DEPARTMENT OF WATER
County of Kaual

"Water has no Substitute – Conserve It!"

March 1, 2000

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OFC. OF ENVIRONMENTAL QUALITY CONTROL

Ms. Genevieve Salmonson, Director
Office of Environmental Quality Control
State of Hawaii
235 South Beretania Street
Room 702
Honolulu, Hawaii 96813

Dear Ms. Salmonson:

Subject: **FINDING OF NO SIGNIFICANT IMPACT (FONSI) FOR KAPILIMAO VALLEY WELL AND TRANSMISSION MAIN WAIMEA-KEKAHA WATER SYSTEM KEKAHA, KAUAI, HAWAII, TMK: (4) 1-2-02: 1**

The Kauai County Housing Agency has reviewed the comments received during the 30-day public comment period, which began on January 23, 2000. The agency has determined that this project will not have significant environmental effects and has issued a **FONSI.** Please publish this notice in the March 23, 2000 OEQC Environmental Notice.

We have enclosed a completed OEQC Publication Form and four copies of the final EA. Please call Mr. Melvin Matsumura at (808) 245-5410 if you have any questions.

Sincerely,

Ernest Y.W. Lau
Manager and Chief Engineer

MM
Enclosures

c: Matilda A. Yoshioka
Office of Community Assistance
Akinaka & Associates, Ltd.

— 4398 Pua Loke Street, Lihue, Kauai, Hawaii or P. O. Box 1706, Lihue, HI 96766-5706 —
Phone No. (808) 245-5400 – Administration FAX No. (808) 246-8628 – Engineering/Fiscal/Shop FAX No. (808) 245-5813

2000-03-23-KA-FEA-
FINAL

ENVIRONMENTAL ASSESSMENT

FOR

KAPILIMAO VALLEY WELL & TRANSMISSION MAIN
KEKAHA, KAUAI, HAWAII
TAX MAP KEY: (4) 1-2-02:1

WATER SOURCE IMPROVEMENTS
WAIMEA-KEKAHA WATER SYSTEM
PAKUI HOUSING PROGRAM
CDBG DISASTER GRANT

MARCH 2000

PROPOSING AGENCY: COUNTY OF KAUAI
DEPARTMENT OF WATER

ERNEST Y.W. LAU
MANAGER & CHIEF ENGINEER

APPROVING AGENCY: COUNTY OF KAUAI
OFFICES OF COMMUNITY ASSISTANCE

MATILDA A. YOSHIOKA
DIRECTOR

PREPARED BY: AKINAKA & ASSOCIATES, LTD.
250 N. BERETANIA STREET, STE. 300
HONOLULU, HAWAII 96817

ENVIRONMENTAL ASSESSMENT

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PROJECT SUMMARY

PROJECT:	Kapilimao Valley Well & Transmission Main State Well 5841-02 Waimea - Kekaha Water System Pakui Housing Program CDBG Disaster Grant
PROPOSING AGENCY:	County of Kauai Department of Water
CONTACT PERSON:	Mr. Melvin Matsumura Phone: 808-245-5410
APPROVING AGENCY:	County of Kauai Offices of Community Assistance
CONTACT PERSON:	Mr. Dennis Alkire KCHA Project Coordinator Phone: 808-241-6814
LAND OWNER: (Well and Main)	State of Hawaii (DLNR) Leased to Kekaha Sugar Co.
TMK:	(4) 1-2-02:1

ITEM	WELL	MAIN	WATERLINE
Existing Land Use	Pasture	Pasture, Canefield	Road
Land Use Designation	Agriculture	Agriculture	Urban
Zoning Designation	Open	Open	Urban Rural

I. INTRODUCTION

A. Program Objective

The objective is to provide additional domestic water to the Waimea-Kekaha Water System for the benefit of all residents of the Waimea and Kekaha communities. The program will be accomplished by developing a deepwell source within the Waimea-Kekaha service area and connecting the source to the Waimea-Kekaha Water System.

B. Project Description

The proposed project consists of developing an exploratory well located in Kekaha, Kauai. The well has been tested and can service consumers within the Waimea-Kekaha Water System up to 400,000 gallons per day (gpd). Included in the project are transmission mains to connect with the existing water system. The proposed project will be under the jurisdiction *of the Department of Water, County of Kauai.*

C. Project Location

The project is located in the Waimea District of Kauai, within the town of Kekaha then northerly for approximate 1.3 miles . The well site is in Kapilimao Valley (elevation 152') and presently used for pasture. The route of the transmission main is along dirt roads through canefields and pasture. **EXHIBIT 1: VICINITY MAP** and **EXHIBIT 2: WAIMEA-KEKAHA WATER SYSTEM** shows the project area and location. **EXHIBIT 3: PROPOSED IMPROVEMENTS** identifies the well site and transmission main routes. Access to the project site will be through existing sugar cane field roads.

II. DESCRIPTION OF PROPOSED PROJECT

A. Background

The Waimea-Kekaha Water System service area contains 500 to 750 existing housing units in Waimea and Kekaha Towns. The service area is relatively large and includes residences, Waimea High School, Waimea Intermediate School, commercial districts in Waimea and Kekaha and the resort area called Waimea Plantation Cottages.

In 1994, the State of Hawaii Department of Health raised concerns which caused the Kauai Department of Water (DOW) to cease the operation of its Waimea Shaft No. 9 (5939-01). This has resulted in a 27% reduction in source capacity serving the Waimea-Kekaha system. Accordingly, the DOW is pursuing selection and development of a new water source.

A "Well Site Selection Report" has been prepared which reviews and updated the hydrogeologic information in the area. Essential field data has been collected and compared with existing literature and data to select a site for drilling a new well. The selected well site, based partially on the site selection report, is located on the west side of Kapilimao Valley, in the north of Kekaha Town.

A "Schematic Design Report" to develop the Kapilimao Valley Well was prepared in October 1999 and amended in December 1999. The report include results of pump tests executed to determine the well production capacity. The results of the tests indicated that a sustainable yield of about 400,000 gpd is available from the well. The choice of pumping rates and schedule will be based on the operational need of the system. Available pumps, valves, controls, and equipment (including electrical power and supervisory controllers) are discussed in the report.

B. Existing Water System

1. General

The Waimea-Kekaha Water System is located in the south western section of the island of Kauai as shown in **EXHIBIT 1: VICINITY MAP**. It is one of thirteen water service districts of the Department of Water. Existing well sources, storage facilities and the distribution system are shown in **EXHIBIT 2: WAIMEA-KEKAHA WATER SYSTEM.**

2. Flow Demands

Information from the Kauai Water Use and Development Plan shows that the Kekaha (20301) and Waimea (20302) hydrologic systems used 1.18 mgd of ground water for municipal consumption in 1988. The water demand in the service area is expected to rise to 1.19 mgd in 2010 with an ultimate demand of 2.89 mgd. Groundwater sustainable yield for Kekaha is 12 mgd and is 42 mgd for Waimea hydrologic systems.

3. Storage Capacity

Locations of storage tanks are shown in **EXHIBIT 2.** Total storage capacity in the service area is:

1.	Paua Valley Tanks	=	1,000,000 gal
2.	Waimea 0.5 MG Tank	=	500,000 gal
3.	Waimea 0.25 MG Tank	=	250,000 gal
4.	Waimea Heights Tank	=	100,000 gal
	Total	=	1,850,000 gal

Water System Standards Criteria:

a. Meet maximum day consumption
Max. day = 1.5 x 1,190,000 = 1,785,000 < 1,850,000 O.K.

b. Meet maximum day rate plus fire flow (2000 gpm/2 hrs = 240,000 gal) w/reservoirs 3/4 full.
(Commercial) 1,785,000 x 2/24 + 240,000 = 388,750 < 3/4 x 1,850,000 = 1,387,500 O.K.

The Department of Water's proposed 6-year Capital Improvement Program projects (Request for State aid) does not include new storage facilities in the service area.

4. Pump Capacity

Well locations are shown on **EXHIBIT 2** with capacities listed below.

a.	Waipao Valley Well B (5943-02)	=	600 gpm
b.	Kekaha Shaft (5843-01)	=	400 gpm
c.	Paua Valley Well (5942-01)	=	500 gpm
d.	Waimea Deepwell No. 2 (5840-02)	=	210 gpm
e.	Waimea Well No. 26 (5840-01)	=	220 gpm
f.	Waimea Shaft (out of service)*	=	0
	Total	=	***1930 gpm***
	If largest unit considered stand-by,		
	Total	=	***1330 gpm***

Water System Standards Criteria

Meet maximum day demand @ 16 hours.
1.5 x 1,190,000 x $\frac{1}{1440}$ x $\frac{24}{16}$ = 1860 > 1330 gpm (N.G. demand exceeds capacity)
A source of approximately 500 gpm is required to meet the criteria.

* Design funds have been appropriated by the State legislature for a water treatment facility.

5. Distribution Network

The distribution system of the Waimea-Kekaha Water System consists of pipelines (2" to 12") and a booster pump station.

The Kekaha area has experienced only minor maintenance problems - asphalt cement coupling problems along Elepaio Road. The Waimea area has corrosion problems in the cast iron piping on Menehune and Ala Wai Roads. Future problems due to corrosion of galvanized piping in Waimea Town is expected.

An 8-inch asbestos-cement main connects the Kekaha and Waimea areas. It is 1.3 miles long between major connections. A booster station is planned (**See EXHIBIT 3**) on this main to aid flows in either direction.

The DOW proposed 6-year C.I.P. projects (Request for State aid) includes pipeline improvements for fire protection to state facilities such as hospitals and schools.

C. Proposed Improvements

The exploratory well drilled on State lands leased to Kekaha Sugar Company (TMK: (4)1-2-02:1) in Kapilimao Valley will be developed for potable water production consists of a line shaft vertical turbine pump, controls, pump house, piping, paving, chlorinators, fencing etc., and connection to the Waimea-Kekaha water system with transmission main. The site is in close proximity to and accessible from a canefield road. Ground elevation of the well site range from 150 to 160 feet (MSL). Well depth is 267 feet with the upper 157' grouted and cased. **EXHIBIT 4: WELL SECTION** provides a detail of the exploratory well.

The transmission main will be buried along dirt roads through the pasture and canefields to connect to the existing Waimea-Kekaha Water System. A short section of pipeline will be installed in Kekaha Road to loop the system.

Overhead power lines will parallel the transmission main as installed by Kauai Electric Co. Supervisory controllers (SCADA) will link the project with other facilities (wells and tanks) of the Waimea-Kekaha water system. Signals will be transmitted by land lines and/or radio transmitter units.

D. Project Activity

Site grading is necessary to provide a level working area for maintenance crews. Grading during the exploratory well project indicates that blasting will not be required. Asphalt concrete pavement within the fenced pump site will provide all weather working conditions. Planting will be minimal to conform to the existing landscape.

Extensive activity will be involved in installing the line shaft vertical turbine pump, pump discharge piping, and construction of the pump control building with motor controls, chlorination facilities, radio telemetry and electrical work. In addition to equipment installation, the activity will involve concrete work, hollow tile walls and roofing.

The transmission mains will involve trenching, dewatering, pipe installation and backfill. Present access road surfacing is compacted earth which will be replaced. On Kekaha Road, asphalt concrete paving is the final surfacing on the travel lanes with grassed shoulders.

Power to the pump station will be provided through overhead lines by KECo. The overhead lines will follow the alignment shown in **Exhibit 3.**

E. Cost Estimate

Preliminary cost estimate for the Kapilimao Valley sitework, well development, pump station and water transmission mains is $2,200,000. As identified in the Cooperative Funding Agreement between the County of Kauai, Housing Agency and County of Kauai, Department of Water the development costs will be supported partially by the Community Development Block Grant (CDBG) funding. Additional funding will be provided by the Kauai Board of Water Supply.

III. RELATIONSHIP TO EXISTING LAND USE PLANS AND CONTROLS

A. Existing Land Use

The well site is presently used as pasture lands by Kekaha Sugar Company. Sparse bush and grasses are the typical site feature. Access to the site is presently limited to cane and dirt roads.

The transmission main route is through the pasture and canefield roads of Kekaha Sugar Company. A section of pipeline will be installed in the County's Kekaha Road.

B. State Land Use Designation

The State Land Use Commission designates properties in four categories: Agriculture, Rural, Urban, and Conservation. The proposed well and transmission main are within land designated as Agriculture. The pipeline in Kekaha Road is within lands designated as Urban. (**See EXHIBIT 5: STATE LAND USE DISTRICTS**). The water well is permissible under the rules of practice and procedure, State Land Use District Regulations, Part III Section 3-3 paragraph 7 which reads as follows:

> Public, private, and quasi-public utility lines, and roadways, transformer stations, solid waste transfer station, etc., and appurtenant small buildings such as booster pumping stations, but not including offices or yards for equipment, material, vehicle storage, repair or maintenance, treatment plants and major storage tanks not ancillary to agricultural practices, or corporation yards or other like structures.

C. County of Kauai General Plan

The General Plan for the County of Kauai, dated March 1970, provides information on the surrounding communities and land use designations. Also provided are generalized statements regarding transportation, sewer and water systems, storm drainage, etc.

The proposed project is consistent with the County of Kauai General Plan Update (**Section 7-2.1, June 21, 1984**) which states as its goal:

"To promote and protect the health, safety and welfare of all residents and visitors, and to promote the improvement and expansion of the island's economy, by recognizing and carefully utilizing land and water resource."

The proposed well and transmission main are within land zoned as Open District (**See EXHIBIT 6: COUNTY OF KAUAI GENERAL PLAN**). The pipeline in Kekaha Road lies with land zoned as Urban Rural. Under the provisions of the County's Comprehension Zoning Ordinance No. 164, public utilities and facilities are permissible uses in this zoning district.

IV. ENVIRONMENTAL SETTING

A. Topography

The well site is located 1.4 miles mauka of the shoreline above Kekaha Town. The site is along the western slope of Kapilimao Valley. The valley sides slopes at approximately 40% while the slope at the site is approximately 10%. The adjacent pasture road serves as an access route for Kekaha Sugar Co. Topographic information is available on the Waimea Quadrangle Map published by the U.S. Geological Survey (**See EXHIBIT 3: PROPOSED IMPROVEMENTS**) and aerial topographic maps by the County of Kauai.

The transmission main will start at the well site then down slope for 2,000 feet to the mana plain which is characterized by generally flat slopes with elevations ranging from sea level to about 30 feet mean sea level (msl). Approximately 5,200 feet of main and the Kekaha Road pipeline will reside within the plain.

B. Geology

The Island of Kauai is the oldest of the major islands in the Hawaiian chain. The Kauai Volcanic shield built itself off the ocean floor approximately two to four million years ago. Rock formations belonging to this original shield are part of the Waimea Canyon Volcanic Series, a major portion of which are the thin lava flows of the Napali formation.

Maps by the U.S. Soils Conservation Service within the "Soil Survey of Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii, August 1972" classifies the soil at the well site and valley slopes as Waiawa extremely rocky clay (WJF). A thin layer of granular heavy clay loam (2" thick) is underlain by dark reddish-brown clay about 12 inches thick. The substratum is hard rock. Surface soil permeability is moderate to moderately slow. Runoff is very rapid, and the erosion hazard is severe.

The Mana Plain soils were developed in alluvium washed from upland soils. They are mainly Kekaha series soils (KoA, KobA) classified as silty clay and clay. These series consists of soils that have moderate permeability, slow runoff and no erosion hazard.

Fill land (Fd) is located near Kekaha Road. It consists mostly of areas filled with material from dredging and bagasse and slurry from the sugar mill.

C. Climate

The climate of Kauai is comfortably uniform and is characterized by the northeast tradewinds generated by regions of high pressure to the north. The consistent approach of the tradewinds from the Northeast distinguishes the island into windward and leeward sides. Windward Kauai receives larger amounts of rainfall as the result of the condensation of water vapor as it is forced up into the atmosphere by the mountain mass. Mount Waialeale, for example, has a mean annual rainfall of 466 inches. The Waimea-Kekaha region, on the leeward side, has a mean annual rainfall of about 22 inches. May through September are the drier months while November thru March are the wetter months.

Temperatures in the region range from the mid 50's to the low 90's (degree Fahrenheit). Average temperature is 75°F. Temperature varies by about 15 degrees between day and night.

D. Hydrology

The principal sources of ground water on the island of Kauai are from the Napali Formation of the Waimea Canyon volcanic series. This volcanic series are typically highly permeable and yield water readily to wells as experienced by the Kekaha-Waipio and Paua Valley wells. The Koloa Volcanic series, in contrast, tend to be poorly to moderately permeable and offer limited yields. The candidate well site is located in the Napali Formation series.

Groundwater in the region is used for domestic (DOW) and irrigation (Kekaha Sugar Company). Per the Site Selection Report, wells in the vicinity seem to be located where the fresh water lens is thicker. The DOW's Paua Valley well (well #5942-01) was test pumped at a continuous rate of 500 gpm and is equipped with a 500 gpm pump, while the Waipao well 'B' (well #5943-02) was test pumped at a rate of 1,000 gpm and is equipped with a 700 gpm pump.

The sparse rainfall (less than 30 inches annually) in the study area most certainly is significant in calculating any local recharge. Irrigation practices of the plantation in the fields mauka of the producing wells are important in estimating the recharge from applied surface waters. A reasonable estimate of recharge from rainfall and irrigation will be about 5 mgd. Waters spread on the land is delivered via the Kokee and Kekaha Ditches and averages 50 mgd over the entire 5,000 acres of irrigated lands. The lands immediately above and between Waimea and Kekaha represents about 2500 irrigated acres and a total recharge of about 2.5

mgd. Shade (1995, page 24) stated "In the Kekaha system, pumpage exceeds recharge by almost 11 mgd indicating that ground water likely flows into this system from an adjacent up-gradient aquifer system."

The conclusion reached by Shade is supported by the geology as expressed by the orientation of dikes. The actual flow to the west from leakage of the Waimea River is undoubtedly significant, particularly northeast of Kekaha. This would tend to explain the evidently thicker freshwater portion of the lens in that sector of the aquifer.

Pump testing for Kapilimao Valley Well occurred during September 1999. A sustained test at 530 gpm for 7 days produced a steady drawdown of 11.5 feet. Salinity rose from 67 mg/L to 101 mg/L. The sustained test was followed by a 3 day cyclic pattern test of 12 hours on and 12 hours off. The results of the tests indicated that a sustainable yield of 400,000 gpd is available from the well.

The water course that drains Kapilimao Valley is active only after a heavy storm event. It is over 300 feet away from the well site and 30 feet lower. As the well is encased to a depth 120 feet below the water course invert, there should be no effect to the water course. Considering the depth, location and casing limits, the Project will not affect streams with sufficient water to allow 'opae, hihiwai or oopu to thrive.

E. Biology

The Kekaha Sugar Company has utilized the surrounding area for sugar cultivation over the past several decades. The well site due to its steep topography, is vacant or at times used for pasture. Vegetation at the well site is typically koa haole, lantana, natal redtop and molassesgrass. Native vegetation at the well site has been replaced with shrubs and grasses.

A formal biological survey was not performed for the site. Considering the agricultural activity and grazing, threatened or endangered birds are not expected to frequent the well site. According to the Hawaii Natural Diversity Database (The Nature Conservancy of Hawaii) there have been no recordings of rare species or ecosystems within the vicinity of the well site. Endangered water bird species have been recorded at the mill's settling ponds which are 1,600 feet from the transmission main alignment.

CORRECTION

THE PRECEDING DOCUMENT(S) HAS
BEEN REPHOTOGRAPHED TO ASSURE
LEGIBILITY
SEE FRAME(S)
IMMEDIATELY FOLLOWING

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The Final Environmental Assessment for the Wildlife Habitat Improvement Project in the adjacent Kekaha Game Management Area (September 1997) noted that the area has been highly altered from its native condition through past range fires, cattle overgrazing and noxious weed invasion. There are no known threatened or endangered plant species in the game management area.

F. Air Quality

Although no information on air quality at the project site was obtained, it is generally assumed that the air is normally relatively clear and low in pollution because of the great distance from the major urban centers. The exception is the seasonal dust created during agricultural planting and harvesting.

G. Water Quality

The proposed well is located Makai of an existing sugar cane field, and is subject to potential contamination from the leaching of fertilizers and herbicides used in cultivation. Nitrate, a good indicator of contamination by fertilizers, was found to occur at 2.7 milligrams per liter (mg/l) as nitrate-nitrogen which is similar to concentratives at Waipao Well and Kekaha shaft. This concentration is within the primary drinking water standard of 10 mg/l (nitrate-nitrogen). A "Preliminary Engineering Report for New Potable Water Source" as required by the State of Hawaii Department of Health, Chapter 20 of Title 11, Administrative Rules, will include water quality analyses and recommendations.

Atrazine, a herbicide, has been reported at 0.00005 and 0.00009 mg/l in the Paua Well. These values are well below the maximum contaminant level of 0.003 mg/l (State CWRM, Water Quality Plan, 1992, p. 111-19, and the Department of Health Administrative Rules Chapter 11-20, 1992). However, water quality analyses of the Kapilimao Valley Well did not find atrazine at detectable levels. **APPENDIX B: LABORATORY REPORT** provides the test results.

The County of Kauai, Department of Public Works has filed a Final Environmental Statement for effluent injection wells at their Waimea Wastewater Treatment Plant. The injection wells will be 1.9 miles from the project well site. The above EA included a study by Mink & Yuen, Inc. which states that the upgradient reach of the injection plume will be less than 1,000 feet (0.2 mile) and will be restricted to a depth of about 300 feet below seal level. The depth of the project well is 117 feet below sea

level. In consideration of the distance between wells and depth of the project well, there should be no impact from the effluent wells.

Data from the Department of Water from their testing of adjacent wells are:

Source Name	Date	Nitrate ppm	Nitrite ppm	Atrazine ppb
Paua (5942-01)	4/19/95 12/10/96 9/24/97	3.6 – –	<.05 – –	– .05 .09
Waipao (5943-01)	4/19/95	3.0	<.05	–
Kekaha S. (5843-01)	4/19/95	3.5	<.05	–
Waimea A. (5840-01)	4/19/95	1.3	<.05	–
Waimea S. (5939-01)	1/10/95 6/22/92	.56 .82	<.05 <.05	– –

H. Noise

Noise levels were not measured at the project site. The noise levels are considered to be normal rural and agricultural levels in comparison with the cane haul road traffic and the sugar mill operations.

I. Archaeology

An archaeological reconnaissance and archival / background research regarding the well site was performed by Scientific Consultant Services, Inc. (SCS) in October 1998. The research and investigations determined that no archaeological sites are present within the project area and none will be impacted during construction of the well. The superior characteristic of the landscape is the intensive landscape alterations occurring within and near the subject pane. The archaeological report is attached as **APPENDIX A.**

An archaeological reconnaissance survey of the Kekaha Game Management Area, Waimea, Kauai concluded that this upland area was probably used intermittently for resource gathering but not for permanent habitation. Historical modifications and land use may have destroyed any archaeological sites or trails. The management area is adjacent and topographically similar to the pasture lands that house the project well site

and part of the transmission main. The same conclusion can be assumed for the project site.

The Mana Plain lands which surround the transmission main's route have been cultivated for sugar cane for the past forty years. The land area was dewatered and filled in order to be useful for agricultural activities. Items of historical or archaeological significance in the area have been destroyed or altered by the actions related to agricultural activities.

Based on previous studies and historical modifications, there are no identified historic or archaeologically significant locations in the project area or immediate vicinity. However, should any unanticipated sites, artifacts or remains, such as shell, bone or charcoal deposits, be discovered during construction, the work would be halted and the State Historic Preservation Office will be contacted.

J. Flood Hazard

Flood hazard data was not computed for the project site. The Flood Insurance Rate Map (Panel 150002 0156 D dated Sept. 30, 1995) indicates that the well site outside the 100-year floodway. The transmission main and the Kekaha Road waterline traverse Zone AE flood hazard areas. Flood elevations are shown in the Flood Insurance Rate Maps. **EXHIBIT 7: FLOOD INSURANCE RATE MAP.**

Although the map indicates inundation by the 100-year floods with base flood elevations between 8 and 9 feet, the transmission main facilities are totally below grade and will not be affected. High velocities are not expected based on the stability of the adjacent aqueduct during previous floods.

K. Public Health and Safety

Public health and safety are of the utmost importance, and measures will be taken to ensure protection. The well site will be identified and surrounded by a chain link fence. The water from the wells will be disinfected by chlorination; and the chlorination facilities will be designed, installed, and maintained in accordance with all applicable safety codes. State DOH regulations (HAR Title II, Chapter 20, "Rules Relating to Potable Water Systems") will be followed; therefore, no public health or safety problems associated with the water system improvements are anticipated.

V. SOCIO-ECONOMIC SETTING

The project area is located in the Waimea-Kekaha region of Kauai. The population has remained stable in this region over the past several years, as evidenced by no significant increases in water meter installation during this period. Some development by Kikiaola Land Co. in the existing Waimea service area is anticipated within the next few years.

The resident population of the island of Kauai as of 1990 was 51,177. The population of the Waimea District for this same date was 8,888. These statistics are from the State of Hawaii Data Book 1993-94.

Kauai County has no ethnic majority. In 1990, the ethnic percentages were:

Hawaiian & Part-Hawaiian	25.3%
Filipino	17.3%
Japanese	18.4%
Caucasian	18.4%
Other	20.6%

The Kauai economy is primarily geared around agriculture and tourism as the most dynamic industries. The pineapple industry has essentially disappeared since 1960 while the sugar industry has greatly reduced its work force.

In contrast to the decline in agricultural employment, employment in the services sector (dominated by tourism) grew from 9 to 28 percent of total employment since 1960. Other major sources of employment are wholesale and retail trade, 23%; government, 13%; agriculture, 7%, and manufacturing, 6%. The average unemployment rate was 6%.

The project area's economic activity is dominated by sugar cane cultivation and tourist related operations. The nearest truck and taro farming are found in Waimea Valley several miles away. In consideration of the well's location, the Project will not influence water rights which guarantee water sufficient to produce taro or provide for other traditional Kuleana uses.

VI. PROBABLE IMPACTS OF THE PROPOSED ACTION ON THE ENVIRONMENT

A. Short Term Impacts

Minor or short term impacts due to the proposed project are expected. In general, daily traffic of the construction crew (normally vehicles) through the Waimea and Kekaha Towns area and the noise of the construction equipment will be the primary construction impacts. Installation of the Kekaha Road pipeline will cause traffic disruptions which can be controlled by off-duty police officers. Water service inconveniences during connection of the pipeline can be mitigated by advance notices of service interruptions. As the traffic route consists mainly of asphalt concrete roads, and considering the small size of the construction crew, residents should not notice any appreciable increase in traffic. Traffic on the cane roads may create dust but will not have any additional impact to the environment.

Noise from the construction activities will be limited to site construction, trench excavation and backfilling. The work will be restricted to daylight hours and the noise should blend in with the present activities. It should be noted that the Kekaha Road pipeline is near the Kekaha Sugar Mill which produces noise, dust and traffic disruptions. Exhaust emissions will be dispersed by the prevailing winds. Distance from the well site to denser populated areas is approximately 1.3 miles, therefore no adverse impacts are expected.

Dust and erosion from the construction efforts will be related to site construction and traffic movement. Conformance to the County's Grading Ordinance should mitigate any adverse effects. Water discharged from the well during the start-up periods will be directed to the adjacent valley swale and flow to agricultural irrigation courses. Chlorinated water used to disinfect the water system will be disposed in accordance with applicable Department of Health and NPDES requirements.

B. Long Term Impacts

Long term impacts from this water well project include loss of land use on the well site. Individual wastewater treatment systems will be restricted within 1,000 feet of the well site. Secondary long term impacts are those relating to the lands necessary for overhead power lines and pipelines. Overhead power lines are typical for this area of Kauai and will be

installed on or adjacent appendage to existing dirt roads. The transmission main, through the sugar cultivated area, will be buried to a depth which will not impact the agricultural activities. The development of Kapilimao Valley Well is anticipated to have little effect on the water resources in the area. The total pumping capacity of the well is 400,000 gpd (0.4 mgd). Assuming a maximum operating time of 16 hours per day, the existing wells will withdraw 1.85 mgd. The total withdrawal of 2.25 (0.4+1.85) mgd is well below the total sustainable yield of 54 mgd (**See Section II.B.2**) from the Kekaha and Waimea hydrologic systems.

Visual impacts due to the project will be negligible due to minimal above ground improvements related to wells and buried pipelines. The well development will include a pump station and aerial power line which could provide some visual concerns. Motor noise from the line shaft pump is not expected to be a problem due to the isolation of the well site. Vehicular traffic will be limited to inspections and routine maintenance.

The proposed project will not adversely affect the inventory of rare or endangered species of flora. No rare or endangered species of flora are known to inhabit the project or adjacent areas. The proposed project will have no significant effect upon the animals which frequent the site.

Another long term impact is the use of the withdrawn water as it relates to land use in the region. The project is required to replace the Waimea Shaft supply and to meet the 2010 water demands. As the estimated 2010 demand (1.19 mgd) is similar to the present demand (1.18 mgd), drastic land use changes are not expected. Adding the project to the present water system will not attract nor support intensified land uses with surplus water supply.

VII. ADVERSE IMPACTS WHICH CANNOT BE AVOIDED

The noise level will increase during the construction period. This effect will be of short duration, lasting only for the construction phase. The noise level can be reduced by the contractor by ensuring proper functioning of mufflers on all equipment, and conducting construction activity only during daylight hours, between 7:30 a.m. to 5:00 p.m.

Traffic noises, emissions and dust will increase during the construction period. This short duration impact can be mitigated by restricting traffic movement only to daylight hours and mitigating dust generation by moistening the dirt roads.

There are several irreversible commitments of resources including land and financial resources to construct capital improvements, and to operate and maintain the wells, control building, and pipelines. Land commitment for the wells, control building, pipelines is minimal, and financial commitment for capital improvements and operations and maintenance are necessary.

The long-term responsibility of the Department of Water to provide adequate water supplies to the Kekaha and Waimea communities supports the implementation of the proposed project; therefore, the commitment of land, labor, materials, energy, equipment and financial resources that are practically irreversible and irretrievable are warranted.

VIII. ALTERNATIVES TO THE PROPOSED ACTION

A No Action

In 1994, the State of Hawaii Department of Health raised concerns which caused the DOW to cease the operation of its Waimea Canyon Shaft No. 9 (5939-01). This has resulted in a 27% reduction in source capacity serving the Waimea-Kekaha system. Accordingly, the DOW is pursuing construction of a new well source.

The "No Action" alternative will not allow the Department of Water to meet the water standards criteria and the resident generated demands that are greater than the capacity of the existing well sources. Therefore, the "No Action" alternative is unacceptable.

B. Alternative Site

A "Well Site Selection Report" was prepared for the County of Kauai prior to site selection. Alternative sites in Kekaha and Waimea were investigated and discussed within the report. Three sites in Kekaha and five sites in Waimea were investigated as candidate sites. The Kekaha sites (above Kekaha Town) and the Waimea Valley (in proximity to the Waimea River) were the finalist. Reasons to select the Kapilimao Valley site are provided in **SECTION II: DESCRIPTION OF PROPOSED PROJECT.**

C. Alternative Water Sources

Alternative water sources such as desalination and use of surface water were considered, but rejected because of higher construction, operation, maintenance and administration costs. Wastewater reuse and nonpotable water supplies, rainfall catchment, and water conservation are discussed below.

1. Wastewater Reuse and Nonpotable Water Supplies

Wastewater reuse and nonpotable water supplies are potentially viable alternative water sources. Treated wastewater effluent is available from the Waimea Wastewater Treatment Plant serving the Waimea Town area. The amount of treated effluent currently available is about 0.3 mgd, and is committed to Kekaha Sugar Company and DeKalb Plant Genetics (seed corn) for irrigation. Wastewater reuse is being accomplished, and will continue to be

encouraged and pursued as a means for conserving potable water supply resources.

2. Rainfall Catchment

Rainfall catchment involves the construction of a series of ditches and reservoirs to intercept rainfall runoff from large areas of land, and is an ideal water source for agricultural use. According to the Kauai Water Use and Development Plan, January 1990, over 80 percent of water used on Kauai is by sugarcane plantations which rely on rainfall catchment (surface waters) as the primary water source. The Kekaha Sugar Company, utilizes rainfall as its primary water source to meet the sugarcane irrigation requirements on its mauka lands. However, if any surface water source is used to supply municipal drinking water systems, it is subject to the DOH Surface Water Treatment Rule, which requires costly and cumbersome treatment, monitoring and reporting. Consequently, the immense cost of constructing, operating, and maintaining a water treatment facility renders this alternative infeasible and unacceptable.

3. Water Conservation

Water conservation programs can be used to better meet future water demands, and are typically implemented when a water shortage is likely. Conservation programs generally fall into two major categories: Water System Conservation and Consumer Conservation. Water system conservation is the responsibility of the water purveyor, and entails careful monitoring of all water in the transmission and distribution systems. Detection and repair of leaks in the transmission and distribution system would be effective in reducing water demands. DOW currently is in the process of establishing a water conservation plan.

Consumer conservation is the responsibility of the consumer, and could reduce the per capita consumption. Consumers are encouraged to use water saving utilities, to detect and repair leaks within their property, and in general, to minimize wasteful water use.

Water conservation is an environmentally beneficial practice regardless of the water supply situation. However, Kauai experiences a very wet climate and has an abundant groundwater and surface water supply. The water sources for the Waimea-Kekaha Water System are within the Waimea and Kekaha Hydrologic systems, which has a sustainable yield of 54 mgd. The average water use in 2010 is expected to be approximately 1.19 mgd, or 2.2 percent of the estimated sustainable yield. Even with further development of well water sources, the water use will be a fraction of hydrologic system yield. Although it is a practice that should be observed by all consumers, water conservation will not provide the quantity of water required to meet demands. Therefore, water conservation is deemed an insufficient alternative.

IX. MITIGATING MEASURES TO MINIMIZE ADVERSE IMPACTS

The short term impacts occurring during the construction work will be minimized by applying current techniques and methods. In addition, restrictions of operational hours will minimize noise impacts to the adjoining area. Dust migration can be controlled by use of water wagons and sprinklers.

Long term impacts of the well project are insignificant. Long term impacts of future well development and operation can be further mitigated by restricting inspections and routine maintenance to normal workday hours. Landscaping can buffer the final development features, such as the control building and chain link fencing. Color of the paint for the control building will be earth-toned to match the surrounding environment.

X. RECOMMENDATION

Based on the preceding paragraphs, it is anticipated that the proposed action will result in no significant adverse impacts other than those described in this assessment. Consequently, a "Findings of No Significant Impact" is recommended. If such a finding is issued, an Environmental Impact Statement would not be required.

XI. REASONS SUPPORTING THE RECOMMENDATION

In considering the significance of potential environmental effects, the applicant has considered the sum of effects on the quality of the environment and evaluated the overall cumulative effects of the proposed action. The applicant has considered every phase of the proposed action, the expected consequences, both primary and secondary and the cumulative as well as the short- and long-term effects of the proposed action. As a result of these considerations, the applicant has determined that:

A. The proposed action does not involve an irrevocable commitment or loss of or destruction of any natural cultural resource;

There are no natural or cultural resources associated with the project site. The site is presently vacant or used as a pasture or canefield.

B. The proposed action does not curtail the range of beneficial uses of the environment:

The proposed project is consistent with the County's General Plan and the Board of Water Supply policy and would not curtail beneficial uses of the environment in the area. The proposed project will be compatible with the uses of the surrounding area.

C. The proposed action is in concert with the state's long-term environmental policies, goals and guidelines as expressed in Chapter 344, HRS, and any revisions and amendments thereto, court decisions and executive orders:

The proposed project is consistent with the State Land Use Designation which is in concert with all applicable policies, goals and guidelines. No long-term environmental conflicts are foreseen.

D. The proposed action does not substantially affect the economic or social welfare of the community or state:

The economic impact will be expressed in the short-term, construction related activities. Upon completion of the project, economic conditions should return to the existing situation since the new well will serve the existing community.

E. The proposed action does not involve substantial secondary impacts, such as population changes or effects on public facilities:

The proposed project will not result in an increase of population in the area as development is controlled by land use and general plan policies. Normal population growth should not be affected.

F. The proposed action does not substantially affect public health:

Construction activities will be regulated to minimize noise, dust and erosion concerns. The project includes water quality testing to determine if the water source is suitable for domestic purposes.

G. The proposed action does not involve a substantial degradation of environmental quality:

The existing physical aspects of the surrounding area will be preserved.

H. The proposed action is individually limited and cumulatively, does not have a considerable effect upon the environment or involve a commitment for larger actions:

The proposed project will be part of the Waimea-Kekaha Water System. Use is regulated by the County of Kauai, Board of Water Supply. Approval of the project does not involve a commitment for any larger action.

I. The proposed action does not substantially affect rare, threatened or endangered species or habitats:

There are no known rare, threatened or endangered species or habitat associated with the project site.

J. The proposed action does not detrimentally affect air or water quality or ambient noise levels:

Development of the site will not increase ambient noise levels as the generated noise from line shaft pump motors will have no adverse effects due to the distance to the nearest residence.

Short-term impacts on air and water quality, as well as noise, will occur during the construction period, but will be mitigated by normal construction practices and will be regulated by the project plans, specifications and inspections.

K. The proposed action does not affect an environmentally sensitive area such as a flood plain, tsunami zone, erosion-prone area, geologically hazardous land, estuary or coastal waters.

The proposed well site is not located adjacent to the shoreline and is outside of the 100-year floodplain. The transmission main and Kekaha Road pipeline will be buried through the flood hazard area. No other environmentally sensitive characteristics are associated with this site.

L. The proposed action does not substantially affect scenic vistas and view planes identified in county or state plans or studies.

When completed, the well piping, control building and overhead power lines may be visible facilities of this project. Considering the distance from the viewing public and selection of earth-tone paint colors, there will be minimal sight attractions to the well site. The overhead power lines that will service the well pump station is a branch of a KECo system that supplies power to the adjacent valley. There will be no impacts on scenic vistas or view planes identified in County or State plans or studies.

M. The proposed action will require energy consumption to drill and test the well.

The proposed project will require energy to pump water to the Waimea-Kekaha Water System. The amount of energy to construct, operate, and maintain the proposed project would be a small fraction of the total amount of energy currently used in the area. The proposed project will not require substantial energy consumption.

XII. LIST OF NECESSARY APPROVALS

A. County of Kauai, Planning Department: A use permit is required for all utility installations in agricultural and open zoned land. These requirements are stipulated in the revised ordinances of the County of Kauai, Section 8-7.3 and Section 8-8.3.

B. County of Kauai, Department of Water: Construction plan approval.

C. County of Kauai, Department of Public Works: Construction plan approval.

D. State of Hawaii, Department of Health: Preliminary Engineering Report and construction plan approval.

E. State of Hawaii, Commission on Water Resource Management: Well Installation Permit.

F. State of Hawaii, Department of Land & Natural Resources: Right-of-entry, easement and construction plan approval.

G. Kekaha Sugar Company (Amfac Land Co., Ltd. - Kauai Division): Right-of-entry, construction plan approval.

XIII. ORGANIZATIONS AND PERSONS CONTACTED

The following agencies provided information in the preparation of the Draft Environmental Assessment on the subject project.

	AGENCY	COMMENTS	RESPONSE
A.	Department of Planning County of Kauai 4444 Rice Street, Suite 473 Lihue, Hawaii 96766	Reserve comments for the Environmental Assessment.	None
B.	Department of Water County of Kauai P.O. Box 1706 Lihue, Hawaii 96766-5706	Proposing Agency.	None
C.	Department of Public Works County of Kauai 4444 Rice Street, Suite 275 Lihue, Kauai, Hawaii 96766	Comply with flood requirements. Submit Kekaha Road plans for review/approval.	Will comply
D.	Department of Hawaiian Home Lands State of Hawaii 1099 Alakea Street, Suite 2000 Honolulu, Hawaii 96813	No comments received.	None
E.	Department of Business, Economic Development and Tourism State of Hawaii 250 South King Street Honolulu, Hawaii 96813	Hawaii Coastal Zone Management (CZM) Program is no longer routinely reviewing EA reports.	None

AGENCY		COMMENTS	RESPONSE
F.	Department of Land & Natural Resources Land Division State of Hawaii P.O. Box 621 Honolulu, Hawaii 96809	Obtain right-of-entry from Kekaha Sugar Co. and DLNR. Well site located in an area outside the 500-year flood plain.	Will comply
G.	Department of Land & Natural Resources State Historic Preservation Division 601 Kamokila Blvd., Room 555 Kapolei, Hawaii 96707	Project will have "no effect" on significant historic sites.	None
H.	Department of Land & Natural Resources Division of Forestry and Wildlife 3060 Eiwa Street, Room 306 Lihue, Kauai, HI. 96766	No comment - no adverse effects to resources under their jurisdiction.	None
I.	Department of Health Environmental Health Division State of Hawaii P.O. Box 3378 Honolulu, Hawaii 96813	Comply with HAR 11-20 "Rules relating to Potable Water Systems". Kauai DOW responsible to review / approve plans.	Will comply. Project under Kauai DOW jurisdiction.
J.	Office of Hawaiian Affairs State of Hawaii 711 Kapiolani Blvd., Suite 500 Honolulu, Hawaii 96813	Project should not abridge gathering and water rights of persons of Hawaiian ancestry.	Project will not abridge gathering and water rights of persons of Hawaiian ancestry.

	AGENCY	COMMENTS	RESPONSE
K.	Commission on Water Resource Management State of Hawaii P.O. Box 621 Honolulu, Hawaii 96809	Pump Installation Permit required. Describe characteristics of Kapilimao water course and assess potential effects.	Will comply. Kapilimao Valley water course normally dry except after major rain event.
L.	Office of Environmental Quality Control 235 So. Beretania Street, Suite 702 Honolulu, Hawaii 96813	No comments received.	Draft EA to be submitted for review.
M.	U.S. Geological Survey Water Resource Division 677 Ala Moana Blvd. Suite 415 Honolulu, Hawaii 96813	No comments received.	None
N.	Amfac Land Company, Ltd. Kauai Division 2970 Kele Street Lihue, Kauai, Hawaii 96766	No comments received.	Plans to be submitted for review and approval. Request for right-of-entry.
O.	Kikiaola Land Company, Ltd. P.O. Box 367 Waimea, Kauai, HI. 96796	No comments received.	None
THE FOLLOWING AGENCY PROVIDED COMMENTS DURING THE DRAFT REVIEW PERIOD:			
A.	Office of Environmental Quality Control 235 So. Beretania Street, Suite 702 Honolulu, Hawaii 96813	Revise sentence, p.IV-5, lst par. Provide map to show hydrologic conditions, and contamination information.	Sentence revised. Map provided (See response herein).

HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF FORESTRY AND WILDLIFE
KAUAI DISTRICT
3060 EIWA STREET, ROOM 306
LIHUE, KAUAI, HAWAII 96766-1875

November 1, 1999

IN REPLY REFER TO

Mr. Henry S. Morita
Executive Vice President
Akinaka & Associates, Ltd.
250 No. Beretania St., Suite 300
Honolulu, HI 96817

Dear Mr. Morita:

This responds to your pre-assessment consultation letter of October 26, 1999, in which you ask for comments regarding the development of the Kapilimao Valley well and water transmission main.

We do not see that the proposed project has any adverse effects to resources under our jurisdiction, and therefore have no comment.

If you have any questions, please do not hesitate to contact me.

Sincerely,

Edwin Q.P. Petteys
Branch Manager

MARYANNE W. KUSAKA
MAYOR

DEE M. CROWELL
PLANNING DIRECTOR
SHEILAH N. MIYAKE
DEPUTY PLANNING DIRECTOR

TELEPHONE (808) 241-6677
FAX (808) 241-6699

PLANNING DEPARTMENT

November 3, 1999

Henry S. Morita
Akinaka & Assoc.
250 N. Beretania Street, Suite 300
Honolulu, Hawaii 96817

SUBJECT: Pre-assessment Consultation
Development of Kailimao Valley Well at Kekaha, Kauai

Thank you for notifying our office about the subject project. We will reserve our comments for the Environmental Assessment. In the meantime, if you have any questions or require assistance from our office, please feel free to contact Keith Nitta of my staff at 241-6677.

SHEILAH N. MIYAKE
Deputy Planning Director

Kapule Building • 4444 Rice Street, Suite 473 • Lihu'e, Kaua'i, Hawai'i 96766

MARYANNE W. KUSAKA
MAYOR

WALLACE G. REZENTES, SR.
ADMINISTRATIVE ASSISTANT

CESAR C. PORTUGAL
COUNTY ENGINEER
TELEPHONE 241-6600

IAN K. COSTA
DEPUTY COUNTY ENGINEER
TELEPHONE 241-6640

AN EQUAL OPPORTUNITY EMPLOYER
COUNTY OF KAUA'I
DEPARTMENT OF PUBLIC WORKS
4444 RICE STREET
MO'IKEHA BUILDING, SUITE 275
LIHU'E, KAUA'I, HAWAI'I 96766

PW10.182

November 4, 1999

Akinaka & Associates, Ltd.
250 N. Beretania St., Suite 300
Honolulu, Hawaii 96817

Attention: Mr. Henry Morita

SUBJECT: PRE-ASSESSMENT CONSULTATION FOR DEVELOPMENT OF KAPILIMAO VALLEY WELL AND WATER TRANSMISSION MAIN

We completed our review of the subject project. Our comments are similar to those comments noted in our letter dated June 17, 1998. For your convenience, we are enclosing a copy of our letter.

We believe the control building which will house the motor control center, chlorination equipment and supervisory commend and power controllers will be susceptible to flooding and will need to comply with flood requirements.

Kekaha Road is a county maintained road. Construction plans will need to be developed for our review and approval for the short segment of pipeline that will be installed in Kekaha Road.

Should you have any questions, please feel free to contact Mr. Wallace Kudo of my staff at (808) 241-6620.

Very truly yours,

for CESAR C. PORTUGAL
County Engineer

WK/cu
Attachment

DEPARTMENT OF WATER

County of Kauai

"Water has no Substitute – Conserve It!"

January 6, 2000

Mr. Cesar C. Portugal, County Engineer
County of Kauai
Department of Public Works
4444 Rice Street, Suite 275
Lihue, Hawaii 96766

Attention: Mr. Wallace Kudo

Project: Kapilimao Valley Well and Transmission Main
Kekaha, Kauai (Kauai Department of Water)

Subject: Pre-Assessment Consultation

Reference: Department of Public Works ltr Pw10.182 of Nov. 4, 1999

Thank you for reviewing and responding to the subject. We will conform to the comments within the reference by:

1. Complying with flood requirements for facilities susceptible to flooding.

2. Submitting Kekaha Road pipeline construction plans for your review and approval.

Points of contact for this project are Melvin Matsumura, Department of Water @ 808-245-5410 and Henry Morita, Akinaka & Associates, Ltd. @ 808-536-7721.

Very truly yours,

Edward Tschupp

for Ernest Y. W. Lau
Manager and Chief Engineer

san
A:\Pre-assessment\matsu

— 4398 Pua Loke Street, Lihue, Kauai, Hawaii or P. O. Box 1706, Lihue, HI 96766-5706 —
Phone No. (808) 245-5400 – Administration FAX No. (808) 246-8628 – Engineering/Fiscal/Shop FAX No. (808) 245-5813

BENJAMIN J. CAYETANO
GOVERNOR
SEIJI F. NAYA, Ph.D.
DIRECTOR
BRADLEY J. MOSSMAN
DEPUTY DIRECTOR
DAVID W. BLANE
DIRECTOR, OFFICE OF PLANNING

DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT & TOURISM

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

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

Ref. No. P-8343

November 9, 1999

Dear Project Manager:

Subject: Environmental Assessment and Environmental Impact Statement Reviews

For your information, the Hawaii Coastal Zone Management (CZM) Program is no longer routinely reviewing environmental assessment and environmental impact statement reports. If there are any questions, please call John Nakagawa of our CZM Program at (808) 587-2878.

Sincerely,

David W. Blane
Director
Office of Planning

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

BRUCE S. ANDERSON, Ph.D., M.P.H.
DIRECTOR OF HEALTH

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

In reply, please refer to:
EMD / SDWB

November 10, 1999

RECEIVED
NOV 13 1999
AKINAKA & ASSOCIATES LTD.

Mr. Henry S. Morita
Executive Vice President
Akinaka & Associates, Ltd.
250 North Beretania Street, Suite 300
Honolulu, Hawaii 96817

Dear Mr. Morita:

SUBJECT: PRE-ASSESSMENT CONSULTATION
DEVELOPMENT OF KAPILIMAO VALLEY WELL AND WATER TRANSMISSION MAIN
KEKAHA, KAUAI

Thank you for the opportunity to comment on the subject project. Our comments are as follow:

1. 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, "Rules Relating to Potable Water Systems."

2. The project will include the development of a new source of potable water. Section 11-20-29 of Chapter 20 requires that all new sources of potable water serving a public water system be approved by the Director of Health prior to its use. Such an approval is based primarily upon the submission of a satisfactory engineering report that addresses the requirements set in Section 11-20-29.

3. 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, performed by a laboratory certified in the State of Hawaii, must be submitted as part of the report to demonstrate compliance with all drinking water standards. The Director, upon his review of the information submitted, may require additional tests.

4. Section 11-20-30 requires that the Director approve new or substantially modified distribution systems for public water systems. However, if the water system is under the jurisdiction of the County of Kauai, the Kauai Department of Water Supply will be responsible for the review and approval of the plans.

If you should have any questions, please contact Ms. Queenie Komori of the Safe Drinking Water Branch, Engineering Section, at 586-4258.

Sincerely,

FOR WILLIAM WONG, P.E., Chief
Safe Drinking Water Branch
Environmental Management Division

QK:la

DEPARTMENT OF WATER

County of Kauai

"Water has no substitute – conserve it!"

January 6, 2000

Environmental Management Division
Department of Health
State of Hawaii
PO Box 3378
Honolulu, Hawaii 96801

Attention: Mr. William Wong, P.E., Chief
Safe Drinking Water Branch

Project: Kapilimao Valley Well and Transmission Main
Kekaha, Kauai (Kauai Department of Water)

Subject: Pre-Assessment Consultation

Reference: Department of Health ltr EMD/SDWB of Nov. 10, 1999

Thank you for your review and comments regarding the subject. We wish to respond the comments within the reference:

1. We will comply with HAR. Title II, Chapter 20, "Rules Relating to Potable Water Systems."

2. An engineering report that addresses the requirement of Section 11-20-29 will be submitted for approval.

3. Water quality analyses will be submitted as part of the Environmental Assessment and engineering report.

4. The proposed project will be under the jurisdiction of the County of Kauai.

Points of contact for this project are Melvin Matsumura, Department of Water @ 808-245-5410 and Henry Morita, Akinaka & Associates, Ltd. @ 808-536-7721.

Very truly yours,

Edward Tadeupp

for/ Ernest Y. W. Lau
Manager and Chief Engineer

san
A:\Pre-assessment\matsu

-- 4398 Pua Loke Street, Lihue, Kauai, Hawaii or P. O. Box 1706, Lihue, HI 96766-5706 --
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BENJAMIN J. CAYETANO
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TIMOTHY E. JOHNS
CHAIRPERSON

BRUCE S. ANDERSON
ROBERT G. GIRALD
BRIAN C. NISHIDA
DAVID A. NOBRIGA
HERBERT M. RICHARDS, JR.

LINNEL T. NISHIOKA
DEPUTY DIRECTOR

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

November 12, 1999

RECEIVED
NOV 17 1999
AKINAKA & ASSOCIATES, LTD.

TO: Mr. Dean Uchida, Administrator
Land Division

FROM: Linnel T. Nishioka, Deputy Director
Commission on Water Resource Management (CWRM)

SUBJECT: Pre-assessment for Development of Kapilimao Valley Well and Water Transmission Main
Kekaha, Kauai, Hawaii

FILE NO.: KAPILWELL.COM

Thank you for the opportunity to review the subject document. Our comments related to water resources are marked below.

In general, the CWRM strongly promotes the efficient use of our water resources through conservation measures and use of alternative non-potable water resources whenever available, feasible, and there are no harmful effects to the ecosystem. Also, the CWRM encourages the protection of water recharge areas, which are important for the maintenance of streams and the replenishment of aquifers.

[X] We recommend coordination with the county government to incorporate this project into the county's Water Use and Development Plan.

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

[ ] We are concerned about 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.

[X] A Well Construction Permit and/or a Pump Installation Permit from the Commission would be required before ground water is developed as a source of supply for the project.

[ ] The proposed water supply source for the project is located in a designated water management area, and a Water Use Permit from the Commission would be required prior to use of this source.

[X] Groundwater withdrawals from this project may affect streamflows, which may require an instream flow standard amendment.

[ ] We recommend that no development take place affecting highly erodible slopes which drain into streams within or adjacent to the project.

[X] If the proposed project includes construction of a stream diversion, the project may require a stream diversion works permit and amend the instream flow standard for the affected stream(s).

[X] If the proposed project alters the bed and banks of a stream channel, the project may require a stream channel alteration permit.

[X] OTHER:

A well construction permit was issued on February 5, 1999 and executed on May 3, 1999. A pump installation permit has been applied for and will be issued once we receive a well completion report, including pump test results.

The EA should describe the flow characteristics of Kapilimao watercourse and assess any possible effects to streamflow.

If there are any questions, please contact the Commission staff at 587-0225.

c: Akinaka & Associates, Ltd.

PHONE (808) 594-1888

FAX (808) 594-1865

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

November 12, 1999

Akinaka & Associates, Ltd.
250 No. Beretania Street, Suite 300
Honolulu, HI 96817
Attention: Henry Morita

(PC #60)

Re: Pre-assessment Consultation
Proposed Improvements for the Kapilimao Valley and Main
Waimea – Kekaha Water System

Dear Mr. Morita,

Thank you for the opportunity to comment on the above referenced project. According to your letter, the Department of Water, County of Kaua'i proposes to develop the Kapilimao Valley Well and construct a water transmission main to connect the County's Waimea-Kekaha Water System. The Office of Hawaiian has some concerns.

First of all, according to Section 174C-101, Hawai'i Revised Statutes (HRS), persons of Hawaiian ancestry have preferential rights to water pursuant to the Hawaiian Homes Commission Act, 1920, as amended and pursuant to traditional and customary rights. The traditional rights include gathering rights to 'opae, hihiwai and 'o'opu, which require streams with sufficient water to allow them to thrive, and the appurtenant water rights guarantee water sufficient to produce taro and provide for other traditional kuleana uses. Every effort should be made to ensure that the proposed project will not abridge these rights.

Secondly, the State Department of Land & Natural Resources Historic Preservation Division should be contacted in the event that any unidentified archaeological or cultural remains are uncovered during earthwork at the proposed project site.

If you have any questions, please contact Mark A. Mararagan, Policy Analyst at 594-1945. Please refer to the document number noted at the top of this letter in any future correspondence.

If you have any questions, please contact Mark A. Mararagan, Policy Analyst at 594-1945. Please refer to the document number noted at the top of this letter in any future correspondence.

Sincerely,

Colin C. Kippen, Jr.
Deputy Administrator

cc: OHA Board of Trustees
Kaua'i CRS

DEPARTMENT OF WATER
County of Kauai

"Water has no Substitute – Conserve It!"

January 6, 2000

Office of Hawaiian Affairs
State of Hawaii
711 Kapiolani Blvd., Suite 500
Honolulu, Hawaii 96813

Attention: Mr. Mark A. Mararagan
Policy Analyst (594-1945)

Project: Kapilimao Valley Well and Transmission Main
Kekaha, Kauai (Kauai Department of Water)

Subject: Pre-Assessment Consultation

Reference: Office of Hawaiian Affairs letter PC#60 dated Nov. 12, 1999

Thank you for your review of the subject and comments contained in the reference. Please be assured that the Project will not abridge any traditional or customary rights of persons with Hawaiian ancestry.

The Project will not affect streams with sufficient water to allow 'opae, hihiwai or o'opu to thrive. Also, the Project will not influence water rights, which guarantee water sufficient to produce taro or provide for other traditional kuleana uses.

Construction documents will specify that the State Department of Land & Natural Resources, Historic Preservation Division be contacted in the event archaeological or cultural remains are uncovered during the Project work.

Points of contact for this project are Melvin Matsumura, Department of Water @ 808-245-5410 and Henry Morita, Akinaka & Associates, Ltd. @ 808-536-7721.

Very truly yours,

Edward Tschupp

for/Ernest Y. W. Lau
Manager and Chief Engineer

san
A:\Pre-assessment\matsu

– 4398 Pua Loke Street, Lihue, Kauai, Hawaii or P. O. Box 1706, Lihue, HI 96766-5706 –
Phone No. (808) 245-5400 – Administration FAX No. (808) 246-8628 – Engineering/Fiscal/Shop FAX No. (808) 245-5813

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

TIMOTHY E. JOHNS, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DEPUTIES
JANET E. KAWELO

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
CONSERVATION AND RESOURCES
ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND
STATE PARKS
WATER RESOURCE MANAGEMENT

STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

HISTORIC PRESERVATION DIVISION
Kakuhihewa Building, Room 555
601 Kamokila Boulevard
Kapolei, Hawai 96707

November 23, 1999

LOG NO: 24426
DOC NO: 9911NM12

Henry Morita
Akinaka and Assoc.
250 North Beretania Street, Suite 300
Honolulu, HI 96817-4716

Dear Mr. Morita:

SUBJECT: **Historic Preservation Review -- Pre-Assessment Consultation**
Development of Kapilimao Valley Well and
Water Transmission Main(County of Kauai)
Kekaha, Waimea, Kauai

Thank you for providing us the opportunity to consult with you on this project. No historic sites are in the project area, therefore this project will have "no effect" on significant historic sites.

If you have any questions, please call Nancy McMahon at 742-7033.

Aloha,

Don Hibbard, Administrator
State Historic Preservation Division

NM:ah

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 621
HONOLULU, HAWAII 96809

AQUACULTURE DEVELOPMENT PROGRAM
AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
CONSERVATION AND RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND DIVISION
STATE PARKS
WATER RESOURCE MANAGEMENT

December 7, 1999

LD-NAV
Ref.: KAPILWELL.RCM

Mr. Henry Morita
Executive Vice President
Akinaka & Associates, Ltd
250 North Beretania Street, Suite 300
Honolulu, Hawaii 96817

Dear Mr. Morita:

SUBJECT: Pre Assessment Consultation for Development of Kapilimao Valley Well and Water Transmission Main located at Kekaha, Island of Kauai, Hawaii

This is a follow-up to your letter dated October 26, 1999, requesting our department's Pre Assessment Consultation for the subject proposed project.

Attached herewith are copies of our Commission on Water Resource Management and Land Division Engineering Branch's comments for the proposed project.

Should you have any questions, please feel free to contact Nicholas Vaccaro of the Land Division's Support Services Branch at 808-587-0438.

Very truly yours,

DEAN Y. UCHIDA
Administrator

C: Kauai District Land Office

ENGINEERING BRANCH

COMMENTS

For your information, a construction right-of-entry from Kekaha Sugar Company and the State Department of Land and Natural Resources is required. Also, the Kapilimao Valley well site, according to FEMA Community-Panel No. 150002 0156 D, is located in Zone X. This is an area determined to be outside the 500-year flood plain.

The State may request a waiver of the DWS water facility charges for State projects within the Waimea-Kekaha Water System.

We reserve right to provide additional comments to the Draft Environmental Assessment.

Kekahck8.doc

DEPARTMENT OF WATER
County of Kauai

January 6, 2000 *"Water has no Substitute – Conserve It!"*

Commission on Water Resource Management
Department of Land & Natural Resources
State of Hawaii
PO Box 621
Honolulu, Hawaii 96809

Attention: Mr. Dean Uchida, Administrator
Land Division

Project: Pre-Assessment Consultation

Reference: Land Division, DLNR, letters dated Oct. 26, 1999 and Dec. 7, 1999

Thank you for your review of the subject and comments contained in the references. In compliance to the reference, the Environmental Assessment will address the following items:

1. Requirement of a Pump Installation Permit from the Commission.

2. Flow characteristics of Kapilimao Valley watercourse and possible effect to stream flow by the Project.

3. Right-of-Entry for construction from Kekaha Sugar Company and the Department of Land & Natural Resources.

Points of contact for this project are Melvin Matsumura, Department of Water @ 808-245-5410 and Henry Morita, Akinaka & Associates, Ltd. @ 808-536-7721.

Very truly yours,

Edward Tschupp

for/ Ernest Y. W. Lau
Manager and Chief Engineer

san
A:\Pre-assessment\matsu

— 4398 Pua Loke Street, Lihue, Kauai, Hawaii or P. O. Box 1706, Lihue, HI 96766-5706 —
Phone No. (808) 245-5400 – Administration FAX No. (808) 246-8628 – Engineering/Fiscal/Shop FAX No. (808) 245-5813

BENJAMIN J. CAYETANO
GOVERNOR

GENEVIEVE SALMONSON
DIRECTOR

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL
235 SOUTH BERETANIA STREET
SUITE 702
HONOLULU, HAWAII 96813
TELEPHONE (808) 586-4185
FACSIMILE (808) 586-4186

February 22, 2000

Mr. Ernest Lau, Manager and Chief Engineer
Department of Water
County of Kauai
4398 Pua Loke Street
Lihue, Hawaii 96766

Dear Mr. Lau:

Subject: Draft Environmental Assessment for the Kapilimao Valley Well and Transmission Main, Kauai

Thank you for the opportunity to review the subject document. We have the following comments on this draft environmental assessment.

1. According to page IV-5, "In consideration of the distance between wells and depth of the project well, there should be on impact from the effluent wells." Please correct the statement.

2. Please provide maps with the appropriate scale and coverage to analyze the aquifer or hydrologic unit that show the following:

   a) Hydrologic information: aquifer or hydrologic unit boundary, known or assumed groundwater flowpaths, and known or assumed water level contours.

   b) Contamination information: Points or regions of known contamination, points of potential contamination (landfills, individual wastewater disposal systems, hazardous waste sites, dry wells and injection wells), known or assumed chloride levels at specified depths in relation to nearest or adjacent wells, and the likely wellhead protection area for the proposed well.

Should you have any questions, please call Jeyan Thirugnanam at 586-4185.

Sincerely,

Genevieve Salmonson
Director

c: Akinaka & Associates, Ltd.

DEPARTMENT OF WATER
County of Kauai

"Water has no Substitute – Conserve It!"

March 1, 2000

Ms. Genevieve Salmonson, Director
Office of Environmental Quality Control
State of Hawaii
235 South Beretania Street, Room 702
Honolulu, Hawaii 96813

Ms. Salmonson:

Subject: Draft Environmental Assessment for the Kapilimao Valley Well & Transmission Main, Kauai

Reference: Office of Environmental Quality Control Letter Dated 2/22/2000

The following information responds to comments within the reference.

1. Page 1V-5, 1st paragraph: The sentence has been revised to read "In consideration of the distance between wells and depth of the project well, there should be [on} no impact from the effluent wells.

2. The attached map is provided to show:
   a. Hydrologic unit boundary, groundwater flow paths, and water level contours. Contours were assumed based on well static levels.
   b. Landfill locations, area of individual wastewater disposal systems and tentative injection well sites.

3. Chloride levels are discussed in the text and pump testing results in limiting the yield to prevent increase of chloride levels.

4. The well's surrounding lands are owned by the State of Hawaii and regulated by the Department of Land and Natural Resources. A well head protection area for the proposed well is unlikely.

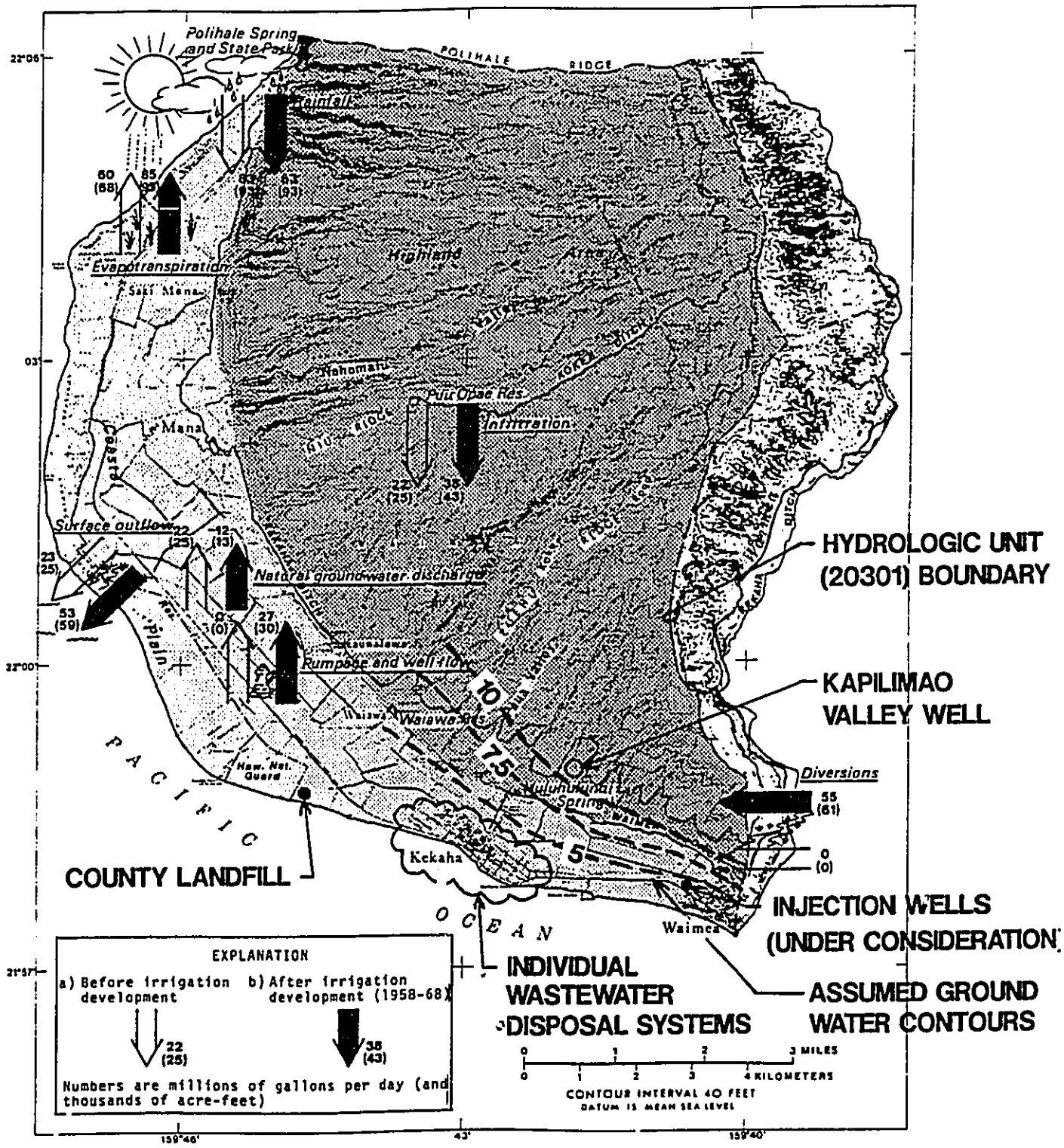
Points of contact for this project are Melvin Matsumura, Department of Water @ (808) 245-5410 and Henry Morita, Akinaka & Associates, Ltd. @ (808) 536-7721.

Sincerely,

Ernest Y.W. Lau
Manager and Chief Engineer

c: Matilda Yoshioka
Office of Community Assistance
Akinaka & Associates, Ltd.

— 4398 Pua Loke Street, Lihue, Kauai, Hawaii or P. O. Box 1706, Lihue, HI 96766-5706 —
Phone No. (808) 245-5400 – Administration FAX No. (808) 246-8628 – Engineering/Fiscal/Shop FAX No. (808) 245-5813



Average annual flow rate of the major components of the hydrologic system before and after irrigation development (1958-68). From DLNR Report R53 "Availability of Ground Water for Irrigation on the Kekaha-Mana Coastal Plain, Island of Kauai, Hawaii."

XIV. BIBLIOGRAPHY

1. County of Kauai, Department of Water, A General Plan for Domestic Water/Island of Kauai, (Division of Water and Land Development, Department of Land and Natural Resources, State of Hawaii), Honolulu, February 1972.

2. County of Kauai, A General Plan for the Island of Kauai, (Eckbo, Dean, Austin & William, Inc. and Muroda, Tanaka & Itagaki, Inc.), March, 1970.

3. County of Kauai, Revised Ordinances of Kauai, 1976 and 1978 Cumulative Supplement.

4. Mac Donald, Gordon A., Dan A. Davis and Coak C. Cox, Geology and Ground-Water Resources of the Island of Kauai, Hawaii, Hawaii Division of Hydrography Bulletin 13, 1960.

5. State of Hawaii, Department of Planning and Economic Development, State of Hawaii Data Book, 1991.

6. State of Hawaii, State Land Use Commission, Rules of Practice and Procedure, October, 1975.

7. County of Kauai, Housing Agency, Final Environmental Assessment for Water Source Improvement Waimea-Kekaha Water System, August 1998.

8. County of Kauai, Department of Water, Schematic Design Report, Kapilimao Valley Well, State Well 5841-02, October 1999.

9. DLNR, Division of Forestry and Wildlife, Final Environmental Assessment for Wildlife Habitat Improvements Project, Kekaha Game Management Area, Kauai, September 1997.

10. County of Kauai, Department of Public Works, Final Environmental Assessment for Effluent Injection Wells, Waimea Wastewater Treatment Plant, May 1995.

SCIENTIFIC CONSULTANT SERVICES, Inc.
711 Kapiolani Blvd., Suite 777 Honolulu, Hawai'i 96813

Henry Morita
Akinaka and Associates, Ltd.
250 N. Beretania St., Ste. 300
Honolulu, HI 96817-4716

October 9, 1998
SCS Project NO. 145

Dear Mr. Morita:

Thank you again for allowing SCS, Inc. to provide archaeological reconnaissance and archival/background research regarding the Waimea-Kekaha Water System project, Kekaha, Kauai. The following letter reports the outcome of archival and background research pertaining to the project area, results of field inspection of the proposed well site, and recommendations for proposed work.

ARCHIVAL/BACKGROUND RESEARCH

The Kekaha area, in general, has not been subject to many archaeological research projects. No archaeological projects have been previously conducted within Kapilimao Valley itself. Of the few recent projects occurring near the present project area, these occurred near the coastline (Heidel *et al.* 1997, Masterson *et al.* 1994) and in upland areas (Yent 1997, McMahon 1993). Although limited archaeology has been done in the Kekaha area, certain patterns of land utilization over time are discernable.

Heidel *et al.* (1997:19) provide a synthesis of traditional land use which likely occurred near the current project area: Zone 2 consists of narrow valleys and slope bases. Intermittent streams and springs would have supplied much needed water for the production of taro (and later, sugar cane). *Lo'i* systems (pondfields for the cultivation of irrigated taro; Kirch 1985), permanent residences, *heiau*, and/or terraces are considered likely to have been constructed in this zone, the gulches such as Kapilimao Valley being considered areas which were tapped for water resources to irrigate lower elevation fields.

While taro was presumably cultivated in the area, sweet potato, not requiring the degree of nourishment needed for taro cultivation, was likely a major staple food in the area. Thus, temporary use of upland areas likely consisted of resource-gathering zones (Yent 1997), lower

APPENDIX A

valley gulches such as Kapilimao Valley utilized for temporary habitation and the acquisition of resources (hydrological and faunal), the plain areas being utilized for subsistence, habitation, and religious pursuits (*lo`i, heiau*, permanent structures, fishponds), and coastal areas being utilized on a temporary basis for fishing (temporary camp sites) and burial activities.

More succinctly, traditional land use within and near the present project area likely consisted of temporary occupation of these dry, Leeward lands. Kelly (1971:2) notes that "Kekaha" means *`aina malo`o* or "dry land" in the Hawaiian language. Activities occurring in the valley, particularly lower valley reaches, presumably consisted of acquiring avifaunal and other faunal resources and tapping the stream and nearby springs for irrigable water, this important commodity funneled to lower elevational areas. Thus far though, only minimal evidence has been found to support this claim. Profitable use of the Kapilimao Stream waters would likely have occurred at the base of the valley, presently the location of intensive sugarcane cultivation.

Archival research further revealed historic-period activities within and near the Kapilimao project locale. Research revealed that no Land Commission Awards (LCA) occurred within the subject parcel nor its environs.

During the 1860s, rice cultivation occurred on the plains below the valley, this terminated by the inception of sugar cane cultivation in the latter portion of the 19th century (Heidel *et al.* 1997). In 1878, Kekaha Sugar Company drilled its first artesian well in this dry area, the company finally incorporated in 1898. Yent (1997:7) states that by 1959, the whole plain was under sugar cane cultivation. Ranching activity also occurred during the late 19th century, more so in upland reaches though.

From the 1870s through the early 1900s and later, during the middle of the 20th century, ranching activities were prevalent near the project area. The land within and near the Kekaha Well Project reflects this land utilization as evidence for sugarcane cultivation (wells, walls signaling irrigation to lower fields) and ranching endeavors (metal cattle pens) were identified during the reconnaissance survey.

PROJECT AREA

On October 5, 1998, Michael Dega of SCS, Inc. conducted a field inspection at the proposed well site. The site is situated within Kapilimao Valley, Waimea Ahupua`a, Kona District, Island of Kauai (TMK (4) 1-2-02:1), northeast of Kekaha Town at 39*44'76" South and 83*74'02" East. The site lies on land leased to Kekaha Sugar Company by the state of Hawaii. Specifically, the proposed well site lies within lower Kapilimao Valley, the valley bounded by Hukipo Road to the south, Huluhulunui Ridge to the east, Waiaka Ridge to the west, and upper Kapilimao Valley to the north.

ENVIRONMENT

Topographically, the lower valley reaches containing the proposed well site consist of only slightly undulating landforms and are generally flat and open. The project area lies at an elevation of some 150 feet (46 meters) above mean sea level. Elevation within the valley increases with upvalley distance. Lower valley reaches, near the site, average elevational increases of approximately 6 vertical feet per 50 horizontal feet, this ratio increasing the further one travels upvalley.

Kapilimao Valley itself is generally U-shaped and contains a gently sloping valley floor enclosed by moderate-steep valley sidewalls. Rock outcrops line the valley slopes and are also common on the valley floor. An intermittent, meandering stream courses through the valley, stream depth being minimal in most places. Vegetation within the valley represents a relatively low diversity of plant species for Kauai, although this is not surprising consideration the aridity of the area (c. 27" of precipitation per year). Large expanses of the project area and environs are covered in "degraded shrubland": *koa haole* (*Leucaena leucocephala*), Guinea Grass (*Panicum maximum*), cat's claw (*Macfadyena ungis-cati*), and other introduced species. Much secondary growth brush occurs near the banks of the small stream.

ARCHAEOLOGICAL RESULTS

Archaeological reconnaissance of the proposed well site and environs failed to yield any traditional or early historic archaeological resources that may have included structures (walls, enclosures, terraces) or artifact scatters (basalt lithic tools such as adzes, flakes, or cores). Survey of areas near the subject parcel revealed traces of sugarcane cultivation (machinery, modern irrigation ducts) and ranching (fenced cattle pen). A road courses through the valley but appears to be of modern origin. No evidence of pre-Contact or early historic features were

evident in the area. It is suggested that if many features were present, they would likely have been destroyed during recent or modern landscape alterations.

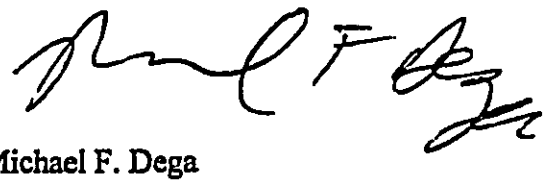
The superior characteristic of the landscape is the intensive landscape alterations occurring within and near the subject parcel. Bulldozer push of large cobbles and boulders has formed modern rock mounds and the land surface itself appears to have been graded in many instances. Disturbance likely occurred during construction of the rough Kapilimao Valley Road (running some 1.5 to 2 kilometers upvalley) and during sugarcane production in the area. While modern disturbances may have obliterated archaeological remains, it is likely that few resources ever existed in this extremely dry, inland location. It appears more likely that early inhabitants of the area would have settled nearer the coastline, particularly in population centers such as Waimea, several miles to the east, and utilized Kapilimao Valley on an intermittent basis.

RECOMMENDATIONS

Archival research and field inspection of the project area allows for our determination that no archaeological sites are present within the project area and none will be impacted during excavations for the water well. The project area is considered as a low sensitivity zone as research has shown that habitation and most traditional activities likely occurred predominantly in the lowlands, south of the valley, and near the coastline. Field inspection of the site failed to reveal prehistoric or early historic resources. In addition, only modern debris and structures were noted within the project area and environs. It is recommended that work on the water well excavation proceed as planned. No archaeological monitoring of this work is required.

We again than you for selecting SCS, Inc. for your archaeological needs. If any questions or concerns arise, please do not hesitate to call myself or Dr. Robert L. Spear.

Regards,



Michael F. Dega
Senior Archaeologist

MONTGOMERY WATSON LABORATORIES
a Division of Montgomery Watson Americas, Inc.
555 East Walnut Street
Pasadena, California 91101
Tel: 626 568 6400 Fax: 626 568 6324
1 800 566 LABS (1 800 566 5227)

Laboratory Report

for

Kauai Water Department
P.O. Box 1706

Lihue , HI 96766

Attention: Wayne Hinazumi
Fax: (808) 245-5813

HDS Hillary Strayer

Report#: 57835
PHASEV

APPENDIX B

Report Summary of positive results, PR57835

Analyzed	990910033 KAPILIMAO WAI	Result	MDL	UNITS
		99 OCT 11 PM: 06		
09/18/99	Data Entry	09/21/99		--
09/23/99	Chromium, Total, ICAP/MS	3.7	2.000	UGL
09/16/99	Data Entry	09/20/99		--
09/15/99	Di(2-Ethylhexyl)phthalate	1.0	.600	UGL
09/26/99	Data Entry	09/29/99		--
09/24/99	Data Entry	09/28/99		--
09/14/99	Alkalinity	127	1.000	MGL
09/16/99	Calcium, Total, ICAP	13.6	1.000	MGL
09/16/99	Fluoride	0.13	.050	MGL
09/10/99	Nitrate-N by IC	2.66	.200	MGL
09/14/99	Specific Conductance	495	4.000	UMHO

MONTGOMERY WATSON LABORATORIES
a Division of Montgomery Watson Americas, Inc.
555 East Walnut Street
Pasadena, California 91101
Tel: 626 568 6400 Fax: 626 568 6324
1 800 566 LABS (1 800 566 5227)

Report
Comments
#57835

99 OCT 11 P4:05

COUNTY OF KAUAI

Group Comments

TCDD analyzed by Quanterra. See attached subcontracted report.
(549.1) Paraquat recovered below method QC limits from the laboratory fortified matrix. This suggests a possible matrix intereaction. Paraquat is not a regulated compound.
(508) LCS recovery failed for PCB 1016 and PCB 1260, LCS was not spiked. Sample results for aroclors not reported. QIR-GC -99-135.
(515.1) LCS recovery failed low for acifluorfen. Acifluorfen is not a regulated compound, method defines as qualitative.

(990910033)
@DIQUAT
(549.1-DIQUAT) Paraquat recovery outside MWL QC criteria of 70-130% in DLFM.
ALK
LCS2 value is over the internal QA limit but meet EPA limits of 90-110%

Montgomery Watson Laboratories
, Los Angeles, CA 90051-3508
PHONE: 626-568-6400/FAX: 626-568-6324

ACKNOWLEDGMENT OF SAMPLES RECEIVED

Kauai Water Department
P.O. Box 1706
Lihue, HI 96766
Attn: Wayne Hinazumi

99 OCT 11 P4:05

Customer Code: KAUAI
Group#: 57835
Project#: PHASEV
Proj Mgr: Hillary Strayer
Phone: (808) 245-5493

The following samples were received from you on 09/10/99. They have been scheduled for the tests listed beside each sample. If this information is incorrect, please contact your service representative. Thank you for using Montgomery Watson Laboratories.

Sample#	Sample Id	Matrix / Tests Scheduled					Sample Date
990910033	KAPILIMAO WAI	Water					09/09/99
		@DIQUAT	@EDB-DBC	@MET-HI	@ML502.2	@ML525	
		@ML531	@NPS3	@PESTSDW	ALK	EC	ENDOT
		GLYPHOS	TCDD-DW	CNDW	HG	CA	NO2-N
		NO3	F				

Test Acronym Description

Test Acronym	Description
@DIQUAT	Diquat and Paraquat
@EDB-DBC	EDB and DBCP by GC-ECD
@MET-HI	ICPMS Metals
@ML502.2	Volatile Organic Compounds
@ML525	525 Semivolatiles by GC/MS
@ML531	Aldicarbs
@NPS3	Herbicides by 515.1
@PESTSDW	SDWA Pesticides
ALK	Alkalinity
CA	Calcium, Total, ICAP
CNDW	Cyanide
EC	Specific Conductance
ENDOTHAL	Endothall
F	Fluoride
GLYPHOS	Glyphosate
HG	Mercury
NO2-N	Nitrite, Nitrogen by IC
NO3	Nitrate-N by IC
TCDD-DW	2,3,7,8 - TCDD

MONTGOMERY WATSON LABORATORIES
555 East Walnut Street
Pasadena, California 91101
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1 800 566 LABS (1 800 566 5227)

Laboratory
Report
57835

99 OCT 11 P4:06

DEPT OF WATER
COUNTY OF KAUAI

Kauai Water Department
Wayne Hinazumi
P.O. Box 1706
Lihue , HI 96766

Sample Received
10-sep-1999 13:57:50
990910033

SAFE DRINKING WATER BRANCH
PHASE II AND PHASE V CONTAMINANTS
SUMMARY FORM

Water System Name: _____ PWS ID No. _____

Sample Location: KAPILIMAO WAI

Sample Date: 09/09/99

Laboratory Name: Montgomery Laboratories Lab Report No. 990910033

Contaminant	EPA Method	Detection Limit	Concentration
2,4-D (ug/L)	515.1	0.1	ND
2,4,5-TP (ug/L)	515.1	0.2	ND
Pentachlorophenol (ug/L)	515.1	0.04	ND
Picloram (ug/L)	515.1	0.1	ND
Dalapon (ug/L)	515.1	1	ND
Dinoseb (ug/L)	515.1	0.2	ND
Benzo(a)pyrene (ug/L)	525.2	0.02	ND
Di(2-ethylhexyl)adipate (ug/L)	525.2	0.6	ND
Diethylhexylphthalate (ug/L)	525.2	0.6	1.0
Dioxin (Picograms/L)	1613	3.1	ND
Diquat (ug/L)	549.1	0.4	ND
Endothall (ug/L)	548.1	5	ND
Cyanide (Milligrams/L)	4500CN	0.025	ND

Group A,B,C -- Note: Surface water systems must take annual samples for cynanide

MONTGOMERY WATSON LABORATORIES
a Division of Montgomery Watson Americas, Inc.
555 East Walnut Street
Pasadena, California 91101
Tel: 626 568 6400 Fax: 626 568 6324
1 800 566 LABS (1 800 566 5227)

Laboratory
Report
#57835

99 OCT 11 P4:06

Kauai Water Department
Wayne Hinazumi
P.O. Box 1706
Lihue , HI 96766

Samples Received
10-Sep-1999 13:57:50

Prepared	Analyzed	QC Batch#	Method	Analyte	Result	Units	MRL	Dilution
LPILIMAO WAI (990910033) Sampled on 09/09/99								
	09/14/99	102007	(SM2320B/E310.1)	Alkalinity	127	mg/l	1.0	1
09/16/99	09/16/99	101986	(ML/EPA 200.7)	Calcium, Total, ICAP	13.6	mg/l	1.0	1
	09/14/99	101826	(ML/SM 4500CN)	Cyanide	ND	mg/l	0.025	1
	09/14/99	101766	(ML/S2510B)	Specific Conductance	495	umho/cm	4.0	1
09/15/99	09/27/99	102792	(ML/EPA 548.1)	Endothall	ND	ug/l	5.0	1
	09/16/99	102146	(S4500FC/E340.2)	Fluoride	0.13	mg/l	0.050	1
	09/20/99	102195	(ML/EPA 547)	Glyphosate	ND	ug/l	6.0	1
09/13/99	09/14/99	101788	(EPA/ML 245.1)	Mercury	ND	ug/l	0.20	1
	09/10/99	101700	(ML/EPA 300.0)	Nitrite, Nitrogen by IC	ND	mg/l	0.20	2
	09/10/99	101701	(ML/EPA 300.0)	Nitrate-N by IC	2.66	mg/l	0.20	2
09/20/99	09/24/99		(EPA 1613)	2,3,7,8 - TCDD	ND	PGL	3.1	1
525 Semivolatiles by GC/MS								
09/14/99	09/15/99	101930	(ML/EPA 525.2)	2,4-Dinitrotoluene	ND	ug/l	0.10	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	alpha-Chlordane	ND	ug/l	0.050	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Acenaphthylene	ND	ug/l	0.10	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Alachlor	ND	ug/l	0.050	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Aldrin	ND	ug/l	0.050	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Anthracene	ND	ug/l	0.020	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Atrazine	ND	ug/l	0.050	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Benz(a)Anthracene	ND	ug/l	0.050	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Benzo(a)pyrene	ND	ug/l	0.020	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Benzo(b)Fluoranthene	ND	ug/l	0.020	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Benzo(g,h,i)Perylene	ND	ug/l	0.050	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Benzo(k)Fluoranthene	ND	ug/l	0.020	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Di(2-Ethylhexyl)phthalate	1.0	ug/l	0.60	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Butylbenzylphthalate	ND	ug/l	0.50	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Bromacil	ND	ug/l	0.20	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Butachlor	ND	ug/l	0.050	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Caffeine	ND	ug/l	0.020	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Chrysene	ND	ug/l	0.020	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Dibenz(a,h)Anthracene	ND	ug/l	0.050	1

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DEPT. OF WATER
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Kauai Water Department
(continued)

Prepared	Analyzed	QC Batch#	Method	Analyte	Result	Units	MRL	Dilution
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Di-(2-Ethylhexyl)adipate	ND	ug/l	0.60	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Diethylphthalate	ND	ug/l	0.50	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Dieldrin	ND	ug/l	0.20	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Dimethylphthalate	ND	ug/l	0.50	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Dimethoate	ND	ug/l	10	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Di-n-Butylphthalate	ND	ug/l	0.50	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Endrin	ND	ug/l	0.10	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Fluorene	ND	ug/l	0.050	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	gamma-Chlordane	ND	ug/l	0.050	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Hexachlorobenzene	ND	ug/l	0.050	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Hexachlorocyclopentadiene	ND	ug/l	0.050	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Heptachlor	ND	ug/l	0.040	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Heptachlor Epoxide	ND	ug/l	0.020	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Indeno(1,2,3,c,d)Pyrene	ND	ug/l	0.050	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Isophorone	ND	ug/l	0.50	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Lindane	ND	ug/l	0.020	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Methoxychlor	ND	ug/l	0.050	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Metribuzin	ND	ug/l	0.050	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Molinate	ND	ug/l	0.20	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Metolachlor	ND	ug/l	0.050	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	trans-Nonachlor	ND	ug/l	0.050	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Pentachlorophenol	ND	ug/l	1.0	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Phenanthrene	ND	ug/l	0.020	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Prometryn	ND	ug/l	0.50	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Propachlor	ND	ug/l	0.050	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Pyrene	ND	ug/l	0.050	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Simazine	ND	ug/l	0.050	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Thiobencarb	ND	ug/l	0.20	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Trifluralin	ND	ug/l	0.10	1
			(Surrogate)	Perylene-d12	89	% Rec		

Aldicarbs

	09/28/99	102460	(ML/EPA 531.1)	3-Hydroxycarbofuran	ND	ug/l	2.0	1
	09/28/99	102460	(ML/EPA 531.1)	Aldicarb (Temik)	ND	ug/l	0.50	1
	09/28/99	102460	(ML/EPA 531.1)	Aldicarb sulfone	ND	ug/l	0.70	1
	09/28/99	102460	(ML/EPA 531.1)	Aldicarb sulfoxide	ND	ug/l	0.50	1

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Prepared	Analyzed	QC Batch#	Method	Analyte	Result	Units	MRL	Dilution
	09/28/99	102460	(ML/EPA 531.1)	Baygon	ND	ug/l	2.0	1
	09/28/99	102460	(ML/EPA 531.1)	Carbofuran (Furadan)	ND	ug/l	0.90	1
	09/28/99	102460	(ML/EPA 531.1)	Carbaryl	ND	ug/l	2.0	1
	09/28/99	102460	(ML/EPA 531.1)	Methiocarb	ND	ug/l	2.0	1
	09/28/99	102460	(ML/EPA 531.1)	Methomyl	ND	ug/l	1.0	1
	09/28/99	102460	(ML/EPA 531.1)	Oxamyl (Vydate)	ND	ug/l	2.0	1
			(Surrogate)	BDMC	108	% Rec		
			Diquat and Paraquat					
09/10/99	09/15/99	102233	(ML/EPA 549.1)	Diquat	ND	ug/l	0.40	1
09/10/99	09/15/99	102233	(ML/EPA 549.1)	Paraquat	ND	ug/l	2.0	1
			EDB and DBCP by GC-ECD					
09/17/99	09/18/99	102124	(ML/EPA 504.1)	Dibromochloropropane (DBCP)	ND	ug/l	0.010	1
09/17/99	09/18/99	102124	(ML/EPA 504.1)	Ethylene Dibromide (EDB)	ND	ug/l	0.010	1
			(Surrogate)	1,2-dibromopropane	109	% Rec		
			Herbicides by 515.1					
09/15/99	09/26/99	102522	(ML/EPA 515.1)	2,4,5-T	ND	ug/l	0.20	1
09/15/99	09/26/99	102522	(ML/EPA 515.1)	2,4,5-TP (Silvex)	ND	ug/l	0.20	1
09/15/99	09/26/99	102522	(ML/EPA 515.1)	2,4-D	ND	ug/l	0.10	1
09/15/99	09/26/99	102522	(ML/EPA 515.1)	2,4-DB	ND	ug/l	2.0	1
09/15/99	09/26/99	102522	(ML/EPA 515.1)	Dichlorprop	ND	ug/l	0.50	1
09/15/99	09/26/99	102522	(ML/EPA 515.1)	Acifluorfen (qualitative)	ND	ug/l	0.20	1
09/15/99	09/26/99	102522	(ML/EPA 515.1)	Bentazon	ND	ug/l	0.50	1
09/15/99	09/26/99	102522	(ML/EPA 515.1)	Dalapon (qualitative)	ND	ug/l	1.0	1
09/15/99	09/26/99	102522	(ML/EPA 515.1)	3,5-Dichlorobenzoic acid	ND	ug/l	0.50	1
09/15/99	09/26/99	102522	(ML/EPA 515.1)	DCPA	ND	ug/l	0.10	1
09/15/99	09/26/99	102522	(ML/EPA 515.1)	Dicamba	ND	ug/l	0.080	1
09/15/99	09/26/99	102522	(ML/EPA 515.1)	Dinoseb	ND	ug/l	0.20	1
09/15/99	09/26/99	102522	(ML/EPA 515.1)	Pentachlorophenol	ND	ug/l	0.040	1
09/15/99	09/26/99	102522	(ML/EPA 515.1)	Picloram	ND	ug/l	0.10	1
09/15/99	09/26/99	102522	(ML/EPA 515.1)	4-Nitrophenol (qualitative)	ND	ug/l	5.0	1
			(Surrogate)	2,4-Dichlorophenylacetic acid	95	% Rec		

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Prepared	Analyzed	QC Batch#	Method	Analyte	Result	Units	MRL	Dilution
				ICPMS Metals				
9/23/99	09/23/99	102307	(EPA/ML 200.8)	Arsenic, Total, ICAP/MS	ND	ug/l	1.0	1
3/23/99	09/23/99	102307	(EPA/ML 200.8)	Barium, Total, ICAP/MS	ND	ug/l	2.0	1
09/23/99	09/23/99	102307	(EPA/ML 200.8)	Beryllium, Total, ICAP/MS	ND	ug/l	1.0	1
9/23/99	09/23/99	102307	(EPA/ML 200.8)	Cadmium, Total, ICAP/MS	ND	ug/l	0.50	1
9/23/99	09/23/99	102307	(EPA/ML 200.8)	Chromium, Total, ICAP/MS	3.7	ug/l	2.0	1
09/23/99	09/23/99	102307	(EPA/ML 200.8)	Copper, Total, ICAP/MS	ND	ug/l	2.0	1
09/23/99	09/23/99	102307	(EPA/ML 200.8)	Nickel, Total, ICAP/MS	ND	ug/l	5.0	1
9/23/99	09/23/99	102307	(EPA/ML 200.8)	Lead, Total, ICAP/MS	ND	ug/l	0.50	1
9/23/99	09/23/99	102307	(EPA/ML 200.8)	Antimony, Total, ICAP/MS	ND	ug/l	1.0	1
09/23/99	09/23/99	102307	(EPA/ML 200.8)	Selenium, Total, ICAP/MS	ND	ug/l	5.0	1
9/23/99	09/23/99	102307	(EPA/ML 200.8)	Thallium, Total, ICAP/MS	ND	ug/l	1.0	1
				SDWA Pesticides				
9/14/99	09/24/99	102427	(ML/EPA 508)	PCB 1016 Aroclor	NA	ug/l	0.070	1
9/14/99	09/24/99	102427	(ML/EPA 508)	PCB 1221 Aroclor	NA	ug/l	0.10	1
09/14/99	09/24/99	102427	(ML/EPA 508)	PCB 1232 Aroclor	NA	ug/l	0.10	1
09/14/99	09/24/99	102427	(ML/EPA 508)	PCB 1242 Aroclor	NA	ug/l	0.10	1
9/14/99	09/24/99	102427	(ML/EPA 508)	PCB 1248 Aroclor	NA	ug/l	0.10	1
9/14/99	09/24/99	102427	(ML/EPA 508)	PCB 1254 Aroclor	NA	ug/l	0.10	1
09/14/99	09/24/99	102427	(ML/EPA 508)	PCB 1260 Aroclor	NA	ug/l	0.10	1
9/14/99	09/24/99	102427	(ML/EPA 508)	Alpha-BHC	ND	ug/l	0.010	1
9/14/99	09/24/99	102427	(ML/EPA 508)	Alachlor (Alanex)	ND	ug/l	0.050	1
09/14/99	09/24/99	102427	(ML/EPA 508)	Aldrin	ND	ug/l	0.010	1
09/14/99	09/24/99	102427	(ML/EPA 508)	Beta-BHC	ND	ug/l	0.010	1
9/14/99	09/24/99	102427	(ML/EPA 508)	Chlordane	ND	ug/l	0.10	1
9/14/99	09/24/99	102427	(ML/EPA 508)	Chlorthalonil (Draconil,Bravo)	ND	ug/l	0.010	1
09/14/99	09/24/99	102427	(ML/EPA 508)	Delta-BHC	ND	ug/l	0.010	1
9/14/99	09/24/99	102427	(ML/EPA 508)	p,p' DDD	ND	ug/l	0.010	1
9/14/99	09/24/99	102427	(ML/EPA 508)	p,p' DDE	ND	ug/l	0.010	1
09/14/99	09/24/99	102427	(ML/EPA 508)	p,p' DDT	ND	ug/l	0.010	1
09/14/99	09/24/99	102427	(ML/EPA 508)	Dieldrin	ND	ug/l	0.010	1
9/14/99	09/24/99	102427	(ML/EPA 508)	Endrin Aldehyde	ND	ug/l	0.010	1
09/14/99	09/24/99	102427	(ML/EPA 508)	Endrin	ND	ug/l	0.010	1

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Prepared	Analyzed	QC Batch#	Method	Analyte	Result	Units	MRL	Dilution
09/14/99	09/24/99	102427	(ML/EPA 508)	Endosulfan I (alpha)	ND	ug/l	0.010	1
09/14/99	09/24/99	102427	(ML/EPA 508)	Endosulfan II (beta)	ND	ug/l	0.010	1
09/14/99	09/24/99	102427	(ML/EPA 508)	Endosulfan sulfate	ND	ug/l	0.010	1
09/14/99	09/24/99	102427	(ML/EPA 508)	Heptachlor	ND	ug/l	0.010	1
09/14/99	09/24/99	102427	(ML/EPA 508)	Heptachlor Epoxide	ND	ug/l	0.010	1
09/14/99	09/24/99	102427	(ML/EPA 508)	Lindane (gamma-BHC)	ND	ug/l	0.010	1
09/14/99	09/24/99	102427	(ML/EPA 508)	Methoxychlor	ND	ug/l	0.050	1
09/14/99	09/24/99	102427	(ML/EPA 508)	Toxaphene	ND	ug/l	0.50	1
			(Surrogate)	Dibutyl Chlorendate	92	% Rec		
			(Surrogate)	Tetrachlorometaxylene	84	% Rec		
				Volatile Organic Compounds				
	09/16/99	101941	(ML/EPA 502.2)	1,1,1,2-Tetrachloroethane	ND	ug/l	0.50	1
	09/16/99	101941	(ML/EPA 502.2)	1,1,1-Trichloroethane	ND	ug/l	0.50	1
	09/16/99	101941	(ML/EPA 502.2)	1,1,2,2-Tetrachloroethane	ND	ug/l	0.50	1
	09/16/99	101941	(ML/EPA 502.2)	1,1,2-Trichloroethane	ND	ug/l	0.50	1
	09/16/99	101941	(ML/EPA 502.2)	1,1-Dichloroethane	ND	ug/l	0.50	1
	09/16/99	101941	(ML/EPA 502.2)	1,1-Dichloroethene	ND	ug/l	0.50	1
	09/16/99	101941	(ML/EPA 502.2)	1,1-Dichloropropene	ND	ug/l	0.50	1
	09/16/99	101941	(ML/EPA 502.2)	1,2,3-Trichloropropane	ND	ug/l	0.50	1
	09/16/99	101941	(ML/EPA 502.2)	1,2,3-Trichlorobenzene	ND	ug/l	0.50	1
	09/16/99	101941	(ML/EPA 502.2)	1,2,4-Trichlorobenzene	ND	ug/l	0.50	1
	09/16/99	101941	(ML/EPA 502.2)	1,2,4-Trimethylbenzene	ND	ug/l	0.50	1
	09/16/99	101941	(ML/EPA 502.2)	1,2-Dichloroethane	ND	ug/l	0.50	1
	09/16/99	101941	(ML/EPA 502.2)	1,2-Dichlorobenzene	ND	ug/l	0.50	1
	09/16/99	101941	(ML/EPA 502.2)	1,2-Dichloropropane	ND	ug/l	0.50	1
	09/16/99	101941	(ML/EPA 502.2)	1,3,5-Trimethylbenzene	ND	ug/l	0.50	1
	09/16/99	101941	(ML/EPA 502.2)	1,3-Dichlorobenzene	ND	ug/l	0.50	1
	09/16/99	101941	(ML/EPA 502.2)	1,3-Dichloropropane	ND	ug/l	0.50	1
	09/16/99	101941	(ML/EPA 502.2)	1,4-Dichlorobenzene	ND	ug/l	0.50	1
	09/16/99	101941	(ML/EPA 502.2)	2,2-Dichloropropane	ND	ug/l	0.50	1
	09/16/99	101941	(ML/EPA 502.2)	2-Chlorotoluene	ND	ug/l	0.50	1
	09/16/99	101941	(ML/EPA 502.2)	4-Chlorotoluene	ND	ug/l	0.50	1
	09/16/99	101941	(ML/EPA 502.2)	Bromodichloromethane	ND	ug/l	0.50	1
	09/16/99	101941	(ML/EPA 502.2)	Benzene	ND	ug/l	0.50	1
	09/16/99	101941	(ML/EPA 502.2)	Bromobenzene	ND	ug/l	0.50	1

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Kauai Water Department

DEPT OF WATER
COUNTY OF KAUAI

QC Batch #101700 Nitrite, Nitrogen by IC

QC	Analyte	Spiked	Recovered	Yield (%)	Limits (%)	RPD (%)
MS	Spiked sample	Lab # 99	0909105		(0.00 - 0.00)	
LCS1	Nitrite, Nitrogen by IC	1.0	0.920	92.0	(90.00 - 110.00)	
LCS2	Nitrite, Nitrogen by IC	1.0	0.960	96.0	(90.00 - 110.00)	4.3
MBLK	Nitrite, Nitrogen by IC	ND				
MS	Nitrite, Nitrogen by IC	1.0	1.04	104.0	(82.00 - 114.00)	
MSD	Nitrite, Nitrogen by IC	1.0	1.03	103.0	(82.00 - 114.00)	0.97

QC Batch #101701 Nitrate-N by IC

QC	Analyte	Spiked	Recovered	Yield (%)	Limits (%)	RPD (%)
MS	Spiked sample	Lab # 99	0908444		(0.00 - 0.00)	
LCS1	Nitrate-N by IC	2.5	2.56	102.4	(94.00 - 106.00)	
LCS2	Nitrate-N by IC	2.5	2.59	103.6	(94.00 - 106.00)	1.2
MBLK	Nitrate-N by IC	ND				
MS	Nitrate-N by IC	2.5	2.66	106.4	(85.00 - 118.00)	
MSD	Nitrate-N by IC	2.5	2.66	106.4	(85.00 - 118.00)	0.00

QC Batch #101766 Specific Conductance

QC	Analyte	Spiked	Recovered	Yield (%)	Limits (%)	RPD (%)
DUP	Spiked sample	Lab # 99	0913076		(0.00 - 0.00)	

QC Batch #101788 Mercury

QC	Analyte	Spiked	Recovered	Yield (%)	Limits (%)	RPD (%)
MS	Spiked sample	Lab # 99	0907016		(0.00 - 0.00)	
LCS1	Mercury	1.50	1.38	92.0	(85.00 - 115.00)	
LCS2	Mercury	1.50	1.33	88.7	(85.00 - 115.00)	3.7
MBLK	Mercury	ND				
MS	Mercury	1.50	1.32	88.0	(83.00 - 119.00)	
MSD	Mercury	1.50	1.34	89.3	(83.00 - 119.00)	1.5

Spikes which exceed Limits and Method Blanks with positive results are highlighted by Underlining.
Criteria for MS and DUP are advisory only and not applicable for ICR monitoring.

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QC Batch #101826 — Cyanide

QC	Analyte	Spiked	Recovered	Yield (%)	Limits (%)	RPD (%)
MS	Spiked sample	Lab # 99	0910142		(0.00 - 0.00)	
LCS1	Cyanide	0.1	0.094	94.0	(80.00 - 120.00)	
MBLK	Cyanide	ND				
MS	Cyanide	0.096	0.077	80.2	(80.00 - 120.00)	
MSD	Cyanide	0.096	0.079	82.3	(80.00 - 120.00)	2.6

QC Batch #101930 — 525 Semivolatiles by GC/MS

QC	Analyte	Spiked	Recovered	Yield (%)	Limits (%)	RPD (%)
LCS1	alpha-Chlordane	2	1.88	94.0	(70.00 - 130.00)	
MBLK	alpha-Chlordane	ND				
MS	alpha-Chlordane	2	1.82	91.0	(70.00 - 130.00)	
MBLK	Diazinon	ND				
MS	Spiked sample	Lab # 99	0910033		(0.00 - 0.00)	
LCS1	Acenaphthylene	2	1.96	98.0	(84.00 - 114.00)	
MBLK	Acenaphthylene	ND				
MS	Acenaphthylene	2	1.98	99.0	(83.00 - 111.00)	
LCS1	Alachlor	2	2.11	105.5	(70.00 - 130.00)	
MBLK	Alachlor	ND				
MS	Alachlor	2	2.11	105.5	(70.00 - 130.00)	
LCS1	Aldrin	2	1.56	78.0	(78.00 - 130.00)	
MBLK	Aldrin	ND				
MS	Aldrin	2	1.74	87.0	(82.00 - 126.00)	
LCS1	Anthracene	2	1.81	90.5	(81.00 - 122.00)	
MBLK	Anthracene	ND				
MS	Anthracene	2	1.66	83.0	(74.00 - 121.00)	
LCS1	Atrazine	2	1.98	99.0	(70.00 - 130.00)	
MBLK	Atrazine	ND				
MS	Atrazine	2	2.04	102.0	(72.00 - 128.00)	
LCS1	Benz(a)Anthracene	2	1.75	87.5	(72.00 - 118.00)	
MBLK	Benz(a)Anthracene	ND				

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MS	Methoxychlor	2	1.84	92.0	(70.00 - 130.00)
MBLK	Metribuzin	ND			
LCS1	Molinate	2	2.20	110.0	(71.00 - 124.00)
MBLK	Molinate	ND			
MS	Molinate	2	2.16	108.0	(73.00 - 127.00)
MBLK	Metolachlor	ND			
LCS1	trans-Nonachlor	2	1.86	93.0	(70.00 - 130.00)
MBLK	trans-Nonachlor	ND			
MS	trans-Nonachlor	2	1.84	92.0	(70.00 - 130.00)
LCS1	Pentachlorophenol	8	7.09	88.6	(70.00 - 130.00)
MBLK	Pentachlorophenol	ND			
MS	Pentachlorophenol	8	8.36	104.5	(70.00 - 130.00)
LCS1	Phenanthrene	2	1.75	87.5	(79.00 - 124.00)
MBLK	Phenanthrene	ND			
MS	Phenanthrene	2	1.77	88.5	(80.00 - 124.00)
MBLK	Prometryn	ND			
MBLK	Propachlor	ND			
LCS1	Pyrene	2	1.93	96.5	(82.00 - 130.00)
MBLK	Pyrene	ND			
MS	Pyrene	2	1.68	94.0	(70.00 - 130.00)
LCS1	Simazine	2	2.37	118.5	(70.00 - 130.00)
MBLK	Simazine	ND			
MS	Simazine	2	2.35	117.5	(71.00 - 125.00)
LCS1	Perylene-d12	100	94	94.0	(70.00 - 130.00)
MBLK	Perylene-d12	100	93	93.0	
MS	Perylene-d12	100	96	96.0	(70.00 - 130.00)
LCS1	Thiobencarb	2	2.07	103.5	(79.00 - 126.00)
MBLK	Thiobencarb	ND			
MS	Thiobencarb	2	2.11	105.5	(80.00 - 127.00)
MBLK	Trifluralin	ND			

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Kauai Water Department
(continued)

QC Batch #101941

Volatile Organic Compounds

QC	Analyte	Spiked	Recovered	Yield (%)	Limits (%)	RPD (%)
LCS1	1,1,1,2-Tetrachloroethane	4.0	4.0	100.0	(80.00 - 120.00)	
MBLK	1,1,1,2-Tetrachloroethane	ND				
LCS1	1,1,1-Trichloroethane	4.0	4.1	102.5	(80.00 - 120.00)	
MBLK	1,1,1-Trichloroethane	ND				
LCS1	1,1,2,2-Tetrachloroethane	4.0	3.8	95.0	(80.00 - 120.00)	
MBLK	1,1,2,2-Tetrachloroethane	ND				
LCS1	1,1,2-Trichloroethane	4.0	4.0	100.0	(80.00 - 120.00)	
MBLK	1,1,2-Trichloroethane	ND				
LCS1	1,1-Dichloroethane	4.0	4.0	100.0	(80.00 - 120.00)	
MBLK	1,1-Dichloroethane	ND				
LCS1	1,1-Dichloroethene	4.0	3.8	95.0	(80.00 - 120.00)	
MBLK	1,1-Dichloroethene	ND				
LCS1	1,1-Dichloropropene	4.0	4.0	100.0	(80.00 - 120.00)	
MBLK	1,1-Dichloropropene	ND				
LCS1	1,2,3-Trichloropropane	4.0	3.9	97.5	(80.00 - 120.00)	
MBLK	1,2,3-Trichloropropane	ND				
LCS1	1,2,3-Trichlorobenzene	4.0	3.8	95.0	(80.00 - 120.00)	
MBLK	1,2,3-Trichlorobenzene	ND				
LCS1	1,2,4-Trichlorobenzene	4.0	3.6	90.0	(80.00 - 120.00)	
MBLK	1,2,4-Trichlorobenzene	ND				
LCS1	1,2,4-Trimethylbenzene	4.0	3.7	92.5	(80.00 - 120.00)	
MBLK	1,2,4-Trimethylbenzene	ND				
LCS1	1,2-Dichloroethane	4.0	4.3	107.5	(80.00 - 120.00)	
MBLK	1,2-Dichloroethane	ND				
LCS1	1,2-Dichlorobenzene	4.0	3.9	97.5	(80.00 - 120.00)	
MBLK	1,2-Dichlorobenzene	ND				
LCS1	1,2-Dichloropropane	4.0	3.9	97.5	(80.00 - 120.00)	
MBLK	1,2-Dichloropropane	ND				
LCS1	1,3,5-Trimethylbenzene	8.0	7.4	92.5	(80.00 - 120.00)	
MBLK	1,3,5-Trimethylbenzene	ND				
LCS1	1,3-Dichlorobenzene	4.0	3.8	95.0	(80.00 - 120.00)	
MBLK	1,3-Dichlorobenzene	ND				

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LCS1	1,3-Dichloropropane	4.0	3.8	95.0	(80.00 - 120.00)
MBLK	1,3-Dichloropropane	ND			
LCS1	1,4-Dichlorobenzene	4.0	4.0	100.0	(80.00 - 120.00)
MBLK	1,4-Dichlorobenzene	ND			
LCS1	2,2-Dichloropropane	8.0	7.4	92.5	(80.00 - 120.00)
MBLK	2,2-Dichloropropane	ND			
LCS1	2-Chlorotoluene	4.0	3.9	97.5	(80.00 - 120.00)
MBLK	2-Chlorotoluene	ND			
LCS1	4-Chlorotoluene	4.0	3.9	97.5	(80.00 - 120.00)
MBLK	4-Chlorotoluene	ND			
LCS1	Bromodichloromethane	4.0	3.9	97.5	(80.00 - 120.00)
MBLK	Bromodichloromethane	ND			
LCS1	Benzene	4.0	3.7	92.5	(80.00 - 120.00)
MBLK	Benzene	ND			
LCS1	Bromobenzene	4.0	3.8	95.0	(80.00 - 120.00)
MBLK	Bromobenzene	ND			
LCS1	Bromochloromethane	4.0	4.2	105.0	(80.00 - 120.00)
MBLK	Bromochloromethane	ND			
LCS1	Bromomethane	2.0	1.6	80.0	(80.00 - 120.00)
MBLK	Bromomethane	ND			
LCS1	cis-1,2-Dichloroethene	4.0	3.8	95.0	(80.00 - 120.00)
MBLK	cis-1,2-Dichloroethene	ND			
LCS1	Chlorobenzene	4.0	3.9	97.5	(80.00 - 120.00)
MBLK	Chlorobenzene	ND			
LCS1	Carbon tetrachloride	4.0	4.1	102.5	(80.00 - 120.00)
MBLK	Carbon tetrachloride	ND			
LCS1	cis-1,3-Dichloropropene	4.0	3.9	97.5	(80.00 - 120.00)
MBLK	cis-1,3-Dichloropropene	ND			
LCS1	Bromoform	4.0	3.9	97.5	(80.00 - 120.00)
MBLK	Bromoform	ND			
LCS1	Chloroform	4.0	4.2	105.0	(80.00 - 120.00)
MBLK	Chloroform	ND			
LCS1	Chloroethane	2.0	1.6	80.0	(80.00 - 120.00)
MBLK	Chloroethane	ND			
LCS1	Chloromethane	2.0	1.6	80.0	(80.00 - 120.00)
MBLK	Chloromethane	ND			
LCS1	Dibromochloromethane	4.0	3.9	97.5	(80.00 - 120.00)

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Kauai Water Department (continued)

MBLK	Dibromochloromethane	ND				
LCS1	1,2-Dibromo-3-chloropropane	4.0	3.9	97.5	(80.00 - 120.00)	
MBLK	1,2-Dibromo-3-chloropropane	ND				
LCS1	Dibromomethane	4.0	3.8	95.0	(80.00 - 120.00)	
MBLK	Dibromomethane	ND				
LCS1	Dichlorodifluoromethane	2.0	1.8	90.0	(80.00 - 120.00)	
MBLK	Dichlorodifluoromethane	ND				
LCS1	1,2-Dibromoethane	4.0	3.8	95.0	(80.00 - 120.00)	
MBLK	1,2-Dibromoethane	ND				
LCS1	Ethylbenzene	4.0	3.8	95.0	(80.00 - 120.00)	
MBLK	Ethylbenzene	ND				
LCS1	Hexachlorobutadiene	4.0	3.7	92.5	(80.00 - 120.00)	
MBLK	Hexachlorobutadiene	ND				
LCS1	Isopropylbenzene	4.0	3.8	95.0	(80.00 - 120.00)	
MBLK	Isopropylbenzene	ND				
LCS1	Methylene chloride	4.0	3.9	97.5	(80.00 - 120.00)	
MBLK	Methylene chloride	ND				
LCS1	m+p-Xylenes	8.0	7.4	92.5	(80.00 - 120.00)	
MBLK	m+p-Xylenes	ND				
LCS1	Methyl tert-butyl ether	40	36	90.0	(80.00 - 120.00)	
MBLK	Methyl tert-butyl ether	ND				
LCS1	Naphthalene	4.0	3.6	90.0	(80.00 - 120.00)	
MBLK	Naphthalene	ND				
LCS1	n-Butylbenzene	4.0	3.5	87.5	(80.00 - 120.00)	
MBLK	n-Butylbenzene	ND				
LCS1	n-Propylbenzene	4.0	3.8	95.0	(80.00 - 120.00)	
MBLK	n-Propylbenzene	ND				
LCS1	o-Xylene	4.0	3.7	92.5	(80.00 - 120.00)	
MBLK	o-Xylene	ND				
LCS1	Tetrachloroethylene (PCE)	4.0	3.8	95.0	(80.00 - 120.00)	
MBLK	Tetrachloroethylene (PCE)	ND				
LCS1	p-Isopropyltoluene	4.0	3.6	90.0	(80.00 - 120.00)	
MBLK	p-Isopropyltoluene	ND				
LCS1	sec-Butylbenzene	4.0	3.7	92.5	(80.00 - 120.00)	
MBLK	sec-Butylbenzene	ND				
LCS1	Styrene	4.0	4.4	110.0	(80.00 - 120.00)	
MBLK	Styrene	ND				

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CORRECTION

THE PRECEDING DOCUMENT(S) HAS BEEN REPHOTOGRAPHED TO ASSURE LEGIBILITY
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(continued)

MBLK	Dibromochloromethane	ND			
LCS1	1,2-Dibromo-3-chloropropane	4.0	3.9	97.5	(80.00 - 120.00)
MBLK	1,2-Dibromo-3-chloropropane	ND			
LCS1	Dibromomethane	4.0	3.8	95.0	(80.00 - 120.00)
MBLK	Dibromomethane	ND			
LCS1	Dichlorodifluoromethane	2.0	1.8	90.0	(80.00 - 120.00)
MBLK	Dichlorodifluoromethane	ND			
LCS1	1,2-Dibromoethane	4.0	3.8	95.0	(80.00 - 120.00)
MBLK	1,2-Dibromoethane	ND			
LCS1	Ethylbenzene	4.0	3.8	95.0	(80.00 - 120.00)
MBLK	Ethylbenzene	ND			
LCS1	Hexachlorobutadiene	4.0	3.7	92.5	(80.00 - 120.00)
MBLK	Hexachlorobutadiene	ND			
LCS1	Isopropylbenzene	4.0	3.8	95.0	(80.00 - 120.00)
MBLK	Isopropylbenzene	ND			
LCS1	Isopropylbenzene	4.0	3.8	95.0	(80.00 - 120.00)
MBLK	Isopropylbenzene	ND			
LCS1	Methylene chloride	4.0	3.9	97.5	(80.00 - 120.00)
MBLK	Methylene chloride	ND			
LCS1	m+p-Xylenes	8.0	7.4	92.5	(80.00 - 120.00)
MBLK	m+p-Xylenes	ND			
LCS1	Methyl tert-butyl ether	40	36	90.0	(80.00 - 120.00)
MBLK	Methyl tert-butyl ether	ND			
LCS1	Naphthalene	4.0	3.6	90.0	(80.00 - 120.00)
MBLK	Naphthalene	ND			
LCS1	n-Butylbenzene	4.0	3.5	87.5	(80.00 - 120.00)
MBLK	n-Butylbenzene	ND			
LCS1	n-Propylbenzene	4.0	3.8	95.0	(80.00 - 120.00)
MBLK	n-Propylbenzene	ND			
LCS1	o-Xylene	4.0	3.7	92.5	(80.00 - 120.00)
MBLK	o-Xylene	ND			
LCS1	Tetrachloroethylene (PCE)	4.0	3.8	95.0	(80.00 - 120.00)
MBLK	Tetrachloroethylene (PCE)	ND			
LCS1	p-Isopropyltoluene	4.0	3.6	90.0	(80.00 - 120.00)
MBLK	p-Isopropyltoluene	ND			
LCS1	sec-Butylbenzene	4.0	3.7	92.5	(80.00 - 120.00)
MBLK	sec-Butylbenzene	ND			
LCS1	Styrene	4.0	4.4	110.0	(80.00 - 120.00)
MBLK	Styrene	ND			

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LCS1	Chlorofluorobenzene (surr) PID	100	95	95.0	(80.00 - 120.00)
MBLK	Chlorofluorobenzene (surr) PID	100	96	96.0	
LCS1	Bromofluorobenzene (surr) PID	100	96	96.0	(80.00 - 120.00)
MBLK	Bromofluorobenzene (surr) PID	100	94	94.0	
LCS1	Chlorofluorobenzene (surr) ELC	100	98	98.0	(80.00 - 120.00)
MBLK	Chlorofluorobenzene (surr) ELC	100	96	96.0	
LCS1	Bromofluorobenzene (surr) ELCD	100	95	95.0	(80.00 - 120.00)
MBLK	Bromofluorobenzene (surr) ELCD	100	95	95.0	
LCS1	trans-1,2-Dichloroethene	4.0	4.0	100.0	(80.00 - 120.00)
MBLK	trans-1,2-Dichloroethene	ND			
LCS1	tert-Butylbenzene	4.0	3.8	95.0	(80.00 - 120.00)
MBLK	tert-Butylbenzene	ND			
LCS1	Trichloroethylene (TCE)	4.0	3.9	97.5	(80.00 - 120.00)
MBLK	Trichloroethylene (TCE)	ND			
MBLK	Trichlorotrifluoroethane(Freon	ND			
LCS1	Trichlorotrifluoroethane(Freon	2.0	1.8	90.0	(80.00 - 120.00)
LCS1	trans-1,3-Dichloropropene	4.0	3.7	92.5	(80.00 - 120.00)
MBLK	trans-1,3-Dichloropropene	ND			
LCS1	Toluene	4.0	3.8	95.0	(80.00 - 120.00)
MBLK	Toluene	ND			
LCS1	Trichlorofluoromethane	2.0	1.8	90.0	(80.00 - 120.00)
MBLK	Trichlorofluoromethane	ND			
LCS1	Vinyl chloride	2.0	1.9	95.0	(80.00 - 120.00)
MBLK	Vinyl chloride	ND			

QC Batch #101986 Calcium, Total, ICAP

QC	Analyte	Spiked	Recovered	Yield (%)	Limits (%)	RPD (%)
MS	Spiked sample	Lab # 99	0908001		(0.00 - 0.00)	
LCS1	Calcium, Total, ICAP	50	50.3	100.6	(85.00 - 115.00)	
LCS2	Calcium, Total, ICAP	50	50.3	100.6	(85.00 - 115.00)	0.00
MBLK	Calcium, Total, ICAP	ND				
MS	Calcium, Total, ICAP	50	50.0	100.0	(70.00 - 130.00)	
MSD	Calcium, Total, ICAP	50	49.6	99.2	(70.00 - 130.00)	0.80

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QC Batch #102007 Alkalinity

QC	Analyte	Spiked	Recovered	Yield (%)	Limits (%)	RPD (%)
MS	Spiked sample	Lab # 99	0816142		(0.00 - 0.00)	
LCS1	Alkalinity	96.2	101	105.0	(96.00 - 107.00)	
LCS2	Alkalinity	96.2	105	109.1	(96.00 - 107.00)	3.9
MBLK	Alkalinity	ND				
MS	Alkalinity	96.2	98.9	102.8	(80.00 - 120.00)	
MSD	Alkalinity	96.2	99	102.9	(80.00 - 120.00)	0.10

QC Batch #102124 EDB and DBCP by GC-ECD

QC	Analyte	Spiked	Recovered	Yield (%)	Limits (%)	RPD (%)
DUP	Spiked sample	Lab # 99	0908022		(0.00 - 0.00)	
MS	Spiked sample	Lab # 99	0908020		(0.00 - 0.00)	
DUP	Dibromochloropropane (DBCP)	ND	ND		(0.00 - 20.00)	
LCS1	Dibromochloropropane (DBCP)	0.02	0.02	100.0	(60.00 - 140.00)	
LCS2	Dibromochloropropane (DBCP)	0.20	0.19	95.0	(60.00 - 140.00)	
MBLK	Dibromochloropropane (DBCP)	ND				
MS	Dibromochloropropane (DBCP)	0.20	0.19	95.0	(60.00 - 140.00)	
DUP	Ethylene Dibromide (EDB)	ND	ND		(0.00 - 20.00)	
LCS1	Ethylene Dibromide (EDB)	0.02	0.02	100.0	(60.00 - 140.00)	
LCS2	Ethylene Dibromide (EDB)	0.20	0.20	100.0	(60.00 - 140.00)	
MBLK	Ethylene Dibromide (EDB)	ND				
MS	Ethylene Dibromide (EDB)	0.20	0.20	100.0	(60.00 - 140.00)	
DUP	1,2-dibromopropane (surr)	100	105	105.0	(60.00 - 140.00)	
LCS1	1,2-dibromopropane (surr)	100	105	105.0	(60.00 - 140.00)	
LCS2	1,2-dibromopropane (surr)	100	99	99.0	(60.00 - 140.00)	5.9
MBLK	1,2-dibromopropane (surr)	100	105	105.0		
MS	1,2-dibromopropane (surr)	100	95	95.0	(60.00 - 140.00)	

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QC Batch #102146 Fluoride

QC	Analyte	Spiked	Recovered	Yield (%)	Limits (%)	RPD (%)
MS	Spiked sample	Lab # 99	0915138		(0.00 - 0.00)	
LCS1	Fluoride	1.00	0.931	93.1	(94.00 - 104.00)	
LCS2	Fluoride	1.00	0.957	95.7	(94.00 - 104.00)	2.8
MBLK	Fluoride	ND				
MS	Fluoride	1.00	1.05	105.0	(86.00 - 120.00)	
MSD	Fluoride	1.00	1.07	107.0	(86.00 - 120.00)	1.9

QC Batch #102195 Glyphosate

QC	Analyte	Spiked	Recovered	Yield (%)	Limits (%)	RPD (%)
MS	Spiked sample	Lab # 99	0910033		(0.00 - 0.00)	
LCS1	Glyphosate	10	10.5	105.0	(70.00 - 130.00)	
LCS2	Glyphosate	10	10.6	106.0	(70.00 - 130.00)	0.95
MBLK	Glyphosate	ND				
MS	Glyphosate	10	10.8	108.0	(75.00 - 130.00)	

QC Batch #102233 Diquat and Paraquat

QC	Analyte	Spiked	Recovered	Yield (%)	Limits (%)	RPD (%)
MS	Spiked sample	Lab # 99	0909010		(0.00 - 0.00)	
LCS1	Diquat	10.0	8.9	89.0	(73.00 - 127.00)	
MBLK	Diquat	ND				
MS	Diquat	10.0	7.9	79.0	(70.00 - 130.00)	
LCS1	Paraquat	10.0	8.7	87.0	(70.00 - 130.00)	
MBLK	Paraquat	ND				
MS	Paraquat	10.0	6.6	66.0	(70.00 - 130.00)	

Spikes which exceed Limits and Method Blanks with positive results are highlighted by Underlining.
Criteria for MS and DUP are advisory only and not applicable for ICR monitoring.

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Kauai Water Department
(continued)

QC Batch #102307 ICPMS Metals

QC	Analyte	Spiked	Recovered	Yield (%)	Limits (%)	RPD (%)
LCS1	Arsenic, Total, ICAP/MS	20	19.7	98.5	(85.00 - 115.00)	
MBLK	Arsenic, Total, ICAP/MS	ND				
LCS1	Barium, Total, ICAP/MS	100	91	91.0	(85.00 - 115.00)	
MBLK	Barium, Total, ICAP/MS	ND				
LCS1	Beryllium, Total, ICAP/MS	5	5.15	103.0	(89.00 - 108.00)	
MBLK	Beryllium, Total, ICAP/MS	ND				
LCS1	Cadmium, Total, ICAP/MS	20	20.1	100.5	(91.00 - 111.00)	
MBLK	Cadmium, Total, ICAP/MS	ND				
LCS1	Chromium, Total, ICAP/MS	100	98	98.0	(85.00 - 115.00)	
MBLK	Chromium, Total, ICAP/MS	ND				
LCS1	Copper, Total, ICAP/MS	100	103	103.0	(85.00 - 115.00)	
MBLK	Copper, Total, ICAP/MS	ND				
LCS1	Nickel, Total, ICAP/MS	50	51.1	102.2	(89.00 - 107.00)	
MBLK	Nickel, Total, ICAP/MS	ND				
LCS1	Lead, Total, ICAP/MS	20	20.7	103.5	(87.00 - 108.00)	
MBLK	Lead, Total, ICAP/MS	ND				
MBLK	Antimony, Total, ICAP/MS	ND				
LCS1	Selenium, Total, ICAP/MS	20	20.4	102.0	(85.00 - 115.00)	
MBLK	Selenium, Total, ICAP/MS	ND				
LCS1	Thallium, Total, ICAP/MS	20	20.4	102.0	(86.00 - 111.00)	
MBLK	Thallium, Total, ICAP/MS	ND				

QC Batch #102427 SDWA Pesticides

QC	Analyte	Spiked	Recovered	Yield (%)	Limits (%)	RPD (%)
MBLK	PCB 1016 Aroclor	ND				
MBLK	PCB 1221 Aroclor	ND				
MBLK	PCB 1232 Aroclor	ND				
MBLK	PCB 1242 Aroclor	ND				
MBLK	PCB 1248 Aroclor	ND				
MBLK	PCB 1254 Aroclor	ND				

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Kauai Water Department
(continued)

MBLK	PCB 1260 Aroclor	ND			
LCS1	Alpha-BHC	0.050	0.052	104.0	(62.00 - 122.00)
MBLK	Alpha-BHC	ND			
MS	Alpha-BHC	0.050	0.053	106.0	(71.00 - 126.00)
MS	Spiked sample	Lab # 99	0914001		(0.00 - 0.00)
MBLK	Alachlor (Alanex)	ND			
LCS1	Alachlor (Alanex)	0.100	0.110	110.0	(70.00 - 130.00)
MS	Alachlor (Alanex)	0.100	0.112	112.0	(65.00 - 135.00)
LCS1	Aldrin	0.050	0.053	106.0	(56.00 - 116.00)
MBLK	Aldrin	ND			
MS	Aldrin	0.050	0.045	90.0	(62.00 - 117.00)
LCS1	Beta-BHC	0.050	0.054	108.0	(65.00 - 125.00)
MBLK	Beta-BHC	ND			
MS	Beta-BHC	0.050	0.056	112.0	(60.00 - 130.00)
MBLK	Chlordane	ND			
LCS1	Chlorthalonil (Draconil,Bravo)	0.100	0.100	100.0	(61.00 - 121.00)
MBLK	Chlorthalonil (Draconil,Bravo)	ND			
MS	Chlorthalonil (Draconil,Bravo)	0.100	0.100	100.0	(56.00 - 126.00)
LCS1	Delta-BHC	0.050	0.054	108.0	(72.00 - 131.00)
MBLK	Delta-BHC	ND			
MS	Delta-BHC	0.050	0.056	112.0	(67.00 - 137.00)
LCS1	p,p' DDD	0.100	0.107	107.0	(77.00 - 137.00)
MBLK	p,p' DDD	ND			
MS	p,p' DDD	0.100	0.108	108.0	(72.00 - 142.00)
LCS1	p,p' DDE	0.100	0.107	107.0	(69.00 - 129.00)
MBLK	p,p' DDE	ND			
MS	p,p' DDE	0.100	0.108	108.0	(73.00 - 131.00)
LCS1	p,p' DDT	0.100	0.108	108.0	(82.00 - 142.00)
MBLK	p,p' DDT	ND			
MS	p,p' DDT	0.100	0.110	110.0	(77.00 - 147.00)
LCS1	Dieldrin	0.100	0.106	106.0	(57.00 - 117.00)
MBLK	Dieldrin	ND			
MS	Dieldrin	0.100	0.107	107.0	(52.00 - 122.00)
LCS1	Endrin Aldehyde	0.100	0.104	104.0	(58.00 - 118.00)
MBLK	Endrin Aldehyde	ND			
MS	Endrin Aldehyde	0.100	0.079	79.0	(53.00 - 123.00)
LCS1	Endrin	0.100	0.107	107.0	(58.00 - 118.00)

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Laboratory
QC Report
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Kauai Water Department
(continued)

MBLK	Endrin	ND				
MS	Endrin	0.100	0.114	114.0	(53.00 - 123.00)	
LCS1	Endosulfan I (alpha)	0.050	0.053	106.0	(57.00 - 117.00)	
MBLK	Endosulfan I (alpha)	ND				
MS	Endosulfan I (alpha)	0.050	0.054	108.0	(57.00 - 127.00)	
LCS1	Endosulfan II (beta)	0.100	0.107	107.0	(62.00 - 122.00)	
MBLK	Endosulfan II (beta)	ND				
MS	Endosulfan II (beta)	0.100	0.110	110.0	(57.00 - 127.00)	
LCS1	Endosulfan sulfate	0.100	0.107	107.0	(72.00 - 132.00)	
MBLK	Endosulfan sulfate	ND				
MS	Endosulfan sulfate	0.100	0.109	109.0	(72.00 - 137.00)	
LCS1	Gamma-BHC (Lindane)	0.050	0.054	108.0	(59.00 - 119.00)	
MBLK	Gamma-BHC (Lindane)	ND				
MS	Gamma-BHC (Lindane)	0.050	0.055	110.0	(54.00 - 124.00)	
LCS1	Heptachlor	0.050	0.054	108.0	(68.00 - 128.00)	
MBLK	Heptachlor	ND				
MS	Heptachlor	0.050	0.048	96.0	(68.00 - 129.00)	
LCS1	Heptachlor Epoxide	0.050	0.055	110.0	(57.00 - 117.00)	
MBLK	Heptachlor Epoxide	ND				
MS	Heptachlor Epoxide	0.050	0.055	110.0	(52.00 - 122.00)	
LCS1	Methoxychlor	0.500	0.545	109.0	(75.00 - 135.00)	
MBLK	Methoxychlor	ND				
MS	Methoxychlor	0.500	0.571	114.2	(70.00 - 132.00)	
LCS1	Tetrachlorometaxylene (surr)	100	106	106.0	(70.00 - 130.00)	
LCS2	Tetrachlorometaxylene (surr)	100	100	100.0	(70.00 - 130.00)	5.8
MBLK	Tetrachlorometaxylene (surr)	100	104	104.0		
MS	Tetrachlorometaxylene (surr)	100	94	94.0	(70.00 - 130.00)	
LCS1	Dibutyl chlorendate (surr)	100	112	112.0	(70.00 - 130.00)	
LCS2	Dibutyl chlorendate (surr)	100	112	112.0	(70.00 - 130.00)	0.00
MBLK	Dibutyl chlorendate (surr)	100	108	108.0		
MS	Dibutyl chlorendate (surr)	100	112	112.0	(70.00 - 130.00)	
MBLK	Toxaphene	ND				

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Kauai Water Department
(continued)

MBLK	BDMC	100	104	104.0	
MS	BDMC	100	112	112.0	(70.00 - 130.00)

QC Batch #102522 Herbicides by 515.1

QC	Analyte	Spiked	Recovered	Yield (%)	Limits (%)	RPD (%)
LCS1	2,4,5-T	0.80	0.70	87.5	(78.00 - 123.00)	
LCS2	2,4,5-T	0.80	0.70	87.5	(78.00 - 123.00)	0.00
MBLK	2,4,5-T	ND				
MS	2,4,5-T	0.80	0.76	95.0	(65.00 - 135.00)	
LCS1	2,4,5-TP (Silvex)	0.80	0.68	85.0	(84.00 - 122.00)	
LCS2	2,4,5-TP (Silvex)	0.80	0.69	86.2	(84.00 - 122.00)	1.5
MBLK	2,4,5-TP (Silvex)	ND				
MS	2,4,5-TP (Silvex)	0.80	0.75	93.8	(65.00 - 135.00)	
LCS1	2,4-D	0.40	0.31	77.5	(74.00 - 124.00)	
LCS2	2,4-D	0.40	0.31	77.5	(74.00 - 124.00)	0.00
MBLK	2,4-D	ND				
MS	2,4-D	0.40	0.35	87.5	(65.00 - 135.00)	
LCS1	2,4-DB	8.00	7.26	90.8	(70.00 - 130.00)	
LCS2	2,4-DB	8.00	7.22	90.2	(70.00 - 130.00)	0.55
MBLK	2,4-DB	ND				
MS	2,4-DB	8.00	6.79	84.9	(65.00 - 135.00)	
LCS1	Dichlorprop	2.00	1.68	84.0	(70.00 - 130.00)	
LCS2	Dichlorprop	2.00	1.67	83.5	(70.00 - 130.00)	0.60
MBLK	Dichlorprop	ND				
MS	Dichlorprop	2.00	1.93	96.5	(65.00 - 135.00)	
MS	Spiked sample	Lab # 99	0903070		(0.00 - 0.00)	
LCS1	Acifluorfen (qualitative)	0.80	0.52	65.0	(70.00 - 130.00)	
LCS2	Acifluorfen (qualitative)	0.80	0.56	70.0	(70.00 - 130.00)	7.4
MBLK	Acifluorfen (qualitative)	ND				
MS	Acifluorfen (qualitative)	0.80	0.59	73.8	(65.00 - 135.00)	
LCS1	Bentazon	2.00	1.86	93.0	(70.00 - 130.00)	
LCS2	Bentazon	2.00	1.81	90.5	(70.00 - 130.00)	2.7
MBLK	Bentazon	ND				
MS	Bentazon	2.00	1.96	98.0	(65.00 - 135.00)	
LCS1	Dalapon (qualitative)	4.00	3.62	90.5	(70.00 - 130.00)	

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QC Report
#57835

Kauai Water Department
(continued)

QC Batch #102792 Endothall

QC	Analyte	Spiked	Recovered	Yield (%)	Limits (%)	RPD (%)
MS	Spiked sample	Lab # 99	0914001		(0.00 - 0.00)	
LCS1	Endothall	25	23.2	92.8	(80.00 - 120.00)	
MBLK	Endothall	ND				
MS	Endothall	25	24.3	97.2	(80.00 - 120.00)	

Spikes which exceed Limits and Method Blanks with positive results are highlighted by Underlining.
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Date 09/13/99 Submittal Form KAUAI

Montgomery Watson Laboratories
555 East Walnut Street
Pasadena, CA 91101
Ph (626) 568-6400 Fax (626) 568-6324

Reportir One report for this MWL Project Number: 57835
Do Not Combine Report with any other samples submitted under different MWL project numbers!
Report & Invoice must have the MWL Project Number and Sub PO#: 99-1062
Report all quality control data according to Method. Include dates analyzed, date extracted (if extracted) and method reference on the report. Fax results to 626-568-6324
Faxed results must have complete data & QC. Hardcopy report is due in hand on due date.
Please advise us immediately if Due Date will be missed.

Ship To Nanette Estrada
Quanterra Environmental Services
880 Riverside Parkway
West Sacramento, CA 95605-1501

Bill Recipient: FEDEX ACCT: 2060-8019-1

(916) 374-4348

HARDCOPY REPORT, FORMS, & INVOICE MUST BE SENT TO ATTENTION
Martha Frost, Sub-contracting Administrator
Montgomery Watson Laboratories 555 East Walnut Street Pasadena, CA 91101
Phone (626) 568-6437 Fax (626) 568-6324

For Specific Questions about samples Hillary Strayer (626) 568-6412

MWL Project # 57835 Report Due: 9/28/99

Qty	Test Code	Use MWL Lab # for ID	Client Sample ID for reference only	Analysis Requested	Sample Date	Matrix	Container
1	TCDD-DW	990910033	KAPILIMAO WAI	Dioxin in drinking water 1613b	09/09/99	dw	2 1L amber glass / no preservative

RECEIVED IN GOOD CONDITION
UNDER COC
SEP 14 1999
INI: MP

Relinquished by: Sample Control Date 09/13/99 Time
Date 091499 Time 1415 An Acknowledgement of Receipt is requested to attn: Martha Frost

Quanterra Incorporated
880 Riverside Parkway
West Sacramento, California 95605

916 373-5600 Telephone
916 372-1059 Fax

September 25, 1999

QUANTERRA INCORPORATED PROJECT NUMBER: G9I150259
PO/CONTRACT: 99-1062

Martha Frost
Montgomery Laboratories
555 East Walnut Street
Pasadena, CA 91101

Dear Ms. Frost,

This report contains the analytical results for the aqueous sample received under chain of custody by Quanterra Incorporated on September 14, 1999. This sample is associated with your project number 57835.

All applicable quality control procedures met method-specified acceptance criteria.

If you have any questions, please feel free to call me.

Sincerely,

Nanny Estrada

Nanny Estrada
Project Manager

Quanterra

SAMPLE SUMMARY

G9I150259

WO #	SAMPLE#	CLIENT SAMPLE ID	DATE	TIME
D2GXF	001	990910033	09/09/99	

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

Quanterra

MONTGOMERY LABORATORIES

Client Sample ID: 990910033

Dioxins

Lot-Sample #...: G9I150259-001 Work Order #...: D2GXF101 Matrix.....: WATER
Date Sampled...: 09/09/99 Date Received..: 09/14/99
Prep Date.....: 09/20/99 Analysis Date..: 09/24/99
Prep Batch #...: 9258239
Dilution Factor: 1

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	3.1	pg/L	EPA-5 1613B-Tetra

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	83	(25 - 141)

QC DATA ASSOCIATION SUMMARY

G9I150259

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
001	WATER	EPA-5 1613B-Tetra		9258239	

Quanterra

METHOD BLANK REPORT

Dioxins

Client Lot #...: G9I150259
MB Lot-Sample #: G9I150000-239

Work Order #...: D2G14101
Prep Date.....: 09/20/99
Prep Batch #...: 9258239

Matrix.....: WATER

Analysis Date..: 09/24/99
Dilution Factor: 1

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	3.7	pg/L	EPA-5 1613B-Tetra

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	95	(25 - 141)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Quanterra

LABORATORY CONTROL SAMPLE DATA REPORT

Dioxins

Client Lot #...: G9I150259 Work Order #...: D2G14102 Matrix.....: WATER
LCS Lot-Sample#: G9I150000-239
Prep Date.....: 09/20/99 Analysis Date..: 09/24/99
Prep Batch #...: 9258239
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
2,3,7,8-TCDD	200	212	pg/L	106	EPA-5 1613B-T

INTERNAL STANDARD	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	87	(25 - 141)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

Quanterra

LABORATORY CONTROL SAMPLE EVALUATION REPORT

Dioxins

Client Lot #...: G9I150259 Work Order #...: D2G14102 Matrix.....: WATER
LCS Lot-Sample#: G9I150000-239
Prep Date.....: 09/20/99 Analysis Date..: 09/24/99
Prep Batch #...: 9258239
Dilution Factor: 1

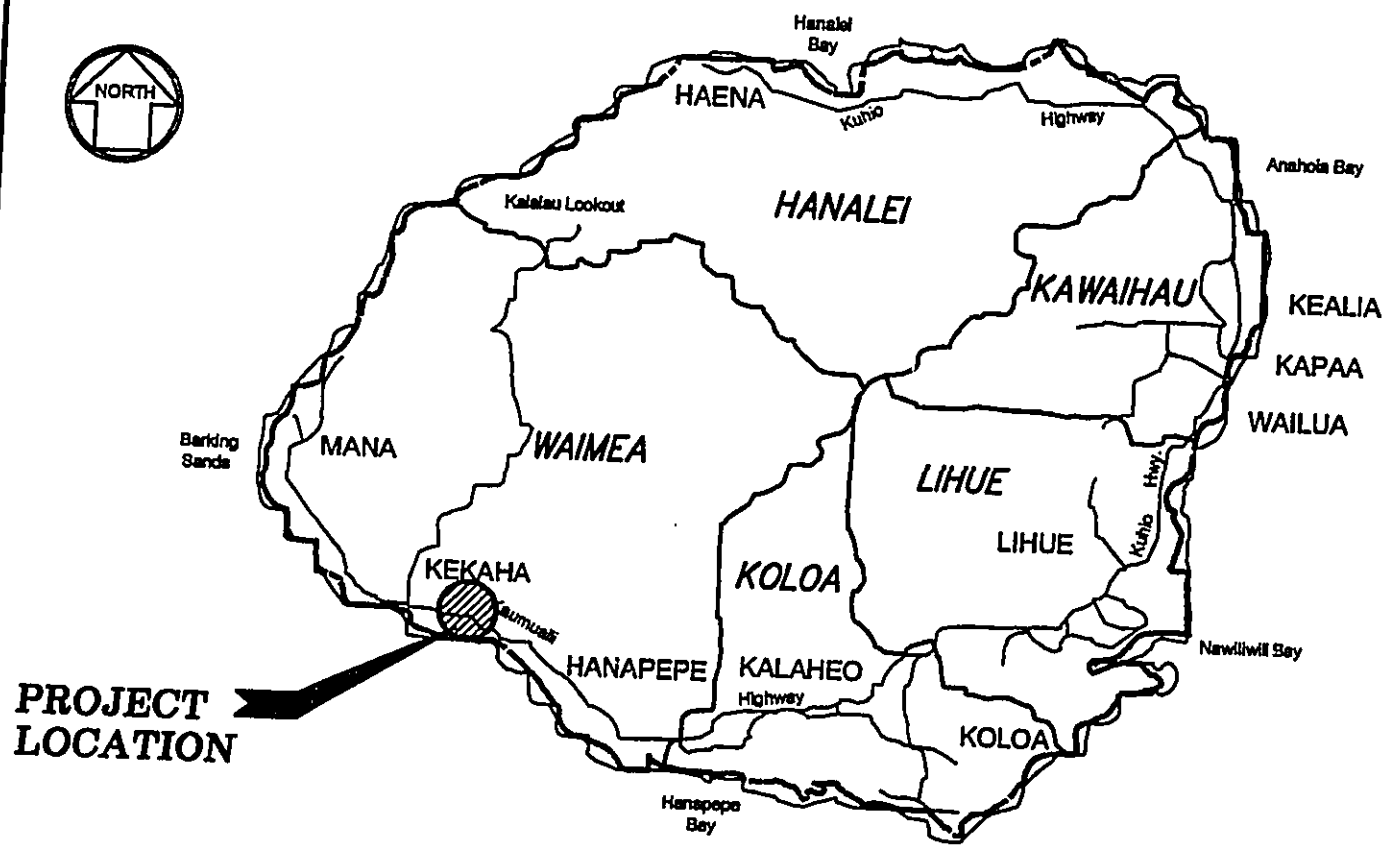
PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
2,3,7,8-TCDD	**106**	**(73 - 146)**	**EPA-5 1613B-Tetras**

INTERNAL STANDARD	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	87	(25 - 141)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters



ISLAND OF KAUAI

VICINITY MAP

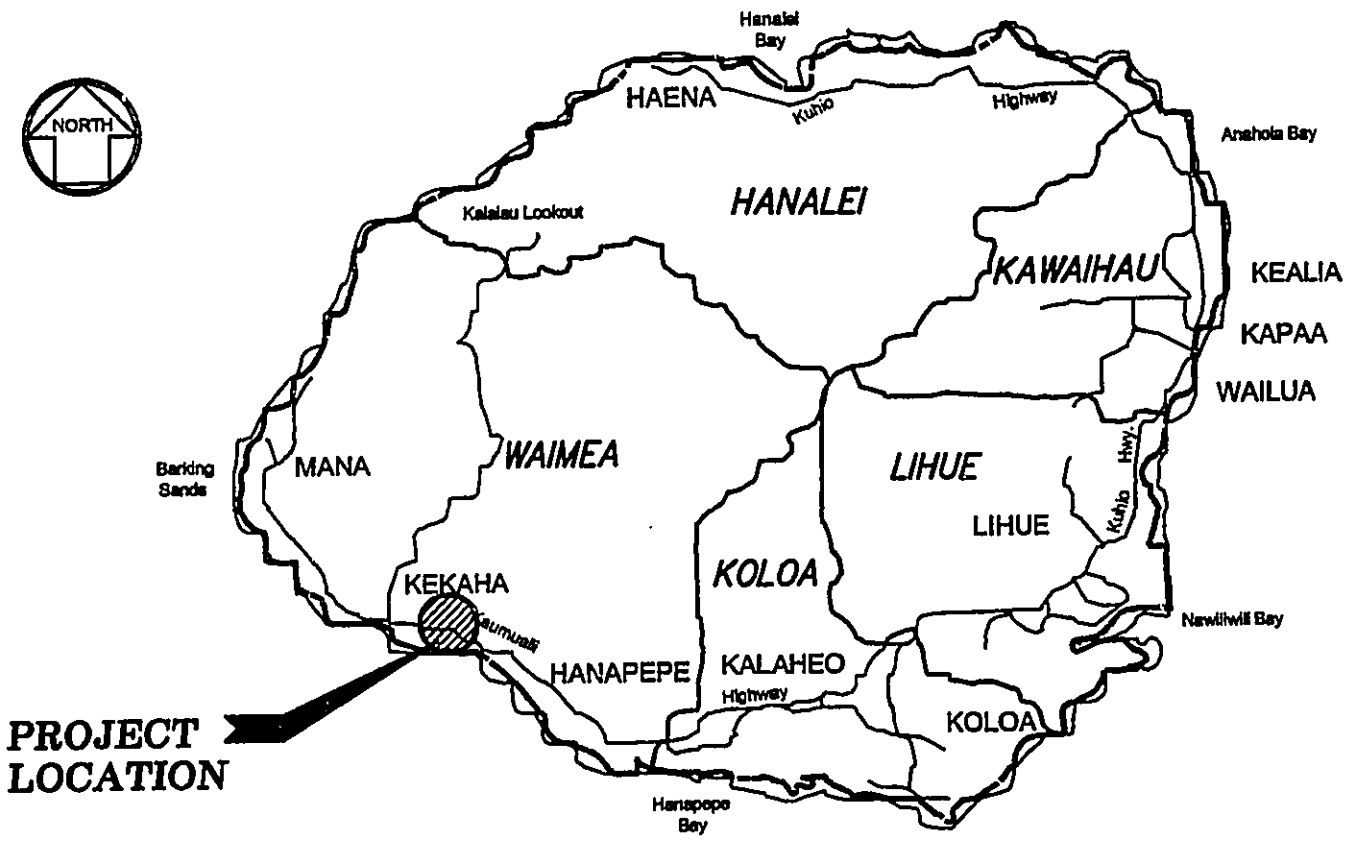
FILENAME: 9901-03
SCALE: 1=1
BEGIN: 09/14/99
PM: BMG
OPER: MSM
REVISED: 11/06/99

VICINITY MAP
ENVIRONMENTAL ASSESSMENT
KAPILIMAO VALLEY WELL & TRANSMISSION MAIN
NOV. 1999

SCALE: NONE

PREPARED BY:
AKINAKA & ASSOCIATES, LTD.

EXHIBIT
1



ISLAND OF KAUAI

VICINITY MAP

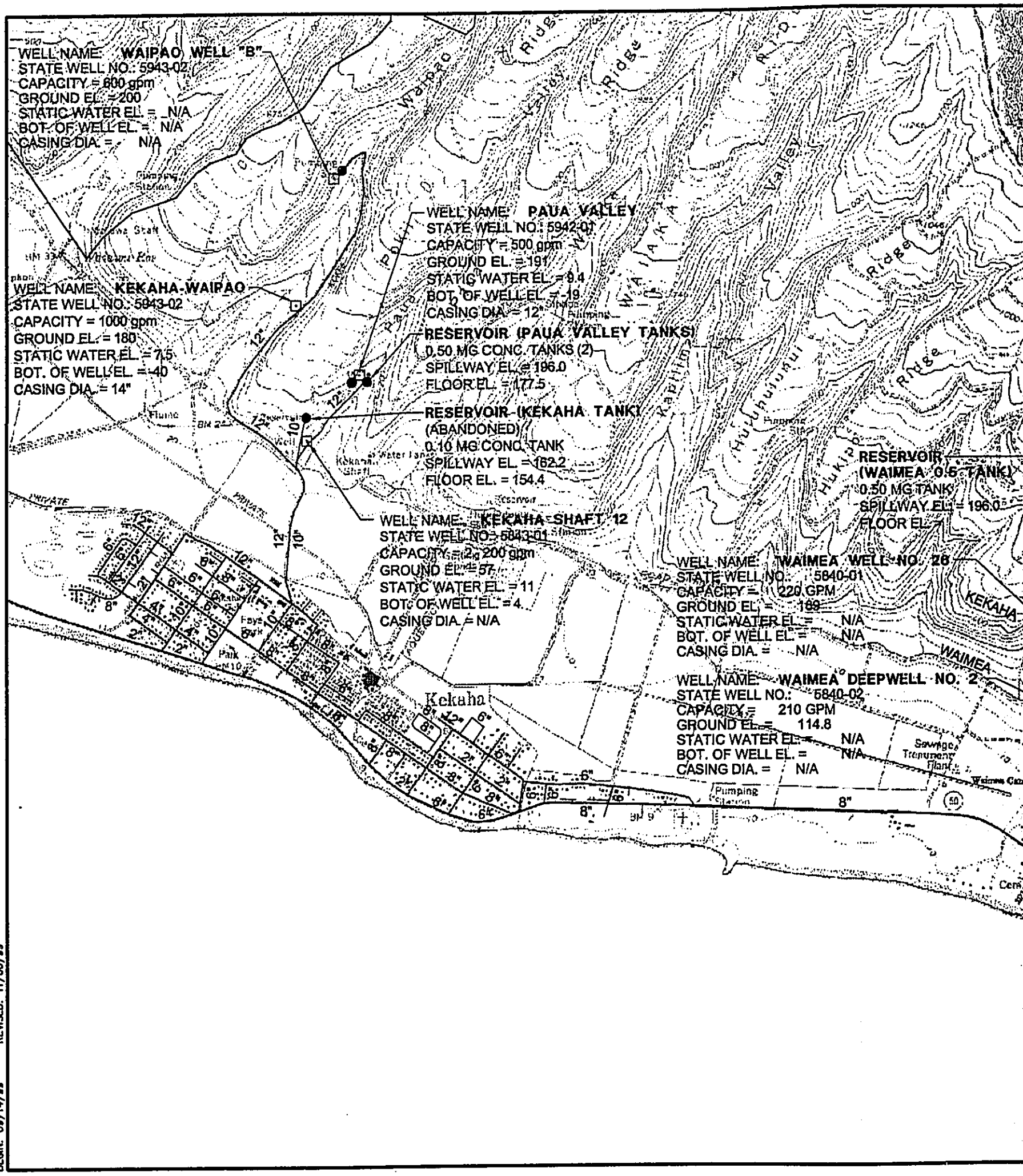
FILENAME: 9901-03
SCALE: 1=1
BEGIN: 09/14/99
PM: BMG
OPER: *MSM
REVISED: 11/08/99

VICINITY MAP
ENVIRONMENTAL ASSESSMENT
KAPILIMAO VALLEY WELL & TRANSMISSION MAIN
NOV. 1999

SCALE: NONE

PREPARED BY:
AKINAKA & ASSOCIATES, LTD.

EXHIBIT 1



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BEGIN: 09/14/99

PM: BMG
OPER: SAL/WSN
REVISED: 11/06/99

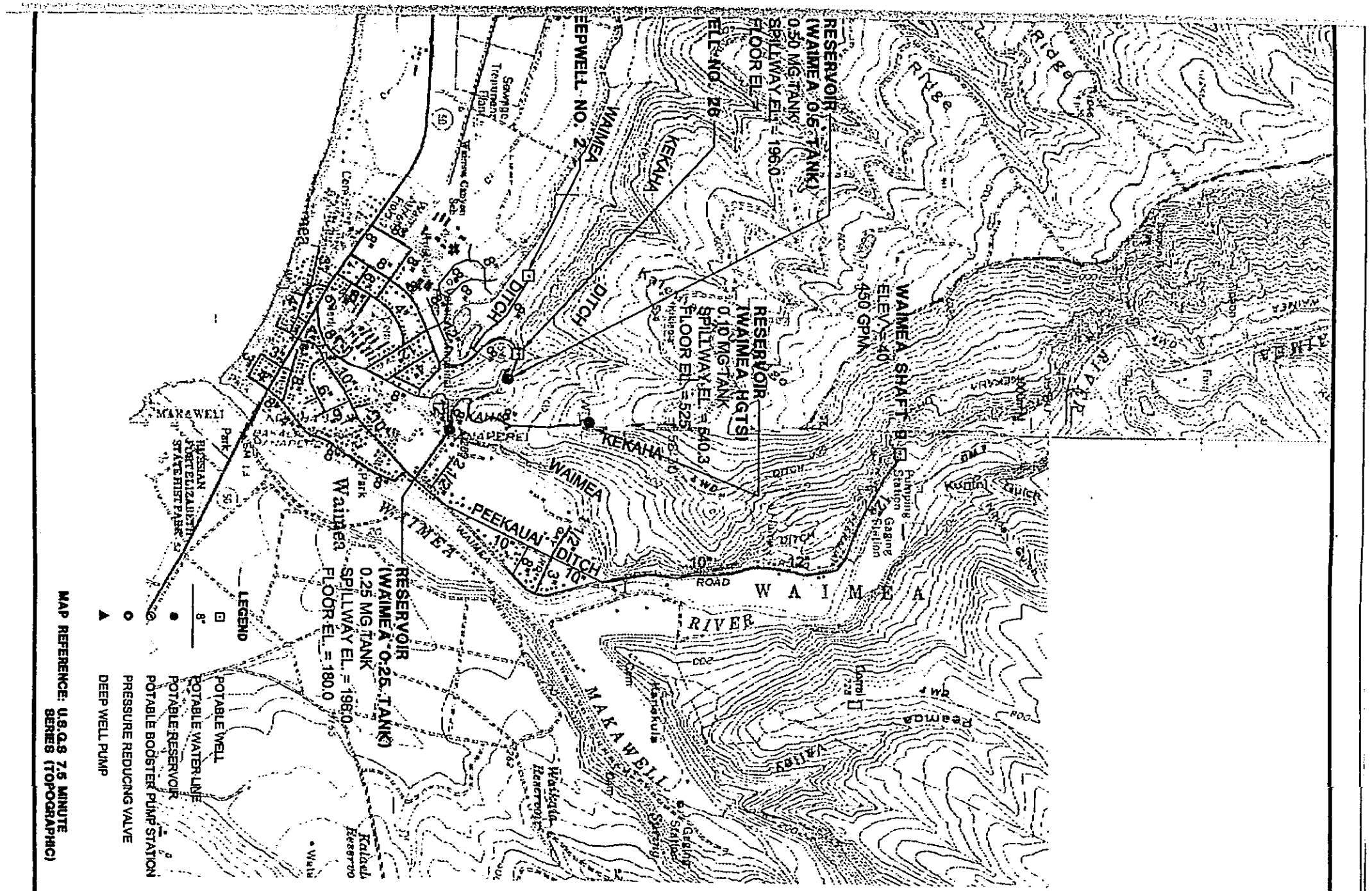


EXHIBIT 2

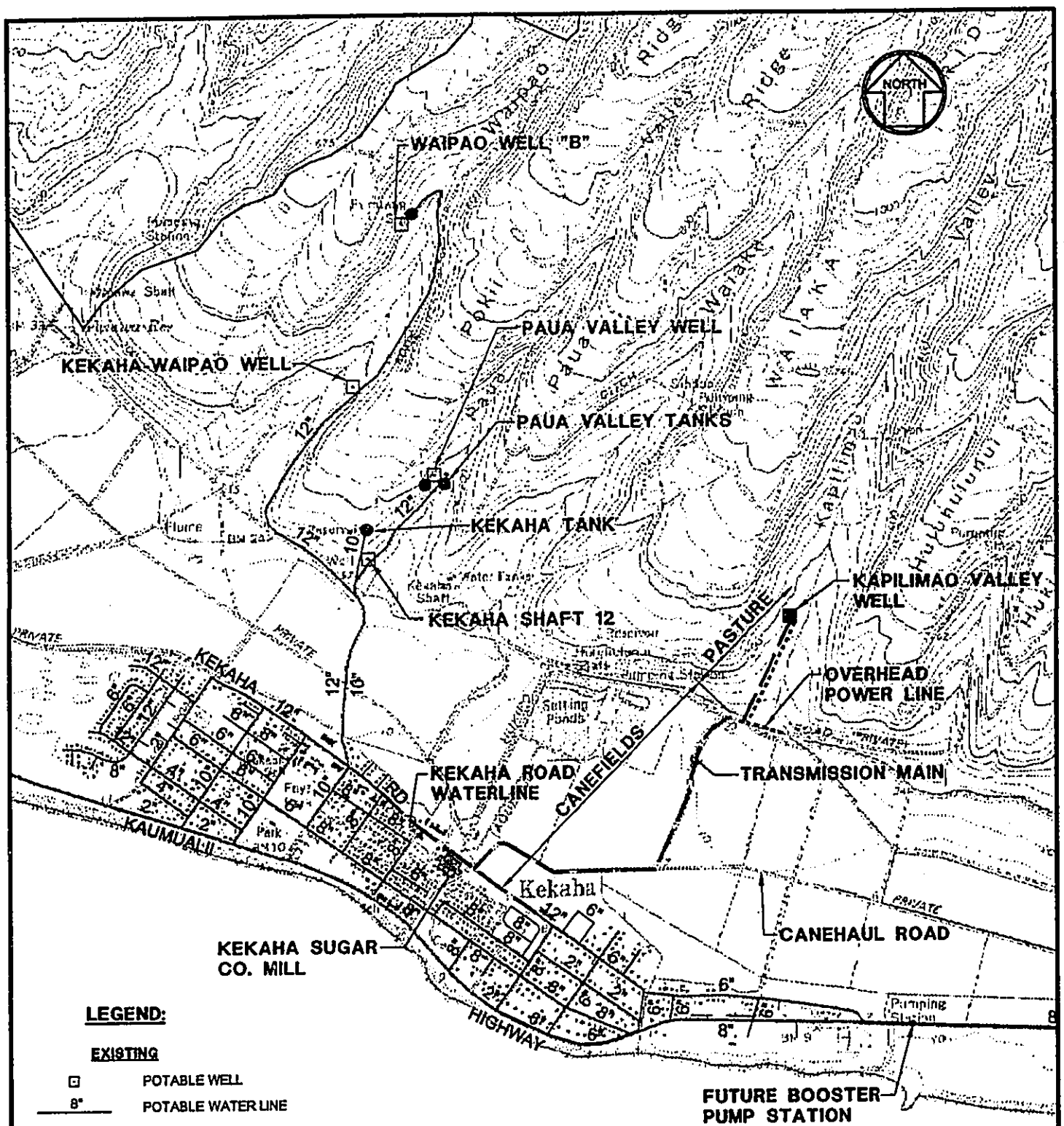
WAIMEA - KEKAHA WATER SYSTEM

ENVIRONMENTAL ASSESSMENT
KAPILIMAO VALLEY WELL & TRANSMISSION MAIN

NOV. 1999

1000 0 1000 2000
SCALE: 1" = 2000'

PREPARED BY:
AKINAKA & ASSOCIATES, LTD.



LEGEND:

EXISTING

- POTABLE WELL
- 8" POTABLE WATER LINE
- POTABLE RESERVOIR
- POTABLE BOOSTER PUMP STATION
- PRESSURE REDUCING VALVE
- DEEP WELL PUMP

FUTURE

- POTABLE WELL
- 6" POTABLE WATER LINE
- BOOSTER PUMP STATION

FILENAME: 9901-02
SCALE: 1=2000
BEGIN: 09/14/99
PM: BMG
OPER: SAJ/WISH
REVISED: 12/14/99

PROPOSED IMPROVEMENTS

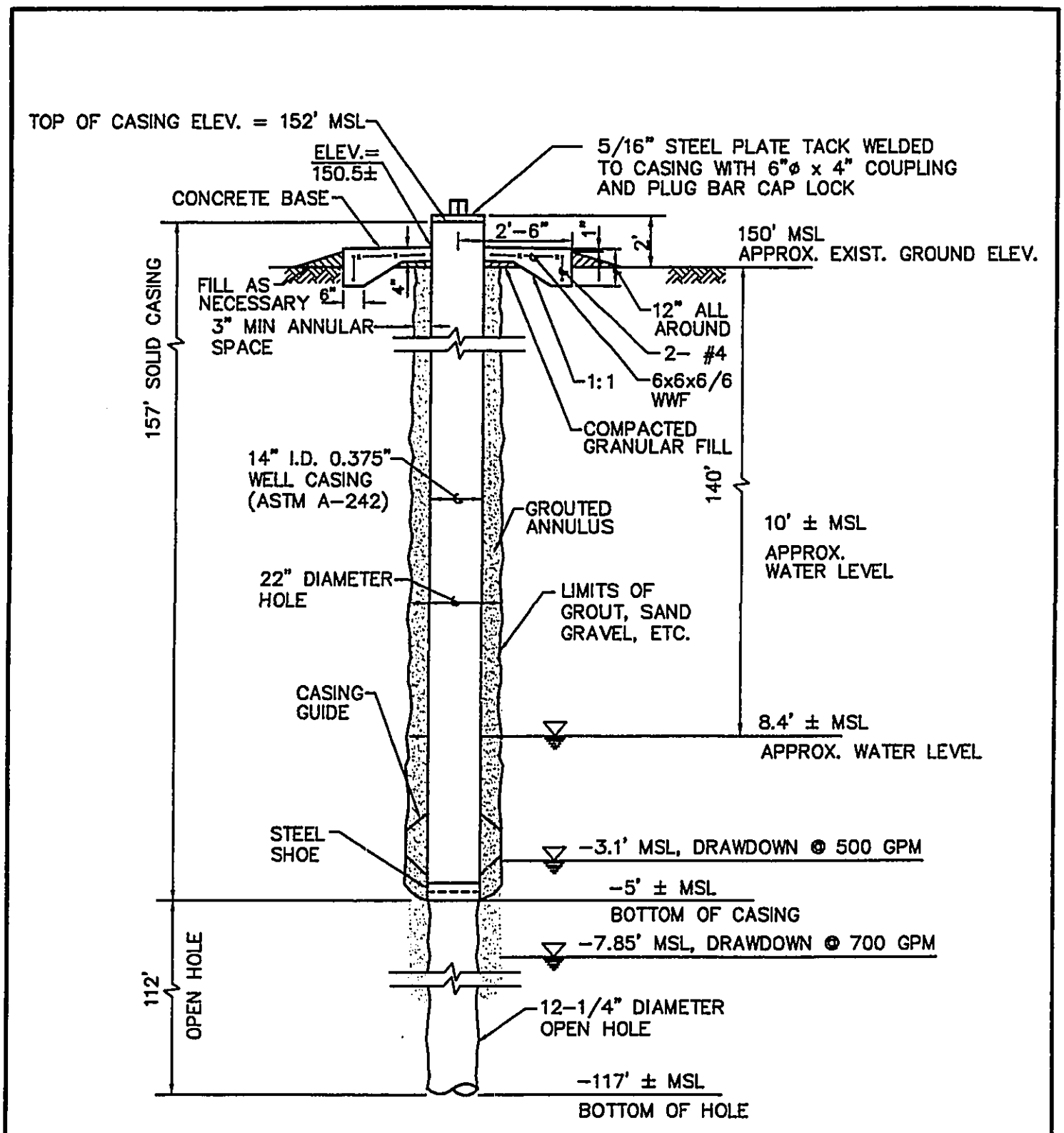
ENVIRONMENTAL ASSESSMENT
KAPILIMAO VALLEY WELL & TRANSMISSION MAIN

NOV. 1999

1000 0 1000 2000
SCALE: 1" = 2000'

PREPARED BY:
AKINAKA & ASSOCIATES, LTD.

EXHIBIT 3



FILENAME: 9901-04
SCALE: 1=1
BEGIN: 09/14/99
PM: BMG
OPER: *MSM
REVISED: 12/14/99

WELL SECTION

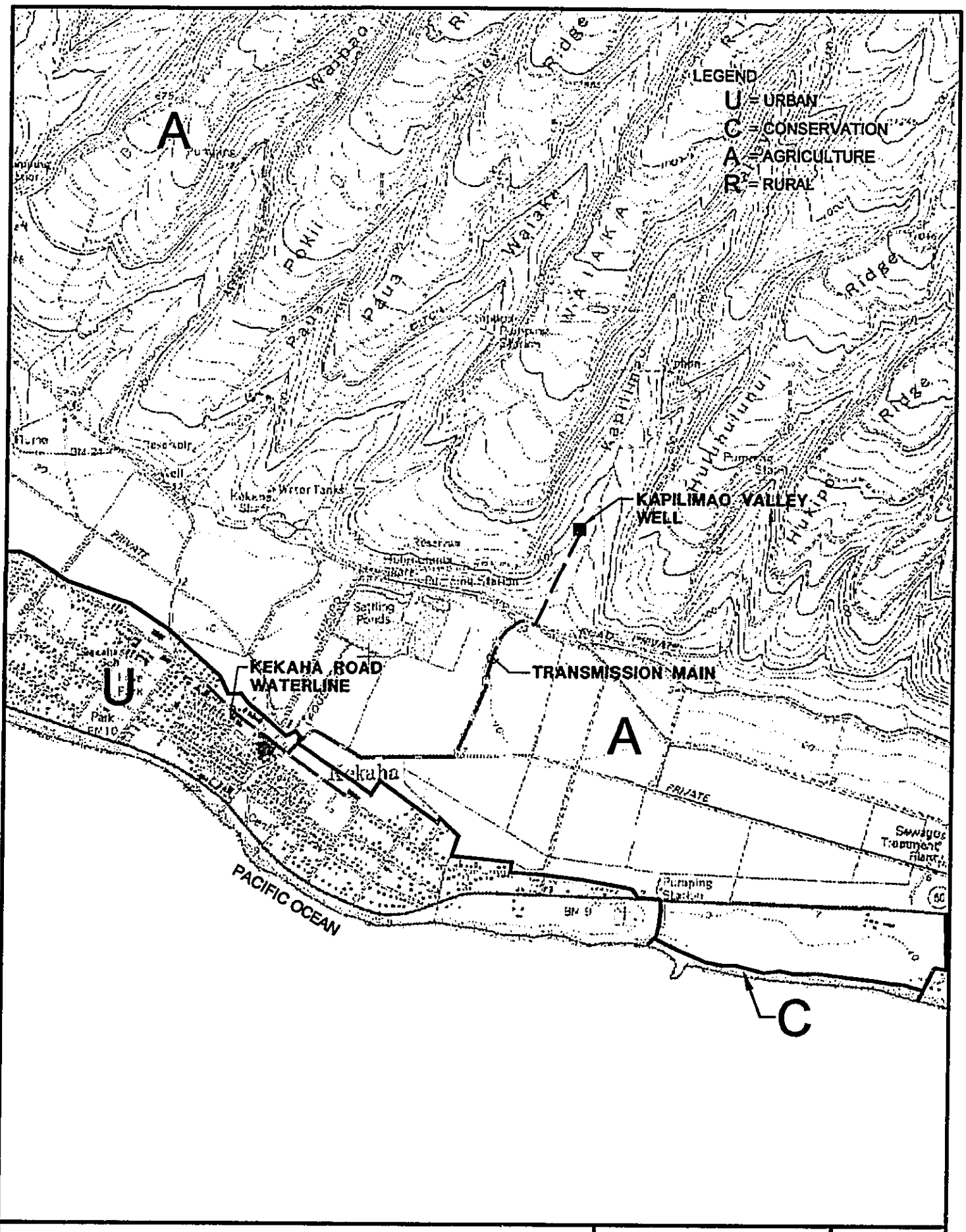
ENVIRONMENTAL ASSESSMENT
KAPILIMAO VALLEY WELL & TRANSMISSION MAIN

NOV. 1999

SCALE: NONE

PREPARED BY:
AKINAKA & ASSOCIATES, LTD.

EXHIBIT
4



STATE LAND USE

ENVIRONMENTAL ASSESSMENT
KAPILIMAO VALLEY WELL & TRANSMISSION MAIN

NOV. 1999

1000 0 1000 2000
SCALE: 1" = 2000'

PREPARED BY:
AKINAKA & ASSOCIATES, LTD.

EXHIBIT 5

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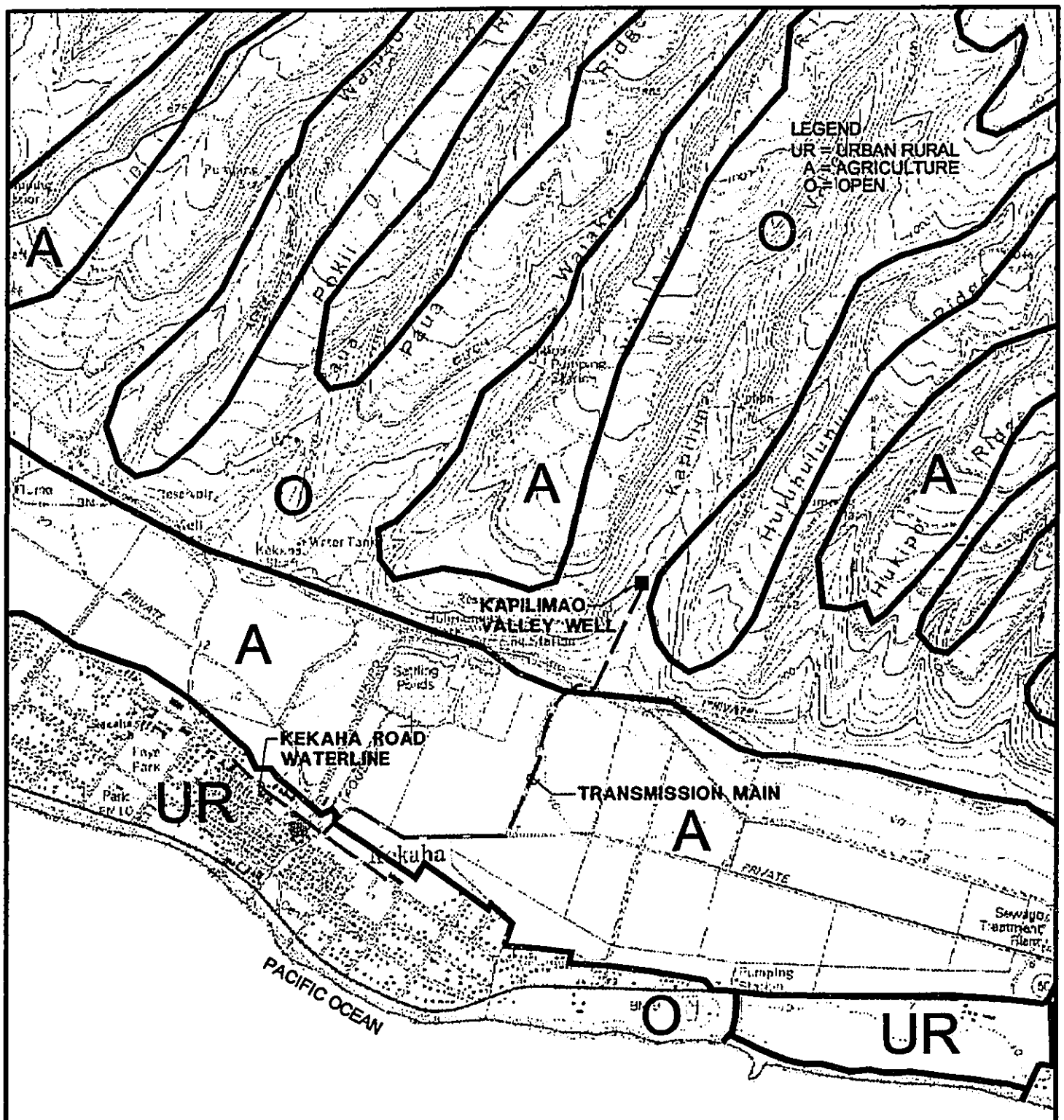
SCALE: 1=2000
BEGIN: 09/14/99

PM: BMG
OPER: SAJ,*MSM
REVISED: 11/06/99



COUNTY OF KAUAI GENERAL PLAN

ENVIRONMENTAL ASSESSMENT
KAPILIMAO VALLEY WELL & TRANSMISSION MAIN
NOV. 1999

1000 0 1000 2000
SCALE: 1" = 2000'

PREPARED BY:
AKINAKA & ASSOCIATES, LTD.

EXHIBIT 6

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SCALE: 1=2000
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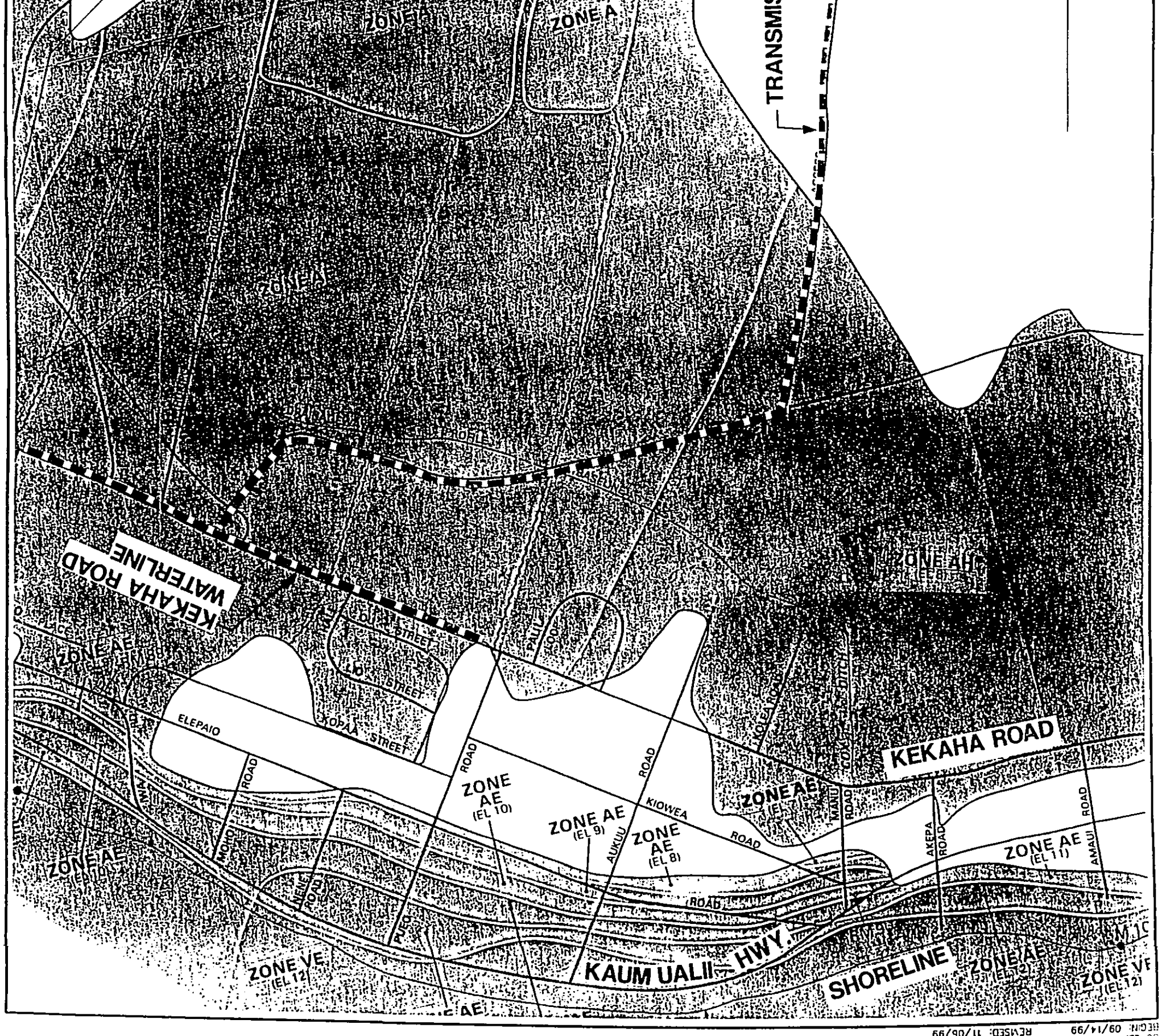
OPER: SAI,TMSM
REVISED: 11/06/99



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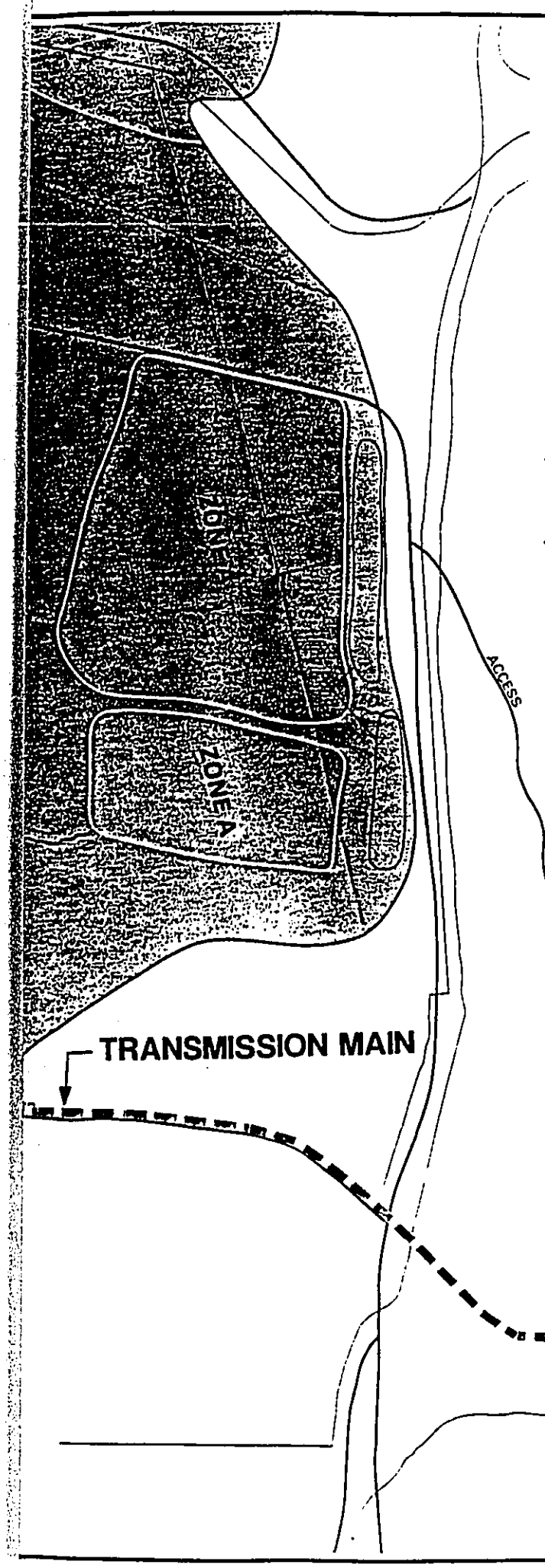
REVISED: 11/06/99



LEGEND

SPECIAL FLOOD HAZARD AREAS INUNDATED BY 100-YEAR FLOOD

ZONE A	No base flood elevations determined.
ZONE AE	Base flood elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

Flood Boundary

Floodway Boundary

Zone D Boundary

Boundary Dividing Special Flood Hazard Zones, and Boundary Dividing Areas of Different Coastal Base Flood Elevations Within Special Flood Hazard Zones.

513 Base Flood Elevation Line: Elevation in Feet*

FIRM

FLOOD INSURANCE RATE MAP

COMMUNITY-PANEL NUMBER
150002 0156 D

MAP REVISED:
SEPTEMBER 30, 1995

APPROXIMATE SCALE IN FEET
500 0 500

SCALE AS SHOWN

PREPARED BY:
AKINAKA & ASSOCIATES, LTD.

NOV. 1999

FLOOD INSURANCE MAP
ENVIRONMENTAL ASSESSMENT
KAPILIMAO VALLEY WELL & TRANSMISSION MAIN

EXHIBIT
7

2000-03-23-KA-FEA-
FINAL

ENVIRONMENTAL ASSESSMENT

FOR

KAPILIMAO VALLEY WELL & TRANSMISSION MAIN
KEKAHA, KAUAI, HAWAII
TAX MAP KEY: (4) 1-2-02:1

WATER SOURCE IMPROVEMENTS
WAIMEA-KEKAHA WATER SYSTEM
PAKUI HOUSING PROGRAM
CDBG DISASTER GRANT

MARCH 2000

PROPOSING AGENCY: COUNTY OF KAUAI
DEPARTMENT OF WATER

ERNEST Y.W. LAU
MANAGER & CHIEF ENGINEER

APPROVING AGENCY: COUNTY OF KAUAI
OFFICES OF COMMUNITY ASSISTANCE

MATILDA A. YOSHIOKA
DIRECTOR

PREPARED BY: AKINAKA & ASSOCIATES, LTD.
250 N. BERETANIA STREET, STE. 300
HONOLULU, HAWAII 96817

ENVIRONMENTAL ASSESSMENT

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LIST OF EXHIBITS

APPENDICES

RESPONSE TO CONTACTS (Section XIII)

PROJECT SUMMARY

PROJECT:	Kapilimao Valley Well & Transmission Main State Well 5841-02 Waimea - Kekaha Water System Pakui Housing Program CDBG Disaster Grant
PROPOSING AGENCY:	County of Kauai Department of Water
CONTACT PERSON:	Mr. Melvin Matsumura Phone: 808-245-5410
APPROVING AGENCY:	County of Kauai Offices of Community Assistance
CONTACT PERSON:	Mr. Dennis Alkire KCHA Project Coordinator Phone: 808-241-6814
LAND OWNER: (Well and Main)	State of Hawaii (DLNR) Leased to Kekaha Sugar Co.
TMK:	(4) 1-2-02:1

ITEM	WELL	MAIN	WATERLINE
Existing Land Use	Pasture	Pasture, Canefield	Road
Land Use Designation	Agriculture	Agriculture	Urban
Zoning Designation	Open	Open	Urban Rural

I. INTRODUCTION

A. Program Objective

The objective is to provide additional domestic water to the Waimea-Kekaha Water System for the benefit of all residents of the Waimea and Kekaha communities. The program will be accomplished by developing a deepwell source within the Waimea-Kekaha service area and connecting the source to the Waimea-Kekaha Water System.

B. Project Description

The proposed project consists of developing an exploratory well located in Kekaha, Kauai. The well has been tested and can service consumers within the Waimea-Kekaha Water System up to 400,000 gallons per day (gpd). Included in the project are transmission mains to connect with the existing water system. The proposed project will be under the jurisdiction *of the Department of Water, County of Kauai.*

C. Project Location

The project is located in the Waimea District of Kauai, within the town of Kekaha then northerly for approximate 1.3 miles . The well site is in Kapilimao Valley (elevation 152') and presently used for pasture. The route of the transmission main is along dirt roads through canefields and pasture. **EXHIBIT 1: VICINITY MAP** and **EXHIBIT 2: WAIMEA-KEKAHA WATER SYSTEM** shows the project area and location. **EXHIBIT 3: PROPOSED IMPROVEMENTS** identifies the well site and transmission main routes. Access to the project site will be through existing sugar cane field roads.

II. DESCRIPTION OF PROPOSED PROJECT

A. Background

The Waimea-Kekaha Water System service area contains 500 to 750 existing housing units in Waimea and Kekaha Towns. The service area is relatively large and includes residences, Waimea High School, Waimea Intermediate School, commercial districts in Waimea and Kekaha and the resort area called Waimea Plantation Cottages.

In 1994, the State of Hawaii Department of Health raised concerns which caused the Kauai Department of Water (DOW) to cease the operation of its Waimea Shaft No. 9 (5939-01). This has resulted in a 27% reduction in source capacity serving the Waimea-Kekaha system. Accordingly, the DOW is pursuing selection and development of a new water source.

A "Well Site Selection Report" has been prepared which reviews and updated the hydrogeologic information in the area. Essential field data has been collected and compared with existing literature and data to select a site for drilling a new well. The selected well site, based partially on the site selection report, is located on the west side of Kapilimao Valley, in the north of Kekaha Town.

A "Schematic Design Report" to develop the Kapilimao Valley Well was prepared in October 1999 and amended in December 1999. The report include results of pump tests executed to determine the well production capacity. The results of the tests indicated that a sustainable yield of about 400,000 gpd is available from the well. The choice of pumping rates and schedule will be based on the operational need of the system. Available pumps, valves, controls, and equipment (including electrical power and supervisory controllers) are discussed in the report.

B. Existing Water System

1. General

The Waimea-Kekaha Water System is located in the south western section of the island of Kauai as shown in **EXHIBIT 1: VICINITY MAP**. It is one of thirteen water service districts of the Department of Water. Existing well sources, storage facilities and the distribution system are shown in **EXHIBIT 2: WAIMEA-KEKAHA WATER SYSTEM.**

2. Flow Demands

Information from the Kauai Water Use and Development Plan shows that the Kekaha (20301) and Waimea (20302) hydrologic systems used 1.18 mgd of ground water for municipal consumption in 1988. The water demand in the service area is expected to rise to 1.19 mgd in 2010 with an ultimate demand of 2.89 mgd. Groundwater sustainable yield for Kekaha is 12 mgd and is 42 mgd for Waimea hydrologic systems.

3. Storage Capacity

Locations of storage tanks are shown in **EXHIBIT 2.** Total storage capacity in the service area is:

1.	Paua Valley Tanks	=	1,000,000 gal
2.	Waimea 0.5 MG Tank	=	500,000 gal
3.	Waimea 0.25 MG Tank	=	250,000 gal
4.	Waimea Heights Tank	=	100,000 gal
	Total	=	1,850,000 gal

Water System Standards Criteria:

a. Meet maximum day consumption
Max. day = 1.5 x 1,190,000 = 1,785,000 < 1,850,000 O.K.

b. Meet maximum day rate plus fire flow (2000 gpm/2 hrs = 240,000 gal) w/reservoirs 3/4 full.
(Commercial) 1,785,000 x 2/24 + 240,000 = 388,750 < 3/4 x 1,850,000 = 1,387,500 O.K.

The Department of Water's proposed 6-year Capital Improvement Program projects (Request for State aid) does not include new storage facilities in the service area.

4. Pump Capacity

Well locations are shown on **EXHIBIT 2** with capacities listed below.

a.	Waipao Valley Well B (5943-02)	=	600 gpm
b.	Kekaha Shaft (5843-01)	=	400 gpm
c.	Paua Valley Well (5942-01)	=	500 gpm
d.	Waimea Deepwell No. 2 (5840-02)	=	210 gpm
e.	Waimea Well No. 26 (5840-01)	=	220 gpm
f.	Waimea Shaft (out of service)*	=	0
	Total	=	***1930 gpm***
	If largest unit considered stand-by,		
	Total	=	***1330 gpm***

Water System Standards Criteria

Meet maximum day demand @ 16 hours.
1.5 x 1,190,000 x $\frac{1}{1440}$ x $\frac{24}{16}$ = 1860 > 1330 gpm (N.G. demand exceeds capacity)
A source of approximately 500 gpm is required to meet the criteria.

* Design funds have been appropriated by the State legislature for a water treatment facility.

5. Distribution Network

The distribution system of the Waimea-Kekaha Water System consists of pipelines (2" to 12") and a booster pump station.

The Kekaha area has experienced only minor maintenance problems - asphalt cement coupling problems along Elepaio Road. The Waimea area has corrosion problems in the cast iron piping on Menehune and Ala Wai Roads. Future problems due to corrosion of galvanized piping in Waimea Town is expected.

An 8-inch asbestos-cement main connects the Kekaha and Waimea areas. It is 1.3 miles long between major connections. A booster station is planned (**See EXHIBIT 3**) on this main to aid flows in either direction.

The DOW proposed 6-year C.I.P. projects (Request for State aid) includes pipeline improvements for fire protection to state facilities such as hospitals and schools.

C. Proposed Improvements

The exploratory well drilled on State lands leased to Kekaha Sugar Company (TMK: (4)1-2-02:1) in Kapilimao Valley will be developed for potable water production consists of a line shaft vertical turbine pump, controls, pump house, piping, paving, chlorinators, fencing etc., and connection to the Waimea-Kekaha water system with transmission main. The site is in close proximity to and accessible from a canefield road. Ground elevation of the well site range from 150 to 160 feet (MSL). Well depth is 267 feet with the upper 157' grouted and cased. **EXHIBIT 4: WELL SECTION** provides a detail of the exploratory well.

The transmission main will be buried along dirt roads through the pasture and canefields to connect to the existing Waimea-Kekaha Water System. A short section of pipeline will be installed in Kekaha Road to loop the system.

Overhead power lines will parallel the transmission main as installed by Kauai Electric Co. Supervisory controllers (SCADA) will link the project with other facilities (wells and tanks) of the Waimea-Kekaha water system. Signals will be transmitted by land lines and/or radio transmitter units.

D. Project Activity

Site grading is necessary to provide a level working area for maintenance crews. Grading during the exploratory well project indicates that blasting will not be required. Asphalt concrete pavement within the fenced pump site will provide all weather working conditions. Planting will be minimal to conform to the existing landscape.

Extensive activity will be involved in installing the line shaft vertical turbine pump, pump discharge piping, and construction of the pump control building with motor controls, chlorination facilities, radio telemetry and electrical work. In addition to equipment installation, the activity will involve concrete work, hollow tile walls and roofing.

The transmission mains will involve trenching, dewatering, pipe installation and backfill. Present access road surfacing is compacted earth which will be replaced. On Kekaha Road, asphalt concrete paving is the final surfacing on the travel lanes with grassed shoulders.

Power to the pump station will be provided through overhead lines by KECo. The overhead lines will follow the alignment shown in **Exhibit 3.**

E. Cost Estimate

Preliminary cost estimate for the Kapilimao Valley sitework, well development, pump station and water transmission mains is $2,200,000. As identified in the Cooperative Funding Agreement between the County of Kauai, Housing Agency and County of Kauai, Department of Water the development costs will be supported partially by the Community Development Block Grant (CDBG) funding. Additional funding will be provided by the Kauai Board of Water Supply.

III. RELATIONSHIP TO EXISTING LAND USE PLANS AND CONTROLS

A. Existing Land Use

The well site is presently used as pasture lands by Kekaha Sugar Company. Sparse bush and grasses are the typical site feature. Access to the site is presently limited to cane and dirt roads.

The transmission main route is through the pasture and canefield roads of Kekaha Sugar Company. A section of pipeline will be installed in the County's Kekaha Road.

B. State Land Use Designation

The State Land Use Commission designates properties in four categories: Agriculture, Rural, Urban, and Conservation. The proposed well and transmission main are within land designated as Agriculture. The pipeline in Kekaha Road is within lands designated as Urban. (**See EXHIBIT 5: STATE LAND USE DISTRICTS**). The water well is permissible under the rules of practice and procedure, State Land Use District Regulations, Part III Section 3-3 paragraph 7 which reads as follows:

> Public, private, and quasi-public utility lines, and roadways, transformer stations, solid waste transfer station, etc., and appurtenant small buildings such as booster pumping stations, but not including offices or yards for equipment, material, vehicle storage, repair or maintenance, treatment plants and major storage tanks not ancillary to agricultural practices, or corporation yards or other like structures.

C. County of Kauai General Plan

The General Plan for the County of Kauai, dated March 1970, provides information on the surrounding communities and land use designations. Also provided are generalized statements regarding transportation, sewer and water systems, storm drainage, etc.

The proposed project is consistent with the County of Kauai General Plan Update (**Section 7-2.1, June 21, 1984**) which states as its goal:

"To promote and protect the health, safety and welfare of all residents and visitors, and to promote the improvement and expansion of the island's economy, by recognizing and carefully utilizing land and water resource."

The proposed well and transmission main are within land zoned as Open District (**See EXHIBIT 6: COUNTY OF KAUAI GENERAL PLAN**). The pipeline in Kekaha Road lies with land zoned as Urban Rural. Under the provisions of the County's Comprehension Zoning Ordinance No. 164, public utilities and facilities are permissible uses in this zoning district.

IV. ENVIRONMENTAL SETTING

A. Topography

The well site is located 1.4 miles mauka of the shoreline above Kekaha Town. The site is along the western slope of Kapilimao Valley. The valley sides slopes at approximately 40% while the slope at the site is approximately 10%. The adjacent pasture road serves as an access route for Kekaha Sugar Co. Topographic information is available on the Waimea Quadrangle Map published by the U.S. Geological Survey (**See EXHIBIT 3: PROPOSED IMPROVEMENTS**) and aerial topographic maps by the County of Kauai.

The transmission main will start at the well site then down slope for 2,000 feet to the mana plain which is characterized by generally flat slopes with elevations ranging from sea level to about 30 feet mean sea level (msl). Approximately 5,200 feet of main and the Kekaha Road pipeline will reside within the plain.

B. Geology

The Island of Kauai is the oldest of the major islands in the Hawaiian chain. The Kauai Volcanic shield built itself off the ocean floor approximately two to four million years ago. Rock formations belonging to this original shield are part of the Waimea Canyon Volcanic Series, a major portion of which are the thin lava flows of the Napali formation.

Maps by the U.S. Soils Conservation Service within the "Soil Survey of Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii, August 1972" classifies the soil at the well site and valley slopes as Waiawa extremely rocky clay (WJF). A thin layer of granular heavy clay loam (2" thick) is underlain by dark reddish-brown clay about 12 inches thick. The substratum is hard rock. Surface soil permeability is moderate to moderately slow. Runoff is very rapid, and the erosion hazard is severe.

The Mana Plain soils were developed in alluvium washed from upland soils. They are mainly Kekaha series soils (KoA, KobA) classified as silty clay and clay. These series consists of soils that have moderate permeability, slow runoff and no erosion hazard.

Fill land (Fd) is located near Kekaha Road. It consists mostly of areas filled with material from dredging and bagasse and slurry from the sugar mill.

C. Climate

The climate of Kauai is comfortably uniform and is characterized by the northeast tradewinds generated by regions of high pressure to the north. The consistent approach of the tradewinds from the Northeast distinguishes the island into windward and leeward sides. Windward Kauai receives larger amounts of rainfall as the result of the condensation of water vapor as it is forced up into the atmosphere by the mountain mass. Mount Waialeale, for example, has a mean annual rainfall of 466 inches. The Waimea-Kekaha region, on the leeward side, has a mean annual rainfall of about 22 inches. May through September are the drier months while November thru March are the wetter months.

Temperatures in the region range from the mid 50's to the low 90's (degree Fahrenheit). Average temperature is 75°F. Temperature varies by about 15 degrees between day and night.

D. Hydrology

The principal sources of ground water on the island of Kauai are from the Napali Formation of the Waimea Canyon volcanic series. This volcanic series are typically highly permeable and yield water readily to wells as experienced by the Kekaha-Waipio and Paua Valley wells. The Koloa Volcanic series, in contrast, tend to be poorly to moderately permeable and offer limited yields. The candidate well site is located in the Napali Formation series.

Groundwater in the region is used for domestic (DOW) and irrigation (Kekaha Sugar Company). Per the Site Selection Report, wells in the vicinity seem to be located where the fresh water lens is thicker. The DOW's Paua Valley well (well #5942-01) was test pumped at a continuous rate of 500 gpm and is equipped with a 500 gpm pump, while the Waipao well 'B' (well #5943-02) was test pumped at a rate of 1,000 gpm and is equipped with a 700 gpm pump.

The sparse rainfall (less than 30 inches annually) in the study area most certainly is significant in calculating any local recharge. Irrigation practices of the plantation in the fields mauka of the producing wells are important in estimating the recharge from applied surface waters. A reasonable estimate of recharge from rainfall and irrigation will be about 5 mgd. Waters spread on the land is delivered via the Kokee and Kekaha Ditches and averages 50 mgd over the entire 5,000 acres of irrigated lands. The lands immediately above and between Waimea and Kekaha represents about 2500 irrigated acres and a total recharge of about 2.5

mgd. Shade (1995, page 24) stated "In the Kekaha system, pumpage exceeds recharge by almost 11 mgd indicating that ground water likely flows into this system from an adjacent up-gradient aquifer system."

The conclusion reached by Shade is supported by the geology as expressed by the orientation of dikes. The actual flow to the west from leakage of the Waimea River is undoubtedly significant, particularly northeast of Kekaha. This would tend to explain the evidently thicker freshwater portion of the lens in that sector of the aquifer.

Pump testing for Kapilimao Valley Well occurred during September 1999. A sustained test at 530 gpm for 7 days produced a steady drawdown of 11.5 feet. Salinity rose from 67 mg/L to 101 mg/L. The sustained test was followed by a 3 day cyclic pattern test of 12 hours on and 12 hours off. The results of the tests indicated that a sustainable yield of 400,000 gpd is available from the well.

The water course that drains Kapilimao Valley is active only after a heavy storm event. It is over 300 feet away from the well site and 30 feet lower. As the well is encased to a depth 120 feet below the water course invert, there should be no effect to the water course. Considering the depth, location and casing limits, the Project will not affect streams with sufficient water to allow 'opae, hihiwai or oopu to thrive.

E. Biology

The Kekaha Sugar Company has utilized the surrounding area for sugar cultivation over the past several decades. The well site due to its steep topography, is vacant or at times used for pasture. Vegetation at the well site is typically koa haole, lantana, natal redtop and molassesgrass. Native vegetation at the well site has been replaced with shrubs and grasses.

A formal biological survey was not performed for the site. Considering the agricultural activity and grazing, threatened or endangered birds are not expected to frequent the well site. According to the Hawaii Natural Diversity Database (The Nature Conservancy of Hawaii) there have been no recordings of rare species or ecosystems within the vicinity of the well site. Endangered water bird species have been recorded at the mill's settling ponds which are 1,600 feet from the transmission main alignment.

CORRECTION

THE PRECEDING DOCUMENT(S) HAS
BEEN REPHOTOGRAPHED TO ASSURE
LEGIBILITY
SEE FRAME(S)
IMMEDIATELY FOLLOWING

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The Final Environmental Assessment for the Wildlife Habitat Improvement Project in the adjacent Kekaha Game Management Area (September 1997) noted that the area has been highly altered from its native condition through past range fires, cattle overgrazing and noxious weed invasion. There are no known threatened or endangered plant species in the game management area.

F. Air Quality

Although no information on air quality at the project site was obtained, it is generally assumed that the air is normally relatively clear and low in pollution because of the great distance from the major urban centers. The exception is the seasonal dust created during agricultural planting and harvesting.

G. Water Quality

The proposed well is located Makai of an existing sugar cane field, and is subject to potential contamination from the leaching of fertilizers and herbicides used in cultivation. Nitrate, a good indicator of contamination by fertilizers, was found to occur at 2.7 milligrams per liter (mg/l) as nitrate-nitrogen which is similar to concentratives at Waipao Well and Kekaha shaft. This concentration is within the primary drinking water standard of 10 mg/l (nitrate-nitrogen). A "Preliminary Engineering Report for New Potable Water Source" as required by the State of Hawaii Department of Health, Chapter 20 of Title 11, Administrative Rules, will include water quality analyses and recommendations.

Atrazine, a herbicide, has been reported at 0.00005 and 0.00009 mg/l in the Paua Well. These values are well below the maximum contaminant level of 0.003 mg/l (State CWRM, Water Quality Plan, 1992, p. 111-19, and the Department of Health Administrative Rules Chapter 11-20, 1992). However, water quality analyses of the Kapilimao Valley Well did not find atrazine at detectable levels. **APPENDIX B: LABORATORY REPORT** provides the test results.

The County of Kauai, Department of Public Works has filed a Final Environmental Statement for effluent injection wells at their Waimea Wastewater Treatment Plant. The injection wells will be 1.9 miles from the project well site. The above EA included a study by Mink & Yuen, Inc. which states that the upgradient reach of the injection plume will be less than 1,000 feet (0.2 mile) and will be restricted to a depth of about 300 feet below seal level. The depth of the project well is 117 feet below sea

level. In consideration of the distance between wells and depth of the project well, there should be no impact from the effluent wells.

Data from the Department of Water from their testing of adjacent wells are:

Source Name	Date	Nitrate ppm	Nitrite ppm	Atrazine ppb
Paua (5942-01)	4/19/95 12/10/96 9/24/97	3.6 – –	<.05 – –	– .05 .09
Waipao (5943-01)	4/19/95	3.0	<.05	–
Kekaha S. (5843-01)	4/19/95	3.5	<.05	–
Waimea A. (5840-01)	4/19/95	1.3	<.05	–
Waimea S. (5939-01)	1/10/95 6/22/92	.56 .82	<.05 <.05	– –

H. Noise

Noise levels were not measured at the project site. The noise levels are considered to be normal rural and agricultural levels in comparison with the cane haul road traffic and the sugar mill operations.

I. Archaeology

An archaeological reconnaissance and archival / background research regarding the well site was performed by Scientific Consultant Services, Inc. (SCS) in October 1998. The research and investigations determined that no archaeological sites are present within the project area and none will be impacted during construction of the well. The superior characteristic of the landscape is the intensive landscape alterations occurring within and near the subject pane. The archaeological report is attached as **APPENDIX A.**

An archaeological reconnaissance survey of the Kekaha Game Management Area, Waimea, Kauai concluded that this upland area was probably used intermittently for resource gathering but not for permanent habitation. Historical modifications and land use may have destroyed any archaeological sites or trails. The management area is adjacent and topographically similar to the pasture lands that house the project well site

and part of the transmission main. The same conclusion can be assumed for the project site.

The Mana Plain lands which surround the transmission main's route have been cultivated for sugar cane for the past forty years. The land area was dewatered and filled in order to be useful for agricultural activities. Items of historical or archaeological significance in the area have been destroyed or altered by the actions related to agricultural activities.

Based on previous studies and historical modifications, there are no identified historic or archaeologically significant locations in the project area or immediate vicinity. However, should any unanticipated sites, artifacts or remains, such as shell, bone or charcoal deposits, be discovered during construction, the work would be halted and the State Historic Preservation Office will be contacted.

J. Flood Hazard

Flood hazard data was not computed for the project site. The Flood Insurance Rate Map (Panel 150002 0156 D dated Sept. 30, 1995) indicates that the well site outside the 100-year floodway. The transmission main and the Kekaha Road waterline traverse Zone AE flood hazard areas. Flood elevations are shown in the Flood Insurance Rate Maps. **EXHIBIT 7: FLOOD INSURANCE RATE MAP.**

Although the map indicates inundation by the 100-year floods with base flood elevations between 8 and 9 feet, the transmission main facilities are totally below grade and will not be affected. High velocities are not expected based on the stability of the adjacent aqueduct during previous floods.

K. Public Health and Safety

Public health and safety are of the utmost importance, and measures will be taken to ensure protection. The well site will be identified and surrounded by a chain link fence. The water from the wells will be disinfected by chlorination; and the chlorination facilities will be designed, installed, and maintained in accordance with all applicable safety codes. State DOH regulations (HAR Title II, Chapter 20, "Rules Relating to Potable Water Systems") will be followed; therefore, no public health or safety problems associated with the water system improvements are anticipated.

V. SOCIO-ECONOMIC SETTING

The project area is located in the Waimea-Kekaha region of Kauai. The population has remained stable in this region over the past several years, as evidenced by no significant increases in water meter installation during this period. Some development by Kikiaola Land Co. in the existing Waimea service area is anticipated within the next few years.

The resident population of the island of Kauai as of 1990 was 51,177. The population of the Waimea District for this same date was 8,888. These statistics are from the State of Hawaii Data Book 1993-94.

Kauai County has no ethnic majority. In 1990, the ethnic percentages were:

Hawaiian & Part-Hawaiian	25.3%
Filipino	17.3%
Japanese	18.4%
Caucasian	18.4%
Other	20.6%

The Kauai economy is primarily geared around agriculture and tourism as the most dynamic industries. The pineapple industry has essentially disappeared since 1960 while the sugar industry has greatly reduced its work force.

In contrast to the decline in agricultural employment, employment in the services sector (dominated by tourism) grew from 9 to 28 percent of total employment since 1960. Other major sources of employment are wholesale and retail trade, 23%; government, 13%; agriculture, 7%, and manufacturing, 6%. The average unemployment rate was 6%.

The project area's economic activity is dominated by sugar cane cultivation and tourist related operations. The nearest truck and taro farming are found in Waimea Valley several miles away. In consideration of the well's location, the Project will not influence water rights which guarantee water sufficient to produce taro or provide for other traditional Kuleana uses.

VI. PROBABLE IMPACTS OF THE PROPOSED ACTION ON THE ENVIRONMENT

A. Short Term Impacts

Minor or short term impacts due to the proposed project are expected. In general, daily traffic of the construction crew (normally vehicles) through the Waimea and Kekaha Towns area and the noise of the construction equipment will be the primary construction impacts. Installation of the Kekaha Road pipeline will cause traffic disruptions which can be controlled by off-duty police officers. Water service inconveniences during connection of the pipeline can be mitigated by advance notices of service interruptions. As the traffic route consists mainly of asphalt concrete roads, and considering the small size of the construction crew, residents should not notice any appreciable increase in traffic. Traffic on the cane roads may create dust but will not have any additional impact to the environment.

Noise from the construction activities will be limited to site construction, trench excavation and backfilling. The work will be restricted to daylight hours and the noise should blend in with the present activities. It should be noted that the Kekaha Road pipeline is near the Kekaha Sugar Mill which produces noise, dust and traffic disruptions. Exhaust emissions will be dispersed by the prevailing winds. Distance from the well site to denser populated areas is approximately 1.3 miles, therefore no adverse impacts are expected.

Dust and erosion from the construction efforts will be related to site construction and traffic movement. Conformance to the County's Grading Ordinance should mitigate any adverse effects. Water discharged from the well during the start-up periods will be directed to the adjacent valley swale and flow to agricultural irrigation courses. Chlorinated water used to disinfect the water system will be disposed in accordance with applicable Department of Health and NPDES requirements.

B. Long Term Impacts

Long term impacts from this water well project include loss of land use on the well site. Individual wastewater treatment systems will be restricted within 1,000 feet of the well site. Secondary long term impacts are those relating to the lands necessary for overhead power lines and pipelines. Overhead power lines are typical for this area of Kauai and will be

installed on or adjacent appendage to existing dirt roads. The transmission main, through the sugar cultivated area, will be buried to a depth which will not impact the agricultural activities. The development of Kapilimao Valley Well is anticipated to have little effect on the water resources in the area. The total pumping capacity of the well is 400,000 gpd (0.4 mgd). Assuming a maximum operating time of 16 hours per day, the existing wells will withdraw 1.85 mgd. The total withdrawal of 2.25 (0.4+1.85) mgd is well below the total sustainable yield of 54 mgd (**See Section II.B.2**) from the Kekaha and Waimea hydrologic systems.

Visual impacts due to the project will be negligible due to minimal above ground improvements related to wells and buried pipelines. The well development will include a pump station and aerial power line which could provide some visual concerns. Motor noise from the line shaft pump is not expected to be a problem due to the isolation of the well site. Vehicular traffic will be limited to inspections and routine maintenance.

The proposed project will not adversely affect the inventory of rare or endangered species of flora. No rare or endangered species of flora are known to inhabit the project or adjacent areas. The proposed project will have no significant effect upon the animals which frequent the site.

Another long term impact is the use of the withdrawn water as it relates to land use in the region. The project is required to replace the Waimea Shaft supply and to meet the 2010 water demands. As the estimated 2010 demand (1.19 mgd) is similar to the present demand (1.18 mgd), drastic land use changes are not expected. Adding the project to the present water system will not attract nor support intensified land uses with surplus water supply.

VII. ADVERSE IMPACTS WHICH CANNOT BE AVOIDED

The noise level will increase during the construction period. This effect will be of short duration, lasting only for the construction phase. The noise level can be reduced by the contractor by ensuring proper functioning of mufflers on all equipment, and conducting construction activity only during daylight hours, between 7:30 a.m. to 5:00 p.m.

Traffic noises, emissions and dust will increase during the construction period. This short duration impact can be mitigated by restricting traffic movement only to daylight hours and mitigating dust generation by moistening the dirt roads.

There are several irreversible commitments of resources including land and financial resources to construct capital improvements, and to operate and maintain the wells, control building, and pipelines. Land commitment for the wells, control building, pipelines is minimal, and financial commitment for capital improvements and operations and maintenance are necessary.

The long-term responsibility of the Department of Water to provide adequate water supplies to the Kekaha and Waimea communities supports the implementation of the proposed project; therefore, the commitment of land, labor, materials, energy, equipment and financial resources that are practically irreversible and irretrievable are warranted.

VIII. ALTERNATIVES TO THE PROPOSED ACTION

A No Action

In 1994, the State of Hawaii Department of Health raised concerns which caused the DOW to cease the operation of its Waimea Canyon Shaft No. 9 (5939-01). This has resulted in a 27% reduction in source capacity serving the Waimea-Kekaha system. Accordingly, the DOW is pursuing construction of a new well source.

The "No Action" alternative will not allow the Department of Water to meet the water standards criteria and the resident generated demands that are greater than the capacity of the existing well sources. Therefore, the "No Action" alternative is unacceptable.

B. Alternative Site

A "Well Site Selection Report" was prepared for the County of Kauai prior to site selection. Alternative sites in Kekaha and Waimea were investigated and discussed within the report. Three sites in Kekaha and five sites in Waimea were investigated as candidate sites. The Kekaha sites (above Kekaha Town) and the Waimea Valley (in proximity to the Waimea River) were the finalist. Reasons to select the Kapilimao Valley site are provided in **SECTION II: DESCRIPTION OF PROPOSED PROJECT.**

C. Alternative Water Sources

Alternative water sources such as desalination and use of surface water were considered, but rejected because of higher construction, operation, maintenance and administration costs. Wastewater reuse and nonpotable water supplies, rainfall catchment, and water conservation are discussed below.

1. Wastewater Reuse and Nonpotable Water Supplies

Wastewater reuse and nonpotable water supplies are potentially viable alternative water sources. Treated wastewater effluent is available from the Waimea Wastewater Treatment Plant serving the Waimea Town area. The amount of treated effluent currently available is about 0.3 mgd, and is committed to Kekaha Sugar Company and DeKalb Plant Genetics (seed corn) for irrigation. Wastewater reuse is being accomplished, and will continue to be

encouraged and pursued as a means for conserving potable water supply resources.

2. Rainfall Catchment

Rainfall catchment involves the construction of a series of ditches and reservoirs to intercept rainfall runoff from large areas of land, and is an ideal water source for agricultural use. According to the Kauai Water Use and Development Plan, January 1990, over 80 percent of water used on Kauai is by sugarcane plantations which rely on rainfall catchment (surface waters) as the primary water source. The Kekaha Sugar Company, utilizes rainfall as its primary water source to meet the sugarcane irrigation requirements on its mauka lands. However, if any surface water source is used to supply municipal drinking water systems, it is subject to the DOH Surface Water Treatment Rule, which requires costly and cumbersome treatment, monitoring and reporting. Consequently, the immense cost of constructing, operating, and maintaining a water treatment facility renders this alternative infeasible and unacceptable.

3. Water Conservation

Water conservation programs can be used to better meet future water demands, and are typically implemented when a water shortage is likely. Conservation programs generally fall into two major categories: Water System Conservation and Consumer Conservation. Water system conservation is the responsibility of the water purveyor, and entails careful monitoring of all water in the transmission and distribution systems. Detection and repair of leaks in the transmission and distribution system would be effective in reducing water demands. DOW currently is in the process of establishing a water conservation plan.

Consumer conservation is the responsibility of the consumer, and could reduce the per capita consumption. Consumers are encouraged to use water saving utilities, to detect and repair leaks within their property, and in general, to minimize wasteful water use.

Water conservation is an environmentally beneficial practice regardless of the water supply situation. However, Kauai experiences a very wet climate and has an abundant groundwater and surface water supply. The water sources for the Waimea-Kekaha Water System are within the Waimea and Kekaha Hydrologic systems, which has a sustainable yield of 54 mgd. The average water use in 2010 is expected to be approximately 1.19 mgd, or 2.2 percent of the estimated sustainable yield. Even with further development of well water sources, the water use will be a fraction of hydrologic system yield. Although it is a practice that should be observed by all consumers, water conservation will not provide the quantity of water required to meet demands. Therefore, water conservation is deemed an insufficient alternative.

IX. MITIGATING MEASURES TO MINIMIZE ADVERSE IMPACTS

The short term impacts occurring during the construction work will be minimized by applying current techniques and methods. In addition, restrictions of operational hours will minimize noise impacts to the adjoining area. Dust migration can be controlled by use of water wagons and sprinklers.

Long term impacts of the well project are insignificant. Long term impacts of future well development and operation can be further mitigated by restricting inspections and routine maintenance to normal workday hours. Landscaping can buffer the final development features, such as the control building and chain link fencing. Color of the paint for the control building will be earth-toned to match the surrounding environment.

X. RECOMMENDATION

Based on the preceding paragraphs, it is anticipated that the proposed action will result in no significant adverse impacts other than those described in this assessment. Consequently, a "Findings of No Significant Impact" is recommended. If such a finding is issued, an Environmental Impact Statement would not be required.

XI. REASONS SUPPORTING THE RECOMMENDATION

In considering the significance of potential environmental effects, the applicant has considered the sum of effects on the quality of the environment and evaluated the overall cumulative effects of the proposed action. The applicant has considered every phase of the proposed action, the expected consequences, both primary and secondary and the cumulative as well as the short- and long-term effects of the proposed action. As a result of these considerations, the applicant has determined that:

A. The proposed action does not involve an irrevocable commitment or loss of or destruction of any natural cultural resource;

There are no natural or cultural resources associated with the project site. The site is presently vacant or used as a pasture or canefield.

B. The proposed action does not curtail the range of beneficial uses of the environment:

The proposed project is consistent with the County's General Plan and the Board of Water Supply policy and would not curtail beneficial uses of the environment in the area. The proposed project will be compatible with the uses of the surrounding area.

C. The proposed action is in concert with the state's long-term environmental policies, goals and guidelines as expressed in Chapter 344, HRS, and any revisions and amendments thereto, court decisions and executive orders:

The proposed project is consistent with the State Land Use Designation which is in concert with all applicable policies, goals and guidelines. No long-term environmental conflicts are foreseen.

D. The proposed action does not substantially affect the economic or social welfare of the community or state:

The economic impact will be expressed in the short-term, construction related activities. Upon completion of the project, economic conditions should return to the existing situation since the new well will serve the existing community.

E. The proposed action does not involve substantial secondary impacts, such as population changes or effects on public facilities:

The proposed project will not result in an increase of population in the area as development is controlled by land use and general plan policies. Normal population growth should not be affected.

F. The proposed action does not substantially affect public health:

Construction activities will be regulated to minimize noise, dust and erosion concerns. The project includes water quality testing to determine if the water source is suitable for domestic purposes.

G. The proposed action does not involve a substantial degradation of environmental quality:

The existing physical aspects of the surrounding area will be preserved.

H. The proposed action is individually limited and cumulatively, does not have a considerable effect upon the environment or involve a commitment for larger actions:

The proposed project will be part of the Waimea-Kekaha Water System. Use is regulated by the County of Kauai, Board of Water Supply. Approval of the project does not involve a commitment for any larger action.

I. The proposed action does not substantially affect rare, threatened or endangered species or habitats:

There are no known rare, threatened or endangered species or habitat associated with the project site.

J. The proposed action does not detrimentally affect air or water quality or ambient noise levels:

Development of the site will not increase ambient noise levels as the generated noise from line shaft pump motors will have no adverse effects due to the distance to the nearest residence.

Short-term impacts on air and water quality, as well as noise, will occur during the construction period, but will be mitigated by normal construction practices and will be regulated by the project plans, specifications and inspections.

K. The proposed action does not affect an environmentally sensitive area such as a flood plain, tsunami zone, erosion-prone area, geologically hazardous land, estuary or coastal waters.

The proposed well site is not located adjacent to the shoreline and is outside of the 100-year floodplain. The transmission main and Kekaha Road pipeline will be buried through the flood hazard area. No other environmentally sensitive characteristics are associated with this site.

L. The proposed action does not substantially affect scenic vistas and view planes identified in county or state plans or studies.

When completed, the well piping, control building and overhead power lines may be visible facilities of this project. Considering the distance from the viewing public and selection of earth-tone paint colors, there will be minimal sight attractions to the well site. The overhead power lines that will service the well pump station is a branch of a KECo system that supplies power to the adjacent valley. There will be no impacts on scenic vistas or view planes identified in County or State plans or studies.

M. The proposed action will require energy consumption to drill and test the well.

The proposed project will require energy to pump water to the Waimea-Kekaha Water System. The amount of energy to construct, operate, and maintain the proposed project would be a small fraction of the total amount of energy currently used in the area. The proposed project will not require substantial energy consumption.

XII. LIST OF NECESSARY APPROVALS

A. County of Kauai, Planning Department: A use permit is required for all utility installations in agricultural and open zoned land. These requirements are stipulated in the revised ordinances of the County of Kauai, Section 8-7.3 and Section 8-8.3.

B. County of Kauai, Department of Water: Construction plan approval.

C. County of Kauai, Department of Public Works: Construction plan approval.

D. State of Hawaii, Department of Health: Preliminary Engineering Report and construction plan approval.

E. State of Hawaii, Commission on Water Resource Management: Well Installation Permit.

F. State of Hawaii, Department of Land & Natural Resources: Right-of-entry, easement and construction plan approval.

G. Kekaha Sugar Company (Amfac Land Co., Ltd. - Kauai Division): Right-of-entry, construction plan approval.

XIII. ORGANIZATIONS AND PERSONS CONTACTED

The following agencies provided information in the preparation of the Draft Environmental Assessment on the subject project.

	AGENCY	COMMENTS	RESPONSE
A.	Department of Planning County of Kauai 4444 Rice Street, Suite 473 Lihue, Hawaii 96766	Reserve comments for the Environmental Assessment.	None
B.	Department of Water County of Kauai P.O. Box 1706 Lihue, Hawaii 96766-5706	Proposing Agency.	None
C.	Department of Public Works County of Kauai 4444 Rice Street, Suite 275 Lihue, Kauai, Hawaii 96766	Comply with flood requirements. Submit Kekaha Road plans for review/approval.	Will comply
D.	Department of Hawaiian Home Lands State of Hawaii 1099 Alakea Street, Suite 2000 Honolulu, Hawaii 96813	No comments received.	None
E.	Department of Business, Economic Development and Tourism State of Hawaii 250 South King Street Honolulu, Hawaii 96813	Hawaii Coastal Zone Management (CZM) Program is no longer routinely reviewing EA reports.	None

AGENCY		COMMENTS	RESPONSE
F.	Department of Land & Natural Resources Land Division State of Hawaii P.O. Box 621 Honolulu, Hawaii 96809	Obtain right-of-entry from Kekaha Sugar Co. and DLNR. Well site located in an area outside the 500-year flood plain.	Will comply
G.	Department of Land & Natural Resources State Historic Preservation Division 601 Kamokila Blvd., Room 555 Kapolei, Hawaii 96707	Project will have "no effect" on significant historic sites.	None
H.	Department of Land & Natural Resources Division of Forestry and Wildlife 3060 Eiwa Street, Room 306 Lihue, Kauai, HI. 96766	No comment - no adverse effects to resources under their jurisdiction.	None
I.	Department of Health Environmental Health Division State of Hawaii P.O. Box 3378 Honolulu, Hawaii 96813	Comply with HAR 11-20 "Rules relating to Potable Water Systems". Kauai DOW responsible to review / approve plans.	Will comply. Project under Kauai DOW jurisdiction.
J.	Office of Hawaiian Affairs State of Hawaii 711 Kapiolani Blvd., Suite 500 Honolulu, Hawaii 96813	Project should not abridge gathering and water rights of persons of Hawaiian ancestry.	Project will not abridge gathering and water rights of persons of Hawaiian ancestry.

	AGENCY	COMMENTS	RESPONSE
K.	Commission on Water Resource Management State of Hawaii P.O. Box 621 Honolulu, Hawaii 96809	Pump Installation Permit required. Describe characteristics of Kapilimao water course and assess potential effects.	Will comply. Kapilimao Valley water course normally dry except after major rain event.
L.	Office of Environmental Quality Control 235 So. Beretania Street, Suite 702 Honolulu, Hawaii 96813	No comments received.	Draft EA to be submitted for review.
M.	U.S. Geological Survey Water Resource Division 677 Ala Moana Blvd. Suite 415 Honolulu, Hawaii 96813	No comments received.	None
N.	Amfac Land Company, Ltd. Kauai Division 2970 Kele Street Lihue, Kauai, Hawaii 96766	No comments received.	Plans to be submitted for review and approval. Request for right-of-entry.
O.	Kikiaola Land Company, Ltd. P.O. Box 367 Waimea, Kauai, HI. 96796	No comments received.	None
THE FOLLOWING AGENCY PROVIDED COMMENTS DURING THE DRAFT REVIEW PERIOD:			
A.	Office of Environmental Quality Control 235 So. Beretania Street, Suite 702 Honolulu, Hawaii 96813	Revise sentence, p.IV-5, lst par. Provide map to show hydrologic conditions, and contamination information.	Sentence revised. Map provided (See response herein).

HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF FORESTRY AND WILDLIFE
KAUAI DISTRICT
3060 EIWA STREET, ROOM 306
LIHUE, KAUAI, HAWAII 96766-1875

November 1, 1999

IN REPLY REFER TO

Mr. Henry S. Morita
Executive Vice President
Akinaka & Associates, Ltd.
250 No. Beretania St., Suite 300
Honolulu, HI 96817

Dear Mr. Morita:

This responds to your pre-assessment consultation letter of October 26, 1999, in which you ask for comments regarding the development of the Kapilimao Valley well and water transmission main.

We do not see that the proposed project has any adverse effects to resources under our jurisdiction, and therefore have no comment.

If you have any questions, please do not hesitate to contact me.

Sincerely,

Edwin Q.P. Petteys
Branch Manager

MARYANNE W. KUSAKA
MAYOR

DEE M. CROWELL
PLANNING DIRECTOR
SHEILAH N. MIYAKE
DEPUTY PLANNING DIRECTOR

TELEPHONE (808) 241-6677
FAX (808) 241-6699

PLANNING DEPARTMENT

November 3, 1999

Henry S. Morita
Akinaka & Assoc.
250 N. Beretania Street, Suite 300
Honolulu, Hawaii 96817

SUBJECT: Pre-assessment Consultation
Development of Kailimao Valley Well at Kekaha, Kauai

Thank you for notifying our office about the subject project. We will reserve our comments for the Environmental Assessment. In the meantime, if you have any questions or require assistance from our office, please feel free to contact Keith Nitta of my staff at 241-6677.

SHEILAH N. MIYAKE
Deputy Planning Director

Kapule Building • 4444 Rice Street, Suite 473 • Lihu'e, Kaua'i, Hawai'i 96766

MARYANNE W. KUSAKA
MAYOR

WALLACE G. REZENTES, SR.
ADMINISTRATIVE ASSISTANT

CESAR C. PORTUGAL
COUNTY ENGINEER
TELEPHONE 241-6600

IAN K. COSTA
DEPUTY COUNTY ENGINEER
TELEPHONE 241-6640

AN EQUAL OPPORTUNITY EMPLOYER
COUNTY OF KAUA'I
DEPARTMENT OF PUBLIC WORKS
4444 RICE STREET
MO'IKEHA BUILDING, SUITE 275
LIHU'E, KAUA'I, HAWAI'I 96766

PW10.182

November 4, 1999

Akinaka & Associates, Ltd.
250 N. Beretania St., Suite 300
Honolulu, Hawaii 96817

Attention: Mr. Henry Morita

SUBJECT: PRE-ASSESSMENT CONSULTATION FOR DEVELOPMENT OF KAPILIMAO VALLEY WELL AND WATER TRANSMISSION MAIN

We completed our review of the subject project. Our comments are similar to those comments noted in our letter dated June 17, 1998. For your convenience, we are enclosing a copy of our letter.

We believe the control building which will house the motor control center, chlorination equipment and supervisory commend and power controllers will be susceptible to flooding and will need to comply with flood requirements.

Kekaha Road is a county maintained road. Construction plans will need to be developed for our review and approval for the short segment of pipeline that will be installed in Kekaha Road.

Should you have any questions, please feel free to contact Mr. Wallace Kudo of my staff at (808) 241-6620.

Very truly yours,

for CESAR C. PORTUGAL
County Engineer

WK/cu
Attachment

DEPARTMENT OF WATER

County of Kauai

"Water has no Substitute – Conserve It!"

January 6, 2000

Mr. Cesar C. Portugal, County Engineer
County of Kauai
Department of Public Works
4444 Rice Street, Suite 275
Lihue, Hawaii 96766

Attention: Mr. Wallace Kudo

Project: Kapilimao Valley Well and Transmission Main
Kekaha, Kauai (Kauai Department of Water)

Subject: Pre-Assessment Consultation

Reference: Department of Public Works ltr Pw10.182 of Nov. 4, 1999

Thank you for reviewing and responding to the subject. We will conform to the comments within the reference by:

1. Complying with flood requirements for facilities susceptible to flooding.

2. Submitting Kekaha Road pipeline construction plans for your review and approval.

Points of contact for this project are Melvin Matsumura, Department of Water @ 808-245-5410 and Henry Morita, Akinaka & Associates, Ltd. @ 808-536-7721.

Very truly yours,

Edward Tschupp

for Ernest Y. W. Lau
Manager and Chief Engineer

san
A:\Pre-assessment\matsu

— 4398 Pua Loke Street, Lihue, Kauai, Hawaii or P. O. Box 1706, Lihue, HI 96766-5706 —
Phone No. (808) 245-5400 – Administration FAX No. (808) 246-8628 – Engineering/Fiscal/Shop FAX No. (808) 245-5813

BENJAMIN J. CAYETANO
GOVERNOR
SEIJI F. NAYA, Ph.D.
DIRECTOR
BRADLEY J. MOSSMAN
DEPUTY DIRECTOR
DAVID W. BLANE
DIRECTOR, OFFICE OF PLANNING

DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT & TOURISM

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

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

Ref. No. P-8343

November 9, 1999

Dear Project Manager:

Subject: Environmental Assessment and Environmental Impact Statement Reviews

For your information, the Hawaii Coastal Zone Management (CZM) Program is no longer routinely reviewing environmental assessment and environmental impact statement reports. If there are any questions, please call John Nakagawa of our CZM Program at (808) 587-2878.

Sincerely,

David W. Blane
Director
Office of Planning

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

BRUCE S. ANDERSON, Ph.D., M.P.H.
DIRECTOR OF HEALTH

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

In reply, please refer to:
EMD / SDWB

November 10, 1999

RECEIVED
NOV 13 1999
AKINAKA & ASSOCIATES LTD.

Mr. Henry S. Morita
Executive Vice President
Akinaka & Associates, Ltd.
250 North Beretania Street, Suite 300
Honolulu, Hawaii 96817

Dear Mr. Morita:

SUBJECT: PRE-ASSESSMENT CONSULTATION
DEVELOPMENT OF KAPILIMAO VALLEY WELL AND WATER TRANSMISSION MAIN
KEKAHA, KAUAI

Thank you for the opportunity to comment on the subject project. Our comments are as follow:

1. 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, "Rules Relating to Potable Water Systems."

2. The project will include the development of a new source of potable water. Section 11-20-29 of Chapter 20 requires that all new sources of potable water serving a public water system be approved by the Director of Health prior to its use. Such an approval is based primarily upon the submission of a satisfactory engineering report that addresses the requirements set in Section 11-20-29.

3. 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, performed by a laboratory certified in the State of Hawaii, must be submitted as part of the report to demonstrate compliance with all drinking water standards. The Director, upon his review of the information submitted, may require additional tests.

4. Section 11-20-30 requires that the Director approve new or substantially modified distribution systems for public water systems. However, if the water system is under the jurisdiction of the County of Kauai, the Kauai Department of Water Supply will be responsible for the review and approval of the plans.

If you should have any questions, please contact Ms. Queenie Komori of the Safe Drinking Water Branch, Engineering Section, at 586-4258.

Sincerely,

FOR WILLIAM WONG, P.E., Chief
Safe Drinking Water Branch
Environmental Management Division

QK:la

DEPARTMENT OF WATER

County of Kauai

"Water has no substitute – conserve it!"

January 6, 2000

Environmental Management Division
Department of Health
State of Hawaii
PO Box 3378
Honolulu, Hawaii 96801

Attention: Mr. William Wong, P.E., Chief
Safe Drinking Water Branch

Project: Kapilimao Valley Well and Transmission Main
Kekaha, Kauai (Kauai Department of Water)

Subject: Pre-Assessment Consultation

Reference: Department of Health ltr EMD/SDWB of Nov. 10, 1999

Thank you for your review and comments regarding the subject. We wish to respond the comments within the reference:

1. We will comply with HAR. Title II, Chapter 20, "Rules Relating to Potable Water Systems."

2. An engineering report that addresses the requirement of Section 11-20-29 will be submitted for approval.

3. Water quality analyses will be submitted as part of the Environmental Assessment and engineering report.

4. The proposed project will be under the jurisdiction of the County of Kauai.

Points of contact for this project are Melvin Matsumura, Department of Water @ 808-245-5410 and Henry Morita, Akinaka & Associates, Ltd. @ 808-536-7721.

Very truly yours,

Edward Tadeupp

for/ Ernest Y. W. Lau
Manager and Chief Engineer

san
A:\Pre-assessment\matsu

-- 4398 Pua Loke Street, Lihue, Kauai, Hawaii or P. O. Box 1706, Lihue, HI 96766-5706 --
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BENJAMIN J. CAYETANO
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BRIAN C. NISHIDA
DAVID A. NOBRIGA
HERBERT M. RICHARDS, JR.

LINNEL T. NISHIOKA
DEPUTY DIRECTOR

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

November 12, 1999

RECEIVED
NOV 17 1999
AKINAKA & ASSOCIATES, LTD.

TO: Mr. Dean Uchida, Administrator
Land Division

FROM: Linnel T. Nishioka, Deputy Director
Commission on Water Resource Management (CWRM)

SUBJECT: Pre-assessment for Development of Kapilimao Valley Well and Water Transmission Main
Kekaha, Kauai, Hawaii

FILE NO.: KAPILWELL.COM

Thank you for the opportunity to review the subject document. Our comments related to water resources are marked below.

In general, the CWRM strongly promotes the efficient use of our water resources through conservation measures and use of alternative non-potable water resources whenever available, feasible, and there are no harmful effects to the ecosystem. Also, the CWRM encourages the protection of water recharge areas, which are important for the maintenance of streams and the replenishment of aquifers.

[X] We recommend coordination with the county government to incorporate this project into the county's Water Use and Development Plan.

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

[ ] We are concerned about 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.

[X] A Well Construction Permit and/or a Pump Installation Permit from the Commission would be required before ground water is developed as a source of supply for the project.

[ ] The proposed water supply source for the project is located in a designated water management area, and a Water Use Permit from the Commission would be required prior to use of this source.

[X] Groundwater withdrawals from this project may affect streamflows, which may require an instream flow standard amendment.

[ ] We recommend that no development take place affecting highly erodible slopes which drain into streams within or adjacent to the project.

[X] If the proposed project includes construction of a stream diversion, the project may require a stream diversion works permit and amend the instream flow standard for the affected stream(s).

[X] If the proposed project alters the bed and banks of a stream channel, the project may require a stream channel alteration permit.

[X] OTHER:

A well construction permit was issued on February 5, 1999 and executed on May 3, 1999. A pump installation permit has been applied for and will be issued once we receive a well completion report, including pump test results.

The EA should describe the flow characteristics of Kapilimao watercourse and assess any possible effects to streamflow.

If there are any questions, please contact the Commission staff at 587-0225.

c: Akinaka & Associates, Ltd.

PHONE (808) 594-1888

FAX (808) 594-1865

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

November 12, 1999

Akinaka & Associates, Ltd.
250 No. Beretania Street, Suite 300
Honolulu, HI 96817
Attention: Henry Morita

(PC #60)

Re: Pre-assessment Consultation
Proposed Improvements for the Kapilimao Valley and Main
Waimea – Kekaha Water System

Dear Mr. Morita,

Thank you for the opportunity to comment on the above referenced project. According to your letter, the Department of Water, County of Kaua'i proposes to develop the Kapilimao Valley Well and construct a water transmission main to connect the County's Waimea-Kekaha Water System. The Office of Hawaiian has some concerns.

First of all, according to Section 174C-101, Hawai'i Revised Statutes (HRS), persons of Hawaiian ancestry have preferential rights to water pursuant to the Hawaiian Homes Commission Act, 1920, as amended and pursuant to traditional and customary rights. The traditional rights include gathering rights to 'opae, hihiwai and 'o'opu, which require streams with sufficient water to allow them to thrive, and the appurtenant water rights guarantee water sufficient to produce taro and provide for other traditional kuleana uses. Every effort should be made to ensure that the proposed project will not abridge these rights.

Secondly, the State Department of Land & Natural Resources Historic Preservation Division should be contacted in the event that any unidentified archaeological or cultural remains are uncovered during earthwork at the proposed project site.

If you have any questions, please contact Mark A. Mararagan, Policy Analyst at 594-1945. Please refer to the document number noted at the top of this letter in any future correspondence.

If you have any questions, please contact Mark A. Mararagan, Policy Analyst at 594-1945. Please refer to the document number noted at the top of this letter in any future correspondence.

Sincerely,

Colin C. Kippen, Jr.
Deputy Administrator

cc: OHA Board of Trustees
Kaua'i CRS

DEPARTMENT OF WATER

County of Kauai

"Water has no Substitute – Conserve It!"

January 6, 2000

Office of Hawaiian Affairs
State of Hawaii
711 Kapiolani Blvd., Suite 500
Honolulu, Hawaii 96813

Attention: Mr. Mark A. Mararagan
Policy Analyst (594-1945)

Project: Kapilimao Valley Well and Transmission Main
Kekaha, Kauai (Kauai Department of Water)

Subject: Pre-Assessment Consultation

Reference: Office of Hawaiian Affairs letter PC#60 dated Nov. 12, 1999

Thank you for your review of the subject and comments contained in the reference. Please be assured that the Project will not abridge any traditional or customary rights of persons with Hawaiian ancestry.

The Project will not affect streams with sufficient water to allow 'opae, hihiwai or o'opu to thrive. Also, the Project will not influence water rights, which guarantee water sufficient to produce taro or provide for other traditional kuleana uses.

Construction documents will specify that the State Department of Land & Natural Resources, Historic Preservation Division be contacted in the event archaeological or cultural remains are uncovered during the Project work.

Points of contact for this project are Melvin Matsumura, Department of Water @ 808-245-5410 and Henry Morita, Akinaka & Associates, Ltd. @ 808-536-7721.

Very truly yours,

Edward Tschupp

for/Ernest Y. W. Lau
Manager and Chief Engineer

san
A:\Pre-assessment\matsu

-- 4398 Pua Loke Street, Lihue, Kauai, Hawaii or P. O. Box 1706, Lihue, HI 96766-5706 --
Phone No. (808) 245-5400 -- Administration FAX No. (808) 246-8628 -- Engineering/Fiscal/Shop FAX No. (808) 245-5813

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

TIMOTHY E. JOHNS, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DEPUTIES
JANET E. KAWELO

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
CONSERVATION AND RESOURCES
ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND
STATE PARKS
WATER RESOURCE MANAGEMENT

STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

HISTORIC PRESERVATION DIVISION
Kakuhihewa Building, Room 555
601 Kamokila Boulevard
Kapolei, Hawai 96707

November 23, 1999

LOG NO: 24426
DOC NO: 9911NM12

Henry Morita
Akinaka and Assoc.
250 North Beretania Street, Suite 300
Honolulu, HI 96817-4716

Dear Mr. Morita:

SUBJECT: **Historic Preservation Review -- Pre-Assessment Consultation**
Development of Kapilimao Valley Well and
Water Transmission Main(County of Kauai)
Kekaha, Waimea, Kauai

Thank you for providing us the opportunity to consult with you on this project. No historic sites are in the project area, therefore this project will have "no effect" on significant historic sites.

If you have any questions, please call Nancy McMahon at 742-7033.

Aloha,

Don Hibbard, Administrator
State Historic Preservation Division

NM:ah

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 621
HONOLULU, HAWAII 96809

AQUACULTURE DEVELOPMENT PROGRAM
AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
CONSERVATION AND RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND DIVISION
STATE PARKS
WATER RESOURCE MANAGEMENT

December 7, 1999

LD-NAV
Ref.: KAPILWELL.RCM

Mr. Henry Morita
Executive Vice President
Akinaka & Associates, Ltd
250 North Beretania Street, Suite 300
Honolulu, Hawaii 96817

Dear Mr. Morita:

SUBJECT: Pre Assessment Consultation for Development of Kapilimao Valley Well and Water Transmission Main located at Kekaha, Island of Kauai, Hawaii

This is a follow-up to your letter dated October 26, 1999, requesting our department's Pre Assessment Consultation for the subject proposed project.

Attached herewith are copies of our Commission on Water Resource Management and Land Division Engineering Branch's comments for the proposed project.

Should you have any questions, please feel free to contact Nicholas Vaccaro of the Land Division's Support Services Branch at 808-587-0438.

Very truly yours,

DEAN Y. UCHIDA
Administrator

C: Kauai District Land Office

ENGINEERING BRANCH

COMMENTS

For your information, a construction right-of-entry from Kekaha Sugar Company and the State Department of Land and Natural Resources is required. Also, the Kapilimao Valley well site, according to FEMA Community-Panel No. 150002 0156 D, is located in Zone X. This is an area determined to be outside the 500-year flood plain.

The State may request a waiver of the DWS water facility charges for State projects within the Waimea-Kekaha Water System.

We reserve right to provide additional comments to the Draft Environmental Assessment.

Kekahck8.doc

DEPARTMENT OF WATER
County of Kauai

January 6, 2000 *"Water has no Substitute – Conserve It!"*

Commission on Water Resource Management
Department of Land & Natural Resources
State of Hawaii
PO Box 621
Honolulu, Hawaii 96809

Attention: Mr. Dean Uchida, Administrator
Land Division

Project: Pre-Assessment Consultation

Reference: Land Division, DLNR, letters dated Oct. 26, 1999 and Dec. 7, 1999

Thank you for your review of the subject and comments contained in the references. In compliance to the reference, the Environmental Assessment will address the following items:

1. Requirement of a Pump Installation Permit from the Commission.

2. Flow characteristics of Kapilimao Valley watercourse and possible effect to stream flow by the Project.

3. Right-of-Entry for construction from Kekaha Sugar Company and the Department of Land & Natural Resources.

Points of contact for this project are Melvin Matsumura, Department of Water @ 808-245-5410 and Henry Morita, Akinaka & Associates, Ltd. @ 808-536-7721.

Very truly yours,

Edward Tschupp

for/ Ernest Y. W. Lau
Manager and Chief Engineer

san
A:\Pre-assessment\matsu

— 4398 Pua Loke Street, Lihue, Kauai, Hawaii or P. O. Box 1706, Lihue, HI 96766-5706 —
Phone No. (808) 245-5400 – Administration FAX No. (808) 246-8628 – Engineering/Fiscal/Shop FAX No. (808) 245-5813

BENJAMIN J. CAYETANO
GOVERNOR

GENEVIEVE SALMONSON
DIRECTOR

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL
235 SOUTH BERETANIA STREET
SUITE 702
HONOLULU, HAWAII 96813
TELEPHONE (808) 586-4185
FACSIMILE (808) 586-4186

February 22, 2000

Mr. Ernest Lau, Manager and Chief Engineer
Department of Water
County of Kauai
4398 Pua Loke Street
Lihue, Hawaii 96766

Dear Mr. Lau:

Subject: Draft Environmental Assessment for the Kapilimao Valley Well and Transmission Main, Kauai

Thank you for the opportunity to review the subject document. We have the following comments on this draft environmental assessment.

1. According to page IV-5, "In consideration of the distance between wells and depth of the project well, there should be on impact from the effluent wells." Please correct the statement.

2. Please provide maps with the appropriate scale and coverage to analyze the aquifer or hydrologic unit that show the following:

   a) Hydrologic information: aquifer or hydrologic unit boundary, known or assumed groundwater flowpaths, and known or assumed water level contours.

   b) Contamination information: Points or regions of known contamination, points of potential contamination (landfills, individual wastewater disposal systems, hazardous waste sites, dry wells and injection wells), known or assumed chloride levels at specified depths in relation to nearest or adjacent wells, and the likely wellhead protection area for the proposed well.

Should you have any questions, please call Jeyan Thirugnanam at 586-4185.

Sincerely,

Genevieve Salmonson
Director

c: Akinaka & Associates, Ltd.

DEPARTMENT OF WATER
County of Kauai

"Water has no Substitute – Conserve It!"

March 1, 2000

Ms. Genevieve Salmonson, Director
Office of Environmental Quality Control
State of Hawaii
235 South Beretania Street, Room 702
Honolulu, Hawaii 96813

Ms. Salmonson:

Subject: Draft Environmental Assessment for the Kapilimao Valley Well & Transmission Main, Kauai

Reference: Office of Environmental Quality Control Letter Dated 2/22/2000

The following information responds to comments within the reference.

1. Page 1V-5, 1st paragraph: The sentence has been revised to read "In consideration of the distance between wells and depth of the project well, there should be [on} no impact from the effluent wells.

2. The attached map is provided to show:
   a. Hydrologic unit boundary, groundwater flow paths, and water level contours. Contours were assumed based on well static levels.
   b. Landfill locations, area of individual wastewater disposal systems and tentative injection well sites.

3. Chloride levels are discussed in the text and pump testing results in limiting the yield to prevent increase of chloride levels.

4. The well's surrounding lands are owned by the State of Hawaii and regulated by the Department of Land and Natural Resources. A well head protection area for the proposed well is unlikely.

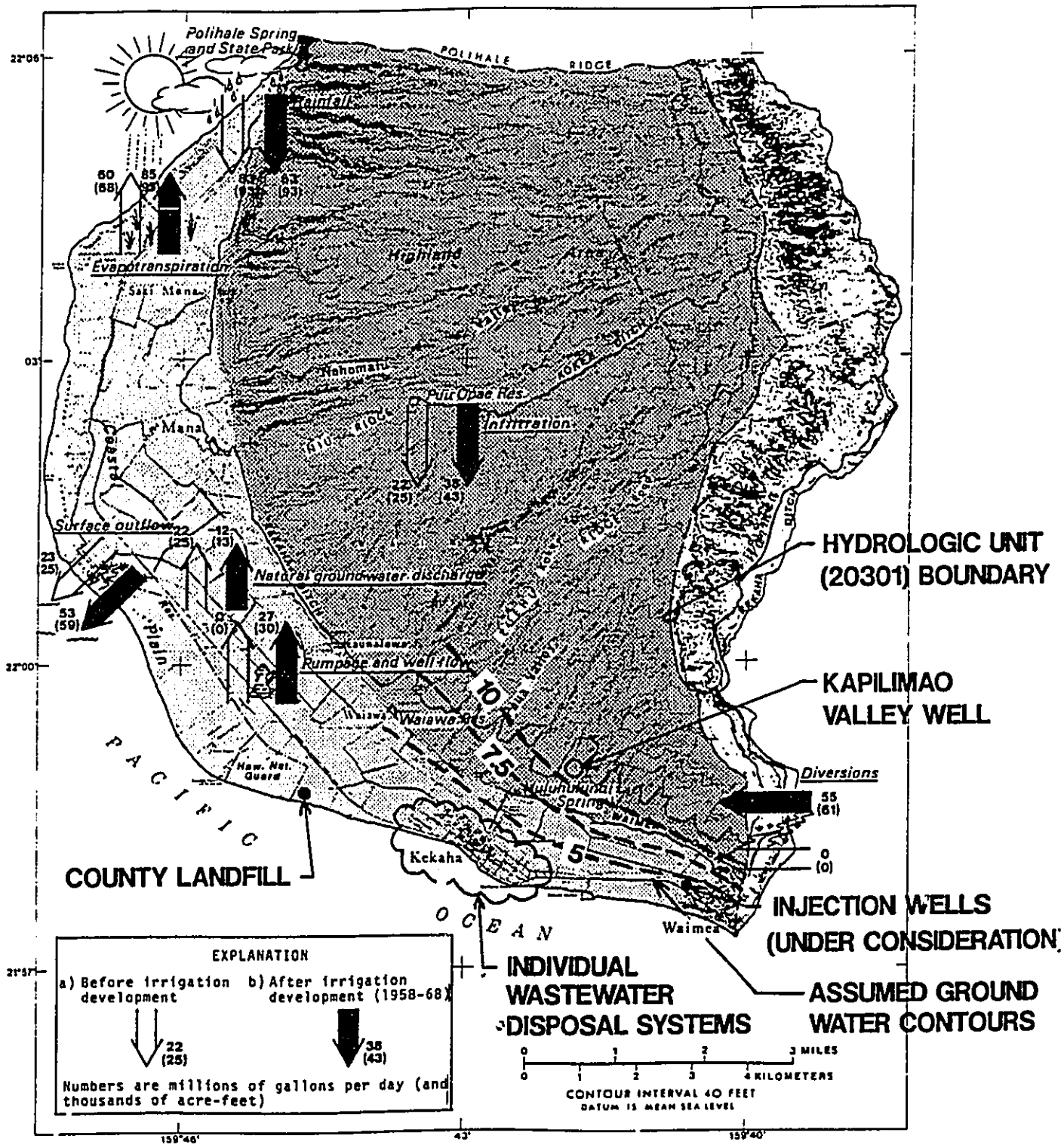
Points of contact for this project are Melvin Matsumura, Department of Water @ (808) 245-5410 and Henry Morita, Akinaka & Associates, Ltd. @ (808) 536-7721.

Sincerely,

Ernest Y.W. Lau
Manager and Chief Engineer

c: Matilda Yoshioka
Office of Community Assistance
Akinaka & Associates, Ltd.

— 4398 Pua Loke Street, Lihue, Kauai, Hawaii or P. O. Box 1706, Lihue, HI 96766-5706 —
Phone No. (808) 245-5400 – Administration FAX No. (808) 246-8628 – Engineering/Fiscal/Shop FAX No. (808) 245-5813



Average annual flow rate of the major components of the hydrologic system before and after irrigation development (1958-68). From DLNR Report R53 "Availability of Ground Water for Irrigation on the Kekaha-Mana Coastal Plain, Island of Kauai, Hawaii."

XIV. BIBLIOGRAPHY

1. County of Kauai, Department of Water, A General Plan for Domestic Water/Island of Kauai, (Division of Water and Land Development, Department of Land and Natural Resources, State of Hawaii), Honolulu, February 1972.

2. County of Kauai, A General Plan for the Island of Kauai, (Eckbo, Dean, Austin & William, Inc. and Muroda, Tanaka & Itagaki, Inc.), March, 1970.

3. County of Kauai, Revised Ordinances of Kauai, 1976 and 1978 Cumulative Supplement.

4. Mac Donald, Gordon A., Dan A. Davis and Coak C. Cox, Geology and Ground-Water Resources of the Island of Kauai, Hawaii, Hawaii Division of Hydrography Bulletin 13, 1960.

5. State of Hawaii, Department of Planning and Economic Development, State of Hawaii Data Book, 1991.

6. State of Hawaii, State Land Use Commission, Rules of Practice and Procedure, October, 1975.

7. County of Kauai, Housing Agency, Final Environmental Assessment for Water Source Improvement Waimea-Kekaha Water System, August 1998.

8. County of Kauai, Department of Water, Schematic Design Report, Kapilimao Valley Well, State Well 5841-02, October 1999.

9. DLNR, Division of Forestry and Wildlife, Final Environmental Assessment for Wildlife Habitat Improvements Project, Kekaha Game Management Area, Kauai, September 1997.

10. County of Kauai, Department of Public Works, Final Environmental Assessment for Effluent Injection Wells, Waimea Wastewater Treatment Plant, May 1995.

SCIENTIFIC CONSULTANT SERVICES, Inc.
711 Kapiolani Blvd., Suite 777 Honolulu, Hawai'i 96813

Henry Morita
Akinaka and Associates, Ltd.
250 N. Beretania St., Ste. 300
Honolulu, HI 96817-4716

October 9, 1998
SCS Project NO. 145

Dear Mr. Morita:

Thank you again for allowing SCS, Inc. to provide archaeological reconnaissance and archival/background research regarding the Waimea-Kekaha Water System project, Kekaha, Kauai. The following letter reports the outcome of archival and background research pertaining to the project area, results of field inspection of the proposed well site, and recommendations for proposed work.

ARCHIVAL/BACKGROUND RESEARCH

The Kekaha area, in general, has not been subject to many archaeological research projects. No archaeological projects have been previously conducted within Kapilimao Valley itself. Of the few recent projects occurring near the present project area, these occurred near the coastline (Heidel *et al.* 1997, Masterson *et al.* 1994) and in upland areas (Yent 1997, McMahon 1993). Although limited archaeology has been done in the Kekaha area, certain patterns of land utilization over time are discernable.

Heidel *et al.* (1997:19) provide a synthesis of traditional land use which likely occurred near the current project area: Zone 2 consists of narrow valleys and slope bases. Intermittent streams and springs would have supplied much needed water for the production of taro (and later, sugar cane). *Lo'i* systems (pondfields for the cultivation of irrigated taro; Kirch 1985), permanent residences, *heiau*, and/or terraces are considered likely to have been constructed in this zone, the gulches such as Kapilimao Valley being considered areas which were tapped for water resources to irrigate lower elevation fields.

While taro was presumably cultivated in the area, sweet potato, not requiring the degree of nourishment needed for taro cultivation, was likely a major staple food in the area. Thus, temporary use of upland areas likely consisted of resource-gathering zones (Yent 1997), lower

APPENDIX A

valley gulches such as Kapilimao Valley utilized for temporary habitation and the acquisition of resources (hydrological and faunal), the plain areas being utilized for subsistence, habitation, and religious pursuits (*lo`i, heiau*, permanent structures, fishponds), and coastal areas being utilized on a temporary basis for fishing (temporary camp sites) and burial activities.

More succinctly, traditional land use within and near the present project area likely consisted of temporary occupation of these dry, Leeward lands. Kelly (1971:2) notes that "Kekaha" means *`aina malo`o* or "dry land" in the Hawaiian language. Activities occurring in the valley, particularly lower valley reaches, presumably consisted of acquiring avifaunal and other faunal resources and tapping the stream and nearby springs for irrigable water, this important commodity funneled to lower elevational areas. Thus far though, only minimal evidence has been found to support this claim. Profitable use of the Kapilimao Stream waters would likely have occurred at the base of the valley, presently the location of intensive sugarcane cultivation.

Archival research further revealed historic-period activities within and near the Kapilimao project locale. Research revealed that no Land Commission Awards (LCA) occurred within the subject parcel nor its environs.

During the 1860s, rice cultivation occurred on the plains below the valley, this terminated by the inception of sugar cane cultivation in the latter portion of the 19th century (Heidel *et al.* 1997). In 1878, Kekaha Sugar Company drilled its first artesian well in this dry area, the company finally incorporated in 1898. Yent (1997:7) states that by 1959, the whole plain was under sugar cane cultivation. Ranching activity also occurred during the late 19th century, more so in upland reaches though.

From the 1870s through the early 1900s and later, during the middle of the 20th century, ranching activities were prevalent near the project area. The land within and near the Kekaha Well Project reflects this land utilization as evidence for sugarcane cultivation (wells, walls signaling irrigation to lower fields) and ranching endeavors (metal cattle pens) were identified during the reconnaissance survey.

PROJECT AREA

On October 5, 1998, Michael Dega of SCS, Inc. conducted a field inspection at the proposed well site. The site is situated within Kapilimao Valley, Waimea Ahupua`a, Kona District, Island of Kauai (TMK (4) 1-2-02:1), northeast of Kekaha Town at 39*44'76" South and 83*74'02" East. The site lies on land leased to Kekaha Sugar Company by the state of Hawaii. Specifically, the proposed well site lies within lower Kapilimao Valley, the valley bounded by Hukipo Road to the south, Huluhulunui Ridge to the east, Waiaka Ridge to the west, and upper Kapilimao Valley to the north.

ENVIRONMENT

Topographically, the lower valley reaches containing the proposed well site consist of only slightly undulating landforms and are generally flat and open. The project area lies at an elevation of some 150 feet (46 meters) above mean sea level. Elevation within the valley increases with upvalley distance. Lower valley reaches, near the site, average elevational increases of approximately 6 vertical feet per 50 horizontal feet, this ratio increasing the further one travels upvalley.

Kapilimao Valley itself is generally U-shaped and contains a gently sloping valley floor enclosed by moderate-steep valley sidewalls. Rock outcrops line the valley slopes and are also common on the valley floor. An intermittent, meandering stream courses through the valley, stream depth being minimal in most places. Vegetation within the valley represents a relatively low diversity of plant species for Kauai, although this is not surprising consideration the aridity of the area (c. 27" of precipitation per year). Large expanses of the project area and environs are covered in "degraded shrubland": *koa haole* (*Leucaena leucocephala*), Guinea Grass (*Panicum maximum*), cat's claw (*Macfadyena ungis-cati*), and other introduced species. Much secondary growth brush occurs near the banks of the small stream.

ARCHAEOLOGICAL RESULTS

Archaeological reconnaissance of the proposed well site and environs failed to yield any traditional or early historic archaeological resources that may have included structures (walls, enclosures, terraces) or artifact scatters (basalt lithic tools such as adzes, flakes, or cores). Survey of areas near the subject parcel revealed traces of sugarcane cultivation (machinery, modern irrigation ducts) and ranching (fenced cattle pen). A road courses through the valley but appears to be of modern origin. No evidence of pre-Contact or early historic features were

evident in the area. It is suggested that if many features were present, they would likely have been destroyed during recent or modern landscape alterations.

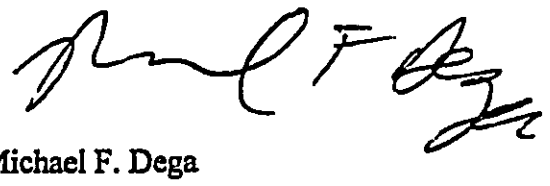
The superior characteristic of the landscape is the intensive landscape alterations occurring within and near the subject parcel. Bulldozer push of large cobbles and boulders has formed modern rock mounds and the land surface itself appears to have been graded in many instances. Disturbance likely occurred during construction of the rough Kapilimao Valley Road (running some 1.5 to 2 kilometers upvalley) and during sugarcane production in the area. While modern disturbances may have obliterated archaeological remains, it is likely that few resources ever existed in this extremely dry, inland location. It appears more likely that early inhabitants of the area would have settled nearer the coastline, particularly in population centers such as Waimea, several miles to the east, and utilized Kapilimao Valley on an intermittent basis.

RECOMMENDATIONS

Archival research and field inspection of the project area allows for our determination that no archaeological sites are present within the project area and none will be impacted during excavations for the water well. The project area is considered as a low sensitivity zone as research has shown that habitation and most traditional activities likely occurred predominantly in the lowlands, south of the valley, and near the coastline. Field inspection of the site failed to reveal prehistoric or early historic resources. In addition, only modern debris and structures were noted within the project area and environs. It is recommended that work on the water well excavation proceed as planned. No archaeological monitoring of this work is required.

We again than you for selecting SCS, Inc. for your archaeological needs. If any questions or concerns arise, please do not hesitate to call myself or Dr. Robert L. Spear.

Regards,



Michael F. Dega
Senior Archaeologist

MONTGOMERY WATSON LABORATORIES
a Division of Montgomery Watson Americas, Inc.
555 East Walnut Street
Pasadena, California 91101
Tel: 626 568 6400 Fax: 626 568 6324
1 800 566 LABS (1 800 566 5227)

Laboratory Report

for

Kauai Water Department
P.O. Box 1706

Lihue , HI 96766

Attention: Wayne Hinazumi
Fax: (808) 245-5813

HDS Hillary Strayer

Report#: 57835
PHASEV

APPENDIX B

Report Summary of positive results, PR57835

Analyzed	990910033 KAPILIMAO WAI	Result	MDL	UNITS
		99 OCT 11 PM: 06		
09/18/99	Data Entry	09/21/99		--
09/23/99	Chromium, Total, ICAP/MS	3.7	2.000	UGL
09/16/99	Data Entry	09/20/99		--
09/15/99	Di(2-Ethylhexyl)phthalate	1.0	.600	UGL
09/26/99	Data Entry	09/29/99		--
09/24/99	Data Entry	09/28/99		--
09/14/99	Alkalinity	127	1.000	MGL
09/16/99	Calcium, Total, ICAP	13.6	1.000	MGL
09/16/99	Fluoride	0.13	.050	MGL
09/10/99	Nitrate-N by IC	2.66	.200	MGL
09/14/99	Specific Conductance	495	4.000	UMHO

MONTGOMERY WATSON LABORATORIES
a Division of Montgomery Watson Americas, Inc.
555 East Walnut Street
Pasadena, California 91101
Tel: 626 568 6400 Fax: 626 568 6324
1 800 566 LABS (1 800 566 5227)

Report
Comments
#57835

99 OCT 11 P4:05

COUNTY OF KAUAI

Group Comments

TCDD analyzed by Quanterra. See attached subcontracted report.
(549.1) Paraquat recovered below method QC limits from the laboratory fortified matrix. This suggests a possible matrix intereaction. Paraquat is not a regulated compound.
(508) LCS recovery failed for PCB 1016 and PCB 1260, LCS was not spiked. Sample results for aroclors not reported. QIR-GC -99-135.
(515.1) LCS recovery failed low for acifluorfen. Acifluorfen is not a regulated compound, method defines as qualitative.

(990910033)
@DIQUAT
(549.1-DIQUAT) Paraquat recovery outside MWL QC criteria of 70-130% in DLFM.
ALK
LCS2 value is over the internal QA limit but meet EPA limits of 90-110%

Montgomery Watson Laboratories
, Los Angeles, CA 90051-3508
PHONE: 626-568-6400/FAX: 626-568-6324

ACKNOWLEDGMENT OF SAMPLES RECEIVED

Kauai Water Department
P.O. Box 1706
Lihue, HI 96766
Attn: Wayne Hinazumi

99 OCT 11 P4:05

Customer Code: KAUAI
Group#: 57835
Project#: PHASEV
Proj Mgr: Hillary Strayer
Phone: (808) 245-5493

The following samples were received from you on 09/10/99. They have been scheduled for the tests listed beside each sample. If this information is incorrect, please contact your service representative. Thank you for using Montgomery Watson Laboratories.

Sample#	Sample Id	Matrix / Tests Scheduled					Sample Date
990910033	KAPILIMAO WAI	Water					09/09/99
		@DIQUAT	@EDB-DBC	@MET-HI	@ML502.2	@ML525	
		@ML531	@NPS3	@PESTSDW	ALK	EC	ENDOT
		GLYPHOS	TCDD-DW	CNDW	HG	CA	NO2-N
		NO3	F				

Test Acronym Description

Test Acronym	Description
@DIQUAT	Diquat and Paraquat
@EDB-DBC	EDB and DBCP by GC-ECD
@MET-HI	ICPMS Metals
@ML502.2	Volatile Organic Compounds
@ML525	525 Semivolatiles by GC/MS
@ML531	Aldicarbs
@NPS3	Herbicides by 515.1
@PESTSDW	SDWA Pesticides
ALK	Alkalinity
CA	Calcium, Total, ICAP
CNDW	Cyanide
EC	Specific Conductance
ENDOTHAL	Endothall
F	Fluoride
GLYPHOS	Glyphosate
HG	Mercury
NO2-N	Nitrite, Nitrogen by IC
NO3	Nitrate-N by IC
TCDD-DW	2,3,7,8 - TCDD

MONTGOMERY WATSON LABORATORIES
555 East Walnut Street
Pasadena, California 91101
818 568 6400; Fax: 818 568 6324;
1 800 566 LABS (1 800 566 5227)

Laboratory
Report
57835

99 OCT 11 P4:06

DEPT OF WATER
COUNTY OF KAUAI

Kauai Water Department
Wayne Hinazumi
P.O. Box 1706
Lihue , HI 96766

Sample Received
10-sep-1999 13:57:50
990910033

SAFE DRINKING WATER BRANCH
PHASE II AND PHASE V CONTAMINANTS
SUMMARY FORM

Water System Name: _____ PWS ID No. _____

Sample Location: KAPILIMAO WAI

Sample Date: 09/09/99

Laboratory Name: Montgomery Laboratories Lab Report No. 990910033

Contaminant	EPA Method	Detection Limit	Concentration
2,4-D (ug/L)	515.1	0.1	ND
2,4,5-TP (ug/L)	515.1	0.2	ND
Pentachlorophenol (ug/L)	515.1	0.04	ND
Picloram (ug/L)	515.1	0.1	ND
Dalapon (ug/L)	515.1	1	ND
Dinoseb (ug/L)	515.1	0.2	ND
Benzo(a)pyrene (ug/L)	525.2	0.02	ND
Di(2-ethylhexyl)adipate (ug/L)	525.2	0.6	ND
Diethylhexylphthalate (ug/L)	525.2	0.6	1.0
Dioxin (Picograms/L)	1613	3.1	ND
Diquat (ug/L)	549.1	0.4	ND
Endothall (ug/L)	548.1	5	ND
Cyanide (Milligrams/L)	4500CN	0.025	ND

Group A,B,C -- Note: Surface water systems must take annual samples for cynanide

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Laboratory
Report
#57835

99 OCT 11 P4:06

Kauai Water Department
Wayne Hinazumi
P.O. Box 1706
Lihue , HI 96766

Samples Received
10-Sep-1999 13:57:50

Prepared	Analyzed	QC Batch#	Method	Analyte	Result	Units	MRL	Dilution
LPILIMAO WAI (990910033) Sampled on 09/09/99								
	09/14/99	102007	(SM2320B/E310.1)	Alkalinity	127	mg/l	1.0	1
09/16/99	09/16/99	101986	(ML/EPA 200.7)	Calcium, Total, ICAP	13.6	mg/l	1.0	1
	09/14/99	101826	(ML/SM 4500CN)	Cyanide	ND	mg/l	0.025	1
	09/14/99	101766	(ML/S2510B)	Specific Conductance	495	umho/cm	4.0	1
09/15/99	09/27/99	102792	(ML/EPA 548.1)	Endothall	ND	ug/l	5.0	1
	09/16/99	102146	(S4500FC/E340.2)	Fluoride	0.13	mg/l	0.050	1
	09/20/99	102195	(ML/EPA 547)	Glyphosate	ND	ug/l	6.0	1
09/13/99	09/14/99	101788	(EPA/ML 245.1)	Mercury	ND	ug/l	0.20	1
	09/10/99	101700	(ML/EPA 300.0)	Nitrite, Nitrogen by IC	ND	mg/l	0.20	2
	09/10/99	101701	(ML/EPA 300.0)	Nitrate-N by IC	2.66	mg/l	0.20	2
09/20/99	09/24/99		(EPA 1613)	2,3,7,8 - TCDD	ND	PGL	3.1	1
525 Semivolatiles by GC/MS								
09/14/99	09/15/99	101930	(ML/EPA 525.2)	2,4-Dinitrotoluene	ND	ug/l	0.10	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	alpha-Chlordane	ND	ug/l	0.050	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Acenaphthylene	ND	ug/l	0.10	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Alachlor	ND	ug/l	0.050	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Aldrin	ND	ug/l	0.050	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Anthracene	ND	ug/l	0.020	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Atrazine	ND	ug/l	0.050	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Benz(a)Anthracene	ND	ug/l	0.050	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Benzo(a)pyrene	ND	ug/l	0.020	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Benzo(b)Fluoranthene	ND	ug/l	0.020	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Benzo(g,h,i)Perylene	ND	ug/l	0.050	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Benzo(k)Fluoranthene	ND	ug/l	0.020	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Di(2-Ethylhexyl)phthalate	1.0	ug/l	0.60	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Butylbenzylphthalate	ND	ug/l	0.50	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Bromacil	ND	ug/l	0.20	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Butachlor	ND	ug/l	0.050	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Caffeine	ND	ug/l	0.020	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Chrysene	ND	ug/l	0.020	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Dibenz(a,h)Anthracene	ND	ug/l	0.050	1

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Kauai Water Department
(continued)

Prepared	Analyzed	QC Batch#	Method	Analyte	Result	Units	MRL	Dilution
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Di-(2-Ethylhexyl)adipate	ND	ug/l	0.60	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Diethylphthalate	ND	ug/l	0.50	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Dieldrin	ND	ug/l	0.20	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Dimethylphthalate	ND	ug/l	0.50	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Dimethoate	ND	ug/l	10	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Di-n-Butylphthalate	ND	ug/l	0.50	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Endrin	ND	ug/l	0.10	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Fluorene	ND	ug/l	0.050	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	gamma-Chlordane	ND	ug/l	0.050	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Hexachlorobenzene	ND	ug/l	0.050	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Hexachlorocyclopentadiene	ND	ug/l	0.050	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Heptachlor	ND	ug/l	0.040	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Heptachlor Epoxide	ND	ug/l	0.020	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Indeno(1,2,3,c,d)Pyrene	ND	ug/l	0.050	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Isophorone	ND	ug/l	0.50	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Lindane	ND	ug/l	0.020	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Methoxychlor	ND	ug/l	0.050	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Metribuzin	ND	ug/l	0.050	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Molinate	ND	ug/l	0.20	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Metolachlor	ND	ug/l	0.050	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	trans-Nonachlor	ND	ug/l	0.050	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Pentachlorophenol	ND	ug/l	1.0	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Phenanthrene	ND	ug/l	0.020	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Prometryn	ND	ug/l	0.50	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Propachlor	ND	ug/l	0.050	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Pyrene	ND	ug/l	0.050	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Simazine	ND	ug/l	0.050	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Thiobencarb	ND	ug/l	0.20	1
09/14/99	09/15/99	101930	(ML/EPA 525.2)	Trifluralin	ND	ug/l	0.10	1
			(Surrogate)	Perylene-d12	89	% Rec		

Aldicarbs

	09/28/99	102460	(ML/EPA 531.1)	3-Hydroxycarbofuran	ND	ug/l	2.0	1
	09/28/99	102460	(ML/EPA 531.1)	Aldicarb (Temik)	ND	ug/l	0.50	1
	09/28/99	102460	(ML/EPA 531.1)	Aldicarb sulfone	ND	ug/l	0.70	1
	09/28/99	102460	(ML/EPA 531.1)	Aldicarb sulfoxide	ND	ug/l	0.50	1

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(continued)

Prepared	Analyzed	QC Batch#	Method	Analyte	Result	Units	MRL	Dilution
	09/28/99	102460	(ML/EPA 531.1)	Baygon	ND	ug/l	2.0	1
	09/28/99	102460	(ML/EPA 531.1)	Carbofuran (Furadan)	ND	ug/l	0.90	1
	09/28/99	102460	(ML/EPA 531.1)	Carbaryl	ND	ug/l	2.0	1
	09/28/99	102460	(ML/EPA 531.1)	Methiocarb	ND	ug/l	2.0	1
	09/28/99	102460	(ML/EPA 531.1)	Methomyl	ND	ug/l	1.0	1
	09/28/99	102460	(ML/EPA 531.1)	Oxamyl (Vydate)	ND	ug/l	2.0	1
			(Surrogate)	BDMC	108	% Rec		
			Diquat and Paraquat					
09/10/99	09/15/99	102233	(ML/EPA 549.1)	Diquat	ND	ug/l	0.40	1
09/10/99	09/15/99	102233	(ML/EPA 549.1)	Paraquat	ND	ug/l	2.0	1
			EDB and DBCP by GC-ECD					
09/17/99	09/18/99	102124	(ML/EPA 504.1)	Dibromochloropropane (DBCP)	ND	ug/l	0.010	1
09/17/99	09/18/99	102124	(ML/EPA 504.1)	Ethylene Dibromide (EDB)	ND	ug/l	0.010	1
			(Surrogate)	1,2-dibromopropane	109	% Rec		
			Herbicides by 515.1					
09/15/99	09/26/99	102522	(ML/EPA 515.1)	2,4,5-T	ND	ug/l	0.20	1
09/15/99	09/26/99	102522	(ML/EPA 515.1)	2,4,5-TP (Silvex)	ND	ug/l	0.20	1
09/15/99	09/26/99	102522	(ML/EPA 515.1)	2,4-D	ND	ug/l	0.10	1
09/15/99	09/26/99	102522	(ML/EPA 515.1)	2,4-DB	ND	ug/l	2.0	1
09/15/99	09/26/99	102522	(ML/EPA 515.1)	Dichlorprop	ND	ug/l	0.50	1
09/15/99	09/26/99	102522	(ML/EPA 515.1)	Acifluorfen (qualitative)	ND	ug/l	0.20	1
09/15/99	09/26/99	102522	(ML/EPA 515.1)	Bentazon	ND	ug/l	0.50	1
09/15/99	09/26/99	102522	(ML/EPA 515.1)	Dalapon (qualitative)	ND	ug/l	1.0	1
09/15/99	09/26/99	102522	(ML/EPA 515.1)	3,5-Dichlorobenzoic acid	ND	ug/l	0.50	1
09/15/99	09/26/99	102522	(ML/EPA 515.1)	DCPA	ND	ug/l	0.10	1
09/15/99	09/26/99	102522	(ML/EPA 515.1)	Dicamba	ND	ug/l	0.080	1
09/15/99	09/26/99	102522	(ML/EPA 515.1)	Dinoseb	ND	ug/l	0.20	1
09/15/99	09/26/99	102522	(ML/EPA 515.1)	Pentachlorophenol	ND	ug/l	0.040	1
09/15/99	09/26/99	102522	(ML/EPA 515.1)	Picloram	ND	ug/l	0.10	1
09/15/99	09/26/99	102522	(ML/EPA 515.1)	4-Nitrophenol (qualitative)	ND	ug/l	5.0	1
			(Surrogate)	2,4-Dichlorophenylacetic acid	95	% Rec		

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(continued)

Prepared	Analyzed	QC Batch#	Method	Analyte	Result	Units	MRL	Dilution
				ICPMS Metals				
9/23/99	09/23/99	102307	(EPA/ML 200.8)	Arsenic, Total, ICAP/MS	ND	ug/l	1.0	1
3/23/99	09/23/99	102307	(EPA/ML 200.8)	Barium, Total, ICAP/MS	ND	ug/l	2.0	1
09/23/99	09/23/99	102307	(EPA/ML 200.8)	Beryllium, Total, ICAP/MS	ND	ug/l	1.0	1
9/23/99	09/23/99	102307	(EPA/ML 200.8)	Cadmium, Total, ICAP/MS	ND	ug/l	0.50	1
9/23/99	09/23/99	102307	(EPA/ML 200.8)	Chromium, Total, ICAP/MS	3.7	ug/l	2.0	1
09/23/99	09/23/99	102307	(EPA/ML 200.8)	Copper, Total, ICAP/MS	ND	ug/l	2.0	1
09/23/99	09/23/99	102307	(EPA/ML 200.8)	Nickel, Total, ICAP/MS	ND	ug/l	5.0	1
9/23/99	09/23/99	102307	(EPA/ML 200.8)	Lead, Total, ICAP/MS	ND	ug/l	0.50	1
9/23/99	09/23/99	102307	(EPA/ML 200.8)	Antimony, Total, ICAP/MS	ND	ug/l	1.0	1
09/23/99	09/23/99	102307	(EPA/ML 200.8)	Selenium, Total, ICAP/MS	ND	ug/l	5.0	1
9/23/99	09/23/99	102307	(EPA/ML 200.8)	Thallium, Total, ICAP/MS	ND	ug/l	1.0	1
				SDWA Pesticides				
9/14/99	09/24/99	102427	(ML/EPA 508)	PCB 1016 Aroclor	NA	ug/l	0.070	1
9/14/99	09/24/99	102427	(ML/EPA 508)	PCB 1221 Aroclor	NA	ug/l	0.10	1
09/14/99	09/24/99	102427	(ML/EPA 508)	PCB 1232 Aroclor	NA	ug/l	0.10	1
09/14/99	09/24/99	102427	(ML/EPA 508)	PCB 1242 Aroclor	NA	ug/l	0.10	1
9/14/99	09/24/99	102427	(ML/EPA 508)	PCB 1248 Aroclor	NA	ug/l	0.10	1
9/14/99	09/24/99	102427	(ML/EPA 508)	PCB 1254 Aroclor	NA	ug/l	0.10	1
09/14/99	09/24/99	102427	(ML/EPA 508)	PCB 1260 Aroclor	NA	ug/l	0.10	1
9/14/99	09/24/99	102427	(ML/EPA 508)	Alpha-BHC	ND	ug/l	0.010	1
9/14/99	09/24/99	102427	(ML/EPA 508)	Alachlor (Alanex)	ND	ug/l	0.050	1
09/14/99	09/24/99	102427	(ML/EPA 508)	Aldrin	ND	ug/l	0.010	1
09/14/99	09/24/99	102427	(ML/EPA 508)	Beta-BHC	ND	ug/l	0.010	1
9/14/99	09/24/99	102427	(ML/EPA 508)	Chlordane	ND	ug/l	0.10	1
9/14/99	09/24/99	102427	(ML/EPA 508)	Chlorthalonil (Draconil,Bravo)	ND	ug/l	0.010	1
09/14/99	09/24/99	102427	(ML/EPA 508)	Delta-BHC	ND	ug/l	0.010	1
9/14/99	09/24/99	102427	(ML/EPA 508)	p,p' DDD	ND	ug/l	0.010	1
9/14/99	09/24/99	102427	(ML/EPA 508)	p,p' DDE	ND	ug/l	0.010	1
09/14/99	09/24/99	102427	(ML/EPA 508)	p,p' DDT	ND	ug/l	0.010	1
09/14/99	09/24/99	102427	(ML/EPA 508)	Dieldrin	ND	ug/l	0.010	1
9/14/99	09/24/99	102427	(ML/EPA 508)	Endrin Aldehyde	ND	ug/l	0.010	1
09/14/99	09/24/99	102427	(ML/EPA 508)	Endrin	ND	ug/l	0.010	1

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Prepared	Analyzed	QC Batch#	Method	Analyte	Result	Units	MRL	Dilution
09/14/99	09/24/99	102427	(ML/EPA 508)	Endosulfan I (alpha)	ND	ug/l	0.010	1
09/14/99	09/24/99	102427	(ML/EPA 508)	Endosulfan II (beta)	ND	ug/l	0.010	1
09/14/99	09/24/99	102427	(ML/EPA 508)	Endosulfan sulfate	ND	ug/l	0.010	1
09/14/99	09/24/99	102427	(ML/EPA 508)	Heptachlor	ND	ug/l	0.010	1
09/14/99	09/24/99	102427	(ML/EPA 508)	Heptachlor Epoxide	ND	ug/l	0.010	1
09/14/99	09/24/99	102427	(ML/EPA 508)	Lindane (gamma-BHC)	ND	ug/l	0.010	1
09/14/99	09/24/99	102427	(ML/EPA 508)	Methoxychlor	ND	ug/l	0.050	1
09/14/99	09/24/99	102427	(ML/EPA 508)	Toxaphene	ND	ug/l	0.50	1
			(Surrogate)	Dibutyl Chlorendate	92	% Rec		
			(Surrogate)	Tetrachlorometaxylene	84	% Rec		
				Volatile Organic Compounds				
	09/16/99	101941	(ML/EPA 502.2)	1,1,1,2-Tetrachloroethane	ND	ug/l	0.50	1
	09/16/99	101941	(ML/EPA 502.2)	1,1,1-Trichloroethane	ND	ug/l	0.50	1
	09/16/99	101941	(ML/EPA 502.2)	1,1,2,2-Tetrachloroethane	ND	ug/l	0.50	1
	09/16/99	101941	(ML/EPA 502.2)	1,1,2-Trichloroethane	ND	ug/l	0.50	1
	09/16/99	101941	(ML/EPA 502.2)	1,1-Dichloroethane	ND	ug/l	0.50	1
	09/16/99	101941	(ML/EPA 502.2)	1,1-Dichloroethene	ND	ug/l	0.50	1
	09/16/99	101941	(ML/EPA 502.2)	1,1-Dichloropropene	ND	ug/l	0.50	1
	09/16/99	101941	(ML/EPA 502.2)	1,2,3-Trichloropropane	ND	ug/l	0.50	1
	09/16/99	101941	(ML/EPA 502.2)	1,2,3-Trichlorobenzene	ND	ug/l	0.50	1
	09/16/99	101941	(ML/EPA 502.2)	1,2,4-Trichlorobenzene	ND	ug/l	0.50	1
	09/16/99	101941	(ML/EPA 502.2)	1,2,4-Trimethylbenzene	ND	ug/l	0.50	1
	09/16/99	101941	(ML/EPA 502.2)	1,2-Dichloroethane	ND	ug/l	0.50	1
	09/16/99	101941	(ML/EPA 502.2)	1,2-Dichlorobenzene	ND	ug/l	0.50	1
	09/16/99	101941	(ML/EPA 502.2)	1,2-Dichloropropane	ND	ug/l	0.50	1
	09/16/99	101941	(ML/EPA 502.2)	1,3,5-Trimethylbenzene	ND	ug/l	0.50	1
	09/16/99	101941	(ML/EPA 502.2)	1,3-Dichlorobenzene	ND	ug/l	0.50	1
	09/16/99	101941	(ML/EPA 502.2)	1,3-Dichloropropane	ND	ug/l	0.50	1
	09/16/99	101941	(ML/EPA 502.2)	1,4-Dichlorobenzene	ND	ug/l	0.50	1
	09/16/99	101941	(ML/EPA 502.2)	2,2-Dichloropropane	ND	ug/l	0.50	1
	09/16/99	101941	(ML/EPA 502.2)	2-Chlorotoluene	ND	ug/l	0.50	1
	09/16/99	101941	(ML/EPA 502.2)	4-Chlorotoluene	ND	ug/l	0.50	1
	09/16/99	101941	(ML/EPA 502.2)	Bromodichloromethane	ND	ug/l	0.50	1
	09/16/99	101941	(ML/EPA 502.2)	Benzene	ND	ug/l	0.50	1
	09/16/99	101941	(ML/EPA 502.2)	Bromobenzene	ND	ug/l	0.50	1

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DEPT OF WATER
COUNTY OF KAUAI

QC Batch #101700 Nitrite, Nitrogen by IC

QC	Analyte	Spiked	Recovered	Yield (%)	Limits (%)	RPD (%)
MS	Spiked sample	Lab # 99	0909105		(0.00 - 0.00)	
LCS1	Nitrite, Nitrogen by IC	1.0	0.920	92.0	(90.00 - 110.00)	
LCS2	Nitrite, Nitrogen by IC	1.0	0.960	96.0	(90.00 - 110.00)	4.3
MBLK	Nitrite, Nitrogen by IC	ND				
MS	Nitrite, Nitrogen by IC	1.0	1.04	104.0	(82.00 - 114.00)	
MSD	Nitrite, Nitrogen by IC	1.0	1.03	103.0	(82.00 - 114.00)	0.97

QC Batch #101701 Nitrate-N by IC

QC	Analyte	Spiked	Recovered	Yield (%)	Limits (%)	RPD (%)
MS	Spiked sample	Lab # 99	0908444		(0.00 - 0.00)	
LCS1	Nitrate-N by IC	2.5	2.56	102.4	(94.00 - 106.00)	
LCS2	Nitrate-N by IC	2.5	2.59	103.6	(94.00 - 106.00)	1.2
MBLK	Nitrate-N by IC	ND				
MS	Nitrate-N by IC	2.5	2.66	106.4	(85.00 - 118.00)	
MSD	Nitrate-N by IC	2.5	2.66	106.4	(85.00 - 118.00)	0.00

QC Batch #101766 Specific Conductance

QC	Analyte	Spiked	Recovered	Yield (%)	Limits (%)	RPD (%)
DUP	Spiked sample	Lab # 99	0913076		(0.00 - 0.00)	

QC Batch #101788 Mercury

QC	Analyte	Spiked	Recovered	Yield (%)	Limits (%)	RPD (%)
MS	Spiked sample	Lab # 99	0907016		(0.00 - 0.00)	
LCS1	Mercury	1.50	1.38	92.0	(85.00 - 115.00)	
LCS2	Mercury	1.50	1.33	88.7	(85.00 - 115.00)	3.7
MBLK	Mercury	ND				
MS	Mercury	1.50	1.32	88.0	(83.00 - 119.00)	
MSD	Mercury	1.50	1.34	89.3	(83.00 - 119.00)	1.5

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Kauai Water Department
(continued)

QC Batch #101826 — Cyanide

QC	Analyte	Spiked	Recovered	Yield (%)	Limits (%)	RPD (%)
MS	Spiked sample	Lab # 99	0910142		(0.00 - 0.00)	
LCS1	Cyanide	0.1	0.094	94.0	(80.00 - 120.00)	
MBLK	Cyanide	ND				
MS	Cyanide	0.096	0.077	80.2	(80.00 - 120.00)	
MSD	Cyanide	0.096	0.079	82.3	(80.00 - 120.00)	2.6

QC Batch #101930 — 525 Semivolatiles by GC/MS

QC	Analyte	Spiked	Recovered	Yield (%)	Limits (%)	RPD (%)
LCS1	alpha-Chlordane	2	1.88	94.0	(70.00 - 130.00)	
MBLK	alpha-Chlordane	ND				
MS	alpha-Chlordane	2	1.82	91.0	(70.00 - 130.00)	
MBLK	Diazinon	ND				
MS	Spiked sample	Lab # 99	0910033		(0.00 - 0.00)	
LCS1	Acenaphthylene	2	1.96	98.0	(84.00 - 114.00)	
MBLK	Acenaphthylene	ND				
MS	Acenaphthylene	2	1.98	99.0	(83.00 - 111.00)	
LCS1	Alachlor	2	2.11	105.5	(70.00 - 130.00)	
MBLK	Alachlor	ND				
MS	Alachlor	2	2.11	105.5	(70.00 - 130.00)	
LCS1	Aldrin	2	1.56	78.0	(78.00 - 130.00)	
MBLK	Aldrin	ND				
MS	Aldrin	2	1.74	87.0	(82.00 - 126.00)	
LCS1	Anthracene	2	1.81	90.5	(81.00 - 122.00)	
MBLK	Anthracene	ND				
MS	Anthracene	2	1.66	83.0	(74.00 - 121.00)	
LCS1	Atrazine	2	1.98	99.0	(70.00 - 130.00)	
MBLK	Atrazine	ND				
MS	Atrazine	2	2.04	102.0	(72.00 - 128.00)	
LCS1	Benz(a)Anthracene	2	1.75	87.5	(72.00 - 118.00)	
MBLK	Benz(a)Anthracene	ND				

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MS	Methoxychlor	2	1.84	92.0	(70.00 - 130.00)
MBLK	Metribuzin	ND			
LCS1	Molinate	2	2.20	110.0	(71.00 - 124.00)
MBLK	Molinate	ND			
MS	Molinate	2	2.16	108.0	(73.00 - 127.00)
MBLK	Metolachlor	ND			
LCS1	trans-Nonachlor	2	1.86	93.0	(70.00 - 130.00)
MBLK	trans-Nonachlor	ND			
MS	trans-Nonachlor	2	1.84	92.0	(70.00 - 130.00)
LCS1	Pentachlorophenol	8	7.09	88.6	(70.00 - 130.00)
MBLK	Pentachlorophenol	ND			
MS	Pentachlorophenol	8	8.36	104.5	(70.00 - 130.00)
LCS1	Phenanthrene	2	1.75	87.5	(79.00 - 124.00)
MBLK	Phenanthrene	ND			
MS	Phenanthrene	2	1.77	88.5	(80.00 - 124.00)
MBLK	Prometryn	ND			
MBLK	Propachlor	ND			
LCS1	Pyrene	2	1.93	96.5	(82.00 - 130.00)
MBLK	Pyrene	ND			
MS	Pyrene	2	1.68	94.0	(70.00 - 130.00)
LCS1	Simazine	2	2.37	118.5	(70.00 - 130.00)
MBLK	Simazine	ND			
MS	Simazine	2	2.35	117.5	(71.00 - 125.00)
LCS1	Perylene-d12	100	94	94.0	(70.00 - 130.00)
MBLK	Perylene-d12	100	93	93.0	
MS	Perylene-d12	100	96	96.0	(70.00 - 130.00)
LCS1	Thiobencarb	2	2.07	103.5	(79.00 - 126.00)
MBLK	Thiobencarb	ND			
MS	Thiobencarb	2	2.11	105.5	(80.00 - 127.00)
MBLK	Trifluralin	ND			

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Kauai Water Department
(continued)

QC Batch #101941

Volatile Organic Compounds

QC	Analyte	Spiked	Recovered	Yield (%)	Limits (%)	RPD (%)
LCS1	1,1,1,2-Tetrachloroethane	4.0	4.0	100.0	(80.00 - 120.00)	
MBLK	1,1,1,2-Tetrachloroethane	ND				
LCS1	1,1,1-Trichloroethane	4.0	4.1	102.5	(80.00 - 120.00)	
MBLK	1,1,1-Trichloroethane	ND				
LCS1	1,1,2,2-Tetrachloroethane	4.0	3.8	95.0	(80.00 - 120.00)	
MBLK	1,1,2,2-Tetrachloroethane	ND				
LCS1	1,1,2-Trichloroethane	4.0	4.0	100.0	(80.00 - 120.00)	
MBLK	1,1,2-Trichloroethane	ND				
LCS1	1,1-Dichloroethane	4.0	4.0	100.0	(80.00 - 120.00)	
MBLK	1,1-Dichloroethane	ND				
LCS1	1,1-Dichloroethene	4.0	3.8	95.0	(80.00 - 120.00)	
MBLK	1,1-Dichloroethene	ND				
LCS1	1,1-Dichloropropene	4.0	4.0	100.0	(80.00 - 120.00)	
MBLK	1,1-Dichloropropene	ND				
LCS1	1,2,3-Trichloropropane	4.0	3.9	97.5	(80.00 - 120.00)	
MBLK	1,2,3-Trichloropropane	ND				
LCS1	1,2,3-Trichlorobenzene	4.0	3.8	95.0	(80.00 - 120.00)	
MBLK	1,2,3-Trichlorobenzene	ND				
LCS1	1,2,4-Trichlorobenzene	4.0	3.6	90.0	(80.00 - 120.00)	
MBLK	1,2,4-Trichlorobenzene	ND				
LCS1	1,2,4-Trimethylbenzene	4.0	3.7	92.5	(80.00 - 120.00)	
MBLK	1,2,4-Trimethylbenzene	ND				
LCS1	1,2-Dichloroethane	4.0	4.3	107.5	(80.00 - 120.00)	
MBLK	1,2-Dichloroethane	ND				
LCS1	1,2-Dichlorobenzene	4.0	3.9	97.5	(80.00 - 120.00)	
MBLK	1,2-Dichlorobenzene	ND				
LCS1	1,2-Dichloropropane	4.0	3.9	97.5	(80.00 - 120.00)	
MBLK	1,2-Dichloropropane	ND				
LCS1	1,3,5-Trimethylbenzene	8.0	7.4	92.5	(80.00 - 120.00)	
MBLK	1,3,5-Trimethylbenzene	ND				
LCS1	1,3-Dichlorobenzene	4.0	3.8	95.0	(80.00 - 120.00)	
MBLK	1,3-Dichlorobenzene	ND				

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LCS1	1,3-Dichloropropane	4.0	3.8	95.0	(80.00 - 120.00)
MBLK	1,3-Dichloropropane	ND			
LCS1	1,4-Dichlorobenzene	4.0	4.0	100.0	(80.00 - 120.00)
MBLK	1,4-Dichlorobenzene	ND			
LCS1	2,2-Dichloropropane	8.0	7.4	92.5	(80.00 - 120.00)
MBLK	2,2-Dichloropropane	ND			
LCS1	2-Chlorotoluene	4.0	3.9	97.5	(80.00 - 120.00)
MBLK	2-Chlorotoluene	ND			
LCS1	4-Chlorotoluene	4.0	3.9	97.5	(80.00 - 120.00)
MBLK	4-Chlorotoluene	ND			
LCS1	Bromodichloromethane	4.0	3.9	97.5	(80.00 - 120.00)
MBLK	Bromodichloromethane	ND			
LCS1	Benzene	4.0	3.7	92.5	(80.00 - 120.00)
MBLK	Benzene	ND			
LCS1	Bromobenzene	4.0	3.8	95.0	(80.00 - 120.00)
MBLK	Bromobenzene	ND			
LCS1	Bromochloromethane	4.0	4.2	105.0	(80.00 - 120.00)
MBLK	Bromochloromethane	ND			
LCS1	Bromomethane	2.0	1.6	80.0	(80.00 - 120.00)
MBLK	Bromomethane	ND			
LCS1	cis-1,2-Dichloroethene	4.0	3.8	95.0	(80.00 - 120.00)
MBLK	cis-1,2-Dichloroethene	ND			
LCS1	Chlorobenzene	4.0	3.9	97.5	(80.00 - 120.00)
MBLK	Chlorobenzene	ND			
LCS1	Carbon tetrachloride	4.0	4.1	102.5	(80.00 - 120.00)
MBLK	Carbon tetrachloride	ND			
LCS1	cis-1,3-Dichloropropene	4.0	3.9	97.5	(80.00 - 120.00)
MBLK	cis-1,3-Dichloropropene	ND			
LCS1	Bromoform	4.0	3.9	97.5	(80.00 - 120.00)
MBLK	Bromoform	ND			
LCS1	Chloroform	4.0	4.2	105.0	(80.00 - 120.00)
MBLK	Chloroform	ND			
LCS1	Chloroethane	2.0	1.6	80.0	(80.00 - 120.00)
MBLK	Chloroethane	ND			
LCS1	Chloromethane	2.0	1.6	80.0	(80.00 - 120.00)
MBLK	Chloromethane	ND			
LCS1	Dibromochloromethane	4.0	3.9	97.5	(80.00 - 120.00)

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Kauai Water Department (continued)

MBLK	Dibromochloromethane	ND				
LCS1	1,2-Dibromo-3-chloropropane	4.0	3.9	97.5	(80.00 - 120.00)	
MBLK	1,2-Dibromo-3-chloropropane	ND				
LCS1	Dibromomethane	4.0	3.8	95.0	(80.00 - 120.00)	
MBLK	Dibromomethane	ND				
LCS1	Dichlorodifluoromethane	2.0	1.8	90.0	(80.00 - 120.00)	
MBLK	Dichlorodifluoromethane	ND				
LCS1	1,2-Dibromoethane	4.0	3.8	95.0	(80.00 - 120.00)	
MBLK	1,2-Dibromoethane	ND				
LCS1	Ethylbenzene	4.0	3.8	95.0	(80.00 - 120.00)	
MBLK	Ethylbenzene	ND				
LCS1	Hexachlorobutadiene	4.0	3.7	92.5	(80.00 - 120.00)	
MBLK	Hexachlorobutadiene	ND				
LCS1	Isopropylbenzene	4.0	3.8	95.0	(80.00 - 120.00)	
MBLK	Isopropylbenzene	ND				
LCS1	Methylene chloride	4.0	3.9	97.5	(80.00 - 120.00)	
MBLK	Methylene chloride	ND				
LCS1	m+p-Xylenes	8.0	7.4	92.5	(80.00 - 120.00)	
MBLK	m+p-Xylenes	ND				
LCS1	Methyl tert-butyl ether	40	36	90.0	(80.00 - 120.00)	
MBLK	Methyl tert-butyl ether	ND				
LCS1	Naphthalene	4.0	3.6	90.0	(80.00 - 120.00)	
MBLK	Naphthalene	ND				
LCS1	n-Butylbenzene	4.0	3.5	87.5	(80.00 - 120.00)	
MBLK	n-Butylbenzene	ND				
LCS1	n-Propylbenzene	4.0	3.8	95.0	(80.00 - 120.00)	
MBLK	n-Propylbenzene	ND				
LCS1	o-Xylene	4.0	3.7	92.5	(80.00 - 120.00)	
MBLK	o-Xylene	ND				
LCS1	Tetrachloroethylene (PCE)	4.0	3.8	95.0	(80.00 - 120.00)	
MBLK	Tetrachloroethylene (PCE)	ND				
LCS1	p-Isopropyltoluene	4.0	3.6	90.0	(80.00 - 120.00)	
MBLK	p-Isopropyltoluene	ND				
LCS1	sec-Butylbenzene	4.0	3.7	92.5	(80.00 - 120.00)	
MBLK	sec-Butylbenzene	ND				
LCS1	Styrene	4.0	4.4	110.0	(80.00 - 120.00)	
MBLK	Styrene	ND				

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CORRECTION

THE PRECEDING DOCUMENT(S) HAS BEEN REPHOTOGRAPHED TO ASSURE LEGIBILITY
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MBLK	Dibromochloromethane	ND			
LCS1	1,2-Dibromo-3-chloropropane	4.0	3.9	97.5	(80.00 - 120.00)
MBLK	1,2-Dibromo-3-chloropropane	ND			
LCS1	Dibromomethane	4.0	3.8	95.0	(80.00 - 120.00)
MBLK	Dibromomethane	ND			
LCS1	Dichlorodifluoromethane	2.0	1.8	90.0	(80.00 - 120.00)
MBLK	Dichlorodifluoromethane	ND			
LCS1	1,2-Dibromoethane	4.0	3.8	95.0	(80.00 - 120.00)
MBLK	1,2-Dibromoethane	ND			
LCS1	Ethylbenzene	4.0	3.8	95.0	(80.00 - 120.00)
MBLK	Ethylbenzene	ND			
LCS1	Hexachlorobutadiene	4.0	3.7	92.5	(80.00 - 120.00)
MBLK	Hexachlorobutadiene	ND			
LCS1	Isopropylbenzene	4.0	3.8	95.0	(80.00 - 120.00)
MBLK	Isopropylbenzene	ND			
LCS1	Isopropylbenzene	4.0	3.8	95.0	(80.00 - 120.00)
MBLK	Isopropylbenzene	ND			
LCS1	Methylene chloride	4.0	3.9	97.5	(80.00 - 120.00)
MBLK	Methylene chloride	ND			
LCS1	m+p-Xylenes	8.0	7.4	92.5	(80.00 - 120.00)
MBLK	m+p-Xylenes	ND			
LCS1	Methyl tert-butyl ether	40	36	90.0	(80.00 - 120.00)
MBLK	Methyl tert-butyl ether	ND			
LCS1	Naphthalene	4.0	3.6	90.0	(80.00 - 120.00)
MBLK	Naphthalene	ND			
LCS1	n-Butylbenzene	4.0	3.5	87.5	(80.00 - 120.00)
MBLK	n-Butylbenzene	ND			
LCS1	n-Propylbenzene	4.0	3.8	95.0	(80.00 - 120.00)
MBLK	n-Propylbenzene	ND			
LCS1	o-Xylene	4.0	3.7	92.5	(80.00 - 120.00)
MBLK	o-Xylene	ND			
LCS1	Tetrachloroethylene (PCE)	4.0	3.8	95.0	(80.00 - 120.00)
MBLK	Tetrachloroethylene (PCE)	ND			
LCS1	p-Isopropyltoluene	4.0	3.6	90.0	(80.00 - 120.00)
MBLK	p-Isopropyltoluene	ND			
LCS1	sec-Butylbenzene	4.0	3.7	92.5	(80.00 - 120.00)
MBLK	sec-Butylbenzene	ND			
LCS1	Styrene	4.0	4.4	110.0	(80.00 - 120.00)
MBLK	Styrene	ND			

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LCS1	Chlorofluorobenzene (surr) PID	100	95	95.0	(80.00 - 120.00)
MBLK	Chlorofluorobenzene (surr) PID	100	96	96.0	
LCS1	Bromofluorobenzene (surr) PID	100	96	96.0	(80.00 - 120.00)
MBLK	Bromofluorobenzene (surr) PID	100	94	94.0	
LCS1	Chlorofluorobenzene (surr) ELC	100	98	98.0	(80.00 - 120.00)
MBLK	Chlorofluorobenzene (surr) ELC	100	96	96.0	
LCS1	Bromofluorobenzene (surr) ELCD	100	95	95.0	(80.00 - 120.00)
MBLK	Bromofluorobenzene (surr) ELCD	100	95	95.0	
LCS1	trans-1,2-Dichloroethene	4.0	4.0	100.0	(80.00 - 120.00)
MBLK	trans-1,2-Dichloroethene	ND			
LCS1	tert-Butylbenzene	4.0	3.8	95.0	(80.00 - 120.00)
MBLK	tert-Butylbenzene	ND			
LCS1	Trichloroethylene (TCE)	4.0	3.9	97.5	(80.00 - 120.00)
MBLK	Trichloroethylene (TCE)	ND			
MBLK	Trichlorotrifluoroethane(Freon	ND			
LCS1	Trichlorotrifluoroethane(Freon	2.0	1.8	90.0	(80.00 - 120.00)
LCS1	trans-1,3-Dichloropropene	4.0	3.7	92.5	(80.00 - 120.00)
MBLK	trans-1,3-Dichloropropene	ND			
LCS1	Toluene	4.0	3.8	95.0	(80.00 - 120.00)
MBLK	Toluene	ND			
LCS1	Trichlorofluoromethane	2.0	1.8	90.0	(80.00 - 120.00)
MBLK	Trichlorofluoromethane	ND			
LCS1	Vinyl chloride	2.0	1.9	95.0	(80.00 - 120.00)
MBLK	Vinyl chloride	ND			

QC Batch #101986 Calcium, Total, ICAP

QC	Analyte	Spiked	Recovered	Yield (%)	Limits (%)	RPD (%)
MS	Spiked sample	Lab # 99	0908001		(0.00 - 0.00)	
LCS1	Calcium, Total, ICAP	50	50.3	100.6	(85.00 - 115.00)	
LCS2	Calcium, Total, ICAP	50	50.3	100.6	(85.00 - 115.00)	0.00
MBLK	Calcium, Total, ICAP	ND				
MS	Calcium, Total, ICAP	50	50.0	100.0	(70.00 - 130.00)	
MSD	Calcium, Total, ICAP	50	49.6	99.2	(70.00 - 130.00)	0.80

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Kauai Water Department
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QC Batch #102007 Alkalinity

QC	Analyte	Spiked	Recovered	Yield (%)	Limits (%)	RPD (%)
MS	Spiked sample	Lab # 99	0816142		(0.00 - 0.00)	
LCS1	Alkalinity	96.2	101	105.0	(96.00 - 107.00)	
LCS2	Alkalinity	96.2	105	109.1	(96.00 - 107.00)	3.9
MBLK	Alkalinity	ND				
MS	Alkalinity	96.2	98.9	102.8	(80.00 - 120.00)	
MSD	Alkalinity	96.2	99	102.9	(80.00 - 120.00)	0.10

QC Batch #102124 EDB and DBCP by GC-ECD

QC	Analyte	Spiked	Recovered	Yield (%)	Limits (%)	RPD (%)
DUP	Spiked sample	Lab # 99	0908022		(0.00 - 0.00)	
MS	Spiked sample	Lab # 99	0908020		(0.00 - 0.00)	
DUP	Dibromochloropropane (DBCP)	ND	ND		(0.00 - 20.00)	
LCS1	Dibromochloropropane (DBCP)	0.02	0.02	100.0	(60.00 - 140.00)	
LCS2	Dibromochloropropane (DBCP)	0.20	0.19	95.0	(60.00 - 140.00)	
MBLK	Dibromochloropropane (DBCP)	ND				
MS	Dibromochloropropane (DBCP)	0.20	0.19	95.0	(60.00 - 140.00)	
DUP	Ethylene Dibromide (EDB)	ND	ND		(0.00 - 20.00)	
LCS1	Ethylene Dibromide (EDB)	0.02	0.02	100.0	(60.00 - 140.00)	
LCS2	Ethylene Dibromide (EDB)	0.20	0.20	100.0	(60.00 - 140.00)	
MBLK	Ethylene Dibromide (EDB)	ND				
MS	Ethylene Dibromide (EDB)	0.20	0.20	100.0	(60.00 - 140.00)	
DUP	1,2-dibromopropane (surr)	100	105	105.0	(60.00 - 140.00)	
LCS1	1,2-dibromopropane (surr)	100	105	105.0	(60.00 - 140.00)	
LCS2	1,2-dibromopropane (surr)	100	99	99.0	(60.00 - 140.00)	5.9
MBLK	1,2-dibromopropane (surr)	100	105	105.0		
MS	1,2-dibromopropane (surr)	100	95	95.0	(60.00 - 140.00)	

Spikes which exceed Limits and Method Blanks with positive results are highlighted by Underlining.
Criteria for MS and DUP are advisory only and not applicable for ICR monitoring.

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Laboratory
QC Report
#57835

Kauai Water Department
(continued)

QC Batch #102146 Fluoride

QC	Analyte	Spiked	Recovered	Yield (%)	Limits (%)	RPD (%)
MS	Spiked sample	Lab # 99	0915138		(0.00 - 0.00)	
LCS1	Fluoride	1.00	0.931	93.1	(94.00 - 104.00)	
LCS2	Fluoride	1.00	0.957	95.7	(94.00 - 104.00)	2.8
MBLK	Fluoride	ND				
MS	Fluoride	1.00	1.05	105.0	(86.00 - 120.00)	
MSD	Fluoride	1.00	1.07	107.0	(86.00 - 120.00)	1.9

QC Batch #102195 Glyphosate

QC	Analyte	Spiked	Recovered	Yield (%)	Limits (%)	RPD (%)
MS	Spiked sample	Lab # 99	0910033		(0.00 - 0.00)	
LCS1	Glyphosate	10	10.5	105.0	(70.00 - 130.00)	
LCS2	Glyphosate	10	10.6	106.0	(70.00 - 130.00)	0.95
MBLK	Glyphosate	ND				
MS	Glyphosate	10	10.8	108.0	(75.00 - 130.00)	

QC Batch #102233 Diquat and Paraquat

QC	Analyte	Spiked	Recovered	Yield (%)	Limits (%)	RPD (%)
MS	Spiked sample	Lab # 99	0909010		(0.00 - 0.00)	
LCS1	Diquat	10.0	8.9	89.0	(73.00 - 127.00)	
MBLK	Diquat	ND				
MS	Diquat	10.0	7.9	79.0	(70.00 - 130.00)	
LCS1	Paraquat	10.0	8.7	87.0	(70.00 - 130.00)	
MBLK	Paraquat	ND				
MS	Paraquat	10.0	6.6	66.0	(70.00 - 130.00)	

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Kauai Water Department
(continued)

QC Batch #102307 ICPMS Metals

QC	Analyte	Spiked	Recovered	Yield (%)	Limits (%)	RPD (%)
LCS1	Arsenic, Total, ICAP/MS	20	19.7	98.5	(85.00 - 115.00)	
MBLK	Arsenic, Total, ICAP/MS	ND				
LCS1	Barium, Total, ICAP/MS	100	91	91.0	(85.00 - 115.00)	
MBLK	Barium, Total, ICAP/MS	ND				
LCS1	Beryllium, Total, ICAP/MS	5	5.15	103.0	(89.00 - 108.00)	
MBLK	Beryllium, Total, ICAP/MS	ND				
LCS1	Cadmium, Total, ICAP/MS	20	20.1	100.5	(91.00 - 111.00)	
MBLK	Cadmium, Total, ICAP/MS	ND				
LCS1	Chromium, Total, ICAP/MS	100	98	98.0	(85.00 - 115.00)	
MBLK	Chromium, Total, ICAP/MS	ND				
LCS1	Copper, Total, ICAP/MS	100	103	103.0	(85.00 - 115.00)	
MBLK	Copper, Total, ICAP/MS	ND				
LCS1	Nickel, Total, ICAP/MS	50	51.1	102.2	(89.00 - 107.00)	
MBLK	Nickel, Total, ICAP/MS	ND				
LCS1	Lead, Total, ICAP/MS	20	20.7	103.5	(87.00 - 108.00)	
MBLK	Lead, Total, ICAP/MS	ND				
MBLK	Antimony, Total, ICAP/MS	ND				
LCS1	Selenium, Total, ICAP/MS	20	20.4	102.0	(85.00 - 115.00)	
MBLK	Selenium, Total, ICAP/MS	ND				
LCS1	Thallium, Total, ICAP/MS	20	20.4	102.0	(86.00 - 111.00)	
MBLK	Thallium, Total, ICAP/MS	ND				

QC Batch #102427 SDWA Pesticides

QC	Analyte	Spiked	Recovered	Yield (%)	Limits (%)	RPD (%)
MBLK	PCB 1016 Aroclor	ND				
MBLK	PCB 1221 Aroclor	ND				
MBLK	PCB 1232 Aroclor	ND				
MBLK	PCB 1242 Aroclor	ND				
MBLK	PCB 1248 Aroclor	ND				
MBLK	PCB 1254 Aroclor	ND				

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Kauai Water Department
(continued)

MBLK	PCB 1260 Aroclor	ND			
LCS1	Alpha-BHC	0.050	0.052	104.0	(62.00 - 122.00)
MBLK	Alpha-BHC	ND			
MS	Alpha-BHC	0.050	0.053	106.0	(71.00 - 126.00)
MS	Spiked sample	Lab # 99	0914001		(0.00 - 0.00)
MBLK	Alachlor (Alanex)	ND			
LCS1	Alachlor (Alanex)	0.100	0.110	110.0	(70.00 - 130.00)
MS	Alachlor (Alanex)	0.100	0.112	112.0	(65.00 - 135.00)
LCS1	Aldrin	0.050	0.053	106.0	(56.00 - 116.00)
MBLK	Aldrin	ND			
MS	Aldrin	0.050	0.045	90.0	(62.00 - 117.00)
LCS1	Beta-BHC	0.050	0.054	108.0	(65.00 - 125.00)
MBLK	Beta-BHC	ND			
MS	Beta-BHC	0.050	0.056	112.0	(60.00 - 130.00)
MBLK	Chlordane	ND			
LCS1	Chlorthalonil (Draconil,Bravo)	0.100	0.100	100.0	(61.00 - 121.00)
MBLK	Chlorthalonil (Draconil,Bravo)	ND			
MS	Chlorthalonil (Draconil,Bravo)	0.100	0.100	100.0	(56.00 - 126.00)
LCS1	Delta-BHC	0.050	0.054	108.0	(72.00 - 131.00)
MBLK	Delta-BHC	ND			
MS	Delta-BHC	0.050	0.056	112.0	(67.00 - 137.00)
LCS1	p,p' DDD	0.100	0.107	107.0	(77.00 - 137.00)
MBLK	p,p' DDD	ND			
MS	p,p' DDD	0.100	0.108	108.0	(72.00 - 142.00)
LCS1	p,p' DDE	0.100	0.107	107.0	(69.00 - 129.00)
MBLK	p,p' DDE	ND			
MS	p,p' DDE	0.100	0.108	108.0	(73.00 - 131.00)
LCS1	p,p' DDT	0.100	0.108	108.0	(82.00 - 142.00)
MBLK	p,p' DDT	ND			
MS	p,p' DDT	0.100	0.110	110.0	(77.00 - 147.00)
LCS1	Dieldrin	0.100	0.106	106.0	(57.00 - 117.00)
MBLK	Dieldrin	ND			
MS	Dieldrin	0.100	0.107	107.0	(52.00 - 122.00)
LCS1	Endrin Aldehyde	0.100	0.104	104.0	(58.00 - 118.00)
MBLK	Endrin Aldehyde	ND			
MS	Endrin Aldehyde	0.100	0.079	79.0	(53.00 - 123.00)
LCS1	Endrin	0.100	0.107	107.0	(58.00 - 118.00)

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Kauai Water Department
(continued)

MBLK	Endrin	ND				
MS	Endrin	0.100	0.114	114.0	(53.00 - 123.00)	
LCS1	Endosulfan I (alpha)	0.050	0.053	106.0	(57.00 - 117.00)	
MBLK	Endosulfan I (alpha)	ND				
MS	Endosulfan I (alpha)	0.050	0.054	108.0	(57.00 - 127.00)	
LCS1	Endosulfan II (beta)	0.100	0.107	107.0	(62.00 - 122.00)	
MBLK	Endosulfan II (beta)	ND				
MS	Endosulfan II (beta)	0.100	0.110	110.0	(57.00 - 127.00)	
LCS1	Endosulfan sulfate	0.100	0.107	107.0	(72.00 - 132.00)	
MBLK	Endosulfan sulfate	ND				
MS	Endosulfan sulfate	0.100	0.109	109.0	(72.00 - 137.00)	
LCS1	Gamma-BHC (Lindane)	0.050	0.054	108.0	(59.00 - 119.00)	
MBLK	Gamma-BHC (Lindane)	ND				
MS	Gamma-BHC (Lindane)	0.050	0.055	110.0	(54.00 - 124.00)	
LCS1	Heptachlor	0.050	0.054	108.0	(68.00 - 128.00)	
MBLK	Heptachlor	ND				
MS	Heptachlor	0.050	0.048	96.0	(68.00 - 129.00)	
LCS1	Heptachlor Epoxide	0.050	0.055	110.0	(57.00 - 117.00)	
MBLK	Heptachlor Epoxide	ND				
MS	Heptachlor Epoxide	0.050	0.055	110.0	(52.00 - 122.00)	
LCS1	Methoxychlor	0.500	0.545	109.0	(75.00 - 135.00)	
MBLK	Methoxychlor	ND				
MS	Methoxychlor	0.500	0.571	114.2	(70.00 - 132.00)	
LCS1	Tetrachlorometaxylene (surr)	100	106	106.0	(70.00 - 130.00)	
LCS2	Tetrachlorometaxylene (surr)	100	100	100.0	(70.00 - 130.00)	5.8
MBLK	Tetrachlorometaxylene (surr)	100	104	104.0		
MS	Tetrachlorometaxylene (surr)	100	94	94.0	(70.00 - 130.00)	
LCS1	Dibutyl chlorendate (surr)	100	112	112.0	(70.00 - 130.00)	
LCS2	Dibutyl chlorendate (surr)	100	112	112.0	(70.00 - 130.00)	0.00
MBLK	Dibutyl chlorendate (surr)	100	108	108.0		
MS	Dibutyl chlorendate (surr)	100	112	112.0	(70.00 - 130.00)	
MBLK	Toxaphene	ND				

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Kauai Water Department
(continued)

MBLK	BDMC	100	104	104.0	
MS	BDMC	100	112	112.0	(70.00 - 130.00)

QC Batch #102522 Herbicides by 515.1

QC	Analyte	Spiked	Recovered	Yield (%)	Limits (%)	RPD (%)
LCS1	2,4,5-T	0.80	0.70	87.5	(78.00 - 123.00)	
LCS2	2,4,5-T	0.80	0.70	87.5	(78.00 - 123.00)	0.00
MBLK	2,4,5-T	ND				
MS	2,4,5-T	0.80	0.76	95.0	(65.00 - 135.00)	
LCS1	2,4,5-TP (Silvex)	0.80	0.68	85.0	(84.00 - 122.00)	
LCS2	2,4,5-TP (Silvex)	0.80	0.69	86.2	(84.00 - 122.00)	1.5
MBLK	2,4,5-TP (Silvex)	ND				
MS	2,4,5-TP (Silvex)	0.80	0.75	93.8	(65.00 - 135.00)	
LCS1	2,4-D	0.40	0.31	77.5	(74.00 - 124.00)	
LCS2	2,4-D	0.40	0.31	77.5	(74.00 - 124.00)	0.00
MBLK	2,4-D	ND				
MS	2,4-D	0.40	0.35	87.5	(65.00 - 135.00)	
LCS1	2,4-DB	8.00	7.26	90.8	(70.00 - 130.00)	
LCS2	2,4-DB	8.00	7.22	90.2	(70.00 - 130.00)	0.55
MBLK	2,4-DB	ND				
MS	2,4-DB	8.00	6.79	84.9	(65.00 - 135.00)	
LCS1	Dichlorprop	2.00	1.68	84.0	(70.00 - 130.00)	
LCS2	Dichlorprop	2.00	1.67	83.5	(70.00 - 130.00)	0.60
MBLK	Dichlorprop	ND				
MS	Dichlorprop	2.00	1.93	96.5	(65.00 - 135.00)	
MS	Spiked sample	Lab # 99	0903070		(0.00 - 0.00)	
LCS1	Acifluorfen (qualitative)	0.80	0.52	65.0	(70.00 - 130.00)	
LCS2	Acifluorfen (qualitative)	0.80	0.56	70.0	(70.00 - 130.00)	7.4
MBLK	Acifluorfen (qualitative)	ND				
MS	Acifluorfen (qualitative)	0.80	0.59	73.8	(65.00 - 135.00)	
LCS1	Bentazon	2.00	1.86	93.0	(70.00 - 130.00)	
LCS2	Bentazon	2.00	1.81	90.5	(70.00 - 130.00)	2.7
MBLK	Bentazon	ND				
MS	Bentazon	2.00	1.96	98.0	(65.00 - 135.00)	
LCS1	Dalapon (qualitative)	4.00	3.62	90.5	(70.00 - 130.00)	

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QC Report
#57835

Kauai Water Department
(continued)

QC Batch #102792 Endothall

QC	Analyte	Spiked	Recovered	Yield (%)	Limits (%)	RPD (%)
MS	Spiked sample	Lab # 99	0914001		(0.00 - 0.00)	
LCS1	Endothall	25	23.2	92.8	(80.00 - 120.00)	
MBLK	Endothall	ND				
MS	Endothall	25	24.3	97.2	(80.00 - 120.00)	

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Date 09/13/99 Submittal Form KAUAI

Montgomery Watson Laboratories
555 East Walnut Street
Pasadena, CA 91101
Ph (626) 568-6400 Fax (626) 568-6324

Reportir One report for this MWL Project Number: 57835
Do Not Combine Report with any other samples submitted under different MWL project numbers!
Report & Invoice must have the MWL Project Number and Sub PO#: 99-1062
Report all quality control data according to Method. Include dates analyzed, date extracted (if extracted) and method reference on the report. Fax results to 626-568-6324
Faxed results must have complete data & QC. Hardcopy report is due in hand on due date.
Please advise us immediately if Due Date will be missed.

Ship To Nanette Estrada
Quanterra Environmental Services
880 Riverside Parkway
West Sacramento, CA 95605-1501

Bill Recipient: FEDEX ACCT: 2060-8019-1

(916) 374-4348

HARDCOPY REPORT, FORMS, & INVOICE MUST BE SENT TO ATTENTION
Martha Frost, Sub-contracting Administrator
Montgomery Watson Laboratories 555 East Walnut Street Pasadena, CA 91101
Phone (626) 568-6437 Fax (626) 568-6324

For Specific Questions about samples Hillary Strayer (626) 568-6412

MWL Project # 57835 Report Due: 9/28/99

Qty	Test Code	Use MWL Lab # for ID	Client Sample ID for reference only	Analysis Requested	Sample Date	Matrix	Container
1	TCDD-DW	990910033	KAPILIMAO WAI	Dioxin in drinking water 1613b	09/09/99	dw	2 1L amber glass / no preservative

RECEIVED IN GOOD CONDITION
UNDER COC
SEP 14 1999
INI: MP

Relinquished by: Sample Control Date 09/13/99 Time
Date 091499 Time 1415 An Acknowledgement of Receipt is requested to attn: Martha Frost

Quanterra Incorporated
880 Riverside Parkway
West Sacramento, California 95605

916 373-5600 Telephone
916 372-1059 Fax

September 25, 1999

QUANTERRA INCORPORATED PROJECT NUMBER: G9I150259
PO/CONTRACT: 99-1062

Martha Frost
Montgomery Laboratories
555 East Walnut Street
Pasadena, CA 91101

Dear Ms. Frost,

This report contains the analytical results for the aqueous sample received under chain of custody by Quanterra Incorporated on September 14, 1999. This sample is associated with your project number 57835.

All applicable quality control procedures met method-specified acceptance criteria.

If you have any questions, please feel free to call me.

Sincerely,

Nanny Estrada

Nanny Estrada
Project Manager

Quanterra

SAMPLE SUMMARY

G9I150259

WO #	SAMPLE#	CLIENT SAMPLE ID	DATE	TIME
D2GXF	001	990910033	09/09/99	

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

Quanterra

MONTGOMERY LABORATORIES

Client Sample ID: 990910033

Dioxins

Lot-Sample #...: G9I150259-001 Work Order #...: D2GXF101 Matrix.....: WATER
Date Sampled...: 09/09/99 Date Received..: 09/14/99
Prep Date.....: 09/20/99 Analysis Date..: 09/24/99
Prep Batch #...: 9258239
Dilution Factor: 1

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	3.1	pg/L	EPA-5 1613B-Tetra

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	83	(25 - 141)

QC DATA ASSOCIATION SUMMARY

G9I150259

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
001	WATER	EPA-5 1613B-Tetra		9258239	

Quanterra

METHOD BLANK REPORT

Dioxins

Client Lot #...: G9I150259
MB Lot-Sample #: G9I150000-239

Work Order #...: D2G14101
Prep Date.....: 09/20/99
Prep Batch #...: 9258239

Matrix.....: WATER

Analysis Date..: 09/24/99
Dilution Factor: 1

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	3.7	pg/L	EPA-5 1613B-Tetra

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	95	(25 - 141)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Quanterra

LABORATORY CONTROL SAMPLE DATA REPORT

Dioxins

Client Lot #...: G9I150259 Work Order #...: D2G14102 Matrix.....: WATER
LCS Lot-Sample#: G9I150000-239
Prep Date.....: 09/20/99 Analysis Date..: 09/24/99
Prep Batch #...: 9258239
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
2,3,7,8-TCDD	200	212	pg/L	106	EPA-5 1613B-T

INTERNAL STANDARD	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	87	(25 - 141)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

Quanterra

LABORATORY CONTROL SAMPLE EVALUATION REPORT

Dioxins

Client Lot #...: G9I150259 Work Order #...: D2G14102 Matrix.....: WATER
LCS Lot-Sample#: G9I150000-239
Prep Date.....: 09/20/99 Analysis Date..: 09/24/99
Prep Batch #...: 9258239
Dilution Factor: 1

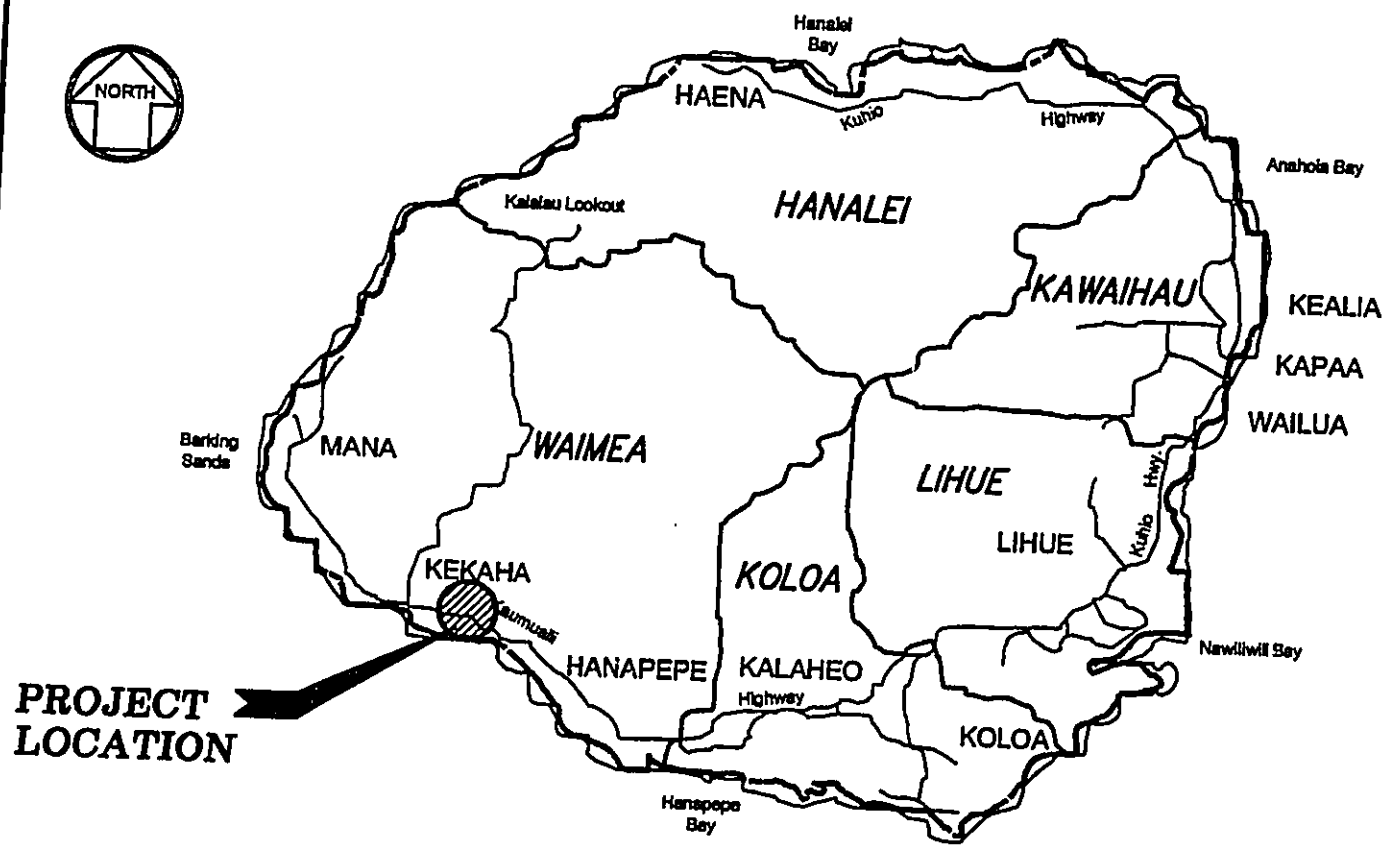
PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
2,3,7,8-TCDD	**106**	**(73 - 146)**	**EPA-5 1613B-Tetras**

INTERNAL STANDARD	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	87	(25 - 141)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters



ISLAND OF KAUAI

VICINITY MAP

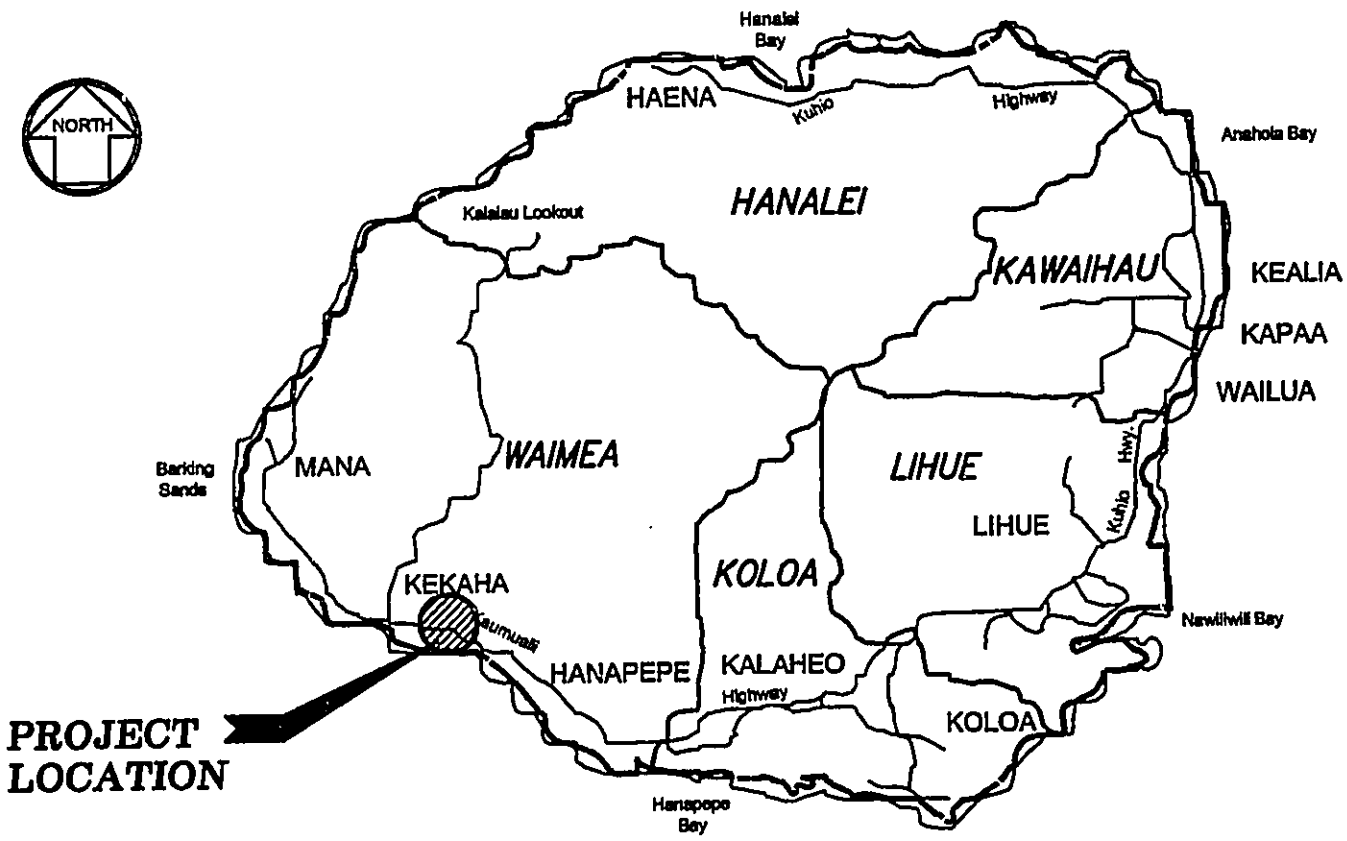
FILENAME: 9901-03
SCALE: 1=1
BEGIN: 09/14/99
PM: BMG
OPER: MSM
REVISED: 11/06/99

VICINITY MAP
ENVIRONMENTAL ASSESSMENT
KAPILIMAO VALLEY WELL & TRANSMISSION MAIN
NOV. 1999

SCALE: NONE

PREPARED BY:
AKINAKA & ASSOCIATES, LTD.

EXHIBIT
1



ISLAND OF KAUAI

VICINITY MAP

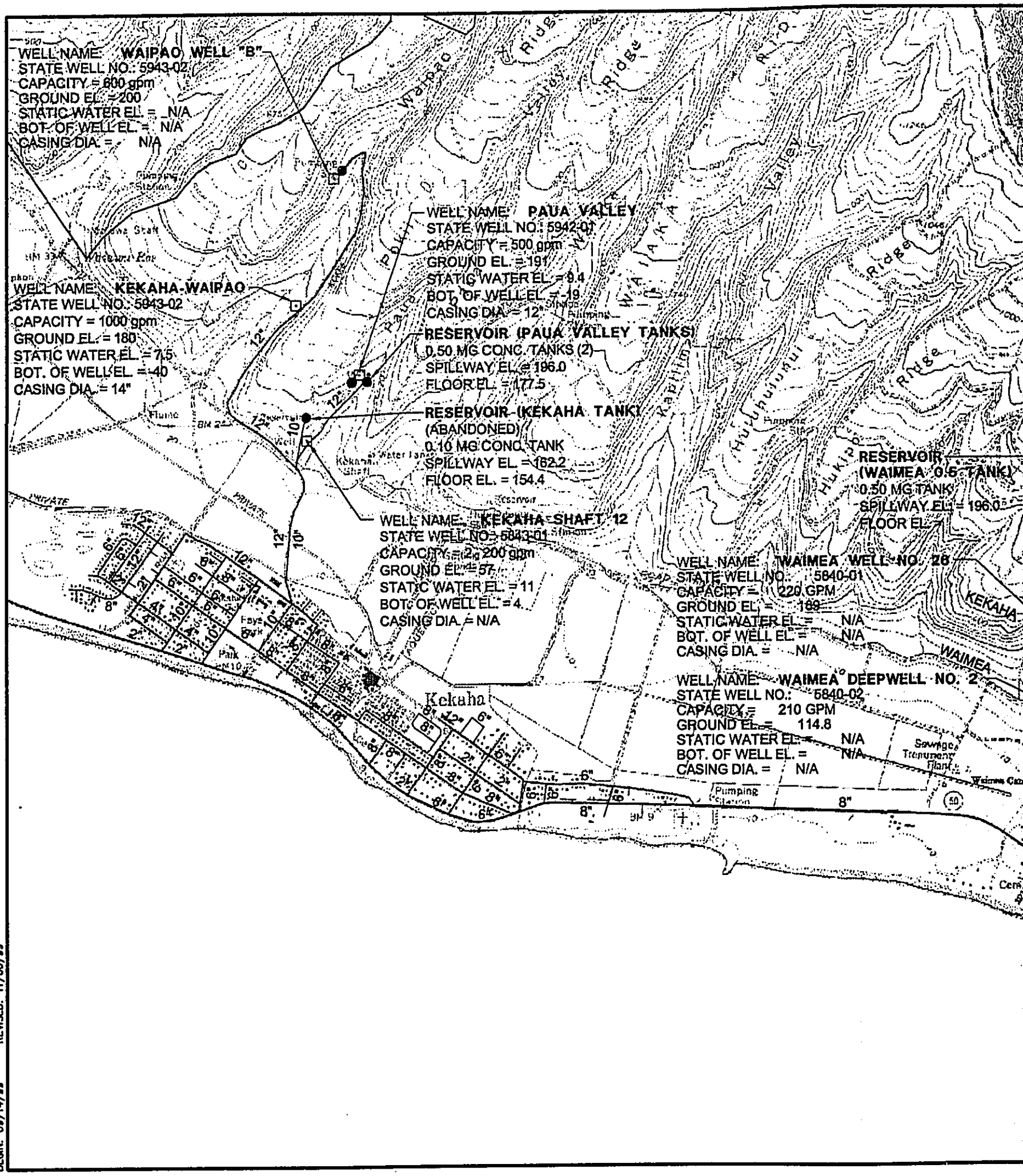
FILENAME: 9901-03
SCALE: 1=1
BEGIN: 09/14/99
PM: BMG
OPER: *MSM
REVISED: 11/08/99

VICINITY MAP
ENVIRONMENTAL ASSESSMENT
KAPILIMAO VALLEY WELL & TRANSMISSION MAIN
NOV. 1999

SCALE: NONE

PREPARED BY:
AKINAKA & ASSOCIATES, LTD.

EXHIBIT 1



FILENAME: 9901-01
SCALE: 1=2000
BEGIN: 09/14/99

PM: BMG
OPER: SAL/WSN
REVISED: 11/06/99

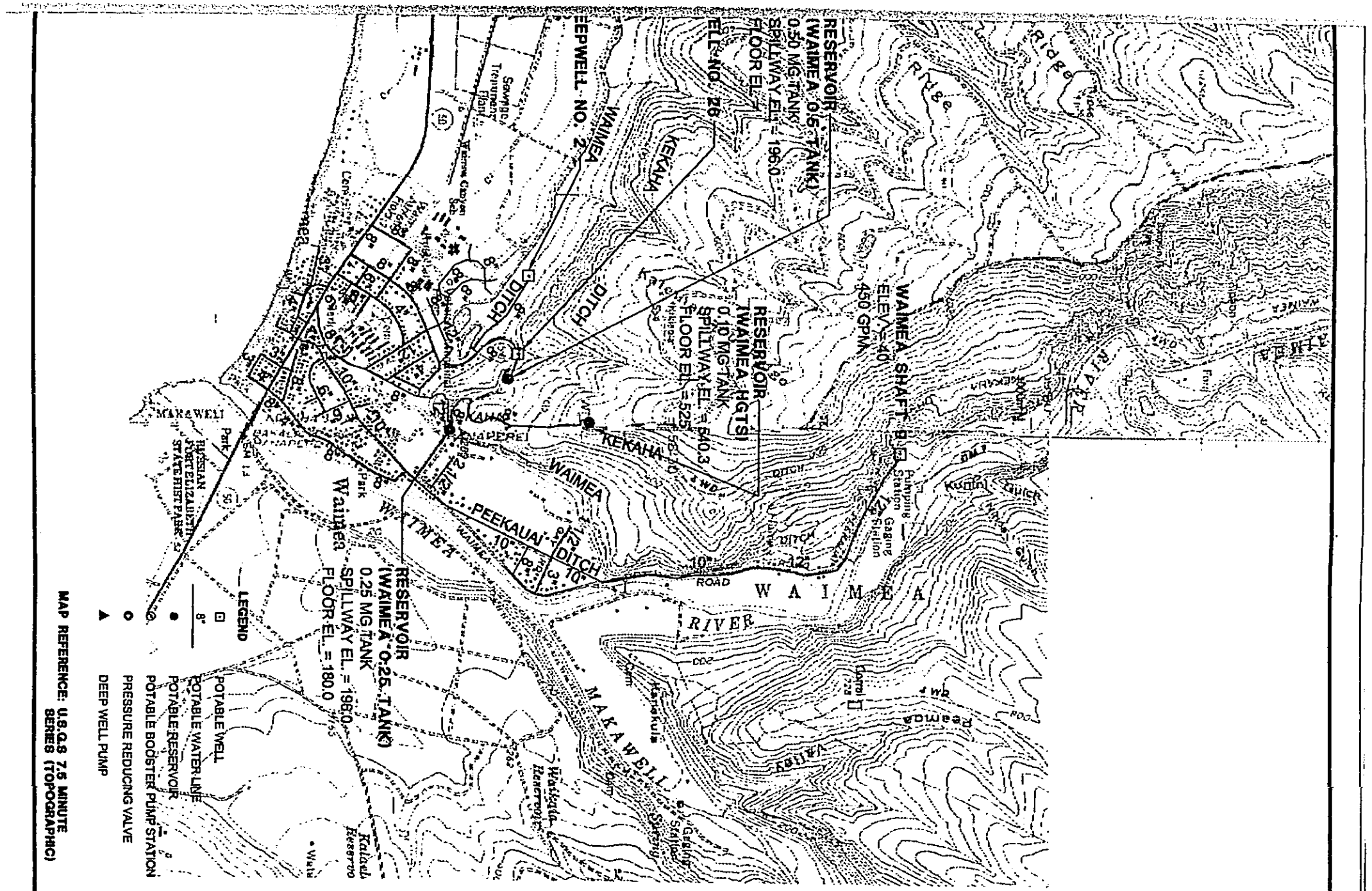


EXHIBIT 2

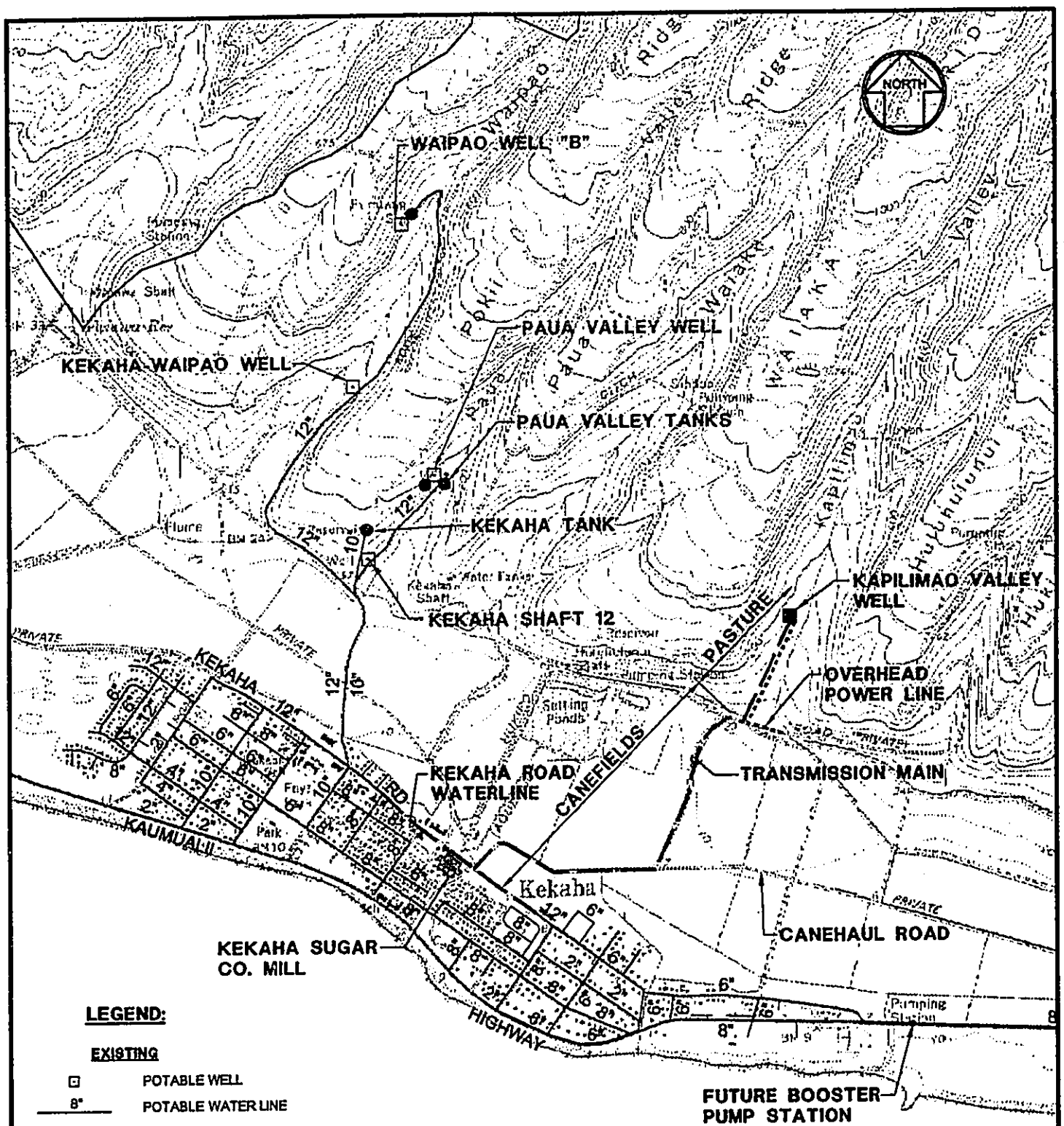
WAIMEA - KEKAHA WATER SYSTEM

ENVIRONMENTAL ASSESSMENT
KAPILIMAO VALLEY WELL & TRANSMISSION MAIN

NOV. 1999

1000 0 1000 2000
SCALE: 1" = 2000'

PREPARED BY:
AKINAKA & ASSOCIATES, LTD.



LEGEND:

EXISTING

- POTABLE WELL
- 8" POTABLE WATER LINE
- POTABLE RESERVOIR
- POTABLE BOOSTER PUMP STATION
- PRESSURE REDUCING VALVE
- DEEP WELL PUMP

FUTURE

- POTABLE WELL
- 6" POTABLE WATER LINE
- BOOSTER PUMP STATION

FILENAME: 9901-02
SCALE: 1=2000
BEGIN: 09/14/99
PM: BMG
OPER: SAJ/WISH
REVISED: 12/14/99

PROPOSED IMPROVEMENTS

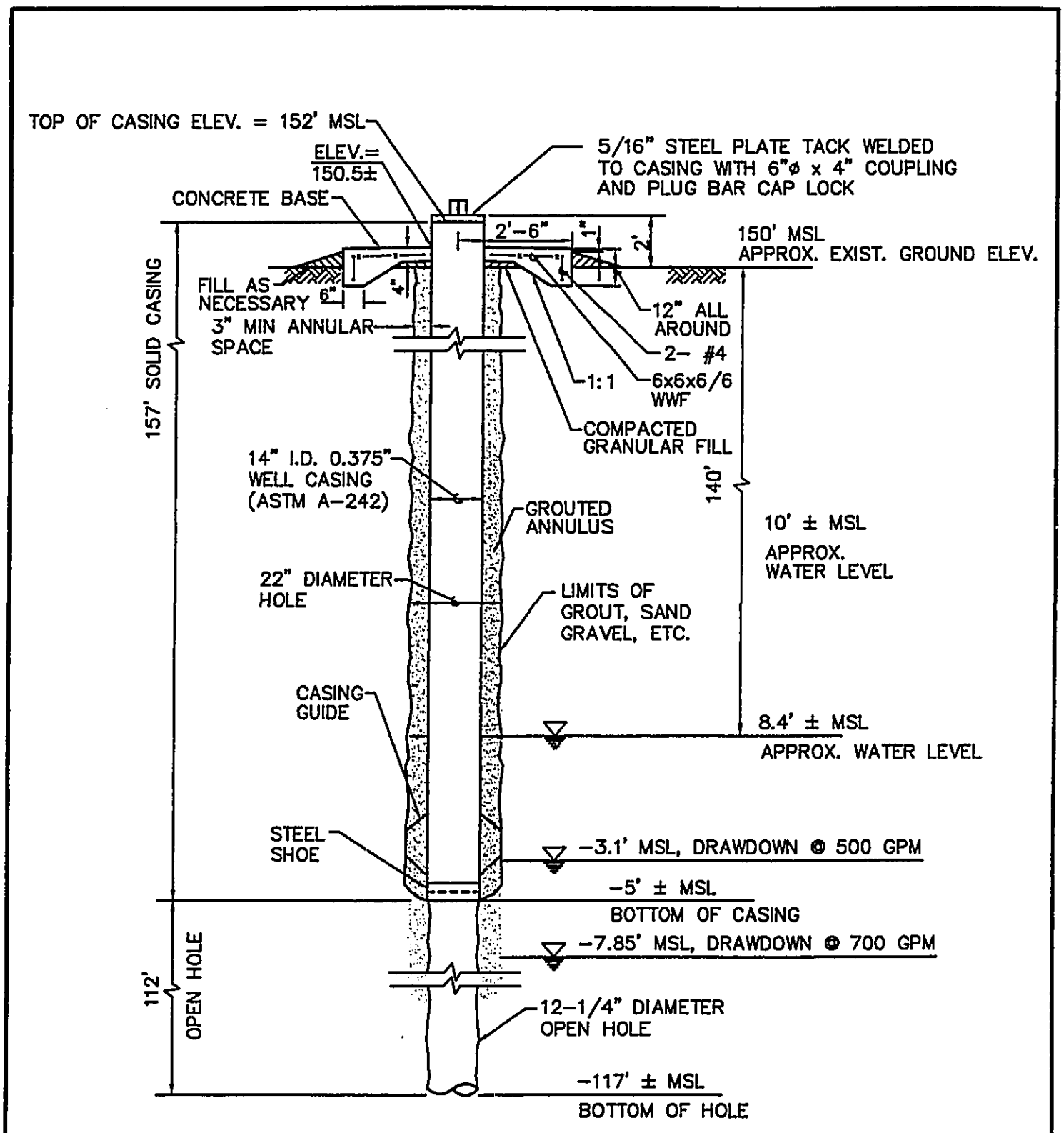
ENVIRONMENTAL ASSESSMENT
KAPILIMAO VALLEY WELL & TRANSMISSION MAIN

NOV. 1999

1000 0 1000 2000
SCALE: 1" = 2000'

PREPARED BY:
AKINAKA & ASSOCIATES, LTD.

EXHIBIT 3



FILENAME: 9901-04
SCALE: 1=1
BEGIN: 09/14/99
PM: BMG
OPER: *MSM
REVISED: 12/14/99

WELL SECTION

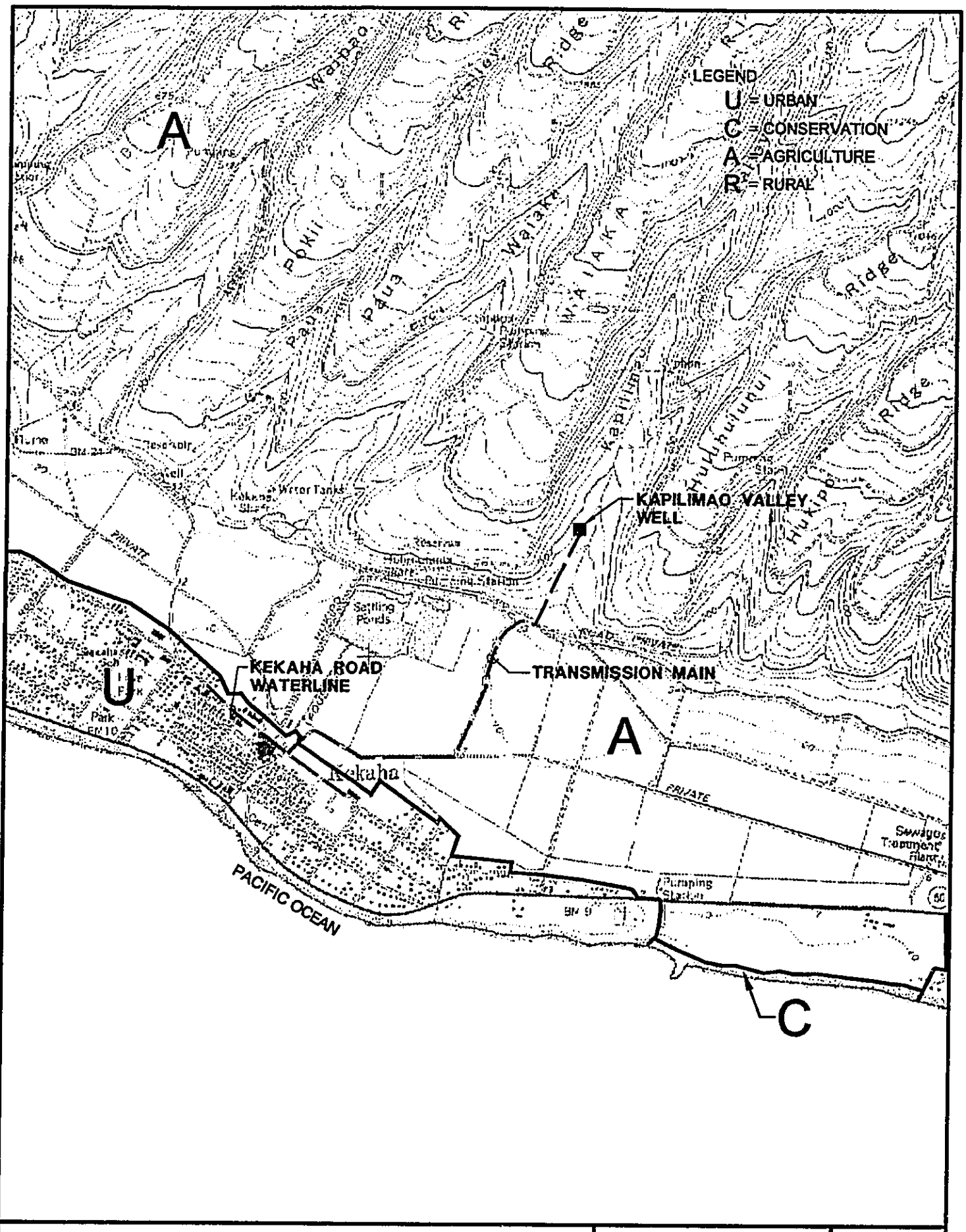
ENVIRONMENTAL ASSESSMENT
KAPILIMAO VALLEY WELL & TRANSMISSION MAIN

NOV. 1999

SCALE: NONE

PREPARED BY:
AKINAKA & ASSOCIATES, LTD.

EXHIBIT
4



STATE LAND USE

ENVIRONMENTAL ASSESSMENT
KAPILIMAO VALLEY WELL & TRANSMISSION MAIN

NOV. 1999

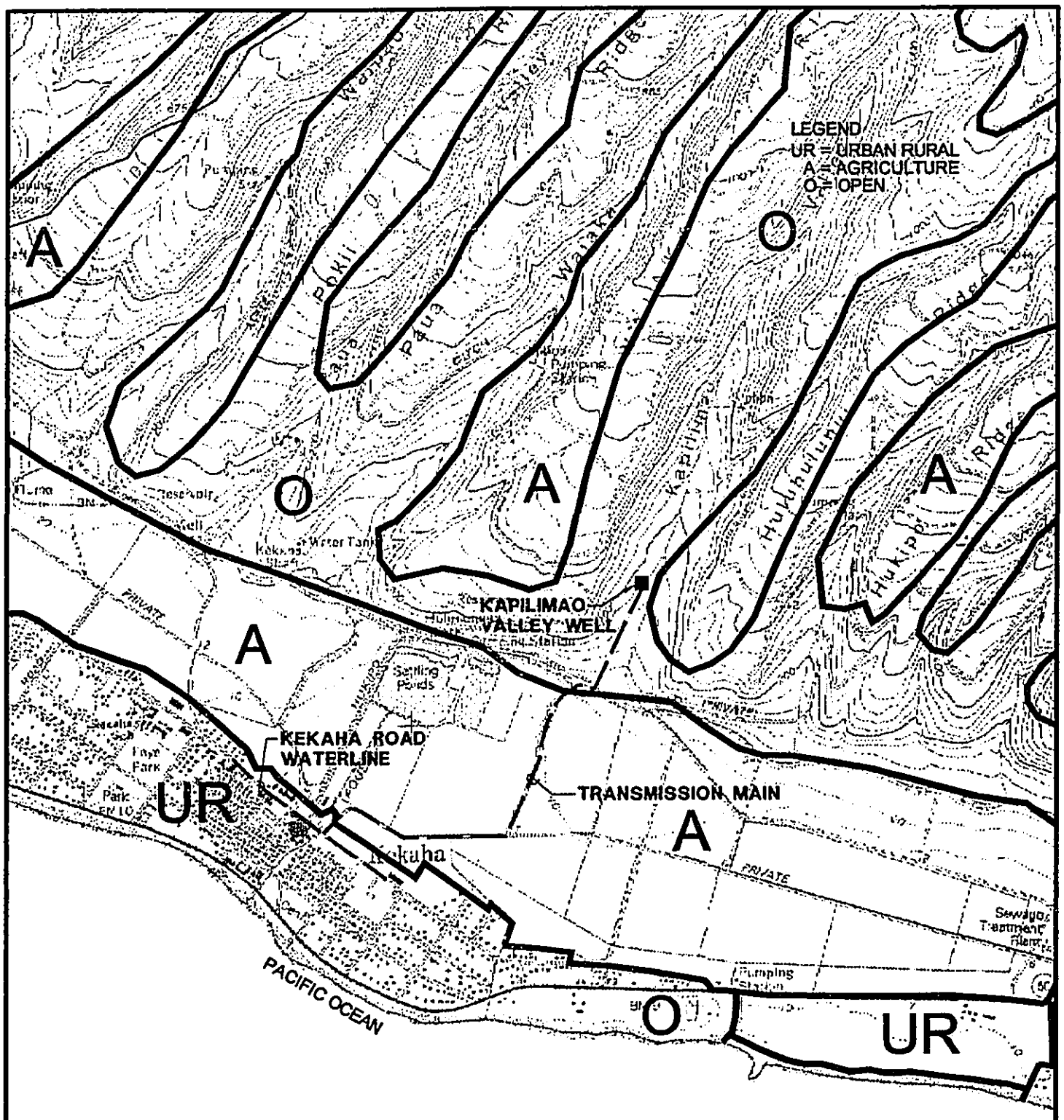
1000 0 1000 2000
SCALE: 1" = 2000'

PREPARED BY:
AKINAKA & ASSOCIATES, LTD.

EXHIBIT 5

FILENAME: 9901_14
SCALE: 1=2000
BEGIN: 09/14/99

PM: BMG
OPER: SAJ,*MSM
REVISED: 11/06/99



COUNTY OF KAUAI GENERAL PLAN

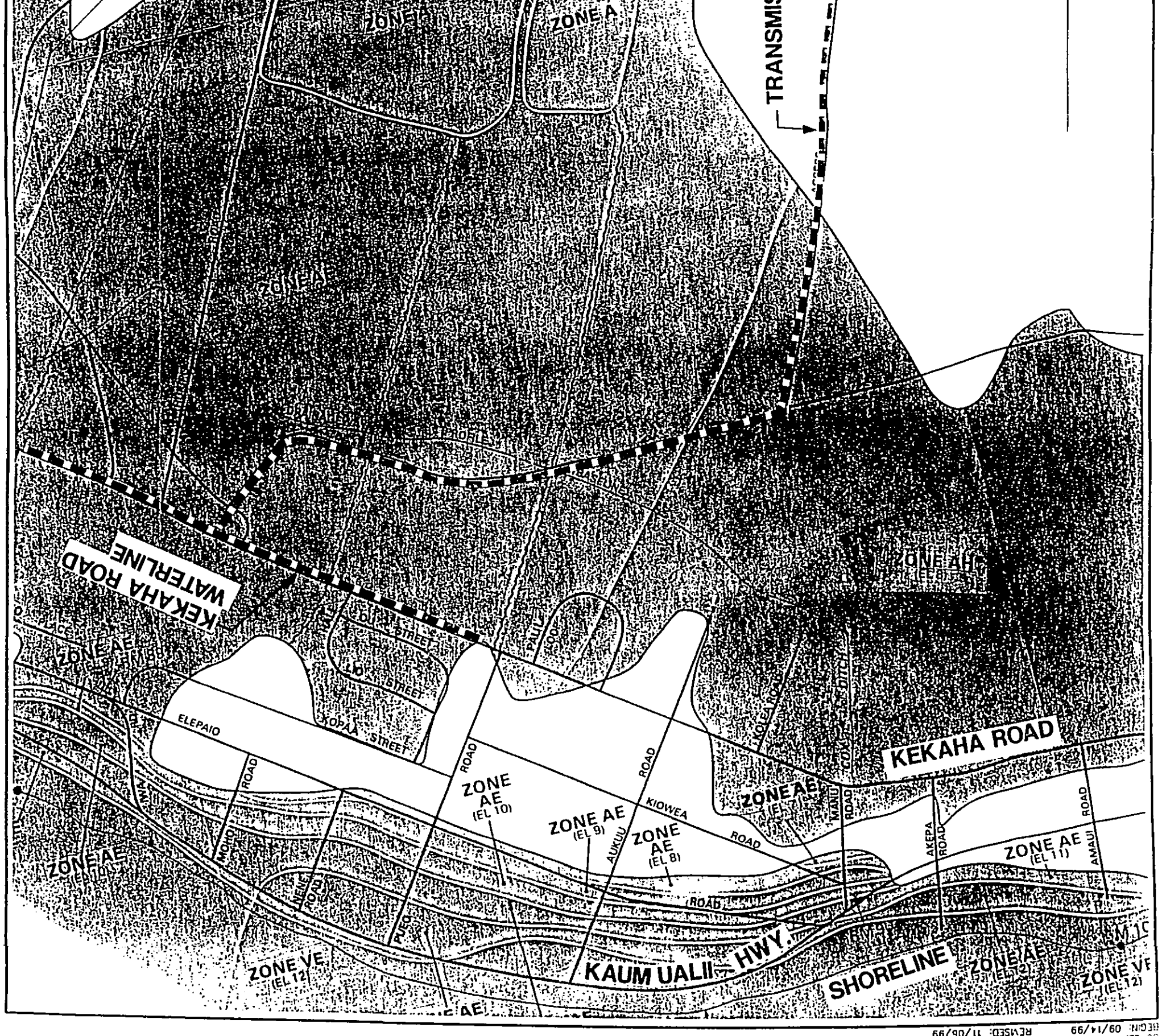
ENVIRONMENTAL ASSESSMENT
KAPILIMAO VALLEY WELL & TRANSMISSION MAIN
NOV. 1999

1000 0 1000 2000
SCALE: 1" = 2000'

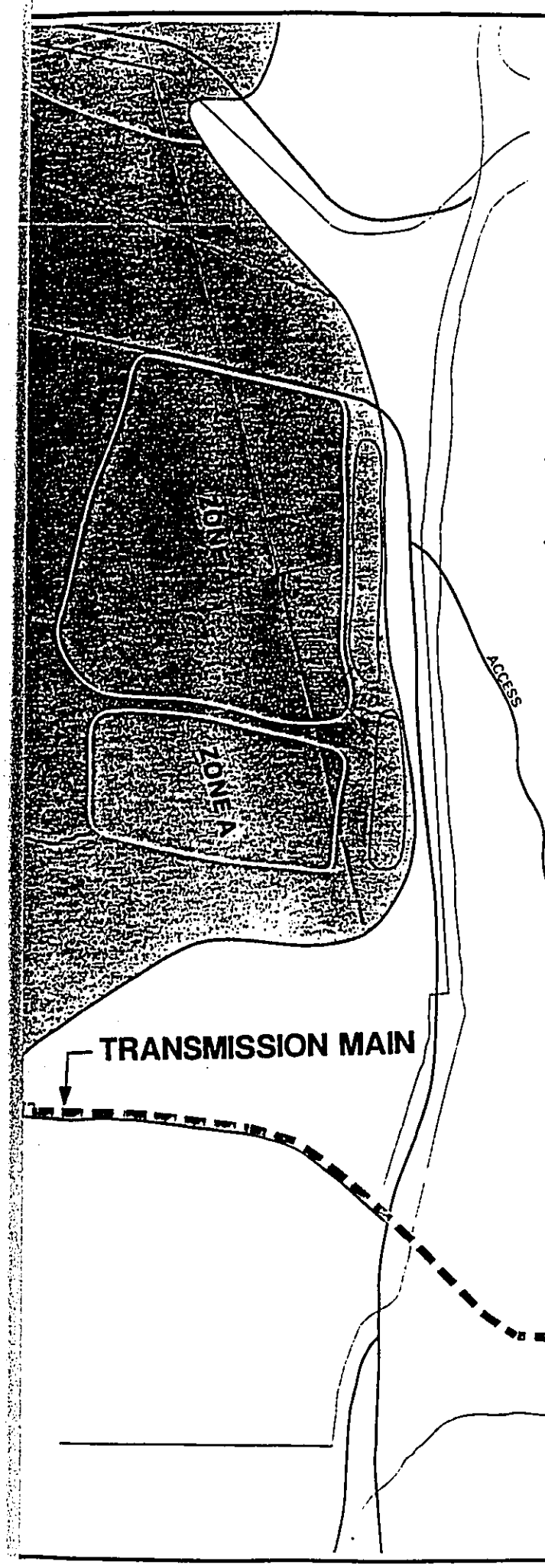
PREPARED BY:
AKINAKA & ASSOCIATES, LTD.

EXHIBIT 6

FILENAME: 9901_15
SCALE: 1=2000
BEGIN: 11/06/99
PM: BMG
OPER: SAI,TMSM
REVISED: 11/06/99



SCALE: 1=2000 RECEIVED: 09/14/99
REVISED: 11/06/99



LEGEND

SPECIAL FLOOD HAZARD AREAS INUNDATED BY 100-YEAR FLOOD

ZONE A	No base flood elevations determined.
ZONE AE	Base flood elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

Flood Boundary

Floodway Boundary

Zone D Boundary

Boundary Dividing Special Flood Hazard Zones, and Boundary Dividing Areas of Different Coastal Base Flood Elevations Within Special Flood Hazard Zones.

513 Base Flood Elevation Line: Elevation in Feet*

FIRM

FLOOD INSURANCE RATE MAP

COMMUNITY-PANEL NUMBER
150002 0156 D

MAP REVISED:
SEPTEMBER 30, 1995

APPROXIMATE SCALE IN FEET
500 0 500

SCALE AS SHOWN

PREPARED BY:
AKINAKA & ASSOCIATES, LTD.

NOV. 1999

FLOOD INSURANCE MAP
ENVIRONMENTAL ASSESSMENT
KAPILIMAO VALLEY WELL & TRANSMISSION MAIN

EXHIBIT
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