CHECKLIST

Well Construction Permit
__ Pump Installation Permit
__ Water Use Permit Required Also

Well Name & Number: Punalu'u Ten-Exploration (3453-15) Island: Oahu
Applicant: Honolulu BWSD Landowner: Same

Consultant: ____________________________

Date application received: 2/9/94
Date acknowledged receipt/request more info: 10/11/94
Date filing fee deposited: Not required

Application sent to following:
✓ Dept. of Health (Safe Drinking Water Branch)
✓ Office of Hawaiian Affairs
✓ Dept. of Hawaiian Home Lands
✓ State Historic Preservation Div.
✓ Sierra Club Legal Defense Fund
✓ Honolulu Board of Water Supply
✓ Maui Dept. of Water Supply
✓ Kaui Dept. of Water Supply
✓ Hawaii Dept. of Water Supply
✓ Hawaii Dept. of Public Works
✓ Koolauola NB #28 (Oahu)
✓ Additional List (Molekai)
   Eric Hirano/Lyann Mizuno
✓ DIV. OF AQUATIC RES.

Date sent: Comments received
Dept. of Health: Oct 19 1994
Office of Hawaiian Affairs: Oct 19 1994
Dept. of Hawaiian Home Lands: Oct 19 1994
State Historic Preservation Div.: Oct 19 1994
Sierra Club Legal Defense Fund: Oct 19 1994
Honolulu Board of Water Supply: Oct 19 1994
Maui Dept. of Water Supply: Oct 19 1994
Kauai Dept. of Water Supply: Oct 19 1994
Hawaii Dept. of Water Supply: Oct 19 1994
Hawaii Dept. of Public Works: Oct 19 1994
Koolauola NB #28 (Oahu): Oct 19 1994

Date agenda due: __________________________
Date submittal due: __________________________
Date submittal sent to applicant: __________________________
Date application approved OR disapproved: 4/27/94
Date applicant notified of decision: __________________________

Remarks: [Handwritten notes on the bottom of the page]

Leaves
Map of area: [Pencil in INDEX/SUMMARY]
Log in logbook (manual)?: 5-3-7:17 (19)
Log in computer (WELL PERMITS):
APPLICATION FOR PERMIT:  
☐ Well Construction or  ☐ Pump Installation

Instructions: Please print in ink or type and send completed application with attachments to the Commission on Water Resource Management, P.O. Box 621, Honolulu, Hawaii 96809. Application must be accompanied by a non-refundable filing fee of $25.00 payable to the Dept. of Land and Natural Resources. The Commission may not accept incomplete applications. For assistance, call the Regulation Branch at 587-0225.

1. APPLICANT: (may be a, b, or c, but all must be filled in)  
(a) WELL OWNER  
Firm/Name: Honolulu Board of Water Supply  
Contact Person: Kazu Hayashida  
Address: 630 South Beretania Street  
Honolulu, Hawaii 96843  
(b) LANDOWNER  
Firm/Name: same  
Contact Person: Ph:  
Address:  
(c) CONTRACTOR  
Firm/Name:  
Ph:  
Address:  
Contractor's C-57 License No:

2. WELL LOCATION/NAME:  
Location: Punaluu Wells III  
Island: Oahu  
Tax Map Key: 5-3-07; 17  
(Tax Map Key: 5-3-07; 17)  
(Attach a USGS map, scale 1"=2000', and a property tax map showing well location referenced to established property boundaries.)

3. (a) PROPOSED WORK:  
☐ New Drill  
☐ Reroute  
☐ Modify Existing Well  
☐ Replace Pump  
☐ Install New Pump  
☐ Deepen  
☐ * Alter Location  
☐ * Abandon/Seal  
☐ * Be sure to complete and submit well abandonment report upon completion of work.  
(b) WELL TYPE:  
☐ Dug  
☐ Bored  
☐ Driven  
☐ Drilled  
☐ Radial  
Is this well a part of a battery of wells?  
☐ Yes  
☐ No  
(Briefly describe and fill in the diagram on the back of this form.)

4. PROPOSED PUMP INFORMATION:  
Rated Pump Capacity: 350 _______ gallons per minute

5. PROPOSED USE:  
☐ Municipal (including hotels, stores, etc.)  
☐ Domestic (individual, noncommercial water use)  
☐ Irrigation (crop)  
☐ Other (explain)  
☐ Agricultural  
☐ Industrial  
☐ Rural  
☐ Conservation  
☐ Urban  
☐ County Zoning (describe)  
☐ Military  
☐ (If more space is needed, continue below under remarks, explanations.)

6. (a) PROPOSED AMOUNT OF WITHDRAWAL:  
500,000 gallons per day  
(b) METHOD OF FLOW MEASUREMENT:  
☐ Flow-meter  
☐ Open-pipe  
☐ Office Plate  
☐ Weir

7. PENDING ACTIONS:  
☐ CDA  
☐ SMA  
☐ ES  
☐ EA  
☐ None  
☐ Other (explain)  
Neg. Dec.

8. REMARKS, EXPLANATIONS:  
Develop alluvial water for municipal use.

(If more space is needed, continue on back)

NOTE: Signing below indicates that the applicant understands that, if the permit is granted by the Commission on Water Resource Management, the proposed work is to be completed within two (2) years of the approval date. In addition, the contractor shall submit to the Commission a well completion report, well abandonment report, or both, within 30 days after the completion date of the permitted work. The applicant also understands that monthly water use data shall be submitted to the Commission. The applicant further understands that approval of the proposed permit shall not constitute a determination of corrective water rights and shall not guarantee the pump capacity or future use up to the permitted pump capacity.

Well Owner: Board of Water Supply  
Landowner: Same  
Contractor:  

Signature:  
Date:  

Signature:  
Date:  

Signature:  
Date:  

For Official Use Only:  
Date Received:  
Date Accepted:  
Field Checked By:  
Date:  
Longitude:  
Latitude:  
Aquifer System Name:  
State Well No:  

6/24/92 WCM Form
Remarks, Explanations (cont’d):

**9. PROPOSED WELL SECTION**

- **Elevation at top of casing**: 67 ft., masl
- **Ground Elevation**: 65 ft., masl
- **Cement Grout**: 100 ft
- **Rock Packing**: 310 ft
- **Hole Diameter**: 20 in.
- **Total Depth**: 410 ft
- **Solid Casing**: ASTM A-53 Steel
  - Length: 150 ft
  - Diameter: 14 in
  - Wall thickness: 3/8 in
- **Casing**: Perforated
  - Material: ASTM A-53 Steel
  - Length: 240 ft
  - Diameter: 14 in
  - Wall thickness: 3/8 in
  - Openings: 70 m in/LF
- **Open Hole**: None

*Approximate elevation at time of filing application. Ground elevation above mean sea level (masl) by a surveyor licensed by the State must be submitted at start of construction. Final elevations of well components shall be submitted in the well completion/well abandonment reports.*
WELL NO. 3453-15
APPLICATION FOR PERMIT

1. APPLICANT: (may be a, b, or c, but all must be filled in)
   (a) WELL OWNER
      Firm/Name: Honolulu Board of Water Supply
      Contact Person: Kazu Hayashi
      Address: 630 South Beretania Street
      Honolulu, Hawaii 96813
   (b) LANDOWNER
      Firm/Name:
      Contact Person:
      Address:
   (c) CONTRACTOR
      Firm/Name:
      Ph:
      Contractor's C-57 License No:
      Address:

2. WELL LOCATION/NAME:
   (Attach a USGS map, scale 1"=2000', and a property tax map showing well location referenced to established property boundaries.)

3. (a) PROPOSED WORK:
       Drill New Well
       Modify Existing Well
       Install New Pump
       Replace Pump
       Deepen
       * Abandon/Seal
       * Alter Location
       Not

   (b) WELL TYPE:
       Dug
       Bored
       Driven
       Drilled
       Radial
       * Is this well part of a battery of wells?

4. PROPOSED PUMP INFORMATION:
   Rated Pump Capacity:
   Gallons per minute
   Pump Type:
   Deep Well Turbine
   Submersible
   Centrifugal
   Rotary
   Rotary-Diplacement
   Rotary-Gear
   Motor:
   Electric
   Diesel
   Other

5. PROPOSED USE:
   Municipal (Including hotels, stores, etc.)
   Domestic (Individual, noncommercial water use)
   Irrigation (crop)
   Other (explain)
   State Land Use District:
   County Zoning (describe)
   U:\
   R:\
   C:\
   Other (explain)

6. (a) PROPOSED AMOUNT OF WITHDRAWAL:
   Gallons per day

   (b) METHOD OF FLOW MEASUREMENT:
   Flow-meter
   Open-pipe
   Office Plate
   Weir

7. FENDING ACTIONS:
   CDUA
   SMA
   EIS
   EA
   NONE
   Other (explain)

8. REMARKS, EXPLANATIONS:
   Develop alluvial water for municipal use.

NOTE: Signing below indicates that the applicant understands that, if the permit is granted by the Commission on Water Resources Management, the proposed work is to be completed within two (2) years of the approval date. In addition, the contractor shall submit to the Commission a well completion report, well abandonment report, or both, within 30 days after the completion date of the permitted work. The applicant also understands that monthly water use data shall be submitted to the Commission. The applicant further understands that approval of the proposed permit shall constitute a determination of correlative water rights and shall not guarantee the pump capacity or future use up to the permitted pump capacity.

Well Owner: Board of Water Supply
Landowner: Same
Contractor: Same

Signature
Date

For Official Use Only:
Date Received
Date Accepted
Field Checked By
Date

Longitude
Latitude
Aquifer System Name
State Well No.

6/24/92 WCM For:
9. PROPOSED WELL SECTION

Elevation at top of casing: 67 ft. masl.

Cement Grout: 100 ft.

Rock Packing: 310 ft.

Hole Diameter: 20 in.

Total Depth: 410 ft.

Ground Elevation: 65 ft. masl.

Solid Casing: ASTM A-53 Steel
- Material: ASTM A-53 Steel
- Length: 150 ft.
- Diameter: 14 in.
- Wall thickness: 3/8 in.

Casing: □ Perforated □ Screen
- Material: ASTM A-53 STEEL
- Length: 240 ft.
- Diameter: 14 in.
- Wall thickness: 3/8 in.
- Openings: 70 mi/foot in.

Open Hole:
- Length: None
- Diameter: None

*Approximate elevation at time of filing application. Ground elevation above mean sea level (masl) by a surveyor licensed by the State must be submitted at start of construction. Final elevations of well components shall be submitted in the well completion/well abandonment reports.
DRAFT ENVIRONMENTAL ASSESSMENT

PUNALUU III
WELL ADDITION

PUNALUU, KOOLAULOA, OAHU, HAWAII
TAX MAP KEY: 5–3–07:PORTION 14

PROPOSING AGENCY
CITY AND COUNTY OF HONOLULU
BOARD OF WATER SUPPLY

Submitted pursuant to Chapter 343, Hawaii Revised Statutes

OCTOBER 1994
Dear Participant:

Attached for your review and comment is a copy of a Draft Environmental Assessment which is being prepared pursuant to the EIS law (Hawaii Revised Statutes, Chapter 343) and the EIS Rules (Administrative Rules, Title 11, Chapter 200).

Title of Project: Punaluu III Well Addition
Location: Punaluu, Koolauloa, Oahu, Hawaii
Tax Map Key: 5-3-07: portion of 14
Type of Action: Agency Action

To properly incorporate your comments into the preparation of the Final Environmental Assessment, your comments should be received or postmarked by December 8, 1994.

Please send your original comments to:

Proposing Agency: Board of Water Supply
City and County of Honolulu
630 South Beretania Street
Honolulu, Hawaii 96843

Contact: Mr. Barry Usagawa Phone: 527-5235

Copies of the comments should be sent to:

Consultant: CH2M HILL
1585 Kapiolani Blvd., Suite 1420
Honolulu, Hawaii 96814-4530

Contact: Mr. Bennett Mark Phone: 943-7135 ext. 202
DRAFT ENVIRONMENTAL ASSESSMENT

PUNALUU III
WELL ADDITION

PUNALUU, Koolaulea, Oahu, Hawaii
TAX MAP KEY: 5-3-07:PORTION 14

PROPOSING AGENCY
City and County of Honolulu
Board of Water Supply

Submitted pursuant to Chapter 343, Hawaii Revised Statutes

OCTOBER 1994

Chemill
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C Avifaunal and Feral Mammal Survey for a Board of Water Supply Exploratory Well Site at Punaluu, Oahu, Phillip L. Bruner, April 1994.

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Chapter 1

Executive Summary

1.1 Proposing Agency and Proposed Action

The City and County of Honolulu Board of Water Supply (BWS) proposes to drill and case an additional water well at its Punaluu Wells III site in Punaluu, on the windward side of Oahu. This well addition will be drilled within an existing 1.97-acre BWS site. The proposed Punaluu III Well Addition is expected to be capable of yielding 0.5 million gallons per day (mgd) of potable water.

The drilling and casing of an exploratory well is the first step in a two-step process that the BWS uses to obtain hydrogeological data on the potential of new groundwater resources. After the exploratory well is drilled and cased, the second step will require that a well pump test will be performed to determine whether the quantity and quality of the water from this exploratory well is suitable for development. If the quantity and quality of the water is suitable for development, the BWS will incorporate the exploratory well into the permanent production facilities. However, if either the quantity or quality of the water proves to be unsuitable for a production well, the exploratory well will be sealed and abandoned.

This environmental assessment focuses on the drilling, casing, and testing of this exploratory well. The proposed action will also include the temporary installation of a test pump, piping, and appurtenances. If the exploratory well is developable, a permanent pump and pipelines will be installed together with the electrical and mechanical controls to the existing facility. All construction work will be within the BWS’s existing 1.97-acre Punaluu III Wells site.

1.2 Purpose of this Environmental Assessment

This environmental assessment (EA) was prepared pursuant to Chapter 343, Hawaii Revised Statutes (HRS). Any project proposing the use of county lands or funds must comply with Chapter 343, HRS. Because this well addition will be on property that is under the jurisdiction and ownership of the BWS, and because the well will be constructed with BWS funds, environmental compliance pursuant to Chapter 343, HRS, is required.

A final environmental assessment and an accompanying Negative Declaration by the BWS determining that the impacts of this project are not sufficient to require the preparation of an environmental impact statement (EIS) will satisfy the Chapter 343, HRS, requirements.
1.3 Permits Required

A well construction, pump installation, and water use permit will be required from the Commission on Water Resource Management (CWRM).

A building permit will be required from the City and County of Honolulu, Building Department.

1.4 Benefits of this Project

The proposed well addition will furnish valuable data that will be added to Oahu’s islandwide hydrogeological information base. The data will be valuable in estimating the quantity and quality of the groundwater resources available at this site, and—in combination with data from other wells—ultimately for the entire island. If the hydrogeological data shows that additional groundwater sources can be developed successfully at this site, this well may be converted to a permanent potable water well.

If the well is converted into a permanent production well, it would be part of a major water development project that will integrate new groundwater sources in Windward Oahu into the islandwide water system. The development of additional water sources is necessary to accommodate the growing demand for water within the City and County of Honolulu.

1.5 Alternatives Considered

The no-action alternative, the delayed action alternative, site alternatives, and source alternatives are discussed in this environmental assessment or were discussed in previous environmental analyses done by the BWS.

The no-action alternative was not pursued because it would be contrary to the BWS’s legal mandate to provide for the water needs of a growing population. The delayed action alternative was not pursued because this alternative would delay the BWS's implementation schedule, and would have substantially similar environmental outcomes and higher development costs because of inflation.

This environmental assessment analyzes one of many possible potable groundwater source sites in the Windward Sector of Oahu, where, according to the Hawaii Water Plan, Oahu Water Management Plan (OWMP), there is a good potential for economic development of potable water supply sources. Additional sites within the Windward Sector were not pursued because the BWS had already conducted an analysis of 46 potential sites for additional potable wells in *Windward Oahu Regional Water System Improvements* (1988).
The 1988 study evaluated 17 sites for possible potable groundwater sources and a possible tunnel or inclined well site in the Koolauloa Aquifer; of these, six possible well sites and the possible tunnel or inclined well site were located within Punalu'u Valley.

The BWS has also analyzed potable water source alternatives other than groundwater in its 1988 EIS; these alternatives included desalinization, the development of surface and brackish water sources, and the recycling of treated wastewater. Typically these alternative sources have considerably higher costs and technical challenges. For instance, the use of surface water such as from Punalu'u Stream has a high potential for health and safety problems and would require installation of a costly water treatment plant. The development of these alternatives was not considered as feasible as the development of groundwater resources.

1.6 Potential Impacts of this Project and Mitigation Measures

Construction work, primarily the drilling of the well, will cause minor short-term noise and air pollution impacts to the surrounding environment. All government rules and regulations concerning noise and air pollution will be followed during construction to minimize these minor short-term noise and air pollution impacts. Mufflers will be used to reduce noise during the drilling. If a permanent pump is installed, mutes will be used to minimize pump noise, or a submersible pump, which will reduce operational noise to below the regulatory limit, will be utilized.

Water from the test pumping will be discharged into the existing drainage system on the Punalu'u Wells III site. It is expected that the water that will be discharged will be clean, and therefore will not introduce any pollutants into the environment. The existing drainage system feeds into a culvert at the northeast corner of the site. Care will be taken in disposing of the test water to preclude the possibility of flushing debris or re-suspending sediments and other pollutants into the ditch.

Impacts on the stream flows within Punalu'u Stream, and to the existing wells in the vicinity are not expected due to this proposed well. Punalu'u Stream is located about 1,500 feet southeast of this proposed well site. There are already two wells on the 1.97-acre Punalu'u Wells III site where the exploratory well is proposed.

Punalu'u Stream in this vicinity is perched over horizontal layers of low-permeability alluvium. These horizontal layers of low-permeability alluvium serve to isolate the water flowing in Punalu'u Stream from the underground alluvial groundwater found at considerably lower depths. The Punalu'u III Well Addition is proposed to be cased to a depth of about 400 feet (about 335 feet below mean sea level [msl]) within the alluvium,
with the screened intake section of the well extending from about 85 feet below msl to the bottom of the well. The invert of Punaluu Stream in this vicinity is about 20 feet above msl. The water withdrawn from the alluvium from 85 feet below to 335 feet below msl due to the pumping of this well is not expected to affect the water flowing in Punaluu Stream because of the approximately 105 feet separating the screened intake section of the well from the stream's invert, and because of the intervening horizontal layers of low-permeability alluvium.

There is no potential for impacts to the Kahuku Wetlands (in the James Campbell National Wildlife Refuge in Kahuku) or to the Kahana Valley Wetlands because of the great distance separating the well site from both the Kahuku Wetlands and the Kahana Valley Wetlands. Further, there should be no potential for impact to the Kahana Valley Wetlands because these wetlands are not located in the same aquifer system as the exploratory well site.

The identified minor adverse impacts can be appropriately mitigated. There are substantial potential benefits that can be provided in terms of potable water supplies from the Punaluu III Well Addition, if it is able to be developed as a production well.

1.7 Determination

In accordance with Chapter 343 of the Hawaii Revised Statutes (HRS), the BWS has determined that no EIS is required for the construction, test pumping, and development of the Punaluu III Well Addition into a production well and the incorporation of this well into the existing Punaluu III Wells production facility.

This determination has been made because whatever minor adverse impacts that result from this project may be minimized to insignificant levels with the application of the recommended mitigation measures.

1.8 Agencies and Others Consulted in Making this Assessment

The following agencies were consulted during the preparation of the draft environmental assessment for this project:

State of Hawaii agencies

- Department of Land and Natural Resources
- Commission on Water Resources Management
- Department of Agriculture
Fifteen government agencies and three groups or other individuals were provided a copy of the draft environmental assessment for this project and requested to provide comments.

The following is a list of those agencies and others who were provided a copy of the draft environmental assessment.

Federal agencies

- U.S. Department of Agriculture, Soil Conservation Service
- U.S. Army Corps of Engineers, Pacific Ocean Division
- U.S. Fish and Wildlife Service

State of Hawaii agencies

- Department of Agriculture
- Department of Business, Economic Development, and Tourism
- Department of Land and Natural Resources
  - Forestry and Wildlife Division
  - Historic Preservation Division
  - Commission on Water Resources Management
- Department of Health
  - Environmental Management Division
  - Office of Environmental Quality Control
- University of Hawaii
  - Environmental Center
  - Water Resources Research Center
City and County of Honolulu agencies

- Planning Department
- Land Utilization Department
- Public Works

Others

- City Council Member Steve Holmes
- Koolauloa Neighborhood Board No. 28
- Sierra Club, Hawaii Chapter
Chapter 2
Purpose and Need for the Proposed Action

2.1 Project’s Purpose and Need

In 1980, the average municipal water demand on the island of Oahu was 130 mgd. The BWS’s 1982 Oahu Water Plan projected that the islandwide average municipal water demand would increase to 156 mgd in 1990 and to 181 mgd in the year 2000. Actual BWS water usage in 1990 averaged 158 mgd, of which 156 mgd was potable water. In its 1992 review draft of the Hawaii Water Plan, Oahu Water Management Plan, the CWRM of the Department of Land and Natural Resources (DLNR), projected that municipal water demand would be between 204 to 213 mgd by the year 2010, depending on whether the upper limit of the City and County of Honolulu’s General Plan population projection for Oahu is attained. Thus, additional water requirements for the year 2010 are projected to be between 48 and 57 mgd. To meet the growing islandwide demand for water, the BWS plans to develop new sources of potable groundwater on Oahu where sufficient water sources exist. The use of groundwater remains the most effective means of increasing Oahu’s potable water supply.

The Punaluu III Well Addition is a proposed BWS well project within the Koolauloa Aquifer portion of the Windward Oahu Sector (see Figure 2-1). If tests indicate that the Punaluu III Well Addition can yield groundwater of sufficient quantity and quality, the BWS intends to convert the well to a production well and integrate it into BWS’s Windward Oahu water system. The Punaluu III Well Addition, if converted to a production well, is expected to be able to yield 0.5 mgd of potable water.

2.2 The State Water Code and the Commission on Water Resource Management

The state water code and a Commission on Water Resource Management was established in 1987 by the Hawaii State Legislature in Section 174-C, HRS. The CWRM was established to handle the administration of the new state water code.

The state water code established a Hawaii Water Plan consisting of the following parts:

- a water resource protection plan prepared by the CWRM
- water use and development plans prepared by each county
- a state water project plan prepared by state agencies
- a water quality plan prepared by the Department of Health.
LEGEND

- Groundwater Sector Boundary
- - - Aquifer System Boundary

Environmental Assessment
Punaluu III Well Addition
CITY AND COUNTY OF HONOLULU - BOARD OF WATER SUPPLY

GROUNDWATER SECTORS
AND AQUIFER SYSTEMS


FIGURE
2-1
As part of the Hawaii Water Plan, a study was commissioned to determine the sustainable yields of surface and groundwater sources statewide.

Under the state water code, the CWRM creates management boundaries for water management areas. Water management areas were designated by the CWRM for those areas where the CWRM decided, after conducting scientific investigation and research, that management of groundwater or surface water, or both, was necessary because the water resources for that area were threatened by existing or proposed withdrawal or diversion of water.

In designating an area for groundwater use regulation, the CWRM must consider the following:

1. Whether an increase in water use of authorized planned use may cause the maximum rate of withdrawal from the groundwater source to reach 90 percent of the sustainable yield of the proposed water management area;

2. There is an actual or threatened water quality degradation as determined by the Department of Health;

3. Whether regulation is necessary to preserve the diminishing groundwater for future needs, as evidenced by excessively declining groundwater levels;

4. Whether the rates, times, spacial patterns, or depths of existing withdrawals of groundwater are endangering the stability or optimum development of the groundwater body due to upconing or encroachment of salt water;

5. Whether the chloride contents of existing wells are increasing to levels which materially reduce the value of their existing uses;

6. Whether excessive preventable waste of water is occurring;

7. Serious disputes respecting the use of the groundwater resources are occurring; or

8. Whether water development projects that have received any federal, state, or county approval may result, in the opinion of the commission, in one of the above conditions.

Notwithstanding an imminent designation of a water management area conditioned on a rise in the rate of groundwater withdrawal to a level of 90 percent of the area’s sustainable yield, the CWRM, when such level reaches the 80 percent level of the sustainable yield, may invite the participation of water users in the affected area to an informational hearing for the purposes of assessing the groundwater situation and devising mitigative measures (Section 174C-44, HRS).
In designating an area for surface water use regulation, the CWRM must consider the following:

(1) **Whether regulation is necessary to preserve the diminishing surface water for future needs, as evidenced by excessively declining surface water levels, not related to rainfall variations, or increasing or proposed diversions of surface waters to levels which may detrimentally affect existing instream uses or prior existing off stream uses;**

(2) **Whether the diversions of stream waters are reducing the capacity of the stream to assimilate pollutants to an extent which adversely affects public health or existing instream uses; or**

(3) **Serious disputes respecting the use of surface water resources are occurring. (Section 174C-45, HRS)**

The CWRM has administrative control over the withdrawal of groundwater and diversion of surface water within a water management area and is responsible for ensuring reasonable beneficial uses of the resources in the public interest.

### 2.3 Groundwater Sectors and Aquifers

The CWRM has established, for planning and administration purposes, six groundwater sectors that cover the entire island of Oahu (see Figure 2-1): Honolulu, Pearl Harbor, Waianae, Central, North, and Windward. Currently, all sectors except the Waianae Sector have been designated as "groundwater management areas." The Windward Sector, which became a groundwater management area in March 1993, is the last sector to be included as a "groundwater management area" *(Personal communications with Lenore Nakama, CWRM, May 12, 1994).*

Each groundwater sector is divided into aquifers. The Windward Sector covers an approximately 150-square-mile region that extends from Makapuu Point northwestward about 38 miles to Kawela. The Windward Sector is generally bounded at its southwest edge by the ridge line of the steep Koolau Mountains and extends northeastward for a few miles down to the shoreline. The Windward Sector is divided into the Koolauloa, Kahana, Koolaupoko, and Waimanalo aquifers.

The Koolauloa Aquifer is the most northwestern of the Windward Sector aquifers and extends from Kawela to Punaluu, a distance of about 12 miles. The location of the proposed Punaluu III Well Addition is in the most southeastern portion of the Koolauloa Aquifer, within Punaluu Valley.
2.4 Sustainable Yield and the Windward Water Management Area

In order to evaluate the impacts of developing an additional permanent potable groundwater source on this site, it may be necessary to estimate the sustainable yield of the underlying aquifer system. Sustainable yield is the amount of groundwater that can be removed from an aquifer over a period of many years without the development of serious adverse impacts to the aquifer.

Within the Hawaiian Islands, the sustainable yield of basal aquifers for each island is always less than the average annual rate of recharge to the groundwater aquifer because a small amount of the groundwater is lost through mixing with the underlying salt water. Estimating sustainable yield for the island of Oahu and for its individual aquifers is complex because the amount of groundwater that is mixed with fresh water is dependent upon the degree of aquifer confinement, lens thickness, the amount of agricultural and urban development, and numerous other factors.

The Windward Water Management Area (WMA) has an estimated sustainable yield of 99 mgd. The Hawaii Water Plan Oahu Water Management Plan (OWMP) notes that the total sustainable yield of 99 mgd is distributed among the four aquifers that constitute the Windward sector as follows: Koolauloa Aquifer, 35 mgd; Kahana Aquifer, 13 mgd; Koolaupoko Aquifer, 43 mgd; and Waimanalo Aquifer, 8 mgd. In 1990, the CWRM reported that the total 28.3 mgd of groundwater withdrawn from the four aquifers in the Windward Sector were distributed as follows: Koolauloa Aquifer, 13.6 mgd; Kahana Aquifer, 0.1 mgd; Koolaupoko Aquifer, 13.7 mgd; and Waimanalo Aquifer, 0.9 mgd. The OWMP noted that for planning purposes, there exists a 21.33 mgd surplus of available sustainable yield in the Koolauloa Aquifer.

For the Windward WMA, the CWRM reported that in 1990 only 28.3 mgd of the 99 mgd sustainable yield was being withdrawn in the Windward WMA, but that not all of the remaining 70.7 mgd may be fully available, because groundwater withdrawals may have a direct effect on the stream flows. However, the direct effect upon stream flows does not apply to all wells in the Windward WMA. The effect of groundwater withdrawal on surface water must be determined on a case-by-case basis. Stream gauging may be warranted when water elevation levels in the well and the adjacent streams are similar, or if the well taps dike water which directly supplies stream flow in the upper reaches.

2.5 Potential for Source Development in the Windward Area

According to the OWMP report, the Windward area has a good potential for economic development of sources of potable water supply. The OWMP recommended that, given the current restrictions of the interim instream flow standards, the effort to establish permanent standards should be accelerated to determine the availability of the remaining sustainable
yields. Well development potential is continuing to be evaluated by the BWS in the Koolaupoko and Waimanalo aquifers.

If groundwater withdrawn from the Koolauloa Aquifer reduces the status quo instream flow standards, the BWS would be required to petition the CWRM for an amendment. However, the Punaluu III Well Addition is not expected to affect the flow in Punaluu Stream and it is not expected that the BWS will be required to petition the CWRM for an amendment.

The impact of development of additional sources of potable groundwater in Windward Oahu was evaluated in a separate study entitled *Windward Oahu Regional Water System Improvements*, which was prepared for the BWS and published in 1988.

### 2.6 Existing and Future Water Sources, Storage Facilities, and Transmission System

The BWS reported that in 1985 its Windward Oahu facilities included 16 wells, 8 tunnels, and 4 inclined wells, and 15 reservoirs. The Windward water system begins at the northwest end of the Windward Sector at Hauula, in the Koolauloa Aquifer, and continues southeast through the Kahana and Koolaupoko aquifers, and finally reaches Makapuu in the Waimanalo Aquifer. Water from developed Windward Oahu potable water sources that is not used to service BWS customers on the Windward side may be pumped around Makapuu to Hawaii Kai. BWS’s Windward water system is described in detail in *Windward Oahu Regional Water System Improvements*, published in 1988.

Within the Koolauloa Aquifer, water from the BWS Hauula Well I pump station in Hauula and Punaluu I Well locally serves the Hauula/Punaluu area. Water from Kaluanui Wells, located northwest of Punaluu, enters into the Windward system and is pumped southeast toward Punaluu via a 20-inch transmission main in Kamehameha Highway. At Punaluu, water from the BWS’s pump station sites—Punaluu II Wells and Punaluu III Wells—is added to the Windward system, with connections to the 30-inch transmission main in Kamehameha Highway (see Figure 2-2). Of the approximately 20 existing wells within Punaluu Valley, the BWS operates nine wells at its Punaluu I, Punaluu II, and Punaluu III pump station sites. Records from recent years indicate that the BWS withdraws an average of 5.63 mgd from the nine wells at these sites. Within Punaluu Valley, the BWS also maintains the Punaluu 180 Reservoir, which provides a water storage capacity of 0.5 million gallons (mg) to the Hauula/Punaluu area. Water is pumped via the transmission main in Kamehameha Highway toward Kaneohe, Kailua, and Waimanalo. Any excess water not used on the windward side will be available for other areas.

Future Windward water sources will include the Kaipapau and Maakua wells in Hauula.
2.7 Recommended Water System Improvements

The Windward Oahu Regional Water System Improvements study addressed the impacts of developing proposed new dike impounded groundwater, basal groundwater, or alluvial groundwater on the windward side of Oahu. In the study, the BWS evaluated 46 proposed water development projects (including tunnels, inclined wells, conventional groundwater wells, and one shaft), 19 proposed reservoirs, and proposals for 148,540 linear feet (about 28.1 miles) of additional transmission pipelines.

The BWS’s Windward Oahu Regional Water System Improvements study proposed an additional 17 groundwater well station sites, an additional high-level inclined well or tunnel, and three additional reservoir sites within the Koolauloa Aquifer; of these, six possible well sites and the possible tunnel or inclined well site were located within Punaluu Valley. Beyond the proposed Punaluu III Well Addition, the BWS, at this time, has deferred further well development in the Punaluu and Kahana Valleys.
3.1 Location and Site Characteristics

The proposed project is located in Punaluu Valley, on the windward coast of Oahu, and is located about 1/2 mile mauka of Kamehameha Highway at an elevation of between 60 and 70 feet mean sea level (msl). The proposed exploratory well is to be located within the BWS’s existing 1.97-acre Punaluu Wells III site. Fully developed in 1977, the 1.97-acre site was has a paved asphalt driveway running the entire length of the site, is landscaped with wedelia, and is surrounded by a 6-foot-high chain link fence. The site is secured with a 14-foot-wide double-swing chain link entry gate, chain, and padlocks (see Figure 3-1). The site is accessed by an unpaved 18-foot-wide entry road from Punaluu Valley Road, formerly known as Green Valley Road. A locked gate at Punaluu Valley Road controls access to the unpaved entry road.

Punaluu Valley Road, also unpaved, connects to Kamehameha Highway at a point about 700 feet northwest of the Punaluu Stream Bridge. From Kamehameha Highway inland, Punaluu Valley Road runs mauka for about 1/2 mile and then eastward toward Punaluu Stream for another 1/4 mile to the intersection with the 18-foot-wide entry road to the Punaluu Wells III site.

There are two producing BWS basal/alluvial groundwater wells at the northwest portion of the site. Near the southeast edge of the site, a small one-story structure houses a chlorinator and control devices.

An underground pipe drainage system is used to dispose of water drawn during the periodic testing and water sampling that is done at the two existing well heads. The underground pipe drainage system terminates at a ditch.

Irrigation for the site’s landscaping is maintained by an underground system of water pipes and surface sprinkler heads. Power for the control building is provided via electric lines from Punaluu Valley Road.
PROPOSED PUNALUU III WELL ADDITION SITE

Abandoned Well

FLOW TUBE VAULT

CHLORINATOR AND CONTROL BLDG.

Punalu'u III Well
No. 3453-06

Punalu'u III Well
No. 3453-07

6' HIGH CHAIN LINK FENCE

SITE PLAN

Environmental Assessment
Punalu'u III Well Addition
City and County of Honolulu – Board of Water Supply

NORTH

0 50 100 FEET

FIGURE

3-1
3.2 Technical Characteristics

The Punaluu III Well Addition is proposed to be approximately 400 feet deep and will attempt to extract potable water from the alluvium (see Figure 3-2). The proposed Punaluu III Well Addition, if developed into a production well, is expected to be able to yield up to 0.5 mgd.

The two producing wells located near the northwest edge of the site are designated Punaluu Wells III, No. 3453-06 and No. 3453-07. Each of these wells has a yield of about 1.0 mgd each. They are connected to 12-inch-diameter pipes that feed into the BWS's 16-inch-diameter water main that leads to the Kamehameha Highway. A small one-story control building containing a chlorinator and control devices is located near the southeast edge of the site. The chlorinator is capable of adding chlorine to the water system through a 2.5-inch-diameter pipe system.

DLNR records indicate that Well No. 3453-06 is located at a ground elevation of 66 feet above msl and has a diameter of 16 inches, a depth of 464 feet below msl, and a solid well casing reaching to a depth of 367 feet below msl. Well No. 3453-07 has a diameter of 16 inches and a depth of 498 feet below msl, with the solid well casing, screen, and gravel pack reaching a depth of 118 feet below msl.

The proposed Punaluu III Well Addition discussed in this environmental assessment is similar to the previous exploratory well drilled on this site in 1981 that was subsequently sealed and abandoned. The abandoned exploratory well was approximately 400 feet in depth and was unsuccessful in extracting the needed quantity of water due to a cave-in during drilling. The proposed Punaluu III Well Addition is expected to be successful in yielding the necessary quantity and quality of groundwater because it will be extracting water at a depth of 400 feet, from an alluvial layer, where BWS hydrologists have predicted that there may be adequate yields of groundwater available.

3.3 Construction and Well Testing

The proposed well will be approximately 400 feet deep with the upper 150 feet consisting of a 10-inch-inside-diameter steel casing. The lower 250 feet of the well will consist of a 10-inch-diameter well-screened casing surrounded by a 3-inch layer of gravel. The ground elevation of the proposed well will be 65 feet above msl (see Figure 3-2).
**NOTES:**

1. **Solid Casing:**
   - Material: ASTM A-53 Steel
   - Length: 150 ft.
   - Inside Diameter: 10 in.
   - Wall thickness: 5/16 in.

2. **Screen Casing:**
   - Material: ASTM A-53 Steel
   - Length: 250 ft.
   - Inside Diameter: 10 in.
   - Wall thickness: 5/16 in.

*ASTM=American Society for Testing and Materials*
Drainage from the two existing wells for testing or flushing is provided through the existing 6-inch-diameter drain lines that lead to a ditch at the north corner of the site. This existing drainage system will be used to dispose of water extracted during the yield drawdown test and the pump test.

The yield drawdown test will be conducted after the proposed well is drilled and temporary diesel or electric pumps and pipelines are connected. The yield drawdown test will be performed at a rate of 200 to 700 gallons per minute. Following the yield drawdown test, a long-term constant rate pump test will be conducted for a period of several days at the rate determined from the yield drawdown test. Water table drawdown rates will be measured and the quality of water will be tested.

Should the quantity and quality of the water prove to be satisfactory, the proposed well will be temporarily capped. Subsequent to the completion of satisfactory tests, a permanent pump with the necessary pipelines and the electrical and mechanical controls will be added to the existing Punaluu III Wells pump station facilities. If the pump tests prove to be unsatisfactory, the well will be sealed and/or capped. In either case, when the yield drawdown and long-term constant rate pump tests are completed, the temporary pumps and pipelines will be removed from the site and all surplus excavation material and construction debris will be removed and disposed of offsite in compliance with applicable City and County of Honolulu regulations.

3.4 Project Schedule, Cost, and Work Force

The construction and testing of the proposed Punaluu III Well Addition is expected to begin in late 1994. The capital cost for the exploratory well construction and testing portion of this project is estimated at $225,000.00. Drilling will be completed in about 6 months. Installation of the casing will take about a week and another 2 to 3 weeks will be required to install the temporary pump and run the test pumping. Demobilization may take up to 2 weeks. The duration of the exploratory well construction and testing portion of this project is therefore estimated to be about 8 months. If the well testing is successful, the well will be added as the third production well to this existing Punaluu III Wells facility. The addition of this third production well to the existing facility is expected to take up to one additional year to complete at an additional estimated cost of $1.2 million. Work crews will probably involve no more than 12 workers at any one time.
Chapter 4
Environmental Setting, Potential Impacts, and Mitigation

4.1 Land Use and Ownership

4.1.1 Existing Environment

Land use in this area is predominantly agricultural. Open lands, pasture, and small fields of banana and guava surround the site. A small horse stable is located adjacent to the access road leading to the site. The BWS site, as well as the surrounding area, was formerly sugar cane land cultivated by the Punaluu Sugar Company. The area has been heavily modified, first by the commercial cane cultivation around or before the turn of the century, and subsequently by diversified agriculture after the closing of the sugar company.

The 1.97-acre site, located within Punaluu Valley, is identified on Tax Map Key 5-3-07: 14, and was transferred to the BWS by Executive Order No. 02711 from the State of Hawaii. The access road from Punaluu Valley Road to the site is located on an easement in favor of the BWS, on privately-owned property identified by Tax Map Key 5-3-07:16. Many of the local farmers within Punaluu Valley lease land from the Bernice Pauahi Bishop Estate. The lands surrounding the BWS site are privately owned.

4.1.2 Project Impacts

Installation of the Punaluu III Well Addition will not change any of the surrounding land uses and ownership patterns.

4.1.3 Mitigation Measures

No mitigation measures are proposed or required.

4.2 Topography, Climate, and Rainfall

4.2.1 Existing Environment

The site is nearly flat, with a slope of less than 4 percent, and is located near the base of Punaluu Valley about 1/2 mile from the shoreline.

The temperature ranges from 74 to 75 degrees Fahrenheit in March and from 79 to 80 degrees Fahrenheit in September. A northeasterly trade wind is prevalent throughout most of the year. In Hawaii, the term "windward" generally refers to the normal direction of this
prevailing trade wind, and not the direction of the wind at a specific time. The northeast trade wind occurs with higher frequency in the summer, about 90 percent of the time, as compared to winter, when it occurs only about 50 percent of the time.

Rainfall averages more than 250 inches per year at the top of the Punaluu Valley near the upper ridge line of the Koolau Mountain range (at an elevation of about 2,700 feet), making the upland portion of this valley the wettest spot on the island of Oahu. The high rainfall at this elevation is the result of mountain-caused or "orographic" rains that form as the moist trade wind air moves in from the sea along the floor of the valley and up the steep mountain slopes (see Figure 4-1). Rainfall distribution closely follows the topographic contours, with higher rainfall at the upper slopes and lower rainfall at lower elevations. The site is located near the foot of the valley at an elevation of approximately 60 to 70 feet above msl and has an average rainfall of about 75 inches per year.

4.2.2 Project Impacts

Installation of the well addition would not have any significant effect on the topography, climate, or rainfall in the area.

4.2.3 Mitigation Measures

No mitigation measures are proposed or required.

4.3 Geology and Hydrology

4.3.1 Geology

The proposed Punaluu III Well Addition site is located within Punaluu Valley and overlies the Koolauloa Aquifer system. The Koolauloa Aquifer system is generally composed of a major basal aquifer in highly permeable geologic formations and high-level, dike-confined aquifers in the mountainous areas.

Geological studies of Punaluu Valley indicate that the mauka portions of the valley consist of dike-complex basalts of the Koolau volcanic series. The vast midsection of Punaluu Valley consists of marginally dike-intruded basalts. The makai portion of the valley consists of dike-free basalts.

The soil at the surface of the proposed Punaluu III Well Addition site is classified as Waialua stony silty clay (WIB) by the U.S. Soil Conservation Service and is characterized as having moderate shrink-swell potential, moderate permeability, low shear strength, slow runoff, and slight erosion hazard.
4.3.2 Groundwater Hydrology

The highest yields of basal groundwater are expected in the makai areas where there are unconfined or confined basaltic aquifers. In the areas closer to the shoreline where there are confined dike-free basalts, the caprock, which is formed of alluvial deposits, is the barrier that retards the seaward flow of basal groundwater (see Figure 4-1). Moderate yields of basal groundwater may be expected in those areas further upland where marginally dike-intruded basalts predominate. Lower yields of basal groundwater may be expected further up slope in the those areas where dike-complex basalts become more and more predominant.

Throughout the upper and middle section of Punaluu Valley, dikes trend in a northwest to southeast direction, transverse to the axis of the valley. In much the same way, groundwater flows from Punaluu Valley toward the northwest and southeast. Groundwater also spills from higher dike compartments to progressively lower dike compartments in the northeasterly direction, which is more or less in line with the axis of the valley, and results in a groundwater flow toward the shoreline that recharges the basal aquifer near the coast.

Aquifers may also occur within alluvial deposits and could consist of pervious layers of rock sandwiched between layers of relatively less pervious sediment. Alluvial groundwater is derived from percolated rainfall and surface water and small amounts of basal water that have leaked through the caprock. In 1981, the BWS drilled a 400-foot-deep exploratory well in the Punaluu III Wells site in an attempt to draw water from the alluvium, but this was unsuccessful because a cave-in during drilling caused the quantity of groundwater to be inadequate for development of a production well.

Within the Punaluu area, there are approximately 20 wells, nine of which are operated by the BWS. The nine BWS wells are distributed among three pump stations: Punaluu I, Punaluu II, and Punaluu III. Records from recent years indicate that the BWS withdraws an average of 5.63 mgd from these three pump stations.

Both Well No. 3453-06 and Well No. 3453-07, located within the Punaluu III pump station, are located over a basaltic aquifer confined by an overlying alluvium layer. Well No. 3453-06 draws groundwater from the basaltic bedrock while Well No. 3453-07 draws water both from the basaltic bedrock and from the alluvium. Records from the drilling of Well No. 3453-06 and Well No. 3453-07 showed that a 413-foot layer of alluvium overlies the basaltic bedrock layer.

The proposed Punaluu III Well Addition will be drilled to a depth of 400 feet and will attempt to develop water from the alluvium.
If the pump test results indicate that the quality or quantity of the water is unsatisfactory, the exploratory well will be permanently capped and/or sealed to prevent malicious or accidental contamination of the underlying groundwater aquifers.

### 4.3.3 Surface Water Hydrology

The Punaluu Valley drainage basin flows into Punaluu Stream, a perennial waterway approaching 70 feet in width in the upper reaches and with an average channel depth of 10 feet. Punaluu Stream is a "gaining stream," meaning that, as it progresses downgradient from the head of the valley toward the coastline, the stream’s flow gradually increases as it successively cuts through and drains high-level, dike-confined groundwater.

Impacts on Punaluu Stream are not expected during the test pumping or production pumpage of proposed Punaluu III Well Addition. Punaluu Stream is located about 1,500 feet southeast of the project area. The U.S. Geological Survey operates a stream flow gauge within the Punaluu Ditch (No. 302000) and a gauge within Punaluu Stream (No. 303000) makai of the stream diversion. Both gauges are located about 2 miles upstream from the mouth of the stream. The mean flow for the Punaluu Ditch diversion was 7.03 cubic feet per second (cfs) (4.5 mgd) for the period from 1953 to 1991. For the same period, the mean flow for the Punaluu Stream downstream from the diversion was 17.70 cfs (11.4 mgd).

Punaluu Stream in this vicinity has an invert of about 20 feet above msl and is perched over horizontal layers of low-permeability alluvium. These horizontal layers of low-permeability alluvium serve to isolate the water flowing in Punaluu Stream from the underground alluvial groundwater found at considerably lower depths. The Punaluu III Well Addition is proposed to be cased to a depth of about 400 feet (about 335 feet below msl) within the alluvium, with the screened intake section of the well extending from about 85 feet below msl to the bottom of the well. The water withdrawn from the alluvium from 85 feet below to 335 feet below msl due to the pumping of this well is not expected to affect the water flowing in Punaluu Stream because of the approximately 105 feet separating the screened intake section of the well from the stream’s invert, and because of the intervening layers of low-permeability alluvium.

There is no potential for impacts upon the Kahuku Wetlands and the Kahana Valley Wetlands. The Kahuku Wetlands in the James Campbell National Wildlife Refuge in Kahuku and the Kahana Valley Wetlands in Kahana Bay are the nearest significant wetlands to the proposed exploratory well site (An Ornithological Survey of Hawaiian Wetlands, U.S. Army, 1977). There is no potential for impact because the Kahuku Wetlands are located about 8 miles northeast of the project site along the shoreline, and the Kahana Valley Wetlands are located about 2 miles southeast of the project site, also along the shoreline. These wetlands are mostly brackish because caprock springs are their source of fresh water.
(the springs are fed by leakage of confined basal groundwater from below), and because they are adjacent to the shoreline (*Windward Oahu Regional Water System Improvements*, 1988). The Punaluu III Well Addition site and the Kahuku Wetlands are both located within the Koolauloa Aquifer system.

Further, there is no potential for impact to the Kahana Valley Wetlands because the wetlands are not located in the same aquifer system as the proposed Punaluu III Well Addition. The proposed Punaluu III Well Addition is located in the Koolauloa Aquifer system, and the Kahana Valley Wetlands are located in the Kahana Aquifer system. The Koolauloa Aquifer and the Kahana Aquifer have been designated as distinctly separate and independent aquifers by the CWRM (Appendix C of the OWMP).

Water from the test pumping will be discharged into the existing drainage system on the Punaluu Wells III site. It is expected that the water that will be discharged will be clean, and therefore will not introduce any pollutants into the environment. The existing drainage system feeds into a culvert at the northeast comer of the site. Care will be taken in disposing of the test water to preclude the possibility of flushing debris into the ditch or resuspending sediments and other pollutants in the ditch.

### 4.3.4 Project Impacts

No adverse impacts to the geological formations underlying the drilling site for the exploratory well or to the soils at the surface of the site are expected. Impacts to the groundwater and surface water flows are expected to be insignificant.

### 4.3.5 Mitigation Measures

During the test pumping, care would be taken in disposal of the test water to preclude the possibility of flushing debris into the ditch or resuspending sediments and other pollutants into the ditch. Best Management Practice (BMP) will be implemented and therefore a National Pollutant Discharge Elimination System (NPDES) Permit will not be required.

If the pump tests results indicate that the quality or quantity of the water is unsatisfactory, the exploratory well would be capped and/or sealed to prevent malicious or accidental contamination of the underlying groundwater aquifer.

No monitoring of Punaluu Stream is needed since pumpage of this well will not affect stream flows within Punaluu Stream. There will be no effects because there will be a large elevation difference separating the water in the well from the invert of the stream, because there are intervening layers of low permeability alluvium, and because the stream is located 1,500 feet away.
4.4 Natural Hazards

4.4.1 Flood Zones

The proposed Punaluu III Well Addition site is located northeast of Punaluu Stream. The Flood Insurance Rate Map (FIRM) shows that detailed studies for flood hazards have been made for the lower reach of Punaluu Stream for the approximately 1,500-foot portion nearest the mouth of the stream. These detailed flood hazard studies show the floodway, and the special flood hazard areas that would be inundated by a 500-year (0.2 percent probability) flood extend out from the center of the stream for a distance of 300 to 1,600 feet near the mouth of the stream and for 600 to 800 feet at the upper limit of the study area.

At approximately the ground elevation where the FIRM study shows that the 500-year flood hazard area extends out from Punaluu Stream to a distance of 800 feet, the proposed Punaluu III Well Addition site is more than 1,500 feet northeast of Punaluu Stream. Thus, the proposed Punaluu III Well Addition site is not located within the FIRM-designated 500-year flood hazard area extending from Punaluu Stream and is more than 700 feet away from the edge of the 500-year flood hazard area.

In the Punaluu area, FIRM-designated coastal flooding areas extend about 300 to 600 feet inland from the shoreline. The proposed Punaluu III Well Addition is about 1/2 mile inland from the shoreline and is not located in any FIRM zone identified as being susceptible to coastal (tsunami) flooding.

4.4.2 Seismic Activity

Under the Uniform Building Code (UBC), the island of Oahu is designated as Seismic Zone 1; in a scale from 1 to 4, this is the zone with the least potential for ground motion from seismic events. The UBC establishes minimum design criteria for structures to resist the effects of seismic ground motion, in accordance with the standards for the seismic zone in which the structure is to be built. In the interest of public health and safety, the BWS has adopted the standards for Seismic Zone 3 for all of its structures. All structures that will be built as part of this project will be designed and built in accordance with the UBC standards for Seismic Zone 3.

4.4.3 Project Impacts

The proposed project would not affect and would not be affected by flooding. Seismic risk at the project site is minimal. The proposed project would not affect seismic activity and would not likely be affected by seismic activity.
4.4.4 Mitigation Measures

As a public health and safety measure, the BWS has adopted the standards for Seismic Zone 3 for the design and construction of all the structures that would be a part of this project.

No other mitigation measures are proposed or required.

4.5 Demographics

4.5.1 Population, Housing, and Employment

The project area is located in Census Tract 102.01, which extends from Hauula to Kaaawa. According to U.S. Census reports, the population in this tract increased 17 percent from 1980 to 1990, from 3,952 to 4,608. In 1990, the U.S. Census reports showed that there were 1,826 housing units in this tract. The resident population of Punaluu, which comprises a portion of this tract, was reported to be 672 in 1990. Many of the jobs in Punaluu are agricultural.

4.5.2 Project Impacts

Existing and future population, housing, and employment in the Punaluu area would not be affected by this project. The proposed Punaluu III Well Addition project would involve a limited amount of new construction work entirely within the BWS property; however, this work would be temporary and would probably be conducted by contractors from outside the Punaluu area.

4.5.3 Mitigation Measures

No mitigation measures are proposed or required.

4.6 Roadways and Traffic

4.6.1 Roadways and Traffic

Punaluu Valley Road, a private roadway, is the only access from Kamehameha Highway to the proposed project site. Kamehameha Highway is a two-lane state highway with a speed limit of 35 miles per hour (mph). According to the Hawaii Department of Transportation, average daily traffic on Kamehameha Highway in 1991 amounted to 10,713 in the section
from Hauula to Kaaawa. Kamehameha Highway traffic consists of a mix of automobiles, trucks, and buses. Because there are relatively few residents and farmers living and working in the area accessed by Punaluu Valley Road, traffic on this unpaved roadway is expected to continue to be very light.

4.6.2 Project Impacts

The project would cause a slight and temporary increase in heavy truck traffic. No significant or long-term impacts to either Kamehameha Highway or Punaluu Valley Road are expected as a result of this project.

4.6.3 Mitigation Measures

To minimize traffic impacts, the contractor would schedule heavy truck activity between the hours of 8:30 am to 3:00 pm, Monday through Friday, excluding state holidays.

4.7 Visual and Recreational Resources

4.7.1 Visual Resources and Recreational Resources

The City and County of Honolulu’s Coastal View Study (1987) notes that the proposed project is located in the Laie/Kaaawa viewshed. In the vicinity of the project area, Kamehameha Highway, located about 1/2 mile makai of the project site, is identified as a coastal roadway with a significant coastal view. The public recreational area closest to the proposed project site is Punaluu Beach Park, which is located on the shoreline and about 3/4 mile away. The Coastal View Study also identifies significant stationary ocean views at Punaluu Beach Park.

4.7.2 Project Impacts

The proposed project site is not visible from Kamehameha Highway or Punaluu Beach Park. The significant coastal views identified in the Coastal View Study from Kamehameha Highway and Punaluu Beach Park would not be affected.

Because the project site and Punaluu Beach Park are separated by a distance of about 3/4 mile, the Punaluu Beach Park recreational area would not be affected by this proposed project.
4.7.3 Mitigation Measures

No mitigation measures are proposed or required.

4.8 Cultural Resources

4.8.1 Cultural Resources

An archaeological reconnaissance survey was conducted by Cultural Surveys of Hawaii on April 7, 1994. The results of the archaeological reconnaissance survey and related research are found in Appendix A of this report.

The property, as well as the surrounding area, is all former sugar cane land of the Punaluu Sugar Company. The site was heavily modified, first by the commercial cane cultivation around or at the turn of the century and then following the closing of the sugar company, by diversified agriculture. *Sites of Oahu* lists five heiau and one fishpond within the *ahupuaa* of Punaluu. None of these sites are located in the vicinity of the project site. The closest site, Site 291, is known as *Maka Heiau* and is shown in *Sites of Oahu* as being at the base of a ridge northeast of the proposed project site; Site 291 was partially destroyed by sugar cane cultivation.

Because of the extensive modification done to the proposed project site by grading, and because of the existence of farm lots consisting of pasture on the mauka side of the site, guava orchards on the makai side, a banana patch on the south side, and secondary tree growth on the north side, it is probable that the proposed project site was agricultural land before its development in 1977.

4.8.2 Project Impacts

The results of the fieldwork show that this project area is devoid of archaeological potential. The proposed development of this site would not result in any impact on archaeological resources.

4.8.3 Mitigation Measures

No mitigation measures are proposed or required.
4.9 Biological Resources

4.9.1 Botanical Resources

A botanical reconnaissance survey was conducted by Char and Associates on April 7, 1994. The results of the botanical reconnaissance survey and related research are found in Appendix B of this report.

The proposed project site is fenced, and the area within the fence is periodically mowed. The "lawn" is made up primarily of wedelia, a low-growing ground cover species with yellow, daisy-like flowers, and Spanish clover of ka’imi, a common pasture legume. Scattered through the wedelia and Spanish clover ground cover are patches of sensitive plant or puahilahila, and yellow foxtail grass. A number of weedy species have encroached onto the perimeter of the site from the surrounding guava orchard and pasture land. These include California grass, cow pea, honohono, pluchea, virgate mimosa, and oriental hawksbeard. A few small mowed specimens of koa-haole about 6 inches tall are found throughout the site.

Coarse gravel has been spread around the two existing wells and a brown-colored hollow tile building. These gravel areas are largely barren with only a few scattered patches of weeds, which consist mainly of buttonweed, niruri, and fir-leaved celery.

The adjacent properties support a guava orchard and pasture land used for grazing cattle and horses. Historically, the proposed project site was cultivated with sugar cane.

None of the plants found on the site are candidates for threatened or endangered species status, and none are listed or proposed as threatened and endangered species (U.S. Fish and Wildlife Service, 1989, 1990, 1994).

None of the plants are considered rare or vulnerable (Wagner et al., 1990). The only native plant observed on the site is ricegrass, which is questionably indigenous—that is, it is a species for which a date of introduction or other information does not firmly support that it was dispersed to Hawaii by natural or human-related mechanisms but for which the weight of evidence suggests that it is probably indigenous (Wagner et al., 1990). Ricegrass can be found is similar habitats throughout the Hawaiian islands.

4.9.2 Faunal Resources

Faunal (bird and mammal) reconnaissance surveys were conducted by Philip L. Bruner, environmental consultant, on April 7 and 12, 1994. The results of this bird and mammal reconnaissance surveys and related research are found in Appendix C of this report.
No native resident land birds were observed during the surveys. The only native resident land bird that may occasionally occur in this area and at this elevation is the short-eared owl or *Pueo*. *Pueo* is listed as an endangered species on the island of Oahu by the Hawaii Division of Forestry and Wildlife. No *pueo* were recorded on the surveys. The number of *pueo* on Oahu is probably quite low, and their present abundance in the areas covered in this survey is unknown.

One resident waterbird, a black-crowned night heron, was seen flying over the property. This waterbird is not listed as endangered. Habitat suitable for waterbirds does not occur at the proposed project site, but nearby lands consisting of taro patches, flooded pasture, and stream drainages do contain some wetland habitat suitable for waterbirds. The nearest wetlands that provide significant wetland habitat for waterbirds are the Kahuku Wetlands in the James Campbell National Wildlife Refuge in Kahuku and the Kahana Valley Wetlands in Kahana Bay (*An Ornithological Survey of Hawaiian Wetlands*, 1977). The Kahuku Wetlands are located about 8 miles northeast of the project site along the shoreline, and the Kahana Valley Wetlands are located about 2 miles southeast of the project site, also along the shoreline.

No seabirds were observed during the surveys of the site. The site is unsuitable for seabirds because of predator access and human disturbance.

One migratory indigenous bird species, the Pacific golden plover, which is the most abundant of the migratory species seen in Hawaii, was recorded on the proposed project site. Plovers establish territory on lawns and other habitats, and studies have shown that they return to the same territory each year. Plovers arrive in Hawaii from arctic breeding grounds in August and remain until spring migration in late April.

A total of 12 exotic bird species were recorded on the site during the survey. This variety of exotic bird species was expected for this area. Four other species of exotic bird species were not observed but are also known to be in this region.

One feral mammal, the introduced small Indian mongoose, was observed near the site. Other small mammals such as rats, mice, and feral cats are undoubtedly common in this area.

Oahu records of the endemic and endangered Hawaiian hoary bat are limited. Data on the bat’s distribution and behavior are extremely limited. They are known to roost solitarily in trees and occur in upland forests as well as in coastal habitats. This species is insectivorous and forages at dusk. No hoary bats were observed at the proposed project site.
4.9.3 Project Impacts

There are no sensitive native plants communities on the project site. The proposed project would not have any affect on any significant biological resources.

There were no sensitive bird or mammal resources observed on or near the project site. The proposed project would have no impact on any significant bird or mammal resources.

4.9.4 Mitigation Measures

For both botanical and faunal resources, no mitigation measures are proposed or required.

4.10 Air Quality and Noise

4.10.1 Air Quality and Noise

The air on Oahu is, in general, relatively clean and low in pollution, except where there are large numbers of motor vehicles or stationary pollution sources. In the Punaluu area near the project site, air pollution is minimal as a result of the low traffic volumes, absence of stationary pollution sources, and predominance of the northeast trade winds. Ambient noise at and around the project site is also very low and comes mainly from nearby farming operations.

4.10.2 Project Impacts

The project would not have any significant impacts to air quality. Construction would involve heavy vehicle and equipment operations that would create a small amount of fugitive dust and pollutant emissions. The effects on air quality would be short-term, with the pollutants generated by the construction and other activities quickly dispersed by the predominantly northeast trade winds. There would be no long-term air quality impacts once construction is completed.

The project would not have any significant noise impacts that would affect sensitive noise receptors. Construction, including heavy equipment moving, and the drilling of the exploratory well, would create a small amount of noise; however, because all of the surrounding land uses are agricultural, there are no significant sensitive noise receptors near the project site. To reduce pump noise, temporary surface pumps may be installed with mutes which will reduce pump noise. Submersible pumps, which will reduce pump noise even further, may also be used. If the pump tests are successful, permanent surface pumps with mutes or submersible pumps may be installed to reduce noise levels to less than the regulatory limit. There would be no noise impacts after the construction is completed.
On the island of Oahu, community noise controls have been set for analyzing noise impacts pursuant to Hawaii Department of Health Rules, Title 11, Chapter 43. Allowable daytime and nighttime noise level standards for residential, preservation, hotel, apartment, and business, agricultural, and industrial districts have been set under these rules. For agricultural zones, the maximum allowable daytime and nighttime noise level is 70 dBA at the property line. The project site is located in and is surrounded by lands in the AG-2, General Agricultural zone and is thus limited to a maximum allowable noise level of 70 dBA at the property boundary. While operating, permanent pumps generate a limited amount of noise.

4.10.3 Mitigation Measures

To minimize adverse air quality impacts, the contractor would properly maintain its internal combustion equipment to minimize exhaust emissions and would comply with the Hawaii Department of Health Rules Title 11, Chapter 59 and 60, regarding air pollution control.

For noise impacts, the contractor would properly maintain the noise mufflers on its internal combustion equipment to reduce noise during drilling operations, and would comply with the Hawaii Department of Health Rules, Title 11, Chapter 43, regarding noise control for the island of Oahu. To reduce pump noise, temporary surface pumps may be installed with mutes which will reduce pump noise. Submersible pumps, which will reduce pump noise even further, may also be used. If the pump tests are successful, permanent surface pumps with mutes or submersible pumps may be installed to reduce noise levels to less than the regulatory limit.
Chapter 5
Relationship to Land Use Designations and Controls

5.1 State Land Use Designations and Controls

The subject property is located within the State Land Use Agricultural District. Land use controls for the development of wells in the agricultural districts on the island of Oahu are under the jurisdiction of the City and County of Honolulu.

A well construction pump installation and water use permit will be required from the Commission on Water Resource Management (CWRM).

5.2 City and County of Honolulu Land Use Designations and Controls

The subject parcel is designated Agriculture on the City and County of Honolulu's Development Plan Land Use Map (Ordinance No. 83-9, as amended) and is consistently shown as AG-2, General Agricultural, on the City and County of Honolulu's zoning map (Ordinance 86-121, as amended). According to the City and County of Honolulu's Land Use Ordinance (LUO), the proposed project is considered a Utility Installation, Type A, and is a principal permitted use in this zoning district.

Projects funded by the City and County of Honolulu must be consistent with the City and County of Honolulu's Development Plan Public Facilities Map. Exploratory wells are considered minor and are not required to be shown on the Development Plan Public Facilities Map. The proposed Punaluu III Well Addition, if it is converted to a production well, will be consistent with the City and County of Honolulu's Development Plan Public Facilities Map (Ordinance No. 83-9, as amended) since the site shown as a "site determined water well facility programmed for construction within 6 years."

A building permit will be required from the City & County of Honolulu Building Department.
Chapter 6
Possible Alternatives

The no-action alternative, the delayed action alternative, alternative sites, and alternative sources were considered either in this environmental assessment or in previous environmental analyses done by the BWS.

6.1 No-Action Alternative

The no-action alternative was considered but not pursued because it would be contrary to the BWS’s legal mandate to provide for the water needs of a growing population.

This project is part of an overall groundwater development program intended to increase the municipal water supply to meet the growing demands of an increasing population. If the BWS’s program to develop new water sources is curtailed, the BWS would not be able to provide adequately for the future water needs of Oahu’s population. Inadequate municipal water supplies could result in future restrictions to development on Oahu as well as regional water shortages within the existing developed areas.

6.2 Delayed Action

The delayed action alternative was considered but not pursued because this alternative would delay the BWS’s implementation schedule and would have substantially similar environmental outcomes and higher development costs because of inflation.

Delay in the proposed well testing program would increase the risk that population growth on Oahu will lead to increasing water demands in excess of the available supplies.

6.3 Alternative Sites

This environmental assessment analyzes one of many possible potable groundwater source sites in the Windward Sector of Oahu, where, according to the OWMP, there is good potential for economic development of potable water supply sources.

Alternative sites were considered in a 1988 Windward Oahu Regional Water System Improvements Study, the BWS conducted an analysis of 46 potential sites for wells, tunnels, or inclined tunnels on the windward side of Oahu that could be used for developing
additional potable water sources. In this 1988 analysis, the BWS evaluated six possible wells sites and one possible tunnel or inclined well site within Punaluu Valley.

These sites have the potential to serve as groundwater supply sources but are considered by the BWS to be additional rather than alternative sites for its well testing program.

6.4 Alternative Sources

Alternative source development has been and is being pursued by the BWS. The BWS has already analyzed potential potable water source alternatives other than groundwater in its 1988 study; these alternatives included desalinization, the development of surface and brackish groundwater sources, and the recycling of treated wastewater.

However, there are a number of problems associated with the development of alternative potable water sources. Typically, these alternative sources have comparatively high development costs and greater technical challenges. For instance, the use of surface water such as from Punaluu Stream has a high potential for health and safety problems and would require installation of a costly water treatment plant. The BWS, although pursuing alternative source development, does not consider the development of these alternative sources to be as feasible or as practical as the development of groundwater resources. Thus, BWS’s emphasis for obtaining potable water for municipal use will continue to focus primarily on the development of groundwater resources.
Chapter 7
List of Preparers

CH2M HILL

Robert Chuck, P.E.  Project Administrator and Senior Reviewer
Clyde Kaneko
Bennett Mark, P.E., A.I.C.P
Ann Sihler
Mara Soloway

SUBCONSULTANTS

Phillip L. Bruner  Faunal (Bird and Mammal) Resources
Char and Associates  Botanical Resources
Cultural Surveys Hawaii  Archaeological and Cultural Resources
Chapter 8
Agencies Consulted in Making this Assessment

The following agencies were consulted during the preparation of the draft environmental assessment for this project:

State of Hawaii agencies

- Department of Land and Natural Resources
  - Commission on Water Resources Management
- Department of Agriculture
- Department of Health
  - Environmental Management Division
  - Office of Environmental Quality Control

City and County of Honolulu agencies

- Planning Department
- Land Utilization Department
Chapter 9

Works Cited


U.S. Department of Agriculture, Soil Conservation Service in cooperation with the University of Hawaii Agricultural Experiment Station. August 1972. Soil Survey of Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii.

Appendix A
Archaeological Reconnaissance Survey of Punaluu Well III for Additional Installations, Punalu‘u, Ko‘olauloa, O‘ahu TMK 5-3-07:14

by

Hallett H. Hammatt, Ph.D.

for

CH2M Hill

Cultural Surveys Hawaii
July 1994
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I. INTRODUCTION

Introduction

The purpose of this report is to describe the results of an archaeological reconnaissance survey conducted at Punaluu Well No. 3. The Board of Water supply is proposing to expand the facility at this well site to include an additional well, a pump, transmission main, and other equipment. This will add an additional .5 million gallons per day to the production of the well.

Description of the Property

The property was located next to Punaluu Valley Road (Fig. 1), formerly known as Green Valley Road at the 40 ft. elevation, approximately 1,000 ft. from Punaluu Stream. The well site is a fully developed facility with an entry road from Punaluu Valley Road and a graded and fenced lawn area of approximately 2 acres (Fig. 2). There is an existing building in the makai center portion of the property (Fig. 3). The well site was developed in 1977. The address is 53-320 Punaluu Valley Road. The name of the property is "Keolanui's Acres."

History of the Property

The property, as well as the surrounding area, is all former sugar cane land of Punaluu Sugar Co. and was heavily modified, first for commercial cane cultivation around or before the turn of the century, and since the closing of the sugar company, has been used for diversified agriculture. Many of the local farmers lease land from the Bishop Estate. An inspection of Sites of O'ahu by Sterling and Summers, list 5 heiau and one fishpond within the ahupua'a of Punaluu. None of these sites are in the vicinity of the project area. The closest site, Site -291, is known as Maka Heiau and is shown on Sterling and Summers's map as being at the base of a ridge northeast of the subject property and was partially destroyed by sugar cane cultivation (Sterling and Summers 1978:166).
II. ARCHAEOLOGICAL FINDINGS

Archaeological Fieldwork

Archaeological fieldwork was conducted on April 7, 1994 and consisted of an inspection of the existing well site by Hallett H. Hammatt, accompanied by other consultants and associates of the Board of Water Supply and CH2M Hill. Through inspection of the access road as well as of the well site it was very clear that the entire area has been previously graded. Surrounding the fenced property are farm lots consisting of pasture on the *mauka* side, guava orchard on the *makai* side, a banana patch on the south side and secondary tree growth on the north side. It is highly probable that the well site itself was agricultural land before its development in 1977.

Conclusions

It is clear from the results of the fieldwork, that this project area is devoid of archaeological potential. The proposal for additional development of this site, will not impact archaeological resources. For these reasons, no further archaeological investigation should be required for this project.
Figure 2  Project Area View to Northwest, Showing Perimeter Fence and Surrounding Terrain

Figure 3  Project Area, View Makai (Northeast) Showing Existing Building within The Well Site Property
Appendix B
An assessment-level survey of the botanical resources found on the Punalu'u Well III project site was conducted by Char & Associates on 07 April 1994. The primary objectives of the field studies were to: 1) provide a general description of the vegetation; 2) search for threatened and endangered species as well as rare and vulnerable plants; and 3) identify areas of potential environmental problems or concerns and propose appropriate mitigation measures. The information from the botanical studies will be used the preparation of an Environmental Assessment (EA) document.

The Punalu'u Well III addition is located in Punalu'u Valley at about the 40 foot elevation contour on an existing Board of Water Supply site. The proposed work for the project will involve installation of one pump, piping, transmission main, electrical equipment, and appurtenances. The addition is needed to meet future demands.

DESCRIPTION OF THE VEGETATION

A walk-through survey method was used. Notes were made on plant associations and distribution, substrate types, topography,
Drainage, exposure, etc. Plant identifications were made in the field; plants which could not be positively determined were collected for later identification in the herbarium, and for comparison with the taxonomic literature. The plant names used in the following discussion are in accordance with the most recent treatment of the Hawaiian flora by Wagner et al. (1990).

The Board of Water Supply site is fenced and the area within the fence periodically mowed. The "lawn" is composed primarily of wedelia (Wedelia trilobata), a low-growing ground cover species with yellow, daisy-like flowers, and Spanish clover or ka'imi, a common pasture legume. Scattered through the wedelia/Spanish clover ground cover are patches of sensitive plant or puahilahila (Mimosa pudica), and yellow foxtail grass (Setaria gracilis). Around the perimeter of the property, a number of weedy species have encroached onto the site from the surrounding guava orchard and pasture land. These include California grass (Brachiaria mutica), cow pea (Macroptilium lathyroides), honohono (Commelina diffusa), pluchea (Pluchea symphytifolia), virgate mimosa (Desmanthus virgatus), and oriental hawksbeard (Youngia japonica).

A few small mowed specimens of koa-haole (Leucaena leucocephala), about 6 inches tall, are found throughout the well site.

A paved road (asphalt) runs the length of the property to the two wells. Along this road is a narrow band of vegetation, 3 to 6 ft. wide, which consists of mixed grasses and herbs. Bermuda grass or manienie (Cynodon dactylon) along with fimbriate paspalum (Paspalum fimbriatum) are common here. Other species include sensitive plant, Spanish clover, yellow foxtail, Henry's crabgrass (Digitaria ciliaris), Hilo grass (Paspalum conjugatum), false daisy (Eclipta alba), artillary plant (Pilea microphylla), and Indian dropseed (Sporobolus indicus).

Course gravel has been spread around the two wells and a brown-
colored concrete building. These gravel areas are largely barren with only a few scattered patches of weeds which consist mainly of buttonweed (*Spermacoce assurgens*), niruri (*Phyllanthus debilis*), and fir-leaved celery (*Ciclospermum leptophylla*).

**DISCUSSION AND RECOMMENDATIONS**

A weedy "lawn" composed primarily of wedelia and Spanish clover is found on the fenced Punalu'u Well III site. The vegetation is periodically maintained. The adjacent properties support a guava orchard and pasture land used for grazing cattle and horses. Historically, the area was under sugar cane cultivation (H. Hammett, pers. comm.).

Because the project site as well as the surrounding areas are disturbed there are no sensitive native plant communities on the project site. None of the plants found on the site are listed, proposed or candidate threatened and endangered species (U.S. Fish and Wildlife Service 1989, 1990, 1994). None of the plants are considered rare or vulnerable (Wagner et al. 1990). The only native plant observed on the site is ricegrass (*Paspalum scrobiculatum*), which is questionably indigenous, that is, it is a species for which a date of introduction or other information does not make for a clear argument for its dispersal to Hawai'i by natural or human-related mechanisms, but for which the weight of evidence suggests that it is probably indigenous (Wagner et al. 1990). It can be found in similar environmental habitats throughout the Hawaiian Islands.

Given the findings above, the proposed additions to the Punalu'u Well III site are not expected to have a significant negative impact on the botanical resources. There are no botanical reasons to impose any restrictions or conditions to these additions. No recommendations concerning the botanical resources are proposed at this time.
References


Appendix C
AVIFAUNAL AND FERAL MAMMAL SURVEY FOR A BOARD OF WATER SUPPLY EXPLORATORY WELL SITE AT PUNALUU, OAHU

Prepared for
CH2M Hill

by

Phillip L. Bruner
Assistant Professor of Biology
Director, Museum of Natural History
BYU-Hawaii
Environmental Consultant - faunal (Bird & Mammal) Surveys

19 April 1994
INTRODUCTION

The purpose of this report is to summarize the findings of a bird and mammal field survey of a proposed well site conducted on 7, 12 April 1994 at Punaluu, Oahu (Fig. 1). Also included are references to pertinent literature.

The objectives of the field survey were to:

1- Document what bird and mammal species occur on and near the property, or may likely be found there given the type of habitats available.

2- Determine the presence or likely occurrence of any native fauna, particularly any that are considered "Endangered" or "Threatened".

3- Evaluate the quality of the habitats for native wildlife and note any special or unique resources.

GENERAL SITE DESCRIPTION

Figure One indicates the location of the area surveyed for birds and mammals. The actual site proposed for the exploratory well is an open area that is regularly mowed. A fence surrounds
the property. Nearby lands are planted in guava and banana. The
habitat at this elevation is a mixture of agriculture and second
growth exotic forest.

Weather during the field survey was cloudy. Winds were from
the east at 15-20 mph.

STUDY METHODS

Field observations were made with binoculars and by listening
for vocalizations. The survey was conducted during mid-morning
on 7 April and early morning on 12 April. Counts were made of all
birds seen or heard (Table 1). Published accounts of birds known
from similar habitat were also consulted in order to acquire a more
complete picture of the possible species that might be expected in
this area (Pratt et al. 1987), Hawaii Audubon Society 1993). Data
on feral mammals were limited to visual observations.

Scientific names used in this report follow those given in
Hawaii's Birds (Hawaii Audubon Society 1993); Field Guide to the
Birds of Hawaii and the Tropical Pacific (Pratt et al. 1987) and
Mammal Species of the World (Honacki et al. 1982).
RESULTS

Resident Endemic (Native) Land Birds:

No native resident land birds were observed on the survey. The only species in this category which may occasionally occur in this area and at this elevation is the Short-eared Owl or Pueo (*Asio flammeus sandwichensis*). Pueo are listed as an endangered species on Oahu by the State of Hawaii Division of Forestry and Wildlife. None were recorded on the survey. The number of Pueo on Oahu is probably quite low and their present abundance in the areas covered by this survey is unknown.

Resident Waterbirds:

One Black-crowned Night Heron (*Nycticorax nycticorax*) was seen flying over the property. This is the only native waterbird in Hawaii that is not listed as endangered. Habitat suitable for waterbirds does not occur on the proposed well site property. Nearby lands, however, do contain some wetland habitat in the form of taro patches, flooded pasture and stream drainages.

Seabirds:

No seabirds were observed on the survey. This site is unsuitable for seabirds due to predator access and human disturbance. There are only a few locations on Oahu where seabirds are nesting.
Migratory Indigenous (Native) Birds:

Three Pacific Golden-Plover (*Pluvialis fulva*) were recorded on the site. This species establishes a territory on lawns and other open habitats while in Hawaii and studies have shown that they return each year to the same territory (Johnson et al. 1981). Plover arrive in Hawaii from their arctic breeding grounds on the tundra in August and remain here until the spring migration in late April. They are the most abundant migratory bird in Hawaii. One other migratory species which also utilizes lawns and open fields is the Ruddy Turnstone (*Arenaria interpres*). No turnstone were seen on the survey.

Exotic (Introduced) Birds:

A total of 12 species of exotic birds were recorded during the field survey (Table 1). Pratt et al. 1987; Hawaii Audubon Society 1993 confirm that this assortment of introduced birds would be expected in this area. In addition the Barn Owl (*Tyto alba*), Japanese Bush-warbler (*Cettia diphone*), Java Sparrow (*Padda oryzivora*) and Nutmeg Mannikin (*Lonchura malacca*) are also known from this region.

Feral Mammals:

The introduced Small Indian Mongoose (*Herpestes auropunctatus*) was seen near the property. No trapping was conducted in order to assess the relative abundance of feral mammals. In addition rats, mice and feral cats undoubtedly also are common in this area.

Oahu records of the endemic and endangered Hawaiian Hoary Bat (*Lasiurus cinereus semotus*) are limited (Tomich 1986; Kepler and Scott 1990). Data
on the bat's distribution and behavior are extremely limited. They are known to roost solitarily in trees and occur in upland forests as well as in coastal habitats. This species is insectivorous and forages at dusk.

DISCUSSION AND CONCLUSIONS

This field survey was necessarily brief and thus can provide only a limited perspective of the wildlife which utilize the area. The number and relative abundance of each species may vary throughout the year due to available food resources and reproductive success. Exotic species sometimes prosper only to later disappear or become a less significant part of the ecosystem (Williams 1987; Moulton et al. 1990). Long term studies could provide a more comprehensive view of the bird and mammal populations in a particular area. Nevertheless, some general conclusions related to birds and mammals at this site are provided. The following comments summarize the findings of this survey.

1- The site was traversed on foot. Counts of birds were used to make conclusions about estimated abundance at this location (Table 1).

2- The open, homogenous habitat on this property limits its value for all but a few species. Birds like Pacific Golden-Plover, Zebra Dove (Geopelia striata), Spotted Dove (Streptopelia chinensis), Common Myna (Acridotheres tristis) and finches such as Common Waxbill (Estrildidae) are most likely to utilize this site.

3- The proposed well should have no effect on bird and mammal populations in this area. No endangered or threatened species were recorded on the survey.
Location of Faunal
(Bird and Mammal) Survey
Punaluu, Oahu, Hawaii
TABLE 1

Introduced birds recorded at a proposed well site in Punaluu, Oahu. Number represents an average of the totals from the two visits to the site. These data provide an estimate of relative abundance.

<table>
<thead>
<tr>
<th>COMMON NAME</th>
<th>SCIENTIFIC NAME</th>
<th>Average Number Recorded</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cattle Egret</td>
<td>Bubulcus ibis</td>
<td>1</td>
</tr>
<tr>
<td>Ring-necked Pheasant</td>
<td>Phasianus colchicus</td>
<td>3</td>
</tr>
<tr>
<td>Spotted Dove</td>
<td>Streptopelia chinensis</td>
<td>4</td>
</tr>
<tr>
<td>Zebra Dove</td>
<td>Geopelia striata</td>
<td>16</td>
</tr>
<tr>
<td>Common Myna</td>
<td>Acridotheres tristis</td>
<td>10</td>
</tr>
<tr>
<td>Red-vented Bulbul</td>
<td>Pycnonotus cafer</td>
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<td>Northern Cardinal</td>
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<tr>
<td>Red-crested Cardinal</td>
<td>Paroaria coronata</td>
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<td>Japanese White-eye</td>
<td>Zosterops japonicus</td>
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<td>House Finch</td>
<td>Carpodacus mexicanus</td>
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<td>Common Waxbill</td>
<td>Estrilda astrild</td>
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<tr>
<td>White-rumped Shama</td>
<td>Copsychus malabaricus</td>
<td>2</td>
</tr>
</tbody>
</table>


Appendix D
Appendix D
Agencies and Others Provided a Copy of the Draft Environmental Assessment

In the process of preparing an environmental assessment (EA), a draft EA is provided to government agencies and other groups or individuals. The comments of the governmental agencies and the other groups or individuals to the draft EA and the responses to these comments are included in the final EA submitted to the Office of Environmental Quality Control (OEQC). In the final EA for this project, the letters and comments are included in Appendix E.

Fifteen governmental agencies and three other groups or individuals were provided a copy of the draft EA for this project and were requested to provide comments. The following is a list of those agencies and others that were requested to provide comments.

Federal agencies

- U.S. Department of Agriculture, Soil Conservation Service
- U.S. Army Corps of Engineers, Pacific Ocean Division
- U.S. Fish and Wildlife Service

State of Hawaii agencies

- Department of Agriculture
- Department of Business, Economic Development, and Tourism
- Department of Land and Natural Resources
  - Forestry and Wildlife Division
  - Historic Preservation Division
  - Commission on Water Resources Management
- Department of Health
  - Environmental Management Division
  - Office of Environmental Quality Control
- University of Hawaii
  - Environmental Center
  - Water Resources Research Center

City and County of Honolulu agencies

- Planning Department
- Land Utilization Department
- Public Works
Others

• City Council Member Steve Holmes
• Koolauloa Neighborhood Board No. 28
• Sierra Club, Hawaii Chapter
Appendix E
Comments and Responses to the Draft Environmental Assessment

(will be included in the Final Environmental Assessment)
COMMISSION ON WATER RESOURCE MANAGEMENT

FROM: R. LOUI
TO: INIT:

DATE: 4/4
SUSPENSE DATE:

TO: INIT: FOR: PLEASE:

R. LOUI
J. UWaine
F. CHING
S. SUBIA
K. YODA
REGULATION BRANCH

X   E. SAKODA
X   D. HIGA
X   L. NAKAMA
X   C. ICE
X   R. JINNAI
X   S. SWANSON

APPROVAL
SIGNATURE
INFORMATION

X   Punawili
3453-15

PLANING BRANCH

S. EDMUNDS
L. MIZUNO

See Me
Review & Comment
Take Action
Type Draft
Type Final
File
Xerox ___ copies

Charley's file

02/95
March 24, 1995

VIA FACSIMILE
(587-0390)
with original to follow

Chairperson Michael D. Wilson
Commission on Water Resource Management
Department of Land and Natural Resources
1121 Punchbowl Street, Room 227
Honolulu, Hawaii 96813

Re: Punalu'u Community Association and
Hawai'i La'ieikawai Association's
("petitioners") Request for A Contested
Case Hearing on Koolau Agricultural Co., Ltd.'s
Application for Well Construction Permits at
Makali'i I, II, III in Punalu'u, Oahu, Hawaii

Dear Chairperson Wilson:

On March 23, 1995, we received a copy of Richard Kiefer, Esq.'s letter to you.

Mr. Kiefer's letter again addresses matters beyond what was to be the limited issue of "standing." Therefore, again, on behalf of Koolau Agricultural Co., Ltd., we feel we must respond.

In regard to the Punalu'u III Exploratory Well (Well 3453-15), it is our understanding that the Board of Water Supply agreed that a hydrologist of a party's choice could observe the procedures in that situation. The situation involved there is very different from the instant matter. In particular, the sites involved in this matter are on the private property of Koolau Agricultural Co., Ltd. Koolau Agricultural Co., Ltd. will not agree to having a person chosen by the petitioners present during the phases of the proposed drilling and pump tests.

As previously stated, there is no basis or justification for a requirement that a person other than one with the Commission's Staff be present during the drilling and pump tests. However, in the event and only in the event that the Commission determines that the presence of a third party is absolutely necessary, Koolau Agricultural Co., Ltd. would agree to have a representative hydrologist/geologist of the University of Hawaii Water Resources Research Center be present with the Commission Staff during the proposed drilling and pump test procedures. In
addition, Koolau Agricultural Co., Ltd. would be agreeable to bearing the reasonable cost to have said person be present.

In the event the alternative procedure posed by Koolau Agricultural Co., Ltd. is not acceptable, it is again respectively submitted that the Staff's recommendation as presented at the March 1, 1995 hearing be approved as is and in its entirety.

Very truly yours,

MATSUBARA, LEE & KOTAKE

Gary B. K. P. Lee

GBL/sys
cc: Koolau Agricultural Co., Ltd.
    Richard Kiefer, Esq.
    Hawai'i-La'ieikawai Association, Inc.
    Punalu'u Community Association
    William M. Tam, Esq.
March 22, 1995

Mr. Michael D. Wilson, Chairman
Commission on Water Resource Management
Department of Land & Natural Resources
1121 Punchbowl Street, Room 227
Honolulu, Hawaii 96813

Re: Makali'i Exploratory Wells
I. II. III Construction Permits

Dear Chairman Wilson:

On March 21, we received a copy of the letter to you from Ko'olau Agricultural Co., Ltd.'s attorney, Mr. Gary Lee, responding to my March 16 letter regarding the above-referenced matter.

While I believe that my March 16 letter adequately addresses the points Mr. Lee attempts to make in his letter, I would like to take this opportunity to briefly respond to Ko'olau Agriculture's adamant objection to the proposal that Dr. Robert Willis, a well-respected groundwater hydrologist, monitor Ko'olau Agriculture's testing by pointing out that the Commission has already approved such an arrangement in connection with the drilling of another well, the Punalu'u III Exploratory Well (Well No. 3453-15). Accordingly, we believe that approving the proposed monitoring would be in line with established Commission precedent.

Thank you for your attention to this matter.

Yours truly,

Richard Kiefer

cc: Hawai'i-Lā'ieikawai Association, Inc.
    Punalu'u Community Association
    William M. Tam, Esq.
    Gary B.K.T. Lee, Esq.
March 21, 1995

Chairperson Michael D. Wilson
Commission of Water Resource Management
Department of Land and Natural Resources
1121 Punchbowl Street, Room 227
Honolulu, Hawaii 96813

Re: Punalu'u Community Association and Hawai'i Lā'ieikawai Association's ("petitioners") Request for a Contested Case Hearing on Koolau Agricultural Co., Ltd.'s Application for Well Construction Permits at Makali'i I, II, III in Punalu'u, Oahu, Hawaii

Dear Chairperson Wilson:

On March 16, 1995, Koolau Agricultural Co., Ltd. received Richard Kiefer's letter dated March 14, 1995 which was addressed to you and in regard to the above-referenced matter.

On behalf of Koolau Agricultural Co., Ltd. we object to the letter to the extent that it discusses matters not directly responsive to the issue of whether the petitioners have the requisite "standing" to request a contested case hearing. At the hearing held on March 1, 1995, it was clearly stated that the parties could within two weeks from March 1, 1995 submit written information on the limited and sole issue of "standing". As the letter of March 14, 1995 discusses matters that are clearly beyond the scope of the limited purpose for which written statements could be submitted, those portions should not be considered.

Despite the foregoing, as petitioners have raised extraneous issues, Koolau Agricultural Co., Ltd. ("Koolau Agricultural") feels compelled to address them. In regard to these issues, Koolau Agricultural's position is as follows:

A. The Activities That Would Be Allowed Pursuant To The Requested Well Construction Permits.

The Staff of the Commission on Water Resource Management of the State of Hawaii ("Staff") submitted its Recommendations dated March 1, 1995. The Staff's Recommendations set forth the activities that can be conducted and how they are to be conducted in the event the well drilling permits that have been requested are
issued. Included in the Staff Recommendations are the detailed descriptions of the Aquifer (Pump) Test Procedures that are required.

In contrast, petitioners' description of the activities that they feel should be allowed is vague, provides no instructive guidance, and will probably only result in future disagreements as to what activities were permitted.

Therefore, the activities allowed as described in the Staff’s Recommendations should control.

B. Participation Of Persons Chosen By Petitioners.

Koolau Agricultural began the process in this matter in December 1991. Since that time, a substantial amount of time, effort, and expense have been expended. After five years, it has finally reached the present point where the Staff’s Recommendation is that this Commission approve Koolau Agricultural’s request for the issuance of the well construction permits.

As is evident, the procedures that are required to be followed as described in the Staff’s Recommendations were developed after much thought and effort. These procedures provide for Koolau Agricultural working cooperatively with the Commission’s Staff. On Koolau Agricultural’s behalf, certified, qualified, and experienced hydrologists and geologists will be implementing the prescribed procedures. In addition, the Commission’s Staff, which has the experience and resources to adequately and professionally participate in the activities, will also be involved. Therefore, there are presently more than adequate measures to assure that the process will be undertaken in a professional and objective manner.

Furthermore, in conjunction with the Staff’s Recommendations, Koolau Agricultural would make the test data and records available to all interested parties for their review and comment. This would result in an orderly distribution of information.

However, Koolau Agricultural is adamantly opposed to the participation of any person or persons of petitioners’ choosing as it is felt that this will only result in delay and unnecessary disputes.

The petitioners have throughout this process been opposed to the activities that Koolau Agricultural has sought to undertake. Therefore, it is Koolau Agricultural’s position that the person or persons chosen by the petitioners to participate in the well drilling process would not be unbiased or objective. It is
anticipated that such a person or persons would only unduly delay and disrupt the process and result in additional and unnecessary costs to Koolau Agricultural.

The participation of the Commission’s Staff will provide an adequate means to validate the procedures that will be used. However, in the event the Commission determines that the presence of a third-party is necessary, Koolau Agricultural suggests that a neutral party such as the University of Hawaii Water Resources Research Center ("WRRC") have a representative present during all phases of the proposed drilling and pump tests. The WRRC is staffed with qualified and competent geologists and hydrologists and has a reputation of evaluating tests and procedures thoroughly and objectively.

In conclusion, it is respectfully submitted that the Staff’s Recommendations as presented at the March 1, 1995 hearing be approved in its entirety.

Very truly yours,

MATSUBARA, LEE & KOTAKE

Gary B. K. T. Lee

cc: Koolau Agricultural Co., Ltd.
Richard Kiefer, Esq.
Hawai‘i-La‘ieikawai Association, Inc.
Punalu‘u Community Association
William M. Tam, Esq.
Chairperson Michael D. Wilson  
Commission on Water Resource Management  
State of Hawaii  
Kalanikuku Building, Room 130  
1151 Punchbowl Street  
Honolulu, Hawaii 96813

Re: Punalu'u Community Association and Hawai'i La'ieikawai Association's Request for a Contested Case Hearing on Koolau Agricultural Co., Ltd.'s Application for Well Construction Permits at Makalii I, II and III in Punalu'u, Oahu, Hawaii

Dear Chairperson Wilson:

On behalf of our client, Koolau Agricultural Co., Ltd. ("Koolau"), this office hereby submits this letter memorandum in opposition to Punalu'u Community Association and Hawai'i La'ieikawai Association's ("Petitioners") Request for a Contested Case Hearing on Koolau's Application for Well Construction Permits at Makalii I, II and III in Punalu'u, Oahu, Hawaii as follows.

I. BACKGROUND

On or about December 18, 1991, Koolau submitted its applications to construct four wells in Punalu'u, Oahu, Hawaii.

On or about March 18, 1992, the Commission on Water Resource Management ("Commission") denied without prejudice Koolau's applications to construct said four wells. The Commission ruled that Koolau's applications would be considered after the question of designation of Windward Oahu as a water management area was determined.

On or about April 8, 1992, Koolau petitioned the Commission to reconsider its decision to deny without prejudice Koolau's applications for well construction permits.

On or about May 5, 1992, the Commission designated Windward Oahu as a ground water management area.

On or about June 17, 1992, the Commission denied without prejudice Koolau's applications. The Commission determined that it would consider the applications subject to the approval of a water
use permit, since the area was recently designated as a ground water management area.

On or about October 29, 1992, Koolau submitted its water use permit applications for Makalii Wells I, II and III.

On or about April 28, 1993, the Commission denied without prejudice Koolau's water use permit applications for Makalii Wells I, II and III, but allowed Koolau to resubmit a well construction permit application for exploratory and hydrologic testing purposes only. Further, the Commission determined that there be an agreement on the methodology to test for ground and surface water interaction prior to approval of the well construction permit, and that information regarding any interaction between ground and surface water would be an important predicate to later action on a water use permit.

On or about June 13, 1994, Koolau submitted its letter agreement as to the methodology to test for ground and surface water interaction. Koolau also requested approval to drill the three well under a single contract to save at least $110,000.00 in additional costs over drilling the wells under separate contracts.

On or about July 13, 1994, Petitioners made their oral Request for Contested Case Hearing in this matter. On or about July 22, 1994, Petitioners made written confirmation of their oral request of July 13, 1994; and on or about July 23, 1994, Petitioners submitted their supplemental written support for their Request for Contested Case Hearing.

On or about March 1, 1995, Petitioners' Request for Contested Case Hearing came before the Commission, wherein Petitioners represented to the Commission that Koolau's sought after exploratory wells would interfere with their alleged surface water rights by causing certain alleged interaction between ground and surface water. The Commission decided to continue Petitioners' request and invited the submission of memoranda in opposition to said Request for Contested Case Hearing on the issue of Petitioners' standing to request a contested case hearing in this matter.

II. ARGUMENT

§ 91-1(5) of the Hawaii Revised Statutes ("HRS") defines a "contested case" as "a proceeding in which the legal rights, duties, or privileges of specific parties are required by law to be
determined after an opportunity for agency hearing." HRS § 91-1(5). Thus, if an agency hearing is "required by law," it is a contested case. Bush v. Hawaiian Homes Com'n, 76 Haw. 128, 134 (1994).

The phrase "required by law," in turn, embraces both statutory and constitutional law. Lono v. Ariyoshi, 63 Haw. 138, 146 (1981). Hence, if the statute or rule governing the activity in question mandates a hearing prior to the agency's decision-making, the actions of the agency are "required by law." Kona Old Hawaiian Trails Group v. Lyman, 69 Haw. 81, 90 (1987). Also, if the agency is constitutionally required to provide a hearing, the adjudicatory procedures of the Hawaii Administrative Procedure Act apply to such hearings. Aguiar v. Hawaii Housing Authority, 55 Haw. 478, 478 (1974).

Here, neither the Water Code nor the Commission's rules mandate that there be a hearing prior to the issuance of an exploratory well construction permit. Consequently, the remaining question is whether a hearing is constitutionally required.

In determining whether a contested case hearing is constitutionally mandated, the Commission is required to address the following two-part test:

1. Is the particular interest which the claimant seeks to protect by a hearing "property" within the meaning of the due process clauses of the federal and state constitutions; and

2. If the interest is "property," what specific procedures are required to protect it.

Aguiar, 55 Haw. at 495.

In the matter at hand, Petitioners seek to protect their alleged surface water rights, further alleging that the subject exploratory wells, when constructed, will cause an unacceptable interaction between ground water and surface water. The flaw in Petitioners' argument, however, is that there is no scientific proof that, in the area of the exploratory wells, such an unacceptable interaction between ground water and surface water exists or that there is any interaction between the subject ground and surface water. Therefore, there are no factual grounds to support their position that a contested case is "required to protect" their purported "property" rights.
Rather, the information submitted to this Commission is that there will be no effect on the streamflow as a result of removal of ground water. The Mink and Yuen, Inc., "KAHANA AQUIFER SYSTEM, Water Balance and Sustainable Yield," Report, dated March 26, 1992, a true and correct copy of which is attached hereto and incorporated herein as Exhibit "A", provides the following observations concerning the Makalii Basal Aquifer:

The Makalii basal aquifer is unused at the present. As single well was drilled into it in 1937 by Kahuku Plantation, and later the suburban Water system (subsequently incorporated in the Board of Water Supply) pumped a small amount for local consumption until the major BWS well field north of Punaluu went on stream.

The well was abandoned for about 30 years before Koolau Agricultural Co. reclaimed it last year and verified the existence of a developable aquifer by extensive pump tests. No one had shown any interest in this small aquifer, and never was it included in plans relating to future water developments.

The Makalii basal aquifer lies considerably seaward of the portion of Punaluu Valley where groundwater seepage from high level aquifers give rise to base flow. Removal of groundwater from the basal aquifer can have no effect on stream flow in either Punaluu Valley or Kahana Valley. Id. at pp. 4-6 (emphasis added).

If Koolau is granted the subject permit, and if evidence of an unacceptable interaction between ground water and surface water is established, then that evidence will be brought to light and Petitioners' concerns will be addressed. Deputy Director Rae M. Loui's submittal of March 1, 1995 regarding Petitioners' Request for a Contested Case Hearing, a true and correct copy of which is attached hereto and incorporated herein as Exhibit "B", establishes, among others, the following Standard Well Construction Permit Conditions and Special Conditions to safeguard stream flows:

STANDARD WELL CONSTRUCTION PERMIT CONDITIONS

3. The proposed well construction shall not adversely affect existing or future legal use of water in the area,
including any surface water or established instream flow standards. This permit or the authorization to construct the well shall not constitute a determination of correlative water rights.

*   *   *

SPECIAL CONDITIONS

1. The applicant is hereby informed, and agrees as a condition of this permit, that the issuance of the drilling permit shall in no way prejudice any future consideration by the Commission on the issuance or non-issuance of a water use permit. If the well is successful, and the applicant wants to use the water, the applicant will apply for a water use permit. If the well is not successful, the applicant will apply for a permit to seal/abandon the well, or properly secure it in a manner approved by the Commission.

2. The applicant shall notify the Commission at least two weeks prior to conducting the pumping test, and shall coordinate with and notify the Commission of any stream gaging conducted during the testing of the well.

3. If the testing demonstrates any measurable reduction of streamflow due to pumpage, and if the applicant wants to use the well, an amendment to the interim instream flow standard will be required.

4. Depending on the results of the pumping test, conversion to an operational status in the absence of a short-term definable effect on the stream may still require long-term monitoring of flows with possible shut-down during drought periods to assure maintenance of stream flows.

5. The applicant shall contact the State Historic Preservation Division at 587-0014 before starting any work on the project. The applicant shall obtain a written statement from the State Historic Preservation Division indicating that their concerns have been addressed, and a copy of that statement shall be sent to the Commission before work is started on the project. Id. at pp. 4-5. (emphasis added).
Turning back to the constitutional requirements of Aguiar, the dispositive answer to the second inquiry of the two-part test is that there are no specific procedures that are "required to protect" Petitioners' purported "property" rights, because there is no known or threatened harm that gives rise to any required protection of Petitioners' alleged "property" rights. In any event, if the subject permit is granted, Petitioners' concerns regarding ground and surface water interaction will be addressed based upon scientific information.

III. CONCLUSION

Based upon the foregoing, Koolau Agricultural Co., Ltd. respectfully requests that Petitioners' Request for Contested Case Hearing be denied.

Very truly yours,

MATSUBARA, LEE & KOTAKE

[Signature]

Gary B. K. T. Lee

cc: Punalu'u Community Association
    The Hawai'i-La'ieikawai Association, Inc.
    Koolau Agricultural Co., Inc.
March 14, 1995

Hand Delivery

Mr. Michael D. Wilson, Chairman
Commission on Water Resource Management
Department of Land & Natural Resources
1121 Punchbowl Street, Room 227
Honolulu, Hawaii 96813

Re: Hawai‘i-Lā‘ieikawai Association, Inc., & Punalu‘u Community Association Request for Contested Case on Ko‘olau Agricultural Co., Ltd.‘s Application for Makali‘i Exploratory Wells I, II, III Construction Permits

Dear Chairman Wilson:

We have been asked to advise petitioners The Hawai‘i-Lā‘ieikawai Association, Inc. and the Punalu‘u Community Association on the question of standing that was raised at the March 1, 1995, Commission meeting on the above-referenced petition. After reviewing petitioners’ contested case request, the Commission’s staff recommendation regarding that request, and related materials, and after consulting with the petitioners, we hereby respond on their behalf to your request for additional information and/or briefing on the question of their standing to request a contested case.

The Petitioners continue to believe that they have amply demonstrated the requisite property right and interest to confer standing on them in this matter and, based on our review, we believe that they are correct. We also note that this conclusion has not been disputed by the Commission staff. Nevertheless, based on a further review of the matter and our consultations with them, The Hawai‘i-Lā‘ieikawai Association, Inc. and the Punalu‘u Community Association are willing to withdraw their request for a contested case hearing at this time, but only (a) upon the understanding that the Application before the Commission is limited strictly to the drilling and limited testing of the exploratory wells, and no other activity, and (b) on condition that Applicant Ko‘olau Agriculture Co., Ltd. is required, as a condition of its permit, to allow Petitioners’ ground water hydrologist, Dr. Robert Willis, and/or his representative(s), to be present during all phases of the proposed drilling, pump
tests, and all other associated work (without, of course, unduly interfering with that work); to allow them to have full access to all data and materials concerning the drilling, testing and work; and to allow them to otherwise fully participate in all phases of the exploratory process.

To be clear, petitioners are not withdrawing their contested case petition because of any perceived lack of standing; for again, we believe that these organizations have amply proven standing to exist. Further, the withdrawal of the contested case request at this time is without prejudice to The Hawai‘i-Lā‘ieikawai Association, Inc.’s and the Punalu‘u Community Association’s right to contest or object to further activities or applications regarding these wells.

Please contact The Hawai‘i-Lā‘ieikawai Association, Inc., and the Punalu‘u Community Association directly if there are any other matters outstanding with respect to their petition. Thank you for your consideration of the foregoing.

Sincerely yours,

Richard Kiefer

cc: Hawai‘i-Lā‘ieikawai Association, Inc.
    Punalu‘u Community Association
    William M. Tam, Esq.
    Gary Lee, Ko‘olau Agricultural Co., Ltd.
March 30, 1995

Dr. J. M. Anthony
The Hawai'i-La'ieikawai Association, Inc.
Mr. Creighton U. Mattoon
Punaluu Community Association
P. O. Box 720
Kā'awa, Hawai'i 96730

Dear Dr. Anthony and Mr. Mattoon:

Subject: Your Letter of December 15, 1994 on the Draft Environmental Assessment (EA) for the Punaluu III Well Addition

Thank you for your letter dated December 15, 1994. Although your letter was received after the December 8, 1994 regulatory deadline for comments on the Draft EA, we will incorporate your comments in the Final EA document.

The Environmental Disclosure Process:

We do not agree with your statement that an EA is no less a disclosure instrument than an Environmental Impact Statement (EIS). The State of Hawaii EA process does not require the same intensity of analysis as is required for an EIS. The procedures for preparing an EA and an EIS are specified by statute, and by rules and regulations, which have been followed in the preparation and processing of the Draft EA document.

State law provides that a Draft EA be prepared to determine if certain classes of action may have an environmental effect, and if that environmental effect is determined to be significant enough to warrant the preparation of an EIS, that an EIS be prepared. There are considerable differences in the level of analysis, the procedures for agency and public review, and the regulatory requirements for an EA as compared to the much greater effort required for an EIS. Both EA's and EIS's must be prepared in accordance with the requirements set forth in Chapter 343 HRS and in Title 11, Chapter 200 HAR, relating to the preparation of environmental reports.

Additionally, we do not agree with your characterization that the consultation and the agency and public review process used for this Draft EA were suspicious or flawed. The consultation and the agency and public review process used for the Draft EA are consistent with the applicable requirements relating to the preparation of environmental assessments. All agencies that were consulted are listed in Chapter 8. All agencies, individuals and organizations that were sent copies of the Draft EA are listed in Appendix D.
The official notice of availability of the draft EA was published in the November 8, 1994 Office of Environmental Quality Control (OEQC) Bulletin. The OEQC Bulletin has wide distribution to agencies and to others interested in the environmental review process. The agencies that were consulted, and the agencies and others that were sent copies of the Draft EA were determined to be those agencies that had appropriate jurisdiction and expertise to assist in the preparation of the EA. After publication, other agencies and individuals interested in making comments could have reviewed the Draft EA at OEQC or could have easily, upon request, obtained a copy from us.

We are satisfied that the level of analysis, consultation and disclosure in the Draft EA is appropriate for this type of environmental document. The comments and responses on the Draft EA, further address all of the critical environmental concerns that are germane to this project.

Project Benefits, Section 1.4:

The drilling and test pumping of the exploratory well will provide geologic and hydrologic data that will be used to determine the feasibility of a permanent production well. Additional water supply capacity that this well may provide will benefit the windward district first and any excess should be then available to other areas. However, if adverse environmental impacts are discovered that cannot be mitigated or if the sustainable capacity is minimal, well production plans will be cancelled.

Cost Alternatives, Section 1.5:

The discussion of environmental costs and benefits, i.e., the impacts, of the various alternatives is consistent with the applicable rules for preparing EA's. It is not necessary to estimate the dollar cost of the no-action alternative or of discarded alternatives that were unfeasible because of health, safety and environmental problems. These alternatives were unacceptable and would not fulfill the Board of Water Supply (BWS) mandate to support the City development plan and were therefore, discarded very early in the evaluation process.

Impacts to Streams, Wetlands and Coastal Waters:

Section 4.3 of the Draft EA adequately describes the surface water hydrology of the area and properly substantiates the conclusion that the impacts of the proposed alluvial well on surface water at Punaluu Stream and the nearest wetlands, will likely be insignificant. Unlike other locations where geological strata data are not readily available, the boring logs of the two existing wells and a core hole at this site, provide substantial evidence that a 413-foot layer of
interbedded alluvium of variable permeability overlies a basaltic bedrock layer at this location. Since the water well is proposed to be drilled to a depth of 400 feet, with the upper 150 feet of low permeability alluvium cased, and the lower 250 feet of the well in moderately permeable older alluvium with a screened intake, we know with certainty, from previous drilling and testing that the water drawn will be from the lower portion of this alluvial layer.

Our experience with wells pumping between 200 and 700 gallons per minute at similar depths, indicates that the resultant cone of depression that extends outward from the bottom of the well during pumping and the typical radius of influence of this cone at the surface is, at most, only a few hundred feet horizontally. The funnel-shaped volume within the radius of influence emanating from the bottom of the well within this cone of depression is the part of the overlying area that would normally be dewatered by the pumping.

As explained in section 4.3.3 of the Draft EA, the impacts to stream flow in Punaluu Stream are expected to be insignificant because Punaluu Stream's location in the vicinity of the proposed well is 1,500 linear feet away from the well site. This 1,500 foot distance is far beyond the typical few hundred feet of a radius of influence. Further, the impacts to Punaluu Stream are expected to be insignificant because Punaluu Stream, in the vicinity of the proposed well, has an invert elevation of about 20 feet above mean sea level (msl), and is perched over layers of low permeability alluvium. The groundwater from the proposed well will be drawn from an elevation of about 85 feet below msl, significantly lower than the invert of the stream, and separated by layers of low permeability alluvium which serve to isolate the stream flow from the much deeper groundwater drawn by the proposed well. The conclusion that the withdrawal of water from the proposed well will not have any significant adverse impact on the flow in Punaluu Stream flow is a sound conclusion based on field data and the professional judgement of our hydro-geologists and engineers. For similar reasons, as stated in section 4.3.3 of the Draft EA, there will be no impacts to the nearest wetland at Kahana Valley because it is two miles away.

Impacts from well pumpage on groundwater underflow into the near shore water are expected to be minimal and unmeasurable because the coastal plain sediments have low vertical conductivity in the range of 0.01 gal/day/sq.ft. Reduction in the groundwater flux from limited well pumpage is not expected and is not significant when compared with the large quantity of surface water flowing into the near coastal waters from the Punaluu Valley drainage basin.

There is an adequate consensus among hydrologists and geologists that these groundwater flows into near coastal waters are unlikely to be altered to any significant degree from this project.
The possible cumulative impacts of the other BWS projects in the Windward area were discussed in various sections of the Windward Oahu Regional Water Systems Improvements (1988) Study and is noted on page iii of the Summary Section.

**Sustainable Yield and Aquifer Compartmentalization:**

The concept of sustainable yield has utility and is basic to water resources planning and management. The concept of sustainable yield provides the Commission on Water Resource Management (CWRM) with a guide to base decisions on whether to allow or not to allow new groundwater development projects or surface water uses in the various aquifers on Oahu, depending on each groundwater sector's or aquifer's estimated surplus or deficit of available groundwater.

The hydrologic model segmenting the island into groundwater sectors and aquifers is a theoretical representation accepted and utilized by the CWRM, which is responsible for administering the State Water Code. It is also accepted and utilized by the Department of Land and Natural Resources (DLNR), United States Geological Survey, BWS and the professional community and is therefore, appropriate for use in the EA.

**Water Rights to Kuleana Lands:**

As was indicated above, the proposed Punaluu III Addition alluvial well is not expected to have any measurable impacts on the flow (or diversion) of surface water. Thus, it is expected that the claims of adverse impacts to any Kuleana lands with correlative, appurtenant, or riparian water rights will be non-substantive.

Claims of adverse impacts to water rights and Kuleana lands are legal issues that should be addressed by the Hawaii courts and by the CWRM, rather than in the EA for this project.

**Archaeological Analysis:**

The archaeological analysis was conducted by Cultural Surveys Hawaii and consisted of a historical literature search and field work. The scope of the work performed by Cultural Surveys Hawaii is consistent with the requirements of the Historic Preservation Division of DLNR. The complete report by Cultural Surveys Hawaii is found in Appendix A. Since the Historic Preservation Division found that the project would have no effects on historic sites, and because all work will be done within the existing pump station site, we are satisfied that the archaeological research and analysis done for this project are appropriate for this EA.
Location Maps:

The figure you noted, Figure 2-2, was intended to show primarily the existing wells, the proposed well site, and the basic water distribution system. In Chapter 4, which is the section analyzing the potential impacts of this project, Figure 4-1 shows the location of the existing wells, the proposed Punaluu III Well Addition, and the streams.

References:

We do not agree with your assertion that the literature cited was inadequate. The works cited were sufficient and appropriate for this EA.

Summary:

We feel the environmental issues have been adequately disclosed in the EA to an acceptable level of analysis and that environmental impacts are minimal based on existing hydrologic and geologic data and professional knowledge. Mitigative measures have been proposed and will be implemented to minimize any adverse impacts. We, therefore, conclude that an EIS is not necessary for this project.

If you have any questions, please contact Barry Usagawa at 527-5235.

Very truly yours,

RAYMOND H. SATO
Manager and Chief Engineer

cc: Department of Land and Natural Resources
    Commission on Water Resource Management
    CH2M Hill
By Fax Transmission: Hard Copy by Certified U.S. Mail

December 15, 1994

Office of Environmental Quality Control
220 South King Street, 4th Floor
Honolulu, Hawai‘i 96813

Mr. Barry Usagawa
Board of Water Supply
630 South Beretania Street
Honolulu, Hawai‘i 96843

Gentlemen:

We have reviewed the Draft Environmental Assessment ("EA") entitled "Punaluu (sic) III Well Addition," located at Punaluu (sic), Koolauloa (sic), Oahu (sic), Hawaii (sic) TMK: 5-3-07: Portion 14. The proposing agency is City and County of Honolulu, Board of Water Supply.

A draft EA is no less an instrument of disclosure than an Environmental Impact Statement is. We submit, further, that a draft EA which seeks a negative declaration ought particularly to be an instrument of full disclosure - its premises must be such as to withstand prudent, carefully crafted, even hostile scrutiny. The range of issues covered in an EA which seeks a negative declaration ought to be "wide and deep" rather than being "narrow and shallow." If it errs anywhere it ought to err on the side of caution for only then can potential impact assessment be gaged in any meaningful way. THIS DRAFT EA IS SERIOUSLY FLAWED. A full EIS must be required.

In particular your attention is drawn to the following specific issues:

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<td>1.5</td>
<td>Costs of alternatives not specified. Speculation only.</td>
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<td>1.6</td>
<td>Stream impact inadequately addressed. Cumulative impact not addressed. No empirical evidence adduced to support bold assertions with no empirical data provided to substantiate. Does not</td>
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The Hawai‘i — Lā‘ieikawai Association, Inc. is a non-profit corporation whose activities include research and education related to Hawaiian cultural issues and the environment.
address impact of this and other wells on estuarine water quality. Impact on wetlands: Again assertions are speculation. No supporting empirical data.

1.7 Disclosure is completely inadequate. EIS is required, therefore, under Chapter 343.

2.3 The alleged compartmentalization of aquifers is not conclusive by any means.


2.6 The 16 Board of Water Supply ("BWS") wells, 8 tunnels, 4 inclined wells and 15 reservoirs: cumulative impact on surface water. No disclosure, assessment or empirical data provided. The cumulative impact of groundwater taking on underflow to near shore waters is not assessed, not even mentioned. This is a serious omission.

4.1.1 Does not mention Kuleana lands in Punalu’u with correlative, appurtenant or riparian rights and how these rights might be impacted by further unconstitutional taking of water. Kuleana landowners’ water rights are property rights.2

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1 Some scientists also refer to this as "submarine discharge."

2 See in particular footnote 1, p.2 letter re Punalu’u wells to Keith Ahue, Chair, Commission on Water Resource Management, July 22, 1994. Text of letter attached hereto and made a part hereof. Another letter on the same subject dated July 23, 1994 is attached hereto and made a part hereof. We hasten to point out that the issues raised in both these letters have not yet been addressed by the Commission; neither has our application for a Contested Case Hearing.
4.3.2 20 wells cumulative impact on surface water, underflow into estuaries not addressed. Inadequate disclosure. This, to repeat, is a serious omission. Again, wetlands impact assessment is cursory and amounts to inadequate disclosure re impact. No empirical data to support conclusions.

6.1 BWS legal mandate is constrained and limited by public trust and other considerations. Cumulative impact of wells on surface water and underflow to nearshore waters and the Hawai‘i State Water Code (particularly, in this case, §174C-71 (1) (c) and §174C-71 (4) - all are relevant. None of these issues are addressed.

Chapter 9 Works cited shows paucity of reliance on professional literature - for example Bredehoeft et al (Ibid.,)

In addition we have grave doubts about the quite cursory archaeological findings. By either default or design the map facing page 2-6 showing existing wells and proposed well addition site (Figure 2-2) does not show streams and their relationship to the location of wells.

Moreover, we notice with some alarm and not a small amount of suspicion, that NOAA (which has coastal zone impact responsibilities), USGS (which has an abundance of expertise in many complex areas ever so lightly traversed in the draft EA) and the State Division of Aquatic Resources (which has a vital interest in streams and near shore water quality and whose staff spoke out in quite clear terms on Makua well drilling) have all been bypassed in the consultation process and so also has the Coastal Zone Management Program in OSP. Comments from these agencies are vital to any reasonable determination of impact and the consequent necessity for an EIS.

The draft EA ought to answer all of the foregoing questions and comments. It is the applicant, not the public, I stress most strongly, who has the obligation to show, on the basis scientifically derived procedures that there is "no significant impact" on streams, estuaries, marine and stream life, as well as ecosystem impacts. Mere assertions are not science.

In summary, this groundwater development EA is essentially based on a groundwater balance of the Punalu‘u
area. Although providing some hydrologic information, the water balance cannot be used to determine or assess the sustainable yield of the aquifer system. No ground water modelling has been done. The EA also assumes that surface and groundwater are essentially independent despite brief, tattered and rather casual statements interspersed throughout the report. Additional groundwater development can be expected to influence and affect surface water. The magnitude and location of these impacts remain unknown. The applicants' EA is, as already mentioned, fatally flawed.

Sincerely

J. M. Anthony, Ph.D., Executive Director,
Hawai'i-La'ieikawai Association

Creighton U. Mattoon, President
Punalu'u Community Association

Encl.
July 22, 1994

Mr. Keith Ahue, Chair  
Commission on Water Resource Management  
Department of Land and Natural Resources  
Kalanimoku Building  
1151 Punchbowl Street  
Honolulu, Hawai‘i 96813

Dear Mr. Ahue

Koolau (sic) Agricultural Co., Ltd., Application for Well Construction Permits, Makalii (sic) Exploratory Wells I, II, and III, (Well Nos. 3452-02, 3453-12 & 13), Punaluu (sic), Oahu (sic)

We hereby confirm in writing our intention to seek a contested case hearing notice of which we gave you verbally at the commencement of the Commission’s meeting on Wednesday, July 13, 1994 when it met to discuss the aforementioned matter. This notice in writing is being provided to you consistent with the requirements of Chapter 13-167, Hawai‘i Administrative Rules, entitled "Rules of Practice and Procedure for the Commission on Water Resource Management". This application is based specifically on HAR 13-167-51 & 52 which gives the Commission the specific authority/jurisdiction to deal with the contested case hearing requested herein.

The bases for this request for a contested case hearing are as follows:

(1) The application is incomplete and does not meet the requirements of Chapter 174C, specifically, Section 174C-84 (a). The well construction application permit must be made by the well driller who will construct the well. We can find no evidence in the record that the application currently before the Commission was in fact made by the well driller. Furthermore, Section 174C-84 (c) calls for a review of the well construction and pump installation permit by the Dept. of Health for "compliance with their rules and standards concerning, among other things, the appropriateness of the well location." We can find no record of this having been done.

Further, this application is not based on empirical findings derived from ground water modelling studies. What ‘soft’ data are provided lurk in the files of the Commission. These files have apparently not been recently examined by the Commission’s staff. The Mink and Yuen unpublished paper, Kahana Aquifer System Water Balance and Sustainable Yield (March 26, 1992) is a text book example of sloppy science which gives this entire application, to quote John Mink’s prose back to him, a "vaporous" quality, "drifting with the breeze of ambition"--and, if I may add, Mink and
Yuen’s fortunes. The material from Mink and Yuen attached to Matsubara, Lee and Kotake’s letter of February 26, 1993, and marked as Attachments "A" and "B", are "vaporous" in as much as they are unsupported by any empirical evidence whatsoever thus rendering this application incomplete.

(2) The petitioners' interests that may be affected:

Petitioners and/or their members and affiliates live either in the ahupua'a of Punalu'u or within the larger Ko'olauloa area which is a designated water management area. Specifically, the following members/affiliates of the petitioners have property interests within the ahupua'a of Punalu'u in very close proximity to where it is proposed that these three wells will be drilled:

1. Eli Keolanui (TMK 5-3-007:016);
2. Glennon Trevenen (TMK 5-3-007:013);
3. Didi Herron representative for Elsa and Charles Wai (TMK 5-3-005:003);
4. Cathleen Mattoon (TMK 5-3-005:035);
5. Catalpa Kong (TMK 5-3-007:001);
6. Delores A. Welling and Balfour Financial (TMK 5-3-005:007). This 50 acre property includes the following kuleana parcels:

- LC AW 6955 Apana 1 to Kaaumoana
- LC AW 4350 Apana 1 to Kauoiani
- LC AW 3752 Apana 6 to Ukele
- LC AW 10771 Apana 1 to Pulani
- LC AW 6954 Apana 1 to Kakaa
- LC AW 4437 Apana 2 to Kaiwi
- LC AW 6954 Apana 3 to Kakaa

The petitioners are prepared to argue on behalf of these property owners, who will themselves testify in their own behalf, that they have already been adversely impacted by the illegal taking of water (the property interests/rights at issue here) by the subject applicants. Taking into account the very substantial sum (approximately $240,000) which the applicants say they are likely to spend on the drilling of three so called exploratory wells the property owners and we, their petitioner representatives, have very little doubt that applicants will argue that by the expenditure of this very substantial amount of money their rights to transfer

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1The property interests to which reference is made here and which the petitioners and property owners seek to protect are "property" within the meaning of the due process clauses of the Federal and State Constitutions—see Aguilar, 55 Haw. at 495, 522 P.2d at 1266; Sandy Beach Defense Fund v. City Council, 70 Haw. 361, 377, 773 P. 2d 250, 260 (1989) (quoting Board of Regents v. Roth, 408 U.S. 564, 577, 92 S.Ct. 2701, 2709, 33 L.Ed.2d 548, 561 (1972)).
water outside of the aquifer of origin (which attorney for the applicants has already admitted on the record is for the sole purpose of out of watershed transfer) will have been vested. The granting of any so called exploratory well drilling permit thus plays into the hands of the applicants and immediately further imperils the property interests of the property owners listed above.

So, in sum, what is at issue here? In substance, the transfer of millions of gallons of water which the applicants already know is in this so called "self contained" aquifer (see "A" attached hereto). The granting of any well drilling permit adds thrust to the illegal taking of property rights along an already established trajectory (the metaphor, 'seamless web', better describes reality). This process exacerbates the illegal taking of property interests and rights of the aforementioned property owners who have riparian, appurtenant and correlative water rights ("property rights" as herein defined--see footnote 1 hereof). Some of them also have hunting and gathering rights which are intimately and systemically connected with the well being of the entire watershed ecosystem and the nearshore marine ecosystem all of which have been damaged by the transference of millions of gallons of water into the public integrated water supply system as well as by illegal actions taken by the applicants--for example, the 18" pipe diversion of water from around Tunnel No. 10 in the Punalu’u flume system. This is a matter that has been brought to the attention of the Commission on several occasions to no effect.

As argued here we make explicit that the taking of more water will continue in a seamless web with the granting of any exploratory well permit. We further submit to you that in the circumstances of this particular application that as soon as any well construction permit is granted the unconstitutional and illegal taking of property rights of property owners listed herein, and others in a similar situation, will proceed along the seamless web of taking that is already in place. We seek deliberately to disabuse you of the view that seemed to be implicit in the tenor and substance of some of your questions at the public hearing on July 13 when you may have been trying to intimate that the granting of exploratory well permits may only open up the possibility of property rights being infringed. We strongly reject such a notion as being paltry and quite without foundation. Any exploratory well permit in these circumstances is in fact a water use within the meaning of the State of Hawai‘i Water Code, Chapter 174-C.

(3) With respect to "the disagreement, denial, or grievance which is being contested by the petitioner(s)" we hereby point out, in

\footnote{These rights include, but are not limited, to those that derive from the Kuleana Act of 1850 also known as Haw. Rev. Stat. Section 7-1.}
addition to what has already been set out above and has become part of the fabric of this petition, that the Commission in its wisdom chose not to make any decision on this matter. It is our belief that we are entitled as a matter of law to have this matter decided in another "domain"--that of the contested case hearing. The disagreement or grievance which we have with the Commission, in part, is that since the application is incomplete in several respects, it should not even have been heard.

(4) The basic facts and issues are those set out in testimony presented to the Commission by the petitioners and their hydrologist/geologist consultant, Mr. Freeman. All of that testimony has already been presented in writing and verbally to the Commission on the record and it is all incorporated herein and made a part hereof.

(5) Some basic facts:

(i) Exploratory well drilling has already been accomplished in this so called "stand alone" aquifer. See Attachment "A" appended hereto. The application for exploratory wells now being made is redundant.

(ii) No less an authority than John Mink says: "The Makalii (sic) basal aquifer has not been utilized for three decades even though it is easily accessible and is a proven water resource" (emphasis added). If it is indeed a proven water resource exploratory wells are unnecessary. Apparently, the applicants should be filing a water use permit application since they assert that it is a proven water source.

(6) The relief to which the party or petitioner seeks or deems itself entitled:

Petitioner/s on behalf of property owners listed herein, as well as others, seek full protection of their statutory and other rights specifically delineated herein. They seek the resolution of existing disputes of which notice has been given to the Commission. They seek restoration of their water rights. They seek, especially, to prevent further illegal taking of their property interests which the granting of exploratory well permits (a water use within the meaning of the State Water Code) will trigger. They seek protection for Punalu’u stream already damaged, illegally realigned and deepened. They seek protection of estuaries and

3Mink and Yuen, Inc., March 26, 1992 unpublished paper, "Kahana Aquifer System Water Balance and Sustainable Yield," p. 6. This paper as well as another by John Mink, "Windward Designation Commentary," December 1992 are both attached hereto and marked "B" and "C" respectively.
estuarine water quality from further adverse impacts which may now, or in the future, diminish or lessen stream life or marine life. The only way for these issues to be fully and fairly addressed is to permit the petitioners and the impacted property owners listed herein (as well as others who may wish to join them) to present their respective cases at a contested case hearing where they can exercise all of the rights that they have to adduce evidence and to conduct relevant discovery, that is, the exercise of their due process rights.

The foregoing constitute all of the areas that call for concise statements required by Section 13-167-51 to 54. We wish further to emphasize that the Commission's jurisdiction to hear this petition is based upon the State Water Code, Chapter 174C of the Hawaii Revised Statutes. It provides for contested case hearings under HRS, Section 174C-60 and Haw. Admin. Rules Section 13-167-51 to 54. Further, by what we see as necessary repetition, HRS, Section 174C-82 sets forth the Commission's authority to regulate well construction in the State of Hawai'i.

Sincerely yours

Creighton Mattoon, President
for Punalu'u Community Association

Jim Anthony, Executive Director
The Hawai'i-Lū'iehawai Association, Inc.

Attachments: A, B, & C

xc: Keolanui
    Trevenen
    Herron
    Mattoon
    Kong
    Welling
July 23, 1994

By Fax (587-0219) & Certified U.S. Mail

Mr. Keith Ahue, Chair
Commission on Water Resource Management
Department of Land and Natural Resources
Kalanikau Building
1151 Punchbowl Street
Honolulu, Hawaii 96813

Dear Mr. Ahue

Supplementary submission\(^1\) for Contested Case Hearing

Ko'olau Agricultural Company's application to drill three exploratory wells in Punalu'u

The following additional points would be raised by the undersigned petitioners at the contested case hearing and are here set out in outline only to demonstrate to the Commission that these are substantive issues not so far addressed:

1. The so called "stand alone" aquifer which John Mink christened "Makalii" (sic) and the rather extravagant claims that he makes for its being separate, distinct and without any connection to any other aquifer appear not to be supported by research derived data. Mink's claims may in fact be defective and in need of revision. The Commission, in the interests of prudence should call on the USGS to comment on this matter on the record and in public.

2. The Commission should not pay as much attention to the measurable effect of each well on surface water but to the cumulative effect of several wells which are drilled as exploratory wells and continue on to become production wells. When ground water is taken via a number of wells there is an accretion factor that appears to escape the Commission's attention. Measuring the impact of one well at a time on surface water ignores, underplays and misstates the cumulative impact of several wells on surface water. Here again, the USGS should be invited by the Commission to comment on this apparently important factor in public and on the

\(^1\)A formal application for a contested case hearing in the matter which is the subject of this supplementary memorandum was filed with the Commission on Water Resource Management at 11:50 a.m. on July 22, 1994.
record. The failure of the Commission to do so is a serious omission.

3. The argument which has been made, I believe, and which may or may not be in the Commission’s records, is that because there is allegedly 700 feet of alluvium under Punalu‘u Stream that this provides an impervious barrier and therefore negates the possibility of there being any groundwater/surface water relationship, may well be another one of those "vaporous" theories unsubstantiated by any replicable empirical evidence. If this is indeed being said by anyone you should insist that it be put in writing and that the data that support this claim be subject to examination by all parties which have an interest in this matter.

4. There are other aspects of wells and their relationship to surface water--some rather subtle but important--which may have been underplayed by the applicants and their spokesmen, including John Mink. The Commission is urged, in the interests of the wise management of the resource as well as ensuring that we as petitioners get administrative due process, to secure competent second opinions. We suggest, with respect, that the USGS is a competent kindred government agency which can provide such necessary independent second opinions in the public interest.

We formally request that these supplementary points be included in the formal petition submitted on July 22 to the Commission and hand delivered to it on that day. We give notice that at a contested case hearing we will invite the USGS, since the Commission itself has not done so yet, to testify on the record on the foregoing issues and matters related to them.

Sincerely yours

Creighton U. Mattoon, President
Punalu‘u Community Association

Jim Anthony, Executive Director
The Hawai‘i--Ka Ieikawai Association, Inc.

xc: Keolanui
Trevenen
Herron
Mattoon
Kong
Welling
## Punaluu Alluvial Well III

### INFORMAL STEP DRAWDOWN TEST

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</tbody>
</table>
# WELL COMPLETION REPORT

**Date of Hawaii**

COMMISSION ON WATER RESOURCE MANAGEMENT

Department of Land and Natural Resources

**RECEIVED**

---

**WELL COMPLETION REPORT**

**05 OCT 20 P2: 14**

**Instructions:** Please print or type and submit completed report within 30 days after well completion to the Commission on Water Resource Management, P.O. Box 821, Honolulu, Hawaii 96802. An as-built drawing of the well and chemical analysis should also be submitted. For assistance call the Commission Regulation Branch at 808-586-0225.

---

1. **STATE WELL NO.** 3453-15  **WELL NAME** PUNALUU III ALLUVIAL/EXP/ISLAND OAHU

2. **LOCATION:** Address BWS PUNALUU WELLS III PUMP STATION Tax Map Key 5-3-07:14

3. **DRILLING OR PUMP INSTALLATION CONTRACTOR** ROSCOE MOSS HAWAII, INC.

4. **CONTRACTOR'S C-57 LICENSE NUMBER** C-16437

5. **NAME OF DRILLER WHO PERFORMED WORK** HAL FENTON

6. **TYPE OF RIG/CONSTRUCTION** 28L CABLE TOOL BUCYRUS ERIE

7. **DATE OF WELL DRILLING COMPLETION** 10/9/95

8. **GROUND ELEVATION (msl) APPROX +65 ft.**

9. **DRILLER'S LOG:**

<table>
<thead>
<tr>
<th>Water Level</th>
<th>Rock Description, Remarks, Dates</th>
<th>Depth (ft.)</th>
<th>Rock Description, Remarks, Dates</th>
<th>Depth (ft.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top of Drilling Platform (msl) +65</td>
<td></td>
<td>30 to 80</td>
<td>brown mud &amp; river rock</td>
<td>305 to 305</td>
</tr>
<tr>
<td>Height of Drilling Platform above Ground surface 1 ft.</td>
<td></td>
<td>80 to 120</td>
<td>brown mud</td>
<td>305 to 402</td>
</tr>
<tr>
<td>Bench Mark and Method Used to Determine Ground Elevation</td>
<td></td>
<td>120 to 160</td>
<td>brown mud &amp; river rock</td>
<td>357 ft</td>
</tr>
<tr>
<td>BWS SPECS ft.</td>
<td></td>
<td>160 to 200</td>
<td>brown mud &amp; river rock</td>
<td>357 ft</td>
</tr>
</tbody>
</table>

   (If more space is needed, continue on back.)

10. **TOTAL DEPTH OF WELL BELOW GROUND** 402 ft.

11. **HOLE SIZE:** 16 inch dia. from 0 ft. to 402 ft. below ground

12. **CASING INSTALLED:**

   | 10 in. I.D. x 365 in. wall solid section | 210 ft. below ground |
   | 10 in. I.D. x 312 in. wall perforated section | 400 ft. below ground |

   Type of Perforation 

13. **ANNULUS:**

   | 0 ft. below ground to 150 ft. below ground |

   Gravel packed from 150 ft. below ground to 400 ft. below ground

14. **INITIAL WATER LEVEL** 35.58 ft. below ground.

15. **INITIAL CHLORIDE** ppm

16. **INITIAL TEMPERATURE** °F

17. **DATE OF PUMP INSTALLATION**

18. **PUMP INSTALLATION:**

<table>
<thead>
<tr>
<th>Pump Type, Make, Serial No.</th>
<th>Capacity gpm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor type, H.P., Voltage, rpm</td>
<td></td>
</tr>
</tbody>
</table>

   Depth of Pump Intake Setting ft. below , which elevation is ft. below .

   Depth of bottom of airline ft. below which elevation is ft. below.

   Pumping Head is ft.

19. **PUMPING TESTS:**

   Reference Point (R.P.) used:

<table>
<thead>
<tr>
<th>Date 10/9/95</th>
<th>Date 10/9/95</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start water level 35.58 ft. below R.P.</td>
<td>Start water level</td>
</tr>
<tr>
<td>End water level 35.46 ft. below R.P.</td>
<td>End water level</td>
</tr>
<tr>
<td>Depth of well 400 ft. below R.P.</td>
<td>Depth of well</td>
</tr>
</tbody>
</table>

   Elapsed Time (hours) | Rate (gpm) | Draw- down (ft.) | Ch. Temp. °F | Elapsed Time (hours) | Rate (gpm) | Draw- down (ft.) | Ch. Temp. °F |

   (If more space is needed, continue on back.)

Remarks:

(If more space is needed, continue on back.)

**Contractor (print)** ROSCOE MOSS HAWAII, INC

**Title** FIELD SUPERINTENDENT

**Signature**

**Date** 10/18/95

---

For Official Use:

- **Well No.** 3453-15
- **Longitude** 157 53 38
- **Latitude** 21 34 42

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For Driller's Use:

- **Job Name**
- **Job No.**

---

**Remarks:**

---

**DATA ATTACHED**

---

**Remarks:**

---

**Date of Drilling**

---

**Date of Report**

---

**Date of Completion**

---

**Date of Completion Report**
**DRILLER'S LOG (cont'd):**

<table>
<thead>
<tr>
<th>Depth (ft.)</th>
<th>Rock Description, Remarks, Dates</th>
<th>Water Level (ft.)</th>
<th>Depth (ft.)</th>
<th>Rock Description, Remarks, Dates</th>
<th>Water Level (ft.)</th>
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**PUMPING TESTS (cont'd):**

<table>
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<tr>
<th>Elapsed Time (hours)</th>
<th>Rate (gpm)</th>
<th>Draw-down (ft.)</th>
<th>Cl- (ppm)</th>
<th>Temp. (°F)</th>
<th>Elapsed Time (hours)</th>
<th>Rate (gpm)</th>
<th>Draw-down (ft.)</th>
<th>Cl- (ppm)</th>
<th>Temp. (°F)</th>
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Remarks (cont'd):
9. PROPOSED WELL SECTION

- Elevation at top of casing: 67 ft., msl.
- Ground Elevation: 65 ft., msl
- Cement Grout: 150 ft.
- Rock Packing: 250 ft.
- Hole Diameter: 16 in.
- Total Depth: 400 ft.
- Solid Casing:
  - Material: STEEL
  - Length: 210
  - Diameter: 10".
  - Wall thickness: .365
- Casing: [ ] Perforated  [ ] Screen
- Material: STEEL
- Length: 190
- Diameter: 10
- Wall thickness: .312
- Openings: 31.5 sq. in./L.F.
- Open Hole:
  - Length: NA
  - Diameter: 

*Approximate elevation at time of filing application. Ground elevation above mean sea level (msl) by a surveyor licensed by the State must be submitted at time of construction. Final elevations of well components shall be submitted in the well completion/well abandonment report.
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<th>Rate Change</th>
<th>Minutes</th>
<th>Time (hr)</th>
<th>psi</th>
<th>feet</th>
<th>OD</th>
<th>gpm/ft</th>
<th>gpm</th>
<th>monitor well sig</th>
<th>adjusted</th>
<th>dd (feet)</th>
<th>meter</th>
<th>gpm</th>
<th>minutes</th>
<th>gpm at rate</th>
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**Note:**
- The table details the results of an informal step drawdown test on a well.
- The test was conducted on October 17, 1995, and the equipment used was a TEL No. 808-527-6195.
- The test involved monitoring the well for changes in pressure and flow rate over time, with readings taken every 5 minutes.
- The data shows a steady decrease in gpm (gallons per minute) and an increase in OD (outside diameter) of the well.
- The adjusted dd (depth below ground) values are shown, indicating the depth at which the gpm readings were taken.
- The test was conducted on a Punaluu Alluvial Well, with readings taken at various times throughout the day.
- The average gpm at rate values are provided for comparison.

**Graphical Note:**
- The graph shows a clear trend of decreasing gpm values as the test progresses, indicating a typical drawdown effect.
- The data points are plotted against time, with gpm values on the y-axis and time on the x-axis.
We need to keep on top of this one. See Spec. 3.

Need to determine effect/non-effect on P. Stream.

NOTICE OF INTENT TO START:

... /unnar
April 7, 1995

Mr. Michael Wilson, Chairperson
Commission on Water Resource Management
Department of Land and Natural Resources
State of Hawaii
P.O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Wilson:

Subject: Well Construction Permit Conditions for Punaluu Well III (3453-15)

Thank you for the well permit. We acknowledge the conditions of the permit.

If you have any questions, please contact Herbert Minakami at 527-6183.

Very truly yours,

Raymond H. Sato
Manager and Chief Engineer

Attachment
WELL CONSTRUCTION PERMIT

for

Punalu'u III Exploratory Well
(Well No. 3453-15)
Punalu'u, Oahu

TO: Honolulu Board of Water Supply
630 South Beretania Street
Honolulu, HI 96843

In accordance with the Department of Land and Natural Resources Administrative Rules, Section 13-168, entitled "Water Use, Wells, and Stream Diversion Works", your application to construct and test Punalu'u III Exploratory Well (Well No. 3453-15), is approved subject to the following conditions:

STANDARD WELL CONSTRUCTION PERMIT CONDITIONS

1. The Commission on Water Resource Management (Commission), P.O. Box 621, Honolulu, HI 96809, shall be notified, in writing, before any work covered by this permit commences.

2. The well construction permit shall be for construction and testing of the well only. The applicant shall coordinate with the Commission and conduct a pumping test in accordance with the attached protocol. A one-inch diameter (minimum) galvanized pipe shall be permanently installed, in a manner acceptable to the Commission, to accurately record water levels. No permanent pump may be installed and no water used from the well without first obtaining a water use permit and a pump installation permit from the Commission.

3. The proposed well construction shall not adversely affect existing or future legal uses of water in the area, including any surface water or established instream flow standards. This permit or the authorization to construct the well shall not constitute a determination of correlative water rights.
4. The following shall be submitted to the Commission within thirty (30) days after completion of work:
   a. Well completion report.
   b. Elevation (referenced to mean sea level, msl) survey by a Hawaii-licensed surveyor.
   c. As-built sectional drawing of the well.
   d. Plot plan and map showing the exact location of the well.
   e. Complete pumping test records, including time, pumping rate, drawdown, chloride content, and other water quality data.

5. The applicant shall comply with all applicable laws, rules, and ordinances.

6. The well construction permit application and staff submittal approved by the Commission at its January 25, 1995 meeting are incorporated into the permit by reference.

7. The permit may be revoked if work is not started within six (6) months after the date of issuance or if work is suspended or abandoned for six (6) months, unless otherwise specified. The work proposed in the well construction permit application shall be completed within two (2) years from the date of permit approval, unless otherwise specified. The permit may be extended by the Commission upon a showing of good cause and good-faith performance. A request to extend the permit shall be submitted to the Commission no later than three (3) months prior to the date the permit expires. If the commencement or completion date is not met, the Commission may revoke the permit after giving the permittee notice of the proposed action and an opportunity to be heard.

SPECIAL CONDITIONS

1. The applicant is hereby informed, and agrees as a condition of this permit, that the issuance of the drilling permit shall in no way prejudice any future consideration by the Commission on the issuance or non-issuance of a water use permit. If the well is successful, and the applicant wants to use the water, the applicant will apply for a water use permit. If the well is not successful, the applicant will apply for a permit to seal/abandon the well, or properly secure it in a manner approved by the Commission.

2. The applicant shall notify the Commission at least two weeks prior to conducting the pumping test, and shall coordinate with and notify the Commission of any stream gaging conducted during the testing of the well.

3. The applicant shall allow the participation of an independent consultant selected by and retained at the expense of Dr. James Anthony, The Hawaii-Laieikawai Association, in monitoring pump testing.
4. If the testing demonstrates any measurable reduction of streamflow due to pumpage, and if the applicant wants to use the well, an amendment to the interim instream flow standard will be required.

5. Depending on the results of the pumping test, conversion to an operational status in the absence of a short-term definable effect on the stream may still require long-term monitoring of flows with possible shut-down during drought periods to assure maintenance of stream flows.

MICHAEL D. WILSON, Chairperson
Commission on Water Resource Management
MAR 16 1995
Date of Issuance

I have read the conditions and terms of this permit and understand them. I accept and agree to meet these conditions as a prerequisite and underlying condition of my ability to proceed.

Applicant’s Signature: Raymond H. Satō Date: 4/11/95
Printed Name: RAYMOND H. SATO, Manager and Chief Engineer
Firm or Title: Board of Water Supply

Please sign and return one copy of this permit to the Commission and retain a copy for your record.

Attachment
cc: USGS
State Historic Preservation Division
Department of Health
Safe Drinking Water Branch
Ground Water Protection Program
Wastewater Branch
Mr. Michael Wilson, Chairperson  
Commission on Water Resource Management  
Department of Land and Natural Resources  
State of Hawaii  
P.O. Box 621  
Honolulu, Hawaii 96809  

Dear Mr. Wilson:  

Subject: Well Construction Permit Conditions for Punaluu Well III (3453-15)  

Thank you for the well permit. We acknowledge the conditions of the permit.  

If you have any questions, please contact Herbert Minakami at 527-6183.  

Very truly yours,  

RAYMOND H. SATO  
Manager and Chief Engineer  

Attachment  

Pure Water . . . man's greatest need – use it wisely
WELL CONSTRUCTION PERMIT

for

Punalu'u III Exploratory Well
(Well No. 3453-15)

Punalu'u, Oahu

TO: Honolulu Board of Water Supply
630 South Beretania Street
Honolulu, HI 96843

In accordance with the Department of Land and Natural Resources Administrative Rules, Section 13-168, entitled "Water Use, Wells, and Stream Diversion Works", your application to construct and test Punalu'u III Exploratory Well (Well No. 3453-15), is approved subject to the following conditions:

STANDARD WELL CONSTRUCTION PERMIT CONDITIONS

1. The Commission on Water Resource Management (Commission), P.O. Box 621, Honolulu, HI 96809, shall be notified, in writing, before any work covered by this permit commences.

2. The well construction permit shall be for construction and testing of the well only. The applicant shall coordinate with the Commission and conduct a pumping test in accordance with the attached protocol. A one-inch diameter (minimum) galvanized pipe shall be permanently installed, in a manner acceptable to the Commission, to accurately record water levels. No permanent pump may be installed and no water used from the well without first obtaining a water use permit and a pump installation permit from the Commission.

3. The proposed well construction shall not adversely affect existing or future legal uses of water in the area, including any surface water or established instream flow standards. This permit or the authorization to construct the well shall not constitute a determination of correlative water rights.
4. The following shall be submitted to the Commission within thirty (30) days after completion of work:
   a. Well completion report.
   b. Elevation (referenced to mean sea level, msl) survey by a Hawaii-licensed surveyor.
   c. As-built sectional drawing of the well.
   d. Plot plan and map showing the exact location of the well.
   e. Complete pumping test records, including time, pumping rate, drawdown, chloride content, and other water quality data.

5. The applicant shall comply with all applicable laws, rules, and ordinances.

6. The well construction permit application and staff submittal approved by the Commission at its January 25, 1995 meeting are incorporated into the permit by reference.

7. The permit may be revoked if work is not started within six (6) months after the date of issuance or if work is suspended or abandoned for six (6) months, unless otherwise specified. The work proposed in the well construction permit application shall be completed within two (2) years from the date of permit approval, unless otherwise specified. The permit may be extended by the Commission upon a showing of good cause and good-faith performance. A request to extend the permit shall be submitted to the Commission no later than three (3) months prior to the date the permit expires. If the commencement or completion date is not met, the Commission may revoke the permit after giving the permittee notice of the proposed action and an opportunity to be heard.

SPECIAL CONDITIONS

1. The applicant is hereby informed, and agrees as a condition of this permit, that the issuance of the drilling permit shall in no way prejudice any future consideration by the Commission on the issuance or non-issuance of a water use permit. If the well is successful, and the applicant wants to use the water, the applicant will apply for a water use permit. If the well is not successful, the applicant will apply for a permit to seal/abandon the well, or properly secure it in a manner approved by the Commission.

2. The applicant shall notify the Commission at least two weeks prior to conducting the pumping test, and shall coordinate with and notify the Commission of any stream gaging conducted during the testing of the well.

3. The applicant shall allow the participation of an independent consultant selected by and retained at the expense of Dr. James Anthony, The Hawaii-Laieikawai Association, in monitoring pump testing.
WELL CONSTRUCTION PERMIT
Well No. 3453-15

4. If the testing demonstrates any measurable reduction of streamflow due to pumpage, and if the applicant wants to use the well, an amendment to the interim instream flow standard will be required.

5. Depending on the results of the pumping test, conversion to an operational status in the absence of a short-term definable effect on the stream may still require long-term monitoring of flows with possible shut-down during drought periods to assure maintenance of stream flows.

MICHAEL D. WILSON, Chairperson
Commission on Water Resource Management
MAR 16 1995
Date of Issuance

I have read the conditions and terms of this permit and understand them. I accept and agree to meet these conditions as a prerequisite and underlying condition of my ability to proceed.

Applicant’s Signature: RAYMOND H. SATO Date: 4/11/95

Printed Name: RAYMOND H. SATO, Manager and Chief Engineer

Firm or Title: Board of Water Supply

Please sign and return one copy of this permit to the Commission and retain a copy for your record.

Attachment
cc: USGS
State Historic Preservation Division
Department of Health
Safe Drinking Water Branch
Ground Water Protection Program
Wastewater Branch
Dear Mr. Hayashida:

Applications for Water Use Permits and Well Construction/Pump Installation Permits Proposed Exploratory Wells Ground Water Management Areas, Oahu

As was discussed in a meeting on February 22, 1994 and a telephone conversation on February 23, 1994 with Board of Water Supply staff, your well construction and pump installation permit applications for the Manoa IV, Kalihi Uka III, Kuou III, Kupaua, Punaluu III, and Kaluanui Wells (Well Nos. 1848-01, 2250-03, 2348-06, 1744-05, 3453-15, and 3554-06, respectively) have been revised to indicate that the wells will be drilled and tested for exploratory purposes only. The water use permit applications for these sources will be kept on file pending the results of the drilling and testing.

If you have any questions, please call me at 587-0214.

Sincerely,

RAE M. LOUI
Deputy Director
Mr. Kazu Hayashida  
Honolulu Board of Water Supply  
630 South Beretania St.  
Honolulu, HI 96843  

Dear Mr. Hayashida:

Applications for Well Construction, Pump Installation, and Water Use Permits  
Ground Water Management Areas, Oahu

We acknowledge receipt, on February 9, 1994, of your completed water use permit applications for the Kapalama Wells (Well Nos. 2052-13 & 14), the Punaluu III Well (Well No. 3453-15), and the Kaluanui Well III (Well No. 3554-06).

You can expect your applications to be processed within ninety (90) days from the date of receipt unless there are objections to your applications. We will be sending you a copy of the public notice for your applications and any further information regarding the status of your applications.

We also acknowledge receipt of your well construction and pump installation permit applications for the above sources. These permit applications are being reviewed for completeness at this time.

We note that the Commission approved an interim water use permit for 1.339 mgd for the Punaluu III Wells (Well Nos. 3554-06 & 07) on January 26, 1994. We assume that Well No. 3453-15 will be in battery with these other two existing sources and that your present request is to increase the permitted use of the Punaluu III Wells battery from 1.339 mgd to 1.839 mgd. Please notify our office in writing to confirm that this is indeed the case.

If you have any questions, please contact Lenore Nakama at 587-0218.

Sincerely,

[Signature]

RAE M. LOUI  
Deputy Director

LN:ky
WELL CONSTRUCTION PERMIT
for
Punalu'u III Exploratory Well
(Well No. 3453-15)
Punalu'u, Oahu

TO: Honolulu Board of Water Supply
630 South Beretania Street
Honolulu, HI 96843

In accordance with the Department of Land and Natural Resources Administrative Rules, Section 13-168, entitled "Water Use, Wells, and Stream Diversion Works", your application to construct and test Punalu'u III Exploratory Well (Well No. 3453-15), is approved subject to the following conditions:

STANDARD WELL CONSTRUCTION PERMIT CONDITIONS

1. The Commission on Water Resource Management (Commission), P.O. Box 621, Honolulu, HI 96809, shall be notified, in writing, before any work covered by this permit commences.

2. The well construction permit shall be for construction and testing of the well only. The applicant shall coordinate with the Commission and conduct a pumping test in accordance with the attached protocol. A one-inch diameter (minimum) galvanized pipe shall be permanently installed, in a manner acceptable to the Commission, to accurately record water levels. No permanent pump may be installed and no water used from the well without first obtaining a water use permit and a pump installation permit from the Commission.

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WELL CONSTRUCTION PERMIT
Well No. 3453-15

4. The following shall be submitted to the Commission within thirty (30) days after completion of work:
   a. / Well completion report.
   b. / Elevation (referenced to mean sea level, msl) survey by a Hawaii-licensed surveyor.
   c. / As-built sectional drawing of the well.
   d. / Plot plan and map showing the exact location of the well.
   e. / Complete pumping test records, including time, pumping rate, drawdown, chloride content, and other water quality data.

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SPECIAL CONDITIONS

1. The applicant is hereby informed, and agrees as a condition of this permit, that the issuance of the drilling permit shall in no way prejudice any future consideration by the Commission on the issuance or non-issuance of a water use permit. If the well is successful, and the applicant wants to use the water, the applicant will apply for a water use permit. If the well is not successful, the applicant will apply for a permit to seal/abandon the well, or properly secure it in a manner approved by the Commission.

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3. The applicant shall allow the participation of an independent consultant selected by and retained at the expense of Dr. James Anthony, The Hawaii-Laieikawai Association, in monitoring pump testing.
4. If the testing demonstrates any measurable reduction of streamflow due to pumpage, and if the applicant wants to use the well, an amendment to the interim instream flow standard will be required.

5. Depending on the results of the pumping test, conversion to an operational status in the absence of a short-term definable effect on the stream may still require long-term monitoring of flows with possible shut-down during drought periods to assure maintenance of stream flows.

MICHAEL D. WILSON, Chairperson
Commission on Water Resource Management
MAR 16 1995

Date of Issuance

I have read the conditions and terms of this permit and understand them. I accept and agree to meet these conditions as a prerequisite and underlying condition of my ability to proceed.

Applicant’s Signature: _____________________________ Date: ______________

Printed Name: __________________________________________

Firm or Title: ____________________________________________

Please sign and return one copy of this permit to the Commission and retain a copy for your record.

Attachment
cc: USGS
   State Historic Preservation Division
   Department of Health
   Safe Drinking Water Branch
   Ground Water Protection Program
   Wastewater Branch
Dr. James Anthony, Executive Director  
The Hawai'i-La'ieikawai Association  
P.O. Box 720  
Ka'a'awa, HI 96730

Dear Dr. Anthony:

The enclosed maps and pump test procedures are sent in response to your request for information relevant to the Punalu'u III Exploratory Well (3453-15), approved by the Commission January 25, 1995.

In addition, there is a groundwater index and summary here in our office that people consult and copy (sample enclosed). Several reports on groundwater hydrology are pertinent; many are out of print, but available for review and copying here.

The Honolulu Board of Water Supply and U.S. Geological Survey are also good sources of information.

You and your consultant are welcome to visit our office. Our geologists will help you as time permits.

Sincerely,

RAE M. LOUI  
Deputy Director
COMMISSION ON WATER RESOURCE MANAGEMENT

FROM: [Signature]

DATE: 1/30

SUSPENSE DATE: ________________

TO: INIT: ____________________

REGULATION BRANCH
R. LOUI
S. KOKUBUN
F. CHING
S. SUBIA
K. YODA
K. OSHIRO

APPROVAL
E. SAKODA
R. HARDY
L. NAKAMA
D. HIGA
C. ICE

SIGNATURE

INFORMATION

PLEASE:

See Me

Review & Comment

Take Action

Type Draft

Type Final

File

Xerox ___ copies

File:

PLANNING BRANCH
E. HIRANO
G. BAUER
N. FUJII

S. EDMUNDS
L. MIZUNO

FIELD SERVICES & TECHNICAL SUPPORT
Y. SHIROMA
R. JINNAI
M. OHYE
I. KUNIMURA
S. SWANSON

PLEASE:

1. Please draft reply letter. Can give him
2. submittal map
3. laboratory test protocol
4. We can give him well maps at Koolau area (Puu Nani & Hakalau)
5. He can borrow Xerox Copy of Index/Summary
6. He can borrow Xerox Marks Woodland Cabin Report.

10/94

Foreman
January 26, 1995

By Fax and U.S. Mail

Ms. Rae Loui
Deputy Director
Commission on Water Resource Management
P.O. Box 621
Honolulu, Hawai‘i 96809

Dear Rae

Punalu‘u III Exploratory Well (Well No. 3453-15),

Please provide me, at your earliest convenience, with all of the relevant information that our consultant will need in order to monitor and participate in matters related to the drilling of the aforementioned well in keeping with our request which was adopted by the Commission at its meeting yesterday and made a part of the motion approving the exploratory well construction permit. Please note that on page 2 of the Staff submittal there is reference to a map which was supposed to have been attached - no map was attached, please provide me with a copy of the relevant map.

It would be useful, too, if you would provide us with a complete list, as well as a map, of all wells in and around Punalu‘u, Kahana, Hau‘ula, La‘ie and Kahuku - the entire Ko‘olauloa aquifer. A full description of those wells would also be useful and we request that you provide that information also.

Your attention to this request for information is appreciated.

Sincerely yours,

Jim Anthony
Executive Director

cc: Professor Robert Willis
The Hawai‘i — Lāʻieikawai Association, Inc.
P.O. Box 720, Kaʻaawa, Hawai‘i 96730 • Phone (808) 237-7015

FACSIMILE TRANSMISSION COVER SHEET

DATE: 1/27/95

TO: Rae Loui

YOUR FAX #: 587-0219 TEL. #: 587-0214

FROM: DR. JIM ANTHONY, EXECUTIVE DIRECTOR

OUR FAX #: 808-237-8962 TEL. #: 808-237-7339

NUMBER OF PAGES INCLUDING THIS COVER SHEET: 3

TYPE OF DOCUMENT TRANSMITTED:

A letter dated 1/26/95 and memo dated 1/26/95

COMMENTS/ADDITIONAL MESSAGE:

ORIG:INAL TO BE MAILED: Yes

The Hawai‘i — Lāʻieikawai Association, Inc. is a non-profit corporation whose activities include research and education related to Hawaiian cultural issues and the environment.
January 26, 1995

By Fax and U.S. Mail

Ms. Rae Loui
Deputy Director
Commission on Water Resource Management
P.O. Box 621
Honolulu, Hawai‘i 96809

Dear Rae

Punalu‘u III Exploratory Well (Well No. 3453-15),

Please provide me, at your earliest convenience, with all of the relevant information that our consultant will need in order to monitor and participate in matters related to the drilling of the aforementioned well in keeping with our request which was adopted by the Commission at its meeting yesterday and made a part of the motion approving the exploratory well construction permit. Please note that on page 2 of the Staff submittal there is reference to a map which was supposed to have been attached - no map was attached, please provide me with a copy of the relevant map.

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Sincerely yours

Jim Anthony
Executive Director

Cc: Professor Robert Willis

The Hawai‘i — Lā‘ieikawai Association, Inc. is a non-profit corporation whose activities include research and education related to Hawaiian cultural issues and the environment.
AGENDA 2

ITEM 1  HONOLULU BOARD OF WATER SUPPLY, APPLICATION FOR WELL CONSTRUCTION PERMIT, PUNALUU III EXPLORATORY WELL (WELL NO. 3453-15), PUNALUU, OAHU

Dr. Anthony suggested that, if staff approved, they could retain and pay their own consultant to participate in monitoring what goes on with respect to pump test data and other related data collection.

Staff approved.

Unanimously approved as amended with the condition that would allow participation of Dr. Anthony's consultant.
Chairperson and Members
Commission on Water Resource Management
State of Hawaii
Honolulu, Hawaii

January 25, 1995

Gentlemen:

Honolulu Board of Water Supply
Application for a Well Construction Permit
Punaluu III Exploratory Well (Well No. 3453-15), Punaluu, Oahu

Applicant: Honolulu Board of Water Supply
Landowner: Same
630 South Beretania Street
Honolulu, HI 96843

Action Requested: Permission to construct and test a 14-inch diameter, 410-foot deep exploratory well (Well No. 3453-15) for municipal use.

Well Location/Tax Map Key: The proposed well site is at Punaluu, Oahu, at Tax Map Key: 5-3-07: 14 (see attached map).

Well Description:

<table>
<thead>
<tr>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ground elevation</td>
<td>65 ft.</td>
</tr>
<tr>
<td>Casing diameter</td>
<td>14 in.</td>
</tr>
<tr>
<td>Solid casing depth</td>
<td>170 ft.</td>
</tr>
<tr>
<td>Perforated casing depth</td>
<td>410 ft.</td>
</tr>
<tr>
<td>Open hole</td>
<td>none</td>
</tr>
<tr>
<td>Total depth</td>
<td>410 ft.</td>
</tr>
<tr>
<td>Grouted annulus</td>
<td>0 to 100 ft.</td>
</tr>
</tbody>
</table>

Agency Review: The applications were sent to the State Historic Preservation Division, the Division of Aquatic Resources, the Office of Hawaiian Affairs, the State Departments of Health and Hawaiian Home Lands, the Koolauloa Neighborhood Board No. 28, and the Sierra Club Legal Defense Fund, Inc. for review. There were no objections though the State Division of Aquatic Resources listed some concerns which need to be addressed by the applicant.

Analysis: The well is expected to develop alluvial water. The effect of pumping the well on streams or existing wells in the area has not been determined.

The Division of Aquatic Resources has the following concerns:

"Punaluu Stream provides important habitat for native stream species, and it is conceivable that an operational well could reduce stream flows. Furthermore, we believe that wells in addition to diversions have already degraded inshore marine habitats."

"We now believe that such infusions of fresh to salt water added important nutrient materials to marine ecosystems and helped sustain flourishing nearshore fisheries. Ancient Hawaiian fish ponds, in fact, were constructed to take advantage of these freshwater infusions where possible. The originally rich fisheries off Punaluu, Oahu have unquestionably declined in recent times, and it is reasonable to suspect that at least part of the decline is attributable to the loss of both stream and ground freshwater inputs."

Approved by Commission on Water Resource Management at the meeting held on JAN 25 1995

ITEM 1
Agenda 2
Existing data are insufficient to quantify direct relationships between ground water inputs and fishery production or ecosystem viability. Further study is needed to test the hypothesis that such inputs are important for nearshore marine fisheries and ecosystems and to place the value of any demonstrated relationships on a quantitative footing. The evidence is already strong enough, however, to incorporate such information in the decision-making process, at least to the point of ascertaining whether a proposed action may further reduce groundwater inputs to marine waters and, if such a potential exists, to determine whether there are realistic alternatives.

The Commission issued a declaratory ruling (Declaratory Ruling G-2) on March 16, 1994, effective in designated water management areas, that where there is insufficient information, an applicant may be allowed to drill and test an exploratory well prior to applying for a water use permit. The applicant shall be informed that the issuance of the drilling permit shall in no way prejudice any future consideration by the Commission on the issuance or non-issuance of a water use permit. If the well is successful, the applicant will apply for a water use permit. If the well is not successful, the applicant will apply for a permit to seal/abandon the well, or properly secure it in a manner approved by the Commission.

The well construction permit would allow the Honolulu Board of Water Supply to drill, construct, and test the well to determine its hydrological characteristics. The well construction permit would not allow them to install a pump and pump the water except for testing purposes, or grant any rights to use groundwater. These activities would require a separate pump installation permit and a water use permit, respectively.

Water Availability: The well is located in the Windward Sector, Koolauloa Aquifer System of Oahu (see attached map). Sustainable yield is estimated at 35 mgd in the system. Present use in the system is about 14 mgd.

RECOMMENDATIONS:

That the Commission approve the issuance of a well construction permit for Punaluu III Exploratory Well, subject to the following conditions:

STANDARD WELL CONSTRUCTION PERMIT CONDITIONS

1. The Commission shall be notified before work commences.

2. The well construction permit shall be for construction and testing of the well only. The applicant shall coordinate with the Commission and conduct a pumping test in accordance with the attached protocol. A one-inch diameter (minimum) galvanized pipe shall be permanently installed, in a manner acceptable to the Commission, to accurately record water levels. No permanent pump may be installed and no water used from the well without first obtaining a water use permit and a pump installation permit from the Commission.

3. The proposed well construction shall not adversely affect existing or future legal uses of water in the area, including any surface water or established instream flow standards. This permit or the authorization to construct the well shall not constitute a determination of correlative water rights.

4. The following shall be submitted to the Commission within thirty (30) days after completion of work:
   a. Well completion report.
   b. Elevation (referenced to mean sea level, msl) survey by a Hawaii-licensed surveyor.
   c. As-built sectional drawing of the well.
   d. Plot plan and map showing the exact location of the well.
Chairperson and Members
Commission on Water Resource Management
January 25, 1995

- Complete pumping test records, including time, pumping rate, drawdown, chloride content, and other water quality data.

5. The applicant shall comply with all applicable laws, rules, and ordinances.

6. The well construction permit application and staff submittal approved by the Commission at its January 25, 1995 meeting are incorporated into the permit by reference.

7. The permit may be revoked if work is not started within six (6) months after the date of issuance or if work is suspended or abandoned for six (6) months, unless otherwise specified. The work proposed in the well construction permit application shall be completed within two (2) years from the date of permit approval, unless otherwise specified. The permit may be extended by the Commission upon a showing of good cause and good-faith performance. A request to extend the permit shall be submitted to the Commission no later than three (3) months prior to the date the permit expires. If the commencement or completion date is not met, the Commission may revoke the permit after giving the permittee notice of the proposed action and an opportunity to be heard.

SPECIAL CONDITIONS

1. The applicant is hereby informed, and agrees as a condition of this permit, that the issuance of the drilling permit shall in no way prejudice any future consideration by the Commission on the issuance or non-issuance of a water use permit. If the well is successful, and the applicant wants to use the water, the applicant will apply for a water use permit. If the well is not successful, the applicant will apply for a permit to seal/abandon the well, or properly secure it in a manner approved by the Commission.

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3. If the testing demonstrates any measurable reduction of streamflow due to pumpage, and if the applicant wants to use the well, an amendment to the interim instream flow standard will be required.

4. Depending on the results of the pumping test, conversion to an operational status in the absence of a short-term definable effect on the stream may still require long-term monitoring of flows with possible shut-down during drought periods to assure maintenance of stream flows.

Respectfully submitted,

RAE M. LOUI
Deputy Director

APPROVED FOR SUBMITTAL:

MICHAEL D. WILSON, Chairperson
AQUIFER (PUMP) TEST PROCEDURES

The pump test procedure for new wells shall consist of a step-drawdown test followed by a long-term continuous aquifer test. Testing the well and aquifer in the prescribed manner should result in the hydrologic information needed to determine: 1) the well's performance with regard to yield and water quality (chloride concentration), and 2) the nearby hydraulic properties of the aquifer.

General Recording Requirements

The records required for analysis and the tolerance in measurement acceptable for the step-drawdown and long-term continuous aquifer test are as follows:

1. Discharge from the well shall not fluctuate beyond $\pm 10\%$.
2. Depth to water measurements in the pumped well shall be accurate to 0.01 feet.
3. Time shall be accurate within $\pm 1\%$.
4. Water discharged from the well during the step-drawdown and long-term test shall be carried away from the well to a distance sufficient to preclude circulation of the discharge water downward to the ground-water table.
5. Recording of data should be on a form similar to Table 1. All information shown in Table 1 shall be provided. In addition, data shall be plotted on Graph 1 and provided.

Step-Drawdown Test

The purpose of the step-drawdown test is to establish the efficiency of the well and to provide preliminary information on the yield of the well, both from a quantity and quality standpoint.

1. Measurement of water level in the pumped well shall be made every 12 hours for a period of no less than two days prior to the initiation of the step-drawdown test in order to obtain the pretest trend in water levels.
2. The step-drawdown test will consist of continuously pumping the well for four hours at four different rates.
   a. The change from one pumping rate to the next must be sufficient to induce an observable change in water level in the well from the previous pumpage rate.
   b. If desired, the four different rates should represent the full range of pump capacity (if the yield can sustain this), but this is not necessary.
3. Each pumping rate should be continued for one hour, after which the new rate should be instituted as rapidly as possible.
4. Pumping should begin at the lowest rate and conclude with the highest rate.
5. Pumping should be continuous through the entire step-drawdown test.
6. Measurement of chloride concentration and temperature of the discharge water shall be measured at least five times:
   a. at the end of each pumping rate during the step-drawdown test, and
   b. at the very beginning of the test.
AQUIFER (PUMP) TEST PROCEDURES

7. A sufficient number of water level measurements shall be made in the pumped well following the termination of the step-drawdown test to establish that the water level fully recovers from each test to pretest levels.

Long-Term Continuous Test

The purpose of the long-term continuous test is to determine the hydraulic properties of the aquifer to explore for and identify nearby aquifer boundaries such as streams or dikes, and to observe the trend in chloride concentration of the discharge water.

1. The long-term test should not commence until the water level in the pumped well has fully recovered from the step-drawdown test. Generally, the time required for this recovery will be slightly greater than four hours. The water level in the pumped well should be measured immediately before initiation of the long-term test.

2. The pump rate for the long-term test should be sufficient to create an observable drawdown.

3. The test should be run 24 hours per day for at least seven days. The decision to extend the test beyond four days shall be determined by agreement between the applicant's consultant and the staff of the Commission. If during the test, the water level remains the same for a period of 24 hours, the test can be terminated.

4. Measurement of chloride concentration and temperature of the discharge water during the long-term test shall be made at the beginning of the test and every six hours thereafter.

5. Depth to water in all wells shall be measured with sufficient frequency that each logarithmic cycle in time on the data plots (Graph 1) contains at least 10 data points spread through the cycle. Thus, depth to water should be made at \( t=0 \) (immediately prior to start of the test), and as close as possible at \( t=1, 1.5, 2, 2.5, 3, 4, 5, 6, 7, \) and 8 minutes for the first ten minutes and at all succeeding decimal multiples of these numbers to the end of the test \( (t=10, 15, 20, 25, 30, 40, 50, 60, 70, \) and 80 minutes for the log cycle 10 to 100 minutes, etc.)

6. A sufficient number of water level measurements shall be made in the pumped well following termination of the long-term continuous test to establish that the water level fully recovers from each test to pretest levels.
# AQUIFER TEST DATA

<table>
<thead>
<tr>
<th>Date</th>
<th>Hour (min)</th>
<th>( t )</th>
<th>Depth to water (ft)</th>
<th>( \Delta s ) (unadjusted) (ft)</th>
<th>Adjustment as (ft)</th>
<th>( Q ) (gpm)</th>
<th>( T )</th>
<th>( \Delta T )</th>
<th>Remarks</th>
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</table>

Average \( Q \): __________ gpm

Distance between Observation & Pumped Well: __________ ft.
Mr. Keith Ahue, Chairperson  
Department of Land and Natural Resources  
Commission on Water Resource Management  
P. O. Box 621  
Honolulu, Hawaii 96809

Dear Mr. Ahue:

Subject: Punaluu Exploratory Well III (3453-15) Well Construction Permit

We request an extension of six months for the start of construction for this well since we are unable to begin drilling by December 30, 1994 as required by the permit.

If you have any questions, please call Herbert H. Minakami at 527-6183.

Very truly yours,

KAZU HAYASHIDA  
Manager and Chief Engineer

11/20/94
Looks like a mistake.
MEMORANDUM

TO: Rae M. Loui, Deputy Director
Commission on Water Resource Management

FROM: Don Hibbard, Administrator
Historic Preservation Division

SUBJECT: Well Construction Permit Application: Punaluu III
Exploratory Well No. 3453-15
Makaua, Ko‘olauloa, O‘ahu
TMK: 5-3-07:017

A review of our records shows that there are no known historic sites at this parcel. Aerial photos taken in the 1970s show that this area has been cleared and graded and used for commercial agriculture. Because past cultivation and development would have destroyed any historic sites that might have been present we believe that this application for a well construction permit will have "no effect" on historic sites.

EJ:jk
Ms. Rae M. Loui, Deputy Director
Commission on Water Resource Management
Department of Land and Natural Resources
State of Hawaii
P. O. Box 621
Honolulu, Hawaii  96809

Dear Ms. Loui:

Subject: Your Letter of October 11, 1994 Regarding Application for a Well Construction Permit Punaluu Well III (Well No. 3453-15), Punaluu, Oahu

We provide the following information as requested:

We acknowledge the erroneous Tax Map Key (TMK: 5-3-07: 17) in the application for a Well Construction Permit for Punaluu Well III (Well No. 3453-15). The TMK should be 5-3-07:14 as indicated on the attached Tax Map.

The draft environmental assessment will be published in the November 8, 1994 OEQC Bulletin. The OEQC Bulletin Publication Form is provided for your information.

The Negative Declaration may be filed after December 8, 1994 and approved 30 days later.

If you have any questions, please call Chester Lao at 527-5286.

Very truly yours,

KAZU HAYASHIDA
Manager and Chief Engineer

Attachment
TITLE OF PROJECT: Punalu'u III Well Addition, Punalu'u, Koolau, Oahu, Hawaii

LOCATION: ISLAND Oahu DISTRICT Punalu'u

TAX MAP KEY: 5-3-07:14

PLEASE CHECK THE FOLLOWING CATEGORIES:

Type of Action: AGENCY X APPLICANT

Applicable State or Federal Statute:

X Chapter 343, HRS

Chapter 205A, HRS NEPA (Federal Actions Only)

Type of Document:

X Draft Environmental Assessment

Draft EIS NEPA NOP

Final Environmental Assessment

Final EIS NEPA Draft EIS

Final Environmental Assessment

NEPA FONSI NEPA Final EIS

Type of Revision (If applicable):

Revised

Supplemental

Addendum

Other (please explain)

Prior to general distribution, please submit to OEQC: 4 copies of the Draft EA, Final EA (Negative Declaration or EIS Preparation Notice), 4 copies of the Draft EIS or Final EIS (For Draft and Final EISs an additional copy is mailed to OEQC.)

PROPOSING AGENCY OR APPLICANT SHOULD SUBMIT COPIES OF THE DOCUMENTS TO THE APPROVING AGENCY OR ACCEPTING AUTHORITY PRIOR TO SUBMITTING COPIES TO OEQC.

APPROVING AGENCY OR ACCEPTING AUTHORITY:

ADDRESS: City and County of Honolulu

Board of Water Supply

630 South Beretania Street

Honolulu, Hawaii 96843

CONTACT: Barry Usagawa PHONE: 827-5235

PROPOSING AGENCY OR APPLICANT:

ADDRESS: City and County of Honolulu

Board of Water Supply

630 South Beretania Street

Honolulu, Hawaii 96843

CONTACT: Barry Usagawa PHONE: 827-5325

CONSULTANT: CH2M HILL

ADDRESS: CH2M HILL

1585 Kapiolani Blvd., Suite 1420

Honolulu, Hawaii 96814-4530

CONTACT: Bennett Mark PHONE: 943-7135 ext. 202

COMMENT PERIOD END DATE: December 8, 1994
SUMMARY of the proposed action or project to be published in the OEQC Bulletin. Please submit it as a summary ready for publication. The description should be brief (300 words or less), yet provide sufficient detail to convey the full impact of the proposed action.

The City and County of Honolulu, Board of Water Supply (BWS), proposes to drill and case an additional water well in its Punaluu Wells III site in Punaluu, on the windward side of Oahu. This well addition will be drilled within an existing 1.97-acre BWS site. The proposed Punaluu III Well Addition is expected to be capable of yielding 9.5 mgd (million gallons per day) of potable water. The well will tap alluvial water and is not expected to affect streamflow. Standard test pumping and monitoring protocol will be followed to verify any adverse impact.

The drilling and casing of an exploratory well is the first step of a two-step process that the BWS uses to obtain hydrogeological data on the potential of new ground water resources. After the exploratory well is drilled and cased, the second step will require that a well pump test be performed to determine if the quantity and quality of the water from this exploratory well is suitable for development. If the quantity and quality is suitable for development, the BWS will incorporate the exploratory well into its permanent production facilities. However, if either the quantity or quality of the water proves to be unsuitable for a production well, the exploratory well will be sealed and abandoned.

This environmental assessment focuses on the drilling, casing, and testing of this exploratory well. The proposed action will also include the temporary installation of a test pump, piping, and appurtenances. If the exploratory well is developable, a permanent pump and pipelines will be installed together with the electrical and mechanical controls to the existing facility. All construction work will be within the BWS's existing 1.97-acre Punaluu Wells site.

NOTE: Since the deadline for EIS submittal is so close to the publication date for the OEQC Bulletin, please assist us by bringing the Document for Publication Form and a computer disk with the project description (size 3 1/2" or 5 1/4" disk are acceptable; preferably WordPerfect 5.1 or ASCII text format) to the Office of Environmental Quality Control as early as possible. Thank you.
Mr. Thomas Arizumi, Chief
Environmental Management Division
State Department of Health
919 Ala Moana Blvd., 3rd Floor
Honolulu, Hawaii 96814

Attn: Mr. William Wong

Dear Mr. Arizumi:

Well Construction Permit Application

Please review the following permit application pursuant to your area of concern and submit your comments to us by ___NOV 21 1994_____.

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Should you have any questions, please contact the Commission on Water Resource Management staff at 587-0225.

Sincerely,

RAE M. LOUI
Deputy Director

Response:

☐ We have no objections
☐ Not subject to our regulatory authority and permit
☐ Comments attached
☐ Additional information requested
☐ Extended review period requested

Contact Person: Bill Wong

Signed: Bill Wong
Mr. Thomas Arizumi, Chief  
Environmental Management Division  
State Department of Health  
919 Ala Moana Blvd., 3rd Floor  
Honolulu, Hawaii 96814

Attn: Mr. Dennis Tulang

Dear Mr. Arizumi:

Well Construction Permit Application

Please review the following permit application pursuant to your area of concern and submit your comments to us by NOV 21 1994.

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Should you have any questions, please contact the Commission on Water Resource Management staff at 587-0225.

Sincerely,

[Signature]

RAE M. LOUI  
Deputy Director

Contact Person: Lori Kajiwara  
Phone: 5864290

Signed: Lori Kajiwara  
Date: 10-24-94
TO: Dr. Don Hibbard, Director
    Historic Preservation Program

    Mr. Henry M. Sakuda, Administrator
    Division of Aquatic Resources

FROM: Rae M. Loui, Deputy Director

SUBJECT: Well Construction Permit Application

Please review the following permit application pursuant to your area of concern and submit your comments to us by NOV 4 1994.

Island  Well Name  Well No.  Application Type
Oahu     Punaluu III Exploratory  3453-15  Well Construction

Should you have any questions, please contact the Commission on Water Resource Management staff at 587-0225.

Response:

( ) We have no objections
( ) Not subject to our regulatory authority and permit
( ) Comments attached
( ) Additional information requested
( ) Extended review period requested

Contact Person: Henry M. Sakuda
Signed: Henry M. Sakuda
Phone: 311-12
Date: 10/28/94
MEMORANDUM

TO: Rae M. Loui, Deputy Director
    Commission on Water Resource Management

FROM: Henry Sakuda, Administrator
      Division of Aquatic Resources

SUBJECT: Comments on Well Construction Permit Application by the Honolulu Board of Water Supply for Well No. 3453-15, Punaluu III Exploratory, Oahu

The project involves installation of an exploratory well near Punaluu Stream approximately 0.7 mile above Punaluu Beach Park to access alluvial water for municipal use.

We have some concerns about additional wells in the area. Punaluu Stream provides important habitat for native stream species, and it is conceivable that an operational well could reduce stream flows. Furthermore, we believe that wells in addition to diversions have already degraded inshore marine habitats. The exceptional lagoon and reef fisheries of Punaluu that existed prior to the wells and diversions are described in Bernice P. Bishop Bulletin 233, Native Planters in Old Hawaii (1972). Punaluu literally means diving spring. Mrs. Mary Kawena Pukui, who was a collaborator in preparation of the Bulletin, noted that drinking water used to be obtained in many such areas throughout Hawaii, where divers in marine waters using stoppered bottles collected cold, fresh drinking water welling up from springs in the bottom.

We now believe that such infusions of fresh to salt water added important nutrient materials to marine ecosystems and helped to sustain flourishing nearshore fisheries. Ancient Hawaiian fish ponds, in fact, were constructed to take advantage of these freshwater infusions where possible. The originally rich fisheries off Punaluu, Oahu have unquestionably declined in recent times, and it is reasonable to suspect that at least part of the decline is attributable to the loss of both stream and ground freshwater inputs.

Existing data are insufficient to quantify direct relationships between ground water inputs and fishery production or ecosystem viability. Further study is needed to test the hypothesis that such inputs are important for nearshore marine fisheries and ecosystems and to place the value of any demonstrated relationships on a quantitative footing. The evidence is already strong enough, however, to incorporate such information in the decision-making process, at least to the point of ascertaining whether a proposed action may further reduce groundwater inputs to marine waters and, if such a potential exists, to determine whether there are realistic alternatives.
Mr. Thomas Arizumi, Chief
Environmental Management Division
State Department of Health
919 Ala Moana Blvd., 3rd Floor
Honolulu, Hawaii 96814

Attn: Mr. William Wong

Dear Mr. Arizumi:

Well Construction Permit Application

Please review the following permit application pursuant to your area of concern and submit your comments to us by NOV 21 1994.

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Should you have any questions, please contact the Commission on Water Resource Management staff at 587-0225.

Sincerely,

 Rae M. Loui
Deputy Director

Response:

( ) We have no objections
( ) Not subject to our regulatory authority and permit
( ) Comments attached
( ) Additional information requested
( ) Extended review period requested

Contact Person: ____________________________ Phone: __________________

Signed: ____________________________ Date: __________________
Mr. Thomas Arizumi, Chief  
Environmental Management Division  
State Department of Health  
919 Ala Moana Blvd., 3rd Floor  
Honolulu, Hawaii 96814

Attn: Mr. Dennis Tulang

Dear Mr. Arizumi:

Well Construction Permit Application

Please review the following permit application pursuant to your area of concern and submit your comments to us by NOV 21 1994.

Island   Well Name         Well No.  Application Type
Oahu      Punaluu III Exploratory  3453-15  Well Construction

Should you have any questions, please contact the Commission on Water Resource Management staff at 587-0225.

Sincerely,

[Signature]

RAE M. LOUI  
Deputy Director

ES:ss  
Enc.

Response:  
() We have no objections  
() Not subject to our regulatory authority and permit  
() Comments attached  
() Additional information requested  
() Extended review period requested

Contact Person: ___________________________  Phone: ______________________

Signed: _________________________________  Date: ________________________
TO: Honorable Hoaliku L. Drake, Director  
Department of Hawaiian Home Lands

Mr. Clayton H.W. Hee, Chairman and Trustee At Large  
Office of Hawaiian Affairs

FROM: Keith W. Ahue, Chairperson
Commission on Water Resource Management

SUBJECT: Well Construction Permit Application

Please review the following permit application pursuant to your area of concern and submit your comments to us by NOV 2 1 1994.

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Should you have any questions, please contact the Commission on Water Resource Management staff at 587-0225.

Enc.

Response:

1. We have no objections
2. Not subject to our regulatory authority and permit
3. Comments attached
4. Additional information requested
5. Extended review period requested

Contact Person: ____________________________ Phone: ________________

Signed: ____________________________________ Date: ________________
TO: Dr. Don Hibbard, Director
    Historic Preservation Program

    Mr. Henry M. Sakuda, Administrator
    Division of Aquatic Resources

FROM: Rae M. Loui, Deputy Director
      Commission on Water Resource Management

SUBJECT: Well Construction Permit Application

Please review the following permit application pursuant to your area of concern and submit your comments to us by NOV - 4 1994.

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Should you have any questions, please contact the Commission on Water Resource Management staff at 587-0225.

ES:ss
Enc.

Response:

( ) We have no objections
( ) Not subject to our regulatory authority and permit
( ) Comments attached
( ) Additional information requested
( ) Extended review period requested

Contact Person: ___________________________ Phone: ___________________________

Signed: ___________________________ Date: ___________________________
Ms. Marjorie Ziegler  
Sierra Club Legal Defense Fund, Inc.  
223 South King Street, Suite 400  
Honolulu, Hawaii 96813

Dear Ms. Ziegler:

**Well Construction Permit Application**

Please review the following permit application pursuant to your area of concern and submit your comments to us by **Nov 21, 1994**.

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Should you have any questions, please contact the Commission on Water Resource Management staff at 587-0225.

Sincerely,

[Signature]

RAE M. LOUI  
Deputy Director

---

**Response:**

( ) We have no objections  
( ) Not subject to our regulatory authority and permit  
( ) Comments attached  
( ) Additional information requested  
( ) Extended review period requested

Contact Person: _____________________________  
Phone: _________________________________

Signed: _____________________________  
Date: ____________________
Koolauloa Neighborhood Board No. 28
C/o Hauula Satellite City Hall
54-010 Kukuna Road
Hauula, Hawaii 96717

Gentlemen:

Well Construction Permit Application

Please review the following permit application pursuant to your area of concern and submit your comments to us by November 21, 1994.

Island     Well Name               Well No.    Application Type
          Punaluu III Exploratory     3453-15    Well Construction

Should you have any questions, please contact the Commission on Water Resource Management staff at 587-0225.

Sincerely,

RAE M. LOUI
Deputy Director

Response:

() We have no objections
() Not subject to our regulatory authority and permit
() Comments attached
() Additional information requested
() Extended review period requested

Contact Person: ____________________________ Phone: ____________________________

Signed: ____________________________ Date: ____________________________
Mr. Kazu Hayashida  
Manager and Chief Engineer  
Honolulu Board of Water Supply  
630 South King Street  
Honolulu, HI 96843  

Dear Mr. Hayashida:

Application for a Well Construction Permit  
Punaluu Well III (Well No. 3453-15)  
Punaluu, Oahu

We have received and are processing your application for the subject well. We need more information for the following:

1. There is a discrepancy in the Tax Map Key (TMK) for the well site. The application lists the TMK as 5-3-07: 17. The well location map provided with the application shows the location to be at 5-3-07: 14. Please provide documentation to clarify.

2. The application lists a Negative Declaration as a pending action. Where an action under Environmental Impact Statements, Chapter 343, is required, it must undergo the review process before any decision making can occur. Please provide the status of the Negative Declaration and the pertinent OEQC Bulletin for our information and files.

If you have any questions, please call me at 587-0214.

Sincerely,

RAE M. LOUI  
Deputy Director

ES: ss
Mr. Kazu Hayashida  
Manager and Chief Engineer  
Honolulu Board of Water Supply  
630 South King Street  
Honolulu, HI 96843

Dear Mr. Hayashida:

Application for a Well Construction Permit  
Punaluu Well III (Well No. 1942-01)  
Punaluu, Oahu

We have received and are processing your application for the subject well. We need more information for the following:

1. There is a discrepancy in the Tax Map Key (TMK) for the well site. The application lists the TMK as 5-3-07: 17. The well location map provided with the application shows the location to be at 5-3-07: 14. Please provide documentation to clarify.

2. The application lists a Negative Declaration as a pending action. Where an action under Environmental Impact Statements, Chapter 343, is required, it must undergo the review process before any decision making can occur. Please provide the status of the Negative Declaration and the pertinent OEQC Bulletin for our information and files.

If you have any questions, please call me at 587-0214.

Sincerely,

RAE M. LOUI  
Deputy Director
APPLICATION FOR PERMIT

1. APPLICANT: (may be a, b, or c, but all must be filled in)
   (a) WELL OWNER
      Firm/Name: Honolulu Board of Water Supply
      Contact Person: Kazu Hayashida
      Ph: 527-6180
      Address: 630 South Beretania Street
      Honolulu, Hawaii 96813
   (b) LANDOWNER
      Firm/Name: 
      Contact Person: 
      Ph: 
      Address: 
   (c) CONTRACTOR
      Firm/Name: 
      Ph: 
      Contractor's C-57 License No: 
      Address: 

2. WELL LOCATION/NAME: Punalu'u Wells III
   Island: Oahu
   Address: 
   Tax Map Key: 5-3-07: 17
   (Attach a USGS map, scale 1" = 2000', and a property tax map showing well location referenced to established property boundaries.)

3. (a) PROPOSED WORK: 
   Drill New Well
   Modify Existing Well
   * Alter Location
   Radial
   Deepen
   * Abandon/Seal
   Install New Pump
   Replace Pump
   Modify Pump
   * Be sure to complete and submit well abandonment report upon completion of work.
   (b) WELL TYPE: 
   Dug
   Bored
   Driven
   Drilled
   Radial
   Is this well a part of a battery of wells? 
   Yes
   No
   (Briefly describe and fill in the diagram on the back of this form.)

4. PROPOSED PUMP INFORMATION: Rated Pump Capacity: 350 gallons per minute
   Pump Type: 
   Deep Well Turbine
   Submersible
   Centrifugal
   Rotary
   Rotary-Displacement
   Propeller
   Rotary-Gear
   Impulse
   Motor: 
   Diesel
   Gas
   Electric, rated horsepower of

5. PROPOSED USE: 
   Municipal (including hotels, stores, etc.)
   Domestic (individual, noncommercial water use)
   Irrigation (crop)
   State Land Use District: 
   County Zoning (describe): 
   (If more space is needed, continue below under remarks, explanations.)

6. (a) PROPOSED AMOUNT OF WITHDRAWAL: 580,7000 
   (b) METHOD OF FLOW MEASUREMENT: 
      Flow-meter
      Open-pipe
      Orifice Plate
      Weir

7. PENDING ACTIONS: 
   CDUA
   SMA
   EIS
   EA
   NONE
   Other(explain) Neg. Dec.

8. REMARKS, EXPLANATIONS: 
   Develop alluvial water for municipal use.
   (If more space is needed, continue on back)

NOTE: Signing below indicates that the applicant understands that, if the permit is granted by the Commission on Water Resource Management, the proposed work is to be completed within two (2) years of the approval date. In addition, the contractor shall submit to the Commission a well completion report, well abandonment report, or both, within 30 days after the completion date of the permitted work. The applicant also understands that monthly water use data shall be submitted to the Commission. The applicant further understands that approval of the proposed permit shall not constitute a determination of correlative water rights and shall not guarantee the pump capacity or future use up to the permitted pump capacity.

Well Owner: Board of Water Supply
Landowner: 
Contractor: 
Signature: 
Signature: 
Signature: 
Date: 
Date: 
Date:

For Official Use Only:
Date Received: 
Date Accepted: 
Field Checked By: 
Date: 

 Longitude: 
 Aquifer System Name: 
 State Well No.: 

5/24/82 WCR Form
9. PROPOSED WELL SECTION

Elevation at top of casing

____ ft., mal.

Cement Grout: _____ ft.

Rock Packing: _____ ft.

Hole Diameter: _____ in.

Total Depth: _____ ft.

Ground Elevation: -500 ft., mal.

Solid Casing:

Material

Length: __________________ ft.

Diameter: ____________ in.

Wall thickness: ____________ in.

Casing: ☐ Perforated ☐ Screen

Material

Length: __________________ ft.

Diameter: ____________ in.

Wall thickness: ____________ in.

Openings: ________ sq. in./L.F.

Open Hole:

Length: __________________ ft.

Diameter: ____________ in.

---

*Approximate elevation at time of application. Ground elevation above mean sea level (mal) by a surveyor licensed by the State must be submitted at start of construction. Final elevations of well components shall be submitted in the well completion/well abandonment reports.
9. PROPOSED WELL SECTION

- Elevation at top of casing: 67 ft., msl.
- Ground Elevation: 65 ft., msl*.
- Cement Grout: 100 ft.
- Rock Packing: 310 ft.
- Hole Diameter: 20 in.
- Total Depth: 410 ft.

Solid Casing:
- Material: ASTM A-53 Steel
- Length: 150 ft.
- Diameter: 14 in.
- Wall thickness: 3/8 in.

Casing:
- Perforated: Yes
- Screen: Yes
- Material: ASTM A-53 STEEL
- Length: 240 ft.
- Diameter: 14 in.
- Wall thickness: 3/8 in.
- Openings: 70 mIn/sq. In./LF.

Open Hole:
- Length: None
- Diameter: None

*Approximate elevation at time of filing application. Ground elevation above mean sea level (msl) by a surveyor licensed by the State must be submitted at start of construction. Final elevations of well components shall be submitted in the well completion/well abandonment reports.