CHECKLIST

WELL CONSTRUCTION PERMIT

WELL NAME or LOCATION: Keahole Point-Waiakea WELL ISLAND: Hawaii
WELL NUMBER: 4363-04 06 Tax Map Key: 7-3-43:3,4 & 5

OWNER/OPERATOR:
Firm Name: Waiakea Fishermen, Inc
Contact Person: Jerry Higashi
Address: PO Box 2077
Honolulu, HI 96805
Phone: 536-7160

LANDOWNER:
Firm Name: Natural Energy Lab of Hawaii
Contact Person: Jan C. Varick, Operations Mgr
Address: PO Box 1749
Kailua-Kona, HI 96745-1749
Phone 329-7341

Date application received: 5-31-90
Date acknowledged receipt/request more info: 6-12-90
Date application accepted: 
Suspense date (90 days): 
Date filing fee deposited: 

Application sent to following:

<table>
<thead>
<tr>
<th>Dept. of Health</th>
<th>Date sent</th>
<th>Comments received</th>
</tr>
</thead>
<tbody>
<tr>
<td>County water board/dept</td>
<td>6-13-90</td>
<td>7-16-90</td>
</tr>
<tr>
<td>Dept. Pub. Wrks (Hawaii)</td>
<td>6-12-90</td>
<td>6-25-90</td>
</tr>
<tr>
<td>Dept. of Hawaiian Homes</td>
<td>6-13-90</td>
<td></td>
</tr>
<tr>
<td>Koolauloa NB #28</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Date agenda due:
Date submittal due:
Date submittal sent to applicant:
Date application ✓ approved or _ disapproved: 7-25-90
Date applicant notified of decision: ISSUED: 8-8-90

REMARKS:

---
---
---
---
---
To: Bill Devick, Administrator  
Division of Aquatic Resources  

From: Tim Johns, Deputy Director  
Commission on Water Resource Management

Subject: NELHA Tenant Outstanding Issues

Following is a summary of issues that Commission Staff investigated and the current status of each issue:

<table>
<thead>
<tr>
<th>Tenant</th>
<th>Well</th>
<th>Action Requested by Staff</th>
<th>Possible Fines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cyanotech¹</td>
<td>Net Washing Well (4363-13)</td>
<td>Commission staff investigated the site on December 10, 1997. Commission found two wells (4363-13 and 4463-04) that were drilled without permits. Staff told Cyanotech that an After-the-Fact Well Construction Permit (ATFWCP) was required. An ATFWCP application was submitted on December 29, 1997 and erroneously accepted on February 3, 1998. The application was still incomplete because the landowner was incorrectly identified as Cyanotech and the Tax Map Key number was not provided.</td>
<td>$1000 / day for the period between when the well was first constructed (1987) and Staff's field investigation. The well may have been constructed before the Water Code and would have been under the BLNR purview.</td>
</tr>
<tr>
<td>Cyanotech¹</td>
<td>Dust Control Well (4463-04)</td>
<td>Staff understood the well to be temporary in nature and that no permit would be necessary.</td>
<td>None</td>
</tr>
<tr>
<td>Uwajima Fisheries¹²</td>
<td>Two wells</td>
<td>Staff investigated the Uwajima Fisheries site on December 10, 1997 and found two unregistered wells. Copies of the Well Standards, Well Completion Reports and the application form were transmitted to the applicant. To date, staff has not received application forms for these two wells.</td>
<td>Up to $1000 / day, since December 10, 1997 = $300,000</td>
</tr>
</tbody>
</table>

¹These are salt water wells which do not endanger the aquifer nor neighboring wells.

²However, tenants have not shown good faith efforts in complying with permit requirements.

RI:ss
December 17, 1997

MEMORANDUM TO THE FILE

FROM: Neal Fujii

SUBJECT: Field Investigation Uwajima Fisheries Wells, Keahole Pt., Hawaii

FILEREF: UWAJIMA FISH

SUMMARY: On December 10, 1997, Glenn Bauer, Mitchell Ohye and I went to Uwajima Fisheries to do a field verification of their wells. At about 3:00 pm, we met with Mr. Ryan Murashige, the manager of the operations. During the inspection, we found that Uwajima Fisheries has 12 wells, eight of which have pumps and are being used. Our well index records show that only 10 of their wells are registered. On December 3, 1997, we sent a letter asking for after-the-fact permits for pump installation. Total pumpage from eight wells is about 2000 gpm. A water sample was taken from one of the wells, and titration later showed chloride level to be 14,250 ppm. Uwajima’s primary product is hirame (flounder); they also grow seaweed, moi and breeding stock shrimp. Photographs of wells and pump taken. One GPS fix taken near a well was 19°43.47”N, 156°03.34”W. A copy of the Hawaii Administrative Rules §168 and the Well Construction Standards was given to Mr. Murashige.

TMK: Wells are located on and water used on TMKs 7-3-43:3,4,5. The address is 73-4460 Queen Kaahumanu Hwy., Ste. 104. The land is owned by the State of Hawaii and is leased to Natural Energy Labs of Hawaii (NELH), who sub-leases the parcels to Uwajima Fisheries.

SOURCE: Twelve drilled, brackish water wells, each about 40-50 feet deep (Figure 1). Eight wells have centrifugal pumps installed, each about 250gpm (Figure 2). The pumpage is not metered. Chloride level is 14,250 ppm. Wells are not metered, but are used 24 hours/day (about 2000gpm). The wells are drilled around the perimeter of the ponds/tanks. Well numbers are 4363-01 to 12. Mr. Murashige stated that he plans to deepen some of the wells in the future to obtain pure salt water.

USE: Water is pumped 24 hours/day for aquaculture (about 2000gpm). Uwajima grows hirame (flounder), seaweed, moi and breeding stock shrimp. The animals are grown in large tanks above the ground surface. At the time of inspection, there were 4-25’ diameter (40,000 liter), 15-18’ diameter (22,000 liter), and 13-12’ diameter (10,000 liter) round plastic tanks. In addition there were 20-24’x24’ (35,000 liter) square concrete tanks. Discharge water is channeled into an open discharge ditch.

OTHER: Mr. Murashige mentioned that he had some concerns that neighboring Cyanotech Corporation had begun to discharge ocean water into an open ditch up-gradient of Uwajima Fisheries. He had concerns that the discharged water may affect the quality of water being pumped from his wells and is monitoring the level of several
constituents within the water. Mr. Murashige stated that he is working with Cyanotech to address this concern.

Figure 1. Typical well construction.

Figure 2. Typical pump/motor setup.
Mr. Ryan Morishige  
Uwajima Fisheries, Inc.  
73-4460 Queen Kaahumanu Hwy., Ste. 104  
Kailua-Kona, HI 96740

Dear Mr. Morishige:

Monthly Water Use Reports From Groundwater Wells

Recent developments in the Keahole Point area have led the Commission on Water Resource Management (CWRM) to examine ground water withdrawals in the Keauhou aquifer system.

From your December 2, 1997 conversation with Mr. Neal Fujii of my staff, we understand that Uwajima Fisheries operates eight out of ten brackish-water wells used for fisheries operations. Our records show as of August 1990, wells 4363-01,02,03 were operational and CWRM had issued a permit for the installation of pumps in wells 4363-04,05,06; the remaining four wells were to be kept in reserve until your operations were expanded. Under Hawaii Administrative Rules (H.A.R.) §13-168-7 Report of water use.:

(a) The owner or operator of any well or stream diversion works from which water is being used shall provide and maintain an approved meter of other appropriate device or means for measuring and reporting total water usage on a monthly (calendar or work schedule) basis. If a well or stream diversion works is one of a battery of interconnected water sources, a centralized measuring device or facility may be approved by the commission.

(b) The owner or operator of any well or stream diversion works or battery of such water sources shall file a report of total water usage on a regular monthly (calendar or work schedule) basis to the commission on forms provided by the commission on or before the end of the month following the month for which water usage is to be reported. The reports may include other use-related information such as type of use, salinity, and water level, as may be deemed appropriate and reasonable by the commission.

(c) At the discretion of the commission, requirements for measuring and reporting monthly water usage may be lessened, modified, or exempted for owner or operators of small, individual wells or stream diversion works. The lessening, modification of such requirements shall be approved, disapproved, or otherwise decided by the commission on a case-by-case basis.
We hereby request monthly water use reports from all wells along with water-level and chloride concentration information. Your monthly water use report form is enclosed. In addition to providing us monthly reports, please provide us with any past records you may have concerning pumping amounts, water-levels, and chloride concentrations.

Under H.A.R. §13-168-12, any pump installation subsequent to your August 1990 pump installation permit requires the issuance of an additional permit from the Commission. A pump installation permit application form is enclosed for any after-the-fact pump installation work. Please respond to these matters before December 31, 1997. Our staff is planning to visit the site to verify existing conditions of your wells during the week of December 8. Mr. Neal Fujii will be contacting you to schedule an appointment. Any cooperation you can extend will be greatly appreciated. If you have any questions or need additional information, please contact Mr. Neal Fujii of our Survey Branch at (808) 578-0264.

Sincerely,

RAE M. LOUI
Deputy Director

NF:ss
Enclosures

c: Dr. Kimberly Lowe, DLNR, Division of Aquatic Resources
MEMORANDUM

TO: Michael D. Wilson, Chairperson

THROUGH: William Devick, Administrator
Division of Aquatic Resources

FROM: Dr. Kimberly Lowe, MHI-MRI Coordinator, DAR

SUBJECT: Concerns regarding detrimental impacts of NELHA and HOST Park affiliates on environmental and historic sites at Keahole Point, with recommendations to alleviate conflicts and better conserve land and natural resources there.

This is to bring to your attention what I feel are important concerns regarding Conservation Land leased to the Natural Energy Laboratory of Hawaii Authority (NELHA) at Keahole Point, Hawaii. I understand this company is in the process of renegotiating their lease. As the lease is renegotiated, we hope this information will be useful to you and will help place DLNR in a position to improve our management and protection of State lands leased to the NELHA. There are various environmental concerns my staff and I have noted while reviewing their CDUP and related EIS reports, environmental monitoring program, and management of the Historic Preserve at Ho'ona. I will outline the main points here, which we'll be happy to explain to you in depth at your convenience.

As you know, MHI-MRI examines a variety of human impacts on coastal fisheries and fish habitat (including effects of overfishing, shoreline development, pollution, etc.). The project seeks to understand the underlying causes of declining fisheries and help DLNR better manage and conserve these resources for future generations. We became interested in the NELHA and it's HOST Park affiliates as part of an ongoing study of opelu fisheries ecosystems at Kona. What we've found has been a real eye opener.

I'm sure you are aware that NELHA is in the process of terminating the curatorship of Ho'ona Historic Preserve (HHP). As part of this process, Don Hibbard and I were questioned in court regarding the curatorship (Dr. Hibbard for his work with historic preservation and me for my efforts to glean information on traditional knowledge of coastal marine ecosystems and fisheries). Dr. Hibbard observed that the HHP was neglected and in decline until the Curator, Alena Kaiokekoa, began his volunteer work there. Since then, at no cost to the State, he has cleared and restored the grounds and implemented a teaching program which reaches out statewide, bringing Hawaiian culture and history to life and sharing much more than just archaeological information with the public in a place where many of his own family members are buried.

I have been working with the Curator at HHP, and other kupuna along the Kona Coast, in an effort to learn some of the knowledge held by native Hawaiians regarding traditional ways of caring for ocean and coastal resources in this region. Older fishermen and women of Kona, including Alena Kaiokekoa, have been of great help in this effort. For several years, I have observed and appreciated Mr. Kaiokekoa's efforts to share HHP's history with people of all ages and walks of life. Groups of kupuna meet at HHP to share ideas and work together for Hawaii's future. Kid's readily learn lessons which would be hard to teach in a classroom. Children, young adults and grown ups from throughout the Main Hawaiian Islands (including the DLNR Youth Conservation Corps, Polynesian Voyaging Society, high schools, elementary schools, tourists, etc...) visit HHP and learn about Hawaiian history and crafting, land and ocean conservation practices,
how to avoid littering and polluting the ocean and leave some fishery resources for the future, etc. They leave HHP with a healthy respect for relationships between land and sea, and often with a greater appreciation for their own family. This accomplishment developed through Mr. Kaiokekoa's gift for teaching and inspiring others.

Through our developing understanding of the importance of groundwater to HHP, Keahole Point, and its offshore fisheries we began observing changes in the anchialine ponds and water table throughout the region. My staff and I began reviewing the activities of the NELHA, and particularly a tenant of theirs called Cyanotech. Through examination of their CDUAs, EIS reports and ongoing expansion, we began to have other environmental concerns, which I will summarize below.

We observe the massive expansion of Cyanotech in progress and the more moderate growth of the rest of NELHA. Throughout the site, dynamite is being used to destroy all traces of historic sites and an ancient and unique lava field (both of great interest to tourists, local residents and scientists). A hard layer of lava is being removed, and the underlying honeycomb of mixed tuff ground up and used to line a network of ponds. It is not clear where the upper layer of lava rock is being taken, but it appears it is being mined and disposed of or sold. All this was done little or no notice to the community, which has caused alarm for several reasons.

Within the area leased, only the burials at HHP are being conserved. Other historic sites and burials are being routinely surveyed and destroyed. Although there is a limited data recovery program, deposits within these sites are not examined in depth. Photographs are taken, measurements and sketches are made, and then the sites are lost forever to this limited survey process. This is being allowed by our Department on Conservation Land and is a source of community outrage.

Our greatest environmental concern is the effect of using so much dynamite in an area permeated by lava tubes and porous rock, which carry streams and groundwater to the ocean, and lead to burial caves and unique nursery habitat for fishes and invertebrates along the shoreline. Lava tube and anchialine pond fauna are quite rare and many are found in only a few remaining regions at Kona. Both ecological and historical devastation is evident, all on land zoned for conservation.

Right beneath the lava rock at Keahole is a layer of very low salinity (almost fresh) water. The companies associated with NELHA, especially Cyanotech, are apparently pumping this water out of the ground to be used for aquaculture. In addition, they are pumping salt water from the ocean, using it to cool the ponds and then returning it to the ground where it easily seeps back into the aquifer. Thus, a double blow is dealt to the aquifer, which must gradually increase in salinity. The models used in various EIS to explain environmental impacts of this activity are poorly researched and technically invalid. We are very concerned about the effects of this on groundwater within this unique hydrological area, one of the few places on the Big Island where freshwater reaches the surface in such large quantities.

Knowledge of the unique hydrology of Keahole is available to laymen and scientists alike, through the lessons in Hawaiian history at HHP and by working with kupuna from throughout the surrounding region. Portions of what I have described were learned through our working relationship with the Curator of HHP. This oral history can be easily lost by focusing only on archaeology. Although Mr. Kaiokekoa humbly excuses his knowledge as unscientific, through traditional legends and practical knowledge, he lead us to a deeper understanding of the groundwater resources of this region, the ecology of the anchialine ponds and how they are affected by the development of Cyanotech. His ideas are confirmed by our research and the rest has been understood by working with DLNRS Divisions of Water Resources Management, Historic Preservation and State Parks, and with the Army Corps of Engineers.
HHP contains anchialine ponds which have the lowest salinity I've seen in any other anchialine ponds along the Kona Coast. Although the endemic species found in these ponds exist elsewhere at Kona, the ponds at Ho'ona may well support unique subpopulations of these species, due to their unique hydrology and geographic isolation. Our preliminary data indicate the water table in these ponds has dropped significantly and salinity is increasing over time.

Our understanding of the fisheries of this region, developed through discussions with Mr. Kalokekoa and other kupuna, indicates the existence of offshore opelu and ahi koa (places where schools of mackerel scad, tunas and other large pelagic fishes have gathered throughout recorded Hawaiian history). The locations of these koa and how to care for them are recorded within the culture and archaeology of the region, and are part of what HHP offers to future generations. The orientation of the buildings at HHP represents one of the historic records of this knowledge. It is also described through chants, stories and hula, as Hawaiians have always done. Scientists have also described the underlying geology and hydrology of this region, but only Hawaiian culture links this to coastal koa.

Groundwater seeping to the surface at sea through porous rocks and lava tubes in the Keahole region also feeds natural upwelling and associated productivity, which in turn supports opelu stocks, and the dolphins, ahi and other fishes which feed on them. Traditional knowledge also tells us that Hawaiians at North Kona fished for opelu using opae ula (the shrimp found in the anchialine ponds and lava tubes), while fishers at South Kona used taro, sweet potato, pumpkin and other vegetables. These differences in customs are probably related to ecological differences causing the unique abundance of opae ula in the northern portion of the Kona coast.

In addition to collapsing lava tubes, acoustic and kinetic damage from dynamite may alter this ecosystem. Sound wave propagate much more rapidly in water. Echoes from blasting may also affect the acoustic systems of marine mammals in this region, which local people note have recently decreased in abundance. Some fishers say opelu schools have left the area of the blasting, so it is not unlikely the disappearance of large dolphin schools may be related to the disappearance of their food.

Crevices within the rocks, potentially collapsed by dynamite, support populations of sea turtles, aweoweo, lolii, surgeonfishes, u'u, hau'uke'uke and many other species which characterize this place to those who know it. The coral communities and fish populations have been characterized as unique by scientists, fishermen and tourists who are lucky enough to visit this coast on vacation. Certain flora and fauna are clearly dependent on the special environment created within the lava tubes and anchialine ponds, by the rise and fall of the tides and influx of groundwater through this region. Recent activities of Cyanotech and NELHA appear to have precipitated the decline of this ecosystem and the life forms it supports.

HHP is part of the old Hawaiian district of Kekaha. At Kekaha (Kai) State Park, on the other side of the 1801 lava flow, kupuna are being consulted by DLNR and honored as they seek to share their knowledge and protect the graves of their families. What a contrast is seen between Kekaha (Kai) State Park and HHP, where the NELHA is expanding rapidly at the cost of historic and natural resources!

Without belaboring the point, we would like to help you provide guidance, so DLNR can set environmentally responsible conditions to the lease and this destruction will not continue or increase. As professionals, we would prefer to halt the Cyanotech expansion, so it's environmental impacts could be better understood before they go any further. At the very least, stringent conditions should be set on any further expansions and/or changes in fresh and salt water usage and discharge volumes under the lease to NELHA, to restore what remains of the coastline and ensure the future of the Keahole Aquifer.
These are our specific recommendations:

**Measures Independent of the NELHA Lease**

1) We recommend DLNR place this aquifer under management of the Water Commission, since it's sustainable yield can rapidly be reached or exceeded by the combined freshwater pumping from wells at the Airport, HELCO and NELHA.

2) We recommend HHP be excluded from the lease and included in the management plan for Kekaha (Kai) State Park. DLNR could reinstate the HHP curatorship, a beneficial arrangement, which could be jointly managed with assistance and funding support from OHA. There are indications such an arrangement would be acceptable to OHA, as an example of a partnership in responsible cultural and historic resource management.

3) MHI-MRI will seek out historical records of the caves along the Keahole shoreline and their fauna from dive tour operators and other sources, to provide baseline data.

**Recommended Conditions of the New NELHA Lease:**

1) Salt water would be returned to the ocean via the present pipeline to the same oceanic depth from which the water is being taken, not run off into trenches or pumped into the ground.

2) Any further expansions or tenant additions would be reviewed with the entire community and appropriate DLNR and Army Corps of Engineers (ACOE) geologists and hydrologists. If additional technical support is needed, experts would be selected by DLNR and NELHA. Expenses would be paid by NELHA.

3) The format of required quarterly environmental monitoring reports would be determined in conjunction with DLNR and would include monthly amounts of potable freshwater usage and pumping by NELHA and tenants, as well as discharge amounts. Raw data supporting these reports would be provided on computer disk to DLNR, with written data summaries.

4) All prior EIS monitoring data would also be provided on computer disk to DLNR.

5) Environmental monitoring would include ecosound surveys of schooling fishes, marine mammal counts and surveys of coral reef flora and fauna, along transects and at locations determined jointly by DLNR, ACOE, NELHA and the National Marine Fisheries Service. The area surveyed would range from Wawaihali Beach to Unualoha Point.

cc. Don Hibbard
    Ross Cordy
    Rae Loui
    Mason Young
PUMP INSTALLATION PERMITS

for

Keahole Point-Uwajima Wells
Well Nos. 4363-04 to 06
Keahole Point, Hawaii

TO: Uwajima Fisheries, Inc.
P.O. Box 2077
Honolulu, HI 96805

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 install 350 gallons per minute pumps into three wells for aquaculture use is approved, subject to the following conditions:

1. The Division of Water Resource Management (DWRM), Geology-Hydrology Section, shall be notified at 548-7543, before any work covered by this permit commences.

2. The proposed use shall not adversely affect existing legal uses in the area.

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

4. The applicant shall submit a Well Completion Report to the DWRM within 30 days after completion of the work.
5. This permit may be revoked if work is not started within six months of the date of issuance or if work is suspended or abandoned for six months. The work shall be completed within two years of the date of issuance.

WILLIAM W. PATY, Chairperson
Commission on Water Resource Management

AUG - 8 1990
Date of Issuance

cc: USGS
Department of Health
Drinking Water Branch
Ground Water Protection Program
Hawaii Department of Water Supply
Chairperson and Members
Commission on Water Resource Management
State of Hawaii
Honolulu, Hawaii

Gentlemen:

Uwajima Fisheries, Inc.
Application for Pump Installation Permits
Keahole Point-Uwajima Wells, Keahole Point, Hawaii

Applicant: Uwajima Fisheries, Inc.
P.O. Box 2077
Honolulu, HI 96805

Landowner: Natural Energy Lab. of Hawaii
P.O. Box 1749
Kailua-Kona, HI 96745-1749

Action Requested: Permission to install 350 gallons per minute (gpm) pumps into three wells (Well Nos. 4363-04 to 06) for aquaculture.

Proposed Amount of Withdrawal: 500,000 gallons per day per pump.

Well Description:

- Ground elevation: 14.0 ± ft.
- Casing diameter: 4-inches
- Solid casing depth: 20 to 25 ft.
- Perforated casing depth: 5 to 10 ft.
- Open hole: 3 to 5 ft.
- Total depth: 30 ± ft.
- Pump Capacity: 350 gpm

Analysis: The wells will develop salt water. No adverse impacts are expected.

RECOMMENDATION:

That the Commission approve the issuance of pump installation permits for Keahole Point-Uwajima Wells, subject to the following conditions:

1. The proposed use shall not adversely affect existing legal uses in the area.
2. The applicant shall comply with all applicable laws, rules, and ordinances.
3. The applicant shall submit a Well Completion Report to the Division of Water

Approved by Commission on
Water Resource Management
at the meeting held on
July 25, 1990
Chairperson and Members
Commission on Water Resource Management  

Resource Management within 30 days after completion of the work.

(4) The permit may be revoked if work is not started within six months of the date of issuance or if work is suspended or abandoned for six months. The work shall be completed within two years of the date of issuance.

Respectfully submitted,

MANABU TAGOMORI
Deputy Director

APPROVAL FOR SUBMITTAL:

WILLIAM W. PATY, Chairperson
Dear Mr. Paty,

Well Construction Permit Applications

We received information on the following permit applications, for our review:

Maalaea Power Plant Well (4829-02)
Laau Point-Alpha Exploratory Well (0615-01)
Keahole Point-Uwajima Wells (4363-03 to 06)

The Maalaea and Keahole Wells do not impact Hawaiian Home Lands. Both proposals involve appropriate sources for the specified uses, and have our support for that reason.

The Laau well represents an effort to learn more about the underlying groundwater source, and to make appropriate use of anticipated results. We support this effort. Their discovery will impact Hawaiian Home Lands indirectly, by contributing to knowledge of the aquifer and by potentially reducing the demand for use of the Kualapuu Aquifer that underlies homestead lands.

Warmest aloha,

Hoaliku L. Drake, Chairman
Hawaiian Homes Commission
The Honorable William W. Paty, Chairperson
Commission on Water Resource Management
Department of Land and Natural Resources
State of Hawaii
P.O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Paty:

SUBJECT: PUMP INSTALLATION PERMIT APPLICATION
KEAHOLE POINT-UWAIMA WELL
STATE WELL NOS. 4363-04, -05, AND -06
KEAHOLE POINT, HAWAII

Thank you for the opportunity to review and comment on the subject pump installation permit application.

We have determined that the Department's Administrative Rules, Title 11, Chapter 20, "Potable Water Systems," are not applicable because the Uwajima Fisheries' wells will be used for aquaculture. However, in the event that the proposed use were to change, please inform the Safe Drinking Water Branch.

If you should have any questions, please contact the Safe Drinking Water Branch at 543-8258.

Very truly yours,

[Signature]
JOHN C. LEWIN, M.D.
Director of Health

cc: Teruo Himoto
Uwajima Fisheries, Inc.
P.O. Box 2077
Honolulu, HI 96805
June 21, 1990

Mr. Manabu Tagomori
State Department of Land and Natural Resources
Division of Water and Land Development
P.O. Box 373
Honolulu, HI 96809

WELL CONSTRUCTION PERMIT APPLICATION
KEAHOLE POINT-UWAJIMA WELLS (WELL NOS. 4363-04 TO 06)

We have no objections to the subject well construction for aquaculture purposes.

[Signature]
Manager

GK

... Water brings progress...
Honorable Hoaliku L. Drake
Director
Department of Hawaiian Home Lands
State of Hawaii
P.O. Box 1879
Honolulu, Hawaii 96805

Dear Mrs. Drake:

Well Construction Permit Applications

We are sending you a copy of the following permit applications and ask that your staff review each application to determine if Hawaiian Home Lands may be affected:

- Maalaea Power Plant Well (4829-02)
- Laau Point-Alpha Exploratory Well (0615-01)
- Keahole Point-Uwajima Wells (Well Nos. 4363-03 to 06)

Please submit your comments to us, orally or in writing, within three weeks from the date of this letter.

If you have any questions, please contact Manabu Tagomori at 548-7533.

Very truly yours,

WILLIAM W. PATY

Encl.
Honorables John C. Lewin, M.D.,
Director
Department of Health
State of Hawaii
1250 Punchbowl Street
Honolulu, Hawaii 96813

Attn. Mr. Thomas Arizumi, Drinking Water Branch

Dear Dr. Lewin:

Well Construction Permit Applications

In accordance with the Department of Land and Natural Resources Administrative Rules, Section 13-168-12(c), we are sending you a copy of the following permit applications for your review:

- Maalaea Power Plant Well (Well No. 4829-02)
- Laau Point-Alpha Exploratory Well (0615-01)
- Keahole Point-Uwajima Wells (Well Nos. 4363-04 to 06)

Please submit your comments to us, orally or in writing, within three weeks from the date of this letter.

If you have any questions, please contact Manabu Tagomori at 548-7533.

Very truly yours,

WILLIAM W. PATY

Encl.
Mr. William Sewake, Manager  
Department of Water Supply  
County of Hawaii  
25 Aupuni Street  
Hilo, Hawaii 96720  

Dear Mr. Sewake:

Well Construction Permit Application

We are sending you a copy of the following permit application for your review:

Keahole Point-Uwajima Wells (Well Nos. 4363-04 to 06)

Please submit your comments to us, orally or in writing, within three weeks from the date of this letter.

If you have any questions, please contact Ed Sakoda at 548-7543.

Sincerely,

[Signature]

MANABU TAGOMORI  
Deputy Director

Enc.
Uwajima Fisheries, Inc.
P.O. Box 2077
Honolulu, Hawaii 96805

Gentlemen:

We have received your application and $25.00 filing fee to install pumps in three existing wells (Well Nos. 4363-04 to 06) at Tax Map Key: 7-3-43:3,4, and 5, at Keahole Point, Hawaii.

We are reviewing your application for completeness and will contact you if we need further information.

If you have any questions, please contact Ed Sakoda at 548-7543.

Sincerely,

[Signature]

MANABU TAGOMORI
Deputy Director

ES: mh
Mitch,

These 10 saltwater wells were drilled w/o permits. Please enter into index/summ.

3 have pumps

See file for more data

thanks, Ed
<table>
<thead>
<tr>
<th>TO</th>
<th>INITIAL</th>
<th>PLEASE:</th>
<th>REMARKS:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M. TAGOMORI</td>
<td>See Me</td>
<td>New Wells!</td>
</tr>
<tr>
<td></td>
<td>G. Matsumoto</td>
<td>Take Action By</td>
<td></td>
</tr>
<tr>
<td></td>
<td>G. Akita</td>
<td>Route to Your Branch</td>
<td></td>
</tr>
<tr>
<td></td>
<td>L. Chang</td>
<td>Review &amp; Comment</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Y. Shiroma</td>
<td>Draft Reply</td>
<td></td>
</tr>
<tr>
<td></td>
<td>E. Sakoda</td>
<td>Acknowledge Receipt</td>
<td></td>
</tr>
<tr>
<td></td>
<td>D. Nakano</td>
<td>Xerox copies</td>
<td></td>
</tr>
<tr>
<td></td>
<td>W. Rozeboom</td>
<td>File</td>
<td></td>
</tr>
<tr>
<td></td>
<td>S. Samuels</td>
<td>Mail</td>
<td></td>
</tr>
<tr>
<td></td>
<td>E. Hirano</td>
<td>For Information</td>
<td></td>
</tr>
<tr>
<td></td>
<td>T. Kam</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>A. Monden</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>H. Young</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>D. Lee</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>G. Miyashiro</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Call to confirm no. 2 pumps being installed. 3?

Keahole Point - Ulujima
Re: Well Construction and Pump Installation Permits

Dear Mr. Togomori:

Enclosed you will find the two maps you provided me whereby I have marked the location of the one-acre site where the wells are located, a Well Completion Report, an Application for Pump Installation Permit and a $25.00 check for filing fee for the permit. These are the items you have requested me to complete in your letter dated May 18, 1990.

I hope I have provided the proper information on the reports and application that you mailed me. If there is any question or omission I have made, please write me or call me at 536-7100.

Sincerely,

Teruo Himoto
Executive Vice President

Enclosures

10 existing wells - 3 with 300 gpm pumps
(Well No. 4363-01 to 10) 10/14/93

This new application is for 3 new pumps (Well No. 4363-04 to 06)
INSTRUCTIONS: Please print or type and submit completed report within 30 days of well completion to the Division of Water & Land Development, P.O. Box 373, Honolulu, HI 96809. An as-built drawing of the well and chemical analysis, if available, should also be submitted. If necessary, phone 548-7545, Hydrology, Geology Section for assistance.

A. STATE WELL NO. ...................................................... B. LOCATION .................................................. C. WELL OWNER .................................................. D. DRILLING OR PUMP INSTALLATION CONTRACTOR .................................................. E. TYPE OF RIG .................................................. F. DATE OF WELL COMPLETION 9/20/89 DATE OF PUMP INSTALLATION 1/11/90 G. GROUND ELEVATION (msl) 14-15 ft. Height of drilling platform above ground surface 8-10 ft. Map (Site Survey) H. TOTAL DEPTH OF WELL BELOW GROUND 30-32 ft. I. HOLE SIZE: 6 in. I.D. x 1/4 in. steel solid section to 20 ft. below ground 6 in. I.D. x 1/4 in. steel perforated section to 25-30 ft. below ground (5'-10' oz. Perforation) (At Bottom of Casing) J. CASING INSTALLED: 4 in. I.D. x 1/4 in. steel solid section to 20 ft. below ground 4 in. I.D. x 1/4 in. steel perforated section to 25-30 ft. below ground K. ANNULUS: Grouted from 0 ft. to 20 ft. below ground Gravel packed from 0 ft. to 20 ft. below ground (Natural Gravel Backfill) L. PERMANENT PUMP INSTALLATION: Pacer Model TEM3BB Pump Capacity 350 gpm Motor type, H.P., voltage, p.p.m. Toshiba 7.5 H.P., 105V-30 - 60 M.E. Cast Iron Depth of pump intake setting 25 ft. below ground Ground Level which elevation is 14 ft. Depth of bottom of air line 0 ft. below ground which elevation is 14 ft. M. PROPOSED USE .................................................. Aquaculture N. INITIAL WATER LEVEL 14 ft. below ground Date and time of measurement 03/01/90 08:00 O. INITIAL CHLORIDE 1.5 ppm. (15 PPT) Date and time of sampling 03/05/90 10:15 P. PUMPING TESTS: Reference point (R.P.) used: Ground which elevation is 14 ft. Date 03/05/90
Start water level 14 ft. below R. P.
End water level 14 ft. below R. P.
Depth of well 30 ft. below R. P.
Elapsed time (hours) 00 to 12:00 300 0.0
Draw-down (ft.) 1.5 in. (21°F)
Temp. 68°F
Elapsed time (hours) 12:00 to 24:00 300 3.0
Draw-down (ft.) 1.5 in. (21°F)
Temp. 68°F

Water Level (ft.) Depth (ft.) Rock Description & Remarks

Water Level (ft.)

After the Fact Permit:

DATE ISSUED: Aug. 8, 1990
WELL COMPLETED DATE OF PUMP: Nov. 1, 1990

Submitted by: Tempo Himoto
Signature

Title: Executive Vice President

Date: May 29, 1990
UWAJIMA FISHERIES, INC.
DBA YONEZAWA SUISAN
PO BOX 2077
HONOLULU, HAWAII 96805

PAY
TO
THE
ORDER
OF

Department of Land and Natural Resources

$25.00

Central Pacific Bank
220 S. King St.,
Honolulu, Hawaii 96813

WELL NO. 4363-041006

FOR

Electric Pump Installation Permit

May 29, 1990

DOLLARS
May 18, 1990

Mr. Teruo Himoto
Executive Vice President
Uwajima Fisheries, Inc.
P.O. Box 2077
Honolulu, HI 96805

Dear Mr. Himoto:

Well Construction and Pump Installation Permits

Thank you for your letter of April 30, providing additional information for your declaration of water use. As discussed, some additional information is still required for the registration of the wells.

Enclosed are materials for you to provide the additional required information. These include:

1) two maps (a tax map and a topographic map) for you to mark the location of the one-acre site where the wells are located;

2) a well completion report to be completed to indicate the well characteristics (a single report would be sufficient for all ten wells, provided you attach a copy of any information on the wells which the well contractor furnished you);

3) an application form for a pump installation permit. A single application, with a single $25.00 filing fee, would be sufficient for the three pumps for the additional ponds to be constructed later this year.

If you have any questions regarding the well completion report or the pump installation permit application forms, please phone our Hydrology/Geology Section at 548-7543 for assistance.

Yours truly,

MANABU TAGOMORI
Deputy Director

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

Re: Uwajima Fish Declaration of Water Use  

Dear Mr. Togomori:  

The declaration of water use by Uwajima Fisheries, Inc. dba Yonezawa Suisan are presented as per recommendation by the Commission by answering the questions outlined in your amended declaration of water use dated March 21, 1990 as follows:  

1. Is the water actually being used?  
   Yes, the water is continually used on a 24-hour cycle per day since we relocated to our new site in January 1990.  

2. Do we have a map showing where you take the water from and where it is used?  
   Enclosed is a map showing the 10 wells in our 1-acre property. There are 10 (24'x24') fish ponds in Fish Ponds designated as A & B which is supplied water from wells 1, 2 & 3 on the map. We are presently raising flounders (hirame), which are primarily used as "sashimi" by the "sushi" restaurants.  
   Another 3 wells (wells 8, 9 & 10) most probably will be used around July or August of this year when the 10 additional ponds designated as C & D on the map are constructed.  
   The remaining 4 additional wells will be kept in reserve until we begin enlarging our operation.
3. How do you take the water from the well; how big is the pump or pipe you use to do this?

We use a 7-1/2 H.P. pump for each well to pump the water into fish ponds. The size of the plastic pipes are 4 inches in diameter.

4. How often do you take the water, and how much do you take?

The water is pumped out of the wells into the fish ponds on a continuous basis around the clock. Each pump is capable of pumping 300 gallons a minute; therefore, we are presently pumping approximately 800 to 900 gallons of water per minute.

5. What do you use the water for?

The water is used to raise flounders (hirame) from eggs to harvesting size of approximately 2 pounds, which takes from 12 to 18 months.

I hope I have included all the information you have asked for in our declaration of water use. If you have any question on the data presented above, please do not hesitate to call me at 536-7100 or write me at the above-stated address.

Sincerely,

Teruo Himoto
Executive Vice President
**REGISTRATION OF WELL AND DECLARATION OF WATER USE**

**INSTRUCTIONS:** Please type or print. If information is not available or not applicable, indicate as N/A. Fill out as completely as possible, sign, and file form with the Division of Water Resource Management, P.O. Box 373, Honolulu, Hawaii 96809. Phone 548-3948 or 548-7543 for assistance.

**BATTERY OF WELLS:** For a battery of wells, on the surface, in a tunnel, or in a shaft, submit a registration form for each well together with a single map or plot plan showing layout of wells.

---

**STATE OF HAWAII**

COMMISSION ON WATER RESOURCE MANAGEMENT

DEPARTMENT OF LAND AND NATURAL RESOURCES

DIVISION OF WATER RESOURCE MANAGEMENT

---

**REGISTRATION OF WELL AND DECLARATION OF WATER USE**

**INSTRUCTIONS:** Please type or print. If information is not available or not applicable, indicate as N/A. Fill out as completely as possible, sign, and file form with the Division of Water Resource Management, P.O. Box 373, Honolulu, Hawaii 96809. Phone 548-3948 or 548-7543 for assistance.

**BATTERY OF WELLS:** For a battery of wells, on the surface, in a tunnel, or in a shaft, submit a registration form for each well together with a single map or plot plan showing layout of wells.

---

**STATE WELL NO.:**

**WELL NAME OR DESIGNATION:** Uwajima Fisheries Inc. c/o Natural Energy Lab

**SOURCE OR STATION NAME:** Brackish Water Lens, 25 ft below grade

10 ft below sea level

---

**ISLAND:** Hawaii

**WELL LOCATION**

**Portions 3, 4, 5**

Tax Map Key: 2-3-43

Town, Place, District: Kailua-Kona, Hawaii

Attach USGS "Quad" map (scale 1:24,000), tax map, or other map showing the well location.

---

**D. WELL DATA**

For Drilled Wells, submit "as-built" drawing, driller's log, and pump test results, and complete items below.

For Tunnels and Shafts, submit construction drawings, plot plan, or sketch map.

- **Ground elevation (mean sea level):** 14 ft.
- **Reference point (Used to measure depth to water):**
  - Elevation: 14.0 average ft.
  - Description: Wells average 25' deep, solid casing to 20', 5' perforated, 4" PVC in. Solid casing depth (below ground): 20 ft.
  - Depth to water (Below reference point): 14 ft.
  - Perforated casing depth (Below ground): 5 ft.
  - Maximum recorded chloride: 1.5 ppm (15 PPM total depth of well: 25 ft).
  - Minimum recorded chloride: As above

- **Maximum chloride in 1987:** NA ppm
- **Minimum chloride in 1987:** NA ppm

---

**E. INSTALLED PUMP DATA**

- **Pump type:** Vertical shaft
- **Power:** Diesel, 1.2 HP
- **Pump capacity:** 300 gallons per minute / well
- **Pump installation contractor:** Uwajima Fisheries Inc.

---

**For Official Use Only:**

- **Date received:**
- **Date accepted:**
- **Latitude:**
- **Longitude:**
- **Hydrologic Unit:**
- **State Well No.:**

---

References: Hawaii Revised Statutes, Chapter 174C.

Hawaii Administrative Rules, Chapters 13-167 to 13-171.
NOTE: The purpose of the Declaration of Water Use is to obtain information necessary for the management of the State's water resources. The Declaration does not confer a legal right to water or its use.

Water use data are recorded: □ Daily □ Weekly □ Monthly
□ Other (describe): ___________

Method of measurement: □ Flow Meter □ Orifice
□ Other (describe): ___________

Capacity of Pump (each = 300 gpm)

Quantity of Use (Report metered or estimated monthly water use from the well described on the reverse side of this form, for the calendar years 1983 through 1987. For a battery of wells which are not individually metered, but which are connected to a single meter or other measuring device, report total use from the battery.):

WATER USE, IN GALLONS x 1000

<table>
<thead>
<tr>
<th>Category</th>
<th>Additional Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ Municipal</td>
<td></td>
</tr>
<tr>
<td>(including resorts, hotels, businesses)</td>
<td></td>
</tr>
<tr>
<td>□ Domestic</td>
<td></td>
</tr>
<tr>
<td>(systems serving 25 people or less)</td>
<td></td>
</tr>
<tr>
<td>□ Irrigation</td>
<td></td>
</tr>
<tr>
<td>□ Other</td>
<td></td>
</tr>
<tr>
<td>□ Industrial</td>
<td></td>
</tr>
<tr>
<td>□ Military</td>
<td></td>
</tr>
<tr>
<td>□ Other</td>
<td></td>
</tr>
</tbody>
</table>

Type of Use (Check all category boxes that apply and provide additional information as indicated):

<table>
<thead>
<tr>
<th>Category</th>
<th>Additional Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ Municipal</td>
<td></td>
</tr>
<tr>
<td>(including resorts, hotels, businesses)</td>
<td></td>
</tr>
<tr>
<td>□ Domestic</td>
<td></td>
</tr>
<tr>
<td>(systems serving 25 people or less)</td>
<td></td>
</tr>
<tr>
<td>□ Irrigation</td>
<td></td>
</tr>
<tr>
<td>□ Other</td>
<td></td>
</tr>
<tr>
<td>□ Industrial</td>
<td></td>
</tr>
<tr>
<td>□ Military</td>
<td></td>
</tr>
<tr>
<td>□ Other</td>
<td></td>
</tr>
</tbody>
</table>

Typical times of usage: ___________

Minimum day's use: ___________ gallons

Maximum day's use: ___________ gallons

Typical times of usage: ___________

Type of Use (Check all category boxes that apply and provide additional information as indicated):

<table>
<thead>
<tr>
<th>Category</th>
<th>Additional Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ Municipal</td>
<td></td>
</tr>
<tr>
<td>(including resorts, hotels, businesses)</td>
<td></td>
</tr>
<tr>
<td>□ Domestic</td>
<td></td>
</tr>
<tr>
<td>(systems serving 25 people or less)</td>
<td></td>
</tr>
<tr>
<td>□ Irrigation</td>
<td></td>
</tr>
<tr>
<td>□ Other</td>
<td></td>
</tr>
<tr>
<td>□ Industrial</td>
<td></td>
</tr>
<tr>
<td>□ Military</td>
<td></td>
</tr>
<tr>
<td>□ Other</td>
<td></td>
</tr>
</tbody>
</table>

Number of service connections: ___________

Acres Irrigated: ___________

Crop(s): □ Sugar □ Pineapple

Non-Crop: □ Landscape □ Golf Course

Method: □ Drip □ Furrow □ Sprinkler

Cooling □ Manufacturing □ Mill

Other (specify): ___________

Specify (livestock, aquaculture, etc.): ___________

I declare that the contents of the above Declaration of Water Use are, to the best of my knowledge and belief, true, correct, and complete.

Water User's Signature: ___________

Printed Name: ___________

Firm or Title (Well Operator, etc.): ___________

Date: ___________
APPLICATION FOR

PUMP INSTALLATION PERMIT

INSTRUCTIONS: Please print or type and send completed application with attachments to the Division of Water and Land Development, P.O. Box 1749, Honolulu, Hawaii 96808. Application must be accompanied by a non-refundable filing fee of $25.00 payable to the Department of Land and Natural Resources. (Filing fee waived for government agencies.) If necessary, phone 346-7443, Hydrology/Geology Section for assistance.

1. WELL LOCATION

Island Hawaii Tax Map Key 7-3-43 Portions 3, 4 & 5
Address NEIH/HOST Park, Keahole Point, Kailua-Kona, Hawaii

(Attach a USGS map (scale 1"=2000') and property tax map showing well location referenced to established property boundaries.)

2. WELL OWNER

Firm Name Uwajima Fisheries, Inc.
Contact Person Teruo Hirnozo
Address P. O. Box 2077
Honolulu, HI 96805
Phone (808) 526-7100

LANDOWNER

Firm Name Natural Energy Lab. of Hawaii
Contact Person Jan C. War, Operational Mgr
Address P. O. Box 1749
Kailua-Kona, Hawaii 96745-1749
Phone (808) 329-7341

3. PROPOSED CONTRACTOR FOR:

☐ Well Drilling
☐ Pump Installation

Name Imperial Sales, Inc.
Address 720-J Mooawa Street
Honolulu, Hawaii 96817

Contractor's License No. 842-1103

4. PROPOSED WORK

☐ Drill New Well
☐ Deepen
☐ Alter
☐ Install New Pump
☐ Seal
☐ Replacement Pump
☐ Modify Pump

(Briefly describe the proposed work and fill in the diagram on the back of this form.)

5. PROPOSED USE

☐ Municipal (including hotels, stores, etc.)
☐ Military
☐ Domestic (individual, noncommercial water systems)
☐ Industrial
☐ Irrigation (specify) Aquaculture
☐ Other (specify)

6. PROPOSED AMOUNT OF WITHDRAWAL

864,000 gallons per day - Currently (432,000 GPD/Pump/Well)

7. PROPOSED PUMP INFORMATION

Pump Type: ☐ Vertical Turbine
☐ Submersible
☐ Centrifugal
Motor: ☐ Diesel
☐ Gas
☐ Electric: 7-1/2 Rated Horsepower
Rated Pump Capacity 350 gallons per minute (gpm)

Well Owner (print) Uwajima Fisheries, Inc.
Landowner (print) Natural Energy Lab. of Hawaii
Signature ____________________________ __
Date ____________________________ 

Signature ____________________________ __
Date ____________________________ 

For Official Use Only:
Field Checked By ____________________________
Latitude ____________________________ State Well No. 1,363-06
Longitude ____________________________
Hydrologic Unit ____________________________
Briefly describe the proposed work:

PROPOSED SECTION OF WELL

Elevation at top of casing 15 ft., msl.

Cement Grout N A ft.

Ground Elev. 14 ft., msl

Hole Dia. 6 in.

Solid Casing:
Material SCH 40 PVC
Length 20 - 25 ft.
Diameter 4 in.
Wall thickness 1/4 - 3/8 in.

Total Depth 30 ft.

Screen Casing: %/Perforated / /Screen
Material SCH 40 PVC
Length 5 - 10 ft.
Diameter 4 in.
Wall thickness 1/4 - 3/8 in.
Openings 20 sq. in./L.F.

Rock Packing ft.

Natural Back Fill

Open Hole:
Length 3 - 5'
Diameter 6 in.

*Approximate elevation at time of filing application. Final elevation (msl) by a surveyor licensed by the State must be submitted at start of construction.
APPLICATION FOR

WELL CONSTRUCTION PERMIT

PUMP INSTALLATION PERMIT

INSTRUCTIONS: Please print or type and send completed application with attachments to the Division of Water and Land Development, P.O. Box 313, Honolulu, Hawaii 96809. Application must be accompanied by a non-refundable filing fee of $25.00 payable to the Department of Land and Natural Resources. Filing fee waived for government agencies. If necessary, phone 548-7343, Hydrology/Geology Section for assistance.

1. WELL LOCATION

Island Hawaii Tax Map Key 7-3-43 Portions 3, 4 & 5
Address NEIL/HOST Park, Keahole Point, Kailua-Kona, Hawaii

(Attach a USGS map (scale 1"=2000') and property tax map showing well location referenced to established property boundaries.)

2. WELL OWNER

Firm Name Uwajima Fisheries, Inc.
Contact Person Teruo Himoto
Address P. O. Box 2077
Honolulu, HI 96805
Phone (808) 536-7100

3. PROPOSED CONTRACTOR FOR: Drill New Well Pump Installation

Name Imperial Sales, Inc.
Address 720-J Moowaa Street
Honolulu, Hawaii 96817

4. PROPOSED WORK

Drill New Well
Alter
Install New Pump

Deepen
Seal
Replace Pump

Redrill
Abandon
Modify Pump

(Briefly describe the proposed work and fill in the diagram on the back of this form.)

5. PROPOSED USE

Municipal (including hotels, stores, etc.)
Domestic (individual, noncommercial water systems)
Irrigation (specify)

Military
Industrial
Other (specify) Aquaculture

6. PROPOSED AMOUNT OF WITHDRAWAL

864,000 gallons per day - Currently (432,000 GPD/Pump/Well)

7. PROPOSED PUMP INFORMATION

Pump Type: Vertical Turbine
Motor: Diesel
Submersible
Rated Pump Capacity 350 gallons per minute (gpm)

Centrifugal
Electric: 7-1/2 Rated Horsepower

Well Owner (print) Uwajima Fisheries, Inc.
Signature _____________________________
Date _____________________________

Landowner (print) Natural Energy Lab. of HI
Signature _____________________________
Date _____________________________

For Official Use Only:
Field Checked By _____________________________
Date _____________________________
Latitude _____________________________
Longitude _____________________________
Hydrologic Unit _____________________________
State Well No. 4363-64
Briefly describe the proposed work:

PROPOSED SECTION OF WELL

Elevation at top of casing 15 ft., msl.

Cement Grout N.A ft.

Hole Dia. 6 in.

Total Depth 30 ft.

Rock Packing ft.

Natural Back Fill

Ground Elev. 14 ft., msl*

Solid Casing:
Material SCH 40 PVC
Length 20 - 25 ft.
Diameter 4 in.
Wall thickness 1/4 - 3/8 in.

Casing: / Perforated / Screen
Material SCH 40 PVC
Length 5 - 10 ft.
Diameter 4 in.
Wall thickness 1/4 - 3/8 in.
Openings 20 sq. in./L.F.

Open Hole:
Length 3 - 5'
Diameter 6 in.

*Approximate elevation at time of filing application. Final elevation (msl) by a surveyor licensed by the State must be submitted at start of construction.