please contact the HDOA for more information.
4. We recommend that water efficient fixtures be installed and water efficient practices implemented throughout the development to reduce the increased demand on the area's freshwater resources. Reducing the water usage of a home or building may earn credit towards Leadership in Energy and Environmental Design (LEED) certification. More information on LEED certification is available at <http://www.usgbc.org/leed>. A listing of fixtures certified by the EPA as having high water efficiency can be found at <http://www.epa.gov/watersense/pp/index.htm>.
5. We recommend the use of best management practices (BMP) for stormwater management to minimize the impact of the project to the existing area's hydrology while maintaining on-site infiltration and preventing polluted runoff from storm events. Stormwater management BMPs may earn credit toward LEED certification. More information on stormwater BMPs can be found at <http://hawaii.gov/dbedt/czm/initiative/lid.php>.

DRF-GN 03/02/2006

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

Permits required by CWRM:

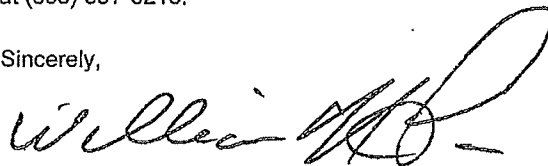
Additional information and forms are available at www.hawaii.gov/dlnr/cwrn/forms.htm.

8. The proposed water supply source for the project is located in a designated water management area, and a Water Use Permit is required prior to use of water. The Water Use Permit may be conditioned on the requirement to use dual line water supply systems for new industrial and commercial developments.
9. A Well Construction Permit(s) is (are) required before the commencement of any well construction work.
10. A Pump Installation Permit(s) is (are) required before ground water is developed as a source of supply for the project.
11. There is (are) well(s) located on or adjacent to this project. If wells are not planned to be used and will be affected by any new construction, they must be properly abandoned and sealed. A permit for well abandonment must be obtained.
12. Ground-water withdrawals from this project may affect streamflows, which may require an instream flow standard amendment.
13. A Stream Channel Alteration Permit(s) is (are) required before any alteration can be made to the bed and/or banks of a stream channel.
14. A Stream Diversion Works Permit(s) is (are) required before any stream diversion works is constructed or altered.
15. A Petition to Amend the Interim Instream Flow Standard is required for any new or expanded diversion(s) of surface water.
16. The planned source of water for this project has not been identified in this report. Therefore, we cannot determine what permits or petitions are required from our office, or whether there are potential impacts to water resources.
- OTHER:

The use of these wells is affected by a court decision in *Coalition to Protect East Maui Water Resources vs. Maui Board of Water Supply* (Civ No. 93-0734). The accepted uses must be clarified in light of the court decision. Both County ordinances and a Governor's Proclamation may affect any use of these wells. The jurisdiction must be clarified. Ultimately, any pump installation permit by the Water Commission must accurately reflect applicable special conditions and limitations.

If there are any questions, please contact Charley Ice at (808) 587-0218.

Sincerely,



WILLIAM M. TAM
Deputy Director

ALAN M. ARAKAWA
Mayor



DAVID TAYLOR, P.E.
Director

PAUL J. MEYER
Deputy Director

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

December 14, 2012

Mr. William M. Tam, Deputy Director
State of Hawaii
Department of Land and Natural Resources
Commission on Water Resource Management
P.O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Tam:

SUBJECT: Early Consultation Request for Proposed Hamakuapoko Well Improvements
Hamakuapoko, Maui, Hawaii

Thank you for your letter dated September 10, 2012 responding to our request for early consultation comments on the Draft Environmental Assessment (EA) that is being prepared for the proposed Hamakuapoko Well improvements in Hamakuapoko, Maui, Hawaii. The County of Maui Department of Water Supply (DWS) offers the following information in the order of the comments in your letter:

1. **COUNTY'S WATER USE AND DEVELOPMENT PLAN**

DWS is in the process of analyzing the major strategies to be considered for the District in the Maui County Water Use and Development Plan.

2. **LEED CERTIFICATION**

The Project consists of various repair and maintenance improvements at the existing Hamakuapoko Well Nos. 1 and 2 sites. As such, Leadership in Energy and Environmental Design (LEED) certification is not applicable to this project.

"By Water All Things Find Life"

Mr. William M. Tam, Deputy Director
December 14, 2012
Page 2

3. **ALTERNATIVE WATER SOURCES**

The Project involves the construction of improvements to allow the Hamakuapoko Well Nos. 1 and 2 to be reopened for agricultural use, use during declared drought events and as an alternative drinking water source and backup to the DWS's existing Upcountry Water Systems (UCWS). This Project fulfills the intent of Ordinance No. 3859 (2011) that was passed by the Maui County Council in October 2011.

Alternative sources such as the use of reclaimed wastewater are not available in the UCWS region.

4. **PERMITS REQUIRED BY CWRM**

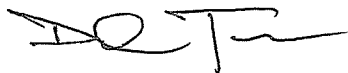
DWS acknowledges that an application for a Pump Installation Permit will need to be submitted to the Commission on Water Resource Management (CWRM) before re-initiating the operations of Hamakuapoko Well Nos. 1 and 2.

5. **USE OF WELLS**

DWS confirms that the subject improvements will be completed in accordance with applicable terms and conditions of the consent decree that resulted from the court decision in Coalition To Protect East Maui Water Resources vs. Maui Board of Water Supply (Civ. No. 93-0734), as well as County Ordinance No. 3404 (October 2, 2006) and No. 3859 (October 13, 2011) and the Governor's Proclamations dated April 1, 1988 and amended July 28, 1999.

We appreciate your input and will include a copy of your comment letter in the Draft EA for the proposed project. Should you have any questions, please feel free to contact our planning consultant, Mark Alexander Roy of Munekiyo & Hiraga, Inc. at (808) 244-2015.

Sincerely,



David Taylor, P.E.
Director

DT

cc: Curtis Eaton, County of Maui, Department of Water Supply
Mark Alexander Roy, Munekiyo & Hiraga, Inc.

NEIL ABERCROMBIE
GOVERNOR



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

MAY 23 2012

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:

STP 8.0843

May 17, 2012

Ms. Cheryl K. Okuma
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Okuma:

Subject: Proposed Improvements at Hamakuapoko Well Nos. 1 and 2
Early Consultation for Draft Environmental Assessment

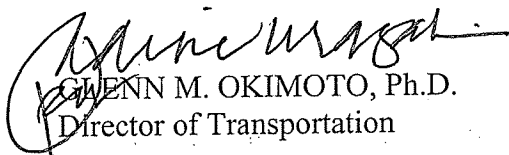
Thank you for requesting the State Department of Transportation's (DOT) review of the subject project.

DOT understands the County of Maui, Department of Water Supply (DWS) plans to undertake various repair and maintenance improvements for the subject project. The proposed improvements include replacement of the existing motors and pumps that will transport water from the two wells through existing transmission lines into a new water storage tank.

Given the project location and the nature of the project, it is not expected to significantly impact the State highway facilities. However, DWS is required to obtain a permit from DOT Highways Division, Maui District Office for the transport of oversized and/or overweight materials and equipment on State highway facilities.

DOT appreciates the opportunity to provide comments. If there are any questions, including the need to meet with DOT Highways Division staff, please contact Mr. Garrett Smith of the DOT Statewide Transportation Planning Office at 831-7976.

Very truly yours,


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

c: Maui County Department of Water Supply

ALAN M. ARAKAWA
Mayor



DAVID TAYLOR, P.E.
Director

PAUL J. MEYER
Deputy Director

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

December 14, 2012

Dr. Glenn M. Okimoto, Director
Department of Transportation
State of Hawaii
869 Punchbowl Street
Honolulu, Hawaii 96813-5097

Dear Dr. Okimoto:

Subject: Early Consultation Request for the Proposed Improvements at
Hamakuapoko Well Nos. 1 and 2
TMK: (2) 2-5-004:039 (por.), Hamakuapoko, Maui, Hawaii (STP 8.0843)

Thank you for your letter, dated May 17, 2012, providing early consultation comments on the proposed improvements at Hamakuapoko Well Nos. 1 and 2. The County of Maui, Department of Water Supply (DWS) acknowledges that the proposed project is not expected to significantly impact State highway facilities. DWS understands that it is required to obtain a permit from the Department of Transportation, Highways Division, Maui District Office for the transportation of any oversized and/or overweight materials and equipment on State highway facilities.

We appreciate your input and will include a copy of your comment letter in the Draft Environmental Assessment for the proposed project. Should you have any questions, please feel free to contact our planning consultant, Mark Alexander Roy of Munekiyo & Hiraga, Inc. at (808) 244-2015

Sincerely,

A handwritten signature in black ink, appearing to read "DT", written over a horizontal line.

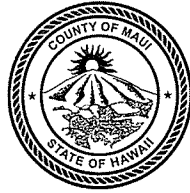
David Taylor, P.E.
Director

cc: Curtis Eaton, P.E., County of Maui, Department of Water Supply
Mark Alexander Roy, Munekiyo & Hiraga, Inc.

"By Water All Things Find Life"



ALAN M. ARAKAWA
MAYOR



MAY 24 2012
JEFFREY A. MURRAY
CHIEF

ROBERT M. SHIMADA
DEPUTY CHIEF

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

May 22, 2012

Cheryl K. Okuma
Munekiyo & Hiraga, Inc.
305 Hight Street, Suite 104
Wailuku, HI 96793

**Re: Early Consultation request for Proposed Improvements at Hamakuapoko
Well Nos. 1 and 2
Hamakuapoko, Maui, HI
TMK: (2) 2-5-004: 039 (por.)**

Dear Cheryl:

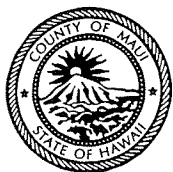
Thank for the allowing the Department of Fire and Public Safety the opportunity to comment on the above subject. At this time, our office has no specific comments in regards to this subject.

If there are any questions or comments, please feel free to contact me at 244-9161 ext. 23.

Sincerely,

Paul Haake
Captain, Fire Prevention Bureau
Department of Fire and Public Safety, Maui County

cc: Neal Dixon; Munekiyo & Hiraga, Inc.



DEPARTMENT OF
HOUSING AND HUMAN CONCERNS
HOUSING DIVISION
COUNTY OF MAUI

APR 30 2012

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

April 24, 2012

Ms. Cheryl K. Okuma
Planning Consultant
Munekiyō & Hiraga
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Cheryl K. Okuma:

**Subject: Early Consultation Request for Proposed
Improvements at Hamakuapoko Well Nos. 1 and 2, TMK (2)2-5-
004:039 (por), Hamakuapoko, Maui, Hawaii**

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

Sincerely,

for

WAYDE T. OSHIRO
Housing Administrator

cc: Director of Housing and Human Concerns

ALAN M. ARAKAWA
Mayor



DAVID TAYLOR, P.E.
Director

PAUL J. MEYER
Deputy Director

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

December 14, 2012

Mr. Wayde T. Oshiro, Housing Administrator
Department of Housing and Human Concerns
County of Maui
35 Lunalilo Street, Suite 102
Wailuku, Hawaii 96793

Dear Mr. Oshiro:

Subject: Draft Environmental Assessment for the Proposed Improvements at
Hamakuapoko Well Nos. 1 and 2
TMK: (2) 2-5-004:039 (por.), Hamakuapoko, Maui, Hawaii

Thank you for your letter, dated April 24, 2012, providing early consultation comments on the proposed improvements at Hamakuapoko Well Nos. 1 and 2. The County of Maui, Department of Water Supply (DWS) acknowledges that the proposed project is not subject to Chapter 2.96, Maui County Code.

We appreciate your input and will include a copy of your Department's comment letter in the Draft Environmental Assessment for the proposed project. Should you have any questions, please feel free to contact our planning consultant, Mark Alexander Roy of Munekiyo & Hiraga, Inc. at (808) 244-2015.

Sincerely,

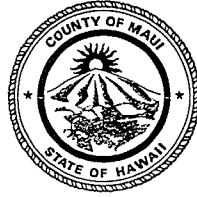
David Taylor, P.E.
Director

cc: Curtis Eaton, P.E., County of Maui, Department of Water Supply
Mark Alexander Roy, Munekiyo & Hiraga, Inc.

"By Water All Things Find Life"



ALAN M. ARAKAWA
Mayor



MAY 07 2012
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

May 1, 2012

Cheryl K. Okuma
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hi 96793

Dear Ms. Okuma:

SUBJECT: Early consultation request for the proposed improvements at Hamakuapoko, Well Nos. 1 and 2, TMK (2)2-5-004:039 (por.) Hamakuapoko, Maui, Hawaii

Thank you for the opportunity to review and comment on the subject action. We have no comment to be noted at this time.

Should you have any questions or concerns, please feel free to contact me, or Steve Grogan, Capital Improvements Project Coordinator, at stephen.grogan@co.maui.hi.us or 808-270-6158.

Sincerely,

A handwritten signature in black ink, appearing to read "GLENN T. CORREA".

GLENN T. CORREA
Director of Parks & Recreation

c: Robert Halvorson, Chief of Planning & Development

GTC:RH:sg

ALAN M. ARAKAWA
Mayor

WILLIAM R. SPENCE
Director

MICHELE CHOUTEAU McLEAN
Deputy Director



MAY 04 2012

COUNTY OF MAUI
DEPARTMENT OF PLANNING

May 4, 2012

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

Dear Ms. Okuma:

SUBJECT: EARLY CONSULTATION REQUEST FOR THE PREPARATION OF A DRAFT ENVIRONMENTAL ASSESSMENT (EA) FOR THE PROPOSED IMPROVEMENTS AT HAMAKUAPOKO WELLS NUMBERS 1 AND 2, LOCATED IN HAMAKUAPOKO, MAUI, HAWAII; TMK: (2) 2-5-004:039 (POR.) (RFC 2012/0061)

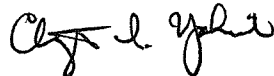
The Department of Planning (Department) has reviewed the above-referenced letter dated April 17, 2012, and provides the following comments:

1. The parcel listed above is in the County zoned Agricultural and Interim Districts, Paia-Haiku Community Plan Agricultural, Rural and Public/Quasi-Public Districts and in the State Agricultural District. It is not located within the Special Management Area (SMA). You should get a Zoning Confirmation from the Department's Zoning Administration & Enforcement Division (ZAED) to verify what the land use classifications are for your specific portions of the overall parcel;
2. A SMA Assessment will not be required for this proposed project;
3. The project is located in the Paia-Haiku Community Plan District. Discuss how the proposal is consistent with the goals, objectives, and implementation strategies of this Community Plan;
4. Discuss in detail the Best Management Practices which will be implemented during the construction phases of the project to reduce impacts on air and water quality as well as promote soil conservation;
5. Discuss any proposed grading and grubbing requirements and if any new ground will be disturbed; and
6. Discuss the anticipated timetable for the construction of the project.

Ms. Cheryl Okuma
May 4, 2012
Page 2

Thank you for the opportunity to comment. Should you require further clarification, please contact Staff Planner Joseph Prutch at joseph.prutch@mauicounty.gov or at (808) 270-7512.

Sincerely,



CLAYTON I. YOSHIDA, AICP
Planning Program Administrator

for WILLIAM SPENCE
Planning Director

xc: Aaron H. Shinmoto, PE, Planning Program Administrator (PDF)
Joseph M. Prutch, Staff Planner (PDF)
Project File
General File

WRS:CIY:JMP:sa
K:\WP_DOCS\PLANNING\RFC\2012\0061_HamakuapokoWellComment.wpd

ALAN M. ARAKAWA
Mayor



DAVID TAYLOR, P.E.
Director

PAUL J. MEYER
Deputy Director

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

December 14, 2012

Mr. William Spence, Director
Attention: Joseph Prutch
Department of Planning
County of Maui
250 South High Street
Wailuku, Hawaii 96793

Dear Mr. Spence:

Subject: Early Consultation Request for the Proposed Improvements at
Hamakuapoko Well Nos. 1 and 2
TMK: (2) 2-5-004:039 (por.), Hamakuapoko, Maui, Hawaii

Thank you for your letter, dated May 4, 2012, providing early consultation comments on the proposed improvements at Hamakuapoko Well Nos. 1 and 2. The Department of Water Supply (DWS) provides the following information in response to your comments.

1. Thank you for the information regarding the zoning and land use designations for the proposed project. A Zoning and Flood Confirmation Form has been submitted to the Department's Zoning Administration and Enforcement Division to verify the land use classifications specifically for the well sites within the overall parcel. See **Exhibit "A"**.
2. DWS notes that a SMA Assessment will not be required for the proposed project.
3. The Draft Environmental Assessment (EA) will discuss how the proposed project is consistent with the goals, objectives, and implementation strategies of the Paia-Haiku Community Plan.
4. The Draft EA will provide information on the Best Management Practices that will be implemented during the construction phase of the proposed project to reduce impacts on air and water quality as well as promote soil conservation.

"By Water All Things Find Life"

Mr. William Spence, Director
December 14, 2012
Page 2

5. A Preliminary Engineering and Drainage Report will be prepared for the proposed project. The Report, which will be discussed and included as an appendix in the Draft EA, will provide information on any proposed grading and grubbing requirements and areas of new ground disturbance.
6. The Draft EA will summarize the anticipated construction timeline for the proposed project.

We appreciate your input and will include a copy of your comment letter in the Draft Environmental Assessment for the proposed project. Should you have any questions, please feel free to contact our planning consultant, Mark Alexander Roy of Munekiyo & Hiraga, Inc. at 244-2015.

Sincerely,



David Taylor, P.E.
Director

Enclosures

cc: Curtis Eaton, P.E., County of Maui, Department of Water Supply
Mark Alexander Roy, Munekiyo & Hiraga, Inc.

10/13/12

COUNTY OF MAUI
DEPARTMENT OF PLANNING
Kalana Pakui Building
250 South High Street
Wailuku, Hawaii 96793



MAR 13 2012

RECEIVED

Zoning Administration and
Enforcement Division (ZAED)
Telephone: (808) 270-7253
Facsimile: (808) 270-7634
E-mail: planning@mauicounty.gov

ZONING AND FLOOD CONFIRMATION FORM

APPLICANT INFORMATION (To be completed by Applicant)

APPLICANT NAME Munekiyo & Hiraga, Inc. TELEPHONE 244-2015
PROJECT NAME Hamakuapoko Well Nos. 1 and 2 and Related Improvements E-MAIL planning@mhplanning.com
ADDRESS/LOCATION Near Maliko Gulch (see attached map) TAX MAP KEY (2)2-5-004:039

Yes Will this Zoning and Flood Confirmation Form be used with a Subdivision Application, including four (4) or more dwelling units on a parcel, but **NOT** including subdivisions listed and processed under the exceptions in Section 18.04.030(B), Maui County Code? **IF YES, LIST THE PROPOSED LAND USES BELOW:**
 No

- NOTE: 1) Use a separate Zoning and Flood Confirmation Form for each Tax Map Key (TMK) number.
2) If the above "Yes" box is checked AND if the zoning information for the subject property contains multiple State Land Use Districts, Community Plan Designations, or County Zoning, a signed and dated Land Use Designations (LUD) Map, prepared by a licensed surveyor showing all the various districts, designations, zonings, and any subdistricts, shall be submitted for review and approval.
3) If the above "Yes" box is checked AND if there are multiple State Land Use District designations, the applicant shall procure a District Boundary Interpretation from the State Land Use Commission.

FOR COUNTY USE ONLY (To be completed by ZAED)

ZONING INFORMATION

STATE LAND USE DISTRICT(S) AG1-Agriculture
COMMUNITY PLAN DESIGNATION(S) AG1-Agriculture
COUNTY ZONING(S) AG1-Agriculture
OTHER DESIGNATION(S) _____

Yes No
SPECIAL
MANAGEMENT
AREA (SMA)
 Yes No
PLANNED
DEVELOPMENT
 Yes No
PROJECT
DISTRICT

Yes No See Additional Comments On Page Two
 Yes No See The Attached Land Use Designation Map

FLOOD INFORMATION

FLOOD HAZARD AREA ZONE(S) X * Per attached map * For Flood Zone AO, FLOOD DEPTH _____
BASE FLOOD ELEVATION(S) N/A feet mean sea level, Local Tidal Datum.

*FLOODWAY Yes No *FLOOD DEVELOPMENT PERMIT REQUIRED Yes No
*For flood hazard area zones X or XS, a flood development permit would be required if any work is done in any drainage facility or stream area that would reduce the capacity of the drainage facility, river, or stream, or adversely affect downstream property.
*For subdivisions in ALL FLOOD HAZARD AREA ZONES (including zones X or XS) that involve streams, gulches, low areas, or any type of draingeway, a designation of the 100 year flood inundation limits or a drainage reserve may be required.

SUBDIVISION CONSISTENCY [Section 18.04.030(D), Maui County Code]

N/A (Not Applicable) **The proposed land uses appear to be consistent _____ a unilateral agreement.

Except as permitted in Section 18.04.030(B) MCC, property containing any Interim Zoning shall NOT be subdivided.

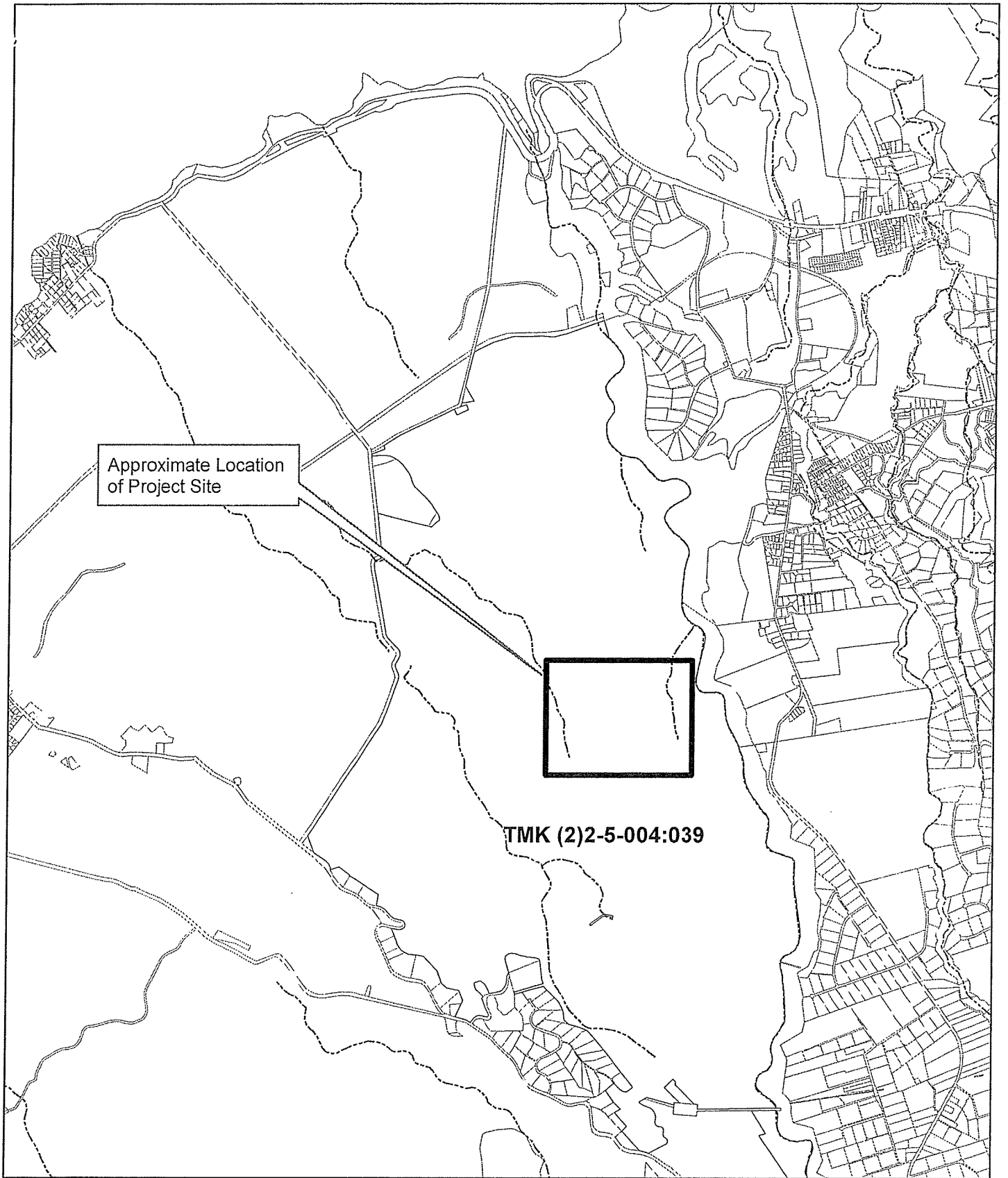
Comments: _____
 **The proposed land uses appear to NOT be consistent.
Comments: _____

** All proposed subdivisions will be further reviewed during the subdivision application process to verify subdivision consistency, unilateral agreement requirements, and the conditions associated with a unilateral agreement.

REVIEWED & CONFIRMED BY:

[Signature] 3/14/12
(Signature) (Date)

For: AARON SHINMOTO, Planning Program Administrator, Zoning Administration and Enforcement Division

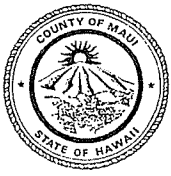


Approximate Location
of Project Site

TMK (2)2-5-004:039



0 1,250 2,500 5,000
Feet



POLICE DEPARTMENT
COUNTY OF MAUI

APR 27 2012



ALAN M. ARAKAWA
MAYOR

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

GARY A. YABUTA
CHIEF OF POLICE

OUR REFERENCE
YOUR REFERENCE

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

April 23, 2012

MEMORANDUM

TO: DAVID TAYLOR, DIRECTOR
DEPARTMENT OF WATER SUPPLY

FROM : GARY A. YABUTA, CHIEF OF POLICE

SUBJECT : EARLY CONSULTATION REQUEST FOR PROPOSED
IMPROVEMENTS AT HAMAKUAPOKO WELL NOS. 1 AND 2,
TMK (2)2-5-004:039 (POR.), HAMAKUAPOKO, MAUI, HI

No recommendation or comment to offer.

Refer to enclosed comments and/or recommendations.

Thank you for giving us the opportunity to comment on this project.

Assistant Chief Victor K. Ramos
For: GARY A. YABUTA
Chief of Police

c: Cheryl K. Okuma, Munekiyo & Hiraga, Inc.

MAY 07 2012

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

May 3, 2012

Ms. Cheryl K. Okuma
MUNEKIYO & HIRAGA, INC.
305 High Street, Suite 104
Wailuku, Maui, Hawaii 96793

Dear Ms. Okuma:

**SUBJECT: EARLY CONSULTATION REQUEST FOR PROPOSED
IMPROVEMENTS AT HAMAKUAPOKO WELL NOS. 1 AND
2; TMK: (2) 2-5-004:039 (POR.)**

We reviewed your early consultation request and have the following comments:

1. The document indicated that access would be from Holomua Road. The applicant should be advised that Holomua Road coming from Baldwin Avenue to the Old Maui High School is a dirt road. During heavy rains, mud has had occasion to flow onto Holomua Road making this road nearly impassable.
2. Holomua Road coming from Hana Highway crosses a bridge of unknown weight-bearing capacity. An assessment of this bridge structure would be needed if heavy equipment/materials are proposed to be transported over the bridge.

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

Sincerely,

A handwritten signature in black ink, appearing to read "David C. Goode".

DAVID C. GOODE
Director of Public Works

DCG:ls

xc: Highways Division
Engineering Division

S:\LUCIA\CZM\prop_improv_at_hamakuapoko_well_1_2_ec_25004039_por_ls.wpd

ALAN M. ARAKAWA
Mayor



DAVID TAYLOR, P.E.
Director

PAUL J. MEYER
Deputy Director

DEPARTMENT OF WATER SUPPLY

COUNTY OF MAUI

200 SOUTH HIGH STREET

WAILUKU, MAUI, HAWAII 96793-2155

www.mauewater.org

December 14, 2012

Mr. David C. Goode, Director
Department of Public Works
County of Maui
200 South High Street, Room No. 434
Wailuku, Hawaii 96793

Dear Mr. Goode:

Subject: Early Consultation Request for the Proposed Improvements at
Hamakuapoko Well Nos. 1 and 2
TMK: (2) 2-5-004:039 (por.), Hamakuapoko, Maui, Hawaii

Thank you for your letter, dated May 3, 2012, providing early consultation comments on the proposed improvements at Hamakuapoko Well Nos. 1 and 2. The Department of Water Supply (DWS) offers the following information in response to your comments:

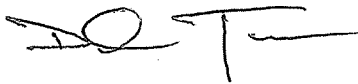
1. Thank you for the information regarding the condition of Holomua Road from Baldwin Avenue to the Old Maui High School. It is noted that the sugarcane access road off is located off of a paved portion of Holomua Road, between Hana Highway and the Old Maui High School. As such, use of the unpaved, dirt segment of Holomua Road is not anticipated.
2. Thank you for the information regarding the bridge structure on Holomua Road coming from Hana Highway. DWS will coordinate with the Department of Public Works to assess the weight-bearing capacity of this bridge if heavy equipment or materials will be transported over the bridge.

"By Water All Things Find Life"

Mr. David C. Goode, Director
December 14, 2012
Page 2

We appreciate your input and will include a copy of your comment letter in the Draft Environmental Assessment for the proposed project. Should you have any questions, please feel free to contact our planning consultant, Mark Alexander Roy of Munekiyo & Hiraga, Inc. at 244-2015.

Sincerely,

A handwritten signature in black ink, appearing to read 'DT', with a horizontal line extending to the right.

David Taylor, P.E.
Director

cc: Curtis Eaton, P.E., County of Maui, Department of Water Supply
Mark Alexander Roy, Munekiyo & Hiraga, Inc.

MAY 11 2012

ALAN M. ARAKAWA
Mayor



JO ANNE JOHNSON-WINER
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

May 4, 2012

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

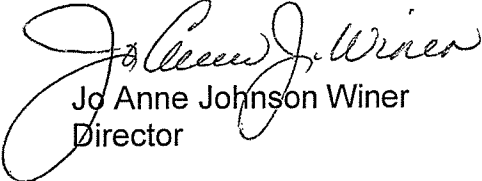
Subject: Proposed Improvements at Hamakuapoko Well No 1 and 2, Maui

Dear Ms. Okuma,

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 Winer
Director

APR 25 2012

Council Chair
Danny A. Mateo

Vice-Chair
Joseph Pontanilla

Council Members
Gladys C. Baisa
Robert Carroll
Elle Cochran
Donald G. Couch, Jr.
G. Riki Hokama
Michael P. Victorino
Mike White



Director of Council Services
Ken Fukuoka

COUNTY COUNCIL
COUNTY OF MAUI
200 S. HIGH STREET
WAILUKU, MAUI, HAWAII 96793
www.mauicounty.gov/council

April 23, 2012

Munekiyo and Hiraga, Inc.
Attention: Cheryl K. Okuma
305 High Street, Suite 104
Wailuku, HI 96793

SUBJECT: Early Consultation Request for Proposed Improvements at Hamakuapoko Well Nos. 1 and 2, TMK (2)2-5-004:039 (por.), Hamakuapoko, Maui, Hawaii

Dear Ms. Okuma:

Thank you for the opportunity to provide early review and comments for the Proposed Improvements at Hamakuapoko Well Nos. 1 and 2, TMK (2)2-5-004:039 (por.), Hamakuapoko, Maui, Hawaii.

After review of the information presented, I am in support of the proposed improvements and have no further comments at this time.

Sincerely,


JOSEPH PONTANILLA,
COUNCIL VICE CHAIR

ALAN M. ARAKAWA
Mayor



DAVID TAYLOR, P.E.
Director

PAUL J. MEYER
Deputy Director

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

December 14, 2012

Joseph Pontanilla, Council Vice Chair
County Council
County of Maui
200 S. High Street
Wailuku, Hawaii 96793

Dear Council Vice Chair Pontanilla:

Subject: Early Consultation Request for the Proposed Improvements at
Hamakuapoko Well Nos. 1 and 2
TMK: (2) 2-5-004:039 (por.), Hamakuapoko, Maui, Hawaii

Thank you for your letter, dated April 23, 2012, providing early consultation comments on the proposed improvements at Hamakuapoko Well Nos. 1 and 2. The Department of Water Supply (DWS) acknowledges and thanks you for your support of the proposed project.

We appreciate your input and will include a copy of your comment letter in the Draft Environmental Assessment for the proposed project. Should you have any questions, please feel free to contact our planning consultant, Mark Alexander Roy of Munekiyo & Hiraga, Inc. at (808) 244-2015.

Sincerely,

A handwritten signature in black ink, appearing to read "D. Taylor".

David Taylor, P.E.
Director

cc: Curtis Eaton, P.E., County of Maui, Department of Water Supply
Mark Alexander Roy, Munekiyo & Hiraga, Inc.

"By Water All Things Find Life"



822 Bishop Street
Honolulu, Hawaii 96813
P.O. Box 5440
Honolulu, Hawaii 96801-5440
www.alexanderbaldwin.com
Tel (808) 525 6660
Fax (808) 525 6677
email mching@abam.com



MEREDITH CHING
Vice President

May 9, 2012

Munekiyo & Hiraga, Inc.
Attention: Cheryl K. Okuma
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms.  Okuma:

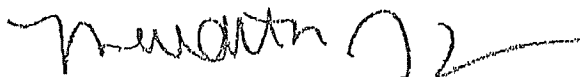
RE: Early Consultation Request for Proposed Improvements at Hamakuapoko Well Nos. 1 and 2, TMK (2)2-5-004:039 (por.), Hamakuapoko, Maui, Hawaii

Thank you for your letters of April 17, 2012 to A&B Properties and HC&S advising us of the upcoming preparation of a Draft EA for the subject project, intended to provide agricultural water, water for use by consumers on the DWS' Upcountry Water System (UCWS) during declared drought events, and to serve as backup capacity for the UCWS.

Your letter notes that the County is currently in negotiations with A&B on the subdivision and acquisition of the two wells sites, as well as a new tank site. Please note that the County will also need to work with the company on securing various easements across A&B land for the pipelines as well as to provide access to the wells. We can provide a list of the specific easements which we believe are involved with this project.

Thank you for this opportunity to comment. We look forward to further consultation with you and the DWS.

Very truly yours,



Meredith J. Ching

ALAN M. ARAKAWA
Mayor



DAVID TAYLOR, P.E.
Director

PAUL J. MEYER
Deputy Director

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

December 14, 2012

Ms. Meredith Ching
Alexander & Baldwin, Inc.
822 Bishop Street
Honolulu, Hawaii 96813

Dear Ms. Ching:

Subject: Early Consultation Request for the Proposed Improvements at
Hamakuapoko Well Nos. 1 and 2
TMK: (2) 2-5-004:039 (por.), Hamakuapoko, Maui, Hawaii

Thank you for your letter, dated May 9, 2012, providing early consultation comments on the proposed improvements at Hamakuapoko Well Nos. 1 and 2. The Department of Water Supply (DWS) acknowledges that the County will work with Alexander & Baldwin, Inc. to secure various easements across A&B land for pipelines and to provide access to the well sites. DWS staff will coordinate with your office regarding the specific easements that would be involved for the proposed project.

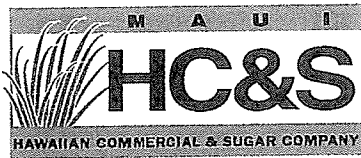
We appreciate your input and will include a copy of your comment letter in the Draft Environmental Assessment for the proposed project. Should you have any questions, please feel free to contact our planning consultant, Mark Alexander Roy of Munekiyo & Hiraga, Inc. at (808) 244-2015.

Sincerely,

David Taylor, P.E.
Director

cc: Curtis Eaton, P.E., County of Maui, Department of Water Supply
Mark Alexander Roy, AICP, Munekiyo & Hiraga, Inc.

"By Water All Things Find Life"



JUN 22 2012

June 21, 2012

Department of Water Supply
c/o Munekiyo & Hiraga Inc.
Attention: Ms. Cheryl K. Okuma
305 High Street, Suite 304
Wailuku, Hawaii 96793

Dear Ms. Okuma:

Re: Hamakuapoko Wells

As per your request below is a list of the specific easements which we believe are involved with the above referenced project:

- 1) Access easement from County owned Holomua Road through HC&S field 100 hauler road to H'Poko Well # 1. Access easement area required is 3.917 acres.
- 2) Access and pipeline easement from H'Poko Well # 1 through field 118 hauler road and 117 field road to H'Poko Well # 2. Access easement area required is 1.959 acres.
- 3) Pipeline easement from H'Poko Well # 2 through field 116 and along field 118 hauler road up to Kamole water treatment plant. Pipeline easement area required is 3.376 acres.
- 4) Pipeline easement (36" pipeline connection to County system) from H'Poko Well # 2 through fields 117 and 102 to County owned Holomua Road. The original plan shows the pipeline easement area from H'Poko Well # 1 to Holomua Road at 5.770 acres but the area needs to be revised to reflect the route beginning from H'Poko Well # 2.
- 5) Pipeline easement (36" pipeline) from County owned Baldwin Avenue through fields 200, 205 and 208 and along Paia Mill hauler road to the top of field 600. The map shows an easement area of 11.327 acres but this area needs to be revised because the section from the top of field 600 to the Hana Highway has not been constructed.

Please contact me at 877-6950 if you have any questions

Sincerely,

Garret Hew
Manager, Water Resources

ALAN M. ARAKAWA
Mayor



DAVID TAYLOR, P.E.
Director

PAUL J. MEYER
Deputy Director

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

December 14, 2012

Mr. Garret Hew
Hawaiian Commercial & Sugar Company
P.O. Box 266
Puunene, Hawaii 96784

Dear Mr. Hew:

Subject: Early Consultation Request for the Proposed Improvements at
Hamakuapoko Well Nos. 1 and 2
TMK: (2) 2-5-004:039 (por.), Hamakuapoko, Maui, Hawaii

Thank you for your letter, dated June 21, 2012, providing early consultation comments on the proposed improvements at Hamakuapoko Well Nos. 1 and 2. The Department of Water Supply has reviewed the list of easements noted in your letter and the Department of Water Supply (DWS) will work with Alexander & Baldwin, Inc. and Hawaiian Commercial & Sugar Company to secure the various easements that will be necessary for the subject project.

We appreciate your input and will include a copy of your comment letter in the Draft Environmental Assessment for the proposed project. Should you have any questions, please feel free to contact our planning consultants, Mark Alexander Roy or Tessa Munekiyo Ng of Munekiyo & Hiraga, Inc. at (808) 244-2015.

Sincerely,

A handwritten signature in black ink, appearing to read "D. Taylor".

David Taylor, P.E., Director

cc: Jeff Pearson, County of Maui, Department of Water Supply
Curtis Eaton, P.E., County of Maui, Department of Water Supply
Mark Alexander Roy, AICP, Munekiyo & Hiraga, Inc.

"By Water All Things Find Life"

APR 27 2012



April 25, 2012

Munekiyo & Hiraga, Inc.
Attn: Ms. Cheryl Okuma
305 High Street, Suite 104
Wailuku, Hawaii 96793

Subject: Early Consultation Request for Proposed Improvements at Hamakuapoko Well
Nos. 1 and 2
Tax Map Key: (2) 2-5-004:039 (por.)
Hamakuapoko, Maui, Hawaii

Dear Ms. Okuma,

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

In reviewing our records and the information received, Maui Electric Company (MECO) would like to highly encourage the customer's electrical consultant to submit electrical drawings to us as soon as practical to address and coordinate any possible relocations of our facilities. Since this project's anticipated electrical demand may have a substantial impact to our system, we encourage the customer's electrical consultant to submit the electrical demand requirements and project time schedule as soon as practical so that service can be provided on a timely basis. MECO may need to complete system upgrades to accommodate the anticipated electrical load.

Should you have any questions or concerns, please call Kelcie Kawamura 872-3246.

Sincerely,

A handwritten signature in black ink, appearing to read 'R. Okazaki'. The signature is fluid and cursive, written over a few lines.

Ray Okazaki
Supervisor, Engineering

ALAN M. ARAKAWA
Mayor



DAVID TAYLOR, P.E.
Director

PAUL J. MEYER
Deputy Director

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

December 14, 2012

Mr. Ray Okazaki, Supervisor
Maui Electric Company, Ltd.
P.O. Box 398
Kahului, Hawaii 96733-6898

Dear Mr. Okazaki:

Subject: Early Consultation Request for the Proposed Improvements at
Hamakuapoko Well Nos. 1 and 2
TMK: (2) 2-5-004:039 (por.), Hamakuapoko, Maui, Hawaii

Thank you for your letter, dated April 25, 2012, providing early consultation comments on the proposed improvements at Hamakuapoko Well Nos. 1 and 2. The Department of Water Supply (DWS) offers the following information in response to the comments noted in your letter.

The proposed improvements to and subsequent reopening of the Hamakuapoko Well Nos. 1 and 2 would allow for 1.5 million gallons per day (mgd) of water to be pumped at the two (2) wells. This is the same level of pumping that occurred between 2000 and 2006 when the Hamakuapoko wells were in operation. As such, the anticipated electrical demand associated with the reopening of the two (2) wells is comparable to the electrical demand from the well sites between 2000 and 2006.

DWS will coordinate with Maui Electric Company, Ltd. to provide information on electrical demand requirements in advance of the reopening of the wells. The Draft Environmental Assessment for the proposed project will outline the anticipated project time schedule.

"By Water All Things Find Life"



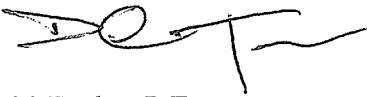
Mr. Ray Okazaki, Supervisor

December 14, 2012

Page 2

We appreciate your input and will include a copy of your organization's comment letter in the Draft Environmental Assessment for the proposed project. Should you have any questions, please feel free to contact our planning consultant, Mark Alexander Roy of Munekiyo & Hiraga, Inc. at (808) 244-2015.

Sincerely,

A handwritten signature in black ink, appearing to read 'DT', with a stylized flourish extending to the right.

David Taylor, P.E.

Director

cc: Curtis Eaton, P.E., County of Maui, Department of Water Supply
Mark Alexander Roy, Munekiyo & Hiraga, Inc.



April 27, 2012

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

ATTN: Cheryl K. Okuma
Phone: (808) 244-2015

SUBJECT: EARLY CONSULTATION REQUEST FOR PROPOSED IMPROVEMENTS
AT HAMAKUAPOKO WELL NOS. 1 AND 2
TMK: (2) 2-5-004:039 (por)
HAMAKUAPOKO, MAUI, HAWAII

Dear Ms. Okuma:

Thank you for providing Hawaiian Telcom Incorporated, the opportunity to comment on the early consultation for the proposed improvements at Hamakuapoko Well Nos. 1 and 2 project.

The described subject project occurs near existing aerial facilities. Please contact our Outside Plant Engineering Department area engineer Sheri Tihada at (808) 242-5258 regarding any facility rearrangement or pole shoring/reinforcement, if required, or with any questions regarding this project.

Sincerely,

Gerry Sagucio
Section Manager –
Network Engineering & Planning

C: File (3005 1204-016)
S. Tihada

ALAN M. ARAKAWA
Mayor



DAVID TAYLOR, P.E.
Director

PAUL J. MEYER
Deputy Director

**DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI**

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

December 14, 2012

Mr. Gary Sagucio, Section Manager
Hawaiian Telcom
P.O. Box 2200
Honolulu, Hawaii 96841

Dear Mr. Sagucio:

Subject:: Early Consultation Request for the Proposed Improvements at
Hamakuapoko Well Nos. 1 and 2
TMK: (2) 2-5-004:039 (por.), Hamakuapoko, Maui, Hawaii

Thank you for your letter, dated April 27, 2012, providing early consultation comments on the proposed improvements at Hamakuapoko Well Nos. 1 and 2. The County of Maui, Department of Water Supply (DWS) offers the following information in response to the comments noted in your letter.

We acknowledge that the project occurs near existing aerial facilities. The proposed improvements are primarily limited to the replacement of existing equipment within the Hamakuapoko Well Nos. 1 and 2 project sites. A new 150,000 gallon water tank is also proposed on land adjacent to the Well No. 2 project site. It is noted that several alternative locations were analyzed for the new tank and the location of existing aerial utility facilities was taken into consideration during the site selection process.

DWS does not anticipate the need for any facility rearrangement or pole shoring or reinforcement. However, should the need for this arise, DWS will contact Hawaiian Telcom's Outside Plant Engineering Department area engineer.

"By Water All Things Find Life"

Mr. Gary Sagucio, Section Manager
December 14, 2012
Page 2

We appreciate your input and will include a copy of your organization's comment letter in the Draft Environmental Assessment for the proposed project. Should you have any questions, please feel free to contact our planning consultant, Mark Alexander Roy of Munekiyo & Hiraga, Inc. at (808) 244-2015.

Sincerely,

A handwritten signature in black ink, appearing to read 'D. Taylor', with a stylized flourish extending to the right.

David Taylor, P.E.
Director

cc: Curtis Eaton, P.E., County of Maui, Department of Water Supply
Mark Alexander Roy, Munekiyo & Hiraga, Inc.

Mark Roy

From: Alan Kaufman [alankaufmandvm@gmail.com]

Sent: Thursday, May 03, 2012 4:11 PM

To: Colleen Suyama

Subject: H'poko wells

County Water Director David Taylor is requesting that

the public submit questions and issues of concern

regarding the resurrection of the two water wells at

Hamakuapoko

It's time for the Hamakuapoko wells to be brought into the county system and water made available for those who need it.

Concerns about contaminants are legitimate and can be legitimately addressed with proper treatment and filtration protocols. Institute those protocols and get the water into the system.

Thank you.

--

Alan Kaufman, DVM

808 870 9861

ALAN M. ARAKAWA
Mayor



DAVID TAYLOR, P.E.
Director

PAUL J. MEYER
Deputy Director

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

December 14, 2012

Mr. Alan Kaufman
Via e-mail: alankaufmandvm@gmail.com

Dear Mr. Kaufman:

Subject: Early Consultation Request for the Proposed Improvements at
Hamakuapoko Well Nos. 1 and 2
TMK: (2) 2-5-004:039 (por.), Hamakuapoko, Maui, Hawaii

Thank you for your email, dated May 3, 2012, providing early consultation comments on the proposed improvements at Hamakuapoko Well Nos. 1 and 2. The County of Maui, Department of Water Supply (DWS) offers the following information in response to your comments:

1. DWS acknowledges your comment about the need for the Hamakuapoko wells to be returned to the County system and water made available for those who need it. The Hamakuapoko Well Nos. 1 and 2 will be reopened for agricultural use, use for customers of the Upcountry Water System (UCWS) during declared drought events, and also to serve as backup capacity for the UCWS. Once the Hamakuapoko Wells are reopened, the existing Pookela Well, which currently serves as backup for the UCWS, will be made available for full-time production and new water meters may be issued to applicants on the water meter waiting list.
2. We note your desire for DWS to institute proper water treatment protocols to address concerns regarding contaminants in the water. In 1999, DWS installed a Granular Activated Carbon (GAC) Treatment facility at Well No. 2 that is capable of treating water from both wells. Water from Hamakuapoko Well No. 1 is transported to Well No. 2 where the combined water drawn from the two (2) wells flow through the treatment process provided by the GAC chambers. The GAC method treats water when the water flows downward from the top of a pressurized vessel through a bed of activated carbon. Active carbon refers to an extremely porous form of carbon, which gives it a very large surface area for absorption of contaminants. The GAC treatment process will be utilized

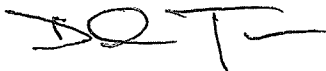
"By Water All Things Find Life"

Mr. Alan Kaufman
December 14, 2012
Page 2

again when the Hamakuapoko wells are reopened. The treated water from the system meets State Department of Health standards for drinking water. GAC systems are an industry standard and have been proven in Maui County. The Department of Health approved the Hamakuapoko Well Nos. 1 and 2 for use as drinking water after treatment in 2000 and DOH reaffirmed that position during Maui County Council deliberations in 2011.

We appreciate your input and will include a copy of your e-mail in the Draft Environmental Assessment for the proposed project. Should you have any questions, please feel free to contact our planning consultant, Mark Alexander Roy of Munekiyo & Hiraga, Inc. at (808) 244-2015.

Sincerely,

A handwritten signature in black ink, appearing to read 'DT', with a horizontal line extending to the right.

David Taylor, P.E.
Director

cc: Curtis Eaton, P.E., County of Maui, Department of Water Supply
Mark Alexander Roy, Munekiyo & Hiraga, Inc.

From: Colleen Suyama <Colleen@mhplanning.com>

Date: May 7, 2012 4:28:40 PM HST

To: Cheryl Okuma <Cheryl@mhplanning.com>, Mark Roy <mark@mhplanning.com>

Subject: H'poko Wells

**Colleen Suyama
Munekiyo & Hiraga, Inc.**

305 High Street, Suite 104

Wailuku, Hawaii 96793

Telephone: (808) 244-2015

Facsimile: (808) 244-8729

Email: colleen@mhplanning.com

CONFIDENTIAL AND PRIVILEGED COMMUNICATION: This message (including attachments) is intended for the use of the designated recipient(s) named above. The contents of this correspondence is considered privileged and confidential. If you have received this message in error, kindly notify us immediately by email or telephone, and delete this email from your computer system. Thank you.

Aloha Colleen,

I'm submitting the following comments in response to a request for input regarding the preparation of draft EA for the proposed H'poko Wells 1 and 2 Improvement Project:

- 1) Presumably, water from H'poko wells 1 and 2 will be stored until need is triggered by any of the three conditions. What's the size of proposed storage tank(s) at site #2 and how long is the anticipated holding time in between triggers of events? Will the water be chlorinated before or after storage? This could have bearing on where at Kamole Weir treatment plant H'poko water is introduced.
- 2) Will GAC treatment of the water done to a level that will allow for dilution when mixed with Kamole Weir water, or will treatment be to absolute potable water quality standards?
- 3) At what point in Kamole Weir treatment plant will water from H'poko wells be mixed? Location of introduction point could probably provide additional level of hazardous contaminant reduction/removal without additional treatment, which means additional level of safety for the users. It is my understanding that Kamole Weir treatment plant removes organic solids by a combination of flocculation and membrane filtration. If so, the organics can possibly provide additional surface for adsorption of dissolved contaminants remaining in the H'poko water (although it would be argued that the GAC removes them to "safe" level).
- 4) Will the Old Maui high be allowed to connect to the H'poko wells for source of "potable water" and for fire protection? As you may know, the Old Maui High rehabilitation project depends on having adequate water standards.

Thank you for the opportunity to comment. Please feel free to ask should you have any questions.

Mahalo- Victor

ALAN M. ARAKAWA
Mayor



DAVID TAYLOR, P.E.
Director

PAUL J. MEYER
Deputy Director

DEPARTMENT OF WATER SUPPLY

COUNTY OF MAUI

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

December 14, 2012

Mr. Victor Reyes
vgreyes@hawaiiantel.net

Dear Mr. Reyes:

Subject: Early Consultation Request for the Proposed Improvements at
Hamakuapoko Well Nos. 1 and 2
TMK: (2) 2-5-004:039 (por.), Hamakuapoko, Maui, Hawaii

Thank you for your email, dated May 7, 2012, providing early consultation comments on the proposed improvements at Hamakuapoko Well Nos. 1 and 2. The Department of Water Supply (DWS) offers the following information in response to your comments.

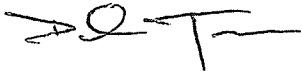
1. The proposed water tank at Well No. 2 will be 150,000 gallons. Water will be chlorinated prior to entering the tank. Flow through the tank will be continuous and will only take place when there is need for water in the Upcountry Water System.
2. Consistent with the Department of Health's approval of the Hamakuapoko Wells as a drinking water source, the GAC treatment units will deliver potable water of the quality that meets the drinking water standards established by Hawaii Administrative Rules, Title 11, Chapter 20. The treatment will achieve potable water quality standards before it enters the clear well at Kamole Weir Water Treatment facility. In other words, compliance with water quality standards will be achieved prior to dilution with treated surface water from the Wailoa Ditch in the clear well.
3. The water from the Hamakuapoko Wells intended for potable uses, following treatment by the GAC unit, will enter the Kamole Water Treatment Facility at the infiltrate line before the clearwell chlorine contact chamber. In addition to the treatment provided by the GAC units, the combined flows shall be continuously disinfected in compliance with the Surface Water Treatment Rule requirement.

"By Water All Things Find Life"

Mr. Victor Reyes
December 14, 2012
Page 2

The water from the Hamakuapoko Well Nos. 1 and 2 will be made available for agricultural use, use during declared drought events, and as backup for the UCWS. The Old Maui High School is located within the Central Maui Water System. However, connection between the Old Maui High School and the Hamakuapoko Wells is not included in the scope of work for this repair and maintenance project. We appreciate your input and will include a copy of your email in the Draft Environmental Assessment for the proposed project. Should you have any questions, please feel free to contact our planning consultant, Mark Alexander Roy of Munekiyo & Hiraga, Inc. at (808) 244-2015.

Sincerely,

A handwritten signature in black ink, appearing to read 'D. Taylor', with a horizontal line extending to the right.

David Taylor, P.E.
Director

cc: Curtis Eaton, P.E., County of Maui, Department of Water Supply
Mark Alexander Roy, Munekiyo & Hiraga, Inc.

FROM: Dick Mayer 1111 Lower Kimo Dr. Kula, HI 96790

dickmayer@earthlink.net

May 7, 2012

TO: Ms. Cheryl K. Okuma, Munekiyo and Hiraga, Inc.

cheryl@mhplanning.com

RE: ENVIRONMENTAL ASSESSMENT: HAMAKUAPOKO WELLS:
QUESTIONS TO BE ANSWERED IN THE ENVIRONMENTAL ASSESSMENT

Mahalo for the opportunity to provide comments for the two Hamakuapoko Wells Environmental Assessment. I am pleased that you are soliciting matters to be discussed at this early stage, before actually preparing the EA.

Hopefully the issues raised and the questions asked below will be fully discussed in the upcoming environmental assessment or in a more complete environmental impact statement. Although some issues overlap more than one category, my comments are divided into three categories: a) Economic; b) Reliability; c) Health.

ECONOMIC QUESTIONS:

1. What does the 1999 County DBCP Water Well settlement cover?

Hamakuapoko well number 1 appears from County testing records to now have TCP, but not DBCP contamination. Does the County's 1999 settlement with the chemical companies still cover all costs of filtering that water, or is the County obligated to pay, since the agreement refers to DBCP only, and the need for DBCP to "exceed specified levels" in the well?

For reference: Maui County's 1999 settlement states that: "until December 1, 2039", the DBCP manufacturers will ". . . pay for 90% of the capital cost to install filtration systems in any future water wells if the presence of a nematocide, commonly known as DBCP, exceeds specified levels, and for the ongoing maintenance and operating cost for filtration systems on existing and future wells."

2. Costs of pumping well water up to the ditch?

Former DWS Water Director Eng stated (2009 Water Resources Committee Meeting) that it would be too costly, (\$2 to \$3 /1000 gal.) to pump Hamakuapoko well water to a nearby EMI ditch for agricultural use, yet the wells must be used regularly or the carbon filters can become subject to bacteria growth. Each well pump has a capacity of 500 gpm. If they are both pumped daily at capacity, cost would be around \$3,000/day or nearly \$1 million/yr. How many days will the wells be pumped when they are not being used for back up, and where will the water go? Are all pumping costs covered by the 1999 legal settlement, or will DWS have to bear the costs? Will the County system get any water in exchange from HC&S system if Hamakuapoko wells are pumped to an EMI irrigation ditch? What is the rate that the County will charge HC&S for the H'poko well water that is put into the ditch? Will HC&S be willing to pay that rate?

3. **Costs of pumping H'poko well water to Upcountry reservoirs?**

If the H'poko wells become back-up wells, how much will it cost to pump them to the surface and then send the water upcountry, compared to pumping and distributing water from the County's Po'okela well which they are replacing? How much will it cost to deliver the water to the ditch, or Kamaole treatment plant year round, or pump the water up to the upper system when needed? Director Taylor says it's the same cost to use either the Po'okela or Hamakuapoko wells. Please show the comparative cost estimates: A) Are there any capital costs putting in any new distribution lines? B) To install pumps to send water uphill (in addition to the pumps within the wells)? C) To build water tanks and/or reservoirs to store the additional water from H'poko wells?

4. **Costs of Nitrate monitoring and clean up?**

In a 2006 meeting DWS staff promised that the Dept. "will install a continuous nitrate meter on wells." Will the DWS comply? If testing shows nitrate levels having risen since 2004, as has happened in Oahu wells, will the DWS need to install a separate filter system to remove the nitrates, since the Granulate Active Charcoal (GAC) filter does not remove nitrates? Can nitrates interfere with absorption of the pesticide residue in the pumped water and make GAC filter changes more frequent and costly? Mayor Arakawa said a nitrate treatment plant would cost an additional \$2 million. Is there land and funding available for such a facility? Does the DBCP settlement cover these costs?

5. **Costs of pumping equipment or tests?**

Will the Hamakuapoko wells need new pumps or filters, since they haven't been used in seven years? How much will that cost? Will a 10 day test be done to determine a sustainable pumping rate, and to determine chemical levels present in the wells? Will there be costs for these tests? Does the 1999 settlement with the chemical companies pay for this testing? If not, is it in the DWS budget?

6. **Added costs of monitoring contaminant removal?**

Jackie Takakura, DWS spokesperson, stated (2006) that compliance samples for nitrates and DBCP, etc. will be done monthly and sent to an independent lab, with results submitted to DOH. She also noted that GAC filters will be tested every two weeks. She offered that "testing will be double what is required. Nitrates will be monitored continuously". Former Director Eng (2009) on the other hand, told the Water Resources Committee that monitoring of the filters "could go as infrequent as every quarter."

Since the Hamakuapoko wells have not been tested since 2004, what will be the County's NEW policy on monitoring for Nitrates, DBCP, TCP, EDB and other chemicals in the two wells and how much would this extra effort cost in staff time and lab fees? Are these costs covered by the settlement? If not, will this water be more costly per gallon than other sources? Please provide actual costs and comparisons.

7. **Are there added costs of debt service?**

Mr. Taylor told the Water Resource Committee that it would take two years and cost \$2 million to get the Hamakuapoko wells operational. Will the DWS need to borrow the funds needed for the upgrades and then pay them back gradually as water meters are issued, or are funds now available? Will the true costs of Hamakuapoko activation be more than the \$2 million cost? For example, if the full activation costs were \$4 million, and the well allowed 500 meters to be issued, that would only bring in \$3 million at current rates of \$6,000/meter. Will rates need to go up to \$8,000/meter to cover real costs of well activation and infrastructure improvements? How much of the cost of the upgrades will be paid from 1999 settlement funds?

8. **The big question: Cost effective choices?**

Please complete a cost comparison: getting water from the H'poko wells as compared to alternatives: a) taking additional non-chemically saturated water from the ditch at Kamaole (since the County has additional, low-cost rights to this water supply, and HC&S could take over the H'poko wells for agricultural use); b) drilling a new well upcountry (in addition to Po'okela); c) repairing the Waikamoi flume; and d) any other viable alternative.

RELIABILITY QUESTIONS:

8. **On site infrastructure needs?**

In 2006 DWS was working to get electricity connected at the well site. Has this been done, or will pump tests require use of the generator that has been on site for years? And will electrical connections now have to be provided? What is the long-term proposal to provide electricity? Is wind power a viable option? What are the costs?

9. **Sustainable yield / water quality data?**

The Water Department wanted a 10-day pump test of a private upcountry well's capacity before it would be acceptable. Hamakuapoko wells were only tested for 48 hrs. back in the 1990's. The State DOH also mentioned in 2009 that continuous pumping would be needed to test the well's water quality. If testing, or continuous use shows the wells' sustainable yields to be lower than expected, will the County be able to still have the wells qualify as back up for Po'okela well? Is there a Plan B?

10. **Is other infrastructure ready for Upcountry meter list customers?**

A main purpose of activating the Hamakuapoko wells is to issue meters to those on the upcountry list as soon as possible. Do Haiku and Makawao storage tanks have additional capacity to serve those on the meter list if water would become available, or would more improvements be needed to supplement the upcountry storage and distribution system? Describe these improvements and their costs.

11. Pa'ia Aquifer Capacity.

The Pa'ia aquifer from which the Hamakuapoko wells would draw is described in several water studies as thin, mostly brackish, and relying on artificial recharge from leaking reservoirs and agricultural irrigation for its potable water capacity. The State's 2008 Water Resources Protection Plan (WRPP) describes Pa'ia Aquifer (p. 83) as being artificially augmented by surface (stream) water imported from East Maui. If this imported source diminishes, will the wells remain viable? This is important data to have if we want to offer Upcountry homeowners and farmers a long-term reliable water source.

The exact quote from WRPP:

"Sustainable Yield ignores significant importation of surface water into Paia from outside the aquifer system area. This explains the ability to withdraw fresh water from the aquifer at significantly higher rates than the sustainable yield without apparent negative impacts (i.e. rising chloride concentrations or decreasing water levels)."

Will the Hamakuapoko wells yield 1.5 MGD of potable water? If A&B converts HC&S sugar plantation to housing or reduces/eliminates sugar farming (as all of the other Hawaii sugar plantations have already done), would the Hamakuapoko wells still reliably produce up to .75 MGD each? How can we protect our investment, or should we make the investment at all?

12. Again the big question: Cost effective choices?

Is it more cost effective to spend two years and several million dollars to bring a water source on line for the upcountry system which is at a low elevation, has an untested output, and has potentially ongoing water quality issues and related rising maintenance costs; or let A&B have the use of H'poko water and have the DWS take more water from the ditch at the Kamaole Wier site, as is allowed in the agreement with A&B?

13. Unusual situations:

One of the conditions allowed in the ordinance is for the "agricultural use" of H'poko water. Will agriculture-destined water be GAC filtered just like drinking water? If not, how will agricultural water be separated from the public drinking water supply? If yes, is this a cost-effective approach?

The H'poko well is intended as a back-up. When another part of the Upcountry Water Supply system fails, how quickly can the H'poko filter system and the water it filters be lab tested as safe drinking water?

HEALTH QUESTIONS: Residents should have healthful choices available. The DWS has the ability and obligation to provide water from safe and clean sources.

14. Safe system waste disposal.

What is the current Department view on filtration system design? How many pounds of GAC filter material a year will the chemical company settlement pay for? Will the GAC filters from the Hamakuapoko wells be backwashed? If so where do the concentrated toxins in the effluent go? If nitrate treatment is needed, where will the toxic effluent go? The remote Hamakuapoko well location has no sewer system.

15. Effect of nitrates in the water supply.

Nitrates are very dangerous for infants, the young and elderly; exposure over time to tiny amounts can cause liver and kidney damage. DWS staff member, Ms. Takakura informed the public in 2006 that Hamakuapoko well 2 has higher nitrate levels than well 1. The figures she gave for well 2: between 3.5 and 6.75 mg/ltr, are as high as the infamous Kunia wells on O'ahu. That drinking water source, although its wells did not test above the Health Department's "maximum levels" for nitrates, impacted the health of nearby residents and the Honolulu Water Dept. is securing funds for installation of a filter to remove the nitrates.

Nitrate levels have risen over time in O'ahu wells. The Hamakuapoko wells, surrounded by active cane fields which have nitrate fertilizer regularly applied, are may do the same. GAC (charcoal) filters don't remove nitrates. How will public health be protected if this nitrate contaminated water is sent upcountry? Does the Kamaole treatment plant have ion filters to remove them? Is this well location a good long-term investment?

If the H'poko well water is sent upcountry during drought periods, as it is being programmed to do, it may not be diluted with other waters, scarce during that period. Therefore, it is absolutely necessary to remove the nitrates.

16. Frequency and effectiveness of water quality testing?

How often will the GAC filters be monitored to make sure they are not "full" or "furrowed" and letting contaminants pass through? Ms. Takakura informed the public that water will flow through two GAC filters, and each filter has sampling points at four different locations "to ensure removal of all 3 contaminants to no detectible levels." Mr. Eng told the Council in 2009 that only one filter would be used.

Either way, the interpretation of "no detectible levels" can mean low levels of pollutants ARE present after filtration, but not detectable. However, "no detectable levels" does NOT mean the water is safe and without a health threat.

17. The Vulnerable

For those people whose medical situation makes them most in danger from some of the chemicals in the well water, what provision can be made to notify them that water from the H'poko wells is being introduced into the water supply? This would allow them to use bottled water or some other alternative to DWS water.

18. Are EPA and Health Department Water quality standards behind the times?

When DBCP was banned in 1979 across the mainland, Hawaii Health Dept. officials told EPA it could be safely used in Hawaii, because they were certain it wouldn't leach into our aquifers. Apparently this was not the case; perhaps a political and financial decision was made.

Many potentially toxic products continue to be approved for use by EPA, only to be eventually proven harmful. No standards or testing is done for these for many years, yet they can combine in our water supply to form a chemical soup. Our keiki and kupuna are particularly at risk.

Since the public cannot always assume that state and federal regulators have adequate information to protect public health, what can be done to go beyond what DOH and EPA require, to minimize the public's exposure to even small doses of deadly or dangerous chemicals?

19. What is the long-term water testing program for these H'poko waters?

Since health concerns were the major reason that the Maui County Council previously banned the use of these waters, it is absolutely necessary for the Environmental Assessment to assure the general public, those who have compromised medical situations, and those who are elderly or very young that this water is safe. The EA must provide a complete description of the water testing program: a) when the wells are first pumped, and b) thereafter on an ongoing basis whenever the water is inserted into the drinking water supply.

Who will do the testing? What is the competency of the personnel, and of the testing lab? How often will the tests be conducted? What chemicals will be tested? How will the public be rapidly informed of the results (instead of the present system of year-end reports of what chemicals were found in the water)?

CC: Director David Taylor, Department of Water Supply david.taylor@mauicounty.gov
Councilmember Gladys Baisa gladys.baisa@mauicounty.us
Councilmember Mike White mike.white@mauicounty.us

ALAN M. ARAKAWA
Mayor



DAVID TAYLOR, P.E.
Director

PAUL J. MEYER
Deputy Director

DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
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WAILUKU, MAUI, HAWAII 96793-2155
www.mauewater.org

December 14, 2012

Mr. Dick Mayer
1111 Lower Kimo Drive
Kula, Hawaii 96788

Dear Mr. Mayer:

Subject: Early Consultation Request for the Proposed Improvements at
Hamakuapoko Well Nos. 1 and 2
TMK: (2) 2-5-004:039 (por.), Hamakuapoko, Maui, Hawaii

Thank you for your letter, dated May 7, 2012, providing early consultation input on the Draft Environmental Assessment (EA) that is being prepared for the proposed improvements at Hamakuapoko Well Nos. 1 and 2 in Hamakuapoko, Maui, Hawaii. The following responses are provided in the order of the comments presented in your letter:

• **Comment (1): What does the 1999 County DBCP Water Well settlement cover?**

Hamakuapoko Well No. 1 appears from County testing records to now have TCP, but not DBCP contamination. Does the County's 1999 settlement with the chemical companies still cover all costs of filtering that water, or is the County obligated to pay, since the agreement refers to DBCP only, and the need for DBCP to "exceed specified levels" in the well?

For reference: Maui County's 1999 settlement states that: "until December 1, 2039", the DBCP manufacturers will ... pay for 90 percent of the capital cost to install filtration systems in any future water wells if the presence of a nematocide, commonly known as DBCP, exceeds specified levels, and for the ongoing maintenance and operating cost for filtration systems on existing and future wells."

"By Water All Things Find Life"

Response:

The terms of the 1999 settlement agreement requiring that manufacturers of 1 and 2 dibromo-3-chloro propane (DBCP) reimburse the County for certain capital costs is effective until December 1, 2039. The requirement that DBCP manufacturers reimburse the capital costs incurred by the County for the installation of Granulated Activation Carbon (GAC) filtration systems in existing and future water wells is triggered when DBCP is found in the water supply and exceeds Maximum Contaminant Levels (MCL) set by State Department of Health (DOH) regulations. The agreement covers several DWS facilities, including Hamakuapoko Well Nos. 1 and 2.

The 1999 settlement agreement limits the DBCP manufacturers' responsibility to pay for the capital costs of installing GAC systems when DBCP exceeds the MCLs. DBCP manufacturers' payment for GAC operations and maintenance costs varies and the amounts are capped based on well yields and the number of GAC vessels. The County is reimbursed by DBCP manufacturers under the terms set forth in the agreement.

The DBCP manufacturer's obligation under the settlement agreement does not apply to the presence of other chemicals beyond DBCP. In accordance with requirements set by the U.S. Environmental Protection Agency (EPA) and DOH, the Department of Water Supply (DWS) monitors and tests the quality of water pumped from its wells for other regulated chemicals, including DBCP and these results are reported to DOH and DWS customers.

DOH has established a State MCL for TCP at .6 parts per billion (ppb). TCP has been detected at the wellheads where water is first pumped from the ground source. The drawn groundwater is fed to the GAC unit located at the Hamakuapoko Well No. 2 site and is then treated. Testing conducted after GAC treatment has not detected TCP in the water. The treated water is then pumped to the Kamole Water Treatment Plant (WTP).

• **Comment (2): Costs of pumping well water up to the ditch?**

Former DWS Director Jeffrey Eng stated (2009 Water Resources Committee Meeting) that it would be too costly, (\$2 to \$3 /1000 gal.) to pump Hamakuapoko well water to a nearby EMI ditch for agricultural use, yet the wells must be used regularly or the carbon filters can become subject to bacteria growth. Each well pump has a capacity of 500 gpm. If they are both pumped daily at capacity, cost would be around \$3,000/day or nearly \$1 million/yr. How many days will the wells be pumped when they are not being used for back-up, and where will the water go? Are all pumping costs covered by the 1999 legal settlement, or will DWS have to bear the costs? Will the County system get any water in exchange from HC&S system if Hamakuapoko wells are pumped to an EMI

irrigation ditch? What is the rate that the County will charge HC&S for the Hamakuapoko well water that is put into the ditch? Will HC&S be willing to pay that rate?

Response:

Pumping costs associated with well operations are not covered by the 1999 settlement agreement and remain the responsibility of the County.

When Hamakuapoko Well Nos. 1 and 2 are not used for back-up they will be pumped as needed to keep the wells operational and to maintain the integrity of the GAC treatment unit. The GAC carbon filters are regularly maintained and replaced. After undergoing treatment through the GAC chambers at the Hamakuapoko Well No. 2 site, the water will feed into a new water storage tank adjacent to this well site. Water from the new storage tank will be pumped through a 12-inch pipe to the Kamole WTP which is located approximately 1 mile south of Hamakuapoko Well No. 2. The water pumped from the Hamakuapoko Well Nos. 1 and No. 2 will not be pumped to the EMI irrigation ditch owned by Hawaiian Commercial & Sugar Company.

• **Comment (3): Costs of pumping Hamakuapoko well water to Upcountry reservoirs?**

If the Hamakuapoko wells become back-up wells, how much will it cost to pump them to the surface and then send the water upcountry, compared to pumping and distributing water from the County's Pookela well which they are replacing? How much will it cost to deliver the water to the ditch, or Kamaole treatment plant year round, or pump the water up to the upper system when needed? Director Taylor says it's the same cost to use either the Po'okela or Hamakuapoko wells. Please show the comparative cost estimates: A) Are there any capital costs putting in any new distribution lines? B) To install pumps to send water uphill (in addition to the pumps within the wells)? C) To build water tanks and/or reservoirs to store the additional water from Hamakuapoko wells?

Response:

DWS staff will operate the Hamakuapoko wells to provide enhanced reliability for the Upcountry Water System. The wells will be used as back-up during times of reduced surface water storage due to drought conditions or when there is high customer demand. In regards to pumpage, as groundwater sits on top of seawater at or near zero sea level, the height distance required to pump groundwater to Upcountry Water System users is generally about the same for any well regardless of location.

To provide storage capacity as part of this project a new water tank is being proposed at the Hamakuapoko Well No. 2 site. A site plan identifying the selected location for this new tank will be provided in the Draft EA as well as an estimated construction cost for the subject project.

- **Comment (4): Costs of Nitrate monitoring and clean up?**

In a 2006 meeting DWS staff promised that the Dept. "will install a continuous nitrate meter on wells." Will the DWS comply? If testing shows nitrate levels having risen since 2004, as has happened in Oahu wells, will the DWS need to install a separate filter system to remove the nitrates, since the Granulate Active Charcoal (GAC) filter does not remove nitrates? Can nitrates interfere with absorption of the pesticide residue in the pumped water and make GAC filter changes more frequent and costly? Mayor Arakawa said a nitrate treatment plant would cost an additional \$2 million. Is there land and funding available for such a facility? Does the DBCP settlement cover these costs?

Response:

DWS has a program to regularly monitor and test for nitrates in all its groundwater wells and this program will include the Hamakuapoko Well Nos. 1 and 2 once they become operational.

Prior monitoring results at the wells (following GAC treatment) detected the presence of nitrates at levels below the MCL, which is the standard set by DOH as being safe for potable water use. Nitrates do not interfere with the GAC filters and will not increase the frequency of filter replacement or costs. As the 1999 settlement agreement does not cover the cost of nitrate removal, additional funding and available land would be needed for the construction of a nitrate treatment system, in the event that this would be warranted due to possible elevated nitrate levels in the future. This additional level of treatment is, however, not anticipated to be warranted at this time and as such, is not included in the proposed scope of work for this project.

- **Comment (5): Costs of pumping equipment or tests?**

Will the Hamakuapoko wells need new pumps or filters, since they haven't been used in seven years? How much will that cost? Will a 10 day test be done to determine a sustainable pumping rate, and to determine chemical levels present in the wells? Will there be costs for these tests? Does the 1999 settlement with the chemical companies pay for this testing? If not, is it in the DWS budget?

Response:

Constant rate tests to determine sustainable pumpage were completed in 1999 during the initial commissioning of Hamakuapoko Well Nos. 1 and 2.

In regards to the proposed improvements, existing motors and pumps will be replaced with submersible pumps at the two (2) wells. The GAC chambers located on the Hamakuapoko Well No. 2 site will have new filter media installed prior to re-initiation of operations. The cost of replacement of GAC filter media will be reimbursed to the County by the DBCP manufacturers in accordance with the terms of the 1999 settlement agreement. The settlement agreement does not cover the cost of well testing to determine the presence of chemicals in the wells, other than DBCP. Similar to other County owned and operated drinking water facilities, water quality testing at Hamakuapoko Wells Nos. 1 and 2 is an operational cost that would be borne by DWS.

The Hamakuapoko Well Nos. 1 and 2 will deliver drinking water of the quality that complies with the State DOH drinking water requirements as set forth in Hawaii Administrative Rules (HAR) Chapter 11-20.

• **Comment (6): Added costs of monitoring contaminant removal?**

Jackie Takakura, DWS spokesperson, stated (2006) that compliance samples for nitrates and DBCP, etc. will be done monthly and sent to an independent lab, with results submitted to DOH. She also noted that GAC filters will be tested every two weeks. She offered that "testing will be double what is required. Nitrates will be monitored continuously". Former Director Eng (2009) on the other hand, told the Water Resources Committee that monitoring of the filters "could go as infrequent as every quarter."

Since the Hamakuapoko wells have not been tested since 2004, what will be the County's NEW policy on monitoring for Nitrates, DBCP, TCP, EDB and other chemicals in the two wells and how much would this extra effort cost in staff time and lab fees? Are these costs covered by the settlement? If not, will this water be more costly per gallon than other sources? Please provide actual costs and comparisons.

Response:

DWS regularly monitors and tests its wells for approximately 100 chemicals, including nitrates, DBCP, 1/2/3 trichloropropane (TCP) and ethylene dibromide (EDB) in compliance with the requirements of the DOH. TCP and EDB though used in the agricultural fields have not been detected during prior testing in any of the Hamakuapoko well water after undergoing GAC treatment. DBCP has also not been detected after GAC

treatment. As mentioned previously, reimbursement to the County for operational costs for staff and lab work involved in the monitoring for regulated chemicals is not covered by the 1999 settlement agreement but would be an operational cost that would be included in the annual DWS budget request to the County Council.

• **Comment (7): Are there added costs of debt service?**

Mr. Taylor told the Water Resource Committee that it would take two years and cost \$2 million to get the Hamakuapoko wells operational. Will the DWS need to borrow the funds needed for the upgrades and then pay them back gradually as water meters are issued, or are funds now available? Will the true costs of Hamakuapoko activation be more than the \$2 million cost? For example, if the full activation costs were \$4 million, and the well allowed 500 meters to be issued, that would only bring in \$3 million at current rates of \$6,000/meter. Will rates need to go up to \$8,000/ meter to cover real costs of well activation and infrastructure improvements? How much of the cost of the upgrades will be paid from 1999 settlement funds?

Response:

Other than for costs associated with the maintenance of the GAC system, capital costs to upgrade the Hamakuapoko Well Nos. 1 and 2 are not subject to the 1999 settlement agreement. In regards to funding, an allocation of \$2.0 million for the proposed Hamakuapoko Well improvements is included in the Fiscal Year 2013 budget. These funds were approved by Council and are to be funded by DWS unrestricted funds. DWS will seek additional funding, as may be required, through DWS restricted or unrestricted funds, State Revolving Funds, financing partnerships or County Bond funding.

• **Comment (8): The big question: Cost effective choices?**

Please complete a cost comparison: getting water from the Hamakuapoko wells as compared to alternatives: a) taking additional non-chemically saturated water from the ditch at Kamaole (since the County has additional, low-cost rights to this water supply, and HC&S could take over the Hamakuapoko wells for agricultural use); b) drilling a new well upcountry (in addition to Pookela); c) repairing the Waikamoi flume; and d) any other viable alternative.

Response:

Alternatives have been evaluated as part of the process of planning the proposed improvements to Hamakuapoko Wells Nos. 1 and 2. In specific regards to the comments noted in your letter, the Kamole WTP will not be able to increase the volume it draws for

treatment during times the water level in the Wailoa Ditch is low. Although the use of the ditch water is a lower cost alternative, it is an unreliable source during drought conditions. On the other hand, drilling a new well will incur significant capital costs on the part of DWS and there is the risk a new well would not produce a viable source of potable water. The capital costs (and risks) associated with the new well development will always be greater than the capital costs of improvements to an existing production well.

In regards to the Waikamoi Flume, design for replacement of the existing timber flume is currently in progress in order to eliminate leakages from this system and increase the amount of water conveyed to the Upcountry Water System. This improvement project is being pursued by DWS in addition to the proposed improvements at the existing Hamakuapoko Wells Nos. 1 and 2. A section discussing potential alternatives considered for this project will be included in the Draft EA.

- **Comment (9): On site infrastructure needs?**

In 2006 DWS was working to get electricity connected at the well site. Has this been done, or will pump tests require use of the generator that has been on site for years? And will electrical connections now have to be provided? What is the long-term proposal to provide electricity? Is wind power a viable option? What are the costs?

Response:

Connections to overhead electrical power currently exist at both the Hamakuapoko Well Nos. 1 and 2 well sites. Energy production by wind is a potentially cost effective option in the upcountry water system. Several wind generation sites have been considered by DWS (separate to the proposed action), including net energy metering at the Kamole WTP. DWS will continue to evaluate the feasibility and cost of wind energy at its facilities across the County as well as potential financing opportunities.

- **Comment (10): Sustainable yield / water quality data?**

The Water Department wanted a 10-day pump test of a private upcountry well's capacity before it would be acceptable. Hamakuapoko wells were only tested for 48 hrs. back in the 1990's. The State DOH also mentioned in 2009 that continuous pumping would be needed to test the well's water quality. If testing, or continuous use shows the wells' sustainable yields to be lower than expected, will the County be able to still have the wells qualify as back-up for Pookela well? Is there a Plan B?

Response:

DWS will coordinate testing requirements, as may be applicable, with DOH for the re-initiation of use of the Hamakuapoko Well Nos. 1 and 2. Engineering designs for the original construction of these wells considered the capacity of the wells and ability to yield a certain volume for pumping which was determined to be 1.5 mgd. Should that volume adjust downward in the future, the Hamakuapoko wells could still continue to be utilized as a back-up well for the Pookela Well. Testing for water quality and well capacity at Hamakuapoko Well Nos. 1 and 2 will meet all applicable DOH and State Commission of Water Resource Management (CWRM) requirements.

• **Comment (11): Is other infrastructure ready for Upcountry meter list customers?**

A main purpose of activating the Hamakuapoko wells is to issue meters to those on the upcountry list as soon as possible. Do Haiku and Makawao storage tanks have additional capacity to serve those on the meter list if water would become available, or would more improvements be needed to supplement the upcountry storage and distribution system? Describe these improvements and their costs.

Response:

The existing storage infrastructure within the upcountry water system is anticipated to be adequate to accommodate the water from Hamakuapoko Well Nos. 1 and 2. Specific improvements may, however, be necessary for new water meter customers in order to meet fire protection standards. Water meter applications would need to address DWS requirements for certain improvements based on factors such as the existing infrastructure in place at the location for which the meter is being requested.

• **Comment (12): Paia Aquifer Capacity.**

The Paia aquifer from which the Hamakuapoko wells would draw is described in several water studies as thin, mostly brackish, and relying on artificial recharge from leaking reservoirs and agricultural irrigation for its potable water capacity. The State's 2008 Water Resources Protection Plan (WRPP) describes Paia Aquifer (p. 83) as being artificially augmented by surface (stream) water imported from East Maui. If this imported source diminishes, will the wells remain viable? This is important data to have if we want to offer Upcountry homeowners and farmers a long-term reliable water source.

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Will the Hamakuapoko wells yield 1.5 MGD of potable water? If Alexander & Baldwin converts HC&S sugar plantation to housing or reduces/eliminates sugar farming (as all of the other Hawaii sugar plantations have already done), would the Hamakuapoko wells still reliably produce up to .75 MGD each? How can we protect our investment, or should we make the investment at all?

Response:

We note your concern regarding the potential impact that a reduction in agricultural activity may have on groundwater recharge rates within the Paia Aquifer. While there is no definitive hydrogeological study of the Paia Aquifer, there is some belief that the Paia Aquifer may also benefit from overflow from the nearby Makawao and Haiku ground water systems which are at higher elevations. Our understanding is that the U.S. Geological Survey (USGS) is currently undertaking a study of the hydrogeology of the Haiku, Honopou and Makawao aquifers in order to collect improved information regarding the interaction and capacity of these respective groundwater systems.

The existing Hamakuapoko wells, have been designed and approved with the capacity to cumulatively draw up to 1.5 mgd of water. Re-initiation of use of these wells will be conducted in accordance with all applicable DOH and CWRM requirements.

• **Comment (13): Again the big question: Cost effective choices?**

Is it more cost effective to spend two years and several million dollars to bring a water source on line for the upcountry system which is at a low elevation, has an untested output, and has potentially ongoing water quality issues and related rising maintenance costs; or let Alexander & Baldwin have the use of Hamakuapoko water and have the DWS take more water from the ditch at the Kamaole Weir site, as is allowed in the agreement with Alexander & Baldwin?

Response:

The DWS is proposing this project to increase reliability within the Upcountry Water System. The Hamakuapoko Wells were utilized from 2000 to 2004 and have been

previously approved with a capacity to draw up to 1.5 mgd from the Paia Aquifer. The wells have been tested and proven to be a desirable location for groundwater pumping based on drawdown tests conducted in 1999 during the original development of the wells. Existing transmission infrastructure is already in place to transport water from the Hamakuapoko wells to the Kamole WTP. Water quality tests during the operation of the well have also demonstrated the effectiveness of the GAC treatment process in providing the quality of water necessary to meet State DOH drinking water requirements. The Wailoa Ditch source water at Kamole Weir, on the other hand, is unreliable during drought conditions, and is not considered to be a viable project alternative.

• **Comment (14): Unusual situations:**

One of the conditions allowed in the ordinance is for the “agricultural use” of H`poko water. Will agriculture-destined water be GAC filtered just like drinking water? If not, how will agricultural water be separated from the public drinking water supply? If yes, is this a cost-effective approach?

The H`poko well is intended as a back-up. When another part of the Upcountry Water Supply system fails, how quickly can the H`poko filter system and the water it filters be lab tested as safe drinking water?

Response:

Water pumped from Hamakuapoko Wells will undergo GAC treatment prior to being used for agricultural and drinking water purposes. The water will not be separated and will meet all applicable DOH water quality requirements prior to the conveyance to the Kamaole WTP.

Water quality tests will be conducted on an ongoing basis by DWS as required by DOH to ensure that the water pumped from the Hamakuapoko Wells meet all EPA and DOH drinking water standards and is available, on demand, to serve as backup to the Upcountry Water Systems via conveyance to the Kamaole WTP.

• **Comment (15): Safe system waste disposal.**

What is the current Department view on filtration system design? How many pounds of GAC filter material a year will the chemical company settlement pay for? Will the GAC filters from the Hamakuapoko wells be backwashed? If so where do the concentrated toxins in the effluent go? If nitrate treatment is needed, where will the toxic effluent go? The remote Hamakuapoko well location has no sewer system.

Response:

GAC filtration systems are widely used throughout the water industry and provide an acceptable method of treatment by DOH and EPA standards. For existing and future wells when the MCL for DBCP is exceeded, the 1999 settlement agreement requires the DBCP manufacturers to reimburse the County for the capital cost of installing GAC filters, as well as its operations and maintenance costs. The amount of the reimbursement for capital costs, operations and maintenance costs varies under the terms of the agreement depending on certain criteria for existing and future wells. Reimbursement payments are adjusted by the Consumer Price Index (CPI) annually.

Chemical concentrations are captured in the GAC filter media which undergo replacement as recommended by the manufacturers of the systems. Based on prior testing results, nitrates at the Hamakuapoko Well Nos. 1 and 2 are not expected to exceed the MCL as established by DOH. As such, the installation of a nitrate removal system is not necessary at this time and has not been included in the scope of work for the proposed project, as part of this project. If nitrate treatment is deemed necessary and implemented in the future due to elevated levels, the residual chemicals will be properly disposed at a licensed DOH disposal facility.

• **Comment (16): Effect of nitrates in the water supply.**

Nitrates are very dangerous for infants, the young and elderly; exposure over time to tiny amounts can cause liver and kidney damage. DWS staff member, Ms. Takakura informed the public in 2006 that Hamakuapoko well 2 has higher nitrate levels than well 1. The figures she gave for well 2: between 3.5 and 6.75 mg/ltr, are as high as the infamous Kunia wells on Oahu. That drinking water source, although its wells did not test above the Health Department's "maximum levels" for nitrates, impacted the health of nearby residents and the Honolulu Water Dept. is securing funds for installation of a filter to remove the nitrates.

Nitrate levels have risen over time in Oahu wells. The Hamakuapoko wells, surrounded by active cane fields which have nitrate fertilizer regularly applied, are may do the same. GAC (charcoal) filters don't remove nitrates. How will public health be protected if this nitrate contaminated water is sent upcountry? Does the Kamole treatment plant have ion filters to remove them? Is this well location a good long-term investment?

If the H`poko well water is sent upcountry during drought periods, as it is being programmed to do, it may not be diluted with other waters, scarce during that period. Therefore, it is absolutely necessary to remove the nitrates.

Response:

As previously discussed, nitrates levels within water drawn from the Hamakuapoko wells are not expected to exceed MCL as established by the State DOH. Should elevated levels be detected by future monitoring of the wells, the need for additional treatment to remove nitrates from the water will be evaluated at that time by the DWS.

Water from the Hamakuapoko wells will be treated by the GAC system to meet or exceed all applicable DOH water quality standards prior to it being mixed and diluted with other treated drinking water in the clear well at the Kamole WTP. All water leaving the Kamole WTP will be monitored in accordance with DOH requirements to ensure that it is suitable for human consumption as drinking water.

• **Comment (17): Frequency and effectiveness of water quality testing?**

How often will the GAC filters be monitored to make sure they are not "full" or "furrowed" and letting contaminants pass through? Ms. Takakura informed the public that water will flow through two GAC filters, and each filter has sampling points at four different locations "to ensure removal of all 3 contaminants to no detectible levels." Mr. Eng told the Council in 2009 that only one filter would be used.

Either way, the interpretation of "no detectible levels" can mean low levels of pollutants ARE present after filtration, but not detectable. However, "no detectable levels" does NOT mean the water is safe and without a health threat.

Response:

Water testing, monitoring and reporting of any exceedences of regulated chemical levels is mandated by the DOH drinking water quality standards for public water systems. GAC filters will be monitored and replaced by the DWS in accordance with the industry-established recommendations to ensure compliance with DOH requirements and the protection of public health.

As required by the EPA through DOH, DWS prepares an annual report on the quality of drinking water which is provided to customers of the County water system. More than 100 substances with established health-based water quality standards are tested in drinking water, including bacteria, pesticides and herbicides, asbestos, lead, copper, petroleum projects, and by-products of industrial and water treatment processes.

- **Comment (18): The Vulnerable**

For those people whose medical situation makes them most in danger from some of the chemicals in the well water, what provision can be made to notify them that water from the Hamakuapoko wells is being introduced into the water supply? This would allow them to use bottled water or some other alternative to DWS water.

Response:

The State DOH approved the Hamakuapoko Well Nos. 1 and 2 as a public drinking water source in 2000. Upon re-initiation of these wells, DWS will regularly monitor water from the wells to ensure that drinking water quality standards are met or exceeded and that the public is provided drinking water that is safe for human consumption. DWS will issue a notification to its customers in the Upcountry Water System prior to the initial reactivation of the wells.

- **Comment (19): Are EPA and Health Department Water quality standards behind the times?**

When DBCP was banned in 1979 across the mainland, Hawaii Health Dept. officials told EPA it could be safely used in Hawaii, because they were certain it wouldn't leach into our aquifers. Apparently this was not the case; perhaps a political and financial decision was made.

Many potentially toxic products continue to be approved for use by EPA, only to be eventually proven harmful. No standards or testing is done for these for many years, yet they can combine in our water supply to form a chemical soup. Our keiki and kupuna are particularly at risk.

Since the public cannot always assume that state and federal regulators have adequate information to protect public health, what can be done to go beyond what DOH and EPA require, to minimize the public's exposure to even small doses of deadly or dangerous chemicals?

Response:

As discussed previously, water from the Hamakuapoko wells will be tested for approximately 100 various contaminants as required by DOH to protect public health and ensure that the water is fit for human consumption as drinking water. A copy of our 2011 Water Quality Report is attached for reference as **Exhibit "A"**. If any levels of regulated contaminants are exceeded, remedial action will be taken immediately by the DWS to avert potential public health risks.

• **Comment (20): What is the long-term water testing program for these Hamakuapoko waters?**

Since health concerns were the major reason that the Maui County Council previously banned the use of these waters, it is absolutely necessary for the Environmental Assessment to assure the general public, those who have compromised medical situations, and those who are elderly or very young that this water is safe. The EA must provide a complete description of the water testing program: a) when the wells are first pumped, and b) thereafter on an ongoing basis whenever the water is inserted into the drinking water supply.

Who will do the testing? What is the competency of the personnel, and of the testing lab? How often will the tests be conducted? What chemicals will be tested? How will the public be rapidly informed of the results (instead of the present system of year-end reports of what chemicals were found in the water)?

Response:

DWS's water testing program will apply to the ground water from the Hamakuapoko wells from the time of extraction to when the water is placed into the drinking water supply.

Water Quality sampling will be conducted by DWS staff or a sub-contractor with experience in water sampling for lab analysis and then the data results will be submitted to DOH. A list of the kinds of contaminants that are monitored during the water quality testing process is provided in **Exhibit "A"**. In the event that MCLs are exceeded, DWS will utilize various media sources such as the County website, press releases, public announcements and social media to immediately inform the public.


Prior to well start-up, both Hamakuapoko wells will be required by DOH to undergo testing that is equivalent to the requirements for a new well start-up. The results of the water quality analysis will be reviewed and accepted by the DOH before any water from

Mr. Dick Mayer
December 14, 2012
Page 15

the Hamakuapoko Well Nos. 1 and 2 enters the DWS water system for human consumption.

Thank you for your participation in the Chapter 343, Hawaii Revised Statutes (HRS) review process for this important infrastructure improvement project. A copy of your letter will be included in the Draft EA. In the meantime, if there are any questions or if additional information is needed, please feel free to contact our planning consultants Mark Alexander Roy or Tessa Ng of Munekiyo & Hiraga, Inc. at 244-2015.

Sincerely,

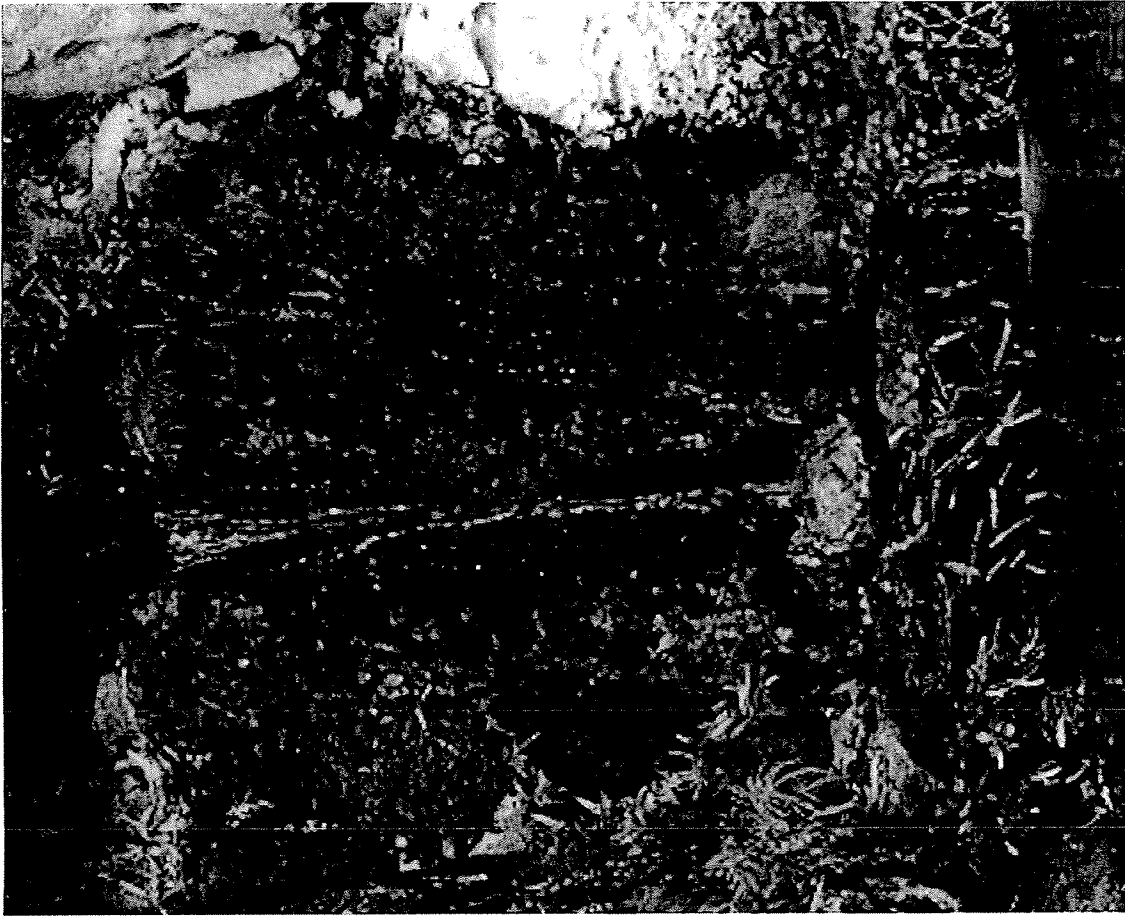
A handwritten signature in black ink, appearing to read 'DT', with a stylized flourish extending to the right.

Dave Taylor, P.E.
Director

DT:

Enclosures

cc: Jeff Pearson, County of Maui, Department of Water Supply
Curtis Eaton, County of Maui, Department of Water Supply
Mark Alexander Roy, Munekiyo & Hiraga, Inc.



2011 Water Quality Report

Department of Water Supply
County of Maui
200 South High Street
Wailuku, Maui, HI 96793
www.mauiwater.org



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EXHIBIT A

Department of Water Supply
County of Maui
614 Palapala Drive
Kahului, Maui, Hawaii 96732
Phone: 808-270-7550
FAX: 808-270-6133

June, 2012

Dear Customers:

I am pleased to share the 14th Annual Water Quality Report with you. The Department of Water Supply (DWS) prepares this report every summer as mandated by the US EPA. The report provides you with an easy-to-understand overview of your drinking water, based on water quality tests taken in 2011. Included are details of the source of your water, what's in your water, and how it compares to US EPA and Hawaii state health standards. Also listed are phone numbers and resources for you to learn more about your water.

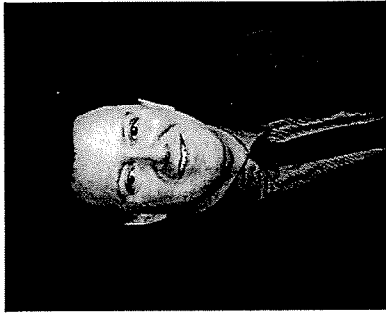
Providing water service and new meters to customers has been a top priority for the department this past year. We have focused on data analyses and operations review to determine the actual source capacity of existing facilities, and are working to identify the unique needs for each system and how we can provide more water to customers. The end result is system optimization or "debottlenecking." Work plans may show that waterline or tank waterline improvements may increase reliability and allow for more meters. Once we know all the options and costs, we will work closely with the Administration and County Council to follow their direction for system optimization.

Drinking water is provided to your tap 24 hours per day and 7 days per week for less than a nickel per gallon. It is by far the best deal around. Your water rates help us pay for capital investments that will provide safe drinking water for generations to come. I urge you to take a few minutes to look through this report and learn about your water system. Learn why we believe, "By Water All Things Find Life."

Sincerely,



David S. Taylor, P.E.
Director of Water Supply



WHAT IS THIS REPORT ABOUT?

The Water Quality Report is sent to all customers every summer. The federal Safe Drinking Water Act (SDWA) requires that public water systems provide customers with a water quality report that summarizes water quality information for the previous calendar year. We are committed to providing our customers with this information because informed customers are our best allies.

IS MY DRINKING WATER SAFE?

Yes. The Department of Water Supply makes the quality of your drinking water its number one priority. To maintain our commitment to you, we routinely collect and test water samples every step of the way - from the source waters right to your home - checking purity and identifying potential problems. We monitor your drinking water according to EPA regulations to ensure that it meets all state and federal standards.

Our goal is and always has been to provide you with a safe and dependable supply of drinking water.

SOURCE WATER ASSESSMENT

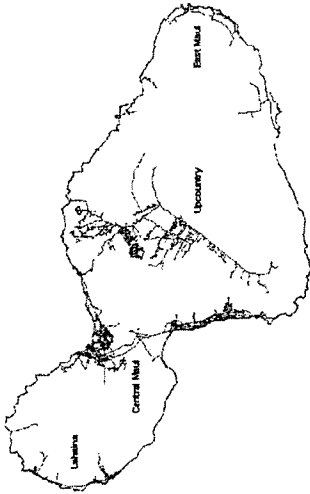
A Source Water Assessment document was completed in 2004 by the University of Hawaii Water Resources Research Center in conjunction with the Department of Health Safe Drinking Water Branch. The assessment provides technical assistance to public water systems to develop protection programs for drinking water sources. The document includes: (1) delineation of the area around a drinking water source through which contaminants may travel to the drinking water supply, (2) inventory of activities that may lead to the release of contaminants within the delineated area, and (3) determination of the susceptibility of the water source experiencing a future contamination. The Department of Water Supply has developed a wellhead protection program to protect the areas around drinking water wells. You will receive a separate brochure about this program later this summer. To find out more, contact the Water Resources and Planning Division at 808-463-3110.

SPECIAL NOTICE TO USERS OF KIDNEY DIALYSIS MACHINES AND FISH OWNERS

Maui DWS water in the Upper Kula area is treated with chloramines, a disinfectant that produces fewer disinfection by-products such as trihalomethanes. As such, customers who have unique water quality needs including those who use specialized treatments such as kidney dialysis machines or fish owners should make the necessary adjustments to remove chloramines. Go to our website for more information at: www.mauiwater.org, click on Maui Water

Where Does My Water Come From?

Depending on where you live on Maui or Molokai, you receive either ground water or surface water. Ground water starts as rain falling over the mountains. The water is filtered naturally as it seeps through the porous volcanic rock to reach large underground formations called aquifers. Pumps are used to get this water from the aquifers to you. Surface water accumulates mainly as a result of direct runoff from rain into streams and rivers and is filtered to meet water quality standards.



On Maui there are five water districts:

Central : A blend of surface water treated at the Iao Treatment Plant and ground water serves Kahului, Kihei, Maalaea, Makena, Paia, Waihee, Wailea and Wailuku.

East Maui : Keanae, Nahiku and Hana have ground water in all districts

Lahaina : A blend of ground and surface water treated at the Lahaina and Mahinahina Treatment Plants serves all of Lahaina and Napili

Molokai : Ground water in all districts.

Upcountry :

Lower Kula: Surface water treated at the Lower Kula Treatment

Plant serves areas from Piihola to Omaopio

Makawao: A blend of surface treated at Kamole Treatment Plant and

ground water serves Hali'imaiile, Haiku, Makawao and Pukalani

Upper Kula: Surface water treated at the Upper Kula Treatment Plant serves Olinda to Kanaio

Your Comments Are Welcome!

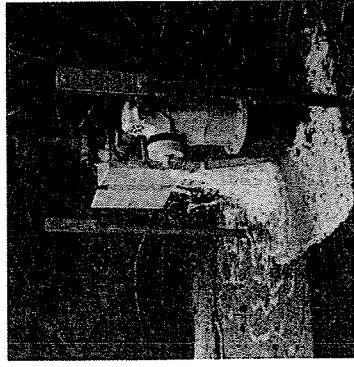
We welcome your questions, concerns and observations. We also encourage our customers to attend and participate at our meetings regarding our water utility. The Board of Water Supply usually meets on the 4th Thursday of the month at 9:00 a.m. Please call 270-7304 for meeting locations or check out our website for details.

FLUSHING PROGRAM IN THE UPCOUNTRY AREA TO IMPROVE WATER QUALITY

The DWS is flushing waterlines in the Upcountry area to improve water quality in its dead-end distribution lines. The purpose of this program is to comply with the Lead and Copper rule of the federal Safe Drinking Water Act. Flushing a waterline involves turning on the water at a fire hydrant or standpipe at full force to rid the pipeline of any buildup in the pipe. This process can take up to 20 minutes at any one point. Staff also take samples of the water before and after the flushing to ensure that water delivered to consumers meets the requirements of the Safe Drinking Water Act. Consumers should contact the Field Operations office at 270-7633 if water at their tap is discolored.

Automatic Flushing Devices

This automatic flushing device (AFD) allows water to be flushed from a hydrant or standpipe several times a day. This automatic flushing will help keep the water flowing through the pipes which will prevent water quality problems that can happen when the water does not move enough. You will be seeing these devices more frequently as the DWS installs these devices throughout the water systems.



Why Is There Anything In My Water?

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. Sources of drinking water (both tap and bottled water) include rivers, lakes, streams, ponds, reservoirs and wells. As water travels over the surface of the land or through the ground it dissolves naturally-occurring minerals, and in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity.

Contaminants that may be present in source waters before we treat it include:

Microbial Contaminants - such as virus, protozoa and bacteria, may come from sewage treatment plants, septic systems, agricultural livestock operations and wildlife.

Inorganic Contaminants - such as salts and metals, which may be naturally occurring or result from urban storm water runoff, industrial or domestic wastewater discharges, oil and gas production, mining or farming.

Pesticides and Herbicides— may come from a variety of sources such as agriculture and residential uses.

Radioactive Contaminants—are naturally occurring.
Organic Chemical Contaminants—including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban storm-water runoff, and septic systems.

For more information about contaminants and potential health effects call the EPA Safe Drinking Water hotline @ 1-800-426-4791.

In April 2004, the DWS stopped using phosphates for lead control in the Upcountry water system. We now use soda ash (sodium carbonate) for pH adjustment to minimize lead leaching from customers' plumbing. We also flush the Upcountry water system on a regular basis. Lead can have devastating effects on children's health. If you think your child may be exposed to lead, please contact your primary care physician.

Lead and Copper in your drinking water. Are you at risk?

Lead is not detectable in the Maui DWS systems. If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The Maui DWS is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at <http://www.epa.gov/safewater/lead>.

Home water filters are not necessary. They can be helpful if you have lead plumbing in your home or want to remove chlorine.

HOWEVER, if you choose to have a water filter, it must be maintained and replaced according to manufacturer instructions. Talk to your supplier if you have questions about your filter.

Customers can maintain water quality in various ways.

Backflow protection - a simple, but important component in plumbing that safeguards the drinking water supply. Higher water pressures elsewhere can cause a reversal in the normal flow of water. This may allow contaminated water to enter the water distribution system. Backflow prevention devices allow the water to flow in only one direction. The air gap between a faucet and water in the sink is the most common form of backflow prevention. Never leave a running hose in a bucket of water.

The contents of the bucket could be "sucked back" into your home plumbing and potentially contaminate the water. Businesses in Maui County that are required to have backflow prevention devices should check them annually to ensure that they are working properly.



Proper use of pesticides/herbicides - Always follow label instructions on pesticides, fertilizers and other household chemicals. Also try to use less toxic alternatives to household chemicals when possible. Find lots of tips on how you can help protect our water supply at www.mauiwater.org. Navigate to: Water Resources and Planning Division Wellhead Protection.

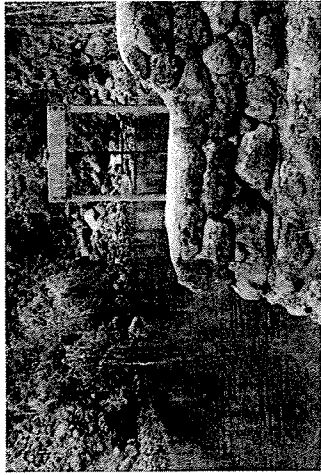
Proper disposal of hazardous materials - hazardous materials such as paint, solvents, used oil and other household cleaning supplies must not be dumped on the ground. Call the Recycle Maui County Hotline at 270-7880 to find out where you can properly dispose these materials to avoid groundwater contamination or at <http://www.co.maui.hi.us/recycle>

IMPORTANT HEALTH INFORMATION

Some people may be more vulnerable to drinking water contaminants than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants may be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. For information about the Environmental Protection Agency's (EPA) guidelines on appropriate means to lessen the risk of infection by Cryptosporidium or other microbial contaminants and potential health effects call the EPA's Safe Drinking Water Hotline (800-426-4791).

We are required by Federal and State laws to test your drinking water for different contaminants. The following is a list of contaminants that we routinely test for in your water:

Regulated Contaminants



Kanaha Intake

Organic Contaminants

2,4-D
2,4,5-TP (Silvex)
Acrylamide
Alachlor
Aroclor 1016, 1221, 1232, 1242
Aroclor 1248, 1254, 1260
Atrazine
Benzo(a)pyrene (PAHs)
Carbofuran
Chlordane
Di(2-ethylhexyl)adipate
Di(2-ethylhexyl)phthalate
Dibromochloropropane
Dinoseb
Dioxin
Diquat
Endothall
Endrin
Epichlorohydrin
Ethylene dibromide (EDB)
Glyphosate
Heptachlor
Heptachlor epoxide
Hexachlorobenzene
Hexachloropentadiene
Lindane
Methoxychlor
Oxamyl (Vydate)
PCBs (Polychlorinated biphenyls)
Pentachlorophenol
Picloram
Simazine
Toxaphene

Microbiological Contaminants

Total coliform
Fecal coliform
E. coli
Giardia
Cryptosporidium

Turbidity

Inorganic Contaminants

Antimony
Arsenic
Asbestos (> 10um)
Atrazine
Barium
Beryllium
Cadmium
Chromium (total)
Copper
Cyanide (as free cyanide)
Fluoride
Lead
Mercury (total)
Nitrate (as N)
Nitrite (as N)
Selenium
Thallium

Volatile Organic Contaminants

Benzene
Carbon tetrachloride (CTC)
Chlorobenzene
o-Dichlorobenzene
p-Dichlorobenzene
1,2-Dichloroethane (EDC)
1,1-Dichloroethylene
cis-1,2-Dichloroethylene
trans-1,2-Dichloroethylene
Dichloromethane
1,2-Dichloropropane (DCP)
Ethylbenzene
Haloacetic Acids (HAA5)
Styrene
Tetrachloroethylene (PCE)
1,2,4-Trichlorobenzene
1,1,1-Trichloroethane (TCA)
1,1,2-Trichloroethane
Trichloroethylene (TCE)
1,2,3-Trichloropropane (TCP)
Total Trihalomethanes (TTHMs)
Toluene
Vinyl chloride
Xylenes (total)

Radioactive Contaminants

Alpha emitters
Beta particles/photon emitters
Radium 226+228
Uranium



Unregulated Contaminants

2,4-DB
Aldicarb
Aldicarb sulfone
Aldicarb sulfoxide
Aldrin
Butachlor
Carbaryl
Dicamba
Dieldrin
3-Hydroxycarbofuran
Methiocarb
Methomyl
Metolachlor
Metribuzin
Molinate
Nickel
Paraquat
Propachlor
Propoxur
Thiobencarb
Acetochlor
Bromoform
DCPA mono-acid degradate
DCPA di-acid degradate
4,4'-DDE
2,4-dinitrotoluene
2,6-dinitrotoluene
EPTC
Manganese
Methyl t-Butyl Ether (MTBE)
Molinate
Nitrobenzene
Perchlorate
Terbacil

Frequently Asked Questions (FAQ)

What is the pH of my water?

The pH of water varies by districts:

Central 7.3-7.9
Makawao 7.6-9.1
Lahaina 7.8-8.2
Lower Kula 7.9-9.0
Upper Kula 7.2-9.2
Molokai 7.2-7.3



Do I have hard or soft water?

Hardness is measured in milligrams per liter (mg/L). Any hardness reading over 75 mg/L is considered hard water. Generally, surface water is soft water. Makawao, Pukalani, Lower Kula and Upper Kula have soft water between 17-69 mg/L. Ground (well) water on Maui is usually 52-171 mg/L.

Is there fluoride in my water?

The Maui DWS does not add fluoride to your water. If you are concerned about your children's dental health, please talk to your pediatrician or dentist.

What can I do about chlorine taste and odor?

Chlorine kills organisms that may cause disease. If you choose to remove the chlorine with a filter, refrigerate the water to limit bacterial re-growth. Other alternatives include:
Filling a pitcher and letting it stand in the refrigerator overnight (this is the best way), filling a glass or jar with water and letting it stand in the sunlight for 30 minutes, or heating water to approximately 100 degrees Fahrenheit.

How often is my water tested? And can I get my water tested?

Every week our water is tested by our certified microbiologists at the source and within the distribution system for any bacteriological contamination. Chemicals are analyzed on a timetable established by state/EPA requirements. You may have your own tap water tested by a private water quality testing lab for a fee. A list is available through our laboratory at 270-7550.

I live on a dead-end (cul-de-sac) and my water has a yellow tinge to it. Is this okay?

You should call the DWS service line (270-7633) to have personnel flush the dead-end main. Or, if you prefer, open the faucets in your home until the water clears up; this will bring fresh water to your home and improve its water quality.

How to Contact Us

Questions on water quality: Maui DWS Laboratory: **808-270-7550**

Questions about DWS Administration: **808-270-7816**

All other DWS inquiries: **808-270-8046**

Drinking water in Hawaii - DOH Safe Drinking Water Branch :

1-800-468-4644
ext. 6-4258

US EPA Safe Drinking Water Hotline: **1-800-426-4791**

ABBREVIATIONS

ppm = parts per million = **mg/L** = milligrams per Liter = one second every 12 days

ppb = parts per billion = **µg/L** = micrograms per Liter = one second every 32 years

ppt = parts per trillion = **ng/L** = nanograms per Liter = one second every 32,000 years

ND = None Detected

NQ = Not Quantifiable

NA = Not applicable

> = Greater than

≥ = Greater than or equal to

< = Less than

≤ = Less than or equal to

MCL = Maximum Contaminant Level = The highest level of a contaminant that is allowed in drinking water. MCL's are set as close to the MCLG's as feasible using the best available technology.

MCLG = Maximum Contaminant Level Goal = The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLG's allow for a margin of safety.

We're also on the web: **www.mauewater.org**

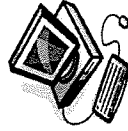
Other websites:

Department of Health - Safe Drinking Water Branch:

www.hawaii.gov/health/eh/sdwb

EPA (Environmental Protection Agency):

www.epa.gov/safewater



Cover Photo by Samantha Hill

-----Original Message-----

From: Diana Dahl [<mailto:melofarm@hawaii.rr.com>]

Sent: Tuesday, May 08, 2012 10:26 AM

To: Cheryl Okuma

Subject: Hamakuapoko Well

Dear Cheryl Okuma,

Has this bad idea not died a good and natural death? Using Hamakuapoko well water has me very concerned.

Having been instrumental in developing the organic standards for growing crops in the '90's, I am well aware of the toxins that have been found in the well water and their consequences. How can they be removed economically and with certainty? This well should never have been traded with the intention of it being of use to the county water supply system. Bad idea.

Sincerely,

Diana Dahl

Trustee, Hawaii Organic Farmers Association

ALAN M. ARAKAWA
Mayor



DAVID TAYLOR, P.E.
Director

PAUL J. MEYER
Deputy Director

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

December 14, 2012

Ms. Diana Dahl, Trustee
Hawaii Organic Farmers Association
melofarm@hawaii.rr.com

Dear Ms. Dahl:

Subject: Early Consultation Request for the Proposed Improvements at
Hamakuapoko Well Nos. 1 and 2
TMK: (2) 2-5-004:039 (por.), Hamakuapoko, Maui, Hawaii

Thank you for your email, dated May 8, 2012, providing early consultation comments on the proposed improvements at Hamakuapoko Well Nos. 1 and 2. The Department of Water Supply (DWS) offers the following information in response to your comments:

DWS notes your concern regarding the use of Hamakuapoko Wells. The DWS mission is to provide clean water on an efficient basis to residents. The reopening of the Hamakuapoko Wells will be undertaken in compliance with all applicable State and Federal water quality standards. Water quality testing was conducted for the 1999 Environmental Assessment for improvements to convert the Hamakuapoko Wells from exploratory wells to production wells. Water quality studies tested for three (3) compounds: DBCP ((1,2-Dibromo-3-chloropropane), EDB (Ethylene Dibromide), and TCP (trichloropropane). Concentrations of DBCP and EDB at Well No. 2 exceeded the Department of Health maximum concentration level. At Hamakuapoko Well No. 1, the concentration of DBCP was at the margin of acceptability while EDB was not detected. With the exception of one (1) test sample at Well No. 1, the concentration of TCP fell below maximum limits in all other test samples for Well No. 1 and Well No. 2.

In 1999, DWS installed a Granular Activated Carbon (GAC) Treatment facility at Well No. 2 that is capable of treating water from both wells. Water from Hamakuapoko Well No. 1 is transported to Well No. 2 where the combined water drawn from the two (2) wells flow through the treatment process provided by the GAC chambers. The GAC method treats water when the water flows downward from the top of a pressurized vessel through a bed of activated carbon.

"By Water All Things Find Life"

Ms. Diana Dahl, Trustee
December 14, 2012
Page 2

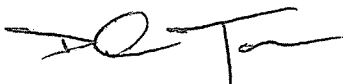
Active carbon refers to an extremely porous form of carbon which gives it a very large surface area for absorption of contaminants. This treatment process will be completed before the water from the Hamakuapoko Well Nos. 1 and 2 is pumped into the clear well at Kamole Weir Water Treatment Plant. The treated water from the GAC meets State Department of Health standards for drinking water and will not require additional treatment at the Kamole Weir Water Treatment Plant.

Water quality tests were conducted between 1999 and 2004. DBCP, EDB, and TCP were not detected in the water following treatment by the GAC facility. These tests demonstrate the effectiveness of the GAC treatment process for providing safe drinking water.

In December 2000, the Department of Health conditionally approved the Hamakuapoko Well Nos. 1 and 2 for drinking water use after treatment. When the Hamakuapoko Well Nos. 1 and 2 are reopened, DWS will continue to conduct regular water quality monitoring to ensure that the GAC treatment process is effective and the water produced by the wells is safe for drinking water use.

We appreciate your input and will include a copy of your email in the Draft Environmental Assessment for the proposed project. Should you have any questions, please feel free to contact our planning consultant, Mark Alexander Roy of Munekiyo & Hiraga, Inc. at (808) 244-2015.

Sincerely,



David Taylor, P.E.
Director

cc: Curtis Eaton, P.E., County of Maui, Department of Water Supply
Mark Alexander Roy, Munekiyo & Hiraga, Inc.

-----Original Message-----

From: Mele Stokesberry [mailto:holamaui@earthlink.net]

Sent: Tuesday, May 08, 2012 2:09 PM

To: Cheryl Okuma

Subject: comments on danger of using Hamakuapoko wells

I am sending my comments about the water department's plans to utilize the water from the contaminated Hamakuapoko wells for all purpose household water Upcountry. I am very concerned that it will be impractical and too expensive to continue constant and adequate filtering out of the PCBs, DBCP, EDB and other possible toxins that definitely are in these wells.

I live in Kula but am writing these comments during travel in China. I testified at the hearings on this issue to say that as an Upcountry resident and a Maui citizen I believe it is totally inconsistent with protection of public health to put Hamakuapoko water into the drinking water system.

Mele Stokesberry
51 Mano Dr
Kula, HI 96790

ALAN M. ARAKAWA
Mayor



DAVID TAYLOR, P.E.
Director

PAUL J. MEYER
Deputy Director

DEPARTMENT OF WATER SUPPLY

COUNTY OF MAUI

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

December 14, 2012

Ms. Mele Stokesberry
51 Mano Drive
Kula, Hawaii 96790
holamaui@earthlink.net

Dear Ms. Stokesberry:

Subject: Early Consultation Request for the Proposed Improvements at
Hamakuapoko Well Nos. 1 and 2
TMK: (2) 2-5-004:039 (por.), Hamakuapoko, Maui, Hawaii

Thank you for your email, dated May 8, 2012, providing early consultation comments on the proposed improvements at Hamakuapoko Well Nos. 1 and 2. The Department of Water Supply (DWS) offers the following information in response to your comments:

DWS notes your concern regarding the use of Hamakuapoko Wells. The DWS mission is to provide clean water on an efficient basis to residents. The reopening of the Hamakuapoko Wells will be undertaken in compliance with all applicable State and Federal water quality standards. Water quality testing was conducted for the 1999 Environmental Assessment for improvements to convert the Hamakuapoko Wells from exploratory wells to production wells. Water quality studies tested for three (3) compounds: DBCP, EDB, and TCP (trichloropropane). Concentrations of DBCP and EDB at Well No. 2 exceeded the Department of Health maximum concentration level. At Hamakuapoko Well No. 1, the concentration of DBCP was at the margin of acceptability while EDB was not detected. With the exception of one (1) test sample at Well No. 1, the concentration of TCP fell below maximum limits in all other test samples for Well No. 1 and Well No. 2.

In 1999, DWS installed a Granular Activated Carbon (GAC) Treatment facility at Well No. 2 that is capable of treating water from both wells. Water from Hamakuapoko Well No. 1 is transported to Well No. 2 where the combined water drawn from the two (2) wells flow through the treatment process provided by the GAC chambers. The GAC method treats water when the

"By Water All Things Find Life"

Ms. Mele Stokesberry
December 14, 2012
Page 2

water flows downward from the top of a pressurized vessel through a bed of activated carbon. This treatment process will be completed before the water from the Hamakuapoko Well Nos. 1 and 2 is pumped into the clear well at Kamole Weir Water Treatment Plant.

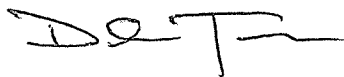
In regards to the cost of the GAC treatment process, it is noted that the GAC facility was funded by a 1999 settlement agreement that required the manufacturers of the chemical DBCP to reimburse the County of Maui for certain capital costs through September 1, 2039. The settlement on the case of *Board of Water Supply of the County of Maui v. Shell Oil Company, et al. (Civil Case No. 96-0370(1))* also stipulated that the defendants reimburse the County for operations and maintenance costs associated with the GAC system at the Hamakuapoko Wells when the GAC is in operation for at least 10 percent of a month.

Water quality tests were conducted between 1999 and 2004. DBCP, EDB, and TCP were not detected in the water following treatment by the GAC facility. These tests demonstrate the effectiveness of the GAC treatment process for providing safe drinking water.

In December 2000, the Department of Health conditionally approved the Hamakuapoko Well Nos. 1 and 2 for drinking water use after treatment. When the Hamakuapoko Well Nos. 1 and 2 are reopened, DWS will continue to conduct regular water quality monitoring to ensure that the GAC treatment process is effective and the water produced by the wells is safe for drinking water use.

We appreciate your input and will include a copy of your email in the Draft Environmental Assessment for the proposed project. Should you have any questions, please feel free to contact our planning consultant, Mark Alexander Roy of Munekiyo & Hiraga, Inc. at (808) 244-2015.

Sincerely,



David Taylor, P.E.
Director

cc: Curtis Eaton, P.E., County of Maui, Department of Water Supply
Mark Alexander Roy, Munekiyo & Hiraga, Inc.

X. REFERENCES

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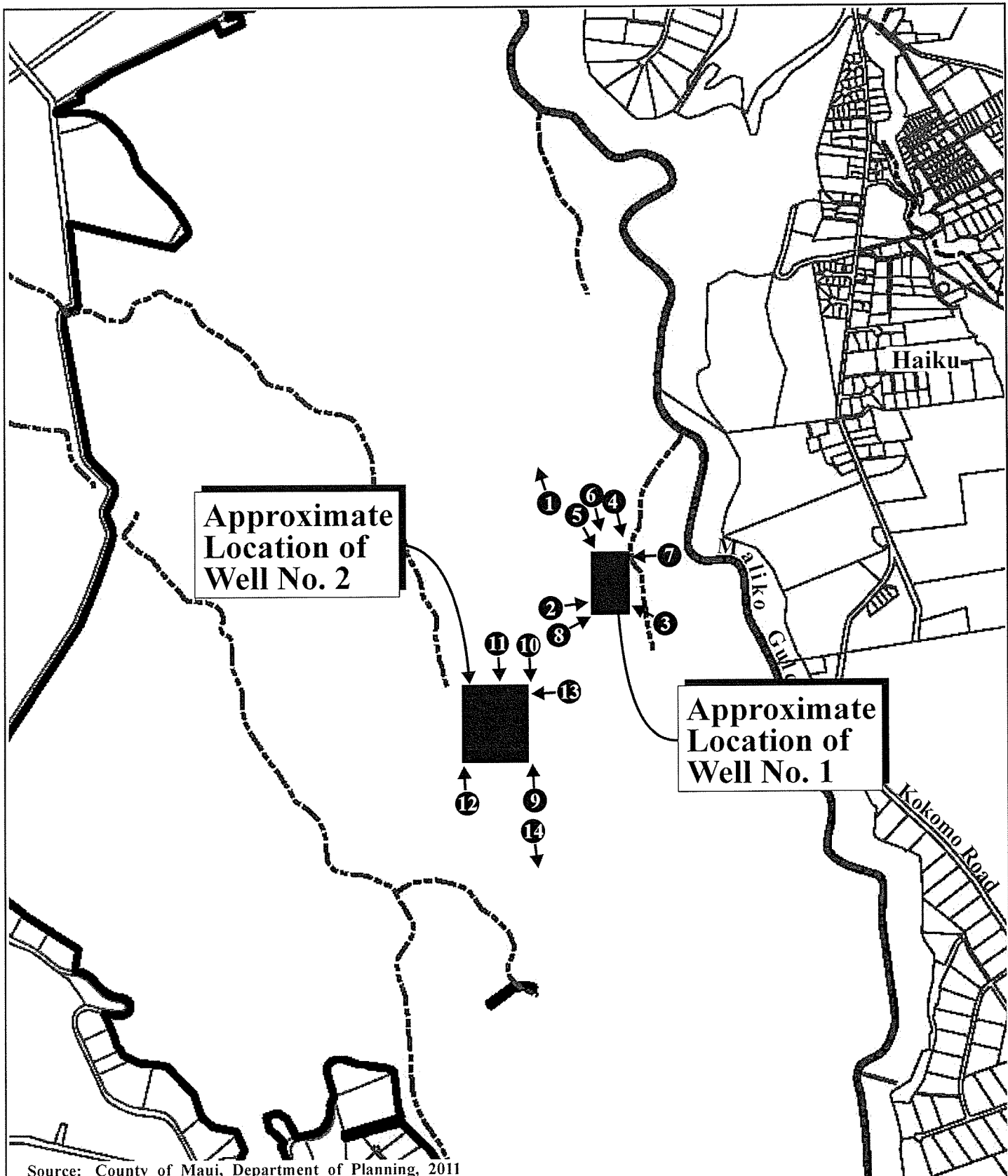
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APPENDIX A.

Photo Reference Map and Photos



Source: County of Maui, Department of Planning, 2011.

Proposed Improvements at Hamakuapoko Well Nos. 1 and 2 Photographic Reference Map




 MUNEKIYO & HIRAGA, INC.

Prepared for: County of Maui, Department of Water Supply



Photo No. 1: Dirt Access Road from Holomua Road to Hamakuapoko Well No. 1 (Makai North View)



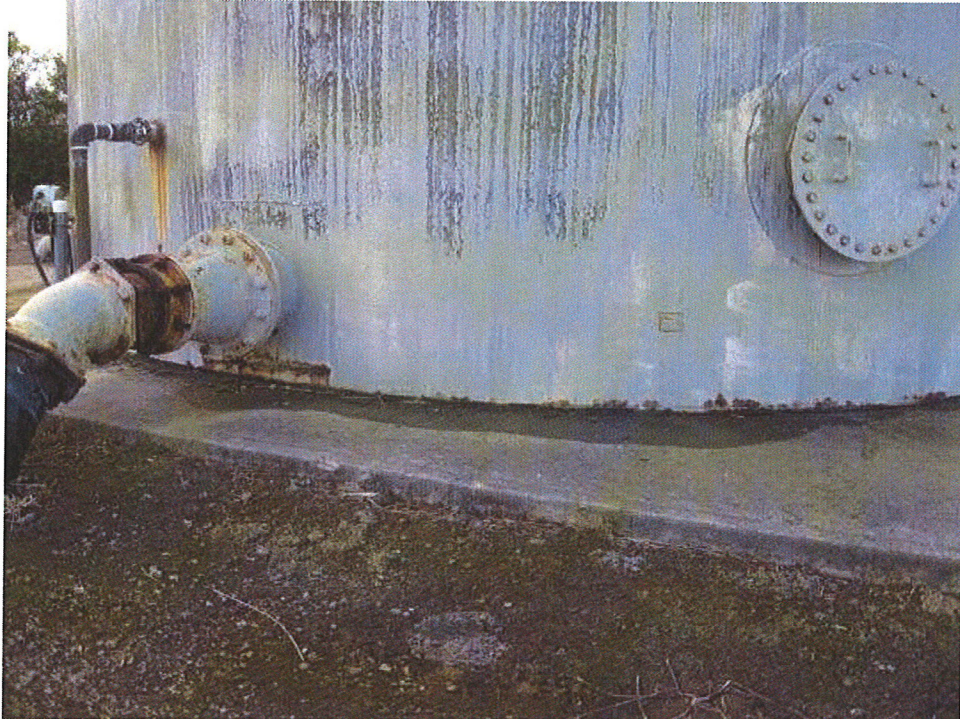
Photo No. 2: Hamakuapoko Well No. 1 Electrical Building (East View)



**Photo No. 3: Hamakuapoko Well No. 1 Storage Tank
(Northwest View)**



**Photo No. 4: Hamakuapoko Well No. 1
Storage Tank (South View)**



**Photo No. 5: Hamakuapoko Well No. 1
Storage Tank (South View)**



**Photo No. 6: Hamakuapoko Well No. 1
Pumps (Northwest View)**



**Photo No. 7: Hamakuapoko Well No. 1
Pump (West View)**



**Photo No. 8: Dirt Access Road from Hamakuapoko
Well No. 2 to Well No. 1 (East View)**



**Photo No. 9: Hamakuapoko Well No. 2
Electrical Building (Makai North View)**



**Photo No. 10: Hamakuapoko Well No. 2
(Mauka South View)**



**Photo No. 11: Hamakuapoko Well No. 2
Pump (South View)**



**Photo No. 12: Hamakuapoko Well No. 2
Storage Tanks (Makai North View)**



**Photo No. 13: Hamakuapoko Well No. 2
Granulated Activated Carbon Units (East View)**



**Photo No. 14: Hamakuapoko Well No. 2
Towards Kamaole Treatment Plant (South View)**

APPENDIX B.

**Well Completion Report,
Hamakuapoko Well No. 1,
June 23, 1992**



**DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
P.O. BOX 1109
WAILUKU, MAUI, HAWAII 96783-7109**

June 23, 1992

Ms. Rae M. Loui, Deputy Director
Commission on Water Resource Management
P. O. Box 621
Honolulu, HI 96809


Dear Ms. Loui:

Subject: Well Completion Report
Hamakuapoko DWS Well (State Well No. 5420-02)

We are enclosing the Well Completion Report and its supporting data, consisting of the as-built well section, driller's log, pumping test record (5 pages), location map, and chemical analysis (7 pages).

If there are any questions, please call the Engineering Division at 243-7835.

Sincerely,


David R. Craddick
Director

hk

RECEIVED
92 JUL 2 10:46
DN: OF WATER &
LAND DEVELOPMENT

"By Water All Things Find Life"

State of Hawaii
 COMMISSION ON WATER RESOURCE MANAGEMENT
 Department of Land and Natural Resources
 Division of Water Resource Management

WELL COMPLETION REPORT

INSTRUCTIONS: Please print or type and submit completed report within 30 days of well completion to the Division of Water & Land Development, P.O. Box 373, Honolulu, HI 96809. An as-built drawing of the well and chemical analysis, if available, should also be submitted. If necessary, phone 548-7543, Hydrology, Geology Section for assistance.

A. STATE WELL NO. 5420-02 WELL NAME Hamakuapoko 1 ISLAND Maui
 B. LOCATION Hamakuapoko, East Maui TAX MAP KEY 2-5-04:39
 C. WELL OWNER Maui Dept of Water Supply
 D. DRILLING OR PUMP INSTALLATION CONTRACTOR Richardson Drilling
 E. TYPE OF RIG Cable tool DRILLER _____
 F. DATE OF WELL COMPLETION April 1992 DATE OF PUMP INSTALLATION _____
 G. GROUND ELEVATION (msl) 702.1 ft.
 Top of Drilling Platform (msl) _____ ft.
 Height of drilling platform above ground surface _____ ft.
 Bench mark and method used to determine ground elevation _____ ft.
 H. TOTAL DEPTH OF WELL BELOW GROUND 736 ft. (plugged back from 762 ft.)
 I. HOLE SIZE: 20 inch dia. from 0 ft. to 80 ft. below ground
 18 inch dia. from 80 ft. to 736 ft. below ground
 _____ inch dia. from _____ ft. to _____ ft. below ground
 J. CASING INSTALLED:
 12 in. I.D. x 0.375 in. wall solid section to 702 ft. below ground
 12 in. I.D. x 0.375 in. wall perforated section to 732 ft. below ground
 Type of perforation Louvre screen
 K. ANNULUS:
 Grouted from 0 ft. to 658 ft. below ground
 Gravel packed from --- ft. to --- ft. below ground
 L. PERMANENT PUMP INSTALLATION:
 Pump type, make, serial No. to be determined Capacity _____ gpm
 Motor type, H.P., voltage, r.p.m. _____
 Depth of pump intake setting _____ ft. below _____ which elevation is _____ ft.
 Depth of bottom of airline _____ ft. below _____ which elevation is _____ ft.
 M. PROPOSED USE municipal
 N. INITIAL WATER LEVEL 4.2 ft. below ground. Date and time of measurement _____ / _____
 O. INITIAL CHLORIDE _____ ppm. Date and time of sampling _____ / _____
 P. PUMPING TESTS: Reference point (R.P.) used: _____ which elevation is _____ ft.
 Date April 6-10, 1992 Date _____
 Start water level _____ ft. below R. P. Start water level _____ ft. below R. P.
 End water level _____ ft. below R. P. End water level _____ ft. below R. P.
 Depth of well _____ ft. below R. P. Depth of well _____ ft. below R. P.

Elapsed Time (hours)	Rate (gpm)	Draw-down (ft.)	Cl- (ppm)	Temp. °F	Elapsed Time (hours)	Rate (gpm)	Draw-down (ft.)	Cl- (ppm)	Temp. °F
..... to .....					..... to				
..... to .....					..... to				
..... to (see attached) .....					..... to				
..... to .....					..... to				
..... to .....					..... to				
..... to .....					..... to				
..... to .....					..... to				

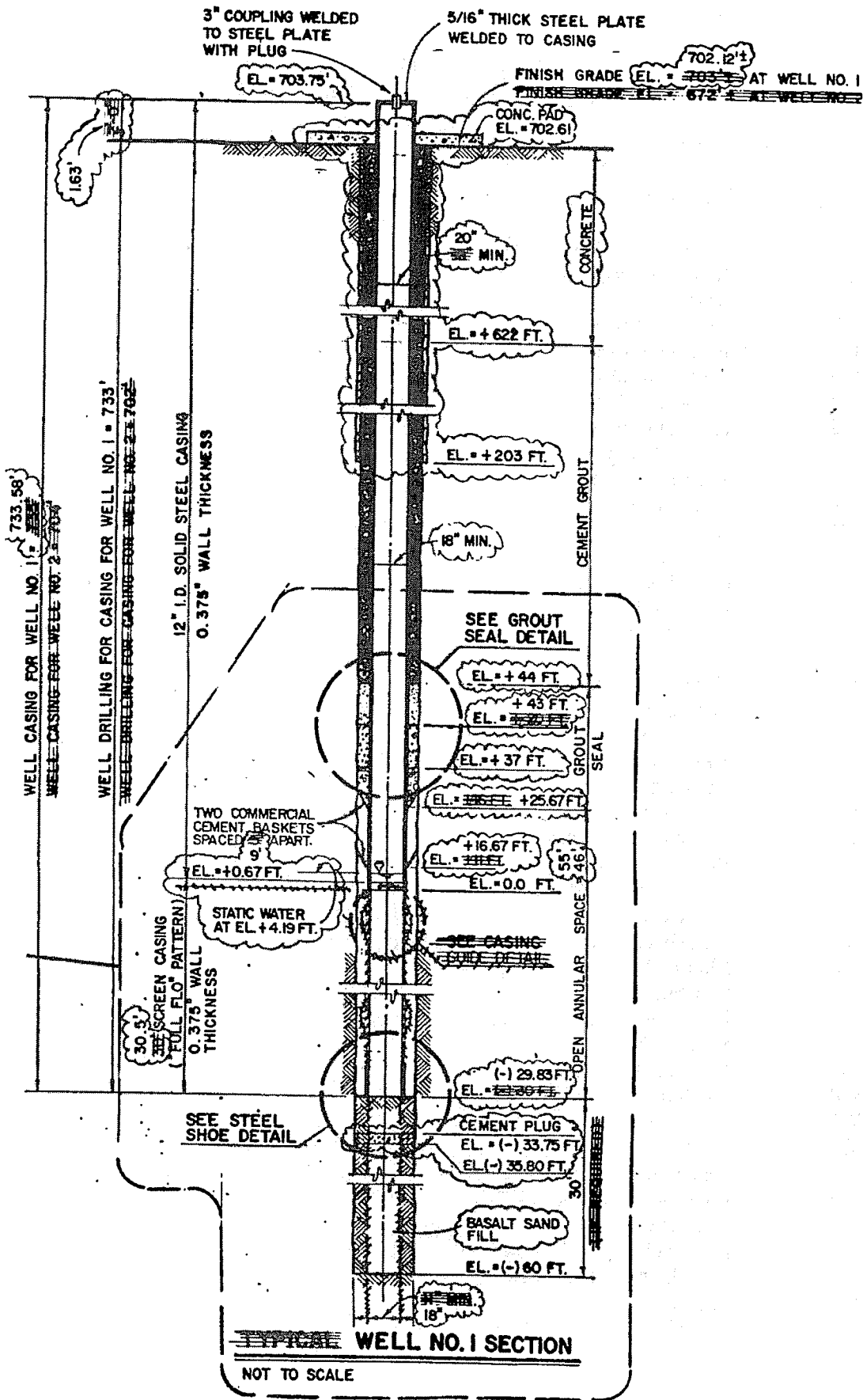
Q. DRILLER'S LOG:

Depth, ft.	Rock Description & Remarks	Water Level ft.	Depth, ft.	Rock Description & Remarks	Water Level ft.
..... to .....			..... to		
..... to (see attached) .....			..... to		
..... to .....			..... to		
..... to .....			..... to		
..... to .....			..... to		
..... to .....			..... to		
..... to .....			..... to		
..... to .....			..... to		
..... to .....			..... to		
..... to .....			..... to		
..... to .....			..... to	Latitude 20° 54' 25"	
..... to .....			..... to	Longitude 156° 20' 08"	
..... to .....			..... to	Well No. 5420-02	

DRILLER'S LOG
Hamakuapoko Well 1, East Maui 5420-02

Driller: Richardson Drilling

<u>Depth (ft.)</u>	<u>Description</u>
0 - 41	Brown clay with boulders
41 - 65	Red clay scarce boulders
65 - 90	Blue rock
90 - 101	Very hard blue rock
101 - 105	Hard blue rock
105 - 108	Very hard blue rock
108 - 113	Boulders of blue rock
113 - 122	Hard blue rock
122 - 140	Harder blue rock
140 - 153	Very hard blue rock
153 - 164	Red cinders
164 - 174	Hard
174 - 188	Very hard
188 - 190	Pahoehoe and Aa soft red brown
190 - 200	Hard red brown
200 - 210	Medium hard
210 - 216	Soft red brown
216 - 224	Hard blue rock
224 - 226	Soft rock, same color
226 - 234	Hard blue rock
234 - 246	Softer pahoehoe
246 - 248	Aa, hard
248 - 271	Pahoehoe (soft)
271 - 285	Pahoehoe med hard
285 - 302	Blue Aa rock, very hard
302 - 337	Red brown pahoehoe
337 - 378	Black pahoehoe, very porous, lost mud--holds no water
378 - 402	Pahoehoe, some red brown, holds some water
402 - 410	Blue rock AA, hard
410 - 439	Soft blue rock
439 - 449	Red brown pahoehoe with soft blue pahoehoe
449 - 457	Medium hard blue rock
457 - 553	Brown pahoehoe
553 - 558	AA blue rock
558 - 605	Pahoehoe
605 - 606	Harder
606 - 710	Pahoehoe blue
710 - 719	Blue pahoehoe with olivine
719 - 727	Red brown pahoehoe and olivine
727 - 748	Blue rock, some feldspar crystals, very little cuttings bailed in 5' drilling, water clearing
748 - 752	Red pahoehoe
752 - 758	Soft blue rock (pahoehoe)
758 - 765	Hard red pahoehoe & blue



PUMPING TEST RECORD
Hamakuapoko Well 1, East Maui

5420-02

+4.2 (see well section)

Static Water Level: ~~44.2~~ ft., msl on 3/23/92

Airline Measurement: Mercury Manometer, 0.1 ft.,
per smallest division

Depth of Well: 736 ft. (-34 ft., msl)

Present at Pumping Test:

Flow Measurement: Flow meter

Dan Lum, Water Resource Associates

Will Garvin, Norman Saito Engineering Consultants, Inc.

Date and Time	Pumping Rate (gpm)	Airline Readings (ft. & psi)	Drawdown (ft.)	Chlorides (ppm)	Water Temp. (°F)
April 6, 1992					
9:35 am	0	6.60 ft.	0		
10:15	0	6.63	0		
10:25	0	6.63	0		
10:30	Start Pump - Adjust to 150 gpm				
10:45	210				
11:00	200	6.25	0.38	55	
11:15	218	6.18	0.45		
11:30	210	6.18			
	Adjust Rate to 350 gpm				
11:41		5.85	0.78		
11:45	360	5.65	0.98		
11:55	383	5.612	1.02		
12:00 N	360	5.61	1.02	48	72.0
	Adjust Rate to 450 gpm				
12:10 pm	500	5.20	1.43		
12:20	500	5.15	1.48		
12:30	510	5.15	1.48		
12:45	480	5.15	1.48		
1:00	480	5.15	1.48	48	
1:15	480	5.18	1.45		
1:30	460	5.125	1.51		
1:45	470	5.15	1.48		
2:00	470	5.125		48	72.0
	Adjust Rate to 600 gpm				
2:05	600				
2:10	600	4.60	2.03		
2:20	570				
2:30	600				
2:40	590				
2:50	600				
3:00	600	4.63	2.00	48	

Pumping Test Record (Cont'd)
Hamakuapoko Well 1

Date and Time	Pumping Rate (gpm)	Airline Readings (ft. & psi)	Drawdown (ft.)	Chlorides (ppm)	Water Temp. (°F)
---------------	--------------------	------------------------------	----------------	-----------------	------------------

April 6, 1992 (Cont'd)

	Adjust Rate to 700 gpm				
3:10 pm	712	3.91 ft.	2.72		
3:15	700	3.91	2.72		
3:30	712	3.89	2.74		
4:00	712	3.89		48	
5:00	700	3.85			
6:00	724	3.83	2.80	50	
7:00	712	3.81			
8:00	724	3.83	2.80	50	
9:00	712	3.85			
10:00	712	3.85	2.78	50	
11:00	712	3.90			
12:00 M	700	3.90	2.73	51	

April 7, 1992

1:00 am	724	3.90			
2:00	700	3.90	2.73	54	
3:00	712	3.90			
4:00	700	3.90	2.73	53	
5:00	700	3.90			
6:00	700	3.90	2.73	55	
7:00	700	3.90			
8:00	700	3.90	2.73	55	
9:00	712	3.91			
10:00	724	3.90	2.73	54	
11:00	712	3.91			
12:00 N	724	3.9	2.73	53	
1:00 pm	712	3.90			
2:00	712	3.9	2.73	55	
3:00	700	3.9			
4:00	700	3.9	2.73	55	
5:00	724	3.87			
6:00	712	3.85	2.78	55	
7:00	724	3.85			
8:00	712	3.81	2.82	56	
9:00	712	3.85			

Pumping Test Record (Cont'd)
Hamakuapoko Well 1

Date and Time	Pumping Rate (gpm)	Airline Readings (ft. & psi)	Drawdown (ft.)	Chlorides (ppm)	Water Temp. (°F)
---------------	--------------------	------------------------------	----------------	-----------------	------------------

April 7, 1992 (cont'd)

10:00	712	3.85 ft.	2.78	56	
11:00	724	3.85			
12:00 M	712	3.9	2.73	58	

April 8, 1992

1:00 am	724	3.9			
2:00	700	3.9	2.73	58	
3:00	712	3.90			
4:00	712	3.90	2.73	58	
5:00	712	3.90			
6:00	712	3.90	2.73	56	
7:00	700	3.90			
8:00	724	3.92	2.71	58	
9:00	700	3.91			
10:00	700	3.91	2.72	58	
11:00	700	3.90			
12:00 N	700	3.90	2.73	59	
1:00 pm	712	3.90			
2:00	700	3.90	2.73	59	
3:00	700	3.90 ft.			
4:00	712	1.85 psi	2.74	60	
5:00	712	1.85			
6:00	700	1.85	2.74	60	
7:00	712	1.80			
8:00	712	1.80	2.62	60	
9:00	712	1.80			
10:00	712	1.80	2.62	63	
11:00	712	1.80			
12:00 M	712	1.80	2.62	60	

April 9, 1992

1:00 am	700	1.85			
2:00	700	1.85	2.74	63	
3:00	700	1.85			
4:00	712	1.85	2.74	61	

Pumping Test Record (Cont'd)
Hamakuapoko Well 1

Date and Time	Pumping Rate (gpm)	Airline Readings (ft. & psi)	Drawdown (ft.)	Chlorides (ppm)	Water Temp. (°F)
April 9, 1992 (cont'd)					
5:00	712	1.85 psi			
6:00	700	1.85	2.74	63	
7:00	700	1.85			
8:00	712	1.85	2.74	63	
9:00	700	1.85			
10:00	724	1.82	2.67	63	
11:00	700	1.85			
12:00 N	724	1.85	2.74	63	
1:00 pm	712	1.85			
2:00	712	1.85	2.74	64	
3:00	700	1.85			
4:00	500	2.35			
4:15	492	2.35	1.58	63	
4:30	492	2.35			
5:00	492	2.35			
6:00	500	2.35	1.58	63	
7:00	500	2.35			
8:00	484	2.35	1.58	65	
9:00	484	2.35			
10:00	484	2.35	1.58	65	
11:00	492	2.35			
12:00 M	484	2.35	1.58	63	
April 10, 1992					
1:00 am	484	2.40			
2:00	484	2.50	1.24	64	
3:00	484	2.50			
4:00	500	2.45	1.35	63	
5:00	492	2.45			
6:00	492	2.45	1.35	61	
7:00	492	2.45			
8:00	492	2.45	1.35	61	
9:00	492	2.45			
10:00	492	2.45	1.35	63	
11:00	492	2.45			
12:00 N	492	2.45	1.35	63	

Pumping Test Record (Cont'd)
Hamakuapoko Well 1

Date and Time	Pumping Rate (gpm)	Airline Readings (ft. & psi)	Drawdown (ft.)	Chlorides (ppm)	Water Temp. (°F)
April 10, 1992 (cont'd)					
1:00 pm	492	2.40 psi			
2:00	492	2.40	1.47	64	
3:00	492	2.40			
4:00	484	2.40	1.47	63	
	Stop Pump - Recovery				
4:05	0	2.45	1.35		
4:06	0	2.5	1.23		
4:07	0	2.55	1.12		
4:08	0	2.8	0.54		
4:10	0	3.02	0.03		
4:12	0	3.03	0.01		
4:20	0	3.03	0.01		
4:30	0	3.02	0.03		
4:50	0	3.02	0.03		
5:10	0	3.02	0.03		



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LABORATORY ANALYSIS REPORT
 Environmental Laboratories Division

CLIENT: NORMAN SAITO ENGINEERING CONSUL.
 2158 MAIN STREET
 WAILUKU, HI 96793

ATTN: WILL GARVIN

JOB NUMBER: 6982-1

DATE: MAY 1, 1992

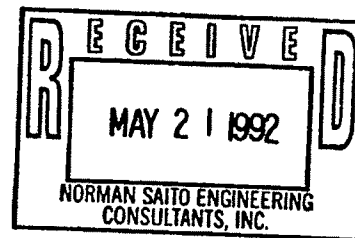
SAMPLE LOCATION: EAST MAUI SOURCE DEV.
 PROJECT #C-65-C

Date/Time Sampled: ----
 Date/Time Received: 04/15/92 @ 0715

Matrix: WATER
 SAMPLE #: HAMAKUAPOKO WELL #1

ANALYSIS	RESULT mg/L	DETECTION LIMIT mg/L	ANALYSIS DATE	METHOD NUMBER
ARSENIC	ND	0.002	04/28/92	7060/7061
BARIUM	ND	0.1	04/29/92	7080
CADMIUM	ND	0.005	04/28/92	7130
CHROMIUM	0.01	0.01	04/28/92	7190
LEAD	0.02	0.01	04/28/92	7420/7421
MERCURY	ND	0.0002	04/27/92	7471
SELENIUM	ND	0.002	04/28/92	7740/7741
SILVER	ND	0.01	04/28/92	7760
COPPER	0.07	0.01	05/01/92	7210
MAGNESIUM	8.7	0.01	04/25/92	7450
MANGANESE	0.034	0.01	05/01/92	7460
NICKEL	ND	0.05	05/01/92	7520
POTASSIUM	1.5	0.01	04/25/92	7610
SODIUM	36.3	0.01	05/01/92	7770
ZINC	0.51	0.01	05/01/92	7950
CALCIUM	3.7	0.01	04/25/92	7140
IRON	1.4	0.03	05/01/92	7380

ND = NOT DETECTED



Approved by *Jana Malcolm Brier*



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LABORATORY ANALYSIS REPORT
Environmental Laboratories Division

CLIENT: NORMAN SAITO ENGINEERING CONSUL.
2158 MAIN STREET
WAILUKU, HI 96793

ATTN: WILL CARVIN
JOB NUMBER: 6982-1A
DATE: MAY 1, 1992

SAMPLE LOCATION: EAST MAUI SOURCE DEV.
PROJECT C-65-C

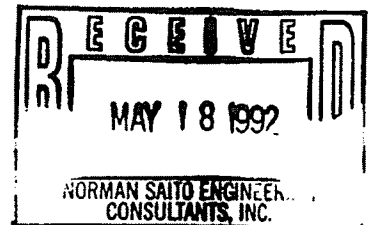
Date/Time Sampled: ----
Date/Time Received: 04/15/92 @ 0715

Matrix: WATER
SAMPLE #: HAMAKUAPOKO WELL #1

ANALYSIS	RESULT mg/L	DETECTION LIMIT mg/L	ANALYSIS DATE	METHOD NUMBER
ALKALINITY	53	0.2	04/15/92	310.1
CHLORIDE	70	1	04/28/92	AOAC 3.067
FLUORIDE	0.1	0.1	04/24/92	340.2
TOTAL HARDNESS	64	0.2	04/20/92	130.2
NITRATE	3.8	0.01	04/15/92	353.3
NITRITE	ND	0.01	04/15/92	353.3
pH (units)	7.8		04/15/92	150.1
DISSOLVED SOLIDS	158	1	04/10/92	160.1
SULFATE	12.5	1	04/28/92	375.4
TURBIDITY (NTU)	0.10	0.01	04/15/92	180.1
SILICA	47.5	0.01	04/24/92	370.1
CARBONATE	ND	0.2	04/20/92	
BICARBONATE	53	0.2	04/20/92	

ND = NOT DETECTED

PAGE 2 OF 7



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Approved by: *Jana M. ...*



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LABORATORY ANALYSIS REPORT
Environmental Laboratories Division

CLIENT: NORMAN SAITO ENGINEERING CONSUL
2158 MAIN STREET
WAILUKU, HAWAII 96793

ATTN: WILL GARVIN

JOB NUMBER: 6982-2

SAMPLE LOCATION: EAST MAUI SOURCE DEV.
PROJECT C-65-C

DATE: MAY 1, 1992

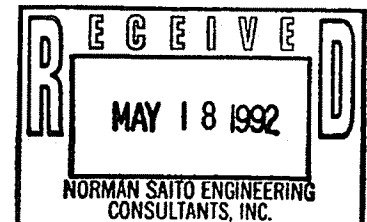
Date/Time Sampled:-----
Date/Time Received: 04/15/92 @ 0715

Matrix: WATER
SAMPLE #: HAMAKUAPOKO WELL #1

ANALYSIS	RESULT mg/L	DETECTION LIMIT mg/L	ANALYSIS DATE	METHOD NUMBER
BENZENE	ND	0.005	04/17/92	M 602
TOLUENE	ND	0.005	04/17/92	M 602
ETHYLBENZENE	ND	0.005	04/17/92	M 602
XYLENE	ND	0.010	04/17/92	M 602
TRihalOMETHANES				
CHLOROFORM	ND	0.001	04/15/92	501.1
BROMODICHLOROMETHANE	ND	0.001	04/15/92	501.1
DIBROMOCHLOROMETHANE	ND	0.001	04/15/92	501.1
BROMOFORM	ND	0.001	04/15/92	501.1
TOTAL TRIHALOMETHANES	ND	0.004	04/15/92	501.1
HERBICIDES				
2,4-D	ND	0.005	04/28/92	615
2,4,5-TP (SILVEX)	ND	0.001	04/28/92	615

ND = NOT DETECTED

PAGE 3 OF 7



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LABORATORY ANALYSIS REPORT
 Environmental Laboratories Division

CLIENT: NORMAN SAITO ENGINEERING CONSUL
 2159 MAIN STREET
 WAILUKU, HAWAII 96793

ATTN: WILL GARVIN

JOB NUMBER: 6982-3

SAMPLE LOCATION: EAST MAUI SOURCE DEV.
 PROJECT C-65-C

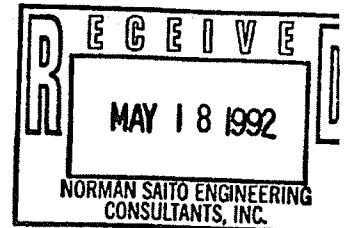
DATE: MAY 1, 1992

Date/Time Sampled: ---
 Date/Time Received: 04/15/92 @ 0715
 PESTICIDES/PCB

Matrix: WATER
 SAMPLE #: HAMAKUAPOKO WELL #1
 METHOD #: 608

ANALYSIS	RESULT mg/L	DETECTION LIMIT mg/L	ANALYSIS DATE
ALACHLOR	ND	0.00005	04/22/92
ATRAZINE	ND	0.00005	04/22/92
CHLORDANE	ND	0.00005	04/22/92
ALDRIN	ND	0.00005	04/22/92
DICHLORAN	ND	0.00005	04/22/92
DIELDRIN	ND	0.00005	04/22/92
ENDRIN	ND	0.00005	04/22/92
HEPTACHLOR	ND	0.0001	04/22/92
HEPTACHLOR EPOXIDE	ND	0.0001	04/22/92
LINDANE	ND	0.0001	04/22/92
METHOXYCHLOR	ND	0.0001	04/22/92
SIMAZINE	ND	0.0001	04/22/92
TOXAPHENE	ND	0.0001	04/22/92
TRIFLURALIN	ND	0.0001	04/22/92
DIAZINON	ND	0.0001	04/22/92
MALATHION	ND	0.0001	04/22/92
DIURON	ND	0.00005	04/22/92
BROMACIL	ND	0.00005	04/22/92
AMETRYN	ND	0.00005	04/22/92
HEXAZINONE	ND	0.00005	04/22/92
GLYPHOSATE	ND	0.00005	04/22/92
BENOMYL	ND	0.00005	04/22/92
FENAMIPHOS	ND	0.00005	04/22/92
VELPAR	ND	0.00005	04/22/92
DALAPON	ND	0.00005	04/22/92
ETHEPON	ND	0.00005	04/22/92
DIFOLATON	ND	0.00005	04/22/92
MIREX	ND	0.00005	04/22/92
CHLOROFLURENOL	ND	0.00005	04/22/92
FOSETHYL-AL	ND	0.00005	04/22/92

ND = NOT DETECTED



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Approved by *Jana Malcolm-Brew*



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LABORATORY ANALYSIS REPORT
Environmental Laboratories Division

CLIENT: NORMAN SAITO ENGINEERING CONSUL
2158 MAIN STREET
WAILUKU, HAWAII 96793

ATTN: WILL GARVIN

JOB NUMBER: 6982-3A

DATE: MAY 1, 1992

SAMPLE LOCATION: EAST MAUI SOURCE DEV.
PROJECT C-65-C

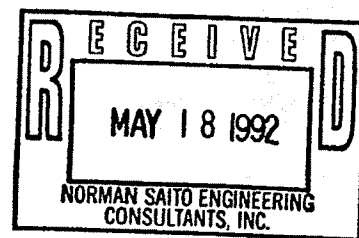
Date/Time Sampled: ---
Date/Time Received: 04/15/92 @ 0715
PESTICIDES/PCB

Matrix: WATER
SAMPLE #: HAMAKUAPOKO WELL #1
METHOD #: 608

ANALYSIS	RESULT ug/L	DETECTION LIMIT ug/L	ANALYSIS DATE
PCB - 1242	ND	0.5 0.0005	04/22/92
PCB - 1254	ND	1.0 0.001	04/22/92
PCB - 1221	ND	0.5 0.0005	04/22/92
PCB - 1232	ND	0.5 0.0005	04/22/92
PCB - 1248	ND	0.02 0.0002	04/22/92
PCB - 1260	ND	0.02 0.0002	04/22/92
PCB - 1016	ND	0.02 0.0002	04/22/92

ND = NOT DETECTED

PAGE 5 OF 7



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LABORATORY ANALYSIS REPORT
Environmental Laboratories Division

CLIENT: NORMAN SAITO ENGINEERING CONSUL
2158 MAIN STREET
WAILUKU, HAWAII 96793

ATTN: WILL GARVIN

JOB NUMBER: 6982-4

DATE: MAY 1, 1992

SAMPLE LOCATION: EAST MAUI SOURCE DEV.
PROJECT C-65-C

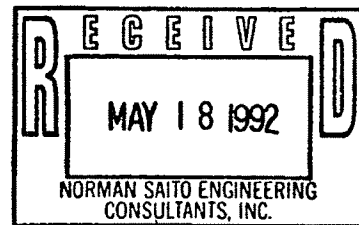
Date/Time Sampled: ----
Date/Time Received: 04/15/92 @ 0715

Matrix: WATER
SAMPLE #: HAMAKUAPOKO WELL #1
METHOD #: 624/625

ANALYSIS	RESULT mg/L	DETECTION LIMIT mg/L	ANALYSIS DATE
Bromobenzene	ND	0.005	04/17/92
Bromomethane	ND	0.005	04/17/92
Carbon Tetrachloride	ND	0.005	04/17/92
Chlorobenzene	ND	0.005	04/17/92
Chloroethane	ND	0.005	04/17/92
Chloromethane	ND	0.005	04/17/92
2-Chlorotoluene	ND	0.005	04/17/92
4-Chlorotoluene	ND	0.005	04/17/92
Dibromomethane	ND	0.005	04/17/92
1,2-Dichlorobenzene	ND	0.005	04/17/92
1,3-Dichlorobenzene	ND	0.005	04/17/92
1,4-Dichlorobenzene	ND	0.005	04/17/92
1,1-Dichloroethane	ND	0.005	04/17/92
1,2-Dichloroethane	ND	0.005	04/17/92
1,1-Dichloroethylene	ND	0.005	04/17/92
trans-1,2-Dichloroethylene	ND	0.005	04/17/92
Dichloromethane	ND	0.005	04/17/92
1,2-Dichloropropane	ND	0.005	04/17/92
trans-1,3-Dichloropropene	ND	0.005	04/17/92
1,1,2,2-Tetrachloroethane	ND	0.005	04/17/92
1,1,1,2-Tetrachloroethane	ND	0.005	04/17/92
Tetrachloroethylene	ND	0.005	04/17/92
1,1,1-Trichloroethane	ND	0.005	04/17/92
1,1,2-Trichloroethane	ND	0.005	04/17/92
Trichlorofluoromethane	ND	0.005	04/17/92
Vinyl chloride	ND	0.001	04/17/92

ND = NOT DETECTED

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BREWER ENVIRONMENTAL LABORATORIES
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FAX (808) 964-5309

Approved by: *James Malcolm Brewer*



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LABORATORY ANALYSIS REPORT
Environmental Laboratories Division

CLIENT: NORMAN SAITO ENGINEERING CONSUL
2158 MAIN STREET
WAILUKU, HAWAII 96793

ATTN: WILL GARVIN

JOB NUMBER: 6982-5

DATE: MAY 1, 1992

SAMPLE LOCATION: EAST MAUI SOURCE DEV.
PROJECT C-65-C

Date/Time Sampled: ----
Date/Time Received: 04/15/92 @ 0715

Matrix: WATER
SAMPLE #: HAMAKUAPOKO WELL #1
METHOD #: 624/625

ANALYSIS	RESULT mg/L	DETECTION LIMIT mg/L	ANALYSIS DATE
Trichloroethylene	ND	0.005	04/17/92
1,1-Dichloroethylene	ND	0.005	04/17/92
Chloroethylvinyl ether	ND	0.005	04/17/92
1,3-Dichloropropene	ND	0.005	04/17/92
Dibromochloropropane	ND	0.00004	04/17/92
cis-1,2-Dichloroethylene	ND	0.005	04/17/92
trans-1,3-Dichloropropene	ND	0.005	04/17/92
cis-1,3-Dichloropropene	ND	0.005	04/17/92
2,2-Dichloropropane	ND	0.005	04/17/92
1,1-Dichloropropane	ND	0.005	04/17/92
1,3-Dichloropropane	ND	0.005	04/17/92
Ethylenedibromide	ND	0.00004	04/17/92
Styrene	ND	0.005	04/17/92
Trichlorobenzene	ND	0.005	04/17/92
1,2,3-Trichloropropane	ND	0.005	04/17/92
1,1,1-Trichloroethane	ND	0.005	04/17/92
1,4-Dichlorobenzene	ND	0.005	04/17/92
Chlorobenzene	ND	0.005	04/17/92
Chloroethane	ND	0.005	04/17/92
Chloromethane	ND	0.005	04/17/92
2-Chlorotoluene	ND	0.005	04/17/92
4-Chlorotoluene	ND	0.005	04/17/92
Dibromomethane	ND	0.005	04/17/92
Dichlorofluoromethane	ND	0.005	04/17/92
Hexachlorobenzene	ND	0.010	04/22/92
Hexachloropentadiene	ND	0.010	04/22/92
Pentachloronitrobenzene	ND	0.010	04/22/92

ND = NOT DETECTED

PAGE 7 OF 7



BREWER ENVIRONMENTAL LABORATORIES
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Approved by: *Jane Malcolm-Bauer*

APPENDIX B-1.

**Well Completion Report,
Hamakuapoko Well No. 2,
June 3, 1993**



RECEIVED
6/10/93

DEPARTMENT OF WATER SUPPLY AID: 56
COUNTY OF MAUI

P.O. BOX 1108
WAILUKU, MAUI, HAWAII 96793-2108
COMMISSION ON WATER
RESOURCE MANAGEMENT

June 3, 1993

Ms. Rae Loui, Deputy Director
Commission on Water Resource Management
Department of Land and Natural Resources
P. O. Box 621
Honolulu, Hawaii 96809

Dear Ms. Loui:

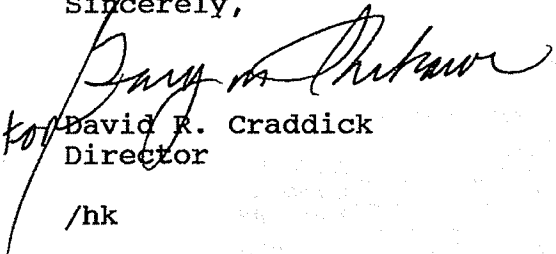
Attention: Mr. Edwin Sakoda

Subject: Hamakuapoko Well 2
State Well No. 5320-01

We are submitting herewith Well Completion Report for Hamakuapoko Well 2 (State Well No. 5320-01) for your information and use. We have also included an as-built drawing of the well and the chemical analysis is included in the attached report.

If there are any questions, please call our Engineering Division at 243-7835.

Sincerely,


David R. Craddick
Director

/hk

"By Water All Things Find Life"





State of Hawaii
COMMISSION ON WATER RESOURCE MANAGEMENT
 Department of Land and Natural Resources

WELL COMPLETION REPORT *6/6/93*

Instructions: Please print or type and submit completed report within 30 days after well completion to the Commission on Water Resource Management, P.O. Box 621, Honolulu, Hawaii 96806. An as-built drawing of the well and chemical analysis should also be submitted. For assistance call the Commission Regulation Branch at 587-0225.

- STATE WELL NO. 5320-01 WELL NAME Hamakuapoko Well 2 ISLAND Maui
- LOCATION: Address Hamakuapoko, East Maui Tax Map Key 2-5-04:39
- DRILLING OR PUMP INSTALLATION CONTRACTOR Richardson Well Drilling, Inc.
- CONTRACTOR'S C-57 LICENSE NUMBER C-12552
- NAME OF DRILLER WHO PERFORMED WORK Lynn Enloe
- TYPE OF RIG/CONSTRUCTION Cable Tool
- DATE OF WELL DRILLING COMPLETION 6/1/93
(NOTE: Report must be submitted within 30 days after this date.)

- GROUND ELEVATION (msl) 780 ft.
 Top of Drilling Platform (msl) _____ ft.
 Height of Drilling Platform above Ground surface _____ ft.
 Bench Mark and Method Used to Determine Ground Elevation Reference MSL ft.

9. DRILLER'S LOG: (see Attached Report)

Depth (ft.)	Rock Description, Remarks, Dates	Water Level (ft.)	Depth (ft.)	Rock Description, Remarks, Dates	Water Level (ft.)
to			to		
to			to		
to			to		
to			to		
to			to		
to			to		
to			to		

(If more space is needed, continue on back.)

- TOTAL DEPTH OF WELL BELOW GROUND 812 ft.
- HOLE SIZE: 20" inch dia. from 0 ft. to 70 ft. below ground
18" inch dia. from 70 ft. to 812 ft. below ground
 _____ inch dia. from _____ ft. to _____ ft. below ground

- CASING INSTALLED:
12 in. I.D. x 0.375 in. wall solid section to 780 ft. below ground
12 in. I.D. x 0.375 in. wall perforated section to 810 ft. below ground
 Type of Perforation _____

- ANNULUS: Grouted from 0 ft. below ground to 698 ft. below ground
 Gravel packed from 698 ft. below ground to 763 ft. below ground

- INITIAL WATER LEVEL 775.65 ft. below ground. Date and time of measurement 11am 1/19/93
- INITIAL CHLORIDE 49 ppm. Date and time of sampling 4pm 11/18/92
- INITIAL TEMPERATURE _____ °F. Date and time of sampling _____
- DATE OF PUMP INSTALLATION n/a

- PUMP INSTALLATION:
 Pump Type, Make, Serial No. _____ Capacity _____ gpm
 Motor type, H.P., Voltage, rpm _____
 Depth of Pump Intake Setting _____ ft. below _____, which elevation is _____ ft.
 Depth of bottom of airline _____ ft. below _____, which elevation is _____ ft.
 Pumping Head is _____ ft.

- PUMPING TESTS: Reference Point (R.P.) used: _____, which elevation is _____ ft.
 Date 11-18-92 (see Attached Reports) Date 11-30-92
 Start water level _____ ft. below R.P. Start water level _____ ft. below R.P.
 End water level _____ ft. below R.P. End water level _____ ft. below R.P.
 Depth of well _____ ft. below R.P. Depth of well _____ ft. below R.P.

Elapsed Time (hours)	Rate (gpm)	Draw-down (ft.)	Cl- (ppm)	Temp. °F	Elapsed Time (hours)	Rate (gpm)	Draw-down (ft.)	Cl- (ppm)	Temp. °F
to					to				
0	96	700	46	58	0	168	340	60	66
to					to				
to					to				
to					to				
to					to				

(If more space is needed, continue on back.)

Remarks: _____
 (If more space is needed, continue on back.)

Contractor (print) _____ Title _____
 Signature *Lynn Enloe* Date 6/1/93

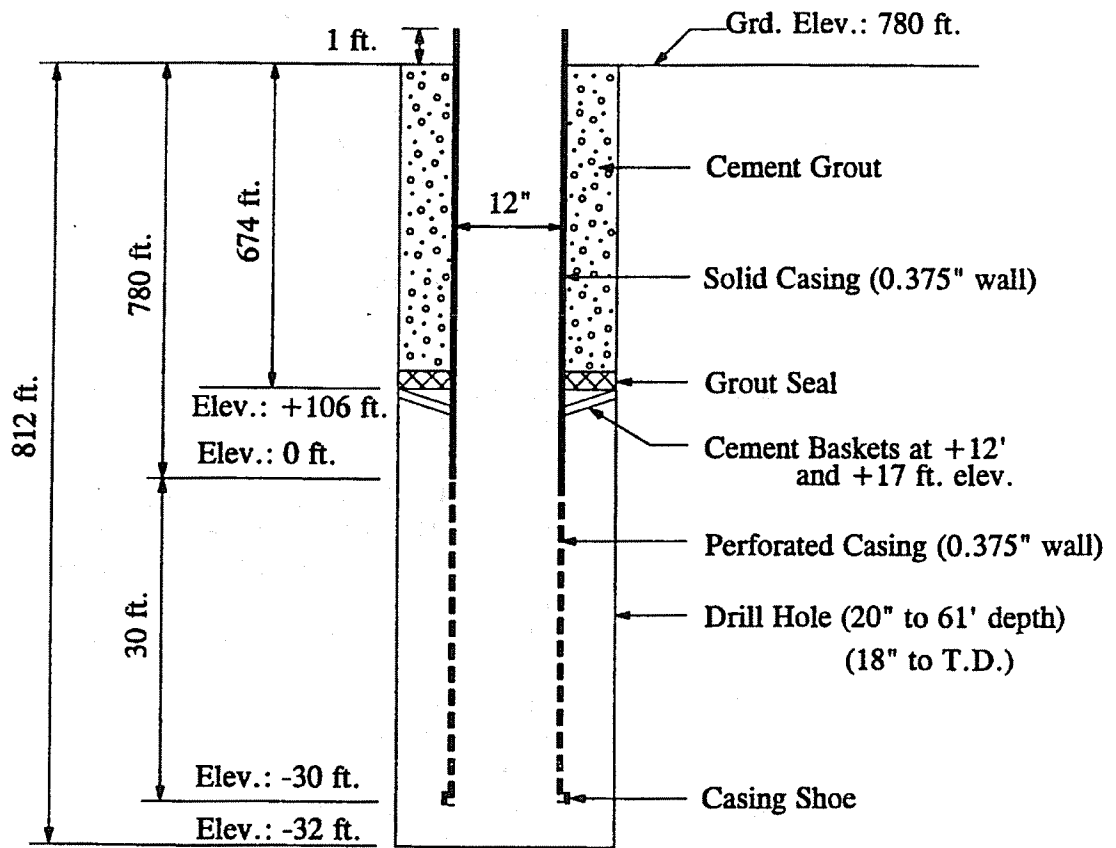
For Driller's Use.
 Job Name _____ Job No _____

For Official Use.
 Longitude 156 20 08 Well No. 5320-01
 Latitude 20 53 25

HAMAKUAPOKO WELL 2 (5320-01)

East Maui, Hawaii

As-Built Section



Not to Scale

Source of Data: NSEC

Water Resource Associates
032ASB2

Figure 2

DRILLER'S LOG
Hamakuapoko Well 2 (5320-01)

Driller: Richardson Drilling

<u>Depth (ft)</u>	<u>Driller's Description</u>
0-17	DECOMPOSED BASALT: Silty
17-35	STICKY CLAY
35-78	CLAY & DECOMPOSED ROCK
78-94	HARD BLUE ROCK
94-97	VERY HARD BLUE ROCK
97-109	HARD BLUE ROCK
109-112	SOFT BLUE ROCK & RED PAHOEHOE
112-125	RED CINDER, CLAY GRAVEL
125-127	BROWN CINDER, CLAY GRAVEL
127-163	SOFT BROWN PAHOEHOE
163-171	HARD ROCK
171-175	SOFT BROWN PAHOEHOE
175-186	RED PAHOEHOE: Soft
186-192	VERY HARD BLUE ROCK
192-200	HARD BLUE ROCK (no water)
200-214	RED BROWN CLAY & PAHOEHOE
214-220	HARD BLUE ROCK (no water)
220-226	SOFT CLAY & PAHOEHOE (no water)
226-244	HARD BLUE ROCK (no water)
244-253	MED. HARD BLUE ROCK (no water)
253-259	BROWN SOFT PAHOEHOE (no water)
259-267	HARD BLUE ROCK (no water)
267-297	SOFT LT. BROWN PAHOEHOE (no water)
297-301	PAHOEHOE: with olivine
301-315	SOFT PAHOEHOE
315-319	SOFT PAHOEHOE (some red)
319-323	HARD PAHOEHOE
323-333	SOFT PAHOEHOE
333-338	HARD PAHOEHOE
338-350	SOFT PAHOEHOE
350-352	HARD PAHOEHOE
352-362	SOFT PAHOEHOE
362-365	HARD PAHOEHOE
365-368	SOFT PAHOEHOE
368-375	HARD PAHOEHOE
375-384	RED PAHOEHOE
384-397	HARD BLUE ROCK
397-407	SOFT PAHOEHOE

Table 1

**Driller's Log
Hamakuapoko Well 2 (Cont'd)**

<u>Depth (ft)</u>	<u>Driller's Description</u>
407-413	HARD BLUE ROCK
413-418	SOFT PAHOEHOE
418-434	MED. HARD BLUE ROCK
434-447	LOOSE PAHOEHOE
447-452	BLUE ROCK
452-462	BROWN PAHOEHOE
462-471	RED BROWN PAHOEHOE
471-540	BLACK PAHOEHOE
540-570	HARD PAHOEHOE: with olivine
570-585	HARD BLUE PAHOEHOE
585-590	BLUE PAHOEHOE
590-595	RED BROWN PAHOEHOE
595-600	HARD PAHOEHOE: with olivine
600-617	HARD BLUE ROCK
617-650	BROWN PAHOEHOE
650-655	SOFT BLUE ROCK
655-670	BROWN & BLUE PAHOEHOE
670-675	HARD BLUE ROCK
675-710	BROWN & BLUE PAHOEHOE
710-718	RED BROWN PAHOEHOE
718-728	SOFT BLUE ROCK
728-733	BLUE PAHOEHOE
733-746	BROWN PAHOEHOE
746-751	HARD BLUE ROCK
751-755	RED BROWN PAHOEHOE
755-772	HARD BLUE ROCK
772-812	RED BROWN PAHOEHOE
(Total Depth)	

Compiled: 1/7/93 - WRA

Pumping Test Record (Continued)
 Well Name: Hamakuapoko Well #2

Date & Time	Pumping Rate (gpm)	Drawdown (feet)	Chlorides (ppm)	Temp. (°F)	
November 21, 1992					
12:00 am	700	0.46	56	71.6	
2:00	700		56		
4:00	700	0.46	56		
6:00	700				
8:00	700	0.46	56		
10:00	700		56		
12:00 Noon	700	0.44	56		
2:00 pm	700		57		
4:00	700	0.39	57		
6:00	700		57		
8:00	700	0.44			
10:00	700		57		
November 22, 1992					
12:00 am	700	0.42	57		
2:00	700		57		
4:00	700	0.39	58		
6:00	700		58		
8:00	700	0.42	58		
10:00	700		58		
12:00 Noon	700	0.69*	58		
2:00 pm	700		58		
4:00	700	0.39	58		
5:00 pm	700	0.37	58		
END OF TEST					
November 24, 1992					
10:30 am	Start Pump	Sample	54		
12:50 pm	Start Pump	Sample	54		

*Drop due to change O2 tank.

**Hamakuapoko Well 2 (5320-01)
PUMPING TEST NO. 2 RECORD
November 30 to December 7, 1992**

DEPTHS (Below Ground Surface):

Solid Csg: 780 ft. Perforated Csg: 810 ft.

Total Depth: 812 ft.

DISCHARGE MEASUREMENT: Flowmeter

DRAWDOWN MEASUREMENT: Pressure Gage

ELEVATIONS (Mean Sea Level):

Ground Surface: 780 ft.

Bottom of Solid Csg: 0 ft.

Bottom of Perf. Csg: -30 ft.

Bottom of Well: -32 ft.

Static Water Level: 4.66 ft. on

1/19/93

Date & Time	Pumping Rate (gpm)	Airline Reading (psi)	Drawdown (feet)	Chlorides (ppm)	Temp. (°F)
11-30-92					
9:00 am	0	1.81	0		
9:15	Start Pump - Adjust to 850 gpm				
9:20	857				
9:30	857	1.62	0.44		
10:00	845	1.62	0.44		70.7
12:00 N		1.65	0.37	52	
2:00 pm	845	1.65	0.37	52	
4:00	845	1.65	0.37	53	
6:00	848	1.64	0.39	54	
8:00	848	1.64	0.39		
10:00	842	1.65	0.37	55	
12-1/92					
12:00 am	842	1.63	0.42	55	
2:00		1.63	0.42		
4:00	832	1.64	0.39	56	
4:51	Stop pump to check oil				
6:00		1.63	0.42		
8:00	838	1.63	0.42	56	
10:00	829	1.63	0.42		
10:19	Stop pump to check oil				
12:00 pm	827	1.65	0.37	57	
2:00	836	1.66	0.35		
4:00	836	1.65	0.37		

Pumping Test Record
Hamakuapoko Well #2

Date & Time	Pumping Rate (gpm)	Airline Reading (psi)	Drawdown (feet)	Chlorides (ppm)	Temp. (°F)
12-1-92					
6:00	836	1.63	0.42	56	
8:00	836	1.60	0.49		
10:00	836	1.62	0.44	57	
12-2-92					
12:00 am	836	1.62	0.44		
2:00	836	1.60	0.49	57	
4:00	836	1.60	0.49	59	
6:00	836	1.60	0.49		
8:00	836	1.60	0.49	59	
10:00	836	1.60	0.49	59	
12:00 pm	836	1.62	0.44	59	
2:00	836	1.65	0.37		
4:00	836	1.65	0.37	59	
6:00	836	1.64	0.39	60	
8:00	836	1.61	0.46		
10:00	836	1.61	0.46	60	
12-3-92					
12:00 am	836	1.61	0.46		
2:00	836	1.61	0.46	60	
4:00	836	1.61	0.46		
6:00	836	1.63	0.42	60	
8:00	836	1.63	0.42		
10:00	820	1.63	0.42		
12:00 pm	831	1.65	0.37	62	
2:00	831	1.65	0.37		
4:00		1.65	0.37	62	
6:00	833	1.62	0.44		

Pumping Test Record
Hamakuapoko Well #2

Date & Time	Pumping Rate (gpm)	Airline Reading (psi)	Drawdown (feet)	Chlorides (ppm)	Temp. (°F)
12-3-92					
8:00	832	1.61	0.46	61	
10:00	830	1.61	0.46	61	
12-4-92					
12:00 am	830	1.61	0.46		
2:00	830	1.60	0.49	61	
4:00	830	1.60	0.49		
6:00	830	1.60	0.49	61	
8:00	828	1.60	0.49	62	
10:00	828	1.60	0.49	62	
12:00 pm	830	1.62	0.44		
2:00	830	1.62	0.44	63	
4:00	832	1.62	0.44		
6:00	830	1.60	0.49	63	
8:00	826	1.59	0.51		
10:00	813	1.57	0.55	63	
12-5-92					
12:00 am	849	1.57	0.55		
2:00	851	1.57	0.55	63	
4:00	851	1.57	0.55		
6:00	833	1.59	0.51	63	
8:00	839	1.58	0.53		
10:00	856	1.56	0.58	63	
12:00 pm	846	1.57	0.55		
2:00	846	1.60	0.49	63	
4:00	846	1.58	0.53		
6:00	848	1.57	0.55	64	
8:00	848	1.57	0.55		

Pumping Test Record
Hamakuapoko Well #2

Date & Time	Pumping Rate (gpm)	Airline Reading (psi)	Drawdown (feet)	Chlorides (ppm)	Temp. (°F)
12-5-92					
10:00	857	1.52	0.67	64	
12-6-92					
12:00 am	857	1.55	0.60		
2:00	857	1.56	0.58	64	
4:00	857	1.56	0.58	64	
6:00	857	1.56	0.58	65	
8:00	857	1.55	0.60		
10:00	857	1.55	0.60	65	
12:00 pm	854	1.56	0.58		
2:00	857	1.56	0.58	64	
4:00	842	1.57	0.51		
6:00	846	1.56	0.58	65	
8:00	846	1.55	0.60		
10:00	847	1.55	0.60	65	
12-7-92					
12:00 am	847	1.55	0.60		
2:00	847	1.55	0.60	66	
4:00	847	1.56	0.58		
6:00	847	1.55	0.60	65	
8:00	847	1.55	0.60		
9:15	852	1.55	0.60	66	
Stop Pump - Recovery					
9:17:11		1.65	0.37		
9:17:33		1.70	0.25		
9:18:20		1.74	0.16		
9:19:20		1.73	0.18		
9:20:04		1.72	0.20		

Pumping Test Record
Hamakuapoko Well #2

Date & Time	Pumping Rate (gpm)	Airline Reading (psi)	Drawdown (feet)	Chlorides (ppm)	Temp. (°F)
12-7-92					
9:21:19 am		1.71	0.23		
9:22:10		1.70	0.25		
9:58:00		1.75	0.14		
10:47:00 am		1.75	0.14		
4:12:00 pm		1.80	0.02		

Total pumpage: 8,394,100 gal.

APPENDIX C.

**Department of Health
Conditional Approval for
Hamakuapoko Well Nos. 1
and 2, December 22, 2000**

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII



0101002

BRUCE S. ANDERSON, Ph.D., M.P.H.
DIRECTOR OF HEALTH

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

RECEIVED
DEC 22 2 51 PM '00
DEPT. OF WATER SUPPLY

In reply, please refer to
EMD / SDWB

December 22, 2000

Mr. David Craddick, Director
Department of Water Supply
County of Maui
P.O. Box 1109
Wailuku, Hawaii 96793-7109

Dear Mr. Craddick:

SUBJECT: PUBLIC WATER SYSTEM NO. 213, DWS MAKAWAO
HAMAKUAPOKO WELL NOS. 1 AND 2
STATE WELL NOS. 6-5420-02 AND 6-5320-01

We have completed our review of the engineering report for the Hamakuapoko Wells No. 1 and 2, State Well Nos. 6-5420-02 and 6-5320-01 respectively, prepared by the County of Maui and the supplemental information provided on September 26, 2000 and December 6, 2000. The Department of Health hereby grants conditional approval for the use of the Hamakuapoko Wells Nos. 1 and 2 as a drinking water source for a public water system. In addition, the use of these wells as a drinking water source shall be subject to the following conditions.

1. All water from the Hamakuapoko Wells Nos. 1 and 2, State Well Nos. 6-5420-02 and 6-5320-01 respectively, shall be treated by Granular Activated Carbon (GAC) treatment units. The GAC treated water shall enter the Kamole Water Treatment Facility at the infiltrate line before the clearwell chlorine contact chamber. The combined flows shall be continuously disinfected to achieve adequate CT in compliance with the Surface Water Treatment Rule requirements.
2. The GAC treatment units shall deliver potable water of the quality in compliance with Hawaii Administrative Rules, Title 11, Chapter 20, "Rules Relating to Potable Water Systems." In other words, the GAC effluent shall meet all drinking water standards with the exception of coliform bacteria. Compliance shall not be achieved through dilution with surface water from the Wailoa Ditch. The water quality shall be subject to verification by the Department of Health (DOH).

3. The Board of Water Supply, County of Maui, in its operation of the Hamakuapoko Wells Nos. 1 and 2, State Well Nos. 6-5420-02 and 6-5320-01 respectively, shall comply with all other relevant provisions of Hawaii Administrative Rules, Title 11, Chapter 20, "Rules Relating to Potable Water Systems."
4. The Board of Water Supply, County of Maui, shall notify the Department of Health of any condition that may arise or be revealed that the operation of these wells and the GAC units may pose a threat to human health.
5. The Hamakuapoko Wells Nos. 1 and 2, GAC contactor port sample taps, individual GAC contactor effluent, and combined GAC contactor effluent must be tested for nitrate, Ethylene Dibromide (EDB), Dibromochloropropane (DBCP), and 1,2,3- Trichloropropane (TCP) once every month. In addition, pH, alkalinity, calcium, conductivity, and temperature shall be monitored once a month at the Hamakuapoko Wells Nos. 1 and 2, GAC contactor combined effluent, Wailoa Ditch (Kamole WTF influent), and the clearwell effluent in Vault "C" and the Maunaolu Vault. Please refer to the attached table that summarizes these monitoring requirements. With the exception of the water quality parameters, all analyses must be performed by a laboratory approved by the Hawaii Department of Health, State Laboratories Division, using EPA approved drinking water methods. The Maui Department of Water Supply must submit the monthly laboratory report(s) and flow data by the 30th day of the following month.
6. The Board of Water Supply, County of Maui, shall notify the Safe Drinking Water Branch of the planned well activation date(s), at least thirty (30) days in advance. This will help the Department incorporate the wells into its monitoring schedules.
7. Hawaii Revised Statutes, Chapter 340E-24, requires suppliers of water to notify the Department of Health, in writing, of any previously undetected chemical contaminant found in a source of drinking water, within seven days of the positive detection.
8. This approval only covers compliance with section 11-20-29, Hawaii Administrative Rules and section 340E-2, Hawaii Revised Statutes. The Maui Department of Water Supply remains responsible for compliance with all other applicable county, state, and federal laws.

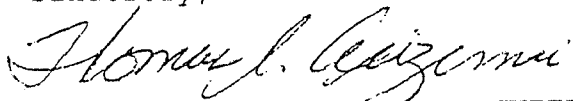
Mr. David Craddick
December 22, 2000
Page 3

The Department would also like to clarify the State Well reference well numbers for the Hamakuapoko Wells Nos. 1 and 2. We concur with you that the well numbers for Hamakuapoko Wells Nos. 1 and 2 are assigned as State Well Nos. 6-5420-02 and 6-5320-01, respectively. The "Engineering Report for Hamakuapoko Well Nos. 1 and 2," dated June 2000, references these well numbers on the title page and on page 5. However, the Department would like to note that in the appendix, "Preliminary Engineering Report for GAC Treatment Facility at Hamakuapoko Wells 1 and 2," page 1-1 refers to a different well number for Hamakuapoko Well No. 2.

The Department of Health reserves the right to suspend or revoke this conditional approval upon either a finding of violation on any of the above conditions or a determination of a threat to public health from factors which may arise in the future.

Thank you for your attention and concern to these matters. If you should have any questions, please contact the Safe Drinking Water Branch, Engineering Section, at 586-4258.

Sincerely,



THOMAS E. ARIZUMI, P.E., CHIEF
Environmental Management Division

DD:la

Enclosure

c: SDWB Monitoring Section
SDWB Enforcement Section
Charlie Ice, CWRM, DLNR
Gordon Muraoka, Maui SDWB Sanitarian

Hamakuapoko Wells Nos. 1 and 2 Special Monitoring Requirements

Sampling Location	DBCP	EDB	TCP	Nitrate as Nitrogen	Flow	pH	Alkalinity	Calcium	Conductivity	Temperature
Wells and GAC										
Hamakuapoko Well No. 1	Monthly	Monthly	Monthly	Monthly	Continuous	Monthly	Monthly	Monthly	Monthly	Monthly
Hamakuapoko Well No. 2	Monthly	Monthly	Monthly	Monthly	Continuous	Monthly	Monthly	Monthly	Monthly	Monthly
GAC Contactor-50% Bed Depth	Monthly	Monthly	Monthly							
GAC Contactor-75% Bed Depth	Monthly	Monthly	Monthly							
GAC Contactor No. 1 Effluent	Monthly	Monthly	Monthly							
GAC Contactor No. 2 Effluent	Monthly	Monthly	Monthly							
GAC Contactor Combined Effluent	Monthly	Monthly	Monthly	Monthly	Continuous	Monthly	Monthly	Monthly	Monthly	Monthly
Kamole Water Treatment Facility										
Waioa Ditch (Valve Control Box?)										
Clearwell Effluent-Vault "C"	Monthly	Monthly	Monthly	Monthly	Continuous	Monthly*	Monthly	Monthly	Monthly	Monthly*
Clearwell Effluent-Maunaolu Vault					Continuous	Monthly*	Monthly	Monthly	Monthly	Monthly*

* **NOTE:** While pH and temperature are monitored at the Kamole Water Treatment Facility on a continuous basis, field measurements are to be taken at the same time that the water quality parameters (alkalinity, calcium, and conductivity) are sampled.

APPENDIX D.

**Ordinance No. 3404 for
Closure of Hamakuapoko
Well Nos. 1 and 2, October 2,
2006**

ORDINANCE NO. 3404

BILL NO. 51 (2006)

A BILL FOR AN ORDINANCE REPEALING CHAPTER 2.88A, MAUI COUNTY CODE, AND AMENDING TITLE 14, MAUI COUNTY CODE, RELATING TO THE COUNTY WATER CODE

BE IT ORDAINED BY THE PEOPLE OF THE COUNTY OF MAUI:

SECTION 1. The purpose of this ordinance is to establish the County Water Code, which shall provide policies relating to the functions of the Department of Water Supply, consistent with Article 8, Chapter 11, Revised Charter of the County of Maui (1983), as amended.

SECTION 2. Chapter 2.88A, Maui County Code, is repealed.

SECTION 3. Title 14, Maui County Code, is amended by amending Article 1 to read as follows:

"Article 1. Water"

SECTION 4. Title 14, Maui County Code, is amended by adding a new chapter to be appropriately designated and to read as follows:

"Chapter 14.01

GENERAL PROVISIONS

Sections:

14.01.010 Title.
14.01.020 Purpose.
14.01.030 Administration.
14.01.040 Definitions.
14.01.050 Hamakuapoko Wells.
14.01.060 Rules.

14.01.010 Title. This article shall be known as the "County water code".

14.01.020 Purpose. The County water code is intended to comply with and complement the State water code, chapter 174C, Hawaii Revised Statutes. The County water code seeks to provide a just and fair distribution of water to the people of the County of Maui. It is the policy of the County of Maui to provide clean, healthful, and plentiful water to its residents. The County water code shall be liberally interpreted and applied in a manner that conforms to the general plan.

14.01.030 Administration. Except as otherwise provided in this article, the director shall administer, implement, and enforce the provisions herein. Any powers granted to, or duties imposed upon, the director may be delegated by the director to other County personnel.

14.01.040 Definitions. For the purpose of this article, unless it is plainly evident from the context that a different meaning is intended, certain words and phrases used herein are defined as follows:

"Board" means the board of water supply of the County of Maui.

"Commission" means the commission on water resource management of the State of Hawaii.

"Consolidated metering system" means the means by which water is furnished through a centralized metering system to multiple consumer units.

"Consumer" means the person, firm, corporation, association, or governmental entity, whether owner or tenant, whose name appears on the records of the department as the party responsible and liable for receiving water service from the department.

"Consumer's supply pipe" means the pipe extending from the consumer's end of the service connection.

"Cost of service lateral" means the sum of the cost of the labor, materials, meter box, transportation, equipment, and road repair, if any, and other charges necessary for the complete installation of a service lateral, but excluding the cost of the meter.

"Council" means the council of the County of Maui.

"Department" means the department of water supply of the County of Maui.

"Director" means the director of the department of water supply of the County of Maui or an authorized representative of the director.

"Dwelling unit" means any building, addition, extension, or any portion thereof, which is designated or intended for occupancy by one family or persons living together or by a person living alone.

"Irrigation" means the use of water for grazing and agricultural purposes.

"Main" or "main pipe" means the department's supply

or distribution pipe from which service connections are made.

"Off-site water improvements" means that portion of a subdivision water system from the point of adequacy to the point of entry of such system into the subdivision boundaries.

"On-site water improvements" means that portion of the subdivision water system constructed within the property limits of the subdivision, to include all fire hydrant assemblies and service laterals whether on or off said property and as required by the department.

"Plan" means the water use and development plan.

"Premises" means the parcel of land, lot or lots, on which the development, improvement, or service is planned.

"Private water system" means a water system constructed, owned, operated, and maintained by private individuals, corporations, or organizations.

"Public water system" means the water system owned, operated, and maintained by the County of Maui.

"Service lateral" means the main tap, pipes, fittings, and valves and appurtenances from the water main to and including the meter box.

"State water code" means chapter 174C, Hawaii Revised Statutes.

"Water service" means the complete installation of pipes, fittings, appurtenances, and meter necessary to provide service to a consumer. This term also refers to the delivery of water to consumers.

"Water system" means a network of pipelines, storage, pumps, and other appurtenances, wells, or other sources which furnishes a supply of water to the consumer.

"Water system development fee" means a monetary charge imposed on an applicant to fund a portion of costs to construct water system improvements or to recover the cost of existing water system improvements made in anticipation of additional demand on water system.

14.01.050 Hamakuapoko Wells. Water from Hamakuapoko Wells 1 and 2 shall not be provided for human consumption.

14.01.060 Rules. The director may adopt, amend, and repeal rules for administration and enforcement of this article, which shall have the force and effect of law, as provided in chapter 91, Hawaii Revised Statutes."

SECTION 5. Title 14, Maui County Code, is amended by adding a new chapter to be appropriately designated and to read as follows:

"Chapter 14.02

WATER USE AND DEVELOPMENT PLAN

Sections:

- 14.02.010 Purpose.
- 14.02.020 Adoption of the plan.
- 14.02.030 Application of the plan.
- 14.02.040 Amendment.

14.02.010 Purpose. The purpose of the water use and development plan is to meet the mandate of the State water code relative to statewide water resources planning and aid the commission on water resource management and the County of Maui in the conservation, development, and use of the water resources of the County.

14.02.020 Adoption of the plan. The council adopted the plan by ordinance no. 1948, and any revision, amendment or modification of the same, pursuant to section 14.02.040 of this chapter, shall be deemed part of the plan without further adoption or amendment to this chapter and shall be incorporated into this chapter by reference.

14.02.030 Application of the plan. The plan shall serve as a guideline to the council, the department, and all other agencies of the County:

1. In approving or recommending to other agencies the use or commitment of the water resources in the County; and
2. In using public funds to develop water resources to meet existing or projected future demands on the public water system as set forth in the plan.

14.02.040 Amendment. A. If a proposed community plan amendment will impact the plan, the director shall initiate any necessary plan amendments.

B. An amendment to the plan proposed by the council, the director, or any agency shall be referred to the board of water supply for its review and recommendation. The board shall hold appropriate public hearings on proposed revisions or amendments and shall transmit the proposed revisions or amendments, with its

findings and recommendations, to the council. Within forty-five days of receipt of a proposed amendment, the council shall act upon the amendment. If the council fails to act within forty-five days, the amendment shall be deemed disapproved.

C. The mayor shall appoint a nine-member task force to be chaired by the director to assist the board with the review and amendment of the plan whenever the planning director recommends revisions to the general plan pursuant to section 8-8.3(3) of the revised charter of the County of Maui (1983), as amended. The task force shall recommend to the board amendments to the plan so as to be consistent with any community plan amendment."

SECTION 6. The following chapters are reserved.

"Chapter 14.04
WATER SERVICES
[Reserved]

Chapter 14.05
REQUIREMENTS FOR SUBDIVISION WATER SYSTEMS
[Reserved]

Chapter 14.06
CONTROL OF WATER USAGE DURING PERIODS OF DROUGHT
[Reserved]

Chapter 14.07
WATER SYSTEM DEVELOPMENT FUND
[Reserved]

Chapter 14.08
RESTRICTIONS ON USE OF POTABLE WATER FOR GOLF COURSES
[Reserved]

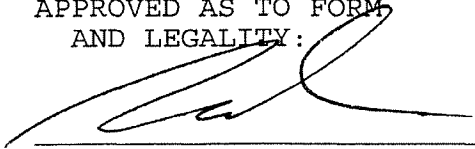
Chapter 14.09
REGULATION OF PERMITS AND WATER USE
[Reserved]

Chapter 14.10
RATES AND FEES
[Reserved]"

SECTION 7. New material is underscored. In printing this bill, the County Clerk need not include the underscoring.

SECTION 8. This ordinance shall take effect upon its approval.

APPROVED AS TO FORM
AND LEGALITY:



EDWARD S. KUSHI, JR.
Deputy Corporation Counsel
County of Maui
S:\ALL\ESK\Ords\Title14article 1.doc

I, JEFFREY T. KUWADA, Deputy County Clerk of the County of Maui, State of Hawaii, DO HEREBY CERTIFY that the foregoing BILL NO. 51 (2006) was passed on Second and Final Reading by the Council of the County of Maui, State of Hawaii, on the 15th day of September, 2006, by the following vote:

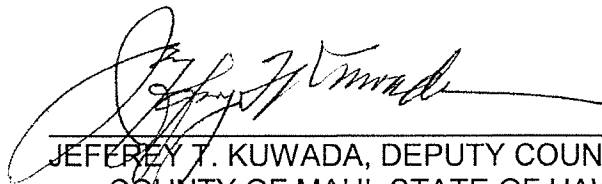
AYES: Councilmembers Michelle Anderson, Dain P. Kane, Joseph Pontanilla, Charmaine Tavares, Vice-Chair Robert Carroll, and Chair G. Riki Hokama.

NOES: Councilmembers Jo Anne Johnson and Michael J. Molina.

EXCUSED: Councilmember Dennis A. Mateo.

I FURTHER CERTIFY that on the 18th day of September, 2006, said BILL NO. 51 (2006) was presented to the Mayor of the County of Maui for his approval or otherwise; that on the 2nd day of October, 2006, the Mayor returned said BILL NO. 51 (2006) without his signature; therefore, pursuant to Section 4-3 of the Charter of the County of Maui, said BILL NO. 51 (2006) was designated as ORDINANCE NO. 3404 of the County of Maui.

DATED at Wailuku, Maui, Hawaii, this 3rd day of October, 2006.



JEFFREY T. KUWADA, DEPUTY COUNTY CLERK
COUNTY OF MAUI, STATE OF HAWAII

Passed First Reading: September 1, 2006

Effective Date of Ordinance: October 2, 2006

APPENDIX D-1.

**Ordinance No. 3859 for Re-
Opening of Hamakuapoko
Well Nos. 1 and 2, October 13,
2011**

ORDINANCE NO. 3859

BILL NO. 56 (2011)

A BILL FOR AN ORDINANCE AMENDING SECTION 14.01.050, MAUI COUNTY CODE,
RELATING TO THE USE OF WATER FROM HAMAKUAPOKO WELLS

BE IT ORDAINED BY THE PEOPLE OF THE COUNTY OF MAUI:

SECTION 1. Section 14.01.050, Maui County Code, is amended to read as follows:

“14.01.050 Hamakuapoko Wells. Water from Hamakuapoko Wells 1 and 2 shall [not be provided for human consumption.] only be provided for:

1. Agricultural purposes;

2. Consumers of the department’s upcountry water system as defined in section 14.13.030 of this code when a drought is declared pursuant to section 14.06.010 of this code; and

3. Backup to the department’s existing upcountry water system facilities.

Water quality sampling schedules shall comply with department of health regulations and with standards set by the United States Environmental Protection Agency.”

SECTION 2. Material to be repealed is bracketed. New material is underscored. In printing this bill, the County Clerk need not include the brackets, the bracketed material, or the underscoring.

SECTION 3. This ordinance shall take effect upon its approval.

APPROVED AS TO FORM AND LEGALITY:



EDWARD S. KUSHI

Department of the Corporation Counsel
County of Maui

S:\ALL\ESK\Ords\14.01.050.Hamakuapoko
Wells.Revised.doc

WE HEREBY CERTIFY that the foregoing BILL NO. 56 (2011)

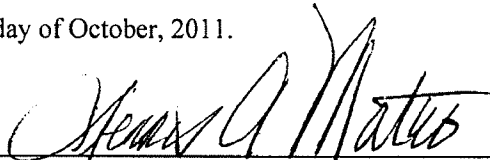
1. Passed FINAL READING at the meeting of the Council of the County of Maui, State of Hawaii, held on the 7th day of October, 2011, by the following vote:

Dennis A. MATEO Chair	Joseph PONTANILLA Vice-Chair	Gladys C. BAISA	Robert CARROLL	Eleanora COCHRAN	Donald G. COUCH, JR.	G. Riki HOKAMA	Michael P. VICTORINO	Michael B. WHITE
Aye	Aye	Aye	Aye	No	Excused	Excused	Aye	Aye

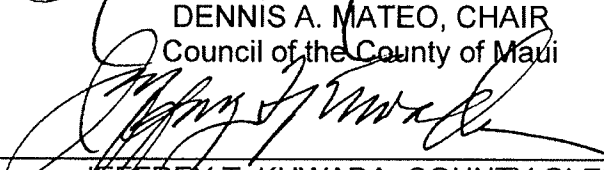
2. Was transmitted to the Mayor of the County of Maui, State of Hawaii, on the 7th day of October, 2011.

DATED AT WAILUKU, MAUI, HAWAII, this 7th day of October, 2011.

RECEIVED
2011 OCT 13 10 40 AM
OFFICE OF THE MAYOR

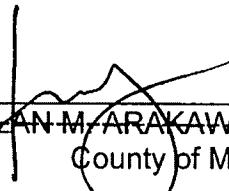


 DENNIS A. MATEO, CHAIR
 Council of the County of Maui

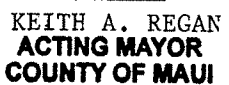


 JEFFREY T. KUWADA, COUNTY CLERK
 County of Maui

THE FOREGOING BILL IS HEREBY APPROVED THIS DAY OF October 13 , 2011.

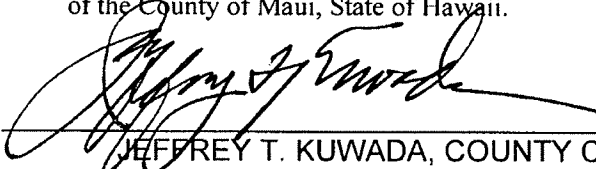


 ALAN M. ARAKAWA, MAYOR
 County of Maui



 KEITH A. REGAN
 ACTING MAYOR
 COUNTY OF MAUI

I HEREBY CERTIFY that upon approval of the foregoing BILL by the Mayor of the County of Maui, the said BILL was designated as ORDINANCE NO. 3859 of the County of Maui, State of Hawaii.



 JEFFREY T. KUWADA, COUNTY CLERK
 County of Maui

Passed First Reading on September 16, 2011.
Effective date of Ordinance October 13, 2011

RECEIVED
2011 OCT 13 PM 2:18
OFFICE OF THE
COUNTY CLERK

I HEREBY CERTIFY that the foregoing is a true and correct copy of Ordinance No. 3859, the original of which is on file in the Office of the County Clerk, County of Maui, State of Hawaii.

Dated at Wailuku, Hawaii, on

County Clerk, County of Maui

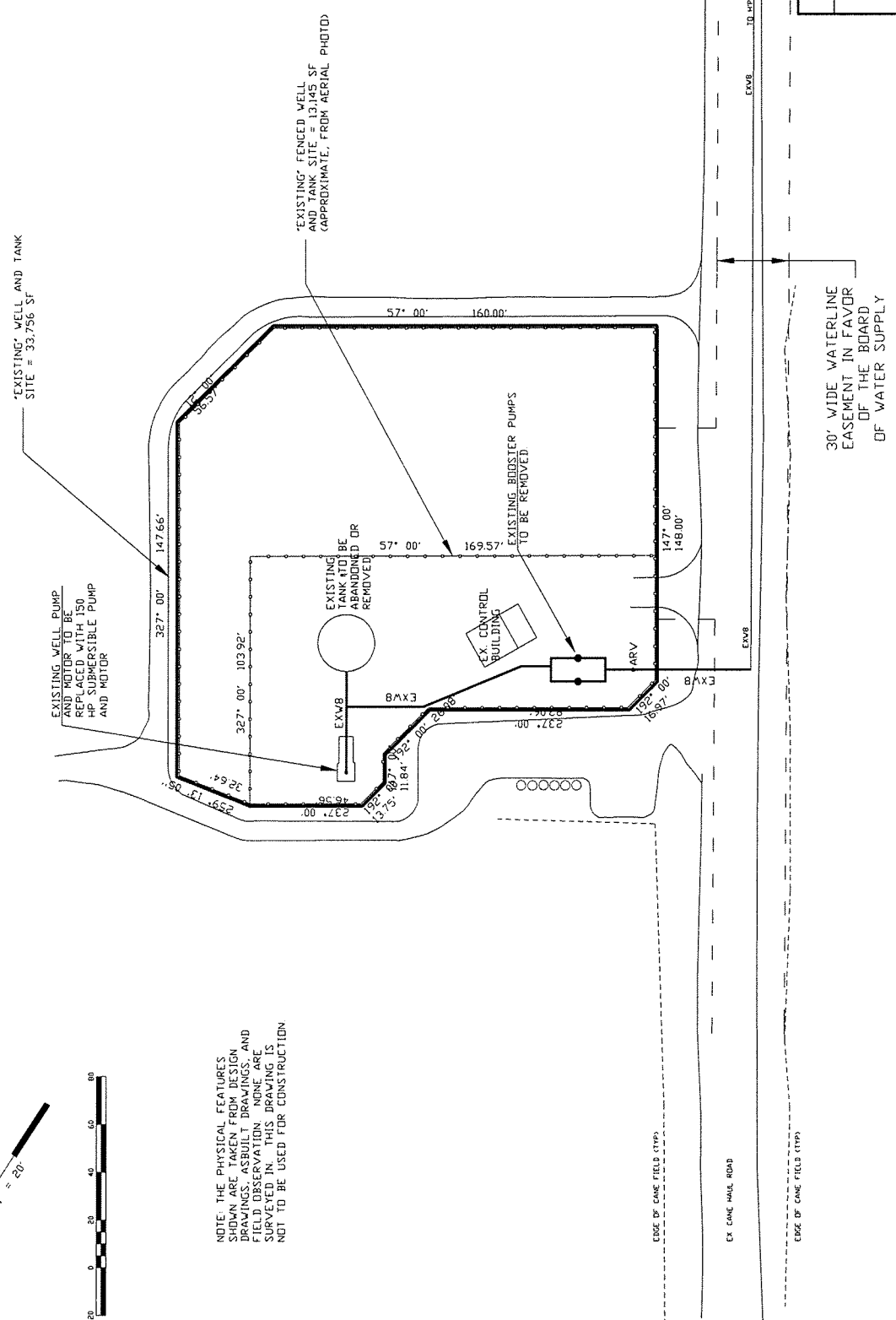
APPENDIX E.

Preliminary Engineering Plans

**Hamakuapoko Well No. 1
Site Plan**

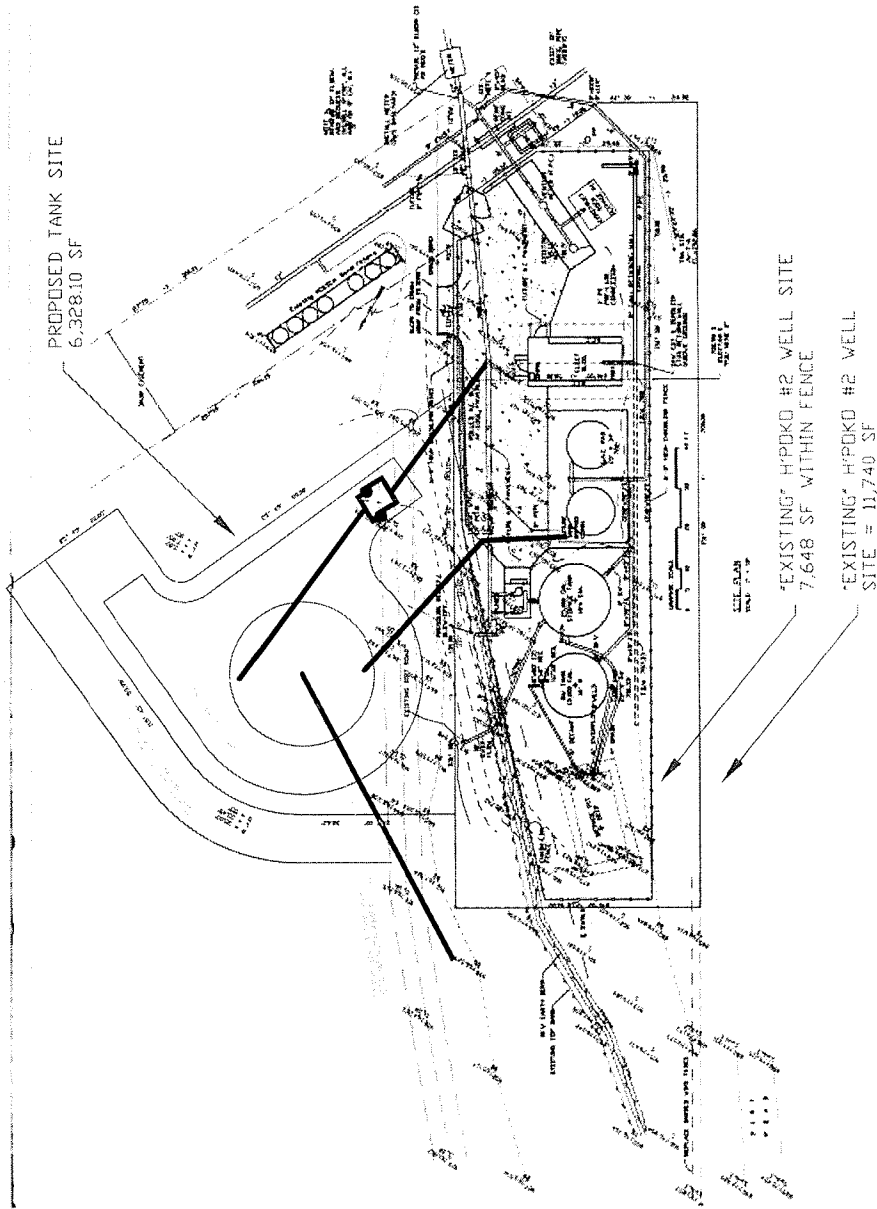


NOTE: THE PHYSICAL FEATURES SHOWN ARE TAKEN FROM DESIGN DRAWINGS, AS-BUILT DRAWINGS, AND FIELD OBSERVATION. NONE ARE SURVEYED IN. THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION.



SCALE: AS NOTED	DATE: 3/12/2012	SHEET: 1
DEPARTMENT OF WATER SUPPLY COUNTY OF MAUI, WAIALUKU, MAUI, HAWAII		
HAMAKUAPOKO WELL #1 SITE PLAN		
WALDO, MAUI, HAWAII JOB NO.		

**Hamakuapoko Well No. 2
Site Plan (As Built)**



AS-BUILT
 HAWAIIAN FENCE & GATE PROJECT
 DATE: 10/15/09
 DRAWN: J. L. WILSON
 CHECKED: J. L. WILSON

APPENDIX F.

Preliminary Drainage Report Prepared by Department of Water Supply

PRELIMINARY DRAINAGE REPORT
FOR
HAMAKUAPOKO WELL SITE #2
PUMP CONTROL TANK
TMK (2) 2-5-004:039

PREPARED BY
COUNTY OF MAUI
DEPARTMENT OF WATER SUPPLY
200 SOUTH HIGH STREET
WAILUKU, HI 96768

NOVEMBER 2012

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EXISTING CONDITIONS	3
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INTRODUCTION

The County of Maui Department of Water Supply plans to construct a new 150,000 gallon water tank to supplement the Hamakuapoko wells number 1 and 2. The tank will be constructed adjacent to Hamakuapoko 2 well site. The tank will be a pump control tank to assist in the conveyance of water from Hamakuapoko 2 well site to the Kamole Water Treatment Plant. This report studies the change in runoff from the existing conditions (sugar cane field) to the proposed condition, water tank with paved drive way.

PROJECT LOCATION

The site is located in Hamakuapoko, Maui, Hawaii adjacent to the existing Hamakuapoko well site #2. The project is on a portion of Tax Map Key (2) 2-5-004:039. This TMK is 2,439 acres and is farmed with sugar cane.

PROJECT DESCRIPTION

The proposed 150,000 gallon water tank will be a pump control tank, approximately 36-feet in diameter, to assist with the conveyance of water from the Hamakuapoko wells to the Kamole treatment plant. Along with the tank, a paved service road, new chain link fence, and the necessary fittings to connect to the existing waterlines.

The proposed tank site is approximately 0.14 acres in size and is currently being used for sugar cane cultivation. The developed site ground cover will consist of 0.02 acre for the proposed tank, 0.06 acre for the driving surface, and the remaining 0.06 acre will be grassed.

FLOOD HAZARD

According to the Flood Insurance Rate Map, this site is located in a Zone X. Thus the site is not located in a flood hazard area.

EXISTING CONDITIONS

The existing land where the tank is to be located is currently farmed with sugar cane. When harvested, the site will be stripped bare of all vegetation. The elevation of the site is 790-feet m/l. The site slopes from south-east to north-west. The slope across the tank site is approximately 16%.

Under the existing conditions, the site generates a runoff rate of 0.18 cfs during the 10-year 1-hour storm event. Refer to page 4 for runoff calculations for existing and proposed conditions.

PROPOSED CONDITIONS

The proposed runoff rate the site will generate is 0.54 cfs during the 10-year 1-hour storm event.

The increase in runoff of 0.36 cfs from the tank site is from the construction of the tank and the paved driveway. The increased runoff from the site will be released from the site by recreating the natural sheet flow pattern of the site. This sheet flow will then flow through the sugar cane field, combining with its runoff prior to being released off site into another sugar cane field.

Storm water runoff control, including any retention/detention facilities is not required.

No additional runoff will be created from the existing well site #1 or well site #2. No impervious areas will be added to either site.

CONCLUSION

Construction of the Hamakuapoko #2 well site pump control tank is not expected to cause any adverse effects to adjacent properties. Added storm runoff due to the construction of the new tank will be negligible when compared to the runoff from the existing parcel. Any additional runoff will follow the existing drainage patterns upon leaving the tank site.

Hydrologic Design Criteria

Hydrologic calculations for both existing and developed conditions were done using the Rational Method. Factors used in the calculations were taken from County of Maui Title MC-15, Rules for the Design of Storm Drainage Facilities in the County of Maui.

Recurrence Interval:

10 yr, 1-hour storm
 $I = 2.4$ ", from Plate 4

Time of Concentration:

Length of flow across site = 90'
Slope = 16.67%

Rainfall Intensity:

From Plate 2, $I = 2.4$

Runoff Coefficient "C":

Concrete Areas	$C=0.95$
Driveway Areas	$C=0.85$
Grassed Areas	$C=0.28 - 0.31$
Unimproved Areas	$C=0.20 - 0.28$

For areas with multiple surface types, a weighted average "C" value is to be used.

Existing Runoff Calculations – 10 year 1 hour storm

Drainage Area (proposed site area) = 0.1441 acres
Runoff Coefficient = 0.20, Unimproved area
Rain fall intensity I = 2.4 in/hr, Plate 4
Tc = 6 min. (bottom of nomograph line on plate 1
I (1 hour rain fall intensity from plate 2) = 6.2 (note: the Tc line of 8 is the lowest
Tc on the plate, thus it is used to determine I.)
Existing Run Off = Q = CIA = 0.20 * 6.2 * 0.1441 = 0.18 cfs

Proposed Runoff Calculations – 10 year 1 hour storm

Drainage Area (proposed site area) = 0.1441 acres
Tank area = 1018 sf = 0.02 ac C=0.95
Driveway area = 2,630 sf = 0.06 ac C=0.85
Grass/rock area = 2,627 sf = 0.06 ac C=0.28

Runoff Coefficient (weighted average) = C = 0.60
Rain fall intensity I = 2.4 in/hr, Plate 4
Tc = 6 min. (bottom of nomograph line on plate 1
I (1 hour rain fall intensity from plate 2) = 6.2 (note: the Tc line of 8 is the lowest
Tc on the plate, thus it is used to determine I.)
Proposed Run Off = Q = CIA = 0.60 * 6.2 * 0.1441 = 0.54 cfs.

APPENDIX F-1.

**Preliminary Engineering
Report Prepared by
Department of Water Supply**

SCOPE

The purpose of this project is to improve the Hamakuapoko well site #1 and the Hamakuapoko well site #2 to adhere to the requirements of County Ordinance Number 3859, titled "A Bill for an Ordinance Amending Section 14.01.050, Maui County Code, Relating to the Use of Water From Hamakuapoko Wells." This bill requires these wells to be used for:

1. Agricultural purposes:
2. Consumers of the department's upcountry water system at defined in section 14.13.030 of this code when a drought is declared pursuant to section 14.06.010 if this code:
3. Backup to the department's existing upcountry water system facilities.

Currently, these wells are to be used only for drought purposes.

EXISTING CONDITIONS

The existing Hamakuapoko Well system consists of two well sites, both located on TMK (2)2-5-004:039 (por.). Each well has a capacity of approximately 500 gallons per minute (gpm).

Well site #1 consists of a well with a well pump and motor, a pump control tank, a control building, and two booster pumps. This system operates by pumping ground water into the pump control tank. Booster pumps pump the water from the pump control tank at well site #1 up to well site #2, through the GAC filters and into the pump control tank on well site #2.

Well site #2 consists of a well with a well pump and motor, a pair of GAC (granular activated carbon) filters, a pump control tank, a back wash water tank, and booster pumps. The well pump pumps the water through the GAC filters and into the pump control tank. The booster pumps then pump water from well site #1 and well site #2 from the pump control tank up to the Kamole Water Treatment Plant.

The water from well #1 and well #2 combine in a pipe just outside of the boundary of well site #2. This water then flows through the GAC filters to remove the contaminant DBCP from the water. From the GAC filters the water flows into the under-sized pump control tank and then is pumped up to the Kamole Water Treatment Plant by the booster pumps.

PROPOSED CONDITIONS

Well Site #1

After an analysis of the system, it was determined that the well pump and motor on site #1 has enough power to pump the well water directly to the pump control tank at well site #2, eliminating the need for the pump control tank and the booster pumps at well site #1. Therefore, the booster pumps and control tank at well site #1 are not needed. The booster pumps will be removed and the tank will be placed out of service. Some minor pipe realignment work may be needed to remove a tee and replace it with a 90-degree bend. Otherwise, there will be no grading or any other site work done at well site #1.

The piping configuration from well site #1 to well site #2 will not be changed and will still combine prior to the GAC filters treating all the water from both wells.

Well Site #2

After an analysis of the proposed system, it was determined that at well site #2 a new larger pump control tank is needed to increase the efficiency of the system to pump the water to the Kamole Water Treatment Facility. The new pump control tank will limit the on-off cycles of the booster pumps to less than two cycles per day.

Site work on existing well site #2 will consist of removing the existing booster pumps and associated piping and the installation of new piping to route the water from the GAC filters to the new pump control tank. Then from the new pump control tank, the booster pumps will pump the water up to the Kamole Water Treatment Plant through the existing line.

New Pump Control Tank

The new pump control tank will have a capacity of 150,000 gallons. It will be approximately 36-feet in diameter and 20-feet high. It will be a steel glassed lined tank. There will be a paved 12-foot wide paved service road surrounding the tank.

The proposed tank site will cover an area of approximately 6,277 square feet (sf) (0.144 acres) (ac). Of this area, the tank will cover 1,018 sf (0.023 ac), the

service road will cover 2,630 sf (0.060 ac), and the remaining 2,579 sf (0.059 ac) will be landscaped.

Earthwork

Earth work will consist of grading the site to accommodate the new tank, access road, and booster pumps. The amount of cut and fill required should be less than 500 cubic yards. No earthwork is needed to remove or install well pump, remove existing booster pumps, and only trench excavation and backfill is needed for any pipe work.

Storm Drainage

Well site #2 is located within a large sugar cane field. The acreage for the entire TMK parcel on which the well sites are located is 2,439 acres. The proposed area to be used for the tank is approximately 0.144 acres. The increased runoff from the proposed tank site is calculated to be 0.36 cfs (cubic feet per second) for the 10-year, 1 hour storm event. This is a very insignificant increase in runoff compared to the runoff of the entire parcel.

The runoff from the site will be released from the site by recreating the natural sheet flow pattern of the site. This sheet flow will then flow through the sugar cane field, combining with its runoff prior to being released off site into another sugar cane field.

Increased runoff from the proposed tank site will not affect any downstream properties.

Best Management Practices

Best Management Practices (BMPs) are effective, practical, structural, or nonstructural methods which prevent or reduce the movement of sediment, nutrients, pesticides, and other pollutants from the land to surface or ground water. BMPs for this project will only be needed for the construction of the new pump control tank. BMPs will include a diversion ditch just mauka of the construction to divert storm water around the construction site, a silt fence to capture sediment laden water from exiting the construction site, and waddles (or similar product) to prevent oils from the asphalt from entering the on site storm drain.

Utility Services Requirements

The electrical demand for the proposed condition should be the same as for the existing condition. There may be a need for new motor control units (MCCs) and other wiring, but there should not be a need to increase the electrical capacity of the sites.

CONCLUSION

The proposed pump control tank at well site #2 is a necessity for efficiently pumping the ground water from the Hamakuapoko wells to the Kamole Water Treatment Plant. The well water from both wells will be treated by the GAC filters to meet all DOH water quality standards prior to pumping up to the Kamole Water Treatment Plant clear well.

Well site #2 site is located within a sugar cane field. The negligible amount of increased runoff from the new tank and related site improvements will assimilate back into the existing runoff from the entire parcel. The minimal increase in storm runoff is considered negligible. Storm drainage from the site will not significantly affect any downstream properties.

APPENDIX G.

Biological Resources Study

BOTANICAL AND FAUNA SURVEY AND ASSESSMENT
HAMAKUAPOKO WELL SITES 1 & 2 DEPARTMENT OF WATER SUPPLY-
HAMAKUAPOKO, MAUI, HAWAII

by

ROBERT W. HOB DY
ENVIRONMENTAL CONSULTANT
Kokomo, Maui
June 2012

Prepared for:
Department of Water Supply
Maui County

**BOTANICAL AND FAUNA SURVEY
DEPARTMENT OF WATER SUPPLY – MAUI COUNTY
HAMAKUAPOKO WELL SITES 1 & 2**

INTRODUCTION

The Maui County Department of Water Supply's Hamakuapoko Wells 1 and 2 are situated in upper Hamakuapoko at the elevation of 700 feet and 780 feet above sea level respectively (see Figures 1 & 2). They both lie to the west of Maliko Gulch and are surrounded by a broad expanse of sugar cane fields on the HC & S Plantation. This study covers these two approximately ¼ acre sites for proposed improvements to pumps and water transmission lines as well as an additional tank site adjacent to wellsite 2. This study was initiated by the County of Maui in fulfillment of environmental requirements of the planning process.

SITE DESCRIPTION

Sites 1 & 2 are similar in that they are both situated on disturbed areas that have been set aside from lands that had been in continuous sugar cane production for about 100 years. Both sites are leveled and fenced enclosures that contain vertical well shafts, pumps and water transmission lines. Well site 1 is located on a gently sloping ridge top while well site 2 is located on a leveled terrace at the base of a slope between two cane fields. Both sites are currently closely mowed within their fenced enclosures, and on the outside retain narrow perimeters of grass and brush surrounded by active sugar cane fields. Annual rainfall in the area averages about 40 inches (Armstrong, 1983). Soils are Hamakuapoko silty clay, 3-7% slopes at both well sites (Foote et al, 1972).

SURVEY OBJECTIVES

This report summarizes the findings of a flora and fauna survey of the Department of Water Supply Maui County – Hamakuapoko Well Sites 1 & 2. The objectives of the survey were to:

1. Document what plant and animal species occur on the property or may likely occur in the existing habitat.
2. Document the status and abundance of each species.
3. Determine the presence or likely occurrence of any native flora and fauna, particularly any that are Federally listed as Threatened or Endangered. If such occur, identify what features of the habitat may be essential for these species.
4. Determine if the project area contains any special habitats which if lost or altered might result in a significant negative impact on the flora and fauna in this part of the island.

BOTANICAL SURVEY REPORT

SURVEY METHODS

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

DESCRIPTION OF THE VEGETATION

Both Hamakuapoko well sites 1 and 2 are significantly altered in their terrain and vegetation. Both sites have been leveled and fenced and are maintained in a mowed condition with outer perimeters of grasses and brush. Site 2 also includes a proposed adjacent new tank site that is presently part of a sugar cane field.

Site 1 had 30 species of plants recorded. Most common were Guinea grass (*Megathyrsus maximus*), Spanish needle (*Bidens pilosa*), graceful spurge (*Euphorbia hypericifolia*) and koa haole (*Leucaena leucocephala*). All of the species recorded were non-native agricultural weeds.

Site 2 had 51 plant species recorded. Most common were Napier grass (*Cenchrus pupureus*), swollen fingergrass (*Chloris barbata*), Guinea grass, sugar cane (*Saccharum officinarum*), Christmas berry (*Schinus terebinthifolius*), Spanish needle, hairy spurge (*Euphorbia hirta*) and graceful spurge. Besides the sugar cane, all of the plant species here were non-native agricultural weeds.

DISCUSSION AND RECOMMENDATIONS

The vegetation on and around these two nearby sites consists entirely of non-native agricultural weeds and one agricultural crop plant. None of these are of any environmental interest or concern. No federally listed Endangered or Threatened plant species (USFWS, 2009), were found on the property, nor were any found that are candidates for such status. No special plant habitats occur here either.

Because of the above existing conditions, there is nothing of botanical concern on these sites, and the proposed improvements are not expected to have a significant negative impact on the botanical resources in this part of Maui. No recommendations with reference to plants are considered to be appropriate or necessary.

PLANT SPECIES LIST

Following is a checklist of all those vascular plant species inventoried during the field studies. Plant families are arranged alphabetically within two groups: Monocots and Dicots. Taxonomy and nomenclature of the plants are in accordance with Wagner et al. (1999) and Palmer (2003).

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 = those plants brought to the islands by the Polynesians in the course of their 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	
			Well 1	Well 2
FERNS				
BLECHNACEAE (Chain-Fern Family)				
<i>Blechnum appendiculatum</i> Willd.	palm fern	non-native		rare
NEPHROLEPIDACEAE (Sword Fern Family)				
<i>Nephrolepis brownii</i> (Desv.) Hovenc. & Miyan.	Asian sword fern	non-native		rare
POLYPODIACEAE (Polypody Fern Family)				
<i>Phymatosorus grossus</i> (Langsd. & Fisch.) Brownlie	laua'e	non-native		rare
PTERIDACEAE (Brake Fern Family)				
<i>Pityrogramma austroamericana</i> Domin	gold fern	non-native		rare
MONOCOTS				
CYPERACEAE (Sedge Family)				
<i>Cyperus rotundus</i> L.	nut sedge	non-native	rare	rare
POACEAE (Grass Family)				
<i>Cenchrus echinatus</i> L.	common sandbur	non-native		rare
<i>Cenchrus purpureus</i> (Schumach.) Monrone	Napier grass	non-native		common
<i>Chloris barbata</i> (L.) Sw.	swollen fingergrass	non-native	rare	common
<i>Chloris virgata</i> Sw.	feather fingergrass	non-native		rare
<i>Cynodon dactylon</i> (L.) Pers.	Bermuda grass	non-native		uncommon
<i>Digitaria violascens</i> Link	kukae pua'a 'uka	non-native	uncommon	uncommon
<i>Eleusine indica</i> (L.) Gaertn.	wiregrass	non-native		uncommon
<i>Eragrostis pectinacea</i> (Michx.) Nees	Carolina lovegrass	non-native	uncommon	rare
<i>Megathyrsus maximus</i> (Jacq.) Simons & Jacobs	Guinea grass	non-native	common	common
<i>Melinis repens</i> (Willd.) Zizka	Natal redtop	non-native	uncommon	
<i>Saccharum officinarum</i> L.	sugar cane	non-native		common
<i>Urochloa mutica</i> (Forssk.) Nguyen	California grass	non-native		uncommon
<i>Urochloa subquadripara</i> (Trin.) Webster	tropical signalgrass	non-native		rare
DICOTS				
AMARANTHACEAE (Amaranth Family)				
<i>Amaranthus spinosus</i> L.	spiny amaranth	non-native		rare
ANACARDIACEAE (Mango Family)				
<i>Schinus terebinthifolius</i> Raddi	Christmas berry	non-native	rare	common
ASTERACEAE (Sunflower Family)				
<i>Ageratum conyzoides</i> L.	maile hohono	non-native	rare	
<i>Bidens pilosa</i> L.	Spanish needle	non-native	common	common
<i>Conyza bonariensis</i> (L.) Cronq.	hairy horseweed	non-native	rare	rare
<i>Crassocephalum crepidioides</i> (Benth.) Moore	redflower ragleaf	non-native		rare
<i>Emilia fosbergii</i> Nicolson	red pualele	non-native	rare	rare
<i>Gamochaeta purpurea</i> (L.) Cabrera	purple cudweed	non-native	rare	
<i>Senecio madagascariensis</i> Poir.	fireweed	non-native	rare	uncommon
<i>Sonchus oleraceus</i> L.	pualele	non-native	rare	uncommon

SCIENTIFIC NAME	COMMON NAME	STATUS	ABUNDANCE	
			Well 1	Well 2
BRASSICACEAE (Mustard Family)				
<i>Lepidium virginicum</i> L.	Virginia pepperwort	non-native	rare	uncommon
CONVOLVULACEAE (Morning Glory Family)				
<i>Ipomoea obscura</i> (L.) Ker-Gawl.	-----	non-native	rare	
<i>Ipomoea triloba</i> L.	little bell	non-native	uncommon	uncommon
CUCURBITACEAE (Gourd Family)				
<i>Momordica charantia</i>	bitter melon	non-native	rare	rare
EUPHORBIACEAE (Spurge Family)				
<i>Euphorbia heterophylla</i> L.	kaliko	non-native		uncommon
<i>Euphorbia hirta</i> L.	hairy spurge	non-native	uncommon	common
<i>Euphorbia hypericifolia</i> L.	graceful spurge	non-native	common	common
<i>Euphorbia prostrata</i> Aiton	prostrate spurge	non-native	rare	rare
<i>Phyllanthus debilis</i> Klein ex Willd.	niruri	non-native		uncommon
<i>Ricinus communis</i> L.	Castor bean	non-native	rare	rare
FABACEAE (Pea Family)				
<i>Chamaecrista nictitans</i> (L.) Moench	partridge pea	non-native	uncommon	uncommon
<i>Crotalaria incana</i> L.	fuzzy rattlepod	non-native	uncommon	uncommon
<i>Desmodium triflorum</i> (L.) DC.	three-flowered beggarweed	non-native		rare
<i>Indigofera hendecaphylla</i> Jacq.	creeping indigo	non-native		rare
<i>Indigofera suffruticosa</i> Mill.	'inikō	non-native	uncommon	rare
<i>Leucaena leucocephala</i> (Lam.) de Wit	koa haole	non-native	common	uncommon
<i>Macroptilium atropurpureum</i> (DC.) Urb.	siratro	non-native		rare
<i>Macroptilium lathyroides</i> (L.) Urb.	wild bean	non-native	rare	
<i>Medicago polymorpha</i> L.	bur clover	non-native	uncommon	rare
<i>Neonotonia wightii</i> (Wight) Lackey	glycine	non-native	rare	
<i>Senna occidentalis</i> (L.) Link	coffee senna	non-native		rare
<i>Senna surattensis</i> (Burm.) Irwin & Barneby	kolomona	non-native		rare
MALVACEAE (Mallow Family)				
<i>Abutilon grandifolium</i> (Willd.) Sw.	hairy abutilon	non-native		rare
<i>Malva parviflora</i> L.	cheese weed	non-native		uncommon
<i>Malvastrum coromandelianum</i> (L.) Garcke	false mallow	non-native		uncommon
<i>Sida rhombifolia</i> L.	Cuban jute	non-native		rare
MYRTACEAE (Myrtle Family)				
<i>Psidium guajava</i> L.	common guava	non-native		rare
NYCTAGINACEAE (Four-o'clock Family)				
<i>Boerhavia coccinea</i> Mill.	scarlet spiderling	non-native		rare
PAPAVERACEAE (Poppy Family)				
<i>Argemone mexicana</i> L.	Mexican poppy	non-native		rare
PORTULACACEAE (Purslane Family)				
<i>Portulaca oleracea</i> L.	pig weed	non-native	rare	

FAUNA SURVEY REPORT

SURVEY METHODS

A walk-through fauna survey method was conducted in conjunction with the botanical survey. All parts of the project area were covered. Field observations were made with the aid of binoculars and by listening to vocalizations. Notes were made on species, abundance, activities and 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 two areas.

RESULTS

MAMMALS

Just sign of one non-native species of mammal was seen on these two small sites, a rat (*Rattus* sp.) burrow on Site 1. Taxonomy and nomenclature follow Tomich (1986). Other species one might expect to see on these remote agricultural sites include mice (*Mus domesticus*), mongoose (*Herpestes auro punctatus*) and possibly feral cat (*Felis catus*).

A special effort was made to look for any occurrence of the endemic and endangered Hawaiian hoary bat by making an evening survey in these two areas. When present in an area these bats can be easily identified as they forage for insects, their distinctive flight patterns clearly visible in the glow of twilight. No evidence of such activity was observed though visibility was excellent. In addition an electronic bat detector (Batbox IID) was utilized, set to the frequency of 27,000 hertz that these bats are known to use for echolocation. No bats were detected using this device.

BIRDS

Birdlife was sparse on and around these two small sites. Just three species of non-native birds were seen during two site visits to the property. These included the house finch (*Carpodacus mexicanus*), zebra dove (*Geopelia striata*) and nutmeg mannikin (*Lonchura punctulata*). Taxonomy and nomenclature follow American Ornithologists' Union (2011). Other non-native birds one might expect to occasionally see include the cattle egret (*Bubulcus ibis*), gray francolin (*Francolinus pondicerianus*), northern cardinal (*Cardinalis cardinalis*) and Japanese white-eye (*Zosterops japonicus*). The habitat is not suitable for Hawaii's native forest birds which can presently survive only at higher elevations, beyond the range of mosquitoes and the avian diseases they carry and transmit.

INSECTS

Insect life was somewhat sparse on these two small sites. Just 6 non-native species in four insect Orders were recorded. Most common were the Australian hoverfly (*Simosyrphus grandicornis*), honey bee (*Apis mellifera*) and the long tail blue butterfly (*Lampides boeticus*). Taxonomy and nomenclature follow Nishida et al (1992).

No native insect species were observed and no host plant species for any Endangered insects were seen.

No species of any reptiles or mollusks were observed.

DISCUSSION AND RECOMMENDATIONS

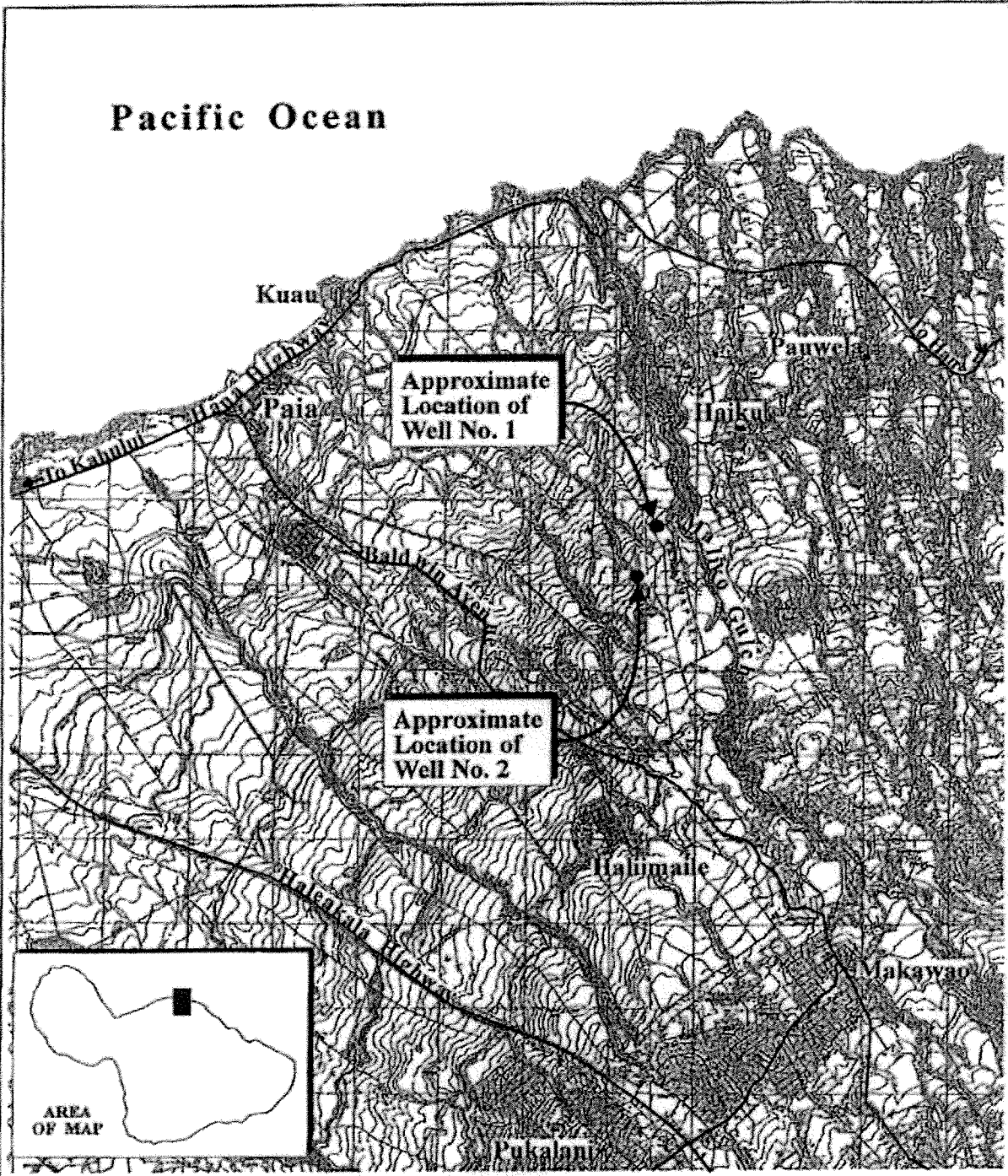
Just 1 mammal, 3 birds and 6 insects were recorded during the survey of these two nearby well sites. None of these species were native and none are of any particular environmental concern. No Endangered animal species were found and none are known to occur in the vicinity. The proposed improvements are not expected to have a significant negative effect on the fauna resources in this part of Maui. No recommendations regarding the fauna resources are deemed appropriate or necessary.

ANIMAL SPECIES LIST

Following is a checklist of the animal species inventoried during the field work. Animal species are arranged in descending abundance within three groups: Mammals, Birds & Insects. For each species the following information is provided:

1. Common name
2. Scientific name
3. Bio-geographical status. The following symbols are used:
 - endemic = native only to Hawaii; not naturally occurring anywhere else in the world.
 - indigenous = native to the Hawaiian Islands and also to one or more other geographic area(s).
 - non-native = all those animals brought to Hawaii intentionally or accidentally after western contact.
 - migratory = spending a portion of the year in Hawaii and a portion elsewhere. In Hawaii the migratory birds are usually in the overwintering/non-breeding phase of their life cycle.
4. Abundance of each species within the project area:
 - abundant = many flocks or individuals seen throughout the area at all times of day.
 - common = a few flocks or well scattered individuals throughout the area.
 - uncommon = only one flock or several individuals seen within the project area.
 - rare = only one or two seen within the project area.

SCIENTIFIC NAME	COMMON NAME	STATUS	ABUNDANCE	
			Well 1	Well 2
MAMMALS				
<i>Rattus</i> sp.	rat	non-native	rare	
BIRDS				
<i>Carpodacus mexicanus</i> Muller	house finch	non-native	rare	common
<i>Geopelia striata</i> L.	zebra dove	non-native	rare	rare
<i>Lonchura punctulata</i> L.	nutmeg mannikin	non-native		uncommon
INSECTS				
Order DIPTERA - flies				
MUSCIDAE (House Fly Family)				
<i>Musca sorbens</i> Wiedemann	dung fly	non-native	uncommon	
SYRPHIDAE (Hoverfly Family)				
<i>Simosyrphus grandicornis</i> Macquart	Australian hoverfly	non-native		common
Order HYMENOPTERA - bees & wasps				
APIDAE (Honey Bee Family)				
<i>Apis mellifera</i> L.	honey bee	non-native	rare	common
VESPIDAE (Vespid Wasp Family)				
<i>Polistes aurifer</i> Saussure	golden paper wasp	non-native	rare	rare
Order LEPIDOPTERA - butterflies & wasps				
<i>Lampides boeticus</i> L.	long tail blue butterfly	non-native	rare	common
Order ORTHOPTERA - grasshoppers & crickets				
<i>Ocadaleus abruptus</i> Thunberg	short-horned grasshopper	non-native	uncommon	



Source: USGS, Paia Quadrangle, 1997 and Haiku Quadrangle, 1992

Figure 1 Proposed Improvements at Hamakuapoko Well Nos. 1 and 2 NOT TO SCALE
 Regional Location Map



MUNEKIYO & KIRAGA, INC.

Prepared for: County of Maui, Department of Water Supply

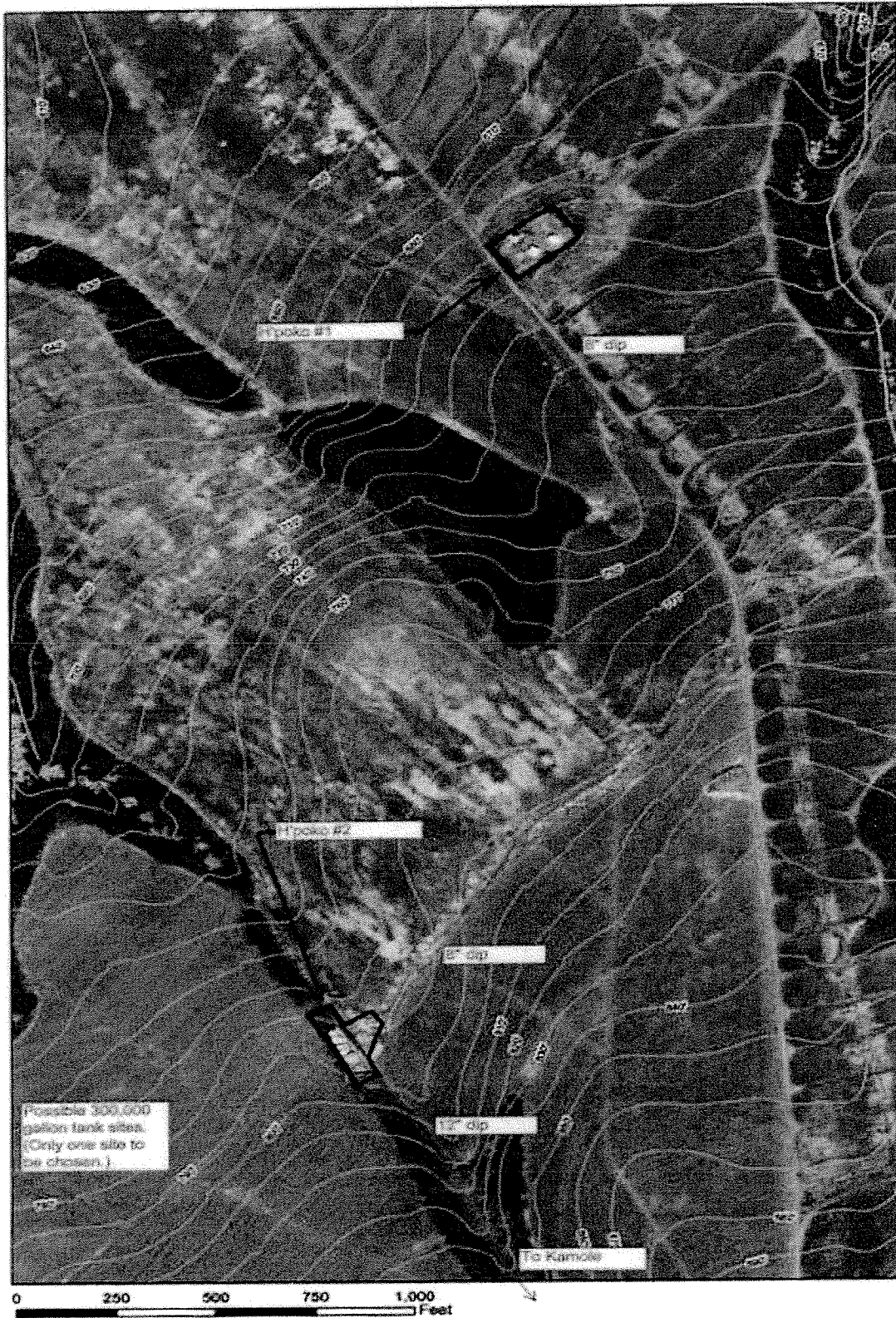
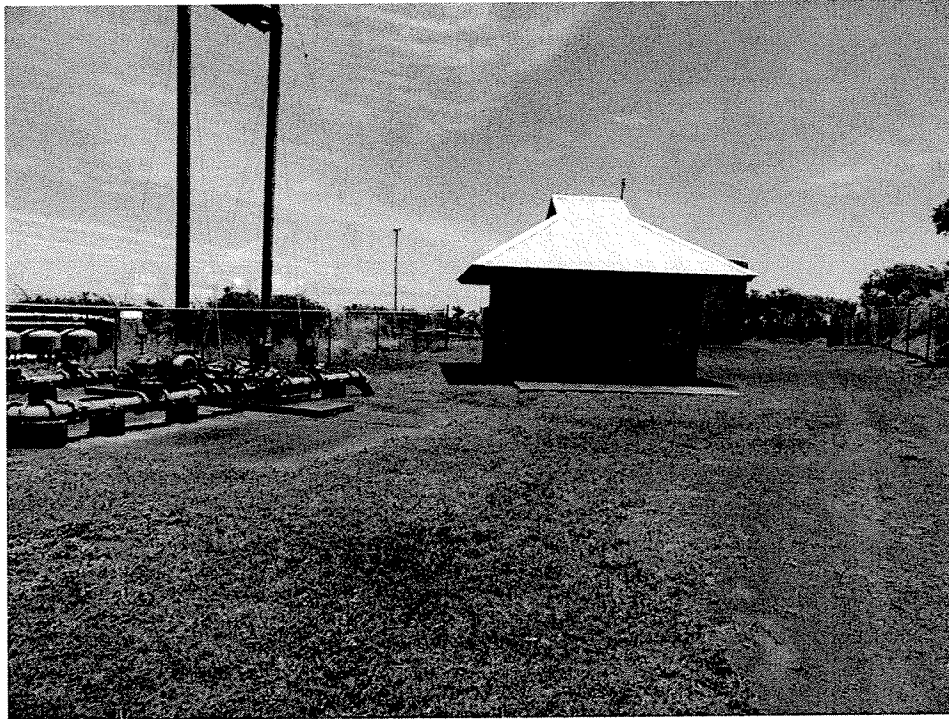
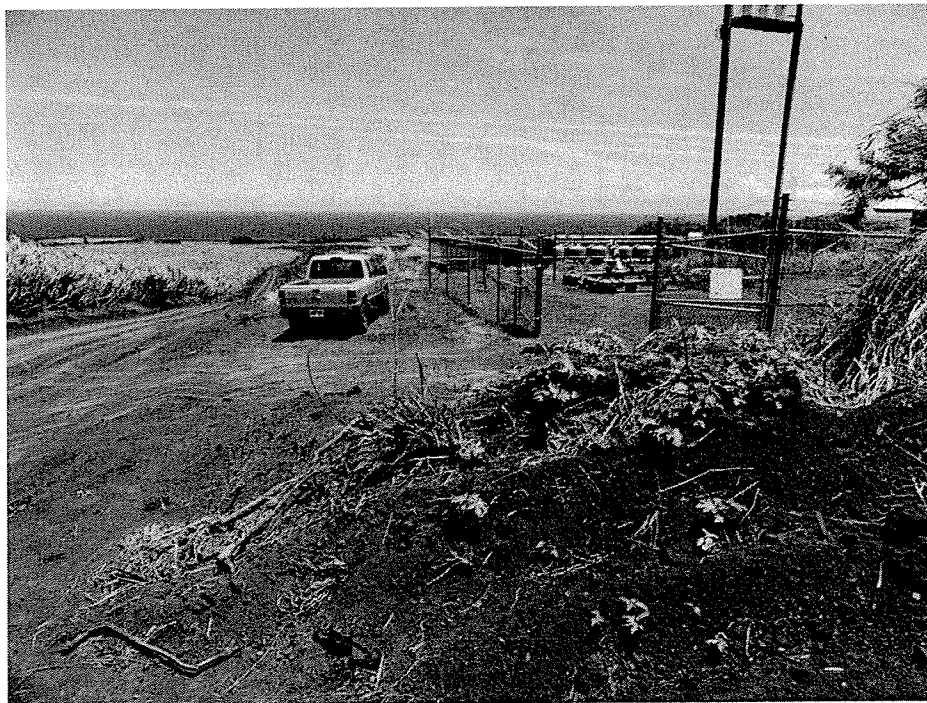


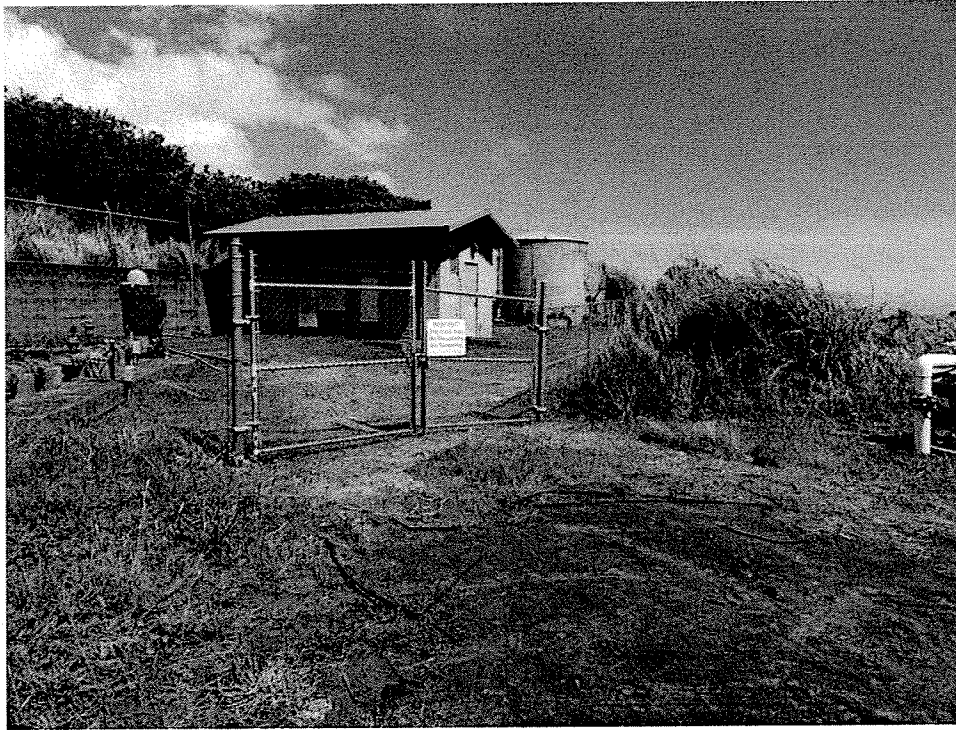
Figure 2 Project areas Hamakuapoko well sites 1 & 2



Hamakuapoko well site 1 showing fenced facility and surrounding grass and brush.



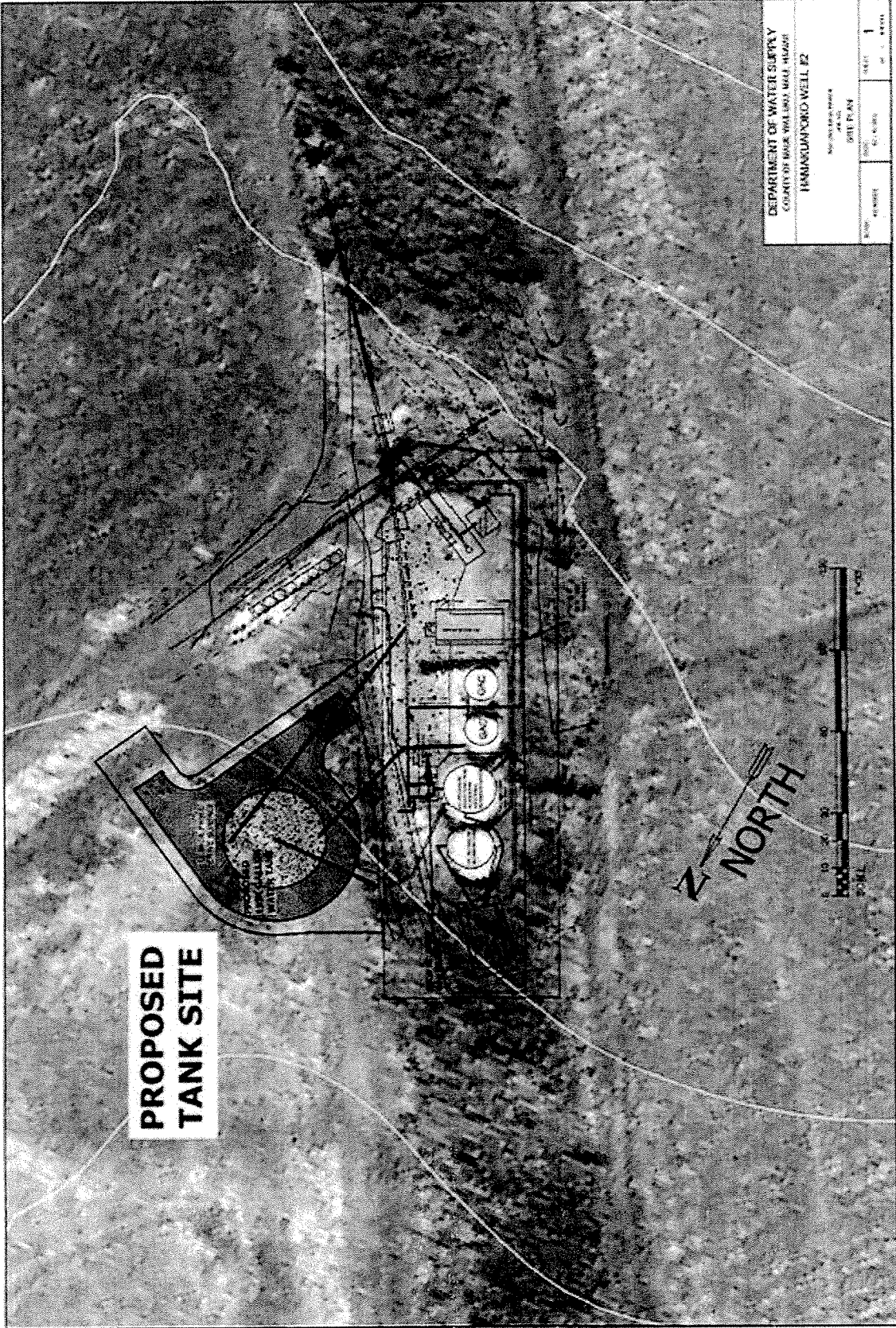
Hamakuapoko well site 1 showing entrance to facility and surrounding cane fields.



Hamakuapoko well site 2 showing fenced facility and surrounding grass and brush.



Hamakuapoko well site 2 showing adjacent proposed tank site in sugar cane field



**PROPOSED
TANK SITE**

NORTH



DEPARTMENT OF WATER SUPPLY
 COUNTY OF BERKSHIRE, MASS.
 HANNAHPOUND WELL #2
 SHEET 1
 OF 1

LITERATURE CITED

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APPENDIX H.

Archaeological Field Inspection



Ms. Jenny Pickett
SHPD-Maui
130 Mahalani Street
Wailuku, HI 96793

October 4, 2012

Re: Field Inspection of Proposed Wells, Hamakuapoko Ahupua`a, Makawao District, Island of Maui [TMK: (2) 2-5-04:039 (por.)]

Dear Ms. Pickett:

At the request of Munekiyo & Hiraga, Inc., Scientific Consultant Services, Inc (SCS) has completed a Field Inspection of approximately 2 acres in Hamakuapoko Ahupua`a, District of Makawao, Maui Island, TMK: (2) 2-5-04:039 (por.). Two existing well sites (Hamakuapoko Well Nos. 1 and 2) were subject to a Field Inspection as well as potential sites for a proposed new water tank. 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. Maps and photographs depicting the project area follow this letter.

Natural Setting

The project areas are situated at an elevation of 713 feet A.M.S.L. (Well #1) and 790 feet A.M.S.L. (Well #2) and are situated 4.0 km and 4.67 km from the coastline respectively. Historic and recent agricultural activities have altered the natural topography for the production of sugar cane and water pumping activities. Well #1 is located in an active sugar cane field and is bounded by a cane haul road to the west and agricultural fields on the north, south and east. Well #2 is bounded by agricultural fields to the east and west and a slope to the north and south. The slope is covered in *koa haole* (*Leucaena leucocephala*), Christmas berry (*Schinus terebinthifolius*) and guava (*Psidium guajava*).

Surface soil around both well sites consists of recently tilled silt loam that has abundant broken cobbles and boulders. Modern trash, such as concrete fragments and PVC piping, is scattered throughout the project area.

Methods

The Field Inspection was conducted on May 30, 2012 by SCS Inc. archaeologist David Perzinski under the supervision of Michael Dega, Ph.D. (Principle Investigator). A 100% pedestrian survey was conducted of the proposed well site areas. The study area for the Well No. 1 well and tank site consists of 33,756 square feet. The survey area for the Well No. 2 site (totaling 1.5 acres) also included three potential locations for a proposed new water storage tank. Since completion of the survey, the County has selected tank option No. 4 (see Figure Referenced as "Well No.2 Location Options"). Numerous photographs were taken to document the current condition of the parcels. No subsurface testing was conducted during the Field Inspection.

Results

A 100% pedestrian survey of the existing well sites and potential water tanks sites did not lead to the identification of historic sites, features, midden scatters, or artifacts. The parcels and surrounding areas are currently used for agriculture, water pumping, and water storage. The ground surface and subsurface soils of the well sites have been heavily modified through time, given intensive industrial sugar cane plantation cultivation in the area, as well as recent construction of the existing wells and related improvement. The survey was negative for both surface materials and areas thought to potentially contain subsurface cultural materials.

Conclusions

No surface cultural remains were identified during the Field Inspection. A full inspection of the existing well site areas and potential water storage tank locations 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.

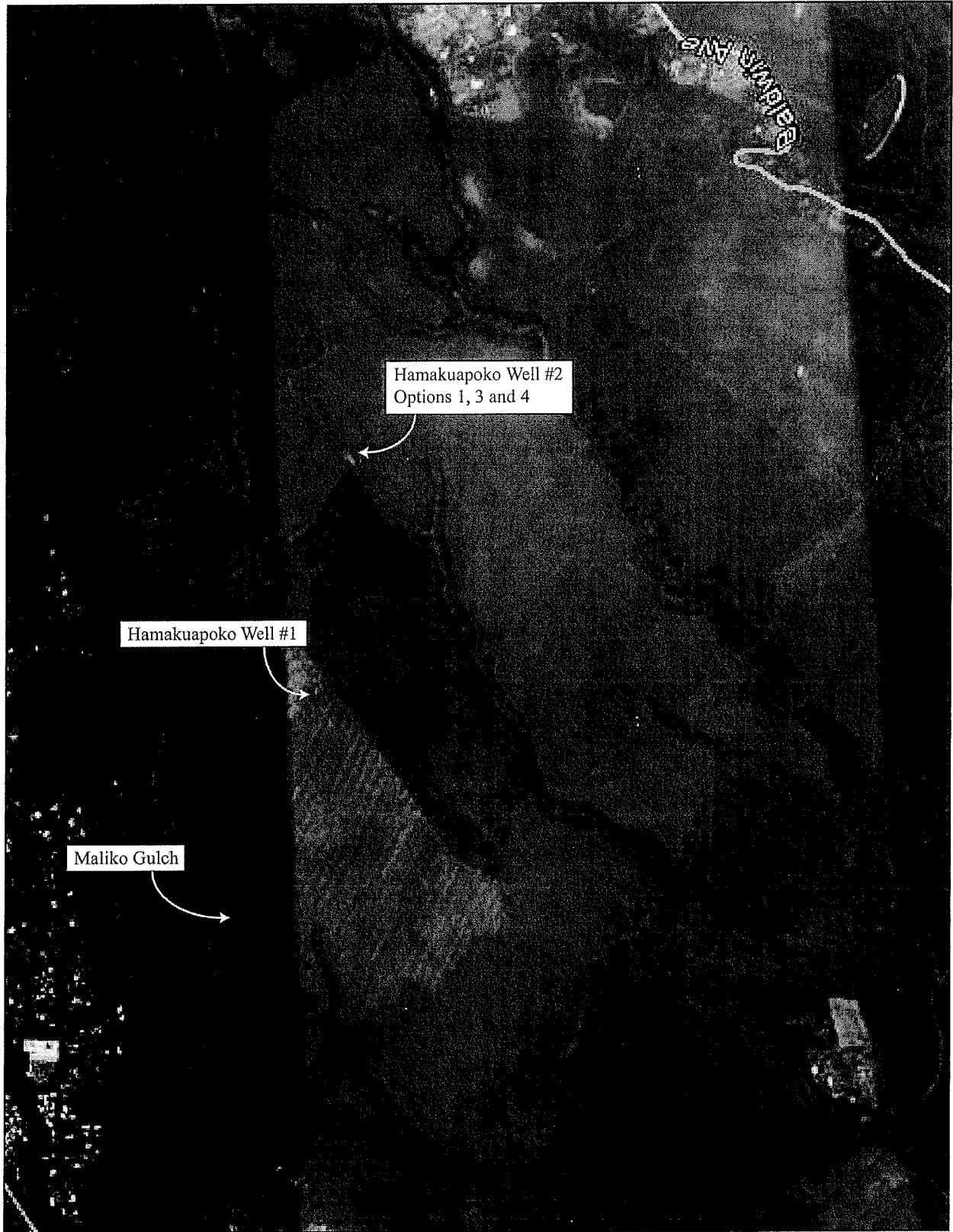
It is our estimation, based on this Field Inspection, that development of improvements at the Hamakuapoko Well Nos. 1 and 2 including the development of a new water storage tank (adjacent to the Hamakuapoko Well No. 2 site) would not have an adverse impact on any significant historic properties. No further work is recommended for the well site and the storage tank areas. 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.

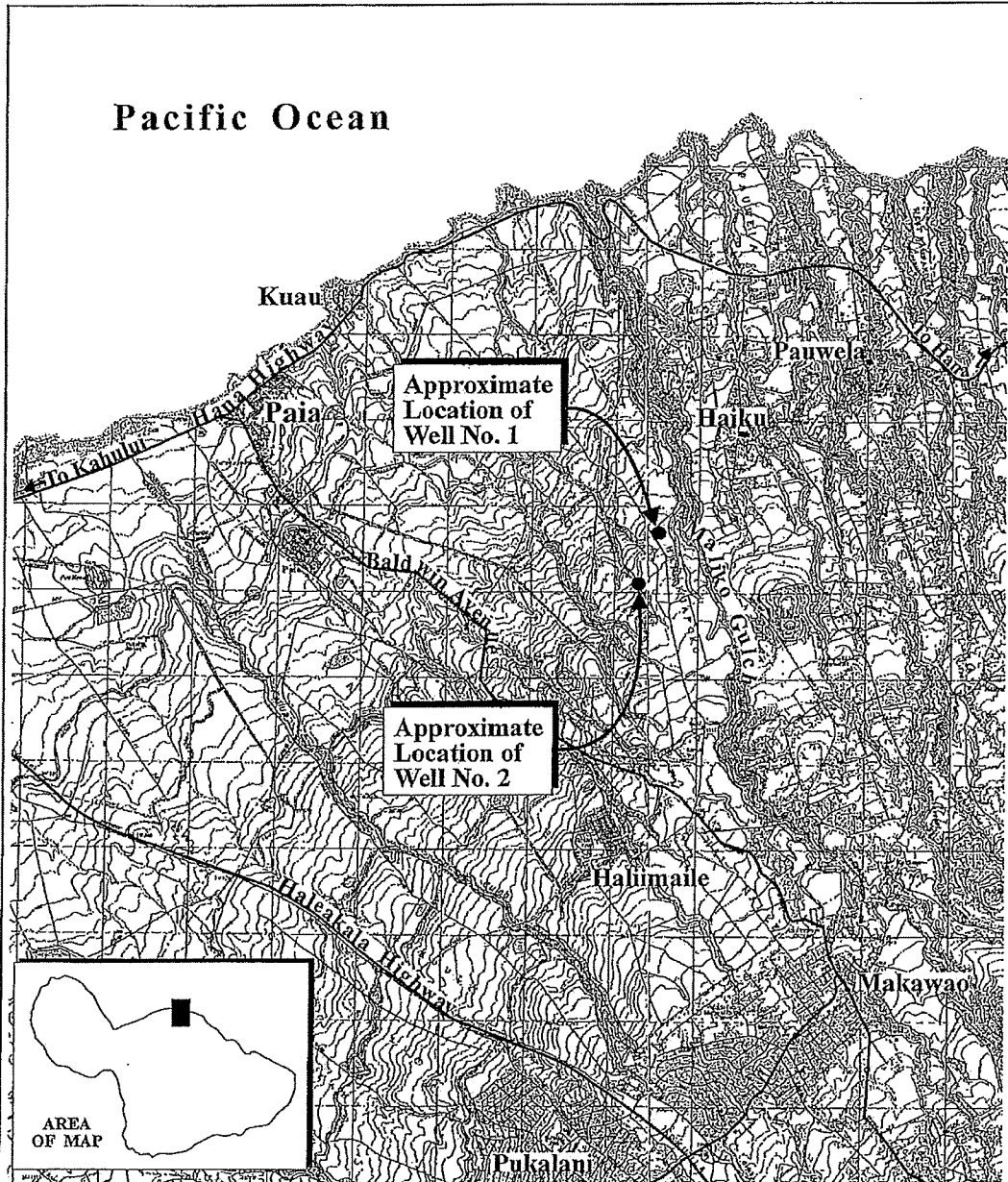
Best Regards,

A handwritten signature in black ink, appearing to read 'D Perzinski'. The signature is written in a cursive style with a large initial 'D' and 'P'.

David Perzinski B.A.,
Michael Dega, Ph.D.
Scientific Consultant Services, Inc.



Aerial View of Hamakuapoko Proposed Well #1 and #2 Locations (Google Earth Image 2012).



Source: USGS, Paia Quadrangle, 1997 and Haiku Quadrangle, 1992

Figure 1 Proposed Improvements at Hamakuapoko Well Nos. 1 and 2 NOT TO SCALE
 Regional Location Map



MUNEKIYO & HIRAGA, INC.

Prepared for: County of Maui, Department of Water Supply

com/dws/hamakuapoko/regionallocation/report

General Location of Well Nos. 1 and 2 (from DWS and Munekiyo & Hiraga, Inc.)

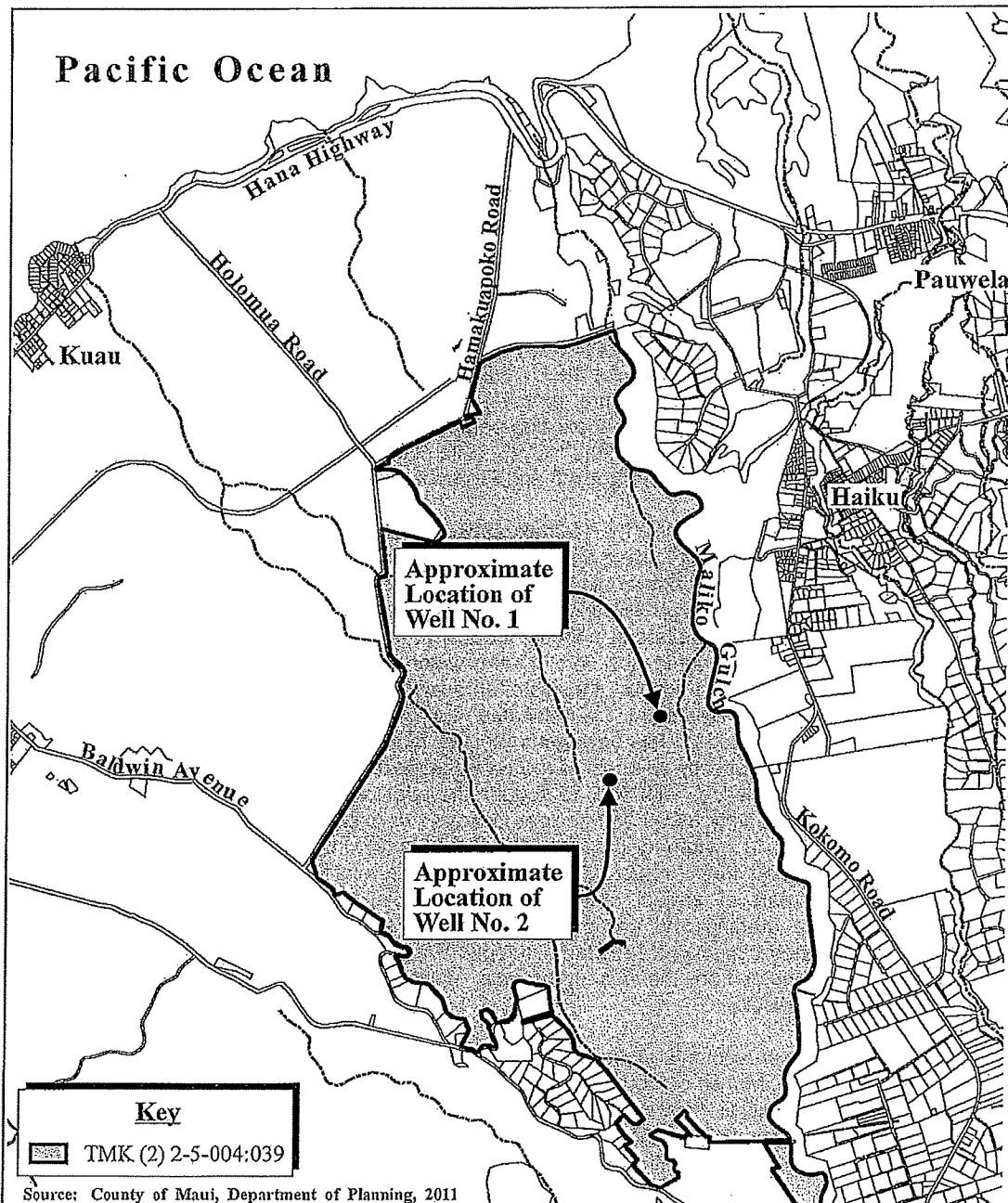
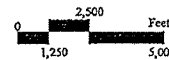


Figure 2 Proposed Improvements at
Hamakuapoko Well Nos. 1 and 2
Property Location Map



MUNEKIYO & HIRAGA, INC.

Prepared for: County of Maui, Department of Water Supply

coa/dws hamakuapoko/propertylocation

Location of Well Nos. 1 and 2 (from DWS and Munekiyo & Hiraga, Inc.)

APPENDIX I.

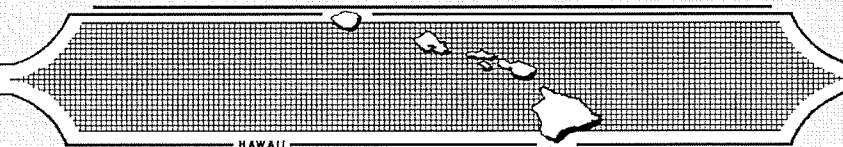
Cultural Impact Assessment

**A CULTURAL IMPACT ASSESSMENT
FOR THE HAMAKUAPOKO WELLS NO. 1 AND NO. 2
HĀMĀKUA POKO AHUPUA`A, MAKAWAO DISTRICT
ISLAND OF MAUI
[TMK: (2) 2-5-004:039 (POR.)]**

Prepared by:
Cathleen A. Dagher, B.A.
and
Robert L. Spear, Ph.D.
October 2012

Prepared for:
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711 Kapiolani Blvd. Suite 975 Honolulu, Hawai'i 96813

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INTRODUCTION

At the request of Munekiyo & Hiraga, Inc., Scientific Consultant Services, Inc. (SCS), has prepared a Cultural Impact Assessment (CIA) for proposed improvements at two existing wells, Hamakuapoko Wells No. 1 and No. 2, located in Hāmākua Poko Ahupua`a, Makawao District, Island of Maui, [TMK: (2) 2-5-04:039 (por.)] (Figures 1 through 3). Each well site is located on approximately 0.25 acres of land. Well site 2 also includes a proposed adjacent new water tank.

The Constitution of the State of Hawai`i clearly states the duty of the State and its agencies is to preserve, protect, and prevent interference with the traditional and customary rights of Native Hawaiians. Article XII, Section 7 (2000) requires the State to “protect all rights, customarily and traditionally exercised for subsistence, cultural and religious purposes and possessed by *ahupua`a* tenants who are descendants of Native Hawaiians who inhabited the Hawaiian Islands prior to 1778.” 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).

Act 50, enacted by the Legislature of the State of Hawai`i (2000) with House Bill (HB) 2895, relating to Environmental Impact Statements, proposes that:

...there is a need to clarify that the preparation of environmental assessments or environmental impact statements should identify and address effects on Hawaii’s culture, and traditional and customary rights... [H.B. NO. 2895].

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

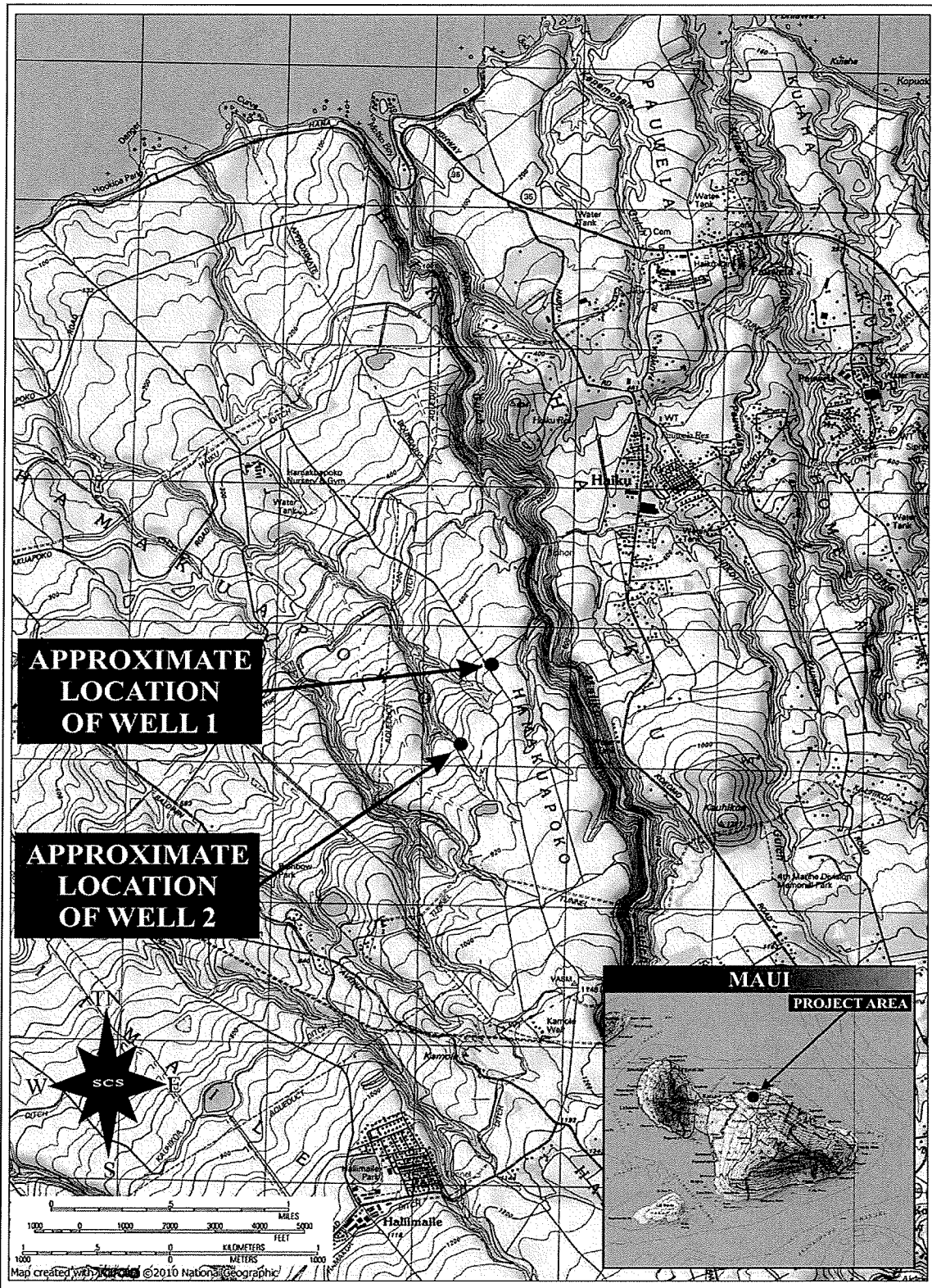


Figure 1: USGS Quadrangle (Haiku 1992) Map Showing Project Area Locations.

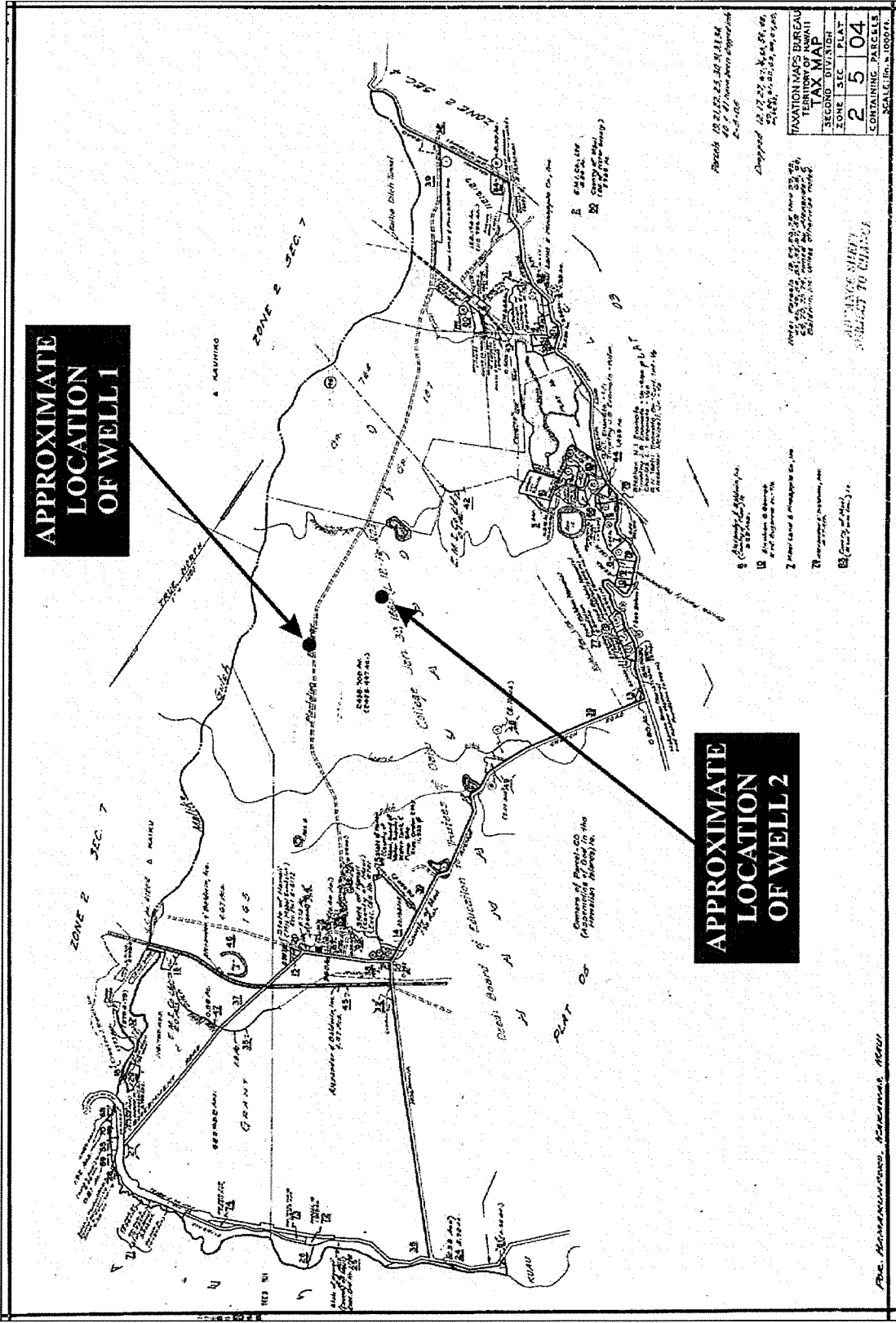


Figure 2: Tax Map Key [TMK: (2) 2-5-004] Showing Project Area Locations.

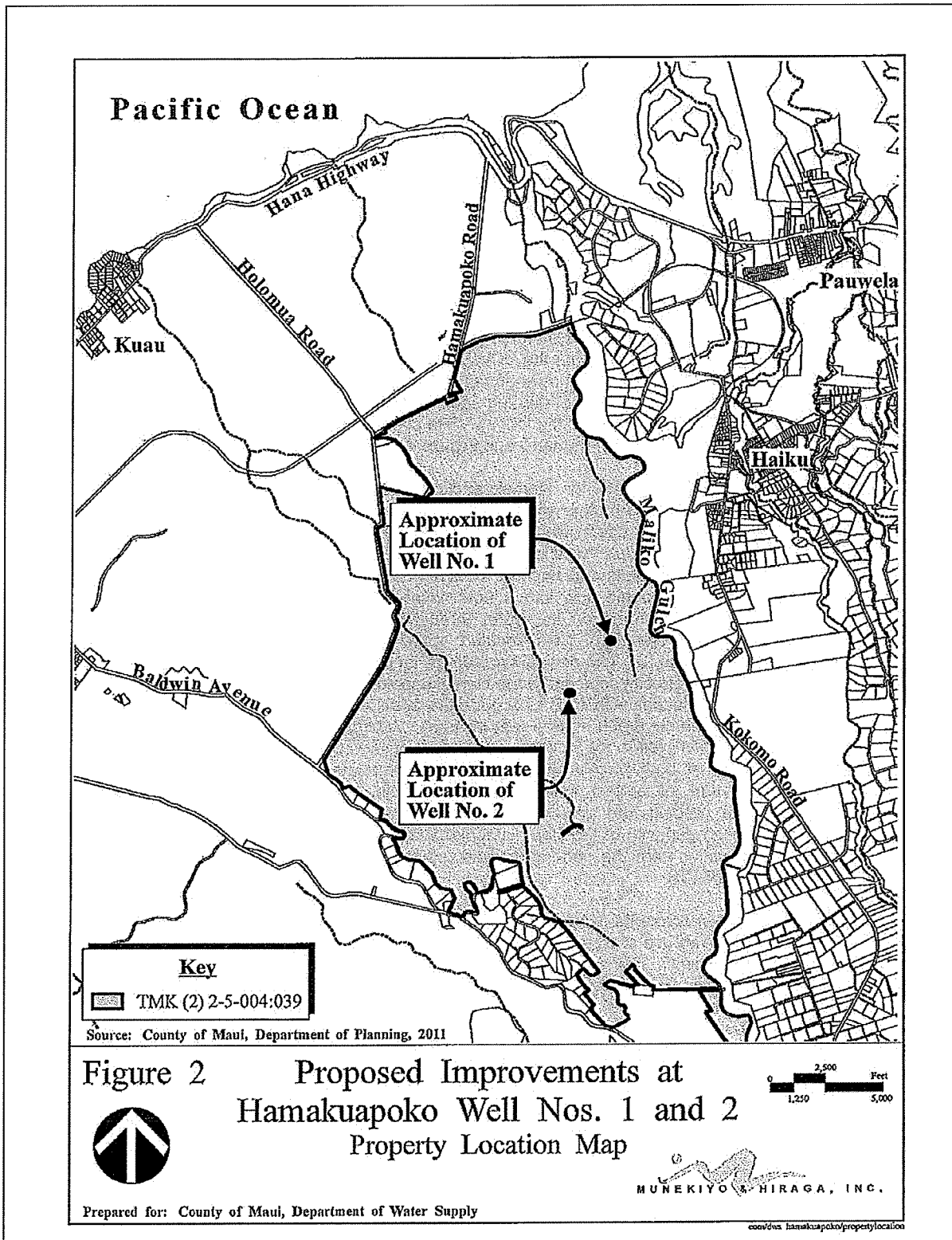


Figure 3: General Location of Well Nos. 1 and 2 (Munekiyo & Hiraga, Inc.).

“cultural practices of the community and State” as part of the HRS Chapter 343 (2001) environmental review process.

It also re-defined the definition of “significant effect” to include “the sum of effects on the quality of the environment including actions 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 50, 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. As defined by the Hawaii State Office of Environmental Quality Control (OEQC), 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 on-going 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 as much as possible 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...”

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. An example letter of inquiry is presented below in Appendix A; copies of posted legal notices are presented in Appendix B; an example the follow-up letters of inquiry is presented below in Appendix C ; and Land Grants awarded in the proposed project area are presented in Appendix D. This Cultural Impact Assessment was prepared in accordance with the suggested methodology and content protocol provided in the Guidelines for Assessing Cultural Impacts (OEQC 1997), whenever possible. The assessment concerning cultural impacts may include, but not be limited to, the following matters:

- (1) if consultation is available, 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) if conducted, 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.

If on-going cultural activities and/or resources are identified within the project area, assessments of the potential effects on the cultural resources in the project area and recommendations for mitigation of these effects can be proposed.

ARCHIVAL RESEARCH

Archival research focused on a historical documentary study involving both published and unpublished sources. These included legendary accounts of native and early foreign writers; early historical journals and narratives; historic maps, land records, such as Land Commission Awards, Royal Patent Grants, and Boundary Commission records; historic accounts, and previous archaeological reports.

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 again that this process does not include formal or in-depth 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 on-going cultural practices, or resources, within a project area or in its close vicinity.

If knowledgeable individuals are identified, personal interviews are sometimes taped and then 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 interview 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.

ENVIRONMENTAL SETTING

The Hamakuapoko Well sites are located on the north side of East Maui. This area is located to the west of the north/northwestern rift of the Kula volcanic flow. The project area lies on the northwestern flank of Haleakalā. In the distant past, lava poured from this rift down the slopes of Haleakalā.

PROJECT AREA AND VICINITY

The Hamakuapoko Well No. 1 well site is situated at an elevation of 713 feet amsl (above mean sea level) and approximately 4.0 km from the coast. The Hamakuapoko Well No. 2 site is located at 790 feet amsl and 4.67 km from the coastline. Historic and recent agricultural activities have altered the natural topography for the production of sugar cane and water pumping activities. Well #1 is located in an active sugar cane field and is bounded by a cane haul road to the west and agricultural fields on the north, south and east. Well #2 is bounded by agricultural fields to the east and west and a slope to the north and south. The slope is covered in *koa haole* (*Leucaena leucocephala*), Christmas berry (*Schinus terebinthifolius*) and guava (*Psidium guajava*).

The terrain within the project area is relatively flat throughout the project area. The parcel exhibits much evidence for previous intensive mechanical ground disturbance from grading and grubbing land (Figures 4 through 6). Surface soil around both well sites consists of recently tilled silt loam that has abundant broken cobbles and boulders. Modern trash, such as concrete fragments and PVC piping, is scattered throughout the entire project area.

RAINFALL

As stated elsewhere in this document, the Hamakuapoko Well Nos. 1 and 2 sites are located in the upland reaches of the island of Maui. According to Giambelluca *et al.* (1986:19) and Armstrong (1983: 62) annual rainfall in the project area ranges from approximately 254 to 300 mm (10 to 12 in.) to 510 to 650 mm (20 to 26 in.) isohyets.

SOILS

According to Foote *et al.* (1972: Map Sheet 104) soils within the project areas is comprised of the Hamakuapoko Series, specifically Hamakua silty clay (HIB). These well-drained soils are derived from decomposing volcanic rock. The Hamakuapoko Soil Series typically occurs in the upland regions of Maui at elevations extending between 500 and 1,200 feet amsl in areas receiving 40 to 60 inches of annual rainfall (*ibid*: 36). The Hamakua silty clay soils occur on 3 to 7 percent slopes. The HIB soils are known to exhibit moderately rapid

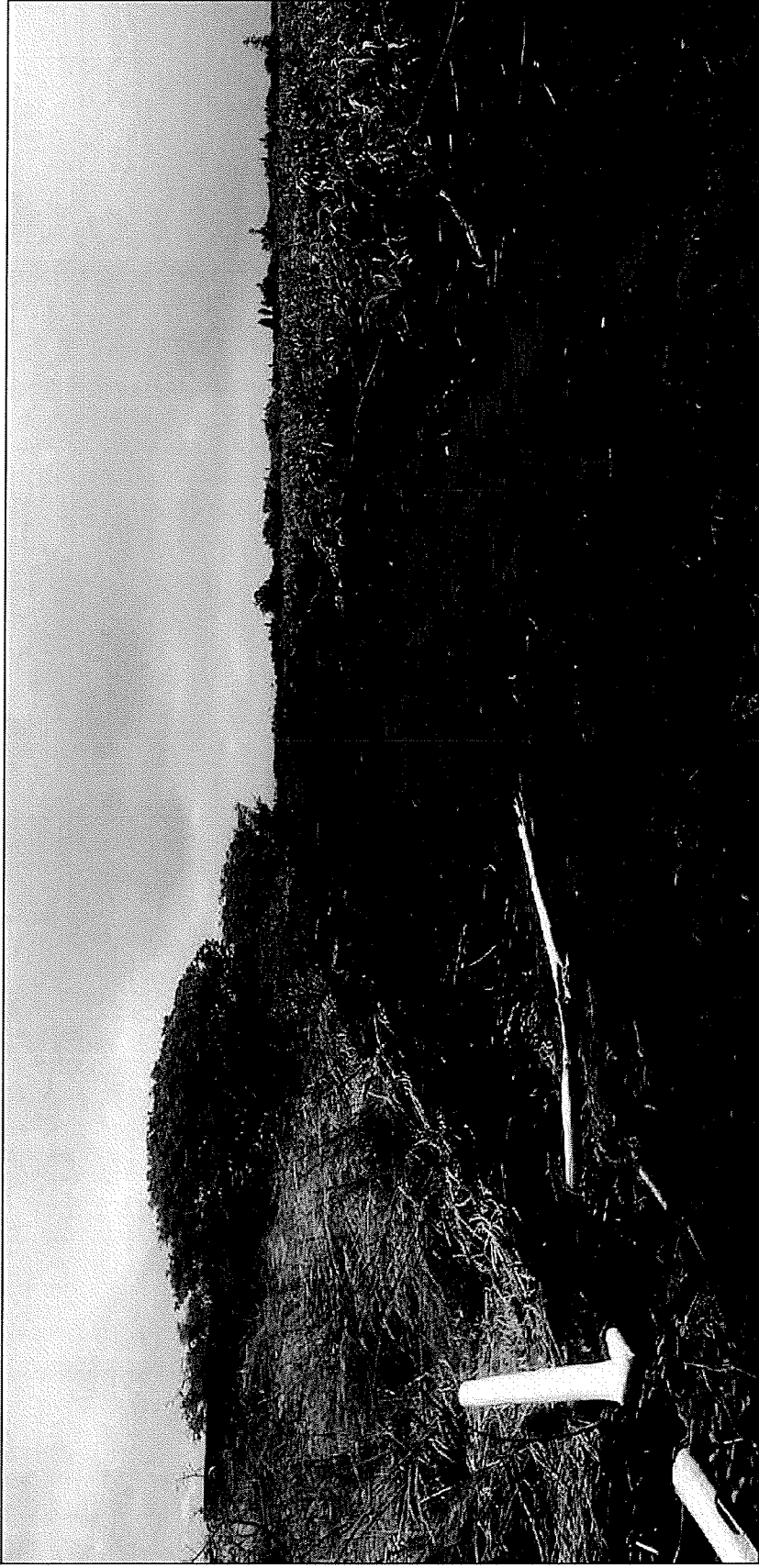


Figure 4: Photographic View of Hamakuapoko Well Site No.1, South Side. View to East.



Figure 5: Photographic View of Hamakuapoko Well Site No.1, East Side. View to Northwest.



Figure 6: Photographic View of Hamakuapoko Well Site No.2. View to Northwest.

permeability, slow runoff, and a limited erosion hazard. These soils are frequently utilized for the commercial cultivation of pineapple.

CULTURAL HISTORICAL CONTEXT

Of the Hawaiian Islands, the Island of Maui is second in size, with the island of Hawai'i being the largest (Handy and Handy 1972:485). 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

Approximately 600 years ago, the Hawaiian population had expanded throughout the Hawaiian Islands to a point where large, political districts could be formed (Lyons 1903;

Kamakau 1991; Moffat and Fitzpatrick 1995). At that time, Maui consisted of four districts, or *moku*: Lāhainā, Wailuku, Makawao, and Hāna. The division of Maui's lands into districts (*moku*) and sub-districts was performed by a *kahuna* (priest, expert) named Kalaiha`ōhia, during the time of the *ali`i Kaka`alaneo* (Beckwith 1985:383; Fornander places Kaka`alaneo at the end of the 15th century or the beginning of the 16th century [Fornander 1919-20, Vol. 6:248]). Land was considered the property of the king or *ali`i `ai moku* (the *ali`i* who eats the island/district), which he held in trust for the gods. The title of *ali`i `ai moku* ensured rights and responsibilities 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`āinana* (commoners) worked the individual plots of land.

In general, several terms, such as *moku*, *ahupua`a*, *`ili* or *`ili`āina* were used to delineate various land sections. A district (*moku*) contained smaller land divisions (*ahupua`a*) that customarily continued inland from the ocean and upland into the mountains. Extended household groups living within the *ahupua`a* were, therefore, able to harvest from both the land and the sea. Ideally, this situation allowed each *ahupua`a* to be self-sufficient by supplying the needed resources from different environmental zones (Lyons 1875:111). The *`ili* or *`ili`āina* were smaller land divisions next in importance to the *ahupua`a* and were administered by the chief who controlled the *ahupua`a* in which it was located (Lyons 1875:33; Lucas 1995:40). The *mo`o`āina* were narrow strips of land within an *`ili*. The land holding of a tenant or *hoa`āina* residing in an *ahupua`a* was called a *kuleana* (Lucas 1995:61).

TRADITIONAL SETTLEMENT PATTERN

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 officinarum*) and *mai`a* (banana, *Musa* sp.), were also grown and, where appropriate, such crops as *`uala* (sweet potato, *Ipomoea batatas*) were cultivated. 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 referred to as the Expansion Period (A.D. 1200-1400, Kirch 1985).

Pā`ia is located on the north side of Haleakalā in a region of sloping *kula* lands that are intersected by small stream gulches. According to Handy and Handy (1972:498):

The number of very narrow *ahupua`a* thus utilized along the whole of the Hamakua coast indicates that there must have been a very considerable population...It was probably a favorable region for breadfruit, banana, sugar cane, arrowroot; and for yams and `awa in the interior. The slopes between gulches were covered with good soil, excellent for sweet-potato planting. The low coast is indented by a number of small bays offering good opportunity for fishing.

Pā`ia Ahupua`a, in the Makawao District, is located on the windward slope of Haleakalā. Rainfall averages range from 500 mm on the leeward side of East Maui, to 750 mm in Makawao, to less than 400 mm in the leeward coastal section. The combined arid conditions and lack of reliable water sources, with the exception of Maliko Stream, resulted in the importance of the expansive upland dry land field systems. Pā`ia consisted of sloped plains with "finger" ridges and *a`a* outcrops. Handy (1940) described this area of Maui as suitable for dry land taro and surmised that it had been well populated and cultivated because of the abundance of *kula* land.

A small *ahupua`a*, there is little direct information about Pā`ia. Traditionally there were trails that extended along the coast and from the coast to the mountains, linking the two for both economic and social reasons. It can be confidently assumed there was one near by, perhaps from Pā`ia Town. The *Alaloa*, or around-the-island road built by Kiha-a-pi`ilani, (16th century based on Fornander) extended along the coastal region from Wai`ehu, passing Pā`ia and extending on, crossing streams where the gulches emerged along the shore.

As Thrum (1909) surveyed religious sites throughout the islands, he recorded the tradition concerning Wa`a who was a chief and the divider of lands in Makawao. He established *heiau* or *pu`uhonua* (places of refuge), two of which were located in Makawao.

WAHI PANI (LEGENDARY PLACES)

Oral histories also indicate that both frequent and intermittent battles between polities of Maui and Hawai`i Island (1700s) occurred in the coastal sands of Wailuku and in upland valleys. In the sand dunes between Wailuku and Pu`unene, Kalaniopu`u's most prized Alapa guard was slaughtered by Kahekili's warriors (Sterling 1998:88). Kamakau (1961:85-89) states:

...They slew the Alapa on the sandhills at the southeast of Kalua (sic). There the dead lay

in heaps strewn like kukui branches; the corpses lay heaped in death; they were slain like fish enclosed in a net....

On the day of Kalaniopu`u's departure from Maui, it was said that his war canoes covered the sands from Kahului to Pā`ia (T`i 1983:11).

Due to the frequent wars and battles occurring in and around the northern coast of Maui, it is conceivable that the coastal sand dunes acted as a final resting place of fallen warriors. A description of such pertaining to the area near present day Spreckelsville reads:

In returning from Makawao to Wailuku...you will ride over fine white sand-hills, as pure and crinkled as a drift of new fallen snow...One sand-hill in that vicinity has been an old burying-ground or battle-place, now laid bare by the winds. Skulls, having jaws in perfect preservation, with thirty four teeth sound ...and all the bones of the human body, some of them of gigantic size, lie bleaching all around (Cheever 1851 in Sterling 1998:97).

Apart from the above references to battles and the archaeological evidence of burials in the sand dunes in the region of Pā`ia, this area of Maui does not appear to have had significant population centers.

HISTORIC PERIOD (1778-EARLY 1900S)

Descriptions of the north coast of Maui were first recorded in November of 1778 by Captain Cook and his men (Beaglehole 1967: Part I, Vol. III). Returning from several months in Alaska, they sailed down a portion of the northeast side of the island. David Samwell, a surgeon on the Discovery, reported "...the ships lay to all day about 3 miles off shore, trading with the Natives who came off in their canoes in great number..." (Samwell in Beaglehole 1967:1151).

It had been a time of war between Kalaniopu`u, ruler of Hawai`i Island, and Kahekili, chief of Maui and Moloka`i. During this season of the year (*Makahiki*), however, the fighting was temporarily suspended and the great chief of Maui, Kahekili, was free to visit the foreign ships. Samwell recorded his impressions of the King and the windward slopes of the northern coast of Maui. He stated that Kahekili was "a middle aged man ... rather of a mean appearance..." and the land was "...mountainous, the sides of the hills are covered with trees...large open plains on which stand their houses & where they have their plantations of sweet potatoes, taro & c. ..." (*ibid.*).

THE 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, Kamehameha III was forced to establish laws changing the traditional Hawaiian economy to that of a market economy (Kuykendall 1938, Vol. I: 145; Daws 1968:111; Kelly 1983:45, 1998:4; Kame`eleihiwa 1992:169–70, 176). The Māhele of 1848 divided Hawaiian lands between the king, the chiefs, the government, and began the process of private ownership of lands. The subsequently awarded parcels were called Land Commission Awards (LCAs). Once lands were made available and private ownership was instituted, the *maka`āinana* were able to claim the plots on which they had been cultivating and living, if they had been made aware of the procedures. 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).

According to the Waihona `Aina Database (2012), there were 39 claims made Hāmākua Poko District during the Māhele, none of which were within the current project area. However, a search of the Waihona `Aina Database (2012) indicated that Hamakuapoko Well No. 1 is located within Land Grant 764. Land Grant 764, comprised of 150 acres, was purchased by Robert W. Wood for \$1,500, "...for school land as per Patent No. 764", on January 27, 1852 (R. Armstrong, Minister of Public Instruction, in Waihona `Aina Database 2012). In addition, the Waihona `Aina Database (2012) indicated Hamakuapoko Well No. 2 is located in Land Grant 187. Land Grant 187, comprised of 24.61 acres, was purchased from by John Richardson for \$75.15 on December 21, 1849. The Land Grant documents area presented in Appendix D. In addition, the Tax Map Key indicates the area containing Hamakuapoko Wells No. 1 and No. 2 was deeded to the Board of Directors Trustees of Oahu College in 1860 (see Figure 2).

During the Mahele of 1848, the eastern half of the Hāmākua Poko *Ahupua`a* became government land while the western half was awarded to W.P. Leileiohoku, brother of Kalakaua and Lili`uokalani. Leileiohoku promptly surrendered these lands in lieu of commutation for his other lands, effectively making the entire *ahupua`a* a government parcel. Handy and Handy (1972:498) recorded that gulches in the *ahupua`a* contained soils amenable to cultivation, and were indeed probably used for sweet potato (*`uala*). Sweet potatoes were grown in the *kula* (*upcountry*) region of Hāmākua Poko, as well.

Kamakau (1961: 23-24) recounts the story of Chief Kiha-a`pi`i-lani who was living in Kula (*upcountry*) while hiding from his brother, Lono-a-Pi`i-lani, who was jealous and trying to kill him. During this time, there was a famine in Kula and Makawao and the people living on weeds. One night Kiha-a`pi`i-lani cleared a large area of land "...that would naturally require the labor of eighty men to clear..." in order to plant sweet potatoes. In the morning the people noticed the large clearing and began asking "[w]here he will find enough sweet-potato slips to cover the patch?" So, the following day, Kiha-a`pi`i-lani went to Hāmākua Poko and Hali`imaile seeking the potato slips. The natives were extremely generous and wherever he went he was given entire patches of *`uala*. Eventually, Kiha-a`pi`i-lani had accumulated enough bundles of sweet potato tied with morning glory vines to return and with more than enough slips to cover every mound in the entire field.

The lands along the north coast of Maui were described in 1860 as:

... a complete desert, a great, barren stretch of sand and dust spread from Wailuku to Pā`ia, except for a little cattle grazing land around the present location of Spreckelsville. (Burns 1991:72).

In spite of this, sugar cane became a major industry in the 1800s. The Hawaiian Commercial Company, formed by Claus Spreckels, developed the area around and to the west of Spreckelsville. Concurrently, the S.T. Alexander and H.P. Baldwin Company developed the area east of Spreckelsville up to, and including, Pā`ia. In 1880, Claus Spreckels managed to acquire fee simple title to the Wailuku *Ahupua`a* (approximately 440,000 acres, Grant 3343), including the Wailuku Commons that had been Crown Lands owned by Ruth Ke`elikolani. In 1926, Alexander and Baldwin acquired Spreckels' Hawaiian Commercial Company interests in Maui.

The growth of the sugar industry was augmented by imported labor from foreign lands. The various ethnic groups that provided needed labor to fuel a large plantation economy is reflected in the names of the various labor camps surrounding the Pā`ia area: Hawaiian Camp, Russian Camp, Spanish Camp, Portuguese Camp, Chinese Camp, and Japanese Camp. A total of thirteen camp communities were formed and situated throughout the sugar lands and towns appeared at Pu`unene and Spreckelsville (USGS 1922a, b Pā`ia and Kihei Quads).

Railroads constructed by the sugar companies facilitated communication between the camps and provided transportation for hauling sugar cane. Remnants of the railroad bed are still evident at the western end of Puna Road in Pā`ia. Labor camps were consolidated and relocated

over time, with some having developed into modern urban centers such as Kahului and Wailuku.

Remnants of these former camps remain in the form of small, scattered cemeteries that occur along the coastline near Pā`ia and Kū`au. Historic period artifacts, including ceramics, bottle glass, metal objects, square nails, marbles, and other objects relating to daily activities in the sugar camps, have been documented in nearby sugar cane fields (Clark and Toenjes 1987:10).

With the outbreak of World War II, 3,800 acres of sugar land at Pu`unene and Kahului were annexed by the military for use as the Kahului Naval Air Station. Several marshy areas were filled utilizing sand from nearby beach areas, during the construction of runways (Welch 1991). Support facilities, in addition to training structures, were built along the coast from Kahului northward up the coastline.

In addition to historic land modifications occurring in the general area of the present project area, recent activities have also altered the natural landscape and likely contributed to the loss of pre-Contact cultural history. Modern construction activities have impacted, through grading and sand removal, large portions of dune lands to the north of the project area. More specifically, residential development, automobile access roads, everyday pedestrian use, and refuse dumping activities have all impacted the northern portion of East Maui significantly.

ARCHAEOLOGY

Early archaeological studies conducted on Maui primarily included recording *heiau* sites along the coastline in Thrum (1909) and Stokes (1918), and an island-wide site survey in 1928 conducted by Winslow Walker (1931). Walker identified only one site, Kailua Heiau, in the vicinity of the current project area. Kailua Heiau was located near Kailua Gulch approximately 0.50 mile west of Pā`ia Road. The site was recorded as a platform measuring 50 by 80 feet and was probably destroyed during sugar cane cultivation (Walker 1933 in Sterling 1998:97).

Many archaeological sites are present in the general vicinity of the project area. Some of these sites, including Kanahā and Mau`oni Fishponds, located on the east end of Kahului, have been preserved. These fishponds have been classified as *loko wai* or fresh water ponds by Kikuchi (1973). This type of pond was originally a natural lake or marsh area that was fortified through human intervention. Kikuchi (1973) states that a stone wall that separates the two ponds was constructed in the early part of the 16th Century by the Maui chief Kiha-a pi`ilani.

Bishop Museum conducted Archaeological Monitoring during sewer line construction from Spreckelsville to Kū`au, along the northern Maui shoreline. During the Archaeological Monitoring program State Sites 50-50-05-1064 and State Sites 50-50-05-177 through 50-05-05-1782, which consisted of six subsurface cultural features were identified (Clark and Toenjes 1987). The sites were functionally interpreted as traditional Hawaiian fishing and habitation sites. Charcoal samples submitted for dating from this study yielded dates of A.D. 1420 to 1810 for coastal occupation. Traditional-type pre-Contact burials were also identified during the study (*ibid.*).

The Baldwin Beach Burial Site (State Site 50-50-05-1171) is a house and grave site located at the first point northeast of Pā`ia Bay (Clark and Toenjes 1987). This site consists of two features: a rectangular foundation composed of basalt boulders and an earth-filled, rectangular pit containing fragments of coral. The site was assessed as a habitation complex (Hommon 1974) and assigned State Site 50-50-05-1258 (*ibid.*)

State Site 50-50-05-1063, the Kū`au Petroglyphs, are located southwest of Kū`au peninsula somewhat northeast of the current area of study. The petroglyphs have been cut into a boulder located on a coral sand beach near an intermittent drainage. The boulder itself is 2.2 m in diameter by 0.7 m high and is inscribed with five linear human figures (Clark and Toenjes 1987:12). Associated with the Kū`au Petroglyphs, a modified boulder 16 m to the south of the petroglyphs and measuring 2.4 m long by 1.4 m wide exhibits a shallow linear groove 0.36 m long that has been carved across the central portion of the boulder's surface. The groove is surrounded by at least ten shallow, smooth depressions ranging from 0.18 m to 0.33 m in diameter. The modifications to the boulder have been interpreted to represent adze sharpening grooves. The depressions are undoubtedly the result of grinding and polishing adzes in the later stages of adze manufacture (*ibid.*).

North of lower Pā`ia, near Kū`au Bay, State Site 50-50-05-1064, known as the Kalahau Burials, has been the focus of much archaeological attention. Human remains have been eroding from within this beach area for a number of years. Excavations conducted by Bowen (1968) revealed two separate cultural layers, providing evidence for both traditional habitation and human burials. These endeavors exhibited two distinctive periods of Hawaiian occupation; however, no radiocarbon dates have been obtained. Another study at this site, conducted by Cultural Surveys of Hawaii, Inc. revealed a pre-Contact cultural layer. Samples collected from a cultural stratum in the dune resulted in a radiocarbon date of c. A.D. 1100 (Borthwick 1990). To

date, over 40 burials have been removed from the area.

In 1991 Cultural Surveys of Hawaii, Inc. conducted subsurface testing on either side of Spreckelsville Beach Road which led to the identification of several cultural deposits (State Site 50-50-04-2849) (Toenjes *et al.* 1991). Radiocarbon dates from documented cultural layers yielded occupation ranges of A.D. 1230 to 1765. One radiocarbon sample from the shoreline yielded a very early date of A.D. 410 to 615 (*ibid.*).

Cultural Surveys of Hawaii, Inc. excavated of nine trenches during subsurface testing of the Kū`au Beach Lots Subdivision. The testing identified dune deposits located *makai* or north of the existing beach road. However, no archaeological sites or features were identified within the project area (Hammett 1997).

In 2001, Scientific Consultant Services, Inc. conducted an Inventory Survey of 0.25 acres in the Pā`ia Youth and Cultural Center, located on a coastal parcel on Pā`ia Bay (Morawski and Spear 2001). Based on the presence of several large native Hawaiian coastal cemeteries within the Hāmākua Poko Ahupua`a, it seemed likely that this area was once the location of pre-Contact habitation and possible burials. During the survey an historic trash deposit containing bottle glass, metal objects, and a ceramic sherd (State Site 50-50-05-5124) was identified. The trash deposit was interpreted as associated with nearby railroad and military structures.

In 2004, Scientific Consultant Services, Inc. performed an Archaeological Inventory Survey of the Pā`ia Town Center Project (Chaffee and Dega 2005). Two archaeological sites were newly identified: State Site 50-50-05-6736, five historic buildings, and State Site 50-50-05-5519, an Historic-era refuse pit containing Historic Period glass bottles and ceramic shards.

Subsequently, Scientific Consultant Services, Inc. conducted Archaeological Monitoring of the Pā`ia Town Center Project (Dagher and Dega 2011). During the Archaeological Monitoring program, four subsurface pit features were newly identified. Based on the findings of the Archaeological Monitoring, State Site 50-50-05-5519 was re-interpreted as associated with the Plantation Era/Historic Period.

CONSULTATION

Consultation was conducted via telephone, e-mail, and the U.S. Postal Service. Consultation was sought from the Central Maui Hawaiian Civic Club; Raymond Hutaff, County of Maui Cultural Resources Commission; Perry Artates, County of Maui Cultural Resources Commission; Thelma Shimaoka, Office of Hawaiian Affairs, Maui; Kamana`opono M. Crabbe, Chief Executive Officer, Office of Hawaiian Affairs; Vincent Hinano Rodrigues, State Historic Preservation Division, Maui; Jan Dapitan, community member; Walter Ouye, community member; Patsy Shishido, community member; Leona (Lona) Wilson, community member; Lucienne de Naie, community member; Paul Ueoka, community member; Brian McAfferty; community member; Aimoku Pali, community member; and Kepa Maly, historian; and Mike Suda, community member. In addition, SCS archaeologist Cathleen Dagher attended the September 6, 2012 County of Maui Cultural Resource Commission monthly meeting in an attempt to consult with the Commissioners and local residents. Following the County of Maui Cultural Resources Commission September 2012 meeting, a letter of inquiry and the associated maps were electronically transmitted to Kepa Maly, Historian.

A Cultural Impact Assessment Notice was published on July 25, 26, and 29, 2012, in *The Honolulu Star-Advertiser* and in *The Maui News*, which published on the same dates on Maui, and the August 2012 issue of the OHA newspaper, *Ka Wai Ola* (see Appendix C). These notices requested information of cultural resources or activities in the area of the proposed project, stated the Tax Map Key (TMK) number, and where to respond with pertinent information.

Based on the responses of the individuals consulted, an assessment of the potential effects on cultural resources in the project area and recommendations for mitigation of these effects can be proposed.

CULTURAL IMPACT ASSESSMENT INQUIRY RESPONSES

Analysis of the potential effect of the project on cultural resources, practices or beliefs, the potential to isolate cultural resources, maintain practices or beliefs in their original setting, and the potential of the project to introduce elements that may alter the setting in which cultural practices take place is a requirement of the OEQC (No. 10, 1997). As stated earlier, this includes the cultural resources of the different groups comprising the multi-ethnic community of Hawai`i.

As stated above, consultation was sought from local community organizations; County of Maui and State of Hawai`i agencies, and knowledgeable community Commissioners and local

residents. In addition, legal notices were placed in *The Honolulu Star-Advertiser*, *The Maui News*, and the OHA newspaper, *Ka Wai Ola*. Follow-up letters of inquiry were mailed to the above-mentioned individuals, as necessary (see Appendix C). In addition, please note that no written responses, to letters of inquiry, were received. None of the individuals interviewed indicated in their responses that any traditional cultural practices would be affected by the proposed well improvements.

As part of the consultation process, SCS archaeologist Cathleen Dagher attended the September 6, 2012 County of Maui Cultural Resource Commission (CRC) monthly meeting in an attempt to consult with the Commissioners and local residents. The CRC recommended consulting Kepa Maly, Historian; Jan Dapitan, community member; Barbara Long, community member and president of Friends of Old Maui High School. Following the County of Maui Cultural Resources Commission September 2012 meeting, a letter of inquiry and the associated maps were electronically transmitted to and Kepa Maly, historian.

Oral interviews were conducted with community members Jan Dapitan, Patsy Shishido, and Leona Wilson. Informal conversations, via telephone or e-mail, were conducted with Paul Ueoka, Kepa Maly, and Brian McAfferty.

Jan Dapitan provided a list of names and contact information for community members she believed were knowledgeable about the Hāmākua Poko area. These individuals were: Brian McAfferty, Roz Lightfoot, Aimoku Pali, Mike Suda, Gaylord Kubota, Lucienne de Naie, Lesley Bruce, Leslie Kuloloio, Margaret Enomoto, and Michael Howden. Aimoku Pali declined to be interviewed, but suggested contacting community member Leslie Kuloloio. Ms. Dapitan did not indicate that any traditional cultural practices would be affected by the proposed well improvements.

Paul Ueoka is a graduate of the “old” Maui High School at Hāmākua Poko, Class of 1967, and is active with the Friends of Old Maui High School (“FOMHS”), a Hawaii non-profit, tax-exempt corporation that is trying to restore the school. Paul’s recently deceased father, Noriyuki Ueoka, was a former Agriculture Teacher and Vice Principal at Old Maui High School. As an “active” Agriculture Teacher, the senior Mr. Ueoka taught the agricultural students how to raise farm animals such as pigs and chickens for meat and eggs, and how to cultivate plants and other farm produce, including corn, citrus trees, mango trees, and flowers, such as orchids and anthuriums. Paul provided a brief overview Plantation Era life and a list of names and contact information of community members he believed were knowledgeable about the Hāmākua Poko

area: Barbara Long, former President of FOMHS; Walter Ouye, former teacher and principal at Old Maui High School; and Ruth Mukai, Old MHS graduate and active member of FOMHS. Unfortunately, many of the people who actually grew up in Hamakuapoko and the surrounding areas are deceased. Old Maui High School relocated to Kahului in 1971. By then, the Hamakuapoko camp or village had already been demolished and converted to sugar cane fields. Mr. Ueoka did not indicate that any traditional cultural practices would be affected by the proposed well improvements.

Mrs. Patsy Shishido and Mrs. Leona Wilson are sisters whose paternal and maternal grandparents emigrated to Hawai'i in the late 1800s and early 1900s, respectively, from the Azores Archipelago, Portugal, in order to work for the sugarcane plantation and provide their families with a better life. As the plantation camps were organized according to nationality, Mrs. Shishido and Mrs. Wilson grew up in a Portuguese Camp in Hāmākua Poko. As children they swam at Ho`okipa Park and as teenagers attended Old Maui High School. Both ladies provided extensive details about Plantation-Era life. According to Mrs. Shishido and Mrs. Wilson, cultural practices occurring within the plantation camps included the plantation providing the plantation workers with medical care, schools for their children's education, and churches. Both Mrs. Shishido and Mrs. Wilson stressed that the plantation promoted the education of the children, and encouraged the various cultures to educate their children by providing free education to the children and placing the schools in easily accessible locations. The plantation provided kindergarten, for children aged 3 to 6, and elementary school, from grades 1 to 8, and high school, grades 8 through 12. After eighth grade many of the children quit school and went to work in the fields. Mrs. Shishido stated that the Japanese culture, for example, placed importance on education and encouraged their children to attend high school. Prior to the introduction of school busses, children took the train to Old Maui High School. Churches within the camps represented the religions of the various cultures. Traditional ethnic foods were prepared by the plantation workers and carried to the fields for lunch. At lunchtime the workers would gather to eat and would share their food. Mrs. Wilson attributed the practice of the fieldworkers' sharing their traditional foods at lunchtime with breaking down the cultural and language barriers that existed between the fieldworkers of the various cultures. Neither Mrs. Shishido nor Mrs. Wilson indicated that any traditional cultural practices would be affected by the proposed well improvements.

Brian McAfferty has been working with young people in the Hāmākua Poko area, of Maui, for many years instructing them in traditional methods of taro cultivation and aquaculture

while using modern materials. Mr. McAfferty did not indicate that any traditional cultural practices would be affected by the proposed well improvements.

Kepa Maly stated, via e-mail dated October 18, 2012, that "...the study "Wai o ke ola..." is available online at ulukau.org." Mr. Maly did not indicate that any traditional cultural practices would be affected by the proposed well improvements.

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 may be affected by the project or who know its history, 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 area previously impacted by commercial agriculture 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.

Historical and cultural source materials were extensively used and can be found listed in the References Cited portion of the report. Such scholars as Samuel Kamakau, Martha Beckwith, Jon J. Chinen, Lilikalā Kame`eleihiwa, R. S. Kuykendall, Marion Kelly, E. S. C. Handy and E.G. Handy, Elspeth P. Sterling, and Mary Kawena Puku`i and Samuel H. Elbert 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 2012 Database.

In the case of the current undertaking, letters of inquiry were sent to individuals and organizations that may have knowledge or information pertaining to the collection of cultural resources and/or practices currently, or previously conducted in close proximity to the Hamakuapoko Wells Nos. 1 and 2. As stated elsewhere in this document, consultation was sought from the Central Maui Hawaiian Civic Club; the County of Maui Cultural Resources Commission via letters of inquiry and in-person; Office of Hawaiian Affairs, Maui; Office of

Hawaiian Affairs, O`ahu; State Historic Preservation Division, Maui, and individuals recognized by the community as being knowledgeable about the Hāmākua Poko area. In addition, SCS archaeologist Cathleen Dagher attended the September 6, 2012 County of Maui Cultural Resource Commission monthly meeting in an attempt to consult with the Commissioners and local residents. In addition, a Cultural Impact Assessment Legal Notices were published in *The Honolulu Star-Advertiser*, *The Maui News*, and the OHA newspaper, *Ka Wai Ola* (see Appendix C).

While the individuals who were interviewed graciously provided detailed testimony in regards to the Plantation Era history of they area, as well as the names and contact information for other potential informants, only the informant who wished to remain anonymous provided information pertaining to traditional cultural practices currently conducted in the vicinity of the Hamakuapoko Wells No. 1 and No. 2 sites. None of the persons consulted indicated the proposed improvements to the wells would impact traditional cultural practices.

CULTURAL ASSESSMENT AND RECOMMENDATIONS

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 also a suggested guideline of the OEQC (No. 10, 1997). To our knowledge, the project area has not been used for traditional cultural purposes within recent times.

Based on the above 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 around and on the approximately 2-acres of land of land containing the existing Hamakuapoko Wells No. 1 and No. 2 and the proposed adjacent new water tank, located in Hāmākua Poko Ahupua`a, Makawao District, Island of Maui, [TMK: (2) 2-5-04:039 (por.)].

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APPENDIX A: LETTERS OF INQUIRY

Walter Ouye
3030 Alameo Place
Wailuku, Hawai`i 96793

September 17, 2012

Dear Mr. Ouye:

Thank you so much for agreeing to be interviewed for the Cultural Impact Assessment for the proposed improvements to the existing Hamakuapoko Wells Nos. 1 and 2. I have attached the formal letter of inquiry and associated maps, as we discussed today. Please let me know what would be a convenient time and date for us to meet and to conduct the interview.

Aloha,

Cathleen Dagher
Senior Archaeologist
Scientific Consultant Services, Inc.
711 Kapi`olani Blvd., Suite 975
Honolulu, Hi. 96813
808 597-1182 (office)
808 597-1193 (fax)

Walter Ouye
3030 Alameo Place
Wailuku, Hawai'i 96793

September 17, 2012

Dear Mr. Ouye:

In compliance with the State of Hawai'i Revised Statute (HRS) Chapter 343 Environmental Impact Statements Law, and in accordance with the State of Hawai'i Department of Health's Office of Environmental Quality Control (OEQC) Guidelines for Assessing Cultural Impacts as adopted by the Environmental Council, State of Hawai'i on November 19, 1997, Scientific Consultant Services, Inc. (SCS) is in the process of preparing a Cultural Impact Assessment (CIA) pertaining to proposed improvements at two existing well sites (Hamakuapoko Well Nos. 1 and 2). Each well site is located on approximately 0.25 acres of land in Hāmākuapoko Ahupua`a, District of Makawao, Maui Island [TMK: (2) 2-5-04:039 (por.)] (Figures 1 through 3). Well site 2 also includes a proposed adjacent new water tank.

Scientific Consultant Services has conducted an Archaeological Field Inspection of the two well sites (Letter Report from SCS archaeologist David Perzinski, B.A., to Jenny Pickett, State Historic Preservation Division Assistant Maui Archaeologist, dated June 12, 2012) in order to determine the presence of archaeological cultural materials. No cultural materials were encountered during the Field Inspection.

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 you or other individuals have which might contribute to the knowledge of traditional cultural activities that were, or are currently, conducted in the vicinity of the two well sites. We are also asking for any information pertaining to traditional cultural activities or traditional rights which may be impacted by the proposed improvements at

the two existing well sites. The results of the cultural impact assessment are dependent on the response and contributions made by individuals and organizations such as the State Historic Preservation Division.

Enclosed are maps showing the proposed project areas. Please contact me at the Scientific Consultant Services, Honolulu, office at (808) 597-1182 or via e-mail (cathy@scshawaii.com) with any information or recommendations concerning this Cultural Impact Assessment.

Regards,

Cathleen Dagher
Senior Archaeologist
Enclosures (3)

Cc: Central Maui Hawaiian Civic Club; Raymond Hutaff, County of Maui Cultural Resources Commission; Perry Artates, County of Maui Cultural Resources Commission; Thelma Shimaoka, Maui Office of Hawaiian Affairs; Kamana'opono M. Crabbe, Chief Executive Officer, Office of Hawaiian Affairs; Hinano Rodrigues, State Historic Preservation Division, Maui; Jan Dapitan, community member; Patsy Shishido, community member

Brian McAfferty
brian.teensoncall@gmail.com

October 11, 2012

Dear Mr. McAfferty:

In compliance with the State of Hawai'i Revised Statute (HRS) Chapter 343 Environmental Impact Statements Law, and in accordance with the State of Hawai'i Department of Health's Office of Environmental Quality Control (OEQC) Guidelines for Assessing Cultural Impacts as adopted by the Environmental Council, State of Hawai'i on November 19, 1997, Scientific Consultant Services, Inc. (SCS) is in the process of preparing a Cultural Impact Assessment (CIA) pertaining to proposed improvements at two existing well sites (Hamakuapoko Well Nos. 1 and 2). Each well site is located on approximately 0.25 acres of land in Hāmākuapoko Ahupua'a, District of Makawao, Maui Island [TMK: (2) 2-5-04:039 (por.)] (Figures 1 through 3). Well site 2 also includes a proposed adjacent new water tank.

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We are asking you for any information that you or other individuals have which might contribute to the knowledge of traditional cultural activities that were, or are currently, conducted in the vicinity of the two well sites. We are also asking for any information pertaining to traditional cultural activities or traditional rights which may be impacted by the proposed improvements at the two existing well sites. The results of the cultural impact assessment are dependent on the response and contributions made by individuals and organizations such as yourself.

Enclosed are maps showing the proposed project areas. Please contact me at the Scientific Consultant Services, Honolulu, office at (808) 597-1182 or via e-mail (cathy@scshawaii.com) with any information or recommendations concerning this Cultural Impact Assessment.

Regards,

Cathleen Dagher
Senior Archaeologist
Enclosures (3)

Cc: Central Maui Hawaiian Civic Club; Raymond Hutaff, County of Maui Cultural Resources Commission; Perry Artates, County of Maui Cultural Resources Commission; Thelma Shimaoka, Maui Office of Hawaiian Affairs; Kamana`opono M. Crabbe, Chief Executive Officer, Office of Hawaiian Affairs; Vincent Hinano Rodrigues, State Historic Preservation Division

Central Maui Hawaiian Civic Club
P.O. Box 1493
Wailuku, Hawai'i 96793

July 26, 2012

Dear Sir or Madam:

In compliance with the State of Hawai'i Revised Statute (HRS) Chapter 343 Environmental Impact Statements Law, and in accordance with the State of Hawai'i Department of Health's Office of Environmental Quality Control (OEQC) Guidelines for Assessing Cultural Impacts as adopted by the Environmental Council, State of Hawai'i on November 19, 1997, Scientific Consultant Services, Inc. (SCS) is in the process of preparing a Cultural Impact Assessment (CIA) pertaining to proposed improvements at two existing well sites (Hamakuapoko Well Nos. 1 and 2). Each well site is located on approximately 0.25 acres of land in Hāmākuapoko Ahupua`a, District of Makawao, Maui Island [TMK: (2) 2-5-04:039 (por.)] (Figures 1 through 3). Well site 2 also includes a proposed adjacent new water tank.

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Enclosed are maps showing the proposed project areas. Please contact me at the Scientific Consultant Services, Honolulu, office at (808) 597-1182 or via e-mail (cathy@scshawaii.com) with any information or recommendations concerning this Cultural Impact Assessment.

Sincerely,

Cathleen Dagher
Senior Archaeologist
Enclosures (3)

Cc: Hinano Rodrigues, State Historic Preservation Division, Maui; Raymond Hutaff, County of Maui Cultural Resources Commission; Perry Artates, County of Maui Cultural Resources Commission; Thelma Shimaoka, Maui Office of Hawaiian Affairs; Kamana`opono M. Crabbe, Chief Executive Officer, Office of Hawaiian Affairs

Raymond Hutaff
C/O County of Maui Cultural Resources Commission
250 South High Street
Wailuku, Hawai'i 96793

July 26, 2012

Dear M. Hutaff:

In compliance with the State of Hawai'i Revised Statute (HRS) Chapter 343 Environmental Impact Statements Law, and in accordance with the State of Hawai'i Department of Health's Office of Environmental Quality Control (OEQC) Guidelines for Assessing Cultural Impacts as adopted by the Environmental Council, State of Hawai'i on November 19, 1997, Scientific Consultant Services, Inc. (SCS) is in the process of preparing a Cultural Impact Assessment (CIA) pertaining to proposed improvements at two existing well sites (Hamakuapoko Well Nos. 1 and 2). Each well site is located on approximately 0.25 acres of land in Hāmākuapoko Ahupua`a, District of Makawao, Maui Island [TMK: (2) 2-5-04:039 (por.)] (Figures 1 through 3). Well site 2 also includes a proposed adjacent new water tank.

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Enclosed are maps showing the proposed project areas. Please contact me at the Scientific Consultant Services, Honolulu, office at (808) 597-1182 or via e-mail (cathy@scshawaii.com) with any information or recommendations concerning this Cultural Impact Assessment.

Sincerely,

Cathleen Dagher
Senior Archaeologist
Enclosures (3)

Cc: Central Maui Hawaiian Civic Club; Perry Artates, County of Maui Cultural Resources Commission; Kamana`opono M. Crabbe, Chief Executive Officer, Office of Hawaiian Affairs; Hinano Rodrigues, State Historic Preservation Division, Maui; Thelma Shimaoka, Maui Office of Hawaiian Affairs

Perry Artates
C/O County of Maui Cultural Resources Commission
250 South High Street
Wailuku, Hawai'i 96793

July 26, 2012

Dear Mr. Artates:

In compliance with the State of Hawai'i Revised Statute (HRS) Chapter 343 Environmental Impact Statements Law, and in accordance with the State of Hawai'i Department of Health's Office of Environmental Quality Control (OEQC) Guidelines for Assessing Cultural Impacts as adopted by the Environmental Council, State of Hawai'i on November 19, 1997, Scientific Consultant Services, Inc. (SCS) is in the process of preparing a Cultural Impact Assessment (CIA) pertaining to proposed improvements at two existing well sites (Hamakuapoko Well Nos. 1 and 2). Each well site is located on approximately 0.25 acres of land in Hāmākuapoko Ahupua`a, District of Makawao, Maui Island [TMK: (2) 2-5-04:039 (por.)] (Figures 1 through 3). Well site 2 also includes a proposed adjacent new water tank.

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Cathleen Dagher
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Jan Dapitan
P.O. Box 2610
Wailuku, Hawai'i 96793

September 17, 2012

Dear Mrs. Dapitan:

Thank you so much for agreeing to be interviewed for the Cultural Impact Assessment for the proposed improvements to the existing Hamakuapoko Wells Nos. 1 and 2. I have attached the formal letter of inquiry and associated maps, as we discussed today. Please let me know what would be a convenient time and date for us to meet and to conduct the interview.

Aloha,

Cathleen Dagher
Senior Archaeologist
Scientific Consultant Services, Inc.
711 Kapi'olani Blvd., Suite 975
Honolulu, Hi. 96813
808 597-1182 (office)
808 597-1193 (fax)

Jan Dapitan
P.O. Box 2610
Wailuku, Hawai'i 96793

September 17, 2012

Dear Mrs. Dapitan:

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We are asking you for any information that you or other individuals have which might contribute to the knowledge of traditional cultural activities that were, or are currently, conducted in the vicinity of the two well sites. We are also asking for any information pertaining to traditional cultural activities or traditional rights which may be impacted by the proposed improvements at the two existing well sites. The results of the cultural impact assessment are dependent on the response and contributions made by individuals and organizations such as the State Historic Preservation Division.

Enclosed are maps showing the proposed project areas. Please contact me at the Scientific Consultant Services, Honolulu, office at (808) 597-1182 or via e-mail (cathy@scshawaii.com) with any information or recommendations concerning this Cultural Impact Assessment.

Regards,

Cathleen Dagher
Senior Archaeologist
Enclosures (3)

Cc: Central Maui Hawaiian Civic Club; Raymond Hutaff, County of Maui Cultural Resources Commission; Perry Artates, County of Maui Cultural Resources Commission; Thelma Shimaoka, Maui Office of Hawaiian Affairs; Kamana`opono M. Crabbe, Chief Executive Officer, Office of Hawaiian Affairs; Hinano Rodrigues, State Historic Preservation Division, Maui; Walter Ouye, community member; Patsy Shishido, community member

Kepa Maly
Kumu Pono Associates LLC
kepa@kumupono.com

September 12, 2012

Dear Mr. Maly:

In compliance with the State of Hawai'i Revised Statute (HRS) Chapter 343 Environmental Impact Statements Law, and in accordance with the State of Hawai'i Department of Health's Office of Environmental Quality Control (OEQC) Guidelines for Assessing Cultural Impacts as adopted by the Environmental Council, State of Hawai'i on November 19, 1997, Scientific Consultant Services, Inc. (SCS) is in the process of preparing a Cultural Impact Assessment (CIA) pertaining to proposed improvements at two existing well sites (Hamakuapoko Well Nos. 1 and 2). Each well site is located on approximately 0.25 acres of land in Hāmākuapoko Ahupua`a, District of Makawao, Maui Island [TMK: (2) 2-5-04:039 (por.)] (Figures 1 through 3). Well site 2 also includes a proposed adjacent new water tank.

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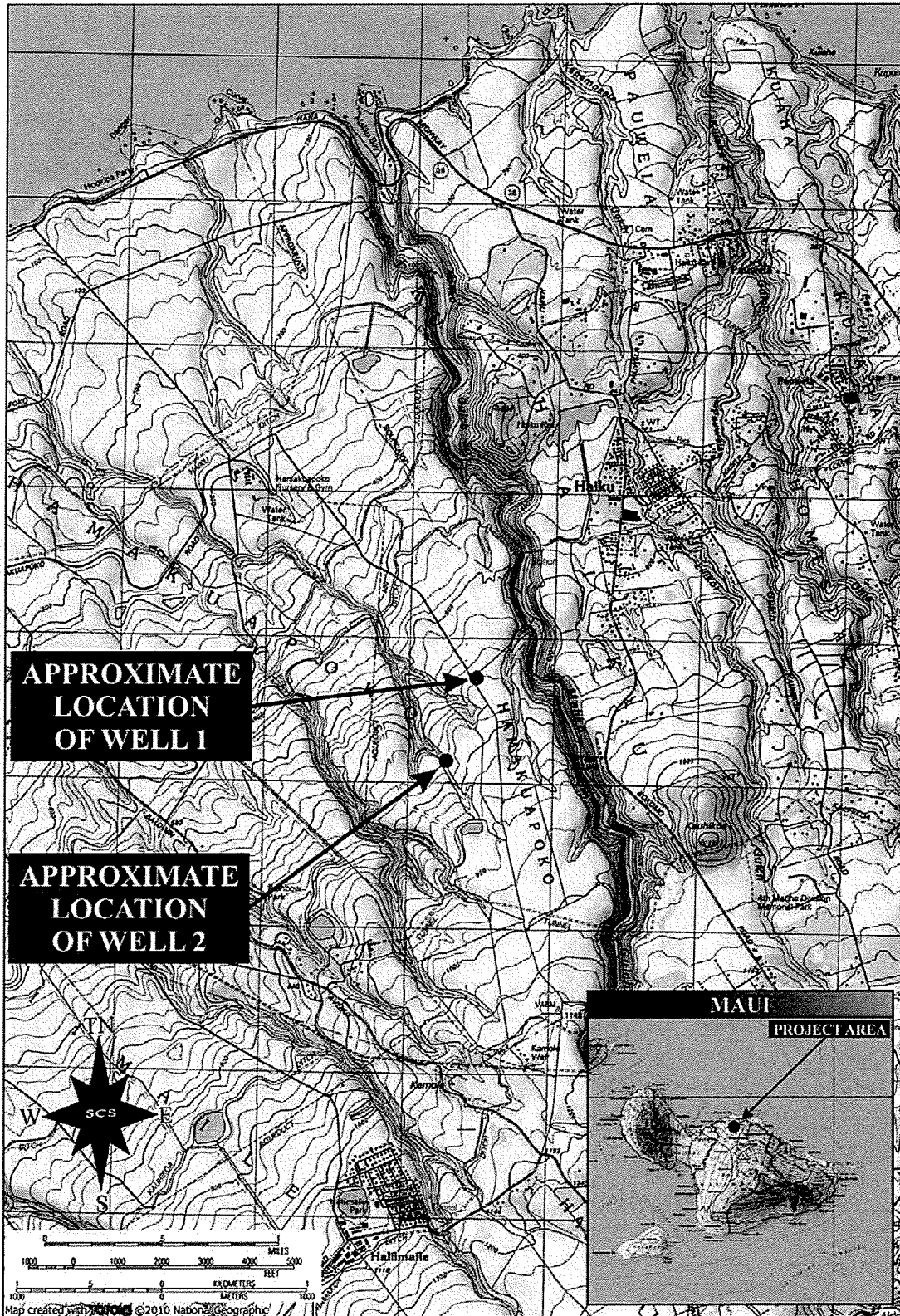
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Regards,

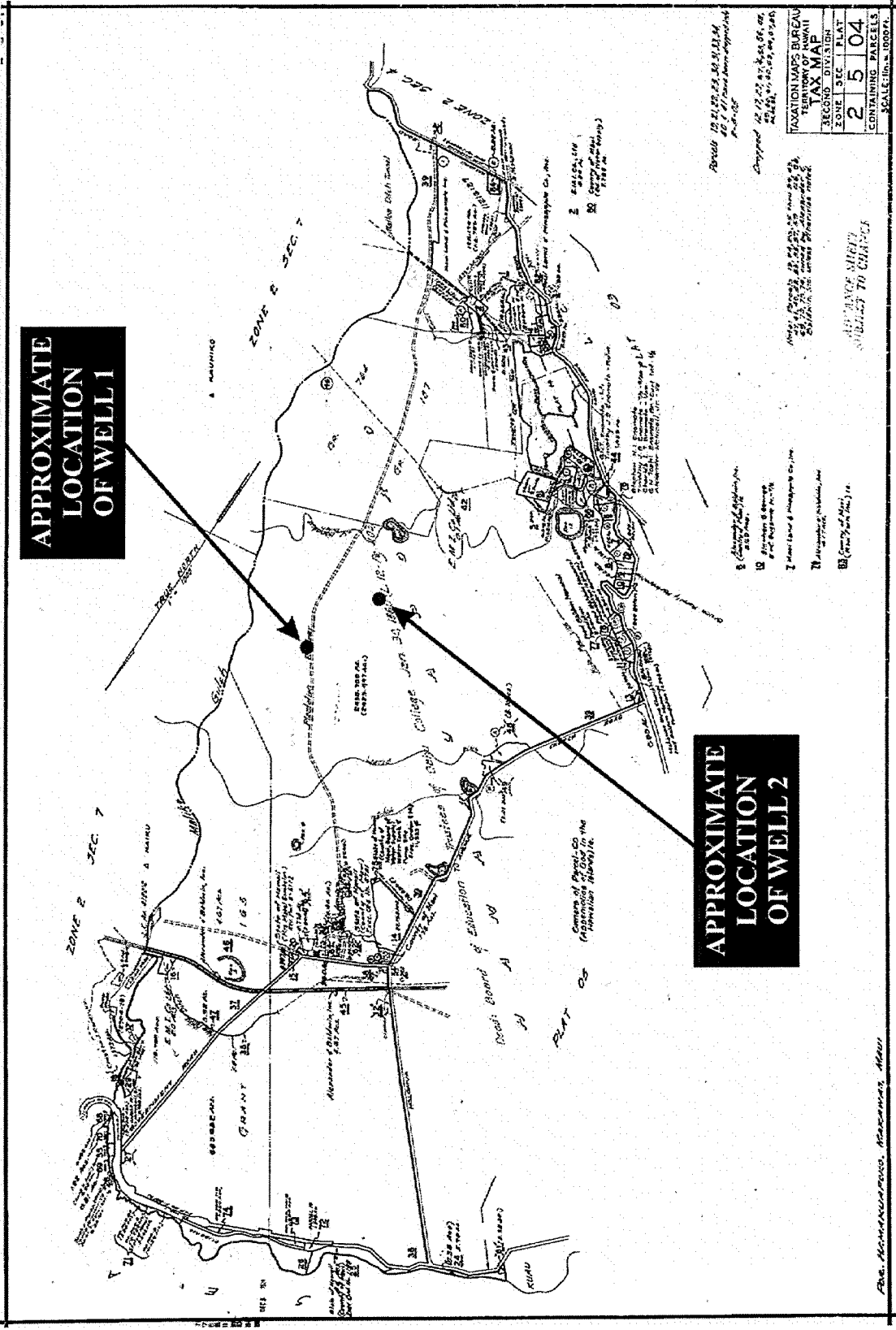
Cathleen Dagher
Senior Archaeologist
Enclosures (3)

Cc: Central Maui Hawaiian Civic Club; Raymond Hutaff, County of Maui Cultural Resources Commission; Perry Artates, County of Maui Cultural Resources Commission; Thelma Shimaoka, Maui Office of Hawaiian Affairs; Kamana`opono M. Crabbe, Chief Executive Officer, Office of Hawaiian Affairs; Vincent Hinano Rodrigues, State Historic Preservation Division



**APPROXIMATE
LOCATION
OF WELL 1**

**APPROXIMATE
LOCATION
OF WELL 2**



TAXATION MAPS BUREAU	2	5	04
TOWN OF ADAMI			
SECOND DIVISION			
ZONE 1 SEC. PLAT	2	5	04
CONTAINING PARCELS			
SCALE (in. = 1000 FT.)			

APPROXIMATE LOCATION OF WELL 1
APPROXIMATE LOCATION OF WELL 2
SUBJECT TO CHANGE

FOR INFORMATION PURPOSES, MISSOURI, MOU

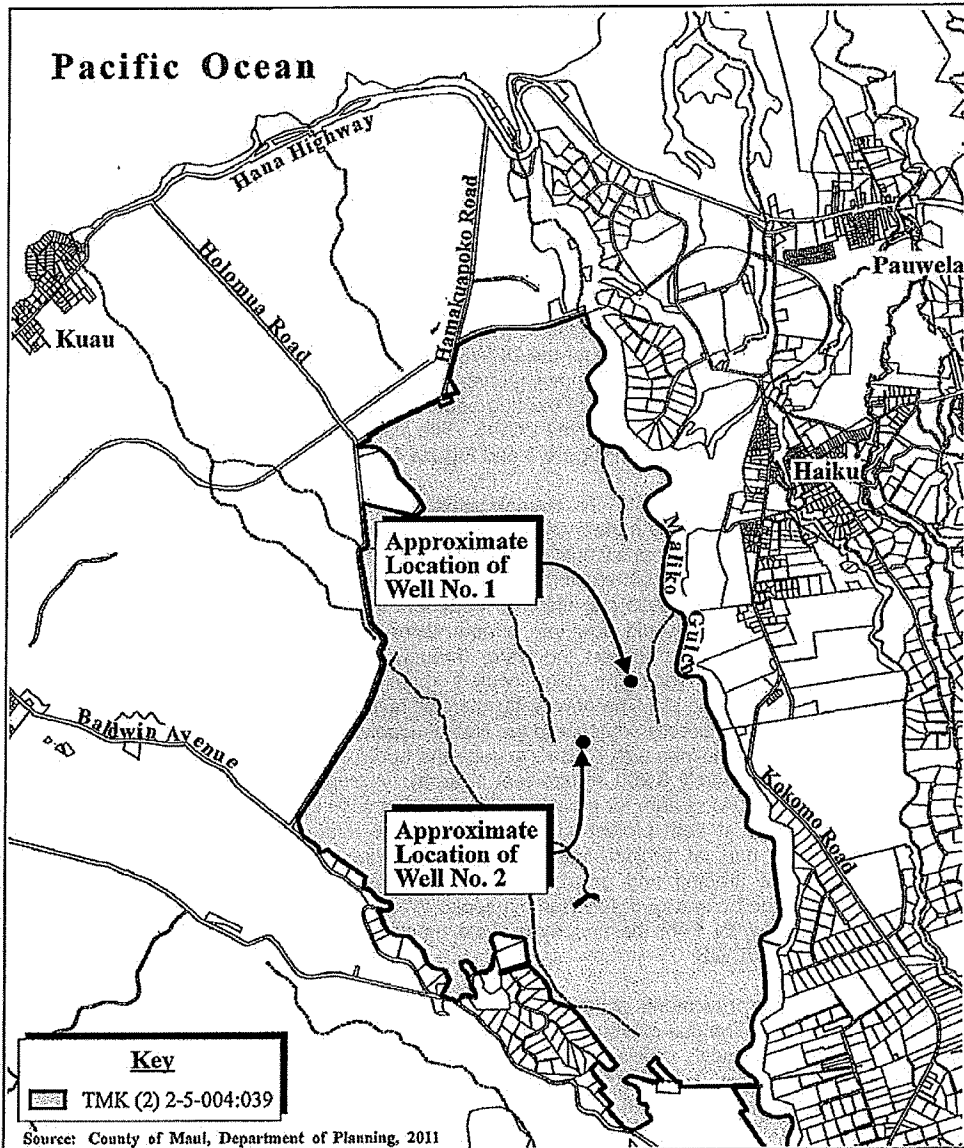
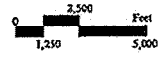


Figure 2 Proposed Improvements at Hamakuapoko Well Nos. 1 and 2
Property Location Map



MUNEKIYO & HIRAGA, INC.

Prepared for: County of Maui, Department of Water Supply

coo/dws/hamakuapoko/property/location

Lucienne Denae
laluz@maui.net

September 28, 2012

Dear Ms. Denae

In compliance with the State of Hawai'i Revised Statute (HRS) Chapter 343 Environmental Impact Statements Law, and in accordance with the State of Hawai'i Department of Health's Office of Environmental Quality Control (OEQC) Guidelines for Assessing Cultural Impacts as adopted by the Environmental Council, State of Hawai'i on November 19, 1997, Scientific Consultant Services, Inc. (SCS) is in the process of preparing a Cultural Impact Assessment (CIA) pertaining to proposed improvements at two existing well sites (Hamakuapoko Well Nos. 1 and 2). Each well site is located on approximately 0.25 acres of land in Hāmākuapoka Ahupua`a, District of Makawao, Maui Island [TMK: (2) 2-5-04:039 (por.)] (Figures 1 through 3). Well site 2 also includes a proposed adjacent new water tank.

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Enclosed are maps showing the proposed project areas. Please contact me at the Scientific Consultant Services, Honolulu, office at (808) 597-1182 or via e-mail (cathy@scshawaii.com) with any information or recommendations concerning this Cultural Impact Assessment.

Regards,

Cathleen Dagher
Senior Archaeologist

Enclosures (3)

Cc: Central Maui Hawaiian Civic Club; Raymond Hutaff, County of Maui Cultural Resources Commission; Perry Artates, County of Maui Cultural Resources Commission; Thelma Shimaoka, Maui Office of Hawaiian Affairs; Kamana`opono M. Crabbe, Chief Executive Officer, Office of Hawaiian Affairs; Hinano Rodrigues, State Historic Preservation Division, Maui; Jan Dapitan, community member; Patsy Shishido, community member; Lona Wilson, community member; Walter Ouye, community member, Paul Ueoka

Mr. Paul Ueoka and Mr. Noriyuki Ueoka
via e-mail (pmu@carlsmith.com)

September 4, 2012

Dear Mr. Ueoka and Mr. Ueoka:

In compliance with the State of Hawai'i Revised Statute (HRS) Chapter 343 Environmental Impact Statements Law, and in accordance with the State of Hawai'i Department of Health's Office of Environmental Quality Control (OEQC) Guidelines for Assessing Cultural Impacts as adopted by the Environmental Council, State of Hawai'i on November 19, 1997, Scientific Consultant Services, Inc. (SCS) is in the process of preparing a Cultural Impact Assessment (CIA) pertaining to proposed improvements at two existing well sites (Hamakuapoko Well Nos. 1 and 2). Each well site is located on approximately 0.25 acres of land in Hāmākuapoko Ahupua`a, District of Makawao, Maui Island [TMK: (2) 2-5-04:039 (por.)] (Figures 1 through 3). Well site 2 also includes a proposed adjacent new water tank.

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Enclosed are maps showing the proposed project areas. Please contact me at the Scientific Consultant Services, Honolulu, office at (808) 597-1182 or via e-mail (cathy@scshawaii.com) with any information or recommendations concerning this Cultural Impact Assessment.

Regards,

Cathleen Dagher
Senior Archaeologist
Enclosures (3)

August 14, 2012

Office of Hawaiian Affairs
33 Lono Ave. Suite 480
Kahului, Hawai'i 96732-1636

Dear Madam or Sir:

In compliance with the State of Hawai'i Revised Statute (HRS) Chapter 343 Environmental Impact Statements Law, and in accordance with the State of Hawai'i Department of Health's Office of Environmental Quality Control (OEQC) Guidelines for Assessing Cultural Impacts as adopted by the Environmental Council, State of Hawai'i on November 19, 1997, Scientific Consultant Services, Inc. (SCS) is in the process of preparing a Cultural Impact Assessment (CIA) pertaining to proposed improvements at two existing well sites (Hamakuapoko Well Nos. 1 and 2). Each well site is located on approximately 0.25 acres of land in Hāmākuapoko Ahupua`a, District of Makawao, Maui Island [TMK: (2) 2-5-04:039 (por.)] (Figures 1 through 3). Well site 2 also includes a proposed adjacent new water tank.

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Enclosed are maps showing the proposed project areas. Please contact me at the Scientific Consultant Services, Honolulu, office at (808) 597-1182 or via e-mail (cathy@scshawaii.com) with any information or recommendations concerning this Cultural Impact Assessment.

Sincerely,

Cathleen Dagher
Senior Archaeologist
Enclosures (3)

Cc: Central Maui Hawaiian Civic Club; Raymond Hutaff, County of Maui Cultural Resources Commission; Perry Artates, County of Maui Cultural Resources Commission; Kamana`o pono M. Crabbe, Chief Executive Officer, Office of Hawaiian Affairs; Hinano Rodrigues, State Historic Preservation Division, Maui

Kamana`opono M. Crabbe, Chief Executive Officer
Office of Hawaiian Affairs
711 Kapi`olani Blvd, Suite 500
Honolulu, Hawai`i 96813

July 26, 2012

Dear Mr. Crabbe:

In compliance with the State of Hawai`i Revised Statute (HRS) Chapter 343 Environmental Impact Statements Law, and in accordance with the State of Hawai`i Department of Health's Office of Environmental Quality Control (OEQC) Guidelines for Assessing Cultural Impacts as adopted by the Environmental Council, State of Hawai`i on November 19, 1997, Scientific Consultant Services, Inc. (SCS) is in the process of preparing a Cultural Impact Assessment (CIA) pertaining to proposed improvements at two existing well sites (Hamakuapoko Well Nos. 1 and 2). Each well site is located on approximately 0.25 acres of land in Hāmākuapoko Ahupua`a, District of Makawao, Maui Island [TMK: (2) 2-5-04:039 (por.)] (Figures 1 through 3). Well site 2 also includes a proposed adjacent new water tank.

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Enclosed are maps showing the proposed project areas. Please contact me at the Scientific Consultant Services, Honolulu, office at (808) 597-1182 or via e-mail (cathy@scshawaii.com) with any information or recommendations concerning this Cultural Impact Assessment.

Sincerely,

Cathleen Dagher
Senior Archaeologist
Enclosures (3)

Cc: Central Maui Hawaiian Civic Club; Raymond Hutaff, County of Maui Cultural Resources Commission; Perry Artates, County of Maui Cultural Resources Commission; Thelma Shimaoka, Maui Office of Hawaiian Affairs; Hinano Rodrigues, State Historic Preservation Division, Maui

Patsy Shishido
231 Holua Drive
Kahului, Hawai'i 96732

September 17, 2012

Dear Mrs. Shishido:

Thank you so much for agreeing to be interviewed for the Cultural Impact Assessment for the proposed improvements to the existing Hamakuapoko Wells Nos. 1 and 2. I have attached the formal letter of inquiry and associated maps, as we discussed today. Please let me know what would be a convenient time and date for us to meet and to conduct the interview.

Aloha,

Cathleen Dagher
Senior Archaeologist
Scientific Consultant Services, Inc.
711 Kapi`olani Blvd., Suite 975
Honolulu, Hi. 96813
808 597-1182 (office)
808 597-1193 (fax)

Patsy Shishido
231 Holua Drive
Kahului, Hawai'i 96732

September 17, 2012

Dear Mrs. Shishido:

In compliance with the State of Hawai'i Revised Statute (HRS) Chapter 343 Environmental Impact Statements Law, and in accordance with the State of Hawai'i Department of Health's Office of Environmental Quality Control (OEQC) Guidelines for Assessing Cultural Impacts as adopted by the Environmental Council, State of Hawai'i on November 19, 1997, Scientific Consultant Services, Inc. (SCS) is in the process of preparing a Cultural Impact Assessment (CIA) pertaining to proposed improvements at two existing well sites (Hamakuapoko Well Nos. 1 and 2). Each well site is located on approximately 0.25 acres of land in Hāmākuapoko Ahupua`a, District of Makawao, Maui Island [TMK: (2) 2-5-04:039 (por.)] (Figures 1 through 3). Well site 2 also includes a proposed adjacent new water tank.

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Regards,

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Senior Archaeologist
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Vincent Hinano Rodrigues
State Historic Preservation Division
Department of Land and Natural Resources Maui Office Annex,
130 Mahalani Street
Wailuku, Hawai'i 96793

July 26, 2012

Dear Mr. Rodrigues:

In compliance with the State of Hawai'i Revised Statute (HRS) Chapter 343 Environmental Impact Statements Law, and in accordance with the State of Hawai'i Department of Health's Office of Environmental Quality Control (OEQC) Guidelines for Assessing Cultural Impacts as adopted by the Environmental Council, State of Hawai'i on November 19, 1997, Scientific Consultant Services, Inc. (SCS) is in the process of preparing a Cultural Impact Assessment (CIA) pertaining to proposed improvements at two existing well sites (Hamakuapoko Well Nos. 1 and 2). Each well site is located on approximately 0.25 acres of land in Hāmākuapoko Ahupua`a, District of Makawao, Maui Island [TMK: (2) 2-5-04:039 (por.)] (Figures 1 through 3). Well site 2 also includes a proposed adjacent new water tank.

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Senior Archaeologist
Enclosures (3)

Cc: Central Maui Hawaiian Civic Club; Raymond Hutaff, County of Maui Cultural Resources Commission; Perry Artates, County of Maui Cultural Resources Commission; Thelma Shimaoka, Maui Office of Hawaiian Affairs; Kamana`opono M. Crabbe, Chief Executive Officer, Office of Hawaiian Affairs

APPENDIX B: LEGAL NOTICES

CULTURAL IMPACT ASSESSMENT NOTICE POSTED IN THE OFFICE OF HAWAIIAN AFFAIRS NEWSLETTER (KA Wai OLA NEWSPAPER), MAUI NEWS, AND IN THE STAR-ADVERTISER NEWSPAPER

Information requested by Scientific Consultant Services, Inc. (SCS) on cultural resources or on-going cultural activities on or near the proposed Hamakua Well Sites 1 & 2, Hāmākuapoko Ahupua`a, Makawao District Maui Island, Hawai`i [TMK: (2) 2-5-004: 039, por.]. Please respond within 30 days to Cathleen Dagher at (808) 597-1182

1310

AFFIDAVIT OF PUBLICATION

STATE OF HAWAII, }
County of Maui. } ss.

Rhonda M. Kurohara 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 _____

Information on cultural resources or
on-going cultural activities

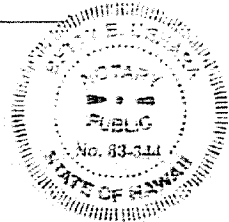
of which the annexed is a true and correct printed notice, was
published 3 times in THE MAUI NEWS, aforesaid, commencing
on the 25th day of July, 2012, and ending
on the 29th day of July, 2012, (both days
inclusive), to-wit: on _____
July 25, 26, 29, 2012

and that affiant is not a party to or in any way interested in the above
entitled matter.

Rhonda M. Kurohara

This 1 page Information on cultural resources, dated
July 25, 26, 29, 2012,
was subscribed and sworn to before me this 30th day of
July, 2012, in the Second Circuit of the State of Hawaii,
by Rhonda M. Kurohara

Benny E. Kurohara
Notary Public, Second Judicial
Circuit, State of Hawaii
BENNY E. KUROHARA
My Commission Expires 09-20-13



Information requested by Scientific
Consultant Services, Inc. (SCS) on
cultural resources on ongoing cultural
activities on or near the proposed
Himakua Wall Sites 1 & 2, Himakua
Ahupua'a, Makawao District, Maui
Island, Hawaii. TMBE (2) 2-5-004
0096.ppt
Please respond within 30 days to
Cathleen Dwyer at (808) 597-1182.
(MN: July 25, 26, 29, 2012)

TO: Suzanna Baker
FAX#/EMAIL: 597-1193
CONTACT #: 597-1182
DATE: 7/20/12
ACCOUNT #: 59454
FROM: Star-Advertiser/MidWeek-Legal Advertising Dept.

FAX: 808-529-4829

- Lisa Kaukani (808-529-4344)**
Email: lkaukani@staradvertiser.com
- Rose Rosales (808-529-4825)**
Email: rrosales@staradvertiser.com

CULTURAL IMPACT ASSESSMENT NOTICE

Information requested by Scientific Consultant Services, Inc. (SCS) on cultural resources or on-going cultural activities on or near the proposed Hamakua Well Sites 1 & 2, Hamakua Ahupua'a, Makawao District Maui Island, Hawai'i [TMK: (2) 2-5-004: 039, por.]. Please respond within 30 days to Cathleen Dagher at (808) 597-1182 (SA436863 7/25, 7/26, 7/29/12)

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Honolulu Star-Advertiser/Midweek
500 Ala Moana Blvd., 7 Waterfront Plaza, Ste. 500
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Oahu Publications, Inc. will not be responsible for any errors, typographical or otherwise, once the proof has been approved and signed by the customer.

**rev 7/20*

Received Time Jul.20. 3:25PM

APPENDIX C: FOLLOW-UP LETTERS

Vincent Hinano Rodrigues
State Historic Preservation Division
Department of Land and Natural Resources Maui Office Annex
130 Mahalani Street
Wailuku, Hawai`i 96793

August 16, 2012

Dear Mr. Rodrigues:

This is our follow-up letter to our July 26, 2012 letter which was in compliance with the statutory requirements of the State of Hawai`i Revised Statute (HRS) Chapter 343 Environmental Impact Statements Law, and in accordance with the State of Hawai`i Department of Health's Office of Environmental Quality Control (OEQC) Guidelines for Assessing Cultural Impacts as adopted by the Environmental Council, State of Hawai`i, on November 19, 1997.

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We are asking you for any information that might contribute to the knowledge of traditional activities, or traditional rights that might be impacted by the construction of the proposed improvements in the area of the two wells. The assessment results are dependent on the response and contributions made by organizations such as the State Historic Preservation Division.

Please contact me at the Scientific Consultant Services, Honolulu, office at (808) 597-1182 or via e-mail (cathy@scshawaii.com) with any information or recommendations concerning this Cultural Impact Assessment.

Sincerely,

Cathleen Dagher

Senior Archaeologist

Cc: Central Maui Hawaiian Civic Club; Raymond Hutaff, County of Maui Cultural Resources Commission; Perry Artates, County of Maui Cultural Resources Commission; Thelma Shimaoka, Maui Office of Hawaiian Affairs; Kamana`opono M. Crabbe, Chief Executive Officer, Office of Hawaiian Affairs

Central Maui Hawaiian Civic Club
P.O. Box 1493
Wailuku, Hawai'i 96793

August 16, 2012

Dear Sir or Madam:

This is our follow-up letter to our July 26, 2012 letter which was in compliance with the statutory requirements of the State of Hawai'i Revised Statute (HRS) Chapter 343 Environmental Impact Statements Law, and in accordance with the State of Hawai'i Department of Health's Office of Environmental Quality Control (OEQC) Guidelines for Assessing Cultural Impacts as adopted by the Environmental Council, State of Hawai'i, on November 19, 1997.

Scientific Consultant Services, Inc. (SCS) is in the process of preparing a Cultural Impact Assessment (CIA) pertaining to proposed improvements at two existing well sites (Hamakuapoko Well Nos. 1 and 2). Each well site is located on approximately 0.25 acres of land in Hāmākuapoko Ahupua`a, District of Makawao, Maui Island[TMK: (2) 2-5-04:039 (por.)]. Well site 2 also includes a proposed adjacent new water tank.

Scientific Consultant Services has conducted an Archaeological Field Inspection of the two well sites (Letter Report from SCS archaeologist David Perzinski, B.A., to Jenny Pickett, State Historic Preservation Division Assistant Maui Archaeologist, dated June 12, 2012) in order to determine the presence of archaeological cultural materials. No cultural materials were encountered during the Field Inspection.

We are asking you for any information that might contribute to the knowledge of traditional activities, or traditional rights that might be impacted by the construction of the proposed improvements in the area of the two wells. The assessment results are dependent on the response and contributions made by organizations such as the Central Maui Hawaiian Civic Club.

Please contact me at the Scientific Consultant Services, Honolulu, office at (808) 597-1182 or via e-mail (cathy@scshawaii.com) with any information or recommendations concerning this Cultural Impact Assessment.

Sincerely,

Cathleen Dagher
Senior Archaeologist

Cc: Hinano Rodrigues, State Historic Preservation Division, Maui; Raymond Hutaff, County of Maui Cultural Resources Commission; Perry Artates, County of Maui Cultural Resources Commission; Thelma Shimaoka, Maui Office of Hawaiian Affairs; Kamana`opono M. Crabbe, Chief Executive Officer, Office of Hawaiian Affairs

Raymond Hutaff
C/O County of Maui Cultural Resources Commission
250 South High Street
Wailuku, Hawai`i 96793

August 16, 2012

Dear M. Hutaff:

This is our follow-up letter to our July 26, 2012 letter which was in compliance with the statutory requirements of the State of Hawai`i Revised Statute (HRS) Chapter 343 Environmental Impact Statements Law, and in accordance with the State of Hawai`i Department of Health's Office of Environmental Quality Control (OEQC) Guidelines for Assessing Cultural Impacts as adopted by the Environmental Council, State of Hawai`i, on November 19, 1997.

Scientific Consultant Services, Inc. (SCS) is in the process of preparing a Cultural Impact Assessment (CIA) pertaining to proposed improvements at two existing well sites (Hamakuapoko Well Nos. 1 and 2). Each well site is located on approximately 0.25 acres of land in Hāmākuapoko Ahupua`a, District of Makawao, Maui Island[TMK: (2) 2-5-04:039 (por.)]. Well site 2 also includes a proposed adjacent new water tank.

Scientific Consultant Services has conducted an Archaeological Field Inspection of the two well sites (Letter Report from SCS archaeologist David Perzinski, B.A., to Jenny Pickett, State Historic Preservation Division Assistant Maui Archaeologist, dated June 12, 2012) in order to determine the presence of archaeological cultural materials. No cultural materials were encountered during the Field Inspection.

We are asking you for any information that might contribute to the knowledge of traditional activities, or traditional rights that might be impacted by the construction of the proposed improvements in the area of the two wells. The assessment results are dependent on the response and contributions made by organizations such as the County of Maui Cultural Resources Commission.

Please contact me at the Scientific Consultant Services, Honolulu, office at (808) 597-1182 or via e-mail (cathy@scshawaii.com) with any information or recommendations concerning this Cultural Impact Assessment.

Sincerely,

Cathleen Dagher
Senior Archaeologist

Cc: Central Maui Hawaiian Civic Club; Perry Artates, County of Maui Cultural Resources Commission; Kamana`opono M. Crabbe, Chief Executive Officer, Office of Hawaiian Affairs; Hinano Rodrigues, State Historic Preservation Division, Maui; Thelma Shimaoka, Maui Office of Hawaiian Affairs

Perry Artates
C/O County of Maui Cultural Resources Commission
250 South High Street
Wailuku, Hawai'i 96793

August 16, 2012

Dear Mr. Artates:

This is our follow-up letter to our July 26, 2012 letter which was in compliance with the statutory requirements of the State of Hawai'i Revised Statute (HRS) Chapter 343 Environmental Impact Statements Law, and in accordance with the State of Hawai'i Department of Health's Office of Environmental Quality Control (OEQC) Guidelines for Assessing Cultural Impacts as adopted by the Environmental Council, State of Hawai'i, on November 19, 1997.

Scientific Consultant Services, Inc. (SCS) is in the process of preparing a Cultural Impact Assessment (CIA) pertaining to proposed improvements at two existing well sites (Hamakuapoko Well Nos. 1 and 2). Each well site is located on approximately 0.25 acres of land in Hāmākuapoko Ahupua`a, District of Makawao, Maui Island[TMK: (2) 2-5-04:039 (por.)]. Well site 2 also includes a proposed adjacent new water tank.

Scientific Consultant Services has conducted an Archaeological Field Inspection of the two well sites (Letter Report from SCS archaeologist David Perzinski, B.A., to Jenny Pickett, State Historic Preservation Division Assistant Maui Archaeologist, dated June 12, 2012) in order to determine the presence of archaeological cultural materials. No cultural materials were encountered during the Field Inspection.

We are asking you for any information that might contribute to the knowledge of traditional activities, or traditional rights that might be impacted by the construction of the proposed improvements in the area of the two wells. The assessment results are dependent on the response and contributions made by organizations such as the County of Maui Cultural Resources Commission.

Please contact me at the Scientific Consultant Services, Honolulu, office at (808) 597-1182 or via e-mail (cathy@scshawaii.com) with any information or recommendations concerning this Cultural Impact Assessment.

Sincerely,

Cathleen Dagher

Senior Archaeologist

Cc: Central Maui Hawaiian Civic Club; Raymond Hutaff, County of Maui Cultural Resources Commission; Kamana`opono M. Crabbe, Chief Executive Officer, Office of Hawaiian Affairs; Hinano Rodrigues, State Historic Preservation Division, Maui; Thelma Shimaoka, Maui Office of Hawaiian Affairs

Mr. Kepa Maly
Kupuna@hoakaleifoundation.org

October 16, 2012

Dear Mr. Maly:

This is our follow-up letter to our September 12, 2012 letter which was in compliance with the statutory requirements of the State of Hawai'i Revised Statute (HRS) Chapter 343 Environmental Impact Statements Law, and in accordance with the State of Hawai'i Department of Health's Office of Environmental Quality Control (OEQC) Guidelines for Assessing Cultural Impacts as adopted by the Environmental Council, State of Hawai'i, on November 19, 1997.

Scientific Consultant Services, Inc. (SCS) is in the process of preparing a Cultural Impact Assessment (CIA) pertaining to proposed improvements at two existing well sites (Hamakuapoko Well Nos. 1 and 2). Each well site is located on approximately 0.25 acres of land in Hāmākuapoko Ahupua`a, District of Makawao, Maui Island [TMK: (2) 2-5-04:039 (por.)]. Well site 2 also includes a proposed adjacent new water tank.

Scientific Consultant Services has conducted an Archaeological Field Inspection of the two well sites (Letter Report from SCS archaeologist David Perzinski, B.A., to Jenny Pickett, State Historic Preservation Division Assistant Maui Archaeologist, dated June 12, 2012) in order to determine the presence of archaeological cultural materials. No cultural materials were encountered during the Field Inspection.

We are asking you for any information that might contribute to the knowledge of traditional activities, or traditional rights that might be impacted by the construction of the proposed improvements in the area of the two wells. The assessment results are dependent on the response and contributions made by organizations such as the State Historic Preservation Division.

Please contact me at the Scientific Consultant Services, Honolulu, office at (808) 597-1182 or via e-mail (cathy@scshawaii.com) with any information or recommendations concerning this Cultural Impact Assessment.

Sincerely,

Cathleen Dagher
Senior Archaeologist

Cc: Central Maui Hawaiian Civic Club; Raymond Hutaff, County of Maui Cultural Resources Commission; Perry Artates, County of Maui Cultural Resources Commission; Thelma Shimaoka, Maui Office of Hawaiian Affairs; Kamana`opono M. Crabbe, Chief Executive Officer, Office of Hawaiian Affairs; Vincent Hinano Rodrigues, State Historic Preservation Division; Patsy Shishido, community member; Leona Wilson, community member; Paul Ueoka, community member; Lucienne de Naie, community member; Aimoku Pali, community member; Brian McAfferty, community member

Thelma Shimaoka
Office of Hawaiian Affairs
33 Lono Ave. Suite 480
Kahului, Hawai'i 96732-1636

August 16, 2012

Dear Ms. Shimaoka:

This is our follow-up letter to our July 26, 2012 letter which was in compliance with the statutory requirements of the State of Hawai'i Revised Statute (HRS) Chapter 343 Environmental Impact Statements Law, and in accordance with the State of Hawai'i Department of Health's Office of Environmental Quality Control (OEQC) Guidelines for Assessing Cultural Impacts as adopted by the Environmental Council, State of Hawai'i, on November 19, 1997.

Scientific Consultant Services, Inc. (SCS) is in the process of preparing a Cultural Impact Assessment (CIA) pertaining to proposed improvements at two existing well sites (Hamakuapoko Well Nos. 1 and 2). Each well site is located on approximately 0.25 acres of land in Hāmākuapoko Ahupua`a, District of Makawao, Maui Island[TMK: (2) 2-5-04:039 (por.)]. Well site 2 also includes a proposed adjacent new water tank.

Scientific Consultant Services has conducted an Archaeological Field Inspection of the two well sites (Letter Report from SCS archaeologist David Perzinski, B.A., to Jenny Pickett, State Historic Preservation Division Assistant Maui Archaeologist, dated June 12, 2012) in order to determine the presence of archaeological cultural materials. No cultural materials were encountered during the Field Inspection.

We are asking you for any information that might contribute to the knowledge of traditional activities, or traditional rights that might be impacted by the construction of the proposed improvements in the area of the two wells. The assessment results are dependent on the response and contributions made by organizations such as the Office of Hawaiian Affairs.

Please contact me at the Scientific Consultant Services, Honolulu, office at (808) 597-1182 or via e-mail (cathy@scshawaii.com) with any information or recommendations concerning this Cultural Impact Assessment.

Sincerely,

Cathleen Dagher
Senior Archaeologist

Cc: Central Maui Hawaiian Civic Club; Raymond Hutaff, County of Maui Cultural Resources Commission; Perry Artates, County of Maui Cultural Resources Commission; Kamana`opono M. Crabbe, Chief Executive Officer, Office of Hawaiian Affairs; Hinano Rodrigues, State Historic Preservation Division, Maui

Kamana`opono M. Crabbe, Chief Executive Officer
Office of Hawaiian Affairs
711 Kapi`olani Blvd, Suite 500
Honolulu, Hawai`i 96813

August 16, 2012

Dear Mr. Crabbe:

This is our follow-up letter to our July 26, 2012 letter which was in compliance with the statutory requirements of the State of Hawai`i Revised Statute (HRS) Chapter 343 Environmental Impact Statements Law, and in accordance with the State of Hawai`i Department of Health's Office of Environmental Quality Control (OEQC) Guidelines for Assessing Cultural Impacts as adopted by the Environmental Council, State of Hawai`i, on November 19, 1997.

Scientific Consultant Services, Inc. (SCS) is in the process of preparing a Cultural Impact Assessment (CIA) pertaining to proposed improvements at two existing well sites (Hamakuapoko Well Nos. 1 and 2). Each well site is located on approximately 0.25 acres of land in Hāmākuapoko Ahupua`a, District of Makawao, Maui Island[TMK: (2) 2-5-04:039 (por.)]. Well site 2 also includes a proposed adjacent new water tank.

Scientific Consultant Services has conducted an Archaeological Field Inspection of the two well sites (Letter Report from SCS archaeologist David Perzinski, B.A., to Jenny Pickett, State Historic Preservation Division Assistant Maui Archaeologist, dated June 12, 2012) in order to determine the presence of archaeological cultural materials. No cultural materials were encountered during the Field Inspection.

We are asking you for any information that might contribute to the knowledge of traditional activities, or traditional rights that might be impacted by the construction of the proposed improvements in the area of the two wells. The assessment results are dependent on the response and contributions made by organizations such as the Office of Hawaiian Affairs.

Please contact me at the Scientific Consultant Services, Honolulu, office at (808) 597-1182 or via e-mail (cathy@scshawaii.com) with any information or recommendations concerning this Cultural Impact Assessment.

Sincerely,

Cathleen Dagher

Senior Archaeologist

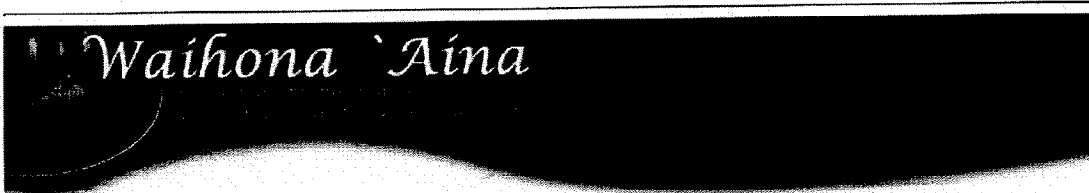
Cc: Central Maui Hawaiian Civic Club; Raymond Hutaff, County of Maui Cultural Resources Commission; Perry Artates, County of Maui Cultural Resources Commission; Thelma Shimaoka, Maui Office of Hawaiian Affairs; Hinano Rodrigues, State Historic Preservation Division, Maui

APPENDIX D: LAND GRANTS



[Print](#)

Subject: Grant 764 revised - Vicki
From: Vicki Creed <WaihonaA001@hawaii.rr.com>
Sent: Saturday, September 15, 2012 5:00:46 PM
To: cathy@scshawaii.com



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Land Grants Documents [vicki](#) | [log out](#)

Date Last Modified: 9/15/2012 4:59:18 PM EST

Basic

Island	Maui	LG	00764
Grantee	Wood, Robert	District	Hamakuapoko, Makawae
Ahupua'a	Hamakuapoko	Source Book	5
Acreage	24.61	Acres/Feet	Acs
Cancelled:(check)	<input type="checkbox"/>	Report Year	1852
TMK	2-2-5-04	Miscellaneous	

Document Text Body

No. 764, Wood, Robert W., Hamakuapoko Ahupuaa, District of Hamakuapoko, Island of Maui, Vol. 4, pps. 361-364 [LG Reel 2, 00452-00456.tif]

Helu 764
Palapala Sila Nui

Ma keia palapala Sila Nui ke hoike aku nei o Kamehameha III, ke Alii nui a ke Akua i kona lokomaikai i hoono ho ai maluna o ko Hawaii Pae Aina, i na kanaka a pau, i keia la, nona iho, a no kona mau hope Alii, ua haawi lilo loa aku oia ma ke ano alodio ia Robert W. Wood, he Kanaka no Amerika Huijuiia i kela apana aina a pau e waiho la ma Hamakuapoko ma ka Mokupuni o Maui, a penei hoi ka waiho ana o na Mokuna:

E hoomaka ma ke kahi Hikina Hema, mawaena konu o ke awawa o Maliko, a e holo
Hema 59° Komohana 43.50 Kaulahao ma ka palena makai o ko J. Richardson aina mamua a i ke kumu o ka awawa o
Ekahanui alaila holo ika i ma kae pali o la awawa penei;
Akau 20° Komohana 9.83 Kaulahao
Akau 73 1/4° Komohana 14.95 Kaulahao
Akau 16 1/2° Komohana 9.42 Kaulahao a
Akau 49 1/2° Komohana 3.30 Kaulahao a i ke kahi Komohana o keia alaila
Akau 59° Hikina 51.60 Kaulahao a hiki iwaena konu o Maliko
Hema 23 3/4° Hikina 7.45 Kaulahao
Hema 1° Hikina 9.50 Kaulahao
Hema 14° Komohana 6 Kaulahao a

Hema 50 1/2° Hikina 14.35 Kaulahao a hiki i kahi i hoomaka'i.

[page 362]

a maloko o ia Apana 150 eka a oi iki aku, emi iki mai paha.

Eia ke kumu o ka lilo ana; ua haawi mai oia iloko o ka waihona waiwai o ke Aupuni i (\$1500.00). Aka, ua koe i ke Aupuni na mine minerala a me na mine metala a pau.

No Robert W. Wood, ua aina la i haawiia, nona mau loa aku no, ma ke ano alodio, a no kona mau hooilina, a me kona waihona, ua pili nae ka auhau a ka Poe Ahaoiolo e kau like ai ma na aina alodio a pau i kela manawa i keia manawa: Eia nae keia, ua haawiia keia aina mamuli o keia kumu paa loa, ina i puka mai ka hihia no keia aina mahope, no ke kuleana o kekahi a me kekahi paha iloko o keia aina, e haawi o ua Robert W. Wood a o kona hooilina, hooke kauoha, hoopono pono waiwai paha, na ke Aupuni Hawaii e hoopono pono kela hihia iloko o kona mau Ahahookolokolo, a ua paa na mea i holo iloko olaila; aole loa e hoopii i ka Aupuni e a i na Luna o ke Aupuni e paha, nana e hoopono pono; a ina hooile oia, a o lakou paha, aole e hana pela, alaila, o kona kuleana, a o lakou kuleana paha a pau loa iloko o ua aina nei, ua pau ia, pau loa, aole ona kuleana i hoe, a e hoihoila ua aina la i ke Aupuni Hawaii

A i mea e ikeai, ua kau wau i ko'u inoa, a me ka Sila Nui o ko Hawaii Pae Aina ma Honolulu i keia la 26 o Ianuari, 1852.

(Inoa) Kamehameha
(Inoa) Keoni Ana

[page 363]

No. 764
Royal Patent

Kamehameha III, By the grace of God, King of the Hawaiian Islands, by this his Royal Patent, makes known unto all men, that he has for himself and his successors in office, this day granted and given, absolutely, in Fee Simple unto Robert W. Wood, a citizen of the United States of America for the consideration of One Thousand Five Hundred Dollars, (\$1,500) paid into the Royal Exchequer, all that certain piece of land, situated at Hamakuapoko in the Island of Maui, and described as follows:

Commencing at the bottom of Maliko Gulch at the South East corner of this land, and running South 59° West 43.50 chains along makai boundary of land formerly owned by J. Richardson to head of Ekahanui Gulch. Thence seaward along brink of said gulch North 20° West 9.83 chains and North 73 1/4° West 14.95 chains, and North 16 1/2° West 9.42 chains, and North 49 1/2° West 3.30 chains to West corner of this lot, and makai boundary. Thence North 59° East 57.60 chains to bottom of Maliko Gulch, forming the makai boundary of this land. Thence mauka along bottom of Maliko Gulch South 23 3/4° East 7.45 chains and South 1° East 9.50 chains, and South 14° West 6 chains, and South 50 1/2° East 14.35 chains to point of commencement.

Reserving the Rights of Native Tenants.

[Insert]

Treasury Office, 27th of January 1852

Received of R. W. Wood the sum of Fifteen hundred dollars for school land as per Patent No. 764 ~~and four dollars, the fees of patenting.~~

R. Armstrong, ~~For Minister of Finance~~ Minister of Public Instruction

[End of Insert]

[Page 364]

Containing 150 Acres, more or less: excepting and reserving to the Hawaiian Government, all mineral or metallic Mines of every description.

To have and to hold the above granted Land in Fee Simple, unto the said Robert W. Wood, his Heirs and Assigns forever, subject to the taxes to be from time to time imposed by the Legislative Council equally upon all landed Property

held in Fee Simple: Provided always, and this grant is made upon the express condition, that the said Robert W. Wood his Heirs, Executors or Administrators shall, in all cases of dispute in relation to his or their rights, title or interest in the land hereby granted or any part or parcel thereof, submit the same to the judicial tribunals of the Hawaiian Kingdom, and abide by the final decisions of those tribunals, without seeking the intervention of any Foreign Nation or Representative; and in case he or they shall refuse so to do, his and their estate therein and all of his and their rights, title and interest therein, shall cease and determine, and the same shall be immediately forfeited and escheat to the Hawaiian Government.

In witness whereof, I have hereunto set my Hand, and caused the Great Seal of the Hawaiian Islands to be affixed, at Honolulu, this 26 day of January, 1852.

(Signed) Kamehameha
(Signed) Keoni Ana

[Land Patent Grant No. 764, Wood, Robert W., Hamakuapoko Ahupuaa, District of Hamakuapoko, Island of Maui, 150 Acres, 1852]

--

Vicki Creed
Waihona Aina
Kailua, Hawaii
Phone: (808) 261-8822
Fax: (808) 363-4950
E-Mail: WaihonaA001@hawaii.rr.com

Waihona Aina

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for hawaiian history and land use

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DOCUMENT DELIVERY

Land Grants Documents

Grant Number(LG)	<u>187</u>	Source Book:	<u>1</u>
Grantee:	<u>Richardson, John</u>	Acreage::	<u>150.3 Accs</u>
Ahupua`a	<u>Pauwela</u>	Year	<u>1849</u>
District:	<u>Hamakuapoko, Makawao</u>	Cancelled	<u>False</u>
Island	<u>Maui</u>	TMK	<u>2-2-5-04</u>

Miscellaneous

No. 187, Richardson, John, Hamakuapoko Ahupuaa, District of Hamakuapoko (Makawao), Island of Maui, Vol. 1, pps. 344-345 [LG Reel 1, 00398-00399.tif]

No. 187

Royal Patent

Kamehameha III, By the Grace of God, King of the Hawaiian Islands, by this Royal Patent, makes known, unto all men, that he has for himself and his successors in office, this day granted and given, absolutely, in Fee Simple unto John Richardson, his faithful and loyally disposed subject for the consideration of Seventy five 15/100 Dollars {\$75.15}, paid into the Royal Exchequer, all that certain piece of Land situated at

Hamakuapoko in the Island of Maui and described as follows:

Commencing at stone at the North East corner of William Crowningburgs land on top of the West bank of big gulch, and running
South 58° 30' West 1,369 links, thence
South 51° 21' West 1,631 links to stone, thence
North 48° West 4,000 links to large Kukui tree, thence
North 59° East 6,200 links to a stone on top edge of big gulch aforesaid, thence following along edge of the bank of said gulch
South 19° 45' East 820 links
South 28° 30' West 300 links
South 30° West 700 links
South 15° 30' East 2,000 links
South 31° 10' West 675 links to first mentioned point.

The rights of native tenants reserved.

Containing 150 3/10 Acres, more or less, excepting and reserving to the Hawaiian Government, all mineral or metallic mines of every description.

To have and to hold the above granted Land in Fee Simple, unto the said John Richardson & his Hawaiian, Heirs and Assigns forever, subject to the taxes to be from time to time imposed by the Legislative Council equally, upon all landed Property held in Fee Simple.

In Witness whereof, I have hereunto set my Hand, and caused the Great Seal of the Hawaiian Islands to be affixed, at Honolulu, this 21 day of December, 1849

Received of John Richardson the sum of \$75, 12 1/2 for land as above
Treasury Office, March 11, 1850
For the Minister of Finance, William Jarrett

[Page 345]

Helu 187

Palapala Sila Nui

Ma keia palapala sila nui ke hoi ke aku nei o Kamehameha III, ke Alii nui a ke Akua i kona lokomaikai i hoono ho ai maluna o ko Hawaii Pae Aina, i na kanaka a pau, i keia la, nona iho; a no kona mau hope alii, ua haawi lilo loa aku oia ma ko ano alodio ia Ioane Richardson i kona wahi kanaka i manao pono ia ia i kela apana aina a pau e waiho la ma Hamakuapoko, Pauwela ma ka Mokupuni o Maui, a penei hoi ka waiho ana o na Mokuna.

E hoomaka ma ka pohaku ma ke kihi Hikina Akau o ka aina no William Crowningburg maluna o ka lihi Komohana o ke awawa nui, a e holo ana
Hema 58° 30' Komohana 1,369 pauku, Alaila
Hema 5° 21' Komohana 1,631 pauku a hiki i ka pohaku, Alaila
Akau 48° Komohana 4,000 pauku a hiki i ka Laau kukui nui, Alaila
Akau 59° Hikina 6,200 pauku a hiki i ka pohaku maluna o ka lihi o ke awawa nui i oleloia, Alaila ma ka lihi o ke awawa i oleloia penei
Hema 19° 45' Hikina 820 pauku
Hema 28° 30' Komohana 300 pauku
Hema 30° Komohana 700 pauku
Hema 15° 30' Hikina 2,000 pauku
Hema 31° 10' Komohana 675 pauku a hiki i kahi i hoomaka'i.

Ua koe ke Kuleana o na kanaka e noho nei, aole lilo

A maloko o ia Apana 150 3/10 eka a oi iki aku, emi iki mai paha.
Eia ke kumu o ka lilo ana; ua haawi mai oia iloko o ka waihona waiwai o ke Aupuni i na Dala he Kanahikukumamailima 15/100. Aka, ua koe i ke Aupuni na mine minerala a me na mine metala a pau.

No Ioane Richardson, ua aina la i haawiia, no na mau loa aku no, ma ke ano alodio, a me ko na mau hooilina, a me ko na waihona, ua pili nae ka auhau a ka Poe Ahaolelo e kau like ai ma na aina alodio a pau i kela manawa i keia manawa.

A i mea e ikeai ua kau wau i ko'u inoa, a me ka sila nui o ko Hawaii Pae Aina ma Honolulu i keia la 21 o

Dekemaba, 1849.

(Inoa) Kamehameha
(Inoa) Keoni ana

[Land Patent Grant No. 187, Richardson, John, Pauwela Ahupuaa, District of Hamakuapoko (Makawao), Island of Maui, 150.15 Acre, 1849]

APPENDIX J.

Water Quality Testing Results for Hamakuapoko Well Nos. 1 and 2 and GAC Treated Water

Sampling Location	DBCP	EDB	TCP	Nitrate as Nitrogen	
	ug/L	ug/L	ug/L	mg/L	
Hamakuapoko # 1	01/20/99	0.03	ND	0.59	4.8
	02/17/99	0.04	ND	0.75	5.4
	02/24/99	0.04	ND	0.87	5.0
	09/23/99	ND	ND	ND	-
	02/01/00	ND	ND	ND	5.9
	03/23/00	0.03	ND	0.49	4.4
	03/30/00	0.03	ND	0.40	3.9
	05/03/00	0.03	ND	0.50	3.3
	05/22/00	0.03	ND	0.40	3.5
	06/05/01	0.026	ND	0.50	4.2
	07/03/01	0.25	ND	0.56	4.8
	10/24/2002	0.23	ND	0.59	5.1
	11/26/2002	ND	ND	ND	5.0
	6/2/2003	ND	ND	0.47	3.6
	10/28/2003	0.018	0.037	0.38	3.4
	9/9/2004	0.029	ND	0.44	4.2
	10/6/2004	ND	ND	0.34	3.5
	10/25/2004	-	-	-	3.8
	Hamakuapoko # 2	01/20/99	0.26	0.12	0.45	3.9
02/17/99		0.24	0.11	0.37	5.7
02/24/99		0.22	0.1	0.34	5.5
09/23/99		ND	ND	ND	-
02/01/00		ND	ND	ND	6.78
03/23/00		0.27	0.09	0.39	5.95
03/30/00		0.30	0.10	0.40	6.61
05/03/00		0.25	0.08	0.40	5.10
05/22/00		0.26	0.09	0.40	5.69
03/02/01		0.25	0.10	0.40	5.46
06/05/01		0.23	0.07	0.37	5.42
07/03/01		0.39	0.10	0.46	6.1
10/28/2003		0.19	0.05	0.34	5.3
9/9/2004		0.18	ND	0.31	4.9
10/6/2004		0.17	ND	0.30	3.5
10/25/2004	-	-	-	5.2	

Sampling Location	DBCP	EDB	TCP			DBCP	EDB	TCP	
	ug/L	ug/L	ug/L			ug/L	ug/L	ug/L	
GAC Contactor-50% Bed Depth				GAC Contactor-75% Bed Depth					
	03/23/00	ND	ND	ND		03/23/00	ND	ND	ND
	03/30/00	ND	ND	ND		03/30/00	ND	ND	ND
	05/03/00	ND	ND	ND		05/03/00	ND	ND	ND
	05/22/00	ND	ND	ND		05/22/00	ND	ND	ND
	03/02/01	ND	ND	ND		03/02/01	ND	ND	ND
	06/05/01	ND	ND	ND		06/05/01	ND	ND	ND
	07/03/01	ND	ND	ND		07/03/01	ND	ND	ND
	06/02/03	ND	ND	ND		06/02/03	ND	ND	ND
	10/28/03	ND	ND	0.10		10/28/03	ND	ND	0.11
	10/6/2004	ND	ND	ND		10/6/2004	ND	ND	ND
	10/25/04	ND	ND	ND		10/25/04	ND	ND	ND
GAC Contactor #1 Effluent				GAC Contactor #2 Effluent					
	10/19/1999	ND	ND	ND		10/19/1999	ND	ND	ND
	11/10/1999	ND	ND	ND		11/10/1999	ND	ND	ND
	1/3/2000	ND	ND	ND		1/3/2000	ND	ND	ND
	3/23/2000	ND	ND	ND		3/23/2003	ND	ND	ND
	3/30/2000	ND	ND	ND		3/30/2003	ND	ND	ND
	5/3/2000	ND	ND	ND		5/3/2000	ND	ND	ND
	5/22/2000	ND	ND	ND		5/22/2000	ND	ND	ND
	3/2/2001	ND	ND	ND		3/2/2001	ND	ND	ND
	6/5/2001	ND	ND	ND		6/5/2001	ND	ND	ND
	7/3/2001	ND	ND	ND		7/3/2001	ND	ND	ND
	6/2/2003	ND	ND	ND		6/2/2003	ND	ND	ND
	10/28/2003	ND	ND	ND		10/28/2003	ND	ND	0.082
	10/6/2004	ND	ND	ND		10/6/2004	ND	ND	ND
	10/25/2004	ND	ND	ND		10/25/2004	ND	ND	ND

Sampling Location	DBCP ug/L	EDB ug/L	TCP ug/L	Nitrate as Nitrogen mg/L
GAC Contactor Combined Effluent				
09/23/99	ND	ND	ND	
03/23/00	ND	ND	ND	5.45
03/30/00	ND	ND	ND	2.35
05/03/00	ND	ND	ND	4.42
05/22/00	ND	ND	ND	4.67
03/02/01	ND	ND	ND	5.35
06/05/01	ND	ND	ND	4.62
07/03/01	ND	ND	ND	5.20
06/02/03	ND	ND	ND	-
10/28/03	ND	ND	ND	4.30
9/9/2004	ND	ND	ND	4.6
10/6/2004	ND	ND	ND	4.0
Kamole Weir-Vault C				
09/23/99				
03/23/00				
03/30/00				
05/03/00				
05/22/00				
03/02/01				
06/05/01				
07/03/01				
9/9/2004	ND	ND	0.06	1.00
10/6/2004	ND	ND	ND	1.6
	MCL (ug/L)			
DBCP = 1,2-Dibromo-3-Chloropropane	0.04			
EDB = Ethylene Dibromide	0.04			
TCP = 1,2,3-Trichloropropane	0.6			
ug/L = micrograms/Liter = parts per billion				
mg/L = milligrams/Liter = parts per million				