<table>
<thead>
<tr>
<th>FROM:</th>
<th>ROY</th>
<th>DATE:</th>
<th>MAR 17 2009</th>
<th>SUSPENSE DATE:</th>
</tr>
</thead>
<tbody>
<tr>
<td>TO:</td>
<td></td>
<td>INIT.</td>
<td>TO:</td>
<td>INIT:</td>
</tr>
<tr>
<td>CHENG, C.</td>
<td></td>
<td></td>
<td>MILLS, D.</td>
<td></td>
</tr>
<tr>
<td>CHING, F.</td>
<td></td>
<td></td>
<td>OHYE, L.</td>
<td></td>
</tr>
<tr>
<td>CHONG, R.</td>
<td></td>
<td></td>
<td>OHYE, M.</td>
<td>WO</td>
</tr>
<tr>
<td>DANBARA, S.</td>
<td></td>
<td></td>
<td>OSHIRO, K.</td>
<td></td>
</tr>
<tr>
<td>ENGLAND, D.</td>
<td></td>
<td></td>
<td>SAKODA, E.</td>
<td></td>
</tr>
<tr>
<td>FUJI, N.</td>
<td></td>
<td></td>
<td>SWANSON, S.</td>
<td></td>
</tr>
<tr>
<td>HARDY, R.</td>
<td></td>
<td></td>
<td>TORRES, R.</td>
<td></td>
</tr>
<tr>
<td>HOAGBIN, S.</td>
<td></td>
<td></td>
<td>UYENO, D.</td>
<td></td>
</tr>
<tr>
<td>ICE, C.</td>
<td></td>
<td></td>
<td>YODA, K.</td>
<td></td>
</tr>
<tr>
<td>IMATA, R.</td>
<td></td>
<td></td>
<td>YOSHINAGA, M.</td>
<td></td>
</tr>
<tr>
<td>KAWAHARA, K.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KIMURA, J.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

COMMISSION ON WATER RESOURCE MANAGEMENT

(11/08)

TO: KUNIMURA, I. FOR: Approval Signature Information

PLEASE:

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

shortage plan last
March 7, 2009

Laura H. Thielen
State of Hawaii
Department of Land and Natural Resources
Commission on Water Resource Management
P.O. Box 621
Honolulu, Hawaii 96809

Subject: Approval of Water Use Permit (WUP No. 869) for Well No. 0916-01
Kaluakoʻi Ground-Water Management Area, Molokai

Dear Chairperson Thielen:

I am in receipt of the water use permit for the Papohaku-Zappacosta Well for use of 0.008 million gallons per day of water on a 12-month moving average basis that was approved by the Water Resource Management Commission on February 18, 2009.

In response to the key conditions addressed and on behalf of Mr. Pierluigi Zappacosta, I/we agree to keep a record of the monthly total pumpage, water level, salinity, and water temperature. The recorded documentation will be submitted to the Commission on a regular yearly basis, as required.

In addition, should the Commission declare a water shortage situation in the Kaluakoʻi Groundwater Management Area, I/we agree to reduce water use in the percentages deemed necessary by the Commission by reducing irrigation rates to achieve the necessary cutbacks.

Call (808) 553-9045 or email me luigis@aloha.net should you have any questions. Thank you for your time and assistance.

Sincerely,

Luigi Manera
March 7, 2009

Laura H. Thielen
State of Hawaii
Department of Land and Natural Resources
Commission on Water Resource Management
P.O. Box 621
Honolulu, Hawaii 96809

Subject: Approval of Water Use Permit (WUP No. 869) for Well No. 0916-01 
Kaluakoʻi Ground-Water Management Area, Molokai

Dear Chairperson Thielen:

I am in receipt of the water use permit for the Papohaku-Zappacosta Well for use of 0.008 million gallons per day of water on a 12-month moving average basis that was approved by the Water Resource Management Commission on February 18, 2009.

In response to the key conditions addressed and on behalf of Mr. Pierluigi Zappacosta, I/we agree to keep a record of the monthly total pumpage, water level, salinity, and water temperature. The recorded documentation will be submitted to the Commission on a regular yearly basis, as required.

In addition, should the Commission declare a water shortage situation in the Kaluakoʻi Groundwater Management Area, I/we agree to reduce water use in the percentages deemed necessary by the Commission by reducing irrigation rates to achieve the necessary cutbacks.

Call (808) 553-9045 or email me luigis@aloha.net should you have any questions. Thank you for your time and assistance.

Sincerely,

Luigi Manera
COMMISSION ON WATER RESOURCE MANAGEMENT

FROM: ROY


INIT: KUNIMURA, I.  MILLS, D.  OHYE, L.  OHYE, M.  OSHIRO, K.  SAKODA, E.  SWANSON, S.  TORRES, R.  UYENO, D.  YODA, K.  YOSHINAGA, M.

DATE: FEB 24 2009

Suspense Date: __________________________

FOR: Approval  Signature  Information

PLEASE:

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

Please: late, but good to supersede.
To: Mr. Ken C. Kawahara, P.E., Deputy Director  
Commission on Water Resource Management  
Department of Land and Natural Resources

From: Tomas See, Chief, Wastewater Branch

Subject: Pierluigi Zappacosta - Application for Water Use Permit No. 869  
Well Construction and Pump Installation Permits  
Papohaku – Zappacosta Saltwater Well, Well No. 0916-01  
Kaluakoi Ground Water Management Area, Molokai  
TMK: (2) 5-1-008: 049 – New Ag use for 0.008 mgd

February 23, 2009

Thank you for allowing us the opportunity to review the above subject project. We have reviewed the plans submitted which includes the Application for Water Use Permit and plot maps of residence and barn/farm.

It is our understanding that the water from the proposed well will be used to irrigate 3.5 acres of fruit trees. Based on this information, the Wastewater Branch has no objections with the subject well construction and pump installation permit.

All wastewater plans must conform to applicable provisions of the Department of Health’s Administrative Rules, Chapter 11-62, "Wastewater Systems." We do reserve the right to review the detailed wastewater plans for conformance to applicable rules.

Should you have any questions, please contact the Planning & Design Section of the Wastewater Branch at telephone 586-4294.

Enclosures: One-Stop Database (brief) information - plot plan
### IWS Systems

<table>
<thead>
<tr>
<th>TMK</th>
<th>City Number</th>
<th>Approval Date</th>
<th>Last Name</th>
<th>Job</th>
</tr>
</thead>
<tbody>
<tr>
<td>251008049</td>
<td>2008-1462M</td>
<td>12/23/2008</td>
<td>Zappacosta</td>
<td>New 10 bd SFD</td>
</tr>
<tr>
<td>251008049</td>
<td>2008-1466M</td>
<td>6/25/2008</td>
<td>Zappacosta</td>
<td>Jacuzzi</td>
</tr>
<tr>
<td>251008049</td>
<td>2008-1465M</td>
<td>8/25/2008</td>
<td>Zappacosta</td>
<td>Swimming Pool</td>
</tr>
<tr>
<td>251008049</td>
<td>2008-1463M</td>
<td>8/25/2008</td>
<td>Zappacosta</td>
<td>New 1 bd ADU</td>
</tr>
<tr>
<td>251008049</td>
<td>2008-1464M</td>
<td>6/25/2008</td>
<td>Zappacosta</td>
<td>New Barn w/ bath</td>
</tr>
</tbody>
</table>

### Building Permits

<table>
<thead>
<tr>
<th>TMK</th>
<th>City Number</th>
<th>Approval Date</th>
<th>Last Name</th>
<th>Job</th>
</tr>
</thead>
<tbody>
<tr>
<td>251008049</td>
<td>2008-1462M</td>
<td>12/23/2008</td>
<td>Zappacosta</td>
<td>New 10 bd SFD</td>
</tr>
<tr>
<td>251008049</td>
<td>2008-1466M</td>
<td>6/25/2008</td>
<td>Zappacosta</td>
<td>Jacuzzi</td>
</tr>
<tr>
<td>251008049</td>
<td>2008-1465M</td>
<td>8/25/2008</td>
<td>Zappacosta</td>
<td>Swimming Pool</td>
</tr>
<tr>
<td>251008049</td>
<td>2008-1463M</td>
<td>8/25/2008</td>
<td>Zappacosta</td>
<td>New 1 bd ADU</td>
</tr>
<tr>
<td>251008049</td>
<td>2008-1464M</td>
<td>6/25/2008</td>
<td>Zappacosta</td>
<td>New Barn w/ bath</td>
</tr>
</tbody>
</table>
March 2, 2009

Mr. Luigi Manera
P.O. Box 1718
Kaunakakai, HI 96748

Dear Mr. Manera:

Approval of Water Use Permit (WUP No. 869) for Well No. 0916-01
Kaluako‘i Ground-Water Management Area, Molokai

This letter transmits your water use permit for Papohaku-Zappacosta Well (Well No.0916-01) for use of 0.008 million gallons per day (mgd) of water on a 12-month moving average basis that was approved by the Commission on Water Resource Management (Commission) on February 18, 2009. As part of the Commission’s approval, the following special conditions were added and are part of your permit under Standard Permit Condition 19:

Special Conditions

1. The applicant shall obtain appropriate approval for the disposal of desalting waste stream brine from the Department of Health.

2. In the event that the tax map key at the location of the water use is changed, the permittee shall notify the Commission in writing of the tax map key change within thirty (30) days after the permittee receives notice of the tax map key change.

Enclosed with this letter of approval are the following:

1. Your water use permit
2. Your official monthly water use report form

Please be sure to read the conditions of your approved permit.

We draw your attention to two key conditions of your permit that require your response. First, you are required to keep a record of your monthly total pumpage, water level, salinity, and water temperature. This information must be submitted to the Commission on a regular yearly basis using the enclosed water use report form. You should make copies of the enclosed report form as needed.
Second, you are required to submit a water shortage plan to the Commission within thirty (30) days of the issuance date of this permit. Your water shortage plan simply identifies what you are willing to do should the Commission declare a water shortage situation in the Kaluako'i Ground-Water Management Area and can be as short as a one page letter. In a water shortage situation, the Commission may require temporary reductions in pumpage from all sources. The Commission is required, by law, to formulate a plan to implement such area-wide reductions, which should accommodate, include, and be consistent with your plans. Therefore, your help, by submitting your water shortage plan, is greatly needed in formulating the Commission's overall Water Shortage Plan.

If you have any questions, please call Charley Ice of the Commission staff at 587-0218.

Sincerely,

LAURA H. THIELEN
Chairperson

Attachments: WUR Form

c: Pierluigi Zappacosta
GROUND-WATER USE PERMIT
WUP NO. 869

PERMITTEE

<table>
<thead>
<tr>
<th>Permittee/Water User</th>
<th>Landowner of Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Luigi Manera</td>
<td>Pierluigi Zappacosta</td>
</tr>
<tr>
<td>P.O. Box 1718</td>
<td>98 Faxon Road</td>
</tr>
<tr>
<td>Kaunakakai, HI 96748</td>
<td>Atherton, CA 94027-4046</td>
</tr>
</tbody>
</table>

PERMITTED SOURCE INFORMATION

<table>
<thead>
<tr>
<th>Island</th>
<th>Molokai</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Management Area</td>
<td>West</td>
</tr>
<tr>
<td>Aquifer Sector</td>
<td>Kaluako’i</td>
</tr>
<tr>
<td>Aquifer System</td>
<td>2</td>
</tr>
<tr>
<td>System Sustainable Yield</td>
<td></td>
</tr>
<tr>
<td>Well Name</td>
<td>Papohaku-Zappacosta</td>
</tr>
<tr>
<td>State Well No.</td>
<td>0916-01</td>
</tr>
</tbody>
</table>

PERMITTED USE INFORMATION

<table>
<thead>
<tr>
<th>Reasonable beneficial use</th>
<th>Agricultural</th>
</tr>
</thead>
<tbody>
<tr>
<td>Withdrawal (12 month moving ave.)</td>
<td>0.008 mgd</td>
</tr>
<tr>
<td>Location of water use</td>
<td></td>
</tr>
<tr>
<td>TMK #</td>
<td>(2) 5-1-008:049</td>
</tr>
<tr>
<td>State land use classification</td>
<td>AG</td>
</tr>
<tr>
<td>County zoning classification</td>
<td>Ag</td>
</tr>
</tbody>
</table>

Pursuant to Hawaii's State Constitution, Article XI, Section 7, Hawaii Revised Statutes, Chapter 174C; Hawaii Administrative Rules, Chapters 13-167 through 13-171; and Hawaii decisional law and custom, the permittee is hereby authorized to use ground water from the sources and in the amount and from and upon the locations described above; subject however, to the requirements of law including but not limited to the following conditions:
1. The water described in this water use permit may only be taken from the location described and used for the reasonable beneficial use described at the location described above. Reasonable beneficial uses means "the use of water in such a quantity as is necessary for economic and efficient utilization which is both reasonable and consistent with State and County land use plans and the public interest." (HRS § 174C-3)

2. The right to use ground water is a shared use right.

3. The water use must at all times meet the requirements set forth in HRS § 174C-49(a), which means that it:
   a. Can be accommodated with the available water source;
   b. Is a reasonable-beneficial use as defined in HRS § 174C-3;
   c. Will not interfere with any existing legal use of water;
   d. Is consistent with the public interest;
   e. Is consistent with State and County general plans and land use designations;
   f. Is consistent with County land use plans and policies; and
   g. Will not interfere with the rights of the Department of Hawaiian Home Lands as provided in section 221 of the Hawaiian Homes Commission Act and HRS § 174C-101(a).

4. The ground-water use here must not interfere with surface or other ground-water rights or reservations.

5. The ground-water use here must not interfere with interim or permanent instream flow standards. If it does, then:
   a. A separate water use permit for surface water must be obtained in the case an area is also designated as a surface water management area;
   b. The interim or permanent instream flow standard, as applicable, must be amended.

6. The water use authorized here is subject to the requirements of the Hawaiian Homes Commission Act, as amended, if applicable.

7. The water use permit application and submittal, as amended, approved by the Commission at its February 18, 2009 meeting are incorporated into this permit by reference.

8. Any modification of the permit terms, conditions, or uses may only be made with the express written consent of the Commission.

9. This permit may be modified by the Commission and the amount of water initially granted to the permittee may be reduced if the Commission determines it is necessary to:
   a. protect the water sources (quantity or quality);
   b. meet other legal obligations including other correlative rights;
   c. insure adequate conservation measures;
   d. require efficiency of water uses;
   e. reserve water for future uses, provided that all legal existing uses of water as of June, 1987 shall be protected;
   f. meet legal obligations to the Department of Hawaiian Home Lands, if applicable; or
   g. carry out such other necessary and proper exercise of the State's and the Commission's police powers under law as may be required.

Prior to any reduction, the Commission shall give notice of its proposed action to the permittee and provide the permittee an opportunity to be heard.

10. An approved flowmeter(s) must be installed to measure monthly withdrawals and a monthly record of withdrawals, salinity, temperature, and pumping times must be kept and reported to the Commission on Water Resource Management on forms provided by the Commission on a yearly basis (attached).
11. This permit shall be subject to the Commission's periodic review of the Kaluako'i Aquifer System's sustainable yield. The amount of water authorized by this permit may be reduced by the Commission if the sustainable yield of the Kaluako'i Aquifer System, or relevant modified aquifer(s), is reduced.

12. A permit may be transferred, in whole or in part, from the permittee to another, if:
   a. The conditions of use of the permit, including, but not limited to, place, quantity, and purpose of the use, remain the same; and
   b. The Commission is informed of the transfer within ninety days.

Failure to inform the department of the transfer invalidates the transfer and constitutes a ground for revocation of the permit. A transfer, which involves a change in any condition of the permit, including a change in use covered in HRS § 174C-57, is also invalid and constitutes a ground for revocation.

13. The use(s) authorized by law and by this permit do not constitute ownership rights.

14. The permittee shall request modification of the permit as necessary to comply with all applicable laws, rules, and ordinances that will affect the permittee's water use.

15. The permittee understands that under HRS § 174C-58(4), that partial or total nonuse, for reasons other than conservation, of the water allowed by this permit for a period of four (4) continuous years or more may result in a permanent revocation as to the amount of water not in use. The Commission and the permittee may enter into a written agreement that, for reasons satisfactory to the Commission, any period of nonuse may not apply towards the four-year period. Any period of nonuse which is caused by a declaration of water shortage pursuant to section HRS § 174C-62 shall not apply towards the four-year period of forfeiture.

16. The permittee shall prepare and submit a water shortage plan within 30 days of the issuance of this permit as required by HAR § 13-171-42(c). The permittee's water shortage plan shall identify what the permittee is willing to do should the Commission declare a water shortage in the Kaluako'i Ground-Water Management Area.

17. The water use permit shall be subject to the Commission's establishment of instream standards and policies relating to the Stream Protection and Management (SPAM) program, as well as legislative mandates to protect stream resources.

18. The permittee understands that any willful violation of any of the above conditions or any provisions of HRS § 174C or HAR § 13-171 may result in the suspension or revocation of this permit.

19. Special conditions in the attached cover transmittal letter are incorporated herein by reference.

Attachment

C: Pierluigi Zappacosta
February 4, 2009

Ms. Laura H. Thielen, Chairperson
State of Hawaii
Department of Land and Natural Resources
Commission on Water Resource Management
P.O. Box 621
Honolulu, Hawaii 96809

Dear Ms. Thielen:

RE: Notice of an Application for a Water Use Permit (WUPA No. 869)
For Zappacosta Tellos, LP, Papohaku-Zappacosta Well (Well No. 0916-01)
Tax Map Key (2) 5-1-008:049
Kaluakoi Ground Water Management Area, Molokai

Thank you for the opportunity to comment on this application.

The Water Use Permit Application (WUPA) does not conflict or interfere with the Department of Water Supply’s programs, plans and objectives. The Department has no objection to the Zappacosta Tellos, LP WUPA in the amount requested, 0.008 million gallons per day.

However, the Department has several concerns for existing, as well as, proposed private wells. These concerns include:

1. The maintenance and operation of these wells.
2. The creation of multiple conduits for contamination of ground water resources.
3. The non-reporting of water use and the status of existing wells.
4. The difficulty in tracking the existing wells.

In order to protect the ground water resources, DWS recommends that the applicant adopt best management practices for well construction/pump installation to prevent

"By Water All Things Find Life"

The Department of Water Supply is an Equal Opportunity provider and employer. To file a complaint of discrimination, write: USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 14th and Independence Avenue, SW, Washington DC 20250-9410. Or call (202) 720-5964 (voice and TDD)

Printed on recycled paper
contamination during the construction, as well as, maintenance of the well. These practices include:

1. Inspect exposed parts of the well periodically for problems such as cracked or corroded well casing, broken or missing well cap, damaged protective casing and settling or cracking of surface seals.
2. Slope the area around the well so that surface runoff drains away from the well.
3. Provide a well cap or sanitary seal to prevent unauthorized use of or entry into the well.
4. Provide for sediment removal or well cleaning as necessary.
5. Have the well tested at least once a year for fecal coliform or other constituents of concern.
6. Avoid mixing or using pesticides, fertilizers, herbicides, degreasers, fuels or other pollutants near the well.
7. Do not locate any type of potentially polluting activity up slope from the well.
8. Keep accurate records of any well maintenance, such as, disinfection or sediment removal, that require the use of chemicals in the well.

Should you have any questions, please contact our Water Resources & Planning Division at 808-244-8550.

Sincerely,

JEFFREY K. ENG
Director

DWS Engineering Division
Jane E. Lovell, Deputy Corporation Counsel
Edward S. Kushi, Jr., Deputy Corporation Counsel
* State snail mail?*

* Does OA2B understand sole source aquifer limitations (ROGs)?

E-mailed granta@dea.org about brackish definition of "sole source"
February 10, 2009

Ken Kawahara  
Commission on Water Resource Management  
P.O. Box 621  
Honolulu, Hawai‘i 96809

RE: Request for comments on the Kaluako‘i ground water management area,  
Commission on Water Resource Management (CWRM) water use permit  
application, Moloka‘i.

Aloha e Ken Kawahara,

The Office of Hawaiian Affairs (OHA) is in receipt of the above-mentioned letter dated January 6, 2009. OHA has reviewed the project and offers the following comments.

As the Commission knows, Moloka‘i has been designated a sole source aquifer. Water has also been a perennial concern on this island. Moloka‘i has been known as the breadbasket of Hawai‘i and is famous for its agricultural products. Furthermore, many of our beneficiaries are not only farmers, but are also dependent upon it. Water, its use and its infrastructure are always hot issues on Moloka‘i. In short, water matters everywhere but on Moloka‘i the people are even more cautious about it.

OHA expresses concern over the proposed use of this resource in this area. We note that the applicant intends to have a substantial main house in addition to a guest house on this ocean front lot in this undeveloped area. We see that the proposed use of this resource is for agriculture and irrigation; however, merely planting a few fruit trees will not obfuscate the fact that this is not an agricultural endeavor. This is for a luxury home.

OHA realizes that water use permits are granted based on reasonable usage and in consideration of maximum-beneficial use. CWRM is the agency responsible for administering the state water code. Under the code, all waters in the state are held in trust for the benefit of the citizens of the state; therefore, all water use is subject to legally protected water rights. OHA
stresses that waters of the state used in agricultural zoned parcels must be used in order to support agriculture. The proposed use is not of the maximum-beneficial use of this scarce resource on this island. OHA also urges that it is not reasonable.

We are also concerned regarding the County of Maui Ordinance No. 3502 which requires that a long-term reliable supply of water be verified. Stating where the water will be stored and come from is not equitable to verifying a long-term reliable source of water for the project. The spirit of this law becomes particularly important in instances such as this when there is a single source aquifer with multiple proposals for limited water resources in the same area. OHA seeks clarification regarding the water source and water availability as seen cumulatively for this area as a whole.

Of additional import it the fact that this is a water management area. CWRM gave this area this designation because it has been determined that the water resources in this area are threatened by existing or proposed withdraws or uses of water.1 CWRM is to ensure reasonable-beneficial use of the water resources in this area for the public interest.2

OHA also points out that the public trust doctrine also creates a burden for those who want to use a public trust resource. As such, applicants must demonstrate that their use will not significantly harm the resource, or if it will harm it, that the proposed use is consistent with the purposes of the trust.

The state’s responsibility as that of a trustee of this public trust means that agencies of the state (such as OHA and CWRM) must act with the diligence and care of a fiduciary in assuring that … “those bona fide trust purposes such as … ‘traditional and customary Hawaiian rights’” are protected when deciding what constitutes a “maximum beneficial use.”3 Additionally, the Hawaiʻi Constitution article XII, section 7 “places an affirmative duty on the State and its agencies to preserve and protect traditional and customary native Hawaiian rights, and confers upon the State and its agencies the power to protect these rights and to prevent any interference with the exercise of these rights.”4

The State Water Code also further requires that: “adequate provision shall be made for the protection of traditional and customary Hawaiian rights.”5 Therefore, OHA urges that the water rights of our beneficiaries must not be abridged or denied nor shall the reserves of water set aside for Hawaiian Home Lands be diminished by this proposed project alone or in combination with other proposed projects in the area.6

---

1 Hawaii Revised Statues (HRS) section 174C-41.
2 Ibid.
3 Waiāhole, 94 Haw. at 137, 9 P.3d at 146.
5 See, HRS section 174C-2.
6 See, HRS section 174C-101.
OHA is also concerned because of the potential effects on Native Hawaiians’ subsistence gathering because of potential reductions in groundwater seeps and natural springs that feed lo‘i and other culturally significant crops; fish, mollusks, limu and other stream, estuarine and marine species; and additional natural resources traditionally and customarily gathered for subsistence, religious and cultural purposes.

Thank you for the opportunity to comment. If you have further questions, please contact Grant Arnold by phone at (808) 594-0263 or e-mail him at granta@oha.org.

‘O wau iho nō me ka ‘oia‘i‘o,

Clyde W. Nāmu‘o
Administrator

C: OHA Moloka‘i CRC
APPLICANT: Luigi Manera  
P.O. Box 1718  
Kaunakakai, HI 96748  

LANDOWNER: Pierluigi Zappacosta  
98 Faxon Road  
Atherton, CA 94027-4046  

SUMMARY OF REQUEST:  
The applicant requests that the Commission on Water Resource Management (Commission) approve a water use permit for an allocation of 8,460 gallons per day, or 0.008 million gallons per day (mgd) of brackish basal ground water from a new well to desalt and supply 3.5 acres of fruit tree irrigation, as well the incidental maintenance of a covered saltwater swimming pool (one-time fill of 9,200 gallons plus 150 gpd to replace evaporation).

LOCATION MAP: See Exhibit 1

BACKGROUND:  
November 20, 2008  
The Commission received a completed Well Construction/ Pump Installation Permit Application. Staff acknowledgement noted the requirement for a water use permit prior to issuing a pump installation permit and encouraged the applicant to submit it simultaneously.
November 25, 2008  The applicant returned with a water use permit application, which required some additional information to be acknowledged as complete as of December 4, 2008, initiating a public notice.

January 7 & 14, 2009  Public Notice was issued in the Maui News.

January 29, 2009  The public review period for the water use permit closed with some comments and questions but no objections. Staff was directed by the applicant to proceed to a submittal for the Commission on both the well construction/pump installation permit application and the water use permit application.

ANALYSIS/ISSUES:

Section 174C-49(a) of the State Water Code establishes seven (7) criteria that must be met to obtain a water use permit. An analysis of the proposed permit in relation to these criteria follows:

(1) Water availability

Through the Hawaii Water Plan, the Commission has adopted 2 mgd as the sustainable yield for the Kaluakoi Aquifer System, consisting only in non-potable brackish water. Individual existing water use permits in this aquifer system are shown in Exhibit 2. A summary of the current ground water conditions in the aquifer is provided in Table 1:

<table>
<thead>
<tr>
<th>Kaluakoi Aquifer System</th>
</tr>
</thead>
<tbody>
<tr>
<td>ITEM</td>
</tr>
<tr>
<td>Sustainable Yield</td>
</tr>
<tr>
<td>Less: Other Existing Water Use Permits (shown in Exhibit 2)</td>
</tr>
<tr>
<td>Reservation to DHHL</td>
</tr>
<tr>
<td>Subtotal (Current Available Allocation)</td>
</tr>
<tr>
<td>Less: Other Completed Applications (shown in Exhibit 3)</td>
</tr>
<tr>
<td>Less: This Application</td>
</tr>
<tr>
<td>Subtotal (Potential Available Allocation/Allocation Deficit)</td>
</tr>
</tbody>
</table>

Therefore, the resource availability can accommodate this application request.
The 2000 Legislature amended the Water Code to include a new section, §174C-51.5 HRS that provides the Commission with the authority to require dual line (potable and non-potable) water supply systems in new industrial and commercial developments located in designated water management areas. In this case, the applicant does not have potable water service and is proposing to install only a single non-potable system. Therefore, this provision does not need to be invoked.

(3) Interference with other existing legal uses

There are no other wells currently in use within 1 mile of this source which use water. Pump test data for this well are not yet available, as the well has yet to be permitted, drilled, and pump tested.

(4) Public interest

Public interest is defined under §174C-2 - Declaration of policy, as follows:

“(c) The state water code shall be liberally interpreted to obtain maximum beneficial use of the waters of the State for purposes such as domestic uses, aquaculture uses, irrigation and other agricultural uses, power development, and commercial and industrial uses. However, adequate provision shall be made for the protection of traditional and customary Hawaiian rights, the protection and procreation of fish and wildlife, the maintenance of proper ecological balance and scenic beauty, and the preservation and enhancement of waters of the State for municipal uses, public recreation, public water supply, agriculture, and navigation. Such objectives are declared to be in the public interest.”

There have been public questions on this application (other than state & county general plans and land use designation comments noted in criteria (5)), expressing an interest in the desalting process and whether the applicant would be willing to share the information. The applicant has been asked to provide responses to these questions, and he has indicated he will provide written testimony to the Commission and possibly to be present at the meeting.

There have been no objections. As there are no freshwater sources in this part of the island other than the brackish ground water lens, drawing brackish water from the aquifer is not expected to impact environmental concerns. The well and agricultural operations do not seem to impact public activities.

Therefore, this application meets the public interest.

(5) State & county general plans and land use designations

The proposed uses are in the State Agriculture District, and the county zoning is Agriculture. Therefore, the proposed use is consistent with these land use designations.

Normal agency review includes:
RECOMMENDATION:

Staff recommends that the Commission approve the issuance of Water Use Permit No. 869 to Pierluigi Zappacosta for the reasonable and beneficial use of 8,460 gallons per day of brackish basal ground water for agricultural irrigation from the Papohaku-Zappacosta Well (Well No. 0916-01), subject to the standard water use permit conditions listed in Attachment B and the following special conditions:

1. The applicant shall obtain appropriate approval for the disposal of desalting waste stream brine from the Department of Health, and meet the Division of Aquatics approval for any described impacts on the nearshore environment, prior to using any water from a desalting process.

2. In the event that the tax map key at the location of the water use is changed, the permittee shall notify the Commission in writing of the tax map key change within thirty (30) days after the permittee receives notice of the tax map key change.

Respectfully submitted,

KEN C. KAWAHARA, P.E.
Deputy Director

Attachment(s):
A (Water Use Permit Detailed Information)
B (Water Use Permit Standard Conditions)
C (Well Construction Permit Standard Conditions)
D (Pump Installation Permit Standard Conditions)

Exhibit(s):
1 (Location Map)

APPROVED FOR SUBMITTAL:

LAURA H. THIELEN
Chairperson
<table>
<thead>
<tr>
<th>MO</th>
<th>NIR</th>
<th>GIR</th>
<th>GAL_A</th>
<th>G_RAIN</th>
<th>N_RAIN</th>
<th>ER</th>
<th>ER21</th>
<th>RO</th>
<th>INT</th>
<th>ETo</th>
<th>ET</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4.4</td>
<td>5.2</td>
<td>141.7</td>
<td>2.5</td>
<td>1.9</td>
<td>1.9</td>
<td>4.4</td>
<td>0.2</td>
<td>0.4</td>
<td>0.4</td>
<td>6.5</td>
</tr>
<tr>
<td>2</td>
<td>4.7</td>
<td>5.6</td>
<td>151.1</td>
<td>1.9</td>
<td>1.5</td>
<td>1.5</td>
<td>3.6</td>
<td>0.1</td>
<td>0.4</td>
<td>0.4</td>
<td>6.3</td>
</tr>
<tr>
<td>3</td>
<td>5.9</td>
<td>7.0</td>
<td>189.5</td>
<td>2.4</td>
<td>1.8</td>
<td>1.8</td>
<td>4.6</td>
<td>0.2</td>
<td>0.3</td>
<td>0.3</td>
<td>7.8</td>
</tr>
<tr>
<td>4</td>
<td>7.0</td>
<td>8.2</td>
<td>222.5</td>
<td>1.3</td>
<td>0.9</td>
<td>0.9</td>
<td>2.8</td>
<td>0.1</td>
<td>0.3</td>
<td>0.3</td>
<td>8.1</td>
</tr>
<tr>
<td>5</td>
<td>7.8</td>
<td>9.2</td>
<td>249.8</td>
<td>0.6</td>
<td>0.4</td>
<td>0.4</td>
<td>1.4</td>
<td>0.0</td>
<td>0.2</td>
<td>0.2</td>
<td>8.9</td>
</tr>
<tr>
<td>6</td>
<td>8.1</td>
<td>9.6</td>
<td>259.4</td>
<td>0.3</td>
<td>0.2</td>
<td>0.2</td>
<td>0.4</td>
<td>0.0</td>
<td>0.1</td>
<td>0.1</td>
<td>9.2</td>
</tr>
<tr>
<td>7</td>
<td>8.4</td>
<td>9.9</td>
<td>267.9</td>
<td>0.4</td>
<td>0.2</td>
<td>0.2</td>
<td>0.9</td>
<td>0.0</td>
<td>0.2</td>
<td>0.2</td>
<td>9.6</td>
</tr>
<tr>
<td>8</td>
<td>7.7</td>
<td>9.1</td>
<td>246.5</td>
<td>0.5</td>
<td>0.3</td>
<td>0.3</td>
<td>0.9</td>
<td>0.0</td>
<td>0.2</td>
<td>0.2</td>
<td>9.5</td>
</tr>
<tr>
<td>9</td>
<td>6.4</td>
<td>7.5</td>
<td>204.8</td>
<td>0.4</td>
<td>0.2</td>
<td>0.2</td>
<td>0.7</td>
<td>0.0</td>
<td>0.2</td>
<td>0.2</td>
<td>8.4</td>
</tr>
<tr>
<td>10</td>
<td>6.0</td>
<td>7.0</td>
<td>191.0</td>
<td>1.0</td>
<td>0.7</td>
<td>0.7</td>
<td>1.7</td>
<td>0.1</td>
<td>0.2</td>
<td>0.2</td>
<td>8.0</td>
</tr>
<tr>
<td>11</td>
<td>5.2</td>
<td>6.1</td>
<td>166.1</td>
<td>1.9</td>
<td>1.3</td>
<td>1.3</td>
<td>3.1</td>
<td>0.3</td>
<td>0.3</td>
<td>0.3</td>
<td>7.0</td>
</tr>
<tr>
<td>12</td>
<td>4.5</td>
<td>5.3</td>
<td>142.9</td>
<td>2.2</td>
<td>1.7</td>
<td>1.7</td>
<td>3.9</td>
<td>0.2</td>
<td>0.3</td>
<td>0.3</td>
<td>6.7</td>
</tr>
</tbody>
</table>

---

**SUMMARY**

SOILS: Holomua(0.186), Very stony land, eroded, eroded(0.814)

ANNUAL IRRIGATION REQUIREMENT (INCHES)

<table>
<thead>
<tr>
<th>WATER BUDGET COMPONENTS</th>
<th>DR</th>
<th>0.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>NIR</td>
<td>G_RAIN</td>
<td>N_RAIN</td>
</tr>
<tr>
<td>76.2</td>
<td>89.6</td>
<td>2433.2</td>
</tr>
</tbody>
</table>

GIR STATISTICS

(mean, med, x-max, x-min, 50%, 80%, 90%, 95%)

<table>
<thead>
<tr>
<th>MEAN</th>
<th>MED.</th>
<th>XMAX</th>
<th>XMIN</th>
<th>50%</th>
<th>80%</th>
<th>90%</th>
<th>95%</th>
</tr>
</thead>
<tbody>
<tr>
<td>89.6</td>
<td>91.2</td>
<td>98.3</td>
<td>79.5</td>
<td>90.2</td>
<td>94.1</td>
<td>95.8</td>
<td>97.1</td>
</tr>
</tbody>
</table>

NIR STATISTICS

<table>
<thead>
<tr>
<th>MEAN</th>
<th>MED.</th>
<th>XMAX</th>
<th>XMIN</th>
<th>50%</th>
<th>80%</th>
<th>90%</th>
<th>95%</th>
</tr>
</thead>
<tbody>
<tr>
<td>76.2</td>
<td>77.5</td>
<td>83.5</td>
<td>67.6</td>
<td>76.6</td>
<td>80.0</td>
<td>81.5</td>
<td>82.6</td>
</tr>
</tbody>
</table>

MONTHLY IRRIGATION REQUIREMENT (INCHES)

<table>
<thead>
<tr>
<th>ET</th>
<th>DR</th>
<th>MO</th>
<th>NIR</th>
<th>GIR</th>
<th>GAL_A</th>
<th>G_RAIN</th>
<th>N_RAIN</th>
<th>ER</th>
<th>ER21</th>
<th>RO</th>
<th>INT</th>
<th>ETo</th>
<th>ET</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.2</td>
<td>0.0</td>
<td>1</td>
<td>4.4</td>
<td>5.2</td>
<td>141.7</td>
<td>2.5</td>
<td>1.9</td>
<td>1.9</td>
<td>4.4</td>
<td>0.2</td>
<td>0.4</td>
<td>0.4</td>
<td>6.5</td>
</tr>
<tr>
<td>6.3</td>
<td>0.0</td>
<td>2</td>
<td>4.7</td>
<td>5.6</td>
<td>151.1</td>
<td>1.9</td>
<td>1.5</td>
<td>1.5</td>
<td>3.6</td>
<td>0.1</td>
<td>0.4</td>
<td>0.4</td>
<td>6.3</td>
</tr>
<tr>
<td>7.8</td>
<td>0.0</td>
<td>3</td>
<td>5.9</td>
<td>7.0</td>
<td>189.5</td>
<td>2.4</td>
<td>1.8</td>
<td>1.8</td>
<td>4.6</td>
<td>0.2</td>
<td>0.3</td>
<td>0.3</td>
<td>7.8</td>
</tr>
<tr>
<td>8.0</td>
<td>0.0</td>
<td>4</td>
<td>7.0</td>
<td>8.2</td>
<td>222.5</td>
<td>1.3</td>
<td>0.9</td>
<td>0.9</td>
<td>2.8</td>
<td>0.1</td>
<td>0.3</td>
<td>0.3</td>
<td>8.1</td>
</tr>
<tr>
<td>8.4</td>
<td>0.0</td>
<td>5</td>
<td>7.8</td>
<td>9.2</td>
<td>249.8</td>
<td>0.6</td>
<td>0.4</td>
<td>0.4</td>
<td>1.4</td>
<td>0.0</td>
<td>0.2</td>
<td>0.2</td>
<td>8.9</td>
</tr>
<tr>
<td>8.3</td>
<td>0.0</td>
<td>6</td>
<td>8.1</td>
<td>9.6</td>
<td>259.4</td>
<td>0.3</td>
<td>0.2</td>
<td>0.2</td>
<td>0.4</td>
<td>0.0</td>
<td>0.1</td>
<td>0.1</td>
<td>9.2</td>
</tr>
<tr>
<td>8.6</td>
<td>0.0</td>
<td>7</td>
<td>8.4</td>
<td>9.9</td>
<td>267.9</td>
<td>0.4</td>
<td>0.2</td>
<td>0.2</td>
<td>0.9</td>
<td>0.0</td>
<td>0.2</td>
<td>0.2</td>
<td>9.6</td>
</tr>
<tr>
<td>8.1</td>
<td>0.0</td>
<td>8</td>
<td>7.7</td>
<td>9.1</td>
<td>246.5</td>
<td>0.5</td>
<td>0.3</td>
<td>0.3</td>
<td>0.9</td>
<td>0.0</td>
<td>0.2</td>
<td>0.2</td>
<td>9.5</td>
</tr>
<tr>
<td>6.8</td>
<td>0.0</td>
<td>9</td>
<td>6.4</td>
<td>7.5</td>
<td>204.8</td>
<td>0.4</td>
<td>0.2</td>
<td>0.2</td>
<td>0.7</td>
<td>0.0</td>
<td>0.2</td>
<td>0.2</td>
<td>8.4</td>
</tr>
<tr>
<td>6.5</td>
<td>0.0</td>
<td>10</td>
<td>6.0</td>
<td>7.0</td>
<td>191.0</td>
<td>1.0</td>
<td>0.7</td>
<td>0.7</td>
<td>1.7</td>
<td>0.1</td>
<td>0.2</td>
<td>0.2</td>
<td>8.0</td>
</tr>
<tr>
<td>6.3</td>
<td>0.0</td>
<td>11</td>
<td>5.2</td>
<td>6.1</td>
<td>166.1</td>
<td>1.9</td>
<td>1.3</td>
<td>1.3</td>
<td>3.1</td>
<td>0.3</td>
<td>0.3</td>
<td>0.3</td>
<td>7.0</td>
</tr>
<tr>
<td>6.0</td>
<td>0.0</td>
<td>12</td>
<td>4.5</td>
<td>5.3</td>
<td>142.9</td>
<td>2.2</td>
<td>1.7</td>
<td>1.7</td>
<td>3.9</td>
<td>0.2</td>
<td>0.3</td>
<td>0.3</td>
<td>6.7</td>
</tr>
</tbody>
</table>
IRRIGATION MANAGEMENT SYSTEM

**LOCATION** = Papohaku-Zappacosta

**CROP TYPE** = GENERIC CROP (PERENNIAL)

**ROOT ZONE DEPTH IRRIGATED (INCHES)** = 24.0
**TOTAL CROP ROOT ZONE DEPTH (INCHES)** = 48.0

**MONTH**

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>KC</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>ALDP</td>
<td>0.50</td>
<td>0.50</td>
<td>0.50</td>
<td>0.50</td>
<td>0.50</td>
<td>0.50</td>
<td>0.50</td>
<td>0.50</td>
<td>0.50</td>
<td>0.50</td>
<td>0.50</td>
<td>0.50</td>
</tr>
</tbody>
</table>

**IRRIGATION SEASON** = 1-1 TO 12-31
**LENGTH** = 365 DAYS

**IRRIGATION SYSTEM** = TRICKLE, Drip

**DESIGN APPLICATION EFFICIENCY** = 85%
**FRACTION OF SOIL SURFACE IRRIGATED** = 50%
**FRACTION EXTRACTED FROM IRRIGATED ZONE** = 40%
imansys_out.txt

|     |       |       |       |       |       |     |     |     |     |     |     |     |  |     |
|-----|-------|-------|-------|-------|-------|-----|-----|-----|-----|-----|-----|-----| |     |
|     | GIR   | STATISTICS |
|     | MO    | MEAN   | MED.  | CV   | XMAX  | XMIN  | ZERO | RSQ  | 50%  | 80%  | 90%  | 95% |
| 1   | 5.7   | 6.1    | 0.37  | 9.2  | 1.0   | 0.00  | 0.91 | 5.6  | 7.7  | 7.7  | 7.7  | 7.7  |
| 2   | 5.3   | 5.3    | 0.25  | 7.4  | 2.0   | 0.00  | 0.95 | 5.3  | 6.5  | 7.1  | 7.5  | 7.5  |
| 3   | 6.6   | 6.7    | 0.25  | 8.8  | 3.1   | 0.00  | 0.96 | 6.6  | 8.2  | 9.0  | 9.2  | 9.2  |
| 4   | 7.9   | 8.2    | 0.17  | 9.7  | 5.2   | 0.00  | 0.97 | 8.0  | 9.2  | 9.5  | 9.5  | 9.5  |
| 5   | 9.4   | 9.5    | 0.09  | 11.0 | 7.7   | 0.00  | 0.93 | 9.5  | 10.2 | 10.4 | 10.4 | 10.4 |
| 6   | 10.2  | 10.0   | 0.05  | 11.0 | 9.0   | 0.00  | 0.81 | 10.3 | 10.7 | 10.8 | 10.8 | 10.8 |
| 7   | 10.6  | 10.9   | 0.05  | 11.3 | 9.7   | 0.00  | 0.88 | 10.7 | 11.1 | 11.3 | 11.3 | 11.3 |
| 8   | 10.4  | 10.8   | 0.07  | 11.8 | 8.7   | 0.00  | 0.92 | 10.5 | 11.0 | 11.2 | 11.2 | 11.2 |
| 9   | 9.3   | 9.2    | 0.06  | 10.3 | 8.0   | 0.00  | 0.91 | 9.3  | 9.7  | 9.9  | 9.9  | 9.9  |
| 10  | 8.4   | 8.6    | 0.12  | 9.9  | 6.1   | 0.00  | 0.93 | 8.5  | 9.3  | 9.4  | 9.4  | 9.4  |
| 11  | 6.9   | 7.3    | 0.18  | 8.9  | 3.9   | 0.00  | 0.90 | 7.0  | 8.0  | 8.3  | 8.3  | 8.3  |
| 12  | 5.8   | 6.1    | 0.28  | 8.1  | 1.9   | 0.00  | 0.92 | 5.8  | 7.3  | 7.8  | 7.8  | 7.8  |

**GIR STATISTICS**

**BI-WEEKLY GROSS IRRIGATION REQUIREMENT (INCHES)**

<table>
<thead>
<tr>
<th></th>
<th>I2w</th>
<th>NIR</th>
<th>GIR</th>
<th>WATER BUDGET</th>
<th>GAL_A</th>
<th>G_RAIN</th>
<th>N_RAIN</th>
<th>ER</th>
<th>RO</th>
<th>INT</th>
<th>ETo</th>
<th>ET</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>COMPONENTS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DR</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.0</td>
<td>1</td>
<td>2.6</td>
<td>3.1</td>
<td>82.9</td>
<td>1.0</td>
<td>0.9</td>
<td>0.9</td>
<td>0.0</td>
<td>0.0</td>
<td>2.9</td>
<td>2.9</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>2.1</td>
<td>2.5</td>
<td>68.4</td>
<td>1.1</td>
<td>1.0</td>
<td>1.0</td>
<td>0.1</td>
<td>0.0</td>
<td>2.9</td>
<td>2.9</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>1.8</td>
<td>2.2</td>
<td>58.4</td>
<td>1.1</td>
<td>1.0</td>
<td>1.0</td>
<td>0.1</td>
<td>0.0</td>
<td>3.1</td>
<td>3.1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>2.3</td>
<td>2.7</td>
<td>72.2</td>
<td>1.0</td>
<td>0.9</td>
<td>0.9</td>
<td>0.0</td>
<td>0.0</td>
<td>3.2</td>
<td>3.2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>2.3</td>
<td>2.7</td>
<td>74.1</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
<td>0.1</td>
<td>0.0</td>
<td>3.4</td>
<td>3.4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>2.6</td>
<td>3.1</td>
<td>84.4</td>
<td>1.0</td>
<td>0.9</td>
<td>0.9</td>
<td>0.1</td>
<td>0.0</td>
<td>3.6</td>
<td>3.6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>2.7</td>
<td>3.2</td>
<td>87.8</td>
<td>1.0</td>
<td>0.8</td>
<td>0.8</td>
<td>0.1</td>
<td>0.0</td>
<td>3.7</td>
<td>3.7</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>3.1</td>
<td>3.7</td>
<td>99.3</td>
<td>0.6</td>
<td>0.5</td>
<td>0.5</td>
<td>0.0</td>
<td>0.0</td>
<td>3.8</td>
<td>3.8</td>
<td></td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>3.5</td>
<td>4.2</td>
<td>112.9</td>
<td>0.4</td>
<td>0.3</td>
<td>0.3</td>
<td>0.0</td>
<td>0.0</td>
<td>3.9</td>
<td>3.9</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>3.4</td>
<td>4.0</td>
<td>109.2</td>
<td>0.4</td>
<td>0.3</td>
<td>0.3</td>
<td>0.0</td>
<td>0.0</td>
<td>3.9</td>
<td>3.9</td>
<td></td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>4.0</td>
<td>4.7</td>
<td>126.5</td>
<td>0.2</td>
<td>0.1</td>
<td>0.1</td>
<td>0.0</td>
<td>0.0</td>
<td>4.1</td>
<td>4.1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>4.0</td>
<td>4.8</td>
<td>129.0</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.0</td>
<td>0.0</td>
<td>4.3</td>
<td>4.3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>13</td>
<td>4.2</td>
<td>4.9</td>
<td>132.9</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.0</td>
<td>0.0</td>
<td>4.3</td>
<td>4.3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>4.1</td>
<td>4.8</td>
<td>131.1</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
<td>0.0</td>
<td>0.0</td>
<td>4.3</td>
<td>4.3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>4.0</td>
<td>4.7</td>
<td>126.6</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
<td>0.0</td>
<td>0.0</td>
<td>4.3</td>
<td>4.3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>4.1</td>
<td>4.8</td>
<td>130.9</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
<td>0.0</td>
<td>0.0</td>
<td>4.3</td>
<td>4.3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>17</td>
<td>3.9</td>
<td>4.6</td>
<td>125.3</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
<td>0.0</td>
<td>0.0</td>
<td>4.3</td>
<td>4.3</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>0.8</td>
<td>1.0</td>
<td>25.9</td>
<td>0.6</td>
<td>0.5</td>
<td>0.5</td>
<td>0.0</td>
<td>0.0</td>
<td>1.5</td>
<td>1.5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>1.0</td>
<td>1.2</td>
<td>32.5</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
<td>0.1</td>
<td>0.0</td>
<td>1.5</td>
<td>1.5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>1.2</td>
<td>1.4</td>
<td>38.0</td>
<td>0.4</td>
<td>0.4</td>
<td>0.4</td>
<td>0.0</td>
<td>0.0</td>
<td>1.6</td>
<td>1.6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>1.1</td>
<td>1.3</td>
<td>34.3</td>
<td>0.6</td>
<td>0.5</td>
<td>0.5</td>
<td>0.0</td>
<td>0.0</td>
<td>1.6</td>
<td>1.6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>1.2</td>
<td>1.5</td>
<td>39.7</td>
<td>0.5</td>
<td>0.4</td>
<td>0.4</td>
<td>0.0</td>
<td>0.0</td>
<td>1.7</td>
<td>1.7</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>1.1</td>
<td>1.3</td>
<td>34.4</td>
<td>0.6</td>
<td>0.5</td>
<td>0.5</td>
<td>0.0</td>
<td>0.0</td>
<td>1.7</td>
<td>1.7</td>
<td></td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>1.4</td>
<td>1.6</td>
<td>44.8</td>
<td>0.6</td>
<td>0.5</td>
<td>0.5</td>
<td>0.1</td>
<td>0.0</td>
<td>1.8</td>
<td>1.8</td>
<td></td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>1.2</td>
<td>1.5</td>
<td>39.6</td>
<td>0.4</td>
<td>0.4</td>
<td>0.4</td>
<td>0.0</td>
<td>0.0</td>
<td>1.8</td>
<td>1.8</td>
<td></td>
</tr>
<tr>
<td></td>
<td>13</td>
<td>1.3</td>
<td>1.6</td>
<td>42.9</td>
<td>0.5</td>
<td>0.4</td>
<td>0.4</td>
<td>0.1</td>
<td>0.0</td>
<td>1.8</td>
<td>1.8</td>
<td></td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>1.4</td>
<td>1.7</td>
<td>44.9</td>
<td>0.5</td>
<td>0.4</td>
<td>0.4</td>
<td>0.1</td>
<td>0.0</td>
<td>1.9</td>
<td>1.9</td>
<td></td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>1.7</td>
<td>2.0</td>
<td>54.2</td>
<td>0.3</td>
<td>0.2</td>
<td>0.2</td>
<td>0.0</td>
<td>0.0</td>
<td>1.9</td>
<td>1.9</td>
<td></td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>1.4</td>
<td>1.7</td>
<td>45.1</td>
<td>0.3</td>
<td>0.3</td>
<td>0.3</td>
<td>0.0</td>
<td>0.0</td>
<td>1.9</td>
<td>1.9</td>
<td></td>
</tr>
<tr>
<td></td>
<td>17</td>
<td>1.7</td>
<td>2.0</td>
<td>53.6</td>
<td>0.2</td>
<td>0.1</td>
<td>0.1</td>
<td>0.0</td>
<td>0.0</td>
<td>1.9</td>
<td>1.9</td>
<td></td>
</tr>
<tr>
<td></td>
<td>18</td>
<td>1.9</td>
<td>2.2</td>
<td>59.3</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
<td>0.0</td>
<td>0.0</td>
<td>2.0</td>
<td>2.0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>19</td>
<td>1.8</td>
<td>2.1</td>
<td>57.6</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.0</td>
<td>0.0</td>
<td>2.0</td>
<td>2.0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>1.6</td>
<td>1.9</td>
<td>51.5</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
<td>0.0</td>
<td>0.0</td>
<td>2.0</td>
<td>2.0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>21</td>
<td>1.9</td>
<td>2.3</td>
<td>61.9</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.0</td>
<td>0.0</td>
<td>2.0</td>
<td>2.0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>22</td>
<td>2.0</td>
<td>2.4</td>
<td>64.6</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.0</td>
<td>0.0</td>
<td>2.1</td>
<td>2.1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>23</td>
<td>2.1</td>
<td>2.4</td>
<td>65.7</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.0</td>
<td>0.0</td>
<td>2.1</td>
<td>2.1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>24</td>
<td>2.0</td>
<td>2.3</td>
<td>63.3</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.0</td>
<td>0.0</td>
<td>2.2</td>
<td>2.2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>25</td>
<td>2.1</td>
<td>2.5</td>
<td>67.8</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>2.2</td>
<td>2.2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>26</td>
<td>2.0</td>
<td>2.4</td>
<td>65.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.0</td>
<td>0.0</td>
<td>2.2</td>
<td>2.2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>27</td>
<td>2.0</td>
<td>2.3</td>
<td>63.3</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.0</td>
<td>0.0</td>
<td>2.2</td>
<td>2.2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>28</td>
<td>2.1</td>
<td>2.5</td>
<td>67.8</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.0</td>
<td>0.0</td>
<td>2.2</td>
<td>2.2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>29</td>
<td>2.0</td>
<td>2.3</td>
<td>62.6</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.0</td>
<td>0.0</td>
<td>2.2</td>
<td>2.2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>30</td>
<td>2.0</td>
<td>2.4</td>
<td>63.9</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.0</td>
<td>0.0</td>
<td>2.2</td>
<td>2.2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>31</td>
<td>1.9</td>
<td>2.2</td>
<td>59.4</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.0</td>
<td>0.0</td>
<td>2.2</td>
<td>2.2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>32</td>
<td>2.2</td>
<td>2.6</td>
<td>71.5</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.0</td>
<td>0.0</td>
<td>2.2</td>
<td>2.2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>33</td>
<td>1.9</td>
<td>2.3</td>
<td>61.8</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.0</td>
<td>0.0</td>
<td>2.2</td>
<td>2.2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>34</td>
<td>2.0</td>
<td>2.3</td>
<td>63.4</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.0</td>
<td>0.0</td>
<td>2.1</td>
<td>2.1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>35</td>
<td>2.0</td>
<td>2.3</td>
<td>62.6</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.0</td>
<td>0.0</td>
<td>2.1</td>
<td>2.1</td>
<td></td>
</tr>
<tr>
<td>MONTH</td>
<td>KC</td>
<td>ALDP</td>
<td>IRRIGATION SEASON</td>
<td>LENGTH</td>
<td>CLIMATE DATA BASE</td>
<td>SOIL</td>
<td>SOIL LAYER DEPTHS</td>
<td>TEXTURE</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------</td>
<td>----</td>
<td>------</td>
<td>-------------------</td>
<td>--------</td>
<td>------------------</td>
<td>------</td>
<td>------------------</td>
<td>---------</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.00</td>
<td>0.50</td>
<td>1-1 to 12-31</td>
<td>365 days</td>
<td>LOCATION = kuala 1957 and 64 are incomplete</td>
<td>SERIES = Very stony land, eroded, eroded</td>
<td>XST-SICL</td>
<td>XST-SICL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>1.00</td>
<td>0.50</td>
<td>1-1 to 12-31</td>
<td>365 days</td>
<td>ALTER Amendments: 1623</td>
<td>BDRK</td>
<td>BDRK</td>
<td>BDRK</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>1.00</td>
<td>0.50</td>
<td>1-1 to 12-31</td>
<td>365 days</td>
<td>NO. OF BLANK RAIN: 1623</td>
<td>TEXTURE = XST-SICL</td>
<td>TEXTURE</td>
<td>TEXTURE</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>1.00</td>
<td>0.50</td>
<td>1-1 to 12-31</td>
<td>365 days</td>
<td>NO. OF BLANK ET: 0</td>
<td>XST-SICL</td>
<td>XST-SICL</td>
<td>XST-SICL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>1.00</td>
<td>0.50</td>
<td>1-1 to 12-31</td>
<td>365 days</td>
<td>NO. OF MISSING DAYS (FILLED WITH AVERAGE VALUES): 0</td>
<td>BDRK</td>
<td>BDRK</td>
<td>BDRK</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>1.00</td>
<td>0.50</td>
<td>1-1 to 12-31</td>
<td>365 days</td>
<td>APPLIED RATIOS: 0.4588(RAIN), 1.0211(ET)</td>
<td>BDRK</td>
<td>BDRK</td>
<td>BDRK</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>1.00</td>
<td>0.50</td>
<td>1-1 to 12-31</td>
<td>365 days</td>
<td>SCS CURVE NUMBER = 78</td>
<td>BDRK</td>
<td>BDRK</td>
<td>BDRK</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>1.00</td>
<td>0.50</td>
<td>1-1 to 12-31</td>
<td>365 days</td>
<td>MAX LAI = 1.000</td>
<td>BDRK</td>
<td>BDRK</td>
<td>BDRK</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>1.00</td>
<td>0.50</td>
<td>1-1 to 12-31</td>
<td>365 days</td>
<td>GROSS RAINFALL IS USED FOR SCS TR21 EFFECTIVE RAINFALL CALCULATION</td>
<td>BDRK</td>
<td>BDRK</td>
<td>BDRK</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>1.00</td>
<td>0.50</td>
<td>1-1 to 12-31</td>
<td>365 days</td>
<td>SOIL : SERIES = Very stony land, eroded, eroded</td>
<td>BDRK</td>
<td>BDRK</td>
<td>BDRK</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>1.00</td>
<td>0.50</td>
<td>1-1 to 12-31</td>
<td>365 days</td>
<td>XST-SIC BDRK</td>
<td>BDRK</td>
<td>BDRK</td>
<td>BDRK</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>1.00</td>
<td>0.50</td>
<td>1-1 to 12-31</td>
<td>365 days</td>
<td>SOIL LAYER DEPTHS (INCHES) AND WATER CONTENTS</td>
<td>BDRK</td>
<td>BDRK</td>
<td>BDRK</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>1.00</td>
<td>0.50</td>
<td>1-1 to 12-31</td>
<td>365 days</td>
<td>DEPTH(I)= 10 30 40</td>
<td>BDRK</td>
<td>BDRK</td>
<td>BDRK</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DR</td>
<td>I2W</td>
<td>NIR</td>
<td>GIR</td>
<td>GAL_A</td>
<td>G_RAIN</td>
<td>N_RAIN</td>
<td>ER</td>
<td>RO</td>
<td>INT</td>
<td>ETo</td>
<td>ET</td>
<td></td>
</tr>
<tr>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-------</td>
<td>--------</td>
<td>--------</td>
<td>----</td>
<td>----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td></td>
</tr>
<tr>
<td>0.0</td>
<td>1</td>
<td>3.9</td>
<td>4.5</td>
<td>123.6</td>
<td>1.0</td>
<td>0.9</td>
<td>0.9</td>
<td>0.0</td>
<td>2.9</td>
<td>2.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.0</td>
<td>2</td>
<td>1.9</td>
<td>2.3</td>
<td>61.9</td>
<td>1.1</td>
<td>1.0</td>
<td>1.0</td>
<td>0.1</td>
<td>2.9</td>
<td>2.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.0</td>
<td>3</td>
<td>2.1</td>
<td>2.4</td>
<td>65.7</td>
<td>1.1</td>
<td>1.0</td>
<td>1.0</td>
<td>0.1</td>
<td>3.1</td>
<td>3.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.0</td>
<td>4</td>
<td>2.3</td>
<td>2.7</td>
<td>72.1</td>
<td>1.0</td>
<td>0.9</td>
<td>0.9</td>
<td>0.0</td>
<td>3.2</td>
<td>3.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.0</td>
<td>5</td>
<td>2.3</td>
<td>2.8</td>
<td>74.7</td>
<td>1.0</td>
<td>1.0</td>
<td>0.9</td>
<td>0.1</td>
<td>3.4</td>
<td>3.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.0</td>
<td>6</td>
<td>2.6</td>
<td>3.1</td>
<td>83.9</td>
<td>1.0</td>
<td>0.9</td>
<td>0.9</td>
<td>0.1</td>
<td>3.6</td>
<td>3.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.0</td>
<td>7</td>
<td>2.7</td>
<td>3.2</td>
<td>86.6</td>
<td>1.0</td>
<td>0.8</td>
<td>0.8</td>
<td>0.1</td>
<td>3.7</td>
<td>3.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.0</td>
<td>8</td>
<td>3.2</td>
<td>3.8</td>
<td>102.3</td>
<td>0.6</td>
<td>0.5</td>
<td>0.5</td>
<td>0.0</td>
<td>3.8</td>
<td>3.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.0</td>
<td>9</td>
<td>3.4</td>
<td>4.0</td>
<td>107.6</td>
<td>0.4</td>
<td>0.3</td>
<td>0.3</td>
<td>0.0</td>
<td>3.9</td>
<td>3.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.0</td>
<td>10</td>
<td>3.4</td>
<td>4.0</td>
<td>109.3</td>
<td>0.4</td>
<td>0.3</td>
<td>0.3</td>
<td>0.0</td>
<td>3.9</td>
<td>3.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.0</td>
<td>11</td>
<td>3.8</td>
<td>4.4</td>
<td>120.8</td>
<td>0.2</td>
<td>0.1</td>
<td>0.1</td>
<td>0.0</td>
<td>4.1</td>
<td>4.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.0</td>
<td>12</td>
<td>4.0</td>
<td>4.7</td>
<td>128.8</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.0</td>
<td>4.3</td>
<td>4.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.0</td>
<td>13</td>
<td>4.0</td>
<td>4.7</td>
<td>127.6</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.0</td>
<td>4.3</td>
<td>4.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.0</td>
<td>14</td>
<td>3.9</td>
<td>4.6</td>
<td>123.7</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
<td>0.0</td>
<td>4.3</td>
<td>4.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.0</td>
<td>15</td>
<td>4.0</td>
<td>4.7</td>
<td>128.9</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
<td>0.0</td>
<td>4.3</td>
<td>4.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.0</td>
<td>16</td>
<td>3.9</td>
<td>4.6</td>
<td>125.6</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
<td>0.0</td>
<td>4.3</td>
<td>4.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.0</td>
<td>17</td>
<td>3.9</td>
<td>4.6</td>
<td>125.2</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
<td>0.0</td>
<td>4.3</td>
<td>4.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.0</td>
<td>18</td>
<td>3.8</td>
<td>4.5</td>
<td>122.5</td>
<td>0.2</td>
<td>0.1</td>
<td>0.1</td>
<td>0.0</td>
<td>4.1</td>
<td>4.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.0</td>
<td>19</td>
<td>3.7</td>
<td>4.4</td>
<td>118.8</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.0</td>
<td>3.9</td>
<td>3.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.0</td>
<td>20</td>
<td>3.3</td>
<td>3.9</td>
<td>104.7</td>
<td>0.3</td>
<td>0.2</td>
<td>0.2</td>
<td>0.0</td>
<td>3.8</td>
<td>3.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.0</td>
<td>21</td>
<td>3.2</td>
<td>3.7</td>
<td>101.3</td>
<td>0.5</td>
<td>0.4</td>
<td>0.4</td>
<td>0.0</td>
<td>3.6</td>
<td>3.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.0</td>
<td>22</td>
<td>2.9</td>
<td>3.5</td>
<td>93.7</td>
<td>0.6</td>
<td>0.5</td>
<td>0.5</td>
<td>0.1</td>
<td>3.5</td>
<td>3.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.0</td>
<td>23</td>
<td>2.7</td>
<td>3.2</td>
<td>86.5</td>
<td>0.9</td>
<td>0.7</td>
<td>0.7</td>
<td>0.1</td>
<td>3.3</td>
<td>3.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.0</td>
<td>24</td>
<td>2.5</td>
<td>2.9</td>
<td>79.8</td>
<td>0.8</td>
<td>0.7</td>
<td>0.7</td>
<td>0.1</td>
<td>3.2</td>
<td>3.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.0</td>
<td>25</td>
<td>2.3</td>
<td>2.7</td>
<td>72.2</td>
<td>1.0</td>
<td>0.9</td>
<td>0.9</td>
<td>0.1</td>
<td>3.1</td>
<td>3.1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Page 9
<table>
<thead>
<tr>
<th></th>
<th>13</th>
<th>15</th>
<th>17</th>
<th>19</th>
<th>21</th>
<th>23</th>
<th>25</th>
<th>27</th>
<th>29</th>
<th>31</th>
<th>33</th>
<th>35</th>
<th>37</th>
<th>39</th>
<th>41</th>
<th>43</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.5</td>
<td>1.6</td>
<td>1.7</td>
<td>1.7</td>
<td>1.9</td>
<td>2.0</td>
<td>2.0</td>
<td>2.1</td>
<td>2.2</td>
<td>2.3</td>
<td>2.4</td>
<td>2.4</td>
<td>2.4</td>
<td>2.4</td>
<td>2.4</td>
<td>2.4</td>
</tr>
<tr>
<td></td>
<td>1.7</td>
<td>1.9</td>
<td>2.0</td>
<td>2.0</td>
<td>2.3</td>
<td>2.4</td>
<td>2.4</td>
<td>2.5</td>
<td>2.6</td>
<td>2.7</td>
<td>2.8</td>
<td>2.8</td>
<td>2.8</td>
<td>2.8</td>
<td>2.8</td>
<td>2.8</td>
</tr>
<tr>
<td></td>
<td>46.7</td>
<td>52.1</td>
<td>50.3</td>
<td>53.2</td>
<td>54.4</td>
<td>55.0</td>
<td>54.3</td>
<td>59.2</td>
<td>61.6</td>
<td>64.8</td>
<td>63.9</td>
<td>65.8</td>
<td>61.7</td>
<td>63.4</td>
<td>60.3</td>
<td>66.3</td>
</tr>
</tbody>
</table>

**imansys_out.txt**

Page 11
### SUMMARY

**SOILS:** Holomua(0.186), Very stony land, eroded, eroded(0.814)

#### ANNUAL IRRIGATION REQUIREMENT (INCHES)

<table>
<thead>
<tr>
<th>MO</th>
<th>NIR</th>
<th>GIR</th>
<th>GAL_A</th>
<th>G_RAIN</th>
<th>N_RAIN</th>
<th>ER</th>
<th>ER21</th>
<th>RO</th>
<th>INT</th>
<th>ETO</th>
<th>ET</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>44</td>
<td>1.7</td>
<td>1.7</td>
<td>0.31</td>
<td>2.6</td>
<td>0.7</td>
<td>0.0</td>
<td>0.89</td>
<td>1.7</td>
<td>2.0</td>
<td>2.0</td>
<td>2.0</td>
</tr>
<tr>
<td>45</td>
<td>1.7</td>
<td>1.7</td>
<td>0.35</td>
<td>2.6</td>
<td>0.0</td>
<td>0.0</td>
<td>0.84</td>
<td>1.8</td>
<td>2.0</td>
<td>2.0</td>
<td>2.0</td>
</tr>
<tr>
<td>46</td>
<td>1.4</td>
<td>1.6</td>
<td>0.34</td>
<td>2.1</td>
<td>0.0</td>
<td>0.0</td>
<td>0.74</td>
<td>1.5</td>
<td>1.9</td>
<td>1.9</td>
<td>1.9</td>
</tr>
<tr>
<td>47</td>
<td>1.5</td>
<td>1.6</td>
<td>0.40</td>
<td>2.4</td>
<td>0.0</td>
<td>0.0</td>
<td>0.69</td>
<td>1.6</td>
<td>1.9</td>
<td>1.9</td>
<td>1.9</td>
</tr>
<tr>
<td>48</td>
<td>1.4</td>
<td>1.5</td>
<td>0.31</td>
<td>2.4</td>
<td>0.8</td>
<td>0.0</td>
<td>0.84</td>
<td>1.4</td>
<td>1.8</td>
<td>1.9</td>
<td>1.9</td>
</tr>
<tr>
<td>49</td>
<td>1.4</td>
<td>1.6</td>
<td>0.47</td>
<td>2.4</td>
<td>0.0</td>
<td>0.0</td>
<td>0.87</td>
<td>1.4</td>
<td>1.8</td>
<td>1.8</td>
<td>1.8</td>
</tr>
<tr>
<td>50</td>
<td>1.2</td>
<td>1.5</td>
<td>0.47</td>
<td>2.4</td>
<td>0.0</td>
<td>0.0</td>
<td>0.86</td>
<td>1.2</td>
<td>1.7</td>
<td>1.8</td>
<td>1.8</td>
</tr>
<tr>
<td>51</td>
<td>1.2</td>
<td>1.5</td>
<td>0.50</td>
<td>2.2</td>
<td>0.0</td>
<td>0.0</td>
<td>0.56</td>
<td>1.4</td>
<td>1.7</td>
<td>1.7</td>
<td>1.7</td>
</tr>
<tr>
<td>52</td>
<td>1.5</td>
<td>1.5</td>
<td>0.35</td>
<td>2.3</td>
<td>0.0</td>
<td>0.0</td>
<td>0.80</td>
<td>1.6</td>
<td>2.0</td>
<td>2.0</td>
<td>2.0</td>
</tr>
</tbody>
</table>

#### WATER BUDGET COMPONENTS

<table>
<thead>
<tr>
<th>MO</th>
<th>NIR</th>
<th>GIR</th>
<th>GAL_A</th>
<th>G_RAIN</th>
<th>N_RAIN</th>
<th>ER</th>
<th>ER21</th>
<th>RO</th>
<th>INT</th>
<th>ETO</th>
<th>ET</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>82</td>
<td>96</td>
<td>622</td>
<td>15.4</td>
<td>13.7</td>
<td>13.6</td>
<td>15.4</td>
<td>1.0</td>
<td>0.8</td>
<td>96</td>
<td>95</td>
</tr>
</tbody>
</table>

#### GIR STATISTICS

- **MEAN:** 96.6
- **MED.:** 97.1
- **XMAX:** 106.8
- **XMIN:** 85.7
- **50%:** 97.2
- **80%:** 101.4
- **90%:** 103.3
- **95%:** 104.7

#### NIR STATISTICS

- **MEAN:** 82.1
- **MED.:** 82.5
- **XMAX:** 90.8
- **XMIN:** 72.9
- **50%:** 82.6
- **80%:** 86.2
- **90%:** 87.8
- **95%:** 89.0

#### MONTHLY IRRIGATION REQUIREMENT (INCHES)

<table>
<thead>
<tr>
<th>MO</th>
<th>NIR</th>
<th>GIR</th>
<th>GAL_A</th>
<th>G_RAIN</th>
<th>N_RAIN</th>
<th>ER</th>
<th>ER21</th>
<th>RO</th>
<th>INT</th>
<th>ETO</th>
<th>ET</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>5.9</td>
<td>6.9</td>
<td>188.4</td>
<td>2.5</td>
<td>2.2</td>
<td>2.2</td>
<td>2.4</td>
<td>0.2</td>
<td>0.1</td>
<td>6.5</td>
<td>6.5</td>
</tr>
<tr>
<td>2</td>
<td>4.5</td>
<td>5.3</td>
<td>143.1</td>
<td>1.9</td>
<td>1.8</td>
<td>1.8</td>
<td>1.9</td>
<td>0.1</td>
<td>0.1</td>
<td>6.3</td>
<td>6.3</td>
</tr>
<tr>
<td>3</td>
<td>5.6</td>
<td>6.6</td>
<td>180.4</td>
<td>2.4</td>
<td>2.1</td>
<td>2.1</td>
<td>2.5</td>
<td>0.2</td>
<td>0.1</td>
<td>7.8</td>
<td>7.8</td>
</tr>
<tr>
<td>4</td>
<td>6.7</td>
<td>7.8</td>
<td>212.7</td>
<td>1.3</td>
<td>1.1</td>
<td>1.1</td>
<td>1.5</td>
<td>0.1</td>
<td>0.1</td>
<td>8.1</td>
<td>8.1</td>
</tr>
<tr>
<td>5</td>
<td>7.9</td>
<td>9.3</td>
<td>251.8</td>
<td>0.6</td>
<td>0.6</td>
<td>0.6</td>
<td>0.8</td>
<td>0.0</td>
<td>0.1</td>
<td>8.9</td>
<td>8.9</td>
</tr>
<tr>
<td>6</td>
<td>8.6</td>
<td>10.1</td>
<td>275.4</td>
<td>0.3</td>
<td>0.3</td>
<td>0.3</td>
<td>0.2</td>
<td>0.0</td>
<td>0.0</td>
<td>9.2</td>
<td>9.2</td>
</tr>
<tr>
<td>7</td>
<td>8.8</td>
<td>10.3</td>
<td>280.2</td>
<td>0.4</td>
<td>0.4</td>
<td>0.4</td>
<td>0.5</td>
<td>0.0</td>
<td>0.1</td>
<td>9.6</td>
<td>9.6</td>
</tr>
<tr>
<td>8</td>
<td>8.7</td>
<td>10.3</td>
<td>279.2</td>
<td>0.5</td>
<td>0.4</td>
<td>0.4</td>
<td>0.5</td>
<td>0.0</td>
<td>0.1</td>
<td>9.5</td>
<td>9.5</td>
</tr>
<tr>
<td>9</td>
<td>7.7</td>
<td>9.0</td>
<td>244.8</td>
<td>0.4</td>
<td>0.3</td>
<td>0.3</td>
<td>0.4</td>
<td>0.0</td>
<td>0.0</td>
<td>8.4</td>
<td>8.4</td>
</tr>
<tr>
<td>10</td>
<td>7.1</td>
<td>8.3</td>
<td>226.7</td>
<td>1.0</td>
<td>0.9</td>
<td>0.9</td>
<td>1.0</td>
<td>0.0</td>
<td>0.1</td>
<td>8.0</td>
<td>8.0</td>
</tr>
<tr>
<td>11</td>
<td>5.8</td>
<td>6.8</td>
<td>184.0</td>
<td>1.9</td>
<td>1.6</td>
<td>1.6</td>
<td>1.7</td>
<td>0.2</td>
<td>0.1</td>
<td>7.0</td>
<td>7.0</td>
</tr>
<tr>
<td>12</td>
<td>4.9</td>
<td>5.7</td>
<td>155.8</td>
<td>2.2</td>
<td>2.0</td>
<td>2.0</td>
<td>2.1</td>
<td>0.1</td>
<td>0.1</td>
<td>6.7</td>
<td>6.7</td>
</tr>
</tbody>
</table>
**COMMISSION ON WATER RESOURCE MANAGEMENT**

**FROM:** ROY  
**DATE:** FEB 17, 2009  
**TO:** CHENG, C.  
**INIT:**  
**TO:** CHING, F.  
**INIT:** CHONG, R.  
**TO:** DANBARA, S.  
**INIT:** ENGLAND, D.  
**TO:** FUJII, N.  
**INIT:** HARDY, R.  
**TO:** HOAGBIN, S.  
**INIT:** ICE, C.  
**TO:** IMATA, R.  
**INIT:** KAWAHARA, K.  
**TO:** KIMURA, J.  

**PLEASE:**  
See Me  
Review & Comment  
Take Action  
Type Draft  
Type Final  
File  
Xerox copies

---

For tomorrow's meeting, please...
February 5, 2009

TO: Laura H. Thielen, Chairperson
Commission on Water Resource Management
Department of Land and Natural Resources

FROM: Orlando Davidson, Executive Officer

SUBJECT: Water Use Permit Application
Kaluakoi Groundwater Management Area, Molokai

We have reviewed the subject application forwarded by your transmittal dated January 6, 2009. Based on the generalized representation of the proposed well site on the accompanying maps, it appears that the site is located within the State Land Use Agricultural District.

With respect to your request as to whether the current designation is appropriate for the proposed use, please be advised that pursuant to sections 205-2(d) and 205-4.5(a)(1), Hawaii Revised Statutes, permitted activities within the Agricultural District include uses characterized by, among other things, the cultivation of crops, including but not limited to flowers, vegetables, foliage, fruits, forage, and timber. To the extent that the water will be used for irrigation of fruit trees, the proposed use appears to be consistent with the aforementioned statutorily permitted uses, and is therefore an appropriate use within the Agricultural District.

Thank you for the opportunity to comment on the subject application. As requested, we are returning the cover memo for the subject application.

Please feel free to contact Bert Saruwatari of my office at 587-3822, should you require clarification or any further assistance.

Enclosure
TO: Mr. Dan Davidson, Executive Officer
Land Use Commission

FROM: Laura H. Thielen, Chairperson
Commission on Water Resource Management

SUBJECT: WATER USE PERMIT APPLICATION
Kaluakoi Ground Water Management Area, Molokai

Transmitted for your review and comment is a copy of a water use permit application (WUPA No. 869) for Zappacosta Tellos, LP for Well No. 0916-01. Public notice of this application will be published in the Maui News issues of January 7, 2009 and January 14, 2009.

We would appreciate your review of the proposed use that is described in the attached application (i.e. line item 6 or Table 1). Specifically, we request that you inform us of the current state land use designation for the TMK parcel, or portion thereof, for the proposed use area(s) and, secondly, whether the current state land use designation is appropriate for the proposed project.

We have attached a TMK map(s) that covers the proposed use area(s). Where water is proposed for use on only a portion of a TMK parcel, or on parcels with multiple zoning, the proposed use area(s) has been clearly delineated on the attached map. Please respond by returning this cover memo along with your review comments by January 29, 2009, which is the legal deadline for objections. If we do not receive your comments by this date, we will assume you have no objections to this application.

If you have any questions, require additional information, or would like to request an extension of the review period for this application, please contact Charley Ice at 587-0218.

Cl:ss
Attachment(s)

Response:

( ) We have no objections or comments
( ) Objections attached
( ) Only comments attached

Contact person: [Signature] Phone: 587-3822
Signed: [Signature] Date: January 28, 2009
<table>
<thead>
<tr>
<th>FROM: ROY</th>
<th>DATE: FEB 9 2009</th>
<th>SUSPENSE DATE:</th>
<th>PLEASE:</th>
</tr>
</thead>
<tbody>
<tr>
<td>TO:</td>
<td>INIT. TO:</td>
<td>INIT: FOR:</td>
<td>See Me</td>
</tr>
<tr>
<td>CHENG, C.</td>
<td>___ KUNIMURA, I.</td>
<td>___ Approval</td>
<td>___ Review &amp; Comment</td>
</tr>
<tr>
<td>CHING, F.</td>
<td>___ MILLS, D.</td>
<td>___ Signature</td>
<td>___ Take Action</td>
</tr>
<tr>
<td>CHONG, R.</td>
<td>___ OHYE, L.</td>
<td>___ Information</td>
<td>___ Type Draft</td>
</tr>
<tr>
<td>DANBARA, S.</td>
<td>___ OHYE, M.</td>
<td>___ Type Final</td>
<td>___ File</td>
</tr>
<tr>
<td>ENGLAND, D.</td>
<td>___ OSHIRO, K.</td>
<td></td>
<td>/ Xerox ___ copies</td>
</tr>
<tr>
<td>FUJII, N.</td>
<td>___ SAKODA, E.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HARDY, R.</td>
<td>___ SWANSON, S.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HOAGBIN, S.</td>
<td>___ TORRES, R.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ICE, C.</td>
<td>___ UYENO, D.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IMATA, R.</td>
<td>___ YODA, K.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KAWAHARA, K.</td>
<td>___ YOSHINAGA, M.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KIMURA, J.</td>
<td>___</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Dear Mr. Kawahara,

Thank you for the opportunity to comment on the water use application for Kaluakoi, Molokai by applicant Pierluigi Zappocosta. To my knowledge this is the first case of this type of application involving a residential application for drilling of a well with the intent to draw brackish water to be desalinized for their agricultural/landscaping use. While I cannot foresee an issue with this current application, I do have some long term concern in the event other landowners would like to do the same. I envision at some yet to be determined point in time, should multiple permits be requested, the state would move to fund research on possible adverse impacts from multiple well draws in the Kaluakoi Ground Water Management Area. A more immediate concern for the current applicant would be what their mitigation plan for water use will be in the event their ability to desalinate well water is compromised. In any event, I hope the Commissioners begin discussions to address potential long term impacts in the event it is asked to review similar applications in the future.

Sincerely,

Lori Buchanan
Commissioner
Molokai Planning Commission
<table>
<thead>
<tr>
<th>TO: CHENG, C.</th>
<th>INIT:</th>
<th>TO: KUNIMURA, I.</th>
<th>INIT:</th>
<th>FOR: Approval</th>
<th>PLEASE: See Me</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHING, F.</td>
<td>---</td>
<td>MILLS, D.</td>
<td>---</td>
<td>Signature</td>
<td>Review &amp; Comment</td>
</tr>
<tr>
<td>CHONG, R.</td>
<td>---</td>
<td>OHYE, L.</td>
<td>---</td>
<td>Information</td>
<td>Take Action</td>
</tr>
<tr>
<td>DANBARA, S.</td>
<td>---</td>
<td>OHYE, M.</td>
<td>---</td>
<td></td>
<td>Type Draft</td>
</tr>
<tr>
<td>ENGLAND, D.</td>
<td>---</td>
<td>OSHIRO, K.</td>
<td>---</td>
<td></td>
<td>Type Final</td>
</tr>
<tr>
<td>FUJII, N.</td>
<td>---</td>
<td>SAKODA, E.</td>
<td>---</td>
<td></td>
<td>File</td>
</tr>
<tr>
<td>HARDY, R.</td>
<td>---</td>
<td>SWANSON, S.</td>
<td>---</td>
<td></td>
<td>Xerox</td>
</tr>
<tr>
<td>HOAGBIN, S.</td>
<td>---</td>
<td>TORRES, R.</td>
<td>---</td>
<td></td>
<td>copies</td>
</tr>
<tr>
<td>ICE, C.</td>
<td>---</td>
<td>UYENO, D.</td>
<td>---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IMATA, R.</td>
<td>---</td>
<td>YODA, K.</td>
<td>---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KAWAHARA, K.</td>
<td>---</td>
<td>YOSHINAGA, M.</td>
<td>---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KIMURA, J.</td>
<td>---</td>
<td></td>
<td>---</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
February 4, 2009

Honorable Laura H. Thielen
Chairperson
State of Hawaii
Department of Land and Natural Resources
Commission on Water Resource Management
P. O. Box 621
Honolulu, Hawaii 96809

Dear Chairperson Thielen:

SUBJECT: NOTICE OF AN APPLICATION FOR A WATER USE PERMIT
KALUAKOI GROUND WATER MANAGEMENT AREA, MOLOKAI

Thank you for the opportunity to comment on the water use permit application (WUPA No. 869) for Zappacosta Tellos, LP for Well No. 0916-01.

WUPA No. 869 is consistent with the County of Maui (County) land use plans and policies. The County has no objection to the application in the amount requested, 0.008 million gallons per day.

Should you have any questions, please contact our Department of Water Supply, Water Resource & Planning Division at 808-244-8550.

Sincerely,

CHARMAINE TAVARES
Mayor, County of Maui

CT:JE/jw
c: Jeffrey K. Eng, Director, Department of Water Supply
   Jane E. Lovell, Deputy Corporation Counsel
   Edward S. Kushi, Jr., Deputy Corporation Counsel
February 6, 2009

Subject : WATER USE PERMIT APPLICATION NO. 869
PAPOHAKU – ZAPPACOSTA WELL
State Well No. 4-0916-04
TMK: 5-1-008:49

This letter responds to the various comment letters that were received regarding the subject application. The questions and our responses are presented in the order they were received.

1. Question: Does he (applicant) have a hydrologist report on the prospects of finding water?
   Answer: No. The available water studies for the area, which are supported by several monitoring wells, suggests that the area has a thin basal lens of brackish water.

2. Question: What is the size and depth of well he is proposing?
   Answer: 8,000 gallons per day. Depth and well diameter will be a function of pump testing during construction.

3. Question: How will the well and distillation be powered- electric, diesel or alternate energy source?
   Answer: The applicant is exploring solar distillation; however conventional processes may ultimately be used such as Reverse Osmosis (RO).

4. Question: Will he agree to (a). Share what he has learned about the process of desalinization? (b). Agree that he will not use potable water in case he finds too many problems and costs with distillation? (c). That he will never mix potable water with water from this well (very difficult to enforce)?
   Answer: (a) Yes, (b) Yes, however to be clear, water service from Molokai Public Utilities, Inc. will be used to provide potable water for the dwelling. (c) Yes.

5. Question: There is a difference between 8,000 GPD (quantity requested) and Box M, Item 11, (page 2) Table 1.
   Answer: 8,000 GPD is the total requested use. Table 1 is the total usage for the orchard crops. Uses that are not otherwise scheduled include make-up water for a pool and the brine from the distillation process that will be disposed of in an injection well.
6. Question: What is the sustainability of this well, i.e. is there a comparable well on the west end of Molokai?
Answer: The available literature identifies numerous wells on the west end that have been pump tested. None are currently in operation as potable water was not found. The 2 MGD sustainable yield of the west end is considerably in excess of the .008 MGD being requested so yield should not be an issue.

7. Question: Describe the Desalination process. Is there adequate power for this process? How will waste water be disposed of and the membranes?
Answer: Several processes will be evaluated. While solar distillation will be explored, it will likely require an excessive amount of land area. Several conventional seawater RO packaged units are available that could be operated with the standard electrical service connection to the property. Wastewater would be disposed of via an injection well. The membranes would be disposed of in the county landfill.

8. Question how will the waste stream be disposed of?
Answer: Wastewater would be disposed of via an injection well.

Answer: The application is amendable to the reasonable standards imposed by the CWRM applicable to similar well applications or permits.

Sincerely,

[Signature]

Luigi Manera
<table>
<thead>
<tr>
<th>F YR</th>
<th>APP</th>
<th>D</th>
<th>OBJ</th>
<th>CTR</th>
<th>PROJECT</th>
<th>PH ACT</th>
<th>AMOUNT</th>
<th>NAME/DESCRIPTION (WANG INPUT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>S 09</td>
<td>326</td>
<td>C</td>
<td>4000</td>
<td>0752</td>
<td></td>
<td></td>
<td>(1) $337.50</td>
<td>Luigi Manera</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REMARKS:</td>
<td>LINE (1)</td>
<td>Reimbursement for Public Notice cost for WUPA No. 869</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LINE (2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LINE (3)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LINE (4)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LINE (5)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LINE (6)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LINE (7)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LINE (8)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LINE (9)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LINE (10)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Aloha Charley... transmitting the Maui DWS response to the January 6, 2009 CWRM Request for Comments on the water use permit application (WUPA No. 869) for Zappacosta Tellos, L.P. The letter was reviewed by Jane Lovell, who had no comments or suggested changes. Thank you for granting the extension (February 6, 2009) to submit our response. The staff planner who worked on the response is out sick today. If you have any questions, you may call Ellen, 808-244-8540. Mahalo.
February 4, 2009

Ms. Laura H. Thielen, Chairperson
State of Hawaii
Department of Land and Natural Resources
Commission on Water Resource Management
P.O. Box 621
Honolulu, Hawaii 96809

Dear Ms. Thielen:

RE: Notice of an Application for a Water Use Permit (WUPA No. 869)
For Zappacosta Tellos, LP, Papohaku-Zappacosta Well (Well No. 0916-01)
Tax Map Key (2) 5-1-008:049
Kaluakoi Ground Water Management Area, Molokai

Thank you for the opportunity to comment on this application.

The Water Use Permit Application (WUPA) does not conflict or interfere with the Department of Water Supply's programs, plans and objectives. The Department has no objection to the Zappacosta Tellos, LP WUPA in the amount requested, 0.008 million gallons per day.

However, the Department has several concerns for existing, as well as, proposed private wells. These concerns include:

1. The maintenance and operation of these wells.
2. The creation of multiple conduits for contamination of ground water resources.
3. The non-reporting of water use and the status of existing wells.
4. The difficulty in tracking the existing wells.

In order to protect the ground water resources, DWS recommends that the applicant adopt best management practices for well construction/pump installation to prevent

"By Water, All Things Find Life"

The Department of Water Supply is an Equal Opportunity provider and employer. To file a complaint of discrimination, write: USDA, Director, Office of Civil Rights, 1400 Independence Avenue, SW, Washington DC 20250-6000. Or call (202) 720-6300 (voice and TDD)
contamination during the construction, as well as, maintenance of the well. These practices include:

1. Inspect exposed parts of the well periodically for problems such as cracked or corroded well casing, broken or missing well cap, damaged protective casing and settling or cracking of surface seals.
2. Slope the area around the well so that surface runoff drains away from the well.
3. Provide a well cap or sanitary seal to prevent unauthorized use of or entry into the well.
4. Provide for sediment removal or well cleaning as necessary.
5. Have the well tested at least once a year for fecal coliform or other constituents of concern.
6. Avoid mixing or using pesticides, fertilizers, herbicides, degreasers, fuels or other pollutants near the well.
7. Do not locate any type of potentially polluting activity up slope from the well.
8. Keep accurate records of any well maintenance, such as, disinfection or sediment removal, that require the use of chemicals in the well.

Should you have any questions, please contact our Water Resources & Planning Division at 808-244-8550.

Sincerely,

JEFFREY K. ENG
Director

cc: DWS Engineering Division
    Jane E. Lovell, Deputy Corporation Counsel
    Edward S. Kushi, Jr., Deputy Corporation Counsel
January 29, 2009

Mr. Ken C. Kawahara, Deputy Director
Commission on Water Resources Management
Department of Land and Natural Resources
Kalanikuku Bldg.
1151 Punchbowl Street
Honolulu, Hawai‘i 96813

Dear Mr. Kawahara:

SUBJECT: Chapter 6E-8 Historic Preservation Review—
Water Use Permit Application—
Kaluakoi Groundwater Management Area, Moloka‘i Island, Hawai‘i
TMK: (3) 5-1-008:049

Thank you for providing the opportunity to review this application for a permit (Water Use Application for Kaluakoi Groundwater Management Area, Moloka‘i Island, Hawai‘i) which we received on January 6, 2009. This project consists of an application for a permit to drill a well in the Kaluakoi Groundwater Management Area.

Photographs of the area reveal non-Jaucas sands matrix. Also, there is a very small area affected by the well drilling activities. Therefore, we determine that there will be no effect to historic properties.

In the event that historic resources, including human skeletal remains, are identified during the drilling activities, all work needs to cease in the immediate vicinity of the find, the find needs to be protected from additional disturbance and the State Historic Preservation Division contacted at (808) 692-8015.

Please contact Wendy Tolleson at (808) 692-8024 if you have any questions or concerns regarding this letter.

Aloha,

Nancy A. McMahon (Deputy SHPO)
State Historic Preservation Officer

Cc: Denise Mills, DLNR, Water Resources Commission Staff
January 29, 2009

Mr. Ken C. Kawahara, Deputy Director
Commission on Water Resources Management
Department of Land and Natural Resources
Kalanikou Bldg.
1151 Punchbowl Street
Honolulu, Hawai‘i 96813

Dear Mr. Kawahara:

SUBJECT: Chapter 6E-8 Historic Preservation Review—
Water Use Permit Application—
Kaluakoi Groundwater Management Area, Moloka‘i Island, Hawai‘i
TMK: (3) 5-1-008:049

Thank you for providing the opportunity to review this application for a permit (Water Use Application for Kaluakoi Groundwater Management Area, Moloka‘i Island, Hawai‘i) which we received on January 6, 2009. This project consists of an application for a permit to drill a well in the Kaluakoi Groundwater Management Area.

Photographs of the area reveal non-Jaucas sands matrix. Also, there is a very small area affected by the well drilling activities. Therefore, we determine that there will be no effect to historic properties.

In the event that historic resources, including human skeletal remains, are identified during the drilling activities, all work needs to cease in the immediate vicinity of the find, the find needs to be protected from additional disturbance and the State Historic Preservation Division contacted at (808) 692-8015.

Please contact Wendy Tolleson at (808) 692-8024 if you have any questions or concerns regarding this letter.

Aloha,

Wendy Tolleson
Commission Staff
MEMORANDUM

TO: Ken C. Kawahara, Deputy Director
Commission on Water Resource Management

FROM: Nancy A. McMahon, Deputy Administrator
and Deputy State Historic Preservation Officer
State Historic Preservation Division

Subject: Chapter 6E-8 Historic Preservation Review—Well Construction/Pump Installation Permit Application, Papohaku-Zappacosta Well (Well No. 0916-01) at a Single Family Residence (Permit SMX-2008), Kaunakakai, Island of Molokai, Hawai‘i, TMK: (2) 5-1-008: 049

Thank you for the opportunity to review this permit application which we received on January 6, 2009. The project (Well Construction/Pump Installation Permit Application, Papohaku-Zappacosta Well (Well No. 0916-01) at a Single Family Residence (Permit SMX-2008), Kaunakakai, Island of Molokai, Hawai‘i, TMK: (2) 5-1-008: 049) is the drilling of a salt-water well and the installation of a pump on the Papohaku-Zappacosta single family parcel.

We determine that no historic properties will be affected by this project because:

- Intensive cultivation has altered the land
- Residential development/urbanization has altered the land
- Previous grubbing/grading has altered the land
- An accepted archaeological inventory survey (AIS) found no historic properties
- SHPD previously reviewed this project and mitigation has been completed
- Other: Based on pictures of the project area, it appears the soil matrix is non-Jaucas soil overlaying basalt.

In the event that historic resources, including human skeletal remains, are identified during the drilling and construction activities, all work needs to cease in the immediate vicinity of the find, the find needs to be protected from additional disturbance and please contact the State Historic Preservation Division at (808) 692-8015.

Please call Wendy Tolleson at (808) 692-8024 if you have any questions or concerns regarding this letter.
February 2, 2009

Ken C. Kawahara  
Deputy Director  
Commission on Water Resource Management  
P.O. Box 621  
Honolulu, Hawaii 96809

Lori Buchanan  
Commissioner  
Molokai Planning Commission  
P.O. Box 133  
Hoolehua, Hawaii 96729  
(808) 336-0625 mobile  
lbuchanan@tnc.org

Re: Request for comment for WUP Kaluakoi Ground Water Management Area, Molokai

Dear Mr. Kawahara,

Thank you for the opportunity to comment on the water use application for Kaluakoi, Molokai by applicant Pierluigi Zappocosta. To my knowledge this is the first case of this type of application involving a residential application for drilling of a well with the intent to draw brackish water to be desalinized for their agricultural/landscaping use. While I cannot foresee an issue with this current application, I do have some long term concern in the event other landowners would like to do the same. I envision at some yet to be determined point in time, should multiple permits be requested, the state would move to fund research on possible adverse impacts from multiple well draws in the Kaluakoi Ground Water Management Area. A more immediate concern for the current applicant would be what their mitigation plan for water use will be in the event their ability to desalinate well water is compromised. In any event, I hope the Commissioners begin discussions to address potential long term impacts in the event it is asked to review similar applications in the future.

Sincerely,

Lori Buchanan  
Commissioner  
Molokai Planning Commission
January 6, 2009

TO: Other Interested Parties

FROM: Ken C. Kawahara, P.E., Deputy Director
Commission on Water Resource Management

SUBJECT: Request for Comments
Water Use Permit Application
Kaluakoi Ground Water Management Area, Molokai

In addition to serving you notice as required by 174C-52 (a), HRS, we transmit for your review and comment a copy of a water use permit application (WUPA No. 869) for Zappacosta Tellos, LP for Well No. 0916-01. Public notice of this application will be published in the Maui News issues of January 7, 2009 and January 14, 2009.

We would appreciate your review of the attached application for any conflicts or interferences with the programs, plans, and objectives of the organization or agency that you represent. Written objections should be made in accordance with Section 13-171-18 of our Administrative Rules and must be filed by the January 29, 2009 deadline. If we do not receive your comments by this date, we will assume you have no objections to this application.

If you have any questions, require additional information, or would like to request an extension of the review period for this application, please contact Charley Ice at 587-0218.

CI: ss
Attachment(s)

Response:

( ) We have no objections or comments
( ) Objections attached
☒ Only comments attached

Contact person: Bill Feeter
Phone: 808-653-9857

Signed: [Signature]
Date: 1-27-2009
COMMENTS/QUESTIONS

1. There is a difference between 8000 GPD (quantity requested) and Box M, Item 11, (page 2) Table 1.
2. What is the sustainability of this well, i.e.: is there a comparable well on the west end of Molokai?
3. Describe the desalination process. Is there adequate electric power for this process? How will the waste water be disposed of and the membranes?
Mr. Luigi Manera  
P.O. Box 1718  
Kaunakakai, HI 96748

Dear Mr. Manera:

Invoice for Public Notice  
Water Use Permit Application for Well No. 0916-01  
(WUPA No. 869)

We are attaching a copy of the Affidavit of Publication and Invoice/Receipt for the subject notice.

Please submit a check payable to the Department of Land and Natural Resources at the address shown above for the Amount Due by the Due Date specified below:

| Amount Due: $337.50 | Due Date: February 12, 2009 |

Failure to submit the full Amount Due by the Due Date will result in a rejection of your application, which will be considered null and void. If you decide to proceed with this project in the future, a new water use permit application must be made, and you will be required to pay for the costs of both this public notice and the new public notice.

If you have any questions, please contact Charley Ice at 587-0218.

Sincerely,

KEN C. KAWAHARA, P.E.  
Deputy Director

CI:ss

c: Pierluigi Zappacosta
January 6, 2009

TO: Aquatic Resources
Forestry and Wildlife/Natural Area Reserve System
Historic Preservation
State Parks

FROM: Ken C. Kawahara, P.E., Deputy Director
Commission on Water Resource Management

SUBJECT: Request for Comments
Water Use Permit Application
Kaluakoi Ground Water Management Area, Molokai

Transmitted for your review and comment is a copy of a water use permit application (WUPA No. 869) for Zappacosta Tellos, LP for Well No. 0916-01. Public notice of this application will be published in the Maui News issues of January 7, 2009 and January 14, 2009.

We would appreciate your review of the attached application for any conflicts or inconsistencies with the programs, plans, and objectives specific to your division only. **Please respond by returning this cover memo form by January 29, 2009, which is the legal deadline for objections.** If we do not receive your comments by this date, we will assume you have no objections to this application.

If you have any questions, require additional information, or would like to request an extension of the review period for this application, please contact Charley Ice at 587-0218.

Class
Attachment(s)

Response:

( ) We have no objections or comments
( ) Objections attached
( ) Only comments attached

Kung Hee Fat Choy Charlie! Here’s hoping all the best for you and your family during 2009.

Regarding the situation with Zappacosta and their proposal to drill a well at Kaluakoi, this has no bearings to our concerns at DAR as there is no long standing surface water supporting native aquatic organisms at the proposed site. However if you don’t mind me putting in my two-cents, it seems to me that it would be in CWRM’s best interest to proceed with caution before allowing anyone in Kaluakoi to sink in a well for personal use. As you are well aware I’m sure, the potable water situation for that side of the island is tenuous at best. Allowing any individual private access to
January 6, 2009

TO:  Aquatic Resources
     Forestry and Wildlife/Natural Area Reserve System
     Historic Preservation
     State Parks

FROM:  Ken C. Kawahara, P.E., Deputy Director
        Commission on Water Resource Management

SUBJECT:  Request for Comments
          Water Use Permit Application
          Kaluakoi Ground Water Management Area, Molokai

Transmitted for your review and comment is a copy of a water use permit application (WUPA No. 869) for Zappacosta Tellos, LP for Well No. 0916-01. Public notice of this application will be published in the Maui News issues of January 7, 2009 and January 14, 2009.

We would appreciate your review of the attached application for any conflicts or inconsistencies with the programs, plans, and objectives specific to your division only. Please respond by returning this cover memo form by January 29, 2009, which is the legal deadline for objections. If we do not receive your comments by this date, we will assume you have no objections to this application.

If you have any questions, require additional information, or would like to request an extension of the review period for this application, please contact Charley Ice at 587-0218.

CI:ss
Attachment(s)

Response:
( ) We have no objections or comments
( ) Objections attached
( ) Only comments attached

Contact person:  Daniel S. Quin
Phone:  587-0218
Signed:  
Date:  1/16/09
January 6, 2009

TO: Honorable Micah Kane, Director
    Department of Hawaiian Home Lands

Honorable Chiyome L. Fukino, M.D., Director
   Department of Health

Mr. Clyde W. Namu'o, Administrator
   Office of Hawaiian Affairs

Honorable G. Riki Hokama, Chairperson
   County Council
   County of Maui

Mr. Jeffery K. Eng, Director
   Department of Water Supply
   County of Maui

Mr. Jeffrey S. Hunt, Director
   Planning Department
   County of Maui

FROM: Laura H. Thielen, Chairperson
   Commission on Water Resource Management

SUBJECT: Water Use Permit Application
   Kaluakoi Ground Water Management Area, Molokai

Transmitted for your review and comment is a copy of a water use permit application (WUPA No. 869) for Zappacosta Tellos, LP for Well No. 0916-01. Public notice of this application will be published in the Maui News issues of January 7, 2009 and January 14, 2009.

We would appreciate your review of the proposed use that is described in the attached application (i.e. line item 6 or Table 1) for any conflicts or inconsistencies with the land use designations, programs, plans, or objectives specific to your organization or department only. **Please respond by returning this cover memo form by January 29, 2009, which is the legal deadline for objections.** If we do not receive your comments by this date, we will assume you have no objections to this application.

If you have any questions, require additional information, or would like to request an extension of the review period for this application, please contact Charley Ice at 587-0218.

CSS
Attachment(s)

Response:

( ) We have no objections or comments
( ) Objections attached
(X) Only comments attached

Contact person: Stuart Yamada
Phone: 586-4258
Signed: Date: 01/12/09
January 9, 2009

TO: The Honorable Laura H. Thielen, Chairperson
Commission on Water Resource Management

FROM: Chiyome Leinaala Fukino, M.D.
Director of Health

SUBJECT: WATER USE PERMIT APPLICATION NO. 869
PAPOHAKU-ZAPPACOSTA WELL
State Well NO. 4-0916-04
TMK: 5-1-008: 49

As the water from the proposed well will be desalinated to produce water for irrigation we generally would have no objections. However, there may be concerns about how the waste stream from the desalination facility will be disposed of, any chemical cleaning, system redundancy, and maintenance considerations.

Finally, we would like to point out that there is a discrepancy on the application form GWUPA-N. Item no. 6, Total Quantity of Water Requested, shows 8,460 gallons per day (?), yet Table 1 shows no potable use and 1,105 gallons per day of total non-potable use (Box L).

If you have any questions on wastewater disposal, please contact Mr. Tomas See, Chief, Wastewater Branch at (808)586-4294.

c: Tomas See, Wastewater Branch
January 6, 2009

TO: Other Interested Parties

FROM: Ken C. Kawahara, P.E., Deputy Director
Commission on Water Resource Management

SUBJECT: Request for Comments
Water Use Permit Application
Kaluakoi Ground Water Management Area, Molokai

In addition to serving you notice as required by 174C-52 (a), HRS, we transmit for your review and comment a copy of a water use permit application (WUPA No. 869) for Zappacosta Tellos, LP for Well No. 0916-01. Public notice of this application will be published in the Maui News issues of January 7, 2009 and January 14, 2009.

We would appreciate your review of the attached application for any conflicts or interferences with the programs, plans, and objectives of the organization or agency that you represent. Written objections should be made in accordance with Section 13-171-18 of our Administrative Rules and must be filed by the January 29, 2009 deadline. If we do not receive your comments by this date, we will assume you have no objections to this application.

If you have any questions, require additional information, or would like to request extension of the review period for this application, please contact Charley Ice at 587-0218.

Response:

[ ] We have no objections or comments at this time
[ ] Objections attached
[ ] Only comments attached

Contact person: Debra Kelly Phone: 808-587-6868 x 102
Signed: Debra Kelly Date: 1/31/09
January 6, 2009

TO: Morris Atta, Administrator
    Land Division

FROM: Ken C. Kawahara, P.E., Deputy Director
      Commission on Water Resource Management

SUBJECT: Request for Comments
         Water Use Permit Application
         Kaluakoi Ground Water Management Area, Molokai

Transmitted for your review and comment is a copy of a water use permit application (WUPA No. 869) for Zappacosta Tellos, LP for Well No. 0916-01. Public notice of this application will be published in the Maui News issues of January 7, 2009 and January 14, 2009.

We would appreciate your review of the attached application for any conflicts or inconsistencies with the programs, plans, and objectives specific to your division only. Please respond by returning this cover memo form by January 29, 2009, which is the legal deadline for objections. If we do not receive your comments by this date, we will assume you have no objections to this application.

If you have any questions, require additional information, or would like to request an extension of the review period for this application, please contact Charley Ice at 587-0218.

Response:

( ) A water lease/permit is required of this applicant and an application for such will be requested by our division.

[X] A water lease/permit is not required of this applicant.

( ) A water lease/permit has been obtained by the applicant through lease no. ...

( ) Other relevant Land Division rules/regulations, information, or recommendations are attached.

[X] No objections

[X] Other comments: Original source of private title is Grant 3146 issued before statehood.

Contact person: Gary Martin
Phone: 587-0421

Signed: [Signature]
Date: Jan 13 2009
STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P.O. BOX 621
HONOLULU, HAWAII 96809

January 6, 2009

TO: Other Interested Parties
FROM: Ken C. Kawahara, P.E., Deputy Director
Commission on Water Resource Management
SUBJECT: Request for Comments
Water Use Permit Application
Kaluakoi Ground Water Management Area, Molokai

In addition to serving you notice as required by 174C-52 (a), HRS, we transmit for your review and comment a copy of a water use permit application (WUPA No. 869) for Zappacosta Tellos, LP for Well No. 0916-01. Public notice of this application will be published in the Maui News issues of January 7, 2009 and January 14, 2009.

We would appreciate your review of the attached application for any conflicts or interferences with the programs, plans, and objectives of the organization or agency that you represent. Written objections should be made in accordance with Section 13-171-18 of our Administrative Rules and must be filed by the January 29, 2009 deadline. If we do not receive your comments by this date, we will assume you have no objections to this application.

If you have any questions, require additional information, or would like to request an extension of the review period for this application, please contact Charley Ice at (808) 620-9218.

Attachment(s)

Response:

☒ We have no objections or comments
( ) Objections attached
( ) Only comments attached

Contact person: Darrell Yagodich
Phone: (808) 620-9500

Signed: Darrell Yagodich
Date: 1-7-09
January 6, 2009

TO: Aquatic Resources
    Forestry and Wildlife/Natural Area Reserve System
    Historic Preservation
    State Parks

FROM: Ken C. Kawahara, P.E., Deputy Director
      Commission on Water Resource Management

SUBJECT: Request for Comments
         Water Use Permit Application
         Kaluakoi Ground Water Management Area, Molokai

Transmitted for your review and comment is a copy of a water use permit application (WUPA No. 869) for Zappacosta Tellos, LP for Well No. 0916-01. Public notice of this application will be published in the Maui News issues of January 7, 2009 and January 14, 2009.

We would appreciate your review of the attached application for any conflicts or inconsistencies with the programs, plans, and objectives specific to your division only. Please respond by returning this cover memo form by January 29, 2009, which is the legal deadline for objections. If we do not receive your comments by this date, we will assume you have no objections to this application.

If you have any questions, require additional information, or would like to request an extension of the review period for this application, please contact Charley Ice at 587-0218.

Response:

☑ We have no objections or comments
☐ Objections attached
☐ Only comments attached

Contact person: [Signature]

Phone: 7-4175

Signed: [Signature]

Date: JAN - 6-2009

PAUL J. CONRY, ADMINISTRATOR
DIVISION OF FORESTRY AND WILDLIFE
Dear Charley:

Please forward this to Ken Kawahara and any other appropriate desk. Thanks.

I have quite a few questions regarding this application and are listed as follows:

1. Does he have a hydrologist report on the prospects of finding water?
2. What is the size and depth of the well he is proposing?
3. How will the well and desalinization be powered - electric, diesel or alternate energy source?
4. Will he agree to:
   • Share what he has learned about the process of desalinization?
   • Agree that he will not use potable water in case he finds too many problems and cost with desalinization?
   • That he will never mix potable water with water from his well. (very difficult to enforce)

A good number of years ago, Harold Edwards, when he was with Molokai Ranch, told me that it would cost $4.00/000 gallons to convert salt water to potable. I expect the cost is higher now. I think many people will be suspicious that this is a scheme to justify more fresh water to the West End users. It would be less expensive to purchase the fruit in the market place than grow them using desalinized water for irrigation.

Thank you for the opportunity to review this.

Robert Granger
January 9, 2009

TO: The Honorable Laura H. Thielen, Chairperson
    Commission on Water Resource Management

FROM: Chiyome Leinaala Fukino, M.D.
    Director of Health

SUBJECT: WATER USE PERMIT APPLICATION NO. 869
         PAPOHAKU-ZAPPACOSTA WELL
         State Well No. 4-0916-04
         TMK: 5-1-008: 49

As the water from the proposed well will be desalinated to
produce water for irrigation we generally would have no
objections. However, there may be concerns about how the waste
stream from the desalination facility will be disposed of, any
chemical cleaning, system redundancy, and maintenance
considerations.

Finally, we would like to point out that there is a discrepancy
on the application form GWUPA-N. Item no. 6, Total Quantity of
Water Requested, shows 8,460 gallons per day (?), yet Table 1
shows no potable use and 1,105 gallons per day of total non-
potable use (Box L).

If you have any questions on wastewater disposal, please contact
Mr. Tomas See, Chief, Wastewater Branch at (808) 586-4294.

cc: Tomas See, Wastewater Branch

Original to follow in the mail.
January 6, 2009

TO: Honorable Micah Kane, Director
Department of Hawaiian Home Lands

Honorable Chiyome L. Fukino, M.D., Director
Department of Health

Mr. Clyde W. Namu'o, Administrator
Office of Hawaiian Affairs

Honorable G. Riki Hokama, Chairperson
County Council
County of Maui

Mr. Jeffery K. Eng, Director
Department of Water Supply
County of Maui

Mr. Jeffrey S. Hunt, Director
Planning Department
County of Maui

FROM: Laura H. Thielen, Chairperson
Commission on Water Resource Management

SUBJECT: Water Use Permit Application
Kaluakoi Ground Water Management Area, Molokai

Transmitted for your review and comment is a copy of a water use permit application (WUPA No. 869) for Zappacosta Tellos, LP for Well No. 0916-01. Public notice of this application will be published in the Maui News issues of January 7, 2009 and January 14, 2009.

We would appreciate your review of the proposed use that is described in the attached application (i.e. line item 6 or Table 1) for any conflicts or inconsistencies with the land use designations, programs, plans, or objectives specific to your organization or department only. Please respond by returning this cover memo form by January 29, 2009, which is the legal deadline for objections. If we do not receive your comments by this date, we will assume you have no objections to this application.

If you have any questions, require additional information, or would like to request an extension of the review period for this application, please contact Charley Ice at 587-0218.

Class
Attachment(s)

Response:
( ) We have no objections or comments
( ) Objections attached
( ) Only comments attached

Contact person: Stuart Yamada
Phone: 586-4258
Date: 01/12/09
LINDA LINGLE
GOVERNOR OF HAWAII

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

January 6, 2009

Mr. Luigi Manera
Zappacosta Tellos, LP
98 Faxon Road
Atherton, CA  94027-4046

Dear Mr. Manera:

We acknowledge completion, on December 4, 2008, of your water use permit application (WUPA No. 869), received November 25, 2008, for the Papohaku Zappacosta Well (Well No. 0916-01). You can expect your application to be processed within ninety (90) days from December 4, 2008 unless there are objections to your application.

Enclosed is a copy of the public notice for your water use permit application which will be published in the Maui News issues of January 7, 2009 and January 14, 2009. You will be required to pay for the cost of the public notice, which runs about $400. We will send you an invoice shortly after your notice is published.

Please be aware that there may be objections to your application. If objections are made, the objector is required to file such objections with the Commission and is also required to send you a copy of the objections.

You, or any other party, may respond to objections by filing a brief in support of your application with the Commission within ten (10) days of the filing of an objection. You, or the other party, must also send a copy of the response to the objector.

If you have any questions, please contact Charley Ice at 587-0218.

Sincerely,

KEN C. KAWAHARA, P.E.
Deputy Director

CI:ss
Enclosure
January 6, 2009

TO: Aquatic Resources  
Forestry and Wildlife/Natural Area Reserve System  
Historic Preservation  
State Parks

FROM: Ken C. Kawahara, P.E., Deputy Director  
Commission on Water Resource Management

SUBJECT: Request for Comments  
Water Use Permit Application  
Kaluakoi Ground Water Management Area, Molokai

Transmitted for your review and comment is a copy of a water use permit application (WUP A No. 869) for Zappacosta Tellos, LP for Well No. 0916-01. Public notice of this application will be published in the Maui News issues of January 7, 2009 and January 14, 2009.

We would appreciate your review of the attached application for any conflicts or inconsistencies with the programs, plans, and objectives specific to your division only. Please respond by returning this cover memo form by January 29, 2009, which is the legal deadline for objections. If we do not receive your comments by this date, we will assume you have no objections to this application.

If you have any questions, require additional information, or would like to request an extension of the review period for this application, please contact Charley Ice at 587-0218.

Response:

( ) We have no objections or comments  
( ) Objections attached  
( ) Only comments attached

Contact person:  
Phone:  

Signed:  
Date:
Transmitted for your review and comment is a copy of a water use permit application (WUPA No. 869) for Zappacosta Tellos, LP for Well No. 0916-01. Public notice of this application will be published in the Maui News issues of January 7, 2009 and January 14, 2009.

We would appreciate your review of the attached application for any conflicts or inconsistencies with the programs, plans, and objectives specific to your division only. Please respond by returning this cover memo form by January 29, 2009, which is the legal deadline for objections. If we do not receive your comments by this date, we will assume you have no objections to this application.

If you have any questions, require additional information, or would like to request an extension of the review period for this application, please contact Charley Ice at 587-0218.

Response:

( ) A water lease/permit is required of this applicant and an application for such will be requested by our division.

( ) A water lease/permit is not required of this applicant.

( ) A water lease/permit has been obtained by the applicant through lease no.

( ) Other relevant Land Division rules/regulations, information, or recommendations are attached.

( ) No objections

( ) Other comments:

Contact person: __________________________ Phone: __________________________

Signed: __________________________ Date: __________________________
TO:  Mr. Dan Davidson, Executive Officer  
Land Use Commission

FROM: Laura H. ThieLEN, Chairperson  
Commission on Water Resource Management

SUBJECT: WATER USE PERMIT APPLICATION  
Kaluakoi Ground Water Management Area, Molokai

Transmitted for your review and comment is a copy of a water use permit application (WUPA No. 869) for Zappacosta Tellos, LP for Well No. 0916-01. Public notice of this application will be published in the Maui News issues of January 7, 2009 and January 14, 2009.

We would appreciate your review of the proposed use that is described in the attached application (i.e. line item 6 or Table 1). Specifically, we request that you inform us of the current state land use designation for the TMK parcel, or portion thereof, for the proposed use area(s) and, secondly, whether the current state land use designation is appropriate for the proposed project.

We have attached a TMK map(s) that covers the proposed use area(s). Where water is proposed for use on only a portion of a TMK parcel, or on parcels with multiple zoning, the proposed use area(s) has been clearly delineated on the attached map. Please respond by returning this cover memo along with your review comments by January 29, 2009, which is the legal deadline for objections. If we do not receive your comments by this date, we will assume you have no objections to this application.

If you have any questions, require additional information, or would like to request an extension of the review period for this application, please contact Charley Ice at 587-0218.

Cl:ss  
Attachment(s)  

Response:

( ) We have no objections or comments
( ) Objections attached
( ) Only comments attached

Contact person: _____________________________ Phone: _____________________________

Signed: _____________________________ Date: _____________________________
January 6, 2009

TO:
Honorable Micah Kane, Director
Department of Hawaiian Home Lands

Honorable Chiyome L. Fukino, M.D., Director
Department of Health

Mr. Clyde W. Namu'o, Administrator
Office of Hawaiian Affairs

Honorable G. Riki Hokama, Chairperson
County Council
County of Maui

Mr. Jeffery K. Eng, Director
Department of Water Supply
County of Maui

Mr. Jeffrey S. Hunt, Director
Planning Department
County of Maui

FROM: Laura H. Thielen, Chairperson
Commission on Water Resource Management

SUBJECT: Water Use Permit Application
Kaluakoi Ground Water Management Area, Molokai

Transmitted for your review and comment is a copy of a water use permit application (WUPA No. 869) for Zappacosta Tellos, LP for Well No. 0916-01. Public notice of this application will be published in the Maui News issues of January 7, 2009 and January 14, 2009.

We would appreciate your review of the proposed use that is described in the attached application (i.e. line item 6 or Table 1) for any conflicts or inconsistencies with the land use designations, programs, plans, or objectives specific to your organization or department only. Please respond by returning this cover memo form by January 29, 2009, which is the legal deadline for objections. If we do not receive your comments by this date, we will assume you have no objections to this application.

If you have any questions, require additional information, or would like to request an extension of the review period for this application, please contact Charley Ice at 587-0218.

CI:ss
Attachment(s)

Response: ( ) We have no objections or comments
( ) Objections attached
( ) Only comments attached

Contact person: Phone:
Signed: Date:
Ms. Sri Ten Cate  
Molokai Public Libraries  
P.O. Box 395  
Kaunakakai, HI 96748  

Dear Ms. Ten Cate:  

Please find enclosed 1) a copy of an application for water use permit and 2) the public notice for the application that will be published in the Maui News issues of January 7, 2009 and January 14, 2009. We request your assistance in posting the enclosed items at the Molokai Public Library for public review and access.

Thank you for your consideration in this matter. If you have any questions, or are unable to accommodate this request, please contact Charley Ice at 587-0218.

Sincerely,

KEN C. KAWAHARA, P.E.  
Deputy Director

Attachment(s)
January 6, 2009

Mr. Brian Kau
Department of Agriculture
Molokai Irrigation Service
P.O. Box 205
Hoolehua, HI 96729

Dear Mr. Kau:

Please find enclosed 1) a copy of an application for water use permit and 2) the public notice for the application that will be published in the Maui News issues of January 7, 2009 and January 14, 2009. We request your assistance in posting the enclosed items on the Department of Agriculture bulletin board in Hoolehua.

Thank you for your consideration in this matter. If you have any questions, or are unable to accommodate this request, please contact Charley Ice at 587-0218.

Sincerely,

KEN C. KAWAHARA, P.E.
Deputy Director

Cl:ss
Attachment(s)
Honorable Charmaine Tavares, Mayor  
County of Maui  
200 South High Street  
Wailuku, HI 96793  

Dear Mayor Tavares:

Notice of an Application for a Water Use Permit  
Kaluakoi Ground Water Management Area, Molokai

In accordance with the Department of Land and Natural Resources Administrative Rules, Section 13-171-17(a), we are sending you a copy of the public notice for the water use permit application (WUPA No. 869) for Zappacosta Tellos, LP for Well No. 0916-01, which will be published in the Maui News.

In addition, Section 13-171-13(b) of our Administrative Rules states:

"Within sixty days after receipt of notice of a permit application, the county shall inform the commission if the proposed use is inconsistent with the county land use plans and policies."

We have attached a copy of the application for your review and would appreciate receiving your comments, within the next sixty (60) days, on whether this water use is consistent with county plans and policies.

Sincerely,

Laura H. Thielen  
Chairperson

Cla: Enclosures
TO: Other Interested Parties

FROM: Ken C. Kawahara, P.E., Deputy Director
Commission on Water Resource Management

SUBJECT: Request for Comments
Water Use Permit Application
Kaluakoi Ground Water Management Area, Molokai

January 6, 2009

In addition to serving you notice as required by 174C-52 (a), HRS, we transmit for your review and comment a copy of a water use permit application (WUPA No. 869) for Zappacosta Tellos, LP for Well No. 0916-01. Public notice of this application will be published in the Maui News issues of January 7, 2009 and January 14, 2009.

We would appreciate your review of the attached application for any conflicts or interferences with the programs, plans, and objectives of the organization or agency that you represent. Written objections should be made in accordance with Section 13-171-18 of our Administrative Rules and must be filed by the January 29, 2009 deadline. If we do not receive your comments by this date, we will assume you have no objections to this application.

If you have any questions, require additional information, or would like to request an extension of the review period for this application, please contact Charley Ice at 587-0218.

CI:ss
Attachment(s)

Response:

( ) We have no objections or comments
( ) Objections attached
( ) Only comments attached

Contact person: ________________________________ Phone: __________________
Signed: ____________________________ Date: ____________________________
PUBLIC NOTICE

Application for Water Use Permit
Kaluakoi Ground Water Management Area, Molokai

The following application for water use permit has been received by the Commission on Water Resource Management and is hereby made public in accordance with Section 13-171, Hawaii Administrative Rules, "Designation and Regulation of Water Management Areas."

WUPA No. 869 Papohaku Zappacosta Well (Well No. 0916-01)

Applicant: Zappacosta Tellos, LP
98 Faxon Road
Atherton, CA 94027-4046

Landowner: Zappacosta Tellos, LP
98 Faxon Road
Atherton, CA 94027-4046

Date Application Filed as Complete: December 4, 2008
Hydrologic Unit: Aquifer Areas: Kaluakoi System, West Molokai Sector, Molokai
Water Source: Papohaku Zappacosta (Well No. 0916-01) at 4300 Pohakuloa Road, Molokai, Tax Map Key (2) 5-1-008:049
Quantity Requested: 0.008 million gallons per day.
Existing/New Use: New desalted Irrigation of 3.5 acres of fruit trees
Place of Water Use: Pohakuloa Road, Kaluakoi at Tax Map Key: (2) 5-1-008:049

Written objections or comments on the above application may be filed by any person who has property interest in any land within the hydrologic unit of the source of water supply, any person who will be directly and immediately affected by the proposed water use, or any other interested person. Written objections shall: (1) state property or other interest in the matter (provide TMK information); (2) set forth questions of procedure, fact, law, or policy, to which objections are taken; and (3) state all grounds for objections to the proposed permit. Written objections must be received by January 29, 2009. Objections must be sent to 1) the Commission on Water Resource Management, P.O. Box 621, Honolulu, Hawaii 96809 and 2) the applicant at the above address.

COMMISSION ON WATER RESOURCE MANAGEMENT

KEN C. KAWAHARA, Deputy Director for
LAURA H. THIELEN, Chairperson

Dated: December 30, 2008

COMMISSION ON WATER RESOURCE MANAGEMENT
ROUTE SLIP FOR NEW APPLICATIONS

FROM: CHARLEY
DATE: 2-Dec-08
SUSPENSE DATE: 9-Dec-08

TO: CHING, F.
INIT. KUNIMURA, I.

TO: FUJI, N.
INIT. NAKIMURA, I.

TO: GOODING, K.
INIT. OHYAMA, M.

TO: HARDY, R.
INIT. SAIDAMA, K.

TO: HIGA, D.
INIT. SWANSON, S.

TO: HOAGBIN, S.
INIT. UYENO, D.

TO: ICE, C.
INIT. YODA, K.

TO: IMATA, R.
INIT. YOSHINAGA, M.

TO: KAWAHARA, K.

PLEASE:
See Me
1 Approval
1 Review & Comment
3 Signature
4 Information
5 Take Action

WELL NUMBER 0916-01
WELL NAME Papohaku Zappacosta
WUP Number New= 869

☐ WELL CONSTRUCTION
☐ PUMP INSTALLATION
☐ WUPA

ATTACHMENTS FOR APPLICATION PROCESSING - Both applicant & staff generated
1 TRANSL. LETTER
2 PERMIT PROCESS TABLE
3 CWRM MAP
4 APPL. FORM (11 COPIES)
5 USGS MAPS (11 COPIES)
6 TAX MAPS (11 COPIES)
7 PARCEL OWNER VERIF.
8 CONTRACTOR VERIF.
9 ALL INFO FILLED IN
10 BACKGROUND CHECK
11 $25 FEE DEPOSIT SLIP
12 DHP/CDUP/SMA pre-screen

FOLDER:
☐ MADE NEW FILE FOLDER, ATTACHED
☒ FILE FOLDER ALREADY MADE, IN FILE CABINET

INCOMPLETE ACTION DATES:

DATE ACTION
2 Dec 08

I think we can fill in some items - he just submitted the map. He wouldn't know name of #; system isn't easy enough. Transfer total 003 from 0 to 0: I think question on Table 1 is answered on Table 2.

RW54
<table>
<thead>
<tr>
<th>F YR APP D</th>
<th>SRC/ OBJ</th>
<th>COST</th>
<th>PROJECT</th>
<th>PH ACT</th>
<th>AMOUNT</th>
<th>NAME/DESCRIPTION (WANG INPUT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>09</td>
<td>326</td>
<td>C</td>
<td>1026</td>
<td>0752</td>
<td>(1) $25.00 Valleey Well Drilling LLC</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(2) $25.00 Luigi Manera</td>
</tr>
</tbody>
</table>

TOTAL       |          |      |         |        |        | $ 50.00                        |

REMARKS:    | LINE (1) | Kauai Natural Artesian Well |
            | LINE (2) | Luigi Manera               |
            | LINE (3) |                             |
            | LINE (4) |                             |
            | LINE (5) |                             |
            | LINE (6) |                             |
            | LINE (7) |                             |
            | LINE (8) |                             |
            | LINE (9) |                             |
            | LINE (10)|                             |
Hi Charley,

The 35”-40”/year figures refers to the inches of water used to irrigate the specified crop – this 35”-40”/year figure is equivalent to 2,500 gallons of water/week/acre (noted in Table 2, Column “I”). The breakdown is rendered in Table 1 for each proposed crop. I enlarged the figures for you to review. In addition to the references provided on Page 3, under “comments,” I contacted Makalapua Landscapes on Molokai (License No. C18464) for irrigation consultation.

I hope this helps. Email me if you have any other questions. Thank you, Luigi

From: Charley.F.Ice@hawaii.gov [mailto:Charley.F.Ice@hawaii.gov]
Sent: Thursday, December 04, 2008 9:37 AM
To: Luigi Manera
Subject: RE: water use permit application

This is helpful, but I’m not understanding the 35”-40”/year figures -- what does that mean? If those are acre-inches, I'll do a conversion to the gpd we use -- or have you done that already with the next column: 2500 gal/ac/wk (~357 g/a/day)?
Also the irrigation practice equivalents are fine -- somehow our instructions do not make it clear that we'd like to know how you derived those figures -- is that advice given by some agricultural authority? from a table or other reference?

Charley Ice
Hydrologist
Hawaii Water Commission
1151 Punchbowl 227 Kalanikau
P.O. Box 621, Honolulu 96809
(808) 587-0218

Aloha Charley,
STATE OF HAWAI'I
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
APPLICATION FOR GROUND WATER USE PERMIT FOR
PROPOSED NEW USE IN A DESIGNATED GROUND WATER
MANAGEMENT AREA

FORM GWUPA-N

APPLICANT

INSTRUCTIONS

1. For mailing address, mailing address

2. Name/Company

Pierluigi Zapacosta
TELAL, L\P

Contact Person

Pierluigi Zapacosta
TELAL, L\P

3. Note: Signing

SOURCE INFORMATION

4. GROUND-WATER

SOURCE

5. Mailing Address

AB FAXON ROAD, ATHERTON, CA 94027-404L

6. Phone

(650) 704-0925

Fax

E-mail

7. (b) 3-Minute Series USGS

Property tax map, showing source location referenced to established property boundaries.

Photograph(s) of the source(s) and location(s) of proposed end use(s), if applicable.

In accordance with §174C-51 (1), HRS, the landowner shall be the joint applicant in the event the applicant is a lessee, licensee, developer, or any person with a terminable interest or estate in the land that is the water source of the permitted water.

APPLICANT

Name/Company

Pierluigi Zapacosta
TELAL, L\P

Contact Person

Pierluigi Zapacosta
TELAL, L\P

APPLICANT INFORMATION

1. APPLICANT'S INFORMATION

Mailing Address

AB FAXON ROAD, ATHERTON, CA 94027-404L

Phone

(650) 704-0925

Fax

E-mail

pierluigi@ Zapacosta.com

SOURCE INFORMATION

3. ISLAND

MOLOKAI

4. GROUND-WATER MANAGEMENT AREA

Kalawao: West Molokai

4A. SUSTAINABLE YIELD FOR ITEM 4

MGD 2

5. SOURCE INFORMATION

Attach additional sheets, if necessary.

Well Number

096-04

Well Name

Paualehua

Zapacosta

PROPOSED

Existing or Proposed?

PROPOSED

TMK

5 - 006 - 049

Flowmeter installed?

Yes, date installed

No

PROPOSED USE INFORMATION

6. TOTAL QUANTITY OF WATER REQUESTED: In the space below, enter total from Box M in Item 11 (Table 1) of this application.

Gallons per day, averaged over 1 year.

8460

7. PROPOSED USE(S):

☐ Agriculture

☐ Domestic

☐ Industrial

☐ Irrigation

☐ Military

☐ Municipal

☐ Other

8. LOCATION OF PROPOSED WATER USE(S):

Show the location of the proposed use location. Otherwise, attach similar maps. See Item 11 (Table 1, column B) of this application.

NOTE: Signing below indicates that the signatories understand and affirm that the information they know.

Further, the signatories understand that: 1) if necessary, further information 2) if a water use permit is granted by the Commission, this permit is subject to any existing standards, reserved uses as defined by the Commission, and Hawaiian Home Lands future notice fees associated with this application.

9. APPLICANT

Signature

Pierluigi Zapacosta

Print Name

Date

10. SOURCE LANDOWNER

Signature

Pierluigi Zapacosta

Print Name

Date
PROPOSED NEW USE OR MODIFIED USE INFORMATION

11. TABLE 1: LAND USE CONSISTENCY / EFFICIENCY OF USE (Attach additional copies, if necessary.)

<table>
<thead>
<tr>
<th>LAND USE CONSISTENCY</th>
<th>EFFICIENCY OF USE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A</strong></td>
<td><strong>B</strong></td>
</tr>
<tr>
<td>PURPOSE / WATER USE</td>
<td>CATEGORY</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**USES THAT REQUIRE POTABLE (DRINKING) WATER**

<table>
<thead>
<tr>
<th>USES THAT REQUIRE POTABLE (DRINKING) WATER</th>
<th>TOTAL POTABLE USE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>GPD</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**USES THAT DO NOT REQUIRE POTABLE WATER**

<table>
<thead>
<tr>
<th>USES THAT DO NOT REQUIRE POTABLE WATER</th>
<th>TOTAL QUANTITY OF WATER REQUESTED (SUM OF TOTAL POTABLE USE)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Please explain if there are any limitations (e.g., legal, contractual) on the proposed water use(s) described in Table 1. Ref. §174C-51(5), HRS.

NONE.
PROPOSED NEW USE OR MODIFIED USE INFORMATION (continued)

12. TABLE 2: IRRIGATION INFORMATION
List all crops that will be grown, including landscape and golf course irrigation uses. Copy Table 2 and attach additional sheets to complete your list, if necessary.

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>CROP</td>
<td>TOTAL ACREAGE</td>
<td>NET IRRIGATED ACREAGE</td>
<td>BEGIN GROWTH PERIOD (month)</td>
<td>END GROWTH PERIOD (month)</td>
<td>IRRIGATION SYSTEM (refer to instructions)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>AVOCADO</td>
<td>6.569</td>
<td>0.5</td>
<td>OCTOBER</td>
<td>ONGOING</td>
<td>DRIP</td>
</tr>
<tr>
<td>G</td>
<td>1</td>
<td>0.08</td>
<td>AVOCADO</td>
<td>6.569</td>
<td>0.5</td>
<td>OCTOBER</td>
<td>ONGOING</td>
<td>DRIP</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>MANGO</td>
<td>6.569</td>
<td>0.5</td>
<td>OCTOBER</td>
<td>ONGOING</td>
<td>DRIP</td>
</tr>
<tr>
<td>E</td>
<td>1</td>
<td>0.08</td>
<td>CITRUS</td>
<td>6.569</td>
<td>2.5</td>
<td>OCTOBER</td>
<td>ONGOING</td>
<td>DRIP</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Comments:
- On average in yearly temperatures and environmental conditions. Also soil structure and pre-plant soil amendments as needed. Above information based upon maximum soil suction as determined by tensiometer of 20 cB. The avocado and citrus will be trimmed at 7 years of growth.

Reference Materials:
- Department of Primary Industries (DPI) Queensland Australia
- Compendium of Citrus Diseases - APS Pess
- The Citrus Industry - University of California
- The Mango Botany, production & uses - CAB International
- Makalapua Landscapes, Inc. Molokai (#8464)

Total Acres: [X] (October 1, 2002)
13. TABLE 3: ALTERNATIVES ANALYSIS

<table>
<thead>
<tr>
<th>Municipal sources</th>
<th>Wastewater reuse</th>
<th>Ditch system</th>
<th>Desalinization</th>
<th>Surface water</th>
<th>Other (specify)</th>
</tr>
</thead>
<tbody>
<tr>
<td>N/A</td>
<td>No wastewater reuse is available in the area owned by Molokai Ranch</td>
<td>There is no existing ditch system</td>
<td>This is the proposed system of use</td>
<td>No surface water present</td>
<td>N/A</td>
</tr>
</tbody>
</table>

14. PUBLIC INTEREST

§174C-2(C), HRS states: The state water code shall be liberally interpreted to obtain maximum beneficial use of the waters of the State for purposes such as domestic uses, aquaculture uses, irrigation and other agricultural uses, power development, and commercial and industrial uses. However, adequate provision shall be made for the protection of traditional and customary Hawaiian rights, the protection and proclamation of fish and wildlife, the maintenance of proper ecological balance and scenic beauty, and the preservation and enhancement of waters of the State for municipal uses, public recreation, public water supply, agriculture, and navigation. Such objectives are declared to be in the public interest.

An independent water source will be created and utilized for irrigation (non-potable) purposes.

15. INTERFERENCE WITH THE RIGHTS OF THE DEPARTMENT OF HAWAIIAN HOME LANDS

Explain how the proposed new use(s) of water will not interfere with the rights of the Department of Hawaiian Home Lands, as provided in section 221 of the Hawaiian Homes Commission Act.

The property is located in excess of 10 statute miles from Hawaiian Homelands properties. There are no existing or pre-existing Hawaiian gathering rights located within the boundaries of this property or other properties bordering this lot. No water for the irrigation of the above referenced trees will be taken from any fresh water aquifer currently in use designated for the betterment of the Hawaiian population. All lands intended for the production of fruit are currently designated as agricultural.

16. INTERFERENCE WITH ANY EXISTING LEGAL USES

Explain how the proposed new use(s) of water will not interfere with any other existing legal use(s) of water.

There is no ground water or surface water available for use or present in the area. Salt water will undergo a desalinization process to produce water for irrigation.
April 26, 2011

Mr. Pierluigi Zappacosta
Tellos, LP
98 Faxon Road
Atherton, CA 94027-4046

Dear Mr. Zappacosta:

Certificate of Well Construction Completion for Well No. 0916-01 (TMK (2) 5-1-008:049)

We are pleased to inform you that the Well Construction work permitted for the Papohaku-Zappacosta (Well No. 0916-01) is complete and acceptable and welcome you as a new member to the community of well owners and ground water users in Hawaii.

The original permit was issued to Clift Cullen, and we understand that the work has been assigned to a new driller, Tomas Fernandez of Precision Drilling Services, LLC. Please transmit a letter verifying your choice of a new contractor.

To protect Hawaii’s natural ground water resources for the benefit of all, the following requirements apply to the use of your well:

1. Before this well can be pumped on a regular basis, a certificate of pump installation completion must be obtained.

2. If the well is not in use it must be properly capped.

3. If the well is to be abandoned then the landowner must cause a licensed contractor to apply for a well abandonment permit in accordance with §13-168-12(f), HAR, prior to any well sealing or plugging work.

4. In the event that the well operator and/or landowner changes, the Commission shall be notified prior to the change.
5. In the event the benchmark in the concrete base of the well is altered in any way, an updated version of the Well Elevation page of the Well Completion Report Part I shall be submitted to the Commission. If a licensed surveyor had estimated the original benchmark elevation then a licensed surveyor must establish the new benchmark elevation. The Well Elevation portion of the Well Completion Report Part I can be obtained by contacting Commission staff or at our website at www.hawaii.gov/dlnr/cwrm/resources_permits.htm.

Because ground water in Hawaii is a public trust, and adverse effects at one well may affect other water resources, any violation of the above conditions or any other provision of the Hawaii Administrative Rules may be subject to fines of up to $5,000 per day. The Commission needs your help and asks that you do your part in utilizing this shared resource. We prefer to work with you in meeting the goal of protecting our ground water resources together.

If you have any questions, please contact Charley Ice of the Commission staff at 587-0218 or toll-free at 1-800-468-4644 (Lanai & Molokai), extension 70218.

Sincerely,

WILLIAM M. TAM
Deputy Director

cc: Precision Drilling Services, LLC
Luigi Manera
April 26, 2011

Mr. Tomas Fernandez
Precision Drilling Services, LLC
373 Waiopua Place
Honolulu, HI 96825

Dear Mr. Fernandez:

Well Completion Report Part I for Well No. 0916-01

We received your Well Completion Report Part I for the Papohaku-Zappacostas (Well No. 0916-01) on February 1, 2011 and acknowledge that it is complete.

This completes your obligation under the well construction permit. A certificate of well construction completion will be issued to the well operator/landowner and you will receive a copy. This certificate transfers responsibility of specific aspects of well usage and maintenance from you to the well operator/landowner.

If you have any questions, please contact Charley Ice of the Commission staff at 587-0218 or toll-free at 1-800-468-4644 (Lanai & Molokai), extension 70218.

Sincerely,

WILLIAM M. TAM
Deputy Director

Cl: ss

c: Tellos, LP
   Luigi Manera
   Clift Cullen
MEMO and ROUTE SLIP (ver. 5/11110) 04/12/11

WCR 1 Check for Well No. 0916-01 (GW regulation route) Zappacosta

1. From Roy (initial) 
   - Initial entry in to well index 
   - Ingrid's spreadsheet updated needed/done

   **Pump Tests Check**
   - Step-Drawdown Test: followed WCPI Stds analysis attached
     - □ No test required
   - Constant Rate Test: followed WCPI Stds analysis attached
     - □ No test required
   - Potential Well Interference: 
     - □
   - Potential Stream Impacts: 
     - □ If yes, stream name(s):
   - Additional Testing or Data Required: 
     - □
   - Pump Test Comments Attached: 
     - □
   - Proposed Pump Capacity is OK.: 
     - □

2. Well Log Check
   - Geology Code for Well Index: Volcanics
   - Fm Name: Volcanics
   - Jeremy (initial) 
   - Location in TMK: 5-1-08:49
   - Location in GIS different from Google Earth location
     - Location verification? Yes/No
     - Landowner Change? Yes/No
     - New Driller change? Yes/No
   - TMK 5-1-08:49 owned Tellos, LP

3. Construction Check
   - Charley Ryan (initial) 
   - Data complete 
     - □ Yes
   - followed Special Cond & elevations 
     - □
   - location unchanged from WCPIPA? 
     - □
   - If yes, is SMA, CD, TMK changed? 
     - □

   **ATTACHMENTS FOR PUMP INSTALLATION PERMIT (2x):**
   1. COVER LETTER
   2. COUNTY COMMENTS (DWS/SMA)
   3. DOH COMMENTS
   4. DLNR COMMENTS (LD/OCCUD/HDP)
   5. WCR 1 Accept
   6. WELL CONST. COMPLETION CERTIFICATE
   7. USGS MAP UPDATED
   8. PARCEL CHECK
   9. WELL DATABASE INPUT CHECK
   10. PUMP TEST WORKSHEET
   11. WELL As-Built CHECK PRINT

   - not necessary – only WCP or BOTH.
   - To be sent to driller/pump installer
   - To Landowner
   - Staff internal

4. Roy (initial) check (Entered WCR 1/WCCC accept date into database)
5. Susan H. (initial) finalize
6. Bill (initial) signature
7. Charley Ryan File & Enter PIP issue date if attached/required
Charley,

Attached please find Mr. Zappacosta’s Application for the supply well with Precision Drilling Services LLC’s information provided.

Thank you for the kind words, I look forward to working together side by side in the near future.

Best Regards,

Tomas Fernandez

========Precision Drilling Services LLC ========
“Solution for All your Drilling needs”
Tomas Fernandez
Cell (808)282-2055
Ph (808)396-1365 Fax (808)396-3369
373 Waiopua Pl. Honolulu, HI 96825
PDSLLC@hawaii.rr.com
STATE OF HAWA'I
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
APPLICATION FOR A WELL CONSTRUCTION /
PUMP INSTALLATION PERMIT

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, Hawai‘i 96820. Application must be accompanied by the fee and 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 587-2025. For further information and updates to this application form, visit http://www.hawaii.gov/environment.

WELL LOCATION INFORMATION

1. STATE WELL NO (if already assigned) 2. WELL NAME 3. ISLAND 4. TMAK

The following must be attached before this application is accepted as complete:
- A copy of a County Surveyor’s Department Survey of the plot
- Title insurance or escrow evidence of clear title
- • Property tax map, showing well location referenced to established property boundaries
- A schematic diagram showing the well site, access road and proposed well infrastructure
- For dug wells, attach a grading plan with cross section profiles showing grading and finish grades

5. WELL OPERATOR’S NAME/COMPANY

CLIFF C. CULLEN

LAWRENCE COMPANY

Address of Well

821 EKA ST., KALUAU, HI 96734

Well Operator’s Phone 98 FAX

(808) 786-1415

(808) 786-3417

Well Operator’s E-mail ltc@hawaii.com

Landowner’s Contact 98 FAX

(808) 786-6151

(808) 786-6151

Landowner’s E-mail

PROPOSED WELL CONSTRUCTION

7. Proposed Work

Construct New Well Modify Existing Well Abandon/Seal Well

8. Construction Type

Drilled Digged Shallow

10. Proposed Pumping Rate, gpm

11. Proposed Pumping Rates per Gallon per Minute (gpm) per Day (gpd)

12. Proposed Amount of Withdrawal, gpd

13. Method of Field Measurement

14. Proposed Surveyor’s name and license number (a surveyor’s name is required for all well Construction Permits and may be required for some Pump INSTALLATION PERMITS)

15. Municipal (water systems serving greater than 25 individuals or 15 service connections)

16. Domestic

17. Industrial (describe)

18. Irrigation (describe crop and no. of acres)

19. Military (describe)

20. Other (describe)

OTHER LEGAL REQUIREMENTS if required, items 21 and 22 must be obtained before the Commission can legally issue a permit:

21. Conservation District Use Permit (CDUP)

• Required, CDUP # date approved

• Not Required, attach documentation from CDU

• Not Required, attach documentation from OCCL

• Not Required, attach documentation from Dowa County agency

• Not Required, attach documentation from applicable County agency

• Not Required, attach documentation from applicable County agency

• Not Required, attach documentation from applicable County agency

22. Special Management Area Permit (SMAP)

• Required, SMAP # date approved

• Not Required, attach documentation from applicable County agency

• Not Required, attach documentation from applicable County agency

• Not Required, attach documentation from applicable County agency

• Not Required, attach documentation from applicable County agency

• Not Required, attach documentation from applicable County agency

23. State Historic Preservation Division (SHPD) of the Department of Land and Natural Resources

• I have consulted with the HPD regarding potential impacts of well construction activities on historic sites. I have attached applicable documentation from the HPD.

• I have not consulted with the HPD regarding potential impacts of well construction activities on historic sites. I have not consulted with the HPD regarding potential impacts of well construction activities on historic sites.

Additional remarks, explanations, etc. (attach additional sheet if more space is needed)

NOTE: Signing below indicates that the signatories understand and swear that the information provided is accurate and true to the best of their knowledge. Further, the signatories understand that the application permit: 1) the proposed work is to be completed within two (2) years of the approval date; 2) the contractor shall submit to the Commission a well completion/abandonment report within 45 days after the completion date of the permitted work; 3) in the event that the application is not completed correctly, any permit may be suspended until the item is brought into compliance, and any work done while the application is incomplete may result in fees of up to $500/day.

24. PUMP INSTALLER (must be filed out if application is for Pump Installation)

25. WELL DRILLER (must be filed out if application is for Well Construction)

Signature Date

Print Date

For Official Use Only:

WCSI Application Form 22/26/2007
<table>
<thead>
<tr>
<th>Taxkey</th>
<th>Subdiv/Condo</th>
<th>Tnr Address</th>
<th>Owner/Lessee</th>
<th>Bds</th>
<th>Bths</th>
<th>Land area</th>
<th>Liv area</th>
<th>Last Sale</th>
<th>Instr</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-5-1-8-49</td>
<td>Papohaku</td>
<td>F 4300</td>
<td>TELLOS LP</td>
<td>0</td>
<td>0</td>
<td>6.57 ac</td>
<td></td>
<td>0 9/2/2005</td>
<td>DEED</td>
<td>$1,000</td>
</tr>
<tr>
<td></td>
<td>Ranchlands</td>
<td></td>
<td>POHAKULOA RD</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

This information has been supplied by third parties and has not been independently verified by Hawaii Information Service and is, therefore, not guaranteed.

Copyright ©4/13/2011 by Hawaii Information Service
**Professional and Vocational Licensing (PVL) Search - Employees Screen**

<table>
<thead>
<tr>
<th>POSITION</th>
<th>POSITION STATUS</th>
<th>EMPLOYEE NAME</th>
<th>LIC ID</th>
<th>LIC STATUS</th>
<th>DUAL RME</th>
<th>EFFECTIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>RESPONSIBLE MANAGING EMPLOYEE</td>
<td>PRINCIPAL</td>
<td>FERNANDEZ TOMAS E</td>
<td>CT-29153</td>
<td>CURRENT, VALID &amp; IN GOOD STANDING</td>
<td></td>
<td>07/21/2008</td>
</tr>
</tbody>
</table>

[http://pvl.ehawaii.gov/pvlsearch/app?_f=n&_a=EE&licno=29152&lictp=CT&off=0&nm=PRECISION%20DRILLING%20SERVICES%20LLC](http://pvl.ehawaii.gov/pvlsearch/app?_f=n&_a=EE&licno=29152&lictp=CT&off=0&nm=PRECISION%20DRILLING%20SERVICES%20LLC) 4/13/2011
Professional and Vocational Licensing (PVL) Search - Search Results

<table>
<thead>
<tr>
<th>Business/Person Name</th>
<th>License</th>
<th>Location</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRECISION DRILLING SERVICES LLC</td>
<td>CT-29152</td>
<td>373 WAIOPUA PL HONOLULU HI 96825</td>
<td></td>
</tr>
</tbody>
</table>

Professional and Vocational Licensing (PVL) Search - General Licensee

<table>
<thead>
<tr>
<th>GENERAL LICENSEE</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIC ID: CT-29152</td>
</tr>
<tr>
<td>NAME: PRECISION DRILLING SERVICES LLC</td>
</tr>
<tr>
<td>TRADE NAME:</td>
</tr>
<tr>
<td>STATUS: CURRENT, VALID &amp; IN GOOD STANDING</td>
</tr>
<tr>
<td>ENTITY: ORGANIZATION (LIMITED LIABILITY COMPANY)</td>
</tr>
<tr>
<td>ORIG LIC DATE: 07/21/2008</td>
</tr>
<tr>
<td>CLASS PREFIX: C</td>
</tr>
<tr>
<td>SPECIAL PRIVILEGE:</td>
</tr>
<tr>
<td>RESTRICTION:</td>
</tr>
<tr>
<td>EDUCATION CODE:</td>
</tr>
<tr>
<td>CONDITIONS AND LIMITATIONS:</td>
</tr>
<tr>
<td>BUSINESS ADDR: 373 WAIOPUA PL HONOLULU HI 96825</td>
</tr>
<tr>
<td>MAILING ADDR:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OTHER BUSINESS/PERSON NAMES</th>
<th>NAME EFFECTIVE DATE</th>
<th>NAME END DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRECISION DRILLING SERVICE LLC</td>
<td>07/21/2008</td>
<td>07/21/2008</td>
</tr>
</tbody>
</table>

Click here to enter search criteria for prior complaints history -> For prior complaints and disciplinary history, contact licensing and business information center at (808) 587-3295.

License information on this site reflects information in the Professional and Vocational Licensing Division as of April 13, 2011; however, applications and forms are subject to standard processing time, and the information here does not reflect pending changes which are being reviewed. The site is updated daily, Monday through Friday, except holidays. The State of Hawaii makes no guarantees as to the accuracy of the information accessed, the timeliness of the delivery of transactions, delivery to the correct party, preservation of the privacy and security of users and makes no warranties, including warranty of merchantability and fitness for a particular purpose. User is advised that if the information obtained herein is to be reasonably relied upon, user should confirm the accuracy of such information with the provider thereof.

http://pvl.ehawaii.gov/pvlsearch/app?_a=d&f=n&lictp=CT&licno=29152&off=&nm=PRECISION%20DRIL... 4/13/2011
Charley's pen on provided GPS lat-long.
1. State Well No.: 0916-01  Well Name: Pupohoku Poppacosta  Island: Molokai

2. Address: 4300 Pohakula Rd. Kula, Molokai  Tax Map Key: 5-1-08-49

3. Drilling Company: Precision Drilling Services LLC

4. Drilling method used during construction: ☑ Percussion  ☐ Rotary  ☐ Other (describe)

5. Date Well Construction (drilled,cased,grouted) completed: 11-15-10  Attach Completed Driller's Log

6. Was the subject well cored? ☑ Yes  ☐ No

7. Step-Drawdown Test completed? ☑ Yes  ☐ No  Attach Step-Drawdown Test form (12/17/97 SDPTD Form)

8. Constant Rate Aquifer Test completed? ☑ Yes  ☐ No  Attach Constant Rate Aquifer Test form (12/17/97 CRPTD Form)

<table>
<thead>
<tr>
<th>Water Level Data:</th>
<th>Reference point elevation</th>
<th>Depth to water (feet)</th>
<th>Water Level ft. above mean sea level (see note below)</th>
<th>Date/time of measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>9. Initial encountered during drilling (this should also be filled in on the driller's log)</td>
<td>Ground = 50 ft. msl</td>
<td>48.7</td>
<td>3.30</td>
<td>11-13-10</td>
</tr>
<tr>
<td>10. Just prior to casing installation</td>
<td>Ground = 50 ft. msl</td>
<td>48.7</td>
<td>11-15-10</td>
<td></td>
</tr>
<tr>
<td>11. After casing installation (this information should be before any pump tests are performed with casing installed)</td>
<td>If this reference point is not the benchmark, the difference between the benchmark and this point is: 48.7</td>
<td>11-15-10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chloride: 9600 ppm, Temperature: 81.2°F</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: For all elevations referenced to mean sea level, take the ground elevation (surveyed or estimated if survey not required at this time) and subtract the depth to the water level.

12. As-built section filled in completely ☑

13. Photograph of well and concrete pad showing benchmark on concrete pad attached ☑

14. GPS coordinates provided in degrees, minutes, seconds ☑ 21°09'.71" N 157°16'.52"W 7.5 ft NAD 83

15. If a pump is not planned to be installed, please describe (below in the remarks section) how well is secured to prevent unauthorized access (example: lockable cover, threaded coupling, etc.)

16. Remarks: 4' x 4' x 6" Concrete pad  
2 foot stick up (6")  
6" Slip cap on top glued and taped

Licensed Driller (print) Tomas Fernandez  C-57 Lic. No. 29152

Signature ____________________________ Date 12-15-10
12. AS-BUILT WELL SECTION (Please attach as-built if different from diagram provided below)

Elevation at top of casing __ ft., msl*

Minimum of 2' Radius & 4" Thick Concrete Pad

Hole Diameter: __ in.

Ground Elevation: __ ft., msl [Surveyed Estimated]

Total Depth 67 ft.

Bench mark elevation:

___ ft., msl*

☐ (Surveyed to nearest 0.01 ft.)

X (Estimated)

Grouting method:

☐ Positive displacement (if annular space is less than two inches, attach photo of tremie)

☐ Other

Cement Grout: __ ft. (min. 70% of distance from ground elevation to top of water surface or 500 ft., whichever is less.)

Annular space between hole and casing (1.5" for positive displacement, 3" for other methods):

__ in.

Rock or Gravel Packing:

__ ft.

Material:

☐ Crushed Basalt

☐ Rounded Gravel

Water Level Elevation:

__ ft., msl*

(item 11 from page 1)

Solid Casing Material:

Carbon Steel: compliant with (check one or more):

☐ ANSI/AWWA C200 ☐ API Spec. 5L ☐ ASTM A53 ☐ ASTM A139

And compliant with (check one or more):

☐ ASTM A242 or A606 ☐ Type E ☐ Type S ☐ Grade B ☐ Other

Stainless Steel: (check one):

☐ ASTM A409 (production wells) ☐ ASTM A312 (monitor wells)

ABS Plastic conforming to ASTM F480 and ASTM D1527: (check one) ☐ Schedule 40 ☐ Schedule 80

PVC Plastic conforming to ASTM F480 and (ASTM D1785 or ASTM D2241): (check one) ☐ Schedule 40 ☐ Schedule 80 ☐ Schedule 120

Thermoset Plastic: (check one)

☐ Filament Wound Resin Pipe conforming to ASTM D2996

☐ Centrifugally Cast Resin Pipe conforming to ASTM D2997

☐ Reinforced Plastic Mortar Pressure Pipe conforming to ASTM D3517

☐ Glass Fiber Reinforced Resin Pressure Pipe conforming to AWWA C950

☐ PTFE Fluorocarbon Tubing conforming to ASTM D3296

☐ FEP Fluorocarbon Tubing conforming to ASTM D3296

Open Casing Material:

Carbon Steel: compliant with (check one or more):

☐ ANSI/AWWA C200 ☐ API Spec. 5L ☐ ASTM A53 ☐ ASTM A139

And compliant with (check one or more):

☐ ASTM A242 or A606 ☐ Type E ☐ Type S ☐ Grade B ☐ Other

Stainless Steel: (check one):

☐ ASTM A409 (production wells) ☐ ASTM A312 (monitor wells)

ABS Plastic conforming to ASTM F480 and ASTM D1527: (check one) ☐ Schedule 40 ☐ Schedule 80

PVC Plastic conforming to ASTM F480 and (ASTM D1785 or ASTM D2241): (check one) ☐ Schedule 40 ☐ Schedule 80 ☐ Schedule 120

Thermoset Plastic: (check one)

☐ Filament Wound Resin Pipe conforming to ASTM D2996

☐ Centrifugally Cast Resin Pipe conforming to ASTM D2997

☐ Reinforced Plastic Mortar Pressure Pipe conforming to ASTM D3517

☐ Glass Fiber Reinforced Resin Pressure Pipe conforming to AWWA C950

☐ PTFE Fluorocarbon Tubing conforming to ASTM D3296

☐ FEP Fluorocarbon Tubing conforming to ASTM D3296

HAWAII WELL CONSTRUCTION AND PUMP INSTALLATION STANDARDS

to ensure that your as-built is in compliance with applicable standards.
### DRILLER'S LOG

In addition to the driller's log, if a geologic log was prepared, please submit with this form.

<table>
<thead>
<tr>
<th>Depths (ft.)</th>
<th>Rock Description</th>
<th>Water Level</th>
<th>CI-</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 8</td>
<td>Soil</td>
<td>0</td>
<td></td>
<td>11-13-10</td>
</tr>
<tr>
<td>8 to 15</td>
<td>Weathered rock</td>
<td>11-13-10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15 to 21</td>
<td>Basalt (black)</td>
<td>11-13-10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21 to 45</td>
<td>Grey Basalt</td>
<td>11-13-10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>45 to 49</td>
<td>Black Scoria 48'</td>
<td>11-13-10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>49 to 52</td>
<td>Red Scoria 48'</td>
<td>11-13-10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>52 to 55</td>
<td>Red/Black Scoria</td>
<td>11-13-10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>55 to 65</td>
<td>Cinder Blk/Red</td>
<td>11-13-10</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Remarks:**
Attach photos of completed well and concrete pad

**SKETCH OF WELL LOCATION**
(Referenced to permanent landmark, i.e. building, road, fence, etc.)

Provide Latitude and Longitude of well referenced to NAD83 to nearest second

**NAD83:**
- Latitude: 21° 09' 07.1" sec
- Longitude: 157° 06' 52.5" sec
**STEP-DRAWDOWN PUMP TEST DATA**
(not required for wells producing < 100,000 gpd or 70 gpm)

Pumped Well No. **0916-01**  
Pumped Well Name **Pohaku - Zepcapota**  
Target Q **33/47/70** gpm  

Observation Well No. **None**  
Distance between Obs. & Pumped Well **150** ft.  
Reference pt. for depth to water **---** ft. msl  
Static Water Level @ start of test **52.20** ft. msl  

Water level measurements by:  
- [ ] electrical sounder  
- [ ] pressure transducer  
- [ ] airline  

START TEST  
Date: **12-2-2010**  
Time of day: **12:00 Noon**  
Flow Meter Reading Start: **NEW** **gallons**

<table>
<thead>
<tr>
<th>Suggested Elapsed Time (min)</th>
<th>Actual Elapsed Time (min)</th>
<th>Depth to water (nearest 0.1 ft)</th>
<th>Drawdown S (unadjusted to nearest 0.1 ft)</th>
<th>Pumping rate Q (at least 3 steps) (gpm)</th>
<th>EC (µhos)</th>
<th>Temp. o°F or o°C</th>
<th>Chloride sample taken</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>-45</td>
<td>-40</td>
<td>52.20</td>
<td></td>
<td></td>
<td>0</td>
<td></td>
<td></td>
<td>Start test/ Step 1</td>
</tr>
<tr>
<td>-30</td>
<td>-30</td>
<td>52.20</td>
<td></td>
<td></td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-15</td>
<td>-20</td>
<td>52.20</td>
<td></td>
<td></td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>-10</td>
<td>52.20</td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td>Start pump</td>
</tr>
<tr>
<td>1.5</td>
<td></td>
<td>51.84</td>
<td>0.36</td>
<td></td>
<td>37</td>
<td></td>
<td></td>
<td>Start pumping</td>
</tr>
<tr>
<td>2.5</td>
<td></td>
<td>51.86</td>
<td>0.34</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>51.86</td>
<td>0.34</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>51.86</td>
<td>0.34</td>
<td>37.1</td>
<td></td>
<td></td>
<td></td>
<td>original pump size expected (at 15 gpm)</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>51.85</td>
<td>0.35</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>51.86</td>
<td>0.34</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td>51.83</td>
<td>0.37</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td>51.85</td>
<td>0.35</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
<td>51.85</td>
<td>0.35</td>
<td>32.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td>51.86</td>
<td>0.34</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td></td>
<td>51.86</td>
<td>0.34</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td></td>
<td>51.84</td>
<td>0.36</td>
<td>32.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td></td>
<td>51.85</td>
<td>0.35</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
<td></td>
<td>51.86</td>
<td>0.34</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td></td>
<td>51.82</td>
<td>0.38</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td></td>
<td>51.85</td>
<td>0.35</td>
<td>33.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td></td>
<td>51.84</td>
<td>0.36</td>
<td>33.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Data in this table is for:  
- [x] Pumped Well  
- [ ] Observation Well  
Remarks:  
- Chloride sample taken  
- Step 2 begin?
<table>
<thead>
<tr>
<th>Suggested Elapsed time (min)</th>
<th>Actual Elapsed Time (min)</th>
<th>Depth to water (nearest 0.1 ft)</th>
<th>Drawdown (unadjusted to nearest 0.1 ft)</th>
<th>Pumping rate Q (gpm)</th>
<th>EC (µhos)</th>
<th>CI (mg/l)</th>
<th>Temp. X °F or °C</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>30</td>
<td>51.84</td>
<td>0.36</td>
<td>33.4</td>
<td>28.400</td>
<td>9550</td>
<td>81.1</td>
<td>END OF 1st STEP</td>
</tr>
<tr>
<td>2</td>
<td>31</td>
<td>51.83</td>
<td>0.37</td>
<td>47</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>32</td>
<td>51.84</td>
<td>0.36</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>UP GPM 33.47</td>
</tr>
<tr>
<td>4</td>
<td>33</td>
<td>51.84</td>
<td>47.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>34</td>
<td>51.84</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>35</td>
<td>51.84</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>36</td>
<td>51.84</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>37</td>
<td>51.84</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>38</td>
<td>51.84</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>39</td>
<td>51.85</td>
<td>0.35</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>40</td>
<td>51.84</td>
<td>48.7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>41</td>
<td>51.85</td>
<td>0.35</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>42</td>
<td>51.86</td>
<td>49.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>43</td>
<td>51.86</td>
<td>0.34</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>44</td>
<td>51.86</td>
<td>0.35</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>45</td>
<td>51.85</td>
<td>49.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>46</td>
<td>51.85</td>
<td>0.35</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>47</td>
<td>51.86</td>
<td>49.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>48</td>
<td>51.86</td>
<td>0.34</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>49</td>
<td>51.86</td>
<td>49.7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>50</td>
<td>51.86</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>51</td>
<td>51.86</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>52</td>
<td>51.86</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>53</td>
<td>51.86</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>54</td>
<td>51.86</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>55</td>
<td>51.86</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>56</td>
<td>51.86</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>57</td>
<td>51.86</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>58</td>
<td>51.86</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>59</td>
<td>51.89</td>
<td>49.7</td>
<td>28300 9530</td>
<td></td>
<td></td>
<td>END OF 2nd STEP</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>60</td>
<td>51.89</td>
<td>0.31</td>
<td></td>
<td></td>
<td></td>
<td>UP GPM 47.70</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>61</td>
<td>51.89</td>
<td>0.31</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>62</td>
<td>51.89</td>
<td>0.31</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>63</td>
<td>51.88</td>
<td>0.32</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>64</td>
<td>51.89</td>
<td>67.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>65</td>
<td>51.88</td>
<td>0.32</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>66</td>
<td>51.89</td>
<td>0.31</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>67</td>
<td>51.89</td>
<td>0.31</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>68</td>
<td>51.89</td>
<td>0.31</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>69</td>
<td>51.88</td>
<td>0.32</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>70</td>
<td>51.90</td>
<td>0.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>71</td>
<td>51.90</td>
<td>67.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>72</td>
<td>51.90</td>
<td>0.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>73</td>
<td>51.91</td>
<td>0.29</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>74</td>
<td>51.90</td>
<td>0.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>75</td>
<td>51.90</td>
<td>0.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>76</td>
<td>51.90</td>
<td>0.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>77</td>
<td>51.90</td>
<td>0.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suggested Elapsed Time t (min)</td>
<td>Actual Elapsed Time t (min)</td>
<td>Depth to water (nearest 0.1 ft)</td>
<td>Drawdown S (unadjusted to nearest 0.1 ft)</td>
<td>Pumping rate Q (gpm)</td>
<td>EC (μmhos)</td>
<td>Cl⁻ (mg/l)</td>
<td>Temp. (°F or °C)</td>
<td>Remarks</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-------------------------------</td>
<td>--------------------------------</td>
<td>------------------------------------------</td>
<td>----------------------</td>
<td>-----------</td>
<td>-----------</td>
<td>----------------</td>
<td>---------</td>
</tr>
<tr>
<td>20</td>
<td>80</td>
<td>51.92</td>
<td>0.28</td>
<td>67.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>85</td>
<td>51.93</td>
<td>0.27</td>
<td>67.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>90</td>
<td>51.93</td>
<td>0.27</td>
<td>67.5</td>
<td>28.00</td>
<td>930</td>
<td>80.0 END OF 3RD STEP</td>
<td></td>
</tr>
</tbody>
</table>

Max possible duration, water level or quality did not stabilize for any 24 period

Begin recovery data next page
Flow meter reading at end of pumped period: 4500 gals

1 starting pumping rate Q
2 minimum length of step period of constant pumping rate
3 minimum mandatory Chloride (Cl⁻) measurement/sampling at end of every step
4 Use same ending drawdown figure as start for recovery
### CONSTANT-RATE PUMP TEST DATA
(not required for wells producing < 50 gpm)

<table>
<thead>
<tr>
<th>Pumped Well No.</th>
<th>Observation Well No.</th>
<th>Pumped Well Name</th>
<th>Distance between Obs. &amp; Pumped Well</th>
<th>Target Q</th>
<th>Reference pt. for depth to water</th>
<th>Static Water Level @ start of test</th>
</tr>
</thead>
<tbody>
<tr>
<td>0916 01</td>
<td>None</td>
<td>Papohaku-Zappacosta</td>
<td>150 ft.</td>
<td>70 gpm</td>
<td>ft. msl</td>
<td>52.20 ft. msl</td>
</tr>
</tbody>
</table>

Water level measurements by: □ electrical sounder □ pressure transducer □ airline

START TEST Date: **12-2-2010** Time of day: **2 PM**

Flow Meter Reading Start: **4,500 gallons**

<table>
<thead>
<tr>
<th>Suggested elapsed time (min)</th>
<th>Actual elapsed time (min)</th>
<th>Depth to water (nearest 0.1 ft)</th>
<th>Drawdown S (unadjusted to nearest 0.1 ft)</th>
<th>Pumping rate Q (gpm)</th>
<th>EC (μmhos)</th>
<th>CI (mg/l)</th>
<th>Temp. °F or °C</th>
<th>Data in this table is for: Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>52.20</td>
<td>0.00</td>
<td>69.46</td>
<td>28.300</td>
<td>9530</td>
<td>81.3</td>
<td>Start pump/CI taken</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>69.46</td>
<td>52.20</td>
<td>28.300</td>
<td>9530</td>
<td>81.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.5</td>
<td>2</td>
<td>69.58</td>
<td>52.22</td>
<td>28.300</td>
<td>9530</td>
<td>81.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>69.97</td>
<td>52.22</td>
<td>28.300</td>
<td>9530</td>
<td>81.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.5</td>
<td>4</td>
<td>6.87</td>
<td>52.3</td>
<td>28.300</td>
<td>9530</td>
<td>81.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>5</td>
<td>52.1</td>
<td>69.87</td>
<td>28.300</td>
<td>9530</td>
<td>81.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>6</td>
<td>52.1</td>
<td>69.76</td>
<td>28.300</td>
<td>9530</td>
<td>81.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>7</td>
<td>52.1</td>
<td>69.67</td>
<td>28.300</td>
<td>9530</td>
<td>81.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>8</td>
<td>52.1</td>
<td>69.67</td>
<td>28.300</td>
<td>9530</td>
<td>81.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>9</td>
<td>52.1</td>
<td>69.54</td>
<td>28.300</td>
<td>9530</td>
<td>81.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>10</td>
<td>52.1</td>
<td>69.54</td>
<td>28.300</td>
<td>9530</td>
<td>81.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>11</td>
<td>52.1</td>
<td>69.49</td>
<td>28.300</td>
<td>9530</td>
<td>81.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>12</td>
<td>52.1</td>
<td>69.49</td>
<td>28.300</td>
<td>9530</td>
<td>81.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>13</td>
<td>52.1</td>
<td>69.49</td>
<td>28.300</td>
<td>9530</td>
<td>81.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>14</td>
<td>52.1</td>
<td>69.49</td>
<td>28.300</td>
<td>9530</td>
<td>81.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>15</td>
<td>52.1</td>
<td>69.49</td>
<td>28.300</td>
<td>9530</td>
<td>81.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>16</td>
<td>52.1</td>
<td>69.49</td>
<td>28.300</td>
<td>9530</td>
<td>81.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>17</td>
<td>52.1</td>
<td>69.49</td>
<td>28.300</td>
<td>9530</td>
<td>81.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>18</td>
<td>52.1</td>
<td>69.49</td>
<td>28.300</td>
<td>9530</td>
<td>81.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>19</td>
<td>52.1</td>
<td>69.49</td>
<td>28.300</td>
<td>9530</td>
<td>81.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>20</td>
<td>52.1</td>
<td>69.49</td>
<td>28.300</td>
<td>9530</td>
<td>81.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>21</td>
<td>52.1</td>
<td>69.49</td>
<td>28.300</td>
<td>9530</td>
<td>81.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>22</td>
<td>52.1</td>
<td>69.49</td>
<td>28.300</td>
<td>9530</td>
<td>81.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>23</td>
<td>52.1</td>
<td>69.49</td>
<td>28.300</td>
<td>9530</td>
<td>81.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>24</td>
<td>52.1</td>
<td>69.49</td>
<td>28.300</td>
<td>9530</td>
<td>81.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>25</td>
<td>52.1</td>
<td>69.49</td>
<td>28.300</td>
<td>9530</td>
<td>81.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>26</td>
<td>52.1</td>
<td>69.49</td>
<td>28.300</td>
<td>9530</td>
<td>81.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>27</td>
<td>52.1</td>
<td>69.49</td>
<td>28.300</td>
<td>9530</td>
<td>81.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>28</td>
<td>52.1</td>
<td>69.49</td>
<td>28.300</td>
<td>9530</td>
<td>81.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>29</td>
<td>52.1</td>
<td>69.49</td>
<td>28.300</td>
<td>9530</td>
<td>81.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>30</td>
<td>52.1</td>
<td>69.49</td>
<td>28.300</td>
<td>9530</td>
<td>81.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>31</td>
<td>52.1</td>
<td>69.49</td>
<td>28.300</td>
<td>9530</td>
<td>81.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>32</td>
<td>52.1</td>
<td>69.49</td>
<td>28.300</td>
<td>9530</td>
<td>81.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>31</td>
<td>33</td>
<td>52.1</td>
<td>69.49</td>
<td>28.300</td>
<td>9530</td>
<td>81.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>32</td>
<td>34</td>
<td>52.1</td>
<td>69.49</td>
<td>28.300</td>
<td>9530</td>
<td>81.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>33</td>
<td>35</td>
<td>52.1</td>
<td>69.49</td>
<td>28.300</td>
<td>9530</td>
<td>81.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>34</td>
<td>36</td>
<td>52.1</td>
<td>69.49</td>
<td>28.300</td>
<td>9530</td>
<td>81.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>35</td>
<td>37</td>
<td>52.1</td>
<td>69.49</td>
<td>28.300</td>
<td>9530</td>
<td>81.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>38</td>
<td>52.1</td>
<td>69.49</td>
<td>28.300</td>
<td>9530</td>
<td>81.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>37</td>
<td>39</td>
<td>52.1</td>
<td>69.49</td>
<td>28.300</td>
<td>9530</td>
<td>81.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>38</td>
<td>40</td>
<td>52.1</td>
<td>69.49</td>
<td>28.300</td>
<td>9530</td>
<td>81.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>39</td>
<td>41</td>
<td>52.1</td>
<td>69.49</td>
<td>28.300</td>
<td>9530</td>
<td>81.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>40</td>
<td>42</td>
<td>52.1</td>
<td>69.49</td>
<td>28.300</td>
<td>9530</td>
<td>81.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>41</td>
<td>43</td>
<td>52.1</td>
<td>69.49</td>
<td>28.300</td>
<td>9530</td>
<td>81.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>42</td>
<td>44</td>
<td>52.1</td>
<td>69.49</td>
<td>28.300</td>
<td>9530</td>
<td>81.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>43</td>
<td>45</td>
<td>52.1</td>
<td>69.49</td>
<td>28.300</td>
<td>9530</td>
<td>81.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>44</td>
<td>46</td>
<td>52.1</td>
<td>69.49</td>
<td>28.300</td>
<td>9530</td>
<td>81.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>45</td>
<td>47</td>
<td>52.1</td>
<td>69.49</td>
<td>28.300</td>
<td>9530</td>
<td>81.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suggested elapsed time (min)</td>
<td>Actual elapsed time (min)</td>
<td>Water depth to water surface (nearest 0.1 ft)</td>
<td>Drawdown (unadjusted to nearest 0.1 ft)</td>
<td>Pumping rate Q (gpm)</td>
<td>EC (μmhos)</td>
<td>Cl (mg/l)</td>
<td>Temp. °F or °C</td>
<td>Remarks</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>---------------------------</td>
<td>---------------------------------------------</td>
<td>----------------------------------------</td>
<td>-----------------------</td>
<td>------------</td>
<td>----------</td>
<td>--------------</td>
<td>---------</td>
</tr>
<tr>
<td>70</td>
<td>90</td>
<td>52.48</td>
<td>69.42</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>80</td>
<td>120</td>
<td>52.55</td>
<td>69.66</td>
<td>28.200 9500</td>
<td>81.2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>90</td>
<td>150</td>
<td>52.60</td>
<td>69.82</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>180</td>
<td>52.65</td>
<td>70.01</td>
<td>28.300 9530</td>
<td>81.2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>150</td>
<td>210</td>
<td>52.65</td>
<td>69.31</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>200</td>
<td>240</td>
<td>52.65</td>
<td>70.01</td>
<td>28.200 9500</td>
<td>81.2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>250</td>
<td>270</td>
<td>52.65</td>
<td>70.86</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>300</td>
<td>300</td>
<td>52.60</td>
<td>70.29</td>
<td>28.200 9500</td>
<td>81.2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>400</td>
<td>330</td>
<td>52.51</td>
<td>70.06</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Cl⁻ sample taken</td>
</tr>
<tr>
<td>500</td>
<td>360</td>
<td>52.41</td>
<td>70.31</td>
<td>28.200 9500</td>
<td>81.2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>600</td>
<td>390</td>
<td>52.30</td>
<td>70.38</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>700</td>
<td>420</td>
<td>52.20</td>
<td>70.33</td>
<td>28.200 9500</td>
<td>81.2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>800</td>
<td>450</td>
<td>52.05</td>
<td>70.11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Cl⁻ sample taken</td>
</tr>
<tr>
<td>900</td>
<td>480</td>
<td>51.90</td>
<td>70.28</td>
<td>28.300 9530</td>
<td>81.2</td>
<td></td>
<td></td>
<td>Cl⁻ sample taken</td>
</tr>
<tr>
<td>1000</td>
<td>510</td>
<td>51.75</td>
<td>70.30</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Cl⁻ sample taken</td>
</tr>
<tr>
<td>1500</td>
<td>540</td>
<td>51.60</td>
<td>69.72</td>
<td>28.400 9550</td>
<td>81.2</td>
<td></td>
<td></td>
<td>Cl⁻ sample taken</td>
</tr>
<tr>
<td>2000</td>
<td>570</td>
<td>51.50</td>
<td>69.58</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Cl⁻ sample taken</td>
</tr>
<tr>
<td>2500</td>
<td>600</td>
<td>51.35</td>
<td>70.08</td>
<td>28.400 9550</td>
<td>81.2</td>
<td></td>
<td></td>
<td>Cl⁻ sample taken</td>
</tr>
<tr>
<td>3000</td>
<td>630</td>
<td>51.32</td>
<td>70.29</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Cl⁻ sample taken</td>
</tr>
<tr>
<td>4000</td>
<td>660</td>
<td>51.30</td>
<td>70.32</td>
<td>28.500 9580</td>
<td>81.2</td>
<td></td>
<td></td>
<td>Cl⁻ sample taken</td>
</tr>
<tr>
<td>5000</td>
<td>690</td>
<td>51.31</td>
<td>70.16</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Cl⁻ sample taken</td>
</tr>
<tr>
<td>6000</td>
<td>720</td>
<td>51.33</td>
<td>70.28</td>
<td>28.500 9580</td>
<td>81.2</td>
<td></td>
<td></td>
<td>Cl⁻ sample taken</td>
</tr>
<tr>
<td>7000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Cl⁻ sample taken</td>
</tr>
<tr>
<td>8000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Cl⁻ sample taken</td>
</tr>
<tr>
<td>9000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Cl⁻ sample taken</td>
</tr>
<tr>
<td>10000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Cl⁻ sample taken</td>
</tr>
</tbody>
</table>

1 Chloride sampling required
2 Use same ending drawdown figure as start for recovery

Max possible duration, water level or quality did not stabilize for any 24 hour period

Begin recovery data on next page

Flow meter reading at end of pumped period: 54,200 gals
### Suggested Depth Recovery Data:

<table>
<thead>
<tr>
<th>Suggested elapsed time (min)</th>
<th>Actual elapsed time (min)</th>
<th>Depth to water (nearest 0.1 ft)</th>
<th>Recovery Drawdown S (unadjusted to nearest 0.1 ft)</th>
<th>Pumping rate Q (gpm)</th>
<th>EC (µhos)</th>
<th>Cl⁻ (mg/l)</th>
<th>Temp. °F or °C</th>
<th>Data in this table is for:</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>51.25</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.5</td>
<td>2</td>
<td>51.25</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>51.24</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.5</td>
<td>4</td>
<td>51.23</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>5</td>
<td>51.22</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>6</td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>7</td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>8</td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>9</td>
<td>51.22</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>10</td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>12</td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>14</td>
<td>51.23</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>16</td>
<td>51.23</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>18</td>
<td>51.22</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>20</td>
<td>51.22</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>40</td>
<td>25</td>
<td>51.22</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>50</td>
<td>30</td>
<td>51.23</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>60</td>
<td></td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>70</td>
<td></td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>80</td>
<td></td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>90</td>
<td></td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100</td>
<td></td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>150</td>
<td></td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>200</td>
<td></td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>250</td>
<td></td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**END TEST** Date: **12-3-10** Time of day: **2:30 AM**

**ADDITIONAL REMARKS:**

Person in charge of pump test (print): ________________________________

Signature: ________________________________________________________

The signature above indicates that the data reported on this form is accurate and true to the best of the person's knowledge who operated this pump test.
<table>
<thead>
<tr>
<th>Suggested elapsed time (t)</th>
<th>Actual elapsed time (t)</th>
<th>Depth To Water (nearest 0.1 ft)</th>
<th>Recovery Drawdown S (unadjusted to nearest 0.1 ft)</th>
<th>Pumping rate Q (gpm)</th>
<th>EC (μhos)</th>
<th>Cl⁻ (mg/l)</th>
<th>Temp. °F or °C</th>
<th>Data in this table is for: Pumped Well</th>
<th>Observation Well</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td>Pump off, start recovery</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>51.92</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.5</td>
<td>2</td>
<td>51.91</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.5</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>5</td>
<td>51.90</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>6</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>7</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>8</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>9</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>10</td>
<td>51.91</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>12</td>
<td>51.91</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>14</td>
<td>51.92</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>16</td>
<td>51.91</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>18</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>20</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>40</td>
<td>25</td>
<td>51.93</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>50</td>
<td>30</td>
<td>51.94</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>60</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>70</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>80</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>90</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>150</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>200</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>250</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td>80% recovery achieved</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

END TEST  Date: 12-2-10  Time of day: 1 PM

ADDITIONAL REMARKS: ________________________________________________________________

Person in charge of pump test (print): ____________________________________________

Signature: ________________________________________________________________

The signature above indicates that the data reported on this form is accurate and true to the best of the person's knowledge who operated this pump test.
March 2, 2009

Mr. Clift C. Cullen
562 Iana Street
Kailua, HI 96734

Dear Mr. Cullen:

Pump Installation Permit
Papohaku-Zappacosta Well (Well No. 0916-01)

Enclosed are two (2) originals of your approved Pump Installation Permit for the captioned well(s) that authorize permanent pump installation work for your well(s). As part of the Chairperson's approval, the following special conditions were added and are part of your permit under Permit Condition 14:

**Special Conditions**

1. If the elevation benchmark needs to be altered, the permittee, well operator, and/or well owner shall ensure that the benchmark is transferred (or the well resurveyed) and documentation of the new benchmark shall be submitted to the Commission within sixty (60) days after the pump is installed.

The permittee is responsible for all conditions of the permit. This includes ensuring the submission of a completed Well Completion Report Part II form within sixty (60) days after the pump installation work is completed. Be advised that you may be subject to fines of up to $5,000 per day for any violations of your permit conditions starting from the permit approval date.

Please sign both permit originals and return one copy to the Commission office for our files.

**IMPORTANT** - Pump installation shall not commence until a fully signed permit is returned to the Commission.

If you have any questions, please call Charley Ice of the Commission staff at 587-0218.

Sincerely,

(Handwritten Signature)

Laura H. Thileen
Chairperson

Enclosure

c: Luigi Manera
Pierluigi Zappacosta
USGS
Maui DWS
PUMP INSTALLATION PERMIT
Papohaku-Zappacosta Well, Well No. 0916-01

Note: This permit shall be prominently displayed at the site until the work is completed

In accordance with Department of Land and Natural Resources, Commission on Water Resource Management's Administrative Rules, Section 13-168, entitled "Water Use, Wells, and Stream Diversion Works", this document permits the pump installation for Papohaku-Zappacosta Well (Well No. 0916-01) at TMK (2) 5-1-008:049, Molokai, subject to the Hawaii Well Construction & Pump Installation Standards (HWCPIS - February 2004) which include but are not limited to the following conditions:

1. The Chairperson to the Commission on Water Resource Management (Commission), P.O. Box 621, Honolulu, HI 96809, shall be notified, in writing, at least two (2) weeks before any work covered by this permit commences and staff shall be allowed to inspect installation activities in accordance with §13-168-15, Hawaii Administrative Rules (HAR).

2. No withdrawal of water shall be made other than for testing until a Certificate of Pump Installation Completion has been issued by the Commission.

3. This permit shall be prominently displayed, or made available, at the site of construction work until work is completed.

4. The pump installation permit shall be for installation of a 15 gpm rated capacity, or less, pump in the well. This permanent capacity may be reduced in the event that the pump test data does not support the capacity.

5. A water-level measurement access shall be permanently installed, in a manner acceptable to the Chairperson, to accurately record water levels.

6. The permittee shall install an approved meter or other appropriate means for measuring and reporting withdrawals and appropriate devices or means for measuring chlorides and temperature at the well head.

7. Well Completion Report Part II shall be submitted to the Chairperson within sixty (60) days after completion of work (please contact staff or visit www.hawaii.gov/dlnr/cwrm/resources_permits.htm for current form).

8. The permittee, well operator, and/or well owner shall comply with all applicable laws, rules, and ordinances, and non-compliance may be grounds for revocation of this permit.

9. The pump installation permit application and, if relevant, any related staff submittal approved by the Commission are incorporated into this permit by reference.

10. If the HWCPIS are not followed and as a consequence water is wasted or contaminated, a lien on the property may result.

11. Any variances from the HWCPIS shall be approved by the Chairperson prior to invoking the variance.

12. The work proposed in the pump installation 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 Chairperson upon a showing of good cause and good-faith performance. A request to extend the permit shall be submitted to the Chairperson no later than the date the permit expires.

13. The permittee, its successors, and assigns shall indemnify, defend, and hold the State of Hawaii harmless from and against any loss, liability, claim, or demand for property damage, personal injury, or death arising out of any act or omission of the applicant, assigns, officers, employees, contractors, and agents under this permit or relating to or connected with the granting of this permit.

14. Special conditions in the attached cover transmittal letter are incorporated herein by reference.

Date of Approval: February 18, 2009
Expiration Date: February 18, 2011

LAURA H. THIELEN, Chairperson
Commission on Water Resource Management

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 and understand that I shall not commence work until I and the pump installer have signed, dated, and returned the permit to the Commission. I understand that this permit is not to be transferred to any other entity. I also understand that non-compliance with any permit condition may be grounds for revocation and fines of up to $5,000 per day starting from the permit date of approval.

Installer's Signature: ___________________________ C-57, C-57a, or A License #: C-27841 Date: ________________
Printed Name: Clift C. Cullen Firm or Title: ___________________________

Please sign both copies of this permit, return one copy to the Commission office, and retain the other for your records.

Attachments
March 2, 2009

Well Construction Permit
Papohaku-Zappacosta Well (Well No. 0916-01)

Enclosed are two (2) copies of your approved Well Construction Permit for the captioned well(s) that authorize well construction activities but excludes installation work for a permanent pump. As part of the Chairperson’s approval, the following special conditions were added and are part of your permit under Permit Condition 17:

Special Conditions

1. Attached for your information are copies of the Department of Health’s (DOH) review comments. Please note DOH’s requirements related to discharge of effluent from well drilling and testing activities. Also, please contact the Noise Radiation and Indoor Air Quality Branch at 586-4700 to check compliance with construction noise permit requirements for this project.

2. Attached for your information is a copy of the State Department of Land and Natural Resources Land Division’s comments related to water lease requirements.

3. Attached for your information is a copy of your county’s Department of Water Supply comments related to their concerns.

Please refer to the Permit Processes Worksheet (transmitted with your acknowledgement letter) for further information regarding the process of drilling a well and installing a pump.

No withdrawal of water shall be made other than for testing purposes until a certificate of pump installation completion has been issued by the Commission.

Please sign both permit originals and return one copy to the Commission office for our files. For copies of the aquifer pump test worksheet, please call staff or visit www.state.hi.us/dlnr/cwrm/forms.htm.

IMPORTANT - Drilling work shall not commence until a fully signed permit is returned to the Commission. The permit shall be prominently displayed or made available at the construction site during construction. Be advised that you may be subject to fines of up to $5,000 per day for any violations of your permit conditions starting from the permit approval date.

If you have any questions, please call Charley Ice of the Commission staff at 587-0218.

Sincerely,

LAURA H. THIELEN
Chairperson

Enclosures

c: Luigi Manera
    Pierluigi Zappacosta
    USGS
    Maui DWS
WELL CONSTRUCTION PERMIT

Papohaku-Zappacosta Well, Well No. 0916-01

Note: This permit shall be prominently displayed at the construction site until the work is completed.

In accordance with Department of Land and Natural Resources, Commission on Water Resource Management's Administrative Rules, Section 13-168, entitled "Water Use, Wells, and Stream Diversion Works", this document permits the construction and testing of Papohaku-Zappacosta Well (Well No. 0916-01) at TMK (2) 5-1-008:049, Molokai, subject to the Hawaii Well Construction & Pump Installation Standards (HWCPIS - February 2004) which include but are not limited to the following conditions:

1. The Chairperson of the Commission on Water Resource Management (Commission), P.O. Box 621, Honolulu, HI 96809, shall be notified, in writing, at least two (2) weeks before any work authorized by this permit commences and staff shall be allowed to inspect installation activities in accordance with §13-168-15, Hawaii Administrative Rules (HAR).

2. This permit shall be prominently displayed, or made available, at the site of construction work until work is completed.

3. The well construction permit shall be for construction and testing of the well only. The permittee shall coordinate with the Chairperson and conduct a pumping test in accordance with the HWCPIS (the latest pump test worksheet can be obtained by contacting Commission staff or at www.hawaii.gov/dlnr/cwrmlresources_permits.htm). The permittee shall submit to the Chairperson the test results as a basis for supporting an application to install a permanent pump. No permanent pump may be installed until a pump installation permit is approved and issued by the Chairperson. No withdrawal of water shall be made for purposes other than testing without a Certificate of Pump Installation Completion. The permitted pump capacity described on the pump installation permit may be reduced in the event that the pump test does not support the capacity.

4. In basal ground water, the depth of the well may not exceed one-fourth (1/4) of the theoretical thickness (41 times initial head) of the basal ground water unless otherwise authorized by the Chairperson. If it can be shown that the well does not tap basal ground water then this condition may be waived after consultation with and acceptance by Commission staff. However, in no instance can the well be drilled deeper than one-half (1/2) of the theoretical thickness without Commission approval.

5. The permittee shall incorporate mitigation measures to prevent construction debris from entering the aquatic environment, to schedule work to avoid periods of high rainfall, and to revegetate any cleared areas as soon as possible.

6. In the event that historically significant remains such as artifacts, burials or concentrations of shells or charcoal are encountered during construction, the permittee shall stop work and immediately contact the Department of Land and Natural Resources' State Historic Preservation Division. Work may recommence only after written concurrence by the State Historic Preservation Division.

7. 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.

8. The Well Completion Report Part I shall be submitted to the Chairperson within sixty (60) days after completion of work (please contact staff or visit www.hawaii.gov/dlnr/cwrmlresources_permits.htm for current form).

9. The permittee shall comply with all applicable laws, rules, and ordinances; non-compliance may be grounds for revocation of this permit.

10. The well construction permit application and, if relevant, any related staff submittal approved by the Commission are incorporated into this permit by reference.

11. If the HWCPIS are not followed and as a consequence water is wasted or contaminated, a lien on the property may result.

12. Any variances from the HWCPIS shall be approved by the Chairperson prior to invoking the variance.

13. 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 Chairperson upon a showing of good cause and good-faith performance. A request to extend the permit shall be submitted to the Chairperson no later than the date the permit expires.

14. If the well is not to be used it must be properly capped. If the well is to be abandoned during the course of the project then the permittee must apply for a well abandonment permit in accordance with §13-168-12(f), HAR, prior to any well sealing or plugging work.

15. The permittee, its successors, and assigns shall indemnify, defend, and hold the State of Hawaii harmless from and against any loss, liability, claim, or demand for property damage, personal injury, or death arising out of any act or omission of the applicant, assigns, officers, employees, contractors, and agents under this permit or relating to or connected with the granting of this permit.

16. This permit shall apply to the location shown on the application only. If the well is to be relocated, the permittee shall apply for a new well construction/pump installation permit in accordance with §13-168-12(f), HAR.

17. Special conditions in the attached cover transmittal letter are incorporated herein by reference.

Date of Approval: February 18, 2009
Expiration Date: February 18, 2011

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 and understand that I shall not commence work until I have signed, dated, and returned the permit to the Commission. I understand that this permit is not to be transferred to any other entity. I also understand that non-compliance with any permit condition may be grounds for revocation and fines of up to $5,000 per day starting from the permit date of approval.

Driller’s Signature: ___________________________ C-57 License #: ___________ Date: ___________

Printed Name: ___________________________ Firm or Title: ___________________________

Please sign both copies of this permit, return one copy to the Commission office, and retain the other for your records.

Attachment
COMMISSION ON WATER RESOURCE MANAGEMENT
ROUTE SLIP FOR PERMIT ISSUANCE 5/19/05

FROM: CHARLEY
TO: ANAKALEA, P.
BAUER, G.
CHING, F.
DANBARA, S.
FUJI, N.
GOODING, K.
HIGA, D.
ICE, C.
IMATA, R.

DATE: ***************
TO: KUNIMURA, I.
NAKAMA, L.
NAKANO, D.
OHYE, M.
SAKODA, E.
SWANSON, S.
UYENO, D.
YODA, K.
YOSHINAGA, M.

SUSPENSE DATE: 
FOR:

PLEASE:

Approval
Signature
Information

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

WELL NUMBER 0916-01

Papohaku-Zappacosta

WELL CONSTRUCTION

ATTACHMENTS FOR WELL CONSTRUCTION PERMIT:
1 COVER LETTER
2 PERMIT (2x)
3 COMMENTS:
4 SDWB
5 WWB
6 CWB
7 HEER
8 LD
9 HP
10 OCCl
11 SMA

** we did not receive standard WUPA review comments - reported were on WUPA... should we copy standard reply from other WUPA?**

TO BE SENT TO APPLICANT

WELL CHECK PRINTOUT
FOR OFFICE USE ONLY

PUMP INSTALLATION

ATTACHMENTS FOR PUMP INSTALLATION PERMIT:
1 COVER LETTER
2 PERMIT (2x)
3 COMMENTS:
4 SDWB
5 WWB
6 CWB
7 HEER
8 LD
9 HP
10 OCCl
11 SMA

TO BE SENT TO APPLICANT

GLEN'S WORKSHEET
FOR OFFICE USE ONLY

** WUP 867**
| FROM: ROY | DATE: Feb 9 2009 | SUSPENSE DATE: |

<table>
<thead>
<tr>
<th>TO:</th>
<th>INIT.</th>
<th>TO:</th>
<th>INIT.</th>
<th>FOR:</th>
<th>PLEASE:</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHENG, C.</td>
<td></td>
<td>KUNIMURA, I.</td>
<td></td>
<td>Approval</td>
<td>See Me</td>
</tr>
<tr>
<td>CHING, F.</td>
<td></td>
<td>MILLS, D.</td>
<td></td>
<td>Signature</td>
<td>Review &amp; Comment</td>
</tr>
<tr>
<td>CHONG, R.</td>
<td></td>
<td>OHYE, L.</td>
<td></td>
<td>Information</td>
<td>Take Action</td>
</tr>
<tr>
<td>DANBARA, S.</td>
<td></td>
<td>OHYE, M.</td>
<td></td>
<td></td>
<td>Type Draft</td>
</tr>
<tr>
<td>ENGLAND, D.</td>
<td></td>
<td>OSHIRO, K.</td>
<td></td>
<td></td>
<td>Type Final</td>
</tr>
<tr>
<td>FUJII, N.</td>
<td></td>
<td>SAKODA, E.</td>
<td></td>
<td></td>
<td>File</td>
</tr>
<tr>
<td>HARDY, R.</td>
<td>R</td>
<td>SWANSON, S.</td>
<td></td>
<td></td>
<td>Xerox copies</td>
</tr>
<tr>
<td>HOAGBIN, S.</td>
<td></td>
<td>TORRES, R.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ICE, C.</td>
<td></td>
<td>UYENO, D.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IMATA, R.</td>
<td></td>
<td>YODA, K.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KAWAHARA, K.</td>
<td></td>
<td>YOSHINAGA, M.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KIMURA, J.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Comment: [Handwritten comment]
January 20, 2009

Ms. Laura H. Thielen, Chairperson
Department of Land and Natural Resources, State of Hawaii
Commission on Water Resource Management
P.O. Box 621
Honolulu, Hawaii 96809

Dear Ms. Thielen:

RE: Well Construction/Pump Installation Permit Review and Application
Papohaku-Zappacosta Well (Well No. 0916-01)
TMK: (2)5-1-008:049

Thank you for the opportunity to comment on this review and application.

The Department of Water Supply (DWS) has several concerns for existing as well as proposed private wells. These concerns include:
1. The maintenance and operation of these wells.
2. The creation of multiple conduits for contamination of ground water resources.
3. The non-reporting of water use and the status of existing wells.
4. The difficulty in tracking the existing wells.

In order to protect the ground water resources, DWS recommends that the applicant adopt best management practices for well construction/pump installation to prevent contamination during the construction as well as maintenance of the well. These practices include:
1. Inspect exposed parts of the well periodically for problems such as cracked or corroded well casing, broken or missing well cap, damaged protective casing and settling or cracking of surface seals.
2. Slope the area around the well so that surface runoff drains away from the well.
3. Provide a well cap or sanitary seal to prevent unauthorized use of or entry into the well.
4. Provide for sediment removal or well cleaning as necessary.
5. Have the well tested at least once a year for fecal coliform or other constituents of concern.
6. Avoid mixing or using pesticides, fertilizers, herbicides, degreasers, fuels or other pollutants near the well.

"By Water All Things Find Life"
7. Do no locate any type of potentially polluting activity up slope from the well.
8. Keep accurate records of any well maintenance, such as disinfection or sediment removal, that require the use of chemicals in the well.

Should you have any questions, please contact our Water Resources & Planning Division at 244-8550.

Sincerely,

JEFFREY K. ENG, DIRECTOR

cc: Engineering Division
ADS
Architectural Drafting Services

LUIGI MANERA

R. O. Box 1718
Kaunakakai, HI 96748

Ph: (808) 553-9045
Cell: (808) 870-3499
Fax: (808) 553-3952

email: luigis@aloha.net
COMMISSION ON WATER RESOURCE MANAGEMENT  
ROUTE SLIP FOR NEW APPLICATIONS

FROM: CHARLEY  
DATE: 25-Nov-08  
SUSPENSE DATE: 2-Dec-08

TO:  
INIT.  
1. CHING, F.  
2. FUJII, N.  
3. GOODING, K.  
4. HARDY, R.  
5. HIGA, D.  
6. HOAGBIN, S.  
7. ICE, C.  
8. IMATA, R.  
9. KAWAHARA, K.

TO:  
INIT.  
1. KUNIMURA, I.  
2. NAKAMA, L.  
3. OHYE, M.  
4. SAKODA, E.  
5. SWANSON, S.  
6. UYENO, D.  
7. YODA, K.  
8. YOSHINAGA, M.

PLEASE:  
1. Approval  
2. Signature  
3. Information  
4. See Me  
5. Review & Comment  
6. Take Action  
7. Type Draft acknow letter  
8. Type Final, label file folder, update People.db  
9. File  
10. Xerox copies

WELL NUMBER: 0916-01  
WELL NAME: Cullen  
WUP Number: New= ???

ATTACHMENTS FOR APPLICATION PROCESSING - Both applicant & staff generated

1. TRANS. LETTER
2. PERMIT PROCESS TABLE
3. CWRM MAP
4. APPL FORM (11 COPIES)
5. USGS MAPS (11 COPIES)
6. TAX MAPS (11 COPIES)
7. PARCEL OWNER VERIF.
8. CONTRACTOR VERIF.
9. ALL INFO FILLED IN
10. BACKGROUND CHECK
11. $25 FEE DEPOSIT SLIP
12. DHP/CDUP/SMA pre-screen

FOLDER:  
□ MADE NEW FILE FOLDER, ATTACHED  
□ FILE FOLDER ALREADY MADE, IN FILE CABINET

INCOMPLETE ACTION DATES:

DATE  
26 Nov 08

ACTION  
WUPA required; applicant has form
Mr. Clift C. Cullen
562 Iana Street
Kailua, HI 96734

Dear Mr. Cullen:

Well Construction/Pump Installation Permit Application for Well No. 0916-01

We acknowledge receipt, on November 20, 2008, of your completed Well Construction/Pump Installation permit application (in conjunction with your water use permit application) and filing fee for the Papohaku-Zappacosta Well (Well No. 0916-01). You can expect your application to be processed within ninety (90) days from this date.

For your information, the attached table describes the process, responsible parties, and deadline requirements for drilling or modifying a well and installing, modifying, or replacing a pump.

By this acceptance letter, we are also notifying the well operator/landowner that water may not be pumped for purposes other than testing until the certificate of well construction/pump installation completion letter is issued to the well operator and landowner. As Molokai is a Ground Water Management Area, an approved water use permit will be necessary prior to issuance of a pump installation permit; the appropriate application was filed by the well operator, accepted, and is scheduled for review.

Additionally, the permitted pump capacity described on the pump installation permit may be reduced in the event that the pump test does not support the capacity. No certificate of pump installation will be issued until the Commission has determined that the pump capacity will not have adverse effects on the aquifer, other nearby wells, or streams. In other words, you may need to remove the pump and install a smaller pump at the Commission's discretion before you can withdraw water for purposes other than testing.

If you have any questions about your permit application, please contact Charley Ice of the Commission staff at 984-2400 (Maui), extension 70218.

Sincerely,

KEN C. KAWAHARA, P.E.
Deputy Director

Attachment

c: Pierluigi Zappacosta
January 6, 2009

TO: Morris Atta, Administrator
    Land Division

FROM: Ken C. Kawahara, P.E., Deputy Director
      Commission on Water Resource Management

SUBJECT: Well Construction/Pump Installation Permit Application
         Papohaku-Zappacosta Well (Well No. 0916-01) TMK (2) 5-1-008:049

Transmitted for your review and comment is a copy of the captioned Well Construction/Pump Installation permit application.

We would appreciate your comments on the captioned application with regard to the programs, plans, and objectives specific to your division. **Please respond by returning this cover memo form by February 6, 2009** or a request for additional review time by this date, we will assume you have no comments.

Please find the attached maps to locate the proposed well. If you have any questions about this permit application, request additional information, or request additional review time, please contact Charley Ice of the Commission staff at 587-0218.

CI:ss
Attachment(s)

RESPONSE:

[ ] A water lease/permit is required of this applicant and an application for such will be requested by our division.

[ ] A water lease/permit is **not** required of this applicant.

[ ] A water lease/permit has been obtained by the applicant through lease no. ____________________________

[ ] Other relevant Land Division rules/regulations, information, or recommendations are attached.

[ ] No objections

[ ] Other comments:

Contact Person: ____________________________ Phone: __________________

Signed: ____________________________ Date: __________________
Transmitted for your review and comment is a copy of the captioned Well Construction/Pump Installation permit application.

We would appreciate your comments on the captioned application with regard to the programs, plans, and objectives specific to your division. Please respond by returning this cover memo form by February 6, 2009. If we do not receive comments or a request for additional review time by this date, we will assume you have no comments.

Please find the attached maps to locate the proposed well. If you have any questions about this permit application or request additional review time, please contact Charley Ice of the Commission staff at 587-0218. If you require additional information regarding specific information that can be provided by the applicant, please contact the applicant directly at the contact information provided on the application form.

CLASS:
Attachment(s)

RESPONSE:

[ ] This is a [ ] public (county or state) project [ ] private project and [ ] will [ ] may disturb historic sites.

[ ] We concur that the work described under this permit will not disturb historic sites.

[ ] We do not concur that the work described under this permit will not disturb historic sites. We require the following for our concurrence:

Contact Person: ___________________________ Phone: ________________

Signed: ___________________________ Date: ________________
Mr. Jeffrey S. Hunt, Director
Planning Department
County of Maui
250 South High Street
Wailuku, HI 96793

Dear Mr. Hunt:

Special Management Area Use Permit Requirements for
Well Construction/Pump Installation Permit Application
Papohaku-Zappacosta Well (Well No. 0916-01)

Transmitted for your review and comment is a copy of the captioned Well Construction/Pump Installation permit application.

We would appreciate your comments on the captioned application with regard to the SMA permitting requirements specific to your division. Please respond by returning this cover memo form by February 6, 2009. If we do not receive comments or a request for additional review time by this date, we will assume you have no comments.

Please find the attached maps to locate the proposed well. If you have any questions about this permit application, request additional information, or request additional review time, please contact Charley Ice of the Commission staff at 587-0218.

Sincerely,

[Signature]
LAURA H. THEILEN
Chairperson

RESPONSE:

[ ] This well project [ ] requires [ ] does not require a SMA. If a SMA is required it [ ] has [ ] has not been approved and [ ] is [ ] is not currently active.

[ ] Other relevant rules/regulations, information, or recommendations are attached.

[ ] No objections

[ ] Other comments:

Contact Person: ___________________________ Phone: ________________

Signed: ___________________________ Date: ________________
Mr. Jeffery K. Eng, Director
Department of Water Supply
County of Maui
200 South High Street
Wailuku, HI 96793

Dear Mr. Eng:

Well Construction/Pump Installation Permit Review
Well Construction/Pump Installation Permit Application
Papohaku-Zappacosta Well (Well No. 0916-01)

Transmitted for your review and comment is a copy of the captioned Well Construction/Pump Installation permit application. If you have any comments on this application, please submit them by February 6, 2009. If we do not receive comments we will assume you have no comments.

If you have any questions about this permit application, please contact Charley Ice of the Commission staff at 587-0251.

Sincerely,

[Signature]

LAURA H. THIELEN
Chairperson

Cl:ss
Attachment
<table>
<thead>
<tr>
<th>F. YR</th>
<th>APP D</th>
<th>OBJ</th>
<th>CTR</th>
<th>PROJECT</th>
<th>PH ACT</th>
<th>AMOUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>09</td>
<td>326</td>
<td>C</td>
<td>1026</td>
<td>0752</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(2)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(3)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(4)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(5)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(6)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(7)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(8)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(9)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(10)</td>
</tr>
</tbody>
</table>

**TOTAL** $ 25.00

**REMARKS:**

- LINE (1) TMK: 5-1-008:049
- LINE (2)
- LINE (3)
- LINE (4)
- LINE (5)
- LINE (6)
- LINE (7)
- LINE (8)
- LINE (9)
- LINE (10)
Transmitted for your review and comment is a copy of the captioned Well Construction/Pump Installation permit application.

We would appreciate your comments on the captioned application with regard to the programs, plans, and objectives specific to your division. **Please respond by returning this cover memo form by February 6, 2009** or a request for additional review time by this date, we will assume you have no comments.

Please find the attached maps to locate the proposed well. If you have any questions about this permit application, request additional information, or request additional review time, please contact Charley Ice of the Commission staff at 587-0218.

**RESPONSE:**

[ O A water lease/permit is required of this applicant and an application for such will be requested by our division.

**X** A water lease/permit is not required of this applicant.

[ O A water lease/permit has been obtained by the applicant through lease no. 

[ O Other relevant Land Division rules/regulations, information, or recommendations are attached.

[ O No objections

**X** Other comments: Original source of private title is Grant 3146 issued before statehood.

Contact Person: Gary Martin Phone: 587-0421

Signed: Gary Martin Date: Jan 13, 2009
PUBLIC NOTICE

Application for Water Use Permit
Kaluakoi Ground Water Management Area, Molokai

The following application for water use permit has been received by the Commission on Water Resource Management and is hereby made public in accordance with Section 13-171, Hawaii Administrative Rules, "Designation and Regulation of Water Management Areas."

WUPA No. 869 Papohaku Zappacosta Well (Well No. 0916-01)

Applicant: Zappacosta Tellos, LP
98 Faxon Road
Atherton, CA 94027-4046

Landowner: Zappacosta Tellos, LP
98 Faxon Road
Atherton, CA 94027-4046

Date Application Filed as Complete: December 4, 2008
Hydrologic Unit: Aquifer Areas: Kaluakoi System, West Molokai Sector, Molokai
Water Source: Papohaku Zappacosta (Well No. 0916-01) at 4300 Pohakuloa Road, Molokai, Tax Map Key (2) 5-1-008:049
Quantity Requested: 0.008 million gallons per day.
Existing/New Use: New desalted Irrigation of 3.5 acres of fruit trees
Place of Water Use: Pohakuloa Road, Kaluakoi at Tax Map Key: (2) 5-1-008:049

Written objections or comments on the above application may be filed by any person who has property interest in any land within the hydrologic unit of the source of water supply, any person who will be directly and immediately affected by the proposed water use, or any other interested person. Written objections shall: (1) state property or other interest in the matter (provide TMK information); (2) set forth questions of procedure, fact, law, or policy, to which objections are taken; and (3) state all grounds for objections to the proposed permit. Written objections must be received by January 29, 2009. Objections must be sent to 1) the Commission on Water Resource Management, P.O. Box 621, Honolulu, Hawaii 96809 and 2) the applicant at the above address.

COMMISSION ON WATER RESOURCE MANAGEMENT

KEN C. KAWAHARA, Deputy Director for
LAURA H. THIELEN, Chairperson

Dated: December 30, 2008

## WELL LOCATION INFORMATION

1. **STATE WELL NO.** (if already assigned)  
2. **WELL NAME**  
3. **ISLAND**  
4. **TMK**

The following must be attached before this application is accepted as complete:

- A photograph of the proposed well site
- A schematic diagram showing the well site, access road and proposed well infrastructure
- For dug wells, an alignment plot with cross section profiles showing existing and finish grades

## WELL OPERATOR’S NAME/COMPANY

<table>
<thead>
<tr>
<th>Well Operator’s Name/Company</th>
<th>Well Operator’s Address</th>
<th>Well Operator’s Phone</th>
<th>Well Operator’s Fax</th>
<th>Well Operator’s E-mail</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLIFT C. CHILEN</td>
<td>8522 IANA ST., KAILUA, HI 96734</td>
<td>(808) 376-0106</td>
<td>(808) 376-2952</td>
<td><a href="mailto:pwptracts@hawaiicom.com">pwptracts@hawaiicom.com</a></td>
</tr>
</tbody>
</table>

## PROPOSED WELL CONSTRUCTION

### PROPOSED PUMP INSTALLATION

- **Proposed Work:**
  - [ ] New Well
  - [ ] Modify Existing Well
  - [ ] Abandon/Seal Well

- **Proposed Pump Installation:**
  - [ ] Install New Pump
  - [ ] Replace Pump

- **Method of Flow Measurement:**
  - [ ] Flowmeter
  - [ ] Other (explain)

- **Proposed Amount of Withdrawal:**

## OTHER LEGAL REQUIREMENTS

- **Industrial (describe):**
- **Agriculture:**
- **Military (describe):**
- **Other (describe):**

## PROPOSED USE

- [ ] 15. Municipal (water systems serving greater than 25 individuals or 15 service connections)
- [ ] 16. Domestic (number of units to be served)
- [ ] 17. Irrigation (crop and no. of acres)
- [ ] 19. Military (describe)
- [ ] 20. Other (describe)

## Conservation District Use Permit (CDUP)

- [ ] Required, CDUP #________ date approved ______
- [ ] Not Required (attach documentation from CDUP)
- [ ] I have not checked with CDUP about whether or not a CDUP is required. I understand that checking with CDUP prior to making this application will expedite my review. I further understand that issues raised by this agency may delay or result in denial of the permit issuance, or revocation of the permit after it is issued.

## Additional Requirements

- [ ] 21. Conservation District Use Permit (CDUP)
- [ ] 22. Special Management Area Permit (SMAP)
- [ ] 23. State Historic Preservation Division (SHPD)
- [ ] I have consulted with the HPD regarding potential impacts of well construction activities on historic sites. I have attached applicable documentation from the HPD.
- [ ] I have not consulted with the HPD regarding potential impacts of well construction activities on historic sites. I understand that checking with the HPD prior to making this application may expedite my review. I further understand that issues raised by this agency may delay or result in denial of the permit issuance, or revocation of the permit after it is issued.

**NOTE:** Signing below indicates that the signatories understand and agree that the information provided is accurate and true to the best of their knowledge. Further, the signatories understand that upon permit approval: 1) the proposed work is to be completed within two (2) years of the approval date; 2) the contractor shall submit to the Commission a well completion/abandonment report within 60 days after the completion date of the permitted work; 3) in the event that the application is not completed correctly, any permit may be suspended until the item is brought in to compliance, and any work done while the permit is in suspense must be suspended for times of up to $5000/day.

## INITIALS

**FOR OFFICIAL USE ONLY:**

**RECEIVED**

**WCP APPLICATION FORM 02/26/20**
**PROPOSED WELL SECTION** (Please attach schematic if different from diagram provided below)

- **Hole Diameter:** __ in.
- **Minimum of 2\(^{\circ}\) Radius & 4\(^{\circ}\) Thick Concrete Pad (to contain benchmark surveyed to nearest 0.01 ft.)
- **Ground Elevation:** __ ft., msl*  

**Grouting method:**  
- **Positive displacement**  
- **Other**

- **Annular space between hole and casing (1.5" for positive displacement, 3" for other methods):** __ in.
- **Rock or Gravel Packing:**  
  - **Material:**  
    - **15 ft. Material:**  
      - **Graded Crushed Basalt**  
      - **Rounded Gravel**

- **Estimated Water Level Elevation:** __ ft., msl*  

**Solid Casing:** (≥ 90% x (Ground Elev.-Water Level Elev))  
- **Total Length:** __ ft.  
- **Nominal Diameter:** __ in.  
- **Wall Thickness:** __ in.  
- **Bottom Elevation:** __ ft., msl*  

- **Open Casing:**  
  - **Perforated**  
  - **Screen**

- **Total Length:** __ ft.  
- **Nominal Diameter:** __ in.  
- **Wall Thickness:** __ in.  
- **Bottom Elevation:** __ ft., msl*  

*The approximate elevation must be referenced to mean sea level (msl) at the time of application filing. Final elevations of well components shall be submitted in the Well Completion/Well Abandonment reports and referenced to a benchmark which has been established by a surveyor licensed by the State.

For non-salt water Basal Wells - bottom elevation of well should not be deeper than 1/4 of aquifer thickness or,  
**Bottom Elevation of Well Limit = \( \frac{1}{4} \times \text{Aquifer Thickness} \)**

Example: Estimated + 2 ft. Water Level Elev. → Bottom Elevation of Well Limit = \( \frac{1}{4} (2) = 1.5 \) ft.

**Solid Casing Material:**  
- **Carbon Steel:** compliant with (check one or more):  
  - **ANSI/AWWA C200**  
  - **API Spec. 5L**  
  - **ASTM A53**  
  - **ASTM A139**
  - And compliant with (check one or more):  
    - **ASTM A242 (or A606)**  
    - **Type E**  
    - **Type S**  
    - **Grade B**  
    - **Other**

- **Stainless Steel:** (check one):  
  - **ASTM A409 (production wells)**  
  - **ASTM A312 (monitor wells)**

- **ABS Plastic conforming to ASTM F480 and ASTM D1527:** (check one):  
  - **Schedule 40**  
  - **Schedule 80**

- **PVC Plastic conforming to ASTM F480 and (ASTM D1785 or ASTM D2241):** (check one):  
  - **Schedule 40**  
  - **Schedule 80**  
  - **Schedule 120**

- **Thermoset Plastic:** (check one):  
  - **Filament Wound Resin Pipe conforming to ASTM D2996**  
  - **Centrifugally Cast Resin Pipe conforming to ASTM D2997**  
  - **Reinforced Plastic Mortar Pressure Pipe conforming to ASTM D3517**  
  - **Glass Fiber Reinforced Resin Pressure Pipe conforming to AWWA C950**  
  - **PTFE Fluorocarbon Tubing conforming to ASTM D3296**  
  - **FEP Fluorocarbon Tubing conforming to ASTM D3296**

**Open Casing Material:**  
- **Carbon Steel:** compliant with (check one or more):  
  - **ANSI/AWWA C200**  
  - **API Spec. 5L**  
  - **ASTM A53**  
  - **ASTM A139**
  - And compliant with (check one or more):  
    - **ASTM A242 (or A606)**  
    - **Type E**  
    - **Type S**  
    - **Grade B**  
    - **Other**

- **Stainless Steel:** (check one):  
  - **ASTM A409 (production wells)**  
  - **ASTM A312 (monitor wells)**

- **ABS Plastic conforming to ASTM F480 and ASTM D1527:** (check one):  
  - **Schedule 40**  
  - **Schedule 80**

- **PVC Plastic conforming to ASTM F480 and (ASTM D1785 or ASTM D2241):** (check one):  
  - **Schedule 40**  
  - **Schedule 80**  
  - **Schedule 120**

- **Thermoset Plastic:** (check one):  
  - **Filament Wound Resin Pipe conforming to ASTM D2996**  
  - **Centrifugally Cast Resin Pipe conforming to ASTM D2997**  
  - **Reinforced Plastic Mortar Pressure Pipe conforming to ASTM D3517**  
  - **Glass Fiber Reinforced Resin Pressure Pipe conforming to AWWA C950**  
  - **PTFE Fluorocarbon Tubing conforming to ASTM D3296**  
  - **FEP Fluorocarbon Tubing conforming to ASTM D3296**

---

WCPI Application Form 02/20/2007
INSTRUCTIONS FOR FILLING OUT WELL CONSTRUCTION/PUMP INSTALLATION PERMIT APPLICATION FORM

CHECKLIST FOR A COMPLETE APPLICATION
☐ Fill in the most recent application form.
☐ Fill every line in (both sides of application).
☐ Enclose a check for $25 payable to the Department of Land and Natural Resources.
☐ Mark the proposed well location on: the appropriate USGS quad map, the TMK map, the photo and the schematic, and attach to the application.
☐ For dug wells, attach a grading plan and cross section profiles showing existing and finish grades.
☐Attach the original and 10 copies of the application form, maps, photo and schematic.
☐Attach letters from OCCL and appropriate county agencies regarding items 21 to 23.
☐Sign the application form.

Send the application and maps, copies, and the filing fee to:
Commission on Water Resource Management
P.O. Box 621
Honolulu, HI 96809

DESCRIPTIONS FOR LINES ON APPLICATION

WELL LOCATION INFORMATION
1. STATE WELL NO. If you already have a state well number assigned, please fill it out here. Otherwise, leave it blank and a well number will be assigned by the CWRM.
2. WELL NAME Give the well a short concise name that will differentiate it from other wells. It is what you want to call the well.
3. ISLAND The island name that the well is located on.
4. TMK Tax Map Key number
5. Well operator’s information Fill in the information for the well operator. This should be the entity that will be responsible for reporting the pumpage when the construction is completed.
6. Landowner’s information Fill in the information for the landowner of the property where the well is located.

PROPOSED WELL CONSTRUCTION
7. Proposed work The proposed work can be the construction of a new well, the modification (deepening, etc.) of an existing well, or the abandonment and sealing of an existing well. Check one box only.
8. Construction type The construction type can be drilled, dug, shaft, or tunnel.
9. Battery Is this well part of a battery of wells? A battery is defined as two or more wells in close proximity that for all intents and purposes functions as a single source.

PROPOSED PUMP INSTALLATION
10. Proposed work The proposed work can be either the installation of a new pump or the replacement of an existing pump. Replacement of an existing pump requires a permit only if the pump is of greater capacity than the existing installed pump. Otherwise, a replacement will only require the submission of a Well Completion Report Part II.
11. Proposed pumping rate The proposed pumping rate of the pump in gallons per minute.
12. Proposed amount of withdrawal The proposed amount of withdrawal in gallons per day, not to exceed (the proposed pumping rate in gallons per minute) x 1440 minutes/day.
13. Method of flow measurement This is the proposed method the operator will be using to measure pumpage for reporting purposes.

PROPOSED SURVEYOR
14. Proposed surveyor name and license number A Hawaii licensed surveyor must establish benchmark elevations for wells where proposed pumps of 70 gpm or more are to be installed, to comply with the well completion report requirements. Proposed pumps less than 70 gpm may have this requirement deferred until the Commission deems it necessary. If you wish to defer this requirement and your pump is less than 70 gpm, please write “deferred” in this space.

PROPOSED USE
15. Municipal Use is domestic, industrial, and commercial use of water through public services available to persons of a county for the promotion and protection of their health, comfort, and safety, for the protection of property from fire, and for the purposes listed under the term "domestic use".
16. Domestic Use is any use of water for individual personal needs and for household purposes such as drinking, bathing, heating, cooking, noncommercial gardening, and sanitation.
17. Industrial Use is for uses such as cooling or processing water, etc.
18. Irrigation Use is for golf courses, agriculture, etc.
19. Military Use is water used by the military from military operated water supply systems.
20. Other Use not described in items 15 through 19. Please add a description.

OTHER LEGAL REQUIREMENTS
21. Conservation District Use Permit (CDUP) To find out if your well is located in a Conservation District (CD), you should first check with the Land Use Commission (LUC) (http://www.hawaii.gov/dbedt-gc/maps/land_use_map_go_to Energy or call 587-2833). If the well is not in a CD, then you may check not in a CD box. If the well site is in a CD you will need to then determine if a Conservation District Use Permit (CDUP) is required. To find out if a CDUP is necessary, please contact the Office of Conservation and Coastal Lands (OCCL) of DLNR at 587-0377.
22. Special Management Area Permit (SMAP) To determine if an SMAP is necessary, on Oahu call 527-5374; on Maui call 270-7235; on Kauai call 241-6675; for Maui County call 270-7235; on Kauai call 241-6675.
23. Historic Preservation review If the parcel(s) affected by construction (well location/access road/infrastructure for well) has been reviewed by the State Department of Land and Natural Resources Historic Preservation Division (SHDP) or through an OEOC Environmental Review, Special Management Area Permit, etc.), check “yes” and attach any relevant documentation from SHDP. If the affected parcel(s) has not undergone SHDP review, attach a photograph of the affected area, a schematic diagram (showing the well location, access road and infrastructure for the well), and a short description of the prior use(s) of the land on which the well resides.

*Please note: You are strongly advised to contact the SHDP to obtain a pre-review of your project. In the event that you do not get an HP pre-review and if during the course of either review or the permit itself it is determined that you need SHDP’s concurrence, your application or permit may be held in abeyance or denied until issues with HP are resolved. To contact SHDP, please call 692-8015.

SIGNATURES
24. Well Driller This section must be filled out completely for the Well Construction Permit application to be accepted as complete.
25. Pump Installer This section must be filled out completely for the Pump Installation Permit application to be accepted as complete.
### COMMISSION ON WATER RESOURCE MANAGEMENT

#### WELL CONSTRUCTION/PUMP INSTALLATION

#### PERMIT PROCESS WORKSHEET

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
<th>Responsible Party</th>
<th>Legal Deadline</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ensure that if items 21 to 23 of the application are required, that they are obtained prior to applying for a permit. Otherwise, post-application comments obtained from these agencies may delay processing of your application.</td>
<td>Applicant</td>
<td>None</td>
</tr>
<tr>
<td>2</td>
<td>Application for Well Construction (or modification) and/or Pump Installation (or replacement with larger capacity than existing pump - see note B below).</td>
<td>Licensed Well Driller (for Well Construction) and/or Licensed Pump Installer (for Pump Installation) (See note C below)</td>
<td>None</td>
</tr>
<tr>
<td>3</td>
<td>Issuance of Well Construction Permit to Well Driller (if applied for).</td>
<td>CWRM</td>
<td>Within 90 days of acceptance of completed application &amp; contingent upon other agencies' legal requirements. (See note A below)</td>
</tr>
<tr>
<td>4</td>
<td>Issuance of Pump Installation Permit to Pump Installer (if applied for).</td>
<td>CWRM</td>
<td>Within 90 days of acceptance of completed application &amp; contingent upon other agencies' legal requirements. (See note A below)</td>
</tr>
<tr>
<td>5</td>
<td>Execute/Sign Permit.</td>
<td>Licensed Well Driller or Licensed Pump Installer</td>
<td>Before work activity begins.</td>
</tr>
<tr>
<td>6</td>
<td>Start of Work Notice.</td>
<td>Licensed Well Driller or Licensed Pump Installer</td>
<td>2 weeks prior to beginning of work activity.</td>
</tr>
<tr>
<td>7</td>
<td>Post copy of permit at the work site.</td>
<td>Licensed Well Driller or Licensed Pump Installer</td>
<td>During entire period of work activity at the site.</td>
</tr>
<tr>
<td>8</td>
<td>Construction of well. Note:</td>
<td>Licensed Well Driller</td>
<td>Within 2 years of issuance of Well Construction Permit.</td>
</tr>
<tr>
<td></td>
<td>a) If the well is to be abandoned during the course of the Well Construction Permit, and no further work is to be done, the applicant shall apply for and obtain a Well Abandonment Permit prior to doing any abandonment work.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>b) If the well is to be abandoned and relocated during the course of the Well Construction Permit, the applicant shall apply for and obtain a Well Abandonment Permit prior to doing any abandonment work, and a new Well Construction Permit shall be applied for and obtained prior to doing any new work (i.e. go back to step 1 above).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Installation of a temporary test pump that can adequately conduct a step-drawdown test (if proposed pump &gt; 70 gpm).</td>
<td>Licensed Well Driller or Licensed Pump Installer</td>
<td>Within 2 years of issuance of Well Construction Permit.</td>
</tr>
<tr>
<td>10</td>
<td>Installation of permanent pump.</td>
<td>Licensed Pump Installer</td>
<td>Within 2 years of issuance of Pump Installation Permit.</td>
</tr>
<tr>
<td>11</td>
<td>Application for permit extension (if required).</td>
<td>Licensed Well Driller</td>
<td>Within 60 days of completion of Well Construction (the date that ALL aspects of Well Completion Report Part I can be filled in).</td>
</tr>
<tr>
<td>12</td>
<td>Well Completion Report Part I (including Elevation Survey and Pump Tests, if applicable) to be returned completed to CWRM.</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Well Completion Report Part II to be returned to CWRM.</td>
<td>Licensed Pump Installer</td>
<td>Within 60 days of completion of Pump Installation (the date that ALL aspects of Well Completion Report Part II can be filled in).</td>
</tr>
<tr>
<td>14</td>
<td>Acceptance of Well Completion Report Part I, Elevation Survey.</td>
<td>CWRM</td>
<td>None</td>
</tr>
<tr>
<td>15</td>
<td>Issuance of Certificate of Well Construction Completion to Landowner.</td>
<td>CWRM</td>
<td>None</td>
</tr>
<tr>
<td>16</td>
<td>Acceptance of Well Completion Report Part II.</td>
<td>CWRM</td>
<td>None</td>
</tr>
<tr>
<td>17</td>
<td>Issuance of Certificate of Pump Installation Completion to Landowner.</td>
<td>CWRM</td>
<td>None</td>
</tr>
<tr>
<td>18</td>
<td>Pumpage may commence, Water Use Reporting required.</td>
<td>Well Operator</td>
<td>Monthly recording.</td>
</tr>
<tr>
<td>19</td>
<td>Abandonment (initiated in Step 2 of process).</td>
<td>Landowner</td>
<td>Until well sealed.</td>
</tr>
</tbody>
</table>

### NOTES:

A. For non-compliance of other agencies' legal requirements that preclude the Commission from issuing a permit, your application may:

- a) Have the 90-day deadline for approval waived (at your request); or
- b) Be denied and you can seek recourse at a Commission hearing.

B. If a pump replacement of equal or less than the existing capacity is done, then only step 10 is required (Well Completion Report Part II).

C. If a contractor is not selected, the application will not be accepted as complete, but may be routed for comments. If the application undergoes a satisfactory review, a letter of assurance will then be issued indicating that a permit will be issued upon selection of a contractor without outstanding issues with the Commission.
# Zoning and Flood Confirmation

**Applicant Information** (To be completed by Applicant)

**Applicant**: Luigi Manera

**Telephone**: E-MAIL

**Project Name**: Pierluigi Zappacosta

**Address/Location**

**Tax Map Key No(s)**: (2)5-1-008:049

**Zoning Information** (To be completed by ZABD)

**Community Plan Designation(s)**: AG

**County Zoning(s)**: AG

**State Land Use District(s)**: AG

**Special District(s)**: SMA/Shoreline

**Flood Information** (To be completed by ZABD)

**Flood Hazard Area Zone(s)**: C

**Base Flood Elevation(s)**: Mean sea level, 1929 National Geodetic Vertical Datum; or

**For Flood Zone No, Flood Depth**

**Floodway**: Yes [☐] No [☑]

**Flood Development Permit Required**: Yes [☐] No [☑]

*For flood hazard area zones B or C, a flood development permit would be required if any work is done in any drainage facility or stream area that would reduce the capacity of the drainage facility, river, or stream, or adversely affect downstream property.*

**Remarks/Comments**

- □ Additional information required
- □ Required for Agricultural Subdivisions
- □ Agricultural Assessment RFS No:
- □ Information submitted is correct
- □ Correction has been made and initialed

Reviewed and Confirmed by:

[Signature]

[Date]: 11/18/08

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

[Signature]

[Date]: (01/08)
May 27, 2008

Nancy McPherson  
County of Maui, Planning Department  
250 South High Street  
Wailuku, Hawai'i 96793

Dear Ms. McPherson:

Kaunakakai, Island of Moloka'i  
TMK: (2) 5-1-008: 049

The aforementioned permit is for an additional single family residence.

We believe that “no historic properties will be affected,” because:

☐ Intensive cultivation has altered the land  
☐ Residential development/urbanization has altered the land  
☒ Previous grubbing/grading has altered the land  
☐ An accepted archaeological inventory survey (AIS) found no historic properties  
☐ SHPD previously reviewed this project and mitigation has been completed  
☒ Other: Based on pictures of the project area, it appears to be fill.

In the event that historic resources, including human skeletal remains, are identified during routine construction activities, all work needs to cease in the immediate vicinity of the find, the find needs to be protected from additional disturbance, and the State Historic Preservation Division, needs to be contacted immediately at (808) 692-8015.

If you have any questions, please call me, at 652-1510.

Aloha,

[Signature]

Nancy McMahon, Deputy SHPO/State Archaeologist  
Historic Preservation Manager/Deputy Administrator  
State Historic Preservation Division

LOG NO: 2008.1785  
DOC NO: 0805NM32  
Archaeology

C: Luigi Manera, Architectural Drafting Service, P.O. Box 1718, Kaunakakai, HI 96748
Assessed Values reflect tax year 2008.

Search criteria: TMK Taxkey 2-5-1-8-49

<table>
<thead>
<tr>
<th>Taxkey</th>
<th>Subdiv/Condo</th>
<th>Tnr</th>
<th>Address</th>
<th>Owner/Lessee</th>
<th>Bds</th>
<th>Bths</th>
<th>Land area</th>
<th>Liv area</th>
<th>Last Sale</th>
<th>Instr</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-5-1-8-49papohaku F 4300</td>
<td>TELLOS LP</td>
<td>0</td>
<td>0</td>
<td>6.57 ac</td>
<td>0</td>
<td>9/2/2005 DEED $1,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

This information has been supplied by third parties and has not been independently verified by Hawaii Information Service and is, therefore, not guaranteed.

Copyright ©11/25/2008 by Hawaii Information Service
COMMISSION ON WATER RESOURCE MANAGEMENT

FROM: ROY

TO: INIT.

DATE: MAR 17 2009

TO: KUNIMURA. I.

INIT: MILLS, D.

FOR: Approval

INIT: OHYE, L.

FOR: Signature

PLEASE: See Me

INIT: OHYE, M.

FOR: Information

PLEASE: Review & Comment

INIT: OSHIRO, K.

FOR: Take Action

INIT: SAKODA, E.

FOR: Type Draft

INIT: SWANSON, S.

FOR: Type Final

INIT: TORRES, R.

FOR: File

INIT: UYENO, D.

FOR: Xerox ___ copies

INIT: YODA, K.

INIT: YOSHINAGA, M.

shortage plan last P
March 7, 2009

Laura H. Thielen  
State of Hawaii  
Department of Land and Natural Resources  
Commission on Water Resource Management  
P.O. Box 621  
Honolulu, Hawaii 96809

Subject: Approval of Water Use Permit (WUP No. 869) for Well No. 0916-01

Kaluako‘i Ground-Water Management Area, Molokai

Dear Chairperson Thielen:

I am in receipt of the water use permit for the Papohaku-Zappacosta Well for use of 0.008 million gallons per day of water on a 12-month moving average basis that was approved by the Water Resource Management Commission on February 18, 2009.

In response to the key conditions addressed and on behalf of Mr. Pierluigi Zappacosta, I/we agree to keep a record of the monthly total pumpage, water level, salinity, and water temperature. The recorded documentation will be submitted to the Commission on a regular yearly basis, as required.

In addition, should the Commission declare a water shortage situation in the Kaluako‘i Groundwater Management Area, I/we agree to reduce water use in the percentages deemed necessary by the Commission by reducing irrigation rates to achieve the necessary cutbacks.

Call (808) 553-9045 or email me luigis@aloha.net should you have any questions. Thank you for your time and assistance.

Sincerely,

Luigi Manera
March 7, 2009

Laura H. Thielen  
State of Hawaii  
Department of Land and Natural Resources  
Commission on Water Resource Management  
P.O. Box 621  
Honolulu, Hawaii  96809

Subject: Approval of Water Use Permit (WUP No. 869) for Well No. 0916-01  
Kaluako‘i Ground-Water Management Area, Molokai

Dear Chairperson Thielen:

I am in receipt of the water use permit for the Papohaku-Zappacosta Well for use of 0.008 million gallons per day of water on a 12-month moving average basis that was approved by the Water Resource Management Commission on February 18, 2009.

In response to the key conditions addressed and on behalf of Mr. Pierluigi Zappacosta, I/we agree to keep a record of the monthly total pumpage, water level, salinity, and water temperature. The recorded documentation will be submitted to the Commission on a regular yearly basis, as required.

In addition, should the Commission declare a water shortage situation in the Kaluako‘i Groundwater Management Area, I/we agree to reduce water use in the percentages deemed necessary by the Commission by reducing irrigation rates to achieve the necessary cutbacks.

Call (808) 553-9045 or email me luigis@aloha.net should you have any questions.

Thank you for your time and assistance.

Sincerely,

Luigi Manera
<table>
<thead>
<tr>
<th>FROM: ROY</th>
<th>DATE: FEB 24 2009</th>
<th>SUSPENSE DATE:</th>
<th>PLEASE:</th>
</tr>
</thead>
<tbody>
<tr>
<td>TO:</td>
<td>INIT. TO:</td>
<td>INIT: FOR:</td>
<td>PLEASE:</td>
</tr>
<tr>
<td>CHENG, C.</td>
<td>KUNIMURA, I.</td>
<td>Approval</td>
<td>See Me</td>
</tr>
<tr>
<td>CHING, F.</td>
<td>MILLS, D.</td>
<td>Signature</td>
<td>Review &amp; Comment</td>
</tr>
<tr>
<td>CHONG, R.</td>
<td>OHYE, L.</td>
<td>Information</td>
<td>Take Action</td>
</tr>
<tr>
<td>DANBARA, S.</td>
<td>OHYE, M.</td>
<td></td>
<td>Type Draft</td>
</tr>
<tr>
<td>ENGLAND, D.</td>
<td>OSHIRO, K.</td>
<td></td>
<td>Type Final</td>
</tr>
<tr>
<td>FUJII, N.</td>
<td>SAKODA, E.</td>
<td></td>
<td>File</td>
</tr>
<tr>
<td>HARDY, R.</td>
<td>SWANSON, S.</td>
<td></td>
<td>Xerox ____ copies</td>
</tr>
<tr>
<td>HOAGBIN, S.</td>
<td>TORRES, R.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ICE, C.</td>
<td>UYENO, D.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IMATA, R.</td>
<td>YODA, K.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KAWAHARA, K.</td>
<td>YOSHINAGA, M.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KIMURA, J.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Late but good to appro.
To: Mr. Ken C. Kawahara, P.E., Deputy Director  
Commission on Water Resource Management  
Department of Land and Natural Resources

From: Tomas See, Chief, Wastewater Branch

Subject: Pierluigi Zappacosta - Application for Water Use Permit No. 869  
Well Construction and Pump Installation Permits  
Papohaku - Zappacosta Saltwater Well, Well No. 0916-01  
Kaluakoi Ground Water Management Area, Molokai  
TMK: (2) 5-1-008: 049 – New Ag use for 0.008 mgd

Thank you for allowing us the opportunity to review the above subject project. We have reviewed the plans submitted which includes the Application for Water Use Permit and plot maps of residence and barn/farm.

It is our understanding that the water from the proposed well will be used to irrigate 3.5 acres of fruit trees. Based on this information, the Wastewater Branch has no objections with the subject well construction and pump installation permit.

All wastewater plans must conform to applicable provisions of the Department of Health's Administrative Rules, Chapter 11-62, "Wastewater Systems." We do reserve the right to review the detailed wastewater plans for conformance to applicable rules.

Should you have any questions, please contact the Planning & Design Section of the Wastewater Branch at telephone 586-4294.

Enclosures: One-Stop Database (brief) information - plot plan
IWS Systems

<table>
<thead>
<tr>
<th>TMK</th>
<th>City Number</th>
<th>Approval Date</th>
<th>Last Name</th>
<th>Job</th>
</tr>
</thead>
<tbody>
<tr>
<td>251008049</td>
<td>2008-1462M</td>
<td>12/23/2008</td>
<td>Zappacosta</td>
<td>New 10 bd SFD</td>
</tr>
<tr>
<td>251008049</td>
<td>2008-1466M</td>
<td>8/25/2008</td>
<td>Zappacosta</td>
<td>Jacuzzi</td>
</tr>
<tr>
<td>251008049</td>
<td>2008-1465M</td>
<td>8/25/2008</td>
<td>Zappacosta</td>
<td>Swimming Pool</td>
</tr>
<tr>
<td>251008049</td>
<td>2008-1463M</td>
<td>8/25/2008</td>
<td>Zappacosta</td>
<td>New 1 bd ADU</td>
</tr>
<tr>
<td>251008049</td>
<td>2008-1464M</td>
<td>8/25/2008</td>
<td>Zappacosta</td>
<td>New Barn w/ bath</td>
</tr>
</tbody>
</table>
Mr. Luigi Manera
P.O. Box 1718
Kaunakakai, HI 96748

Dear Mr. Manera:

Approval of Water Use Permit (WUP No. 869) for Well No. 0916-01
Kaluako'i Ground-Water Management Area, Molokai

This letter transmits your water use permit for Papohaku-Zappacosta Well (Well No.0916-01) for use of 0.008 million gallons per day (mgd) of water on a 12-month moving average basis that was approved by the Commission on Water Resource Management (Commission) on February 18, 2009. As part of the Commission's approval, the following special conditions were added and are part of your permit under Standard Permit Condition 19:

**Special Conditions**

1. The applicant shall obtain appropriate approval for the disposal of desalting waste stream brine from the Department of Health.

2. In the event that the tax map key at the location of the water use is changed, the permittee shall notify the Commission in writing of the tax map key change within thirty (30) days after the permittee receives notice of the tax map key change.

Enclosed with this letter of approval are the following:

1. Your water use permit
2. Your official monthly water use report form

Please be sure to read the conditions of your approved permit.

We draw your attention to two key conditions of your permit that require your response. First, you are required to keep a record of your monthly total pumpage, water level, salinity, and water temperature. This information must be submitted to the Commission on a regular yearly basis using the enclosed water use report form. You should make copies of the enclosed report form as needed.
Second, you are required to submit a water shortage plan to the Commission within thirty (30) days of the issuance date of this permit. Your water shortage plan simply identifies what you are willing to do should the Commission declare a water shortage situation in the Kaluako'i Ground-Water Management Area and can be as short as a one page letter. In a water shortage situation, the Commission may require temporary reductions in pumpage from all sources. The Commission is required, by law, to formulate a plan to implement such area-wide reductions, which should accommodate, include, and be consistent with your plans. Therefore, your help, by submitting your water shortage plan, is greatly needed in formulating the Commission's overall Water Shortage Plan.

If you have any questions, please call Charley Ice of the Commission staff at 587-0218.

Sincerely,

LAURA H. THIELEN
Chairperson

Attachments: WUR Form

c: Pierluigi Zappacosta
GROUND-WATER USE PERMIT
WUP NO. 869

PERMITTEE

<table>
<thead>
<tr>
<th>Permittee/Water User</th>
<th>Landowner of Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Luigi Manera</td>
<td>Pierluigi Zappacosta</td>
</tr>
<tr>
<td>Address</td>
<td>Address</td>
</tr>
<tr>
<td>P.O. Box 1718</td>
<td>98 Faxon Road</td>
</tr>
<tr>
<td>Kaunakakai, HI 96748</td>
<td>Atherton, CA 94027-4046</td>
</tr>
</tbody>
</table>

PERMITTED SOURCE INFORMATION

| Island                  | Molokai              |
| Water Management Area   | West                 |
| Aquifer Sector          | Kaluako'i            |
| Aquifer System          | Papohaku-Zappacosta  |
| System Sustainable Yield| 2                    |
| Well Name               | 0916-01              |
| State Well No.          | 0916-01              |

PERMITTED USE INFORMATION

<table>
<thead>
<tr>
<th>Reasonable beneficial use</th>
<th>Agricultural</th>
</tr>
</thead>
<tbody>
<tr>
<td>Withdrawal (12 month moving ave.)</td>
<td>0.008 mgd</td>
</tr>
<tr>
<td>Location of water use</td>
<td>(2) 5-1-008:049</td>
</tr>
<tr>
<td>TMK #</td>
<td></td>
</tr>
<tr>
<td>State land use classification</td>
<td>AG</td>
</tr>
<tr>
<td>County zoning classification</td>
<td>Ag</td>
</tr>
</tbody>
</table>

Pursuant to Hawaii's State Constitution, Article XI, Section 7, Hawaii Revised Statutes, Chapter 174C; Hawaii Administrative Rules, Chapters 13-167 through 13-171; and Hawaii decisional law and custom, the permittee is hereby authorized to use ground water from the sources and in the amount and from and upon the locations described above; subject however, to the requirements of law including but not limited to the following conditions:
1. The water described in this water use permit may only be taken from the location described and used for the reasonable beneficial use described at the location described above. Reasonable beneficial uses means "the use of water in such a quantity as is necessary for economic and efficient utilization which is both reasonable and consistent with State and County land use plans and the public interest." (HRS § 174C-3)

2. The right to use ground water is a shared use right.

3. The water use must at all times meet the requirements set forth in HRS § 174C-49(a), which means that it:
   a. Can be accommodated with the available water source;
   b. Is a reasonable-beneficial use as defined in HRS § 174C-3;
   c. Will not interfere with any existing legal use of water;
   d. Is consistent with the public interest;
   e. Is consistent with State and County general plans and land use designations;
   f. Is consistent with County land use plans and policies; and
   g. Will not interfere with the rights of the Department of Hawaiian Home Lands as provided in section 221 of the Hawaiian Homes Commission Act and HRS § 174C-101(a).

4. The ground-water use here must not interfere with surface or other ground-water rights or reservations.

5. The ground-water use here must not interfere with interim or permanent instream flow standards. If it does, then:
   a. A separate water use permit for surface water must be obtained in the case an area is also designated as a surface water management area;
   b. The interim or permanent instream flow standard, as applicable, must be amended.

6. The water use authorized here is subject to the requirements of the Hawaiian Homes Commission Act, as amended, if applicable.

7. The water use permit application and submittal, as amended, approved by the Commission at its February 18, 2009 meeting are incorporated into this permit by reference.

8. Any modification of the permit terms, conditions, or uses may only be made with the express written consent of the Commission.

9. This permit may be modified by the Commission and the amount of water initially granted to the permittee may be reduced if the Commission determines it is necessary to:
   a. protect the water sources (quantity or quality);
   b. meet other legal obligations including other correlative rights;
   c. insure adequate conservation measures;
   d. require efficiency of water uses;
   e. reserve water for future uses, provided that all legal existing uses of water as of June, 1987 shall be protected;
   f. meet legal obligations to the Department of Hawaiian Home Lands, if applicable; or
   g. carry out such other necessary and proper exercise of the State's and the Commission's police powers under law as may be required.

Prior to any reduction, the Commission shall give notice of its proposed action to the permittee and provide the permittee an opportunity to be heard.

10. An approved flowmeter(s) must be installed to measure monthly withdrawals and a monthly record of withdrawals, salinity, temperature, and pumping times must be kept and reported to the Commission on Water Resource Management on forms provided by the Commission on a yearly basis (attached).
11. This permit shall be subject to the Commission's periodic review of the Kaluako'i Aquifer System's sustainable yield. The amount of water authorized by this permit may be reduced by the Commission if the sustainable yield of the Kaluako'i Aquifer System, or relevant modified aquifer(s), is reduced.

12. A permit may be transferred, in whole or in part, from the permittee to another, if:
   a. The conditions of use of the permit, including, but not limited to, place, quantity, and purpose of the use, remain the same; and
   b. The Commission is informed of the transfer within ninety days.

Failure to inform the department of the transfer invalidates the transfer and constitutes a ground for revocation of the permit. A transfer, which involves a change in any condition of the permit, including a change in use covered in HRS § 174C-57, is also invalid and constitutes a ground for revocation.

13. The use(s) authorized by law and by this permit do not constitute ownership rights.

14. The permittee shall request modification of the permit as necessary to comply with all applicable laws, rules, and ordinances that will affect the permittee's water use.

15. The permittee understands that under HRS § 174C-58(4), that partial or total nonuse, for reasons other than conservation, of the water allowed by this permit for a period of four (4) continuous years or more may result in a permanent revocation as to the amount of water not in use. The Commission and the permittee may enter into a written agreement that, for reasons satisfactory to the Commission, any period of nonuse may not apply towards the four-year period. Any period of nonuse which is caused by a declaration of water shortage pursuant to section HRS § 174C-62 shall not apply towards the four-year period of forfeiture.

16. The permittee shall prepare and submit a water shortage plan within 30 days of the issuance of this permit as required by HAR § 13-171-42(c). The permittee's water shortage plan shall identify what the permittee is willing to do should the Commission declare a water shortage in the Kaluako'i Ground-Water Management Area.

17. The water use permit shall be subject to the Commission's establishment of instream standards and policies relating to the Stream Protection and Management (SPAM) program, as well as legislative mandates to protect stream resources.

18. The permittee understands that any willful violation of any of the above conditions or any provisions of HRS § 174C or HAR § 13-171 may result in the suspension or revocation of this permit.

19. Special conditions in the attached cover transmittal letter are incorporated herein by reference.

Attachment

c: Pierluigi Zappacosta
February 4, 2009

Ms. Laura H. Thielen, Chairperson
State of Hawaii
Department of Land and Natural Resources
Commission on Water Resource Management
P.O. Box 621
Honolulu, Hawaii 96809

Dear Ms. Thielen:

RE: Notice of an Application for a Water Use Permit (WUPA No. 869)
For Zappacosta Tellos, LP, Papohaku-Zappacosta Well (Well No. 0916-01)
Tax Map Key (2) 5-1-008:049
Kaluakoi Ground Water Management Area, Molokai

Thank you for the opportunity to comment on this application.

The Water Use Permit Application (WUPA) does not conflict or interfere with the Department of Water Supply’s programs, plans and objectives. The Department has no objection to the Zappacosta Tellos, LP WUPA in the amount requested, 0.008 million gallons per day.

However, the Department has several concerns for existing, as well as, proposed private wells. These concerns include:

1. The maintenance and operation of these wells.
2. The creation of multiple conduits for contamination of ground water resources.
3. The non-reporting of water use and the status of existing wells.
4. The difficulty in tracking the existing wells.

In order to protect the ground water resources, DWS recommends that the applicant adopt best management practices for well construction/pump installation to prevent

"By Water All Things Find Life"

The Department of Water Supply is an Equal Opportunity provider and employer. To file a complaint of discrimination, write: USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 14th and Independence Avenue, SW, Washington DC 20250-9410. Or call (202) 720-5964 (voice and TDD)

Printed on recycled paper
contamination during the construction, as well as, maintenance of the well. These practices include:

1. Inspect exposed parts of the well periodically for problems such as cracked or corroded well casing, broken or missing well cap, damaged protective casing and settling or cracking of surface seals.
2. Slope the area around the well so that surface runoff drains away from the well.
3. Provide a well cap or sanitary seal to prevent unauthorized use of or entry into the well.
4. Provide for sediment removal or well cleaning as necessary.
5. Have the well tested at least once a year for fecal coliform or other constituents of concern.
6. Avoid mixing or using pesticides, fertilizers, herbicides, degreasers, fuels or other pollutants near the well.
7. Do not locate any type of potentially polluting activity up slope from the well.
8. Keep accurate records of any well maintenance, such as, disinfection or sediment removal, that require the use of chemicals in the well.

Should you have any questions, please contact our Water Resources & Planning Division at 808-244-8550.

Sincerely,

JEFFREY K. ENG
Director

DWS Engineering Division
Jane E. Lovell, Deputy Corporation Counsel
Edward S. Kushi, Jr., Deputy Corporation Counsel
**COMMISSION ON WATER RESOURCE MANAGEMENT**

FROM: **ROY**

TO: **CHENG, C.**
**CHING, F.**
**CHONG, R.**
**DANBARA, S.**
**ENGLAND, D.**
**FUJII, N.**
**HARDY, R.**
**HOAGBIN, S.**
**ICE, C.**
**IMATA, R.**
**KAWAHARA, K.**
**KIMURA, J.**

DATE: **FEB 20 2009**

INIT. TO: **KUNIMURA, I.**
**MILLS, D.**
**OHYE, L.**
**OHYE, M.**
**OSHIRO, K.**
**SAKODA, E.**
**SWANSON, S.**
**TORRES, R.**
**UYENO, D.**
**YODA, K.**
**YOSHINAGA, M.**

INIT: **FOR:** **PLEASE:**

Approval  Signature  See Me
Information  Review & Comment  Take Action

Type Draft  Type Final  File

Xerox ___ copies

---

* Does OHA understand sole source aquifer limitations (100%)?

emails granta@cha.org about brackish deafling vs "sole source"
February 10, 2009

Ken Kawahara
Commission on Water Resource Management
P.O. Box 621
Honolulu, Hawai‘i 96809

RE: Request for comments on the Kaluako‘i ground water management area,
Commission on Water Resource Management (CWRM) water use permit
application, Moloka‘i.

Aloha e Ken Kawahara,

The Office of Hawaiian Affairs (OHA) is in receipt of the above-mentioned letter dated January 6, 2009. OHA has reviewed the project and offers the following comments.

As the Commission knows, Moloka‘i has been designated a sole source aquifer. Water has also been a perennial concern on this island. Moloka‘i has been known as the breadbasket of Hawai‘i and is famous for its agricultural products. Furthermore, many of our beneficiaries are not only farmers, but are also dependent upon it. Water, its use and its infrastructure are always hot issues on Moloka‘i. In short, water matters everywhere but on Moloka‘i the people are even more cautious about it.

OHA expresses concern over the proposed use of this resource in this area. We note that the applicant intends to have a substantial main house in addition to a guest house on this ocean front lot in this undeveloped area. We see that the proposed use of this resource is for agriculture and irrigation; however, merely planting a few fruit trees will not obfuscate the fact that this is not an agricultural endeavor. This is for a luxury home.

OHA realizes that water use permits are granted based on reasonable usage and in consideration of maximum-beneficial use. CWRM is the agency responsible for administering the state water code. Under the code, all waters in the state are held in trust for the benefit of the citizens of the state; therefore, all water use is subject to legally protected water rights. OHA
stresses that waters of the state used in agricultural zoned parcels must be used in order to support agriculture. The proposed use is not of the maximum-beneficial use of this scarce resource on this island. OHA also urges that it is not reasonable.

We are also concerned regarding the County of Maui Ordinance No. 3502 which requires that a long-term reliable supply of water be verified. Stating where the water will be stored and come from is not equitable to verifying a long-term reliable source of water for the project. The spirit of this law becomes particularly important in instances such as this when there is a single source aquifer with multiple proposals for limited water resources in the same area. OHA seeks clarification regarding the water source and water availability as seen cumulatively for this area as a whole.

Of additional import it the fact that this is a water management area. CWRM gave this area this designation because it has been determined that the water resources in this area are threatened by existing or proposed withdraws or uses of water. OHA is to ensure reasonable-beneficial use of the water resources in this area for the public interest.

OHA also points out that the public trust doctrine also creates a burden for those who want to use a public trust resource. As such, applicants must demonstrate that their use will not significantly harm the resource, or if it will harm it, that the proposed use is consistent with the purposes of the trust.

The state’s responsibility as that of a trustee of this public trust means that agencies of the state (such as OHA and CWRM) must act with the diligence and care of a fiduciary in assuring that “those bona fide trust purposes such as ... ‘traditional and customary Hawaiian rights’” are protected when deciding what constitutes a “maximum beneficial use.” Additionally, the Hawai‘i Constitution article XII, section 7 “places an affirmative duty on the State and its agencies to preserve and protect traditional and customary native Hawaiian rights, and confers upon the State and its agencies the power to protect these rights and to prevent any interference with the exercise of these rights.”

The State Water Code also further requires that: “adequate provision shall be made for the protection of traditional and customary Hawaiian rights.” Therefore, OHA urges that the water rights of our beneficiaries must not be abridged or denied nor shall the reserves of water set aside for Hawaiian Home Lands be diminished by this proposed project alone or in combination with other proposed projects in the area.

---

1 Hawaii Revised Statues (HRS) section 174C-41.
2 Ibid.
3 Waiahole, 94 Haw. at 137, 9 P.3d at 146.
5 See, HRS section 174C-2.
6 See, HRS section 174C-101.
OHA is also concerned because of the potential effects on Native Hawaiians’ subsistence gathering because of potential reductions in groundwater seeps and natural springs that feed lo‘i and other culturally significant crops; fish, mollusks, limu and other stream, estuarine and marine species; and additional natural resources traditionally and customarily gathered for subsistence, religious and cultural purposes.

Thank you for the opportunity to comment. If you have further questions, please contact Grant Arnold by phone at (808) 594-0263 or e-mail him at granta@oha.org.

‘O wau iho nō me ka ‘oia‘i‘o,

Clyde W. Nāmu‘o
Administrator

C: OHA Moloka‘i CRC
Pierluigi Zappacosta
APPLICATION FOR WATER USE PERMIT No. 869,
WELL CONSTRUCTION AND PUMP INSTALLATION PERMITS
Papohaku-Zappacosta Saltwater Well (Well No. 0916-01), TMK 5-1-008:049
New (Agricultural) Use for 0.008 mgd
Kaluakoi Ground Water Management Area, Molokai

APPLICANT:
Luigi Manera
P.O. Box 1718
Kaunakakai, HI 96748

LANDOWNER:
Pierluigi Zappacosta
98 Faxon Road
Atherton, CA 94027-4046

SUMMARY OF REQUEST:
The applicant requests that the Commission on Water Resource Management (Commission) approve a water use permit for an allocation of 8,460 gallons per day, or 0.008 million gallons per day (mgd) of brackish basal ground water from a new well to desalt and supply 3.5 acres of fruit tree irrigation, as well the incidental maintenance of a covered saltwater swimming pool (one-time fill of 9,200 gallons plus 150 gpd to replace evaporation)

LOCATION MAP: See Exhibit 1

BACKGROUND:
November 20, 2008 The Commission received a completed Well Construction/ Pump Installation Permit Application. Staff acknowledgement noted the requirement for a water use permit prior to issuing a pump installation permit and encouraged the applicant to submit it simultaneously.
November 25, 2008  The applicant returned with a water use permit application, which required some additional information to be acknowledged as complete as of December 4, 2008, initiating a public notice.

January 7 & 14, 2009  Public Notice was issued in the Maui News.

January 29, 2009  The public review period for the water use permit closed with some comments and questions but no objections. Staff was directed by the applicant to proceed to a submittal for the Commission on both the well construction/pump installation permit application and the water use permit application.

ANALYSIS/ISSUES:

Section 174C-49(a) of the State Water Code establishes seven (7) criteria that must be met to obtain a water use permit. An analysis of the proposed permit in relation to these criteria follows:

(1)  Water availability

Through the Hawaii Water Plan, the Commission has adopted 2 mgd as the sustainable yield for the Kaluakoi Aquifer System, consisting only in non-potable brackish water. Individual existing water use permits in this aquifer system are shown in Exhibit 2. A summary of the current ground water conditions in the aquifer is provided in Table 1:

<table>
<thead>
<tr>
<th>ITEM</th>
<th>Kaluakoi Aquifer System (mgd)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sustainable Yield</td>
<td>2</td>
</tr>
<tr>
<td>Less: Other Existing Water Use Permits (shown in Exhibit 2)</td>
<td>0</td>
</tr>
<tr>
<td>Reservation to DHHL</td>
<td>0</td>
</tr>
<tr>
<td>Subtotal (Current Available Allocation)</td>
<td>2</td>
</tr>
<tr>
<td>Less: Other Completed Applications (shown in Exhibit 3)</td>
<td>0</td>
</tr>
<tr>
<td>Less: This Application</td>
<td>0.008</td>
</tr>
<tr>
<td>Subtotal (Potential Available Allocation/Allocation Deficit)</td>
<td>1.992</td>
</tr>
</tbody>
</table>

Therefore, the resource availability can accommodate this application request.
The 2000 Legislature amended the Water Code to include a new section, §174C-51.5 HRS that provides the Commission with the authority to require dual line (potable and non-potable) water supply systems in new industrial and commercial developments located in designated water management areas. In this case, the applicant does not have potable water service and is proposing to install only a single non-potable system. Therefore, this provision does not need to be invoked.

(3) **Interference with other existing legal uses**

There are no other wells currently in use within 1 mile of this source which use water. Pump test data for this well are not yet available, as the well has yet to be permitted, drilled, and pump tested.

(4) **Public interest**

Public interest is defined under §174C-2 - Declaration of policy, as follows:

"(c) The state water code shall be liberally interpreted to obtain maximum beneficial use of the waters of the State for purposes such as domestic uses, aquaculture uses, irrigation and other agricultural uses, power development, and commercial and industrial uses. However, adequate provision shall be made for the protection of traditional and customary Hawaiian rights, the protection and procreation of fish and wildlife, the maintenance of proper ecological balance and scenic beauty, and the preservation and enhancement of waters of the State for municipal uses, public recreation, public water supply, agriculture, and navigation. Such objectives are declared to be in the public interest."

There have been public questions on this application (other than state & county general plans and land use designation comments noted in criteria (5)), expressing an interest in the desalting process and whether the applicant would be willing to share the information. The applicant has been asked to provide responses to these questions, and he has indicated he will provide written testimony to the Commission and possibly to be present at the meeting.

There have been no objections. As there are no freshwater sources in this part of the island other than the brackish ground water lens, drawing brackish water from the aquifer is not expected to impact environmental concerns. The well and agricultural operations do not seem to impact public activities.

Therefore, this application meets the public interest.

(5) **State & county general plans and land use designations**

The proposed uses are in the State Agriculture District, and the county zoning is Agriculture. Therefore, the proposed use is consistent with these land use designations.

Normal agency review includes:
RECOMMENDATION:

Staff recommends that the Commission approve the issuance of Water Use Permit No. 869 to Pierluigi Zappacosta for the reasonable and beneficial use of 8,460 gallons per day of brackish basal ground water for agricultural irrigation from the Papohaku-Zappacosta Well (Well No. 0916-01), subject to the standard water use permit conditions listed in Attachment B and the following special conditions:

1. The applicant shall obtain appropriate approval for the disposal of desalting waste stream brine from the Department of Health, and meet the Division of Aquatics approval for any described impacts on the nearshore environment, prior to using any water from a desalting process.

2. In the event that the tax map key at the location of the water use is changed, the permittee shall notify the Commission in writing of the tax map key change within thirty (30) days after the permittee receives notice of the tax map key change.

Respectfully submitted,

KEN C. KAWAHARA, P.E.
Deputy Director

Attachment(s):  A (Water Use Permit Detailed Information)
                B (Water Use Permit Standard Conditions)
                C (Well Construction Permit Standard Conditions)
                D (Pump Installation Permit Standard Conditions)

Exhibit(s):  1 (Location Map)

APPROVED FOR SUBMITTAL:

LAURA H. THIELEN
Chairperson
imansys_out.txt

<table>
<thead>
<tr>
<th>DR</th>
<th>0.0</th>
<th>1.4</th>
<th>1.8</th>
<th>0.38</th>
<th>2.0</th>
<th>0.0</th>
<th>0.0</th>
<th>0.78</th>
<th>1.4</th>
<th>1.7</th>
<th>1.7</th>
<th>1.7</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1.5</td>
<td>1.8</td>
<td>0.38</td>
<td>2.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.78</td>
<td>1.5</td>
<td>1.7</td>
<td>1.7</td>
<td>1.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.3</td>
<td>1.7</td>
<td>0.51</td>
<td>2.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.82</td>
<td>1.4</td>
<td>1.7</td>
<td>1.7</td>
<td>1.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.5</td>
<td>1.8</td>
<td>0.42</td>
<td>1.9</td>
<td>0.0</td>
<td>0.0</td>
<td>0.73</td>
<td>1.5</td>
<td>1.7</td>
<td>1.7</td>
<td>1.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.3</td>
<td>1.4</td>
<td>0.45</td>
<td>1.9</td>
<td>0.0</td>
<td>0.0</td>
<td>0.82</td>
<td>1.3</td>
<td>1.7</td>
<td>1.7</td>
<td>1.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.2</td>
<td>1.0</td>
<td>0.56</td>
<td>1.9</td>
<td>0.0</td>
<td>0.0</td>
<td>0.78</td>
<td>1.2</td>
<td>1.6</td>
<td>1.6</td>
<td>1.6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.1</td>
<td>1.0</td>
<td>0.62</td>
<td>1.9</td>
<td>0.0</td>
<td>0.0</td>
<td>0.79</td>
<td>1.2</td>
<td>1.6</td>
<td>1.6</td>
<td>1.6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.1</td>
<td>1.0</td>
<td>0.52</td>
<td>1.8</td>
<td>0.0</td>
<td>0.0</td>
<td>0.79</td>
<td>1.2</td>
<td>1.6</td>
<td>1.6</td>
<td>1.6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.5</td>
<td>1.8</td>
<td>0.38</td>
<td>1.9</td>
<td>0.0</td>
<td>0.0</td>
<td>0.61</td>
<td>1.6</td>
<td>1.8</td>
<td>1.8</td>
<td>1.8</td>
</tr>
</tbody>
</table>

*******************************************************
* SUMMARY * *******************************************************
SOILS: Holomua(0.186), Very stony land, eroded, eroded(0.814)

ANNUAL IRRIGATION REQUIREMENT (INCHES)

<table>
<thead>
<tr>
<th>WATER BUDGET COMPONENTS</th>
<th>NIR</th>
<th>GIR</th>
<th>GAL_A</th>
<th>G_RAIN</th>
<th>N_RAIN</th>
<th>ER</th>
<th>ER21</th>
<th>RO</th>
<th>INT</th>
<th>ETo</th>
<th>ET</th>
</tr>
</thead>
<tbody>
<tr>
<td>DR</td>
<td>0.0</td>
<td>76.2</td>
<td>89.6</td>
<td>2433.2</td>
<td>15.4</td>
<td>11.1</td>
<td>11.1</td>
<td>28.4</td>
<td>1.2</td>
<td>3.1</td>
<td>96.1</td>
</tr>
</tbody>
</table>

GIR STATISTICS (w/ L4 = G)

<table>
<thead>
<tr>
<th>MEAN MED. XMAX XMIN 50% 80% 90% 95%</th>
</tr>
</thead>
<tbody>
<tr>
<td>89.6 91.2 98.3 79.5 90.2 94.1 95.8 97.1</td>
</tr>
</tbody>
</table>

NIR STATISTICS

<table>
<thead>
<tr>
<th>MEAN MED. XMAX XMIN 50% 80% 90% 95%</th>
</tr>
</thead>
<tbody>
<tr>
<td>76.2 77.5 83.5 67.6 76.6 80.0 81.5 82.6</td>
</tr>
</tbody>
</table>

MONTHLY IRRIGATION REQUIREMENT (INCHES)

<table>
<thead>
<tr>
<th>ET DR</th>
<th>0.0</th>
<th>1.4</th>
<th>5.2</th>
<th>141.7</th>
<th>2.5</th>
<th>1.9</th>
<th>1.9</th>
<th>4.4</th>
<th>0.2</th>
<th>0.4</th>
<th>6.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.2</td>
<td>0.0</td>
<td>2.4</td>
<td>5.6</td>
<td>151.1</td>
<td>1.9</td>
<td>1.5</td>
<td>1.5</td>
<td>3.6</td>
<td>0.1</td>
<td>0.4</td>
<td>6.3</td>
</tr>
<tr>
<td>6.3</td>
<td>0.0</td>
<td>3.5</td>
<td>7.0</td>
<td>189.5</td>
<td>2.4</td>
<td>1.8</td>
<td>1.8</td>
<td>4.6</td>
<td>0.2</td>
<td>0.3</td>
<td>7.8</td>
</tr>
<tr>
<td>7.8</td>
<td>0.0</td>
<td>4.7</td>
<td>8.2</td>
<td>222.5</td>
<td>1.3</td>
<td>0.9</td>
<td>0.9</td>
<td>2.8</td>
<td>0.1</td>
<td>0.3</td>
<td>8.1</td>
</tr>
<tr>
<td>8.0</td>
<td>0.0</td>
<td>5.7</td>
<td>9.2</td>
<td>249.8</td>
<td>0.6</td>
<td>0.4</td>
<td>0.4</td>
<td>1.4</td>
<td>0.0</td>
<td>0.2</td>
<td>8.9</td>
</tr>
<tr>
<td>8.4</td>
<td>0.0</td>
<td>6.5</td>
<td>9.6</td>
<td>259.4</td>
<td>0.3</td>
<td>0.2</td>
<td>0.2</td>
<td>0.4</td>
<td>0.0</td>
<td>0.1</td>
<td>9.2</td>
</tr>
<tr>
<td>8.3</td>
<td>0.0</td>
<td>7.8</td>
<td>9.9</td>
<td>267.9</td>
<td>0.4</td>
<td>0.2</td>
<td>0.2</td>
<td>0.9</td>
<td>0.0</td>
<td>0.2</td>
<td>9.6</td>
</tr>
<tr>
<td>8.6</td>
<td>0.0</td>
<td>8.7</td>
<td>9.1</td>
<td>246.5</td>
<td>0.5</td>
<td>0.3</td>
<td>0.3</td>
<td>0.9</td>
<td>0.0</td>
<td>0.2</td>
<td>9.5</td>
</tr>
<tr>
<td>8.1</td>
<td>0.0</td>
<td>9.6</td>
<td>7.5</td>
<td>204.8</td>
<td>0.4</td>
<td>0.2</td>
<td>0.2</td>
<td>0.7</td>
<td>0.0</td>
<td>0.2</td>
<td>8.4</td>
</tr>
<tr>
<td>6.8</td>
<td>0.0</td>
<td>10.6</td>
<td>7.0</td>
<td>191.0</td>
<td>1.0</td>
<td>0.7</td>
<td>0.7</td>
<td>1.7</td>
<td>0.1</td>
<td>0.2</td>
<td>8.0</td>
</tr>
<tr>
<td>6.5</td>
<td>0.0</td>
<td>11.5</td>
<td>6.1</td>
<td>166.1</td>
<td>1.9</td>
<td>1.3</td>
<td>1.3</td>
<td>3.1</td>
<td>0.3</td>
<td>0.3</td>
<td>7.0</td>
</tr>
<tr>
<td>6.3</td>
<td>0.0</td>
<td>12.4</td>
<td>5.3</td>
<td>142.9</td>
<td>2.2</td>
<td>1.7</td>
<td>1.7</td>
<td>3.9</td>
<td>0.2</td>
<td>0.3</td>
<td>6.7</td>
</tr>
</tbody>
</table>
imansys_out.txt

************************************************************************************
********************
IRRIGATION MANAGEMENT SYSTEM
********************
************************************************************************************

*  DRZI/DZN = (INITIAL) ROOT ZONE DEPTH IRRIGATED (INCHES)
*  DRZT/DZX = (MAXIMUM) TOTAL ZONE DEPTH (INCHES)
*  KC/AKC = CROP WATER USE COEFFICIENTS
*  AWD/ALD = ALLOWABLE SOIL WATER DEPLETIONS
*  ETo  = POTENTIAL CROP EVAPOTRANSPIRATION (INCHES)
*  KC   = CROP COEFFICIENT
*  ET   = CROP EVAPOTRANSPIRATION (INCHES)
*  G_RAIN = GROSS RAINFALL (INCHES)
*  N_RAIN = NET RAINFALL (INCHES)
*  RO   = RUNOFF (INCHES)
*  INT  = INTERCEPTION (INCHES)
*  ER   = EFFECTIVE RAINFALL (INCHES)
*  ER21 = EFFECTIVE RAINFALL USING SCS TR21 METHOD (INCHES)
*  DR   = DRAINAGE (INCHES)
*  NIR  = NET IRRIGATION REQUIREMENT (INCHES)
*  GIR  = GROSS IRRIGATION REQUIREMENT (INCHES)
*  GAL_A = IRRIGATION REQUIREMENT (IN 1000 GALLON PER ACRE)

************************************************************************************

LOCATION = Papohaku-Zappacosta
CROP TYPE = GENERIC CROP (PERENNIAL)
ROOT ZONE DEPTH IRRIGATED (INCHES)  = 24.0
TOTAL CROP ROOT ZONE DEPTH (INCHES) = 48.0

<table>
<thead>
<tr>
<th>MONTH</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>KC</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>ALDP</td>
<td>0.50</td>
<td>0.50</td>
<td>0.50</td>
<td>0.50</td>
<td>0.50</td>
<td>0.50</td>
<td>0.50</td>
<td>0.50</td>
<td>0.50</td>
<td>0.50</td>
<td>0.50</td>
<td>0.50</td>
</tr>
</tbody>
</table>

IRRIGATION SEASON: TYPE = TRICKLE, DRIP
DESIGN APPLICATION EFFICIENCY = 85 %
FRACTION OF SOIL SURFACE IRRIGATED = 50 %
FRACTION EXTRACTED FROM IRRIGATED ZONE = 40 %

Page 1
IMANSYS_OUT.TXT

8.4 0.0 10  7.1  8.4  227.4  1.0  0.9  0.9  2.2  0.0  0.1  8.0
8.0 0.0 11  5.8  6.9  186.6  1.9  1.6  1.6  3.9  0.2  0.1  7.0
7.0 0.0 12  4.9  5.8  165.5  2.2  2.0  2.0  4.8  0.1  0.1  6.6
6.6 0.0

GIR STATISTICS

<table>
<thead>
<tr>
<th>MO</th>
<th>MEAN</th>
<th>MED.</th>
<th>CV</th>
<th>XMAX</th>
<th>XMIN</th>
<th>ZERO</th>
<th>RSQ</th>
<th>50%</th>
<th>80%</th>
<th>90%</th>
<th>95%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5.7</td>
<td>6.1</td>
<td>0.37</td>
<td>9.2</td>
<td>1.0</td>
<td>0.00</td>
<td>0.91</td>
<td>5.6</td>
<td>7.7</td>
<td>7.7</td>
<td>7.7</td>
</tr>
<tr>
<td>2</td>
<td>5.3</td>
<td>5.3</td>
<td>0.25</td>
<td>7.4</td>
<td>2.0</td>
<td>0.00</td>
<td>0.95</td>
<td>5.3</td>
<td>6.5</td>
<td>7.1</td>
<td>7.5</td>
</tr>
<tr>
<td>3</td>
<td>6.6</td>
<td>6.7</td>
<td>0.25</td>
<td>8.8</td>
<td>3.1</td>
<td>0.00</td>
<td>0.96</td>
<td>6.6</td>
<td>8.2</td>
<td>9.0</td>
<td>9.2</td>
</tr>
<tr>
<td>4</td>
<td>7.9</td>
<td>8.2</td>
<td>0.17</td>
<td>9.7</td>
<td>5.2</td>
<td>0.00</td>
<td>0.97</td>
<td>8.0</td>
<td>9.2</td>
<td>9.5</td>
<td>9.5</td>
</tr>
<tr>
<td>5</td>
<td>9.4</td>
<td>9.5</td>
<td>0.09</td>
<td>11.0</td>
<td>7.7</td>
<td>0.00</td>
<td>0.93</td>
<td>9.5</td>
<td>10.2</td>
<td>10.4</td>
<td>10.4</td>
</tr>
<tr>
<td>6</td>
<td>10.2</td>
<td>10.0</td>
<td>0.05</td>
<td>11.0</td>
<td>9.0</td>
<td>0.00</td>
<td>0.81</td>
<td>10.3</td>
<td>10.7</td>
<td>10.8</td>
<td>10.8</td>
</tr>
<tr>
<td>7</td>
<td>10.6</td>
<td>10.9</td>
<td>0.05</td>
<td>11.3</td>
<td>9.7</td>
<td>0.00</td>
<td>0.88</td>
<td>10.7</td>
<td>11.1</td>
<td>11.3</td>
<td>11.3</td>
</tr>
<tr>
<td>8</td>
<td>10.4</td>
<td>10.8</td>
<td>0.07</td>
<td>11.8</td>
<td>8.7</td>
<td>0.00</td>
<td>0.92</td>
<td>10.5</td>
<td>11.0</td>
<td>11.2</td>
<td>11.2</td>
</tr>
<tr>
<td>9</td>
<td>9.3</td>
<td>9.2</td>
<td>0.06</td>
<td>10.3</td>
<td>8.0</td>
<td>0.00</td>
<td>0.91</td>
<td>9.7</td>
<td>9.7</td>
<td>9.9</td>
<td>9.9</td>
</tr>
<tr>
<td>10</td>
<td>8.4</td>
<td>8.6</td>
<td>0.12</td>
<td>9.9</td>
<td>6.1</td>
<td>0.00</td>
<td>0.93</td>
<td>8.5</td>
<td>9.3</td>
<td>9.4</td>
<td>9.4</td>
</tr>
<tr>
<td>11</td>
<td>6.9</td>
<td>7.3</td>
<td>0.18</td>
<td>8.9</td>
<td>3.9</td>
<td>0.00</td>
<td>0.90</td>
<td>7.0</td>
<td>8.0</td>
<td>8.3</td>
<td>8.3</td>
</tr>
<tr>
<td>12</td>
<td>5.8</td>
<td>6.1</td>
<td>0.28</td>
<td>8.1</td>
<td>1.9</td>
<td>0.00</td>
<td>0.92</td>
<td>5.8</td>
<td>7.3</td>
<td>7.8</td>
<td>7.8</td>
</tr>
</tbody>
</table>

BI-WEEKLY GROSS IRRIGATION REQUIREMENT (INCHES)

<table>
<thead>
<tr>
<th>I2W</th>
<th>NIR</th>
<th>GIR</th>
<th>GAL_A</th>
<th>G_RAIN</th>
<th>N_RAIN</th>
<th>ER</th>
<th>RO</th>
<th>INT</th>
<th>ETo</th>
<th>ET</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0</td>
<td>1.0</td>
<td>3.1</td>
<td>82.9</td>
<td>1.0</td>
<td>0.9</td>
<td>0.9</td>
<td>0.0</td>
<td>0.0</td>
<td>2.9</td>
<td>2.9</td>
</tr>
<tr>
<td>0.0</td>
<td>1.0</td>
<td>2.5</td>
<td>68.4</td>
<td>1.1</td>
<td>1.0</td>
<td>1.0</td>
<td>0.1</td>
<td>0.0</td>
<td>2.9</td>
<td>2.9</td>
</tr>
<tr>
<td>0.0</td>
<td>1.0</td>
<td>2.2</td>
<td>58.4</td>
<td>1.1</td>
<td>1.0</td>
<td>1.0</td>
<td>0.1</td>
<td>0.0</td>
<td>3.1</td>
<td>3.1</td>
</tr>
<tr>
<td>0.0</td>
<td>1.0</td>
<td>2.7</td>
<td>72.2</td>
<td>1.0</td>
<td>0.9</td>
<td>0.9</td>
<td>0.0</td>
<td>0.0</td>
<td>3.2</td>
<td>3.2</td>
</tr>
<tr>
<td>0.0</td>
<td>1.0</td>
<td>2.7</td>
<td>74.1</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
<td>0.1</td>
<td>0.0</td>
<td>3.4</td>
<td>3.4</td>
</tr>
<tr>
<td>0.0</td>
<td>1.0</td>
<td>3.1</td>
<td>84.4</td>
<td>1.0</td>
<td>0.9</td>
<td>0.9</td>
<td>0.1</td>
<td>0.0</td>
<td>3.6</td>
<td>3.6</td>
</tr>
<tr>
<td>0.0</td>
<td>1.0</td>
<td>3.2</td>
<td>87.8</td>
<td>1.0</td>
<td>0.8</td>
<td>0.8</td>
<td>0.1</td>
<td>0.0</td>
<td>3.7</td>
<td>3.7</td>
</tr>
<tr>
<td>0.0</td>
<td>1.0</td>
<td>3.7</td>
<td>99.3</td>
<td>0.6</td>
<td>0.5</td>
<td>0.5</td>
<td>0.0</td>
<td>0.0</td>
<td>3.8</td>
<td>3.8</td>
</tr>
<tr>
<td>0.0</td>
<td>1.0</td>
<td>4.2</td>
<td>112.9</td>
<td>0.4</td>
<td>0.3</td>
<td>0.3</td>
<td>0.0</td>
<td>0.0</td>
<td>3.9</td>
<td>3.9</td>
</tr>
<tr>
<td>0.0</td>
<td>1.0</td>
<td>4.0</td>
<td>109.2</td>
<td>0.4</td>
<td>0.3</td>
<td>0.3</td>
<td>0.0</td>
<td>0.0</td>
<td>3.9</td>
<td>3.9</td>
</tr>
<tr>
<td>0.0</td>
<td>1.0</td>
<td>4.7</td>
<td>126.5</td>
<td>0.2</td>
<td>0.1</td>
<td>0.1</td>
<td>0.0</td>
<td>0.0</td>
<td>4.1</td>
<td>4.1</td>
</tr>
<tr>
<td>0.0</td>
<td>1.0</td>
<td>4.8</td>
<td>129.0</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.0</td>
<td>0.0</td>
<td>4.3</td>
<td>4.3</td>
</tr>
<tr>
<td>0.0</td>
<td>1.0</td>
<td>4.9</td>
<td>132.9</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.0</td>
<td>0.0</td>
<td>4.3</td>
<td>4.3</td>
</tr>
<tr>
<td>0.0</td>
<td>1.0</td>
<td>4.8</td>
<td>131.1</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
<td>0.0</td>
<td>0.0</td>
<td>4.3</td>
<td>4.3</td>
</tr>
<tr>
<td>0.0</td>
<td>1.0</td>
<td>4.7</td>
<td>126.6</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
<td>0.0</td>
<td>0.0</td>
<td>4.3</td>
<td>4.3</td>
</tr>
<tr>
<td>0.0</td>
<td>1.0</td>
<td>4.8</td>
<td>130.9</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
<td>0.0</td>
<td>0.0</td>
<td>4.3</td>
<td>4.3</td>
</tr>
<tr>
<td>0.0</td>
<td>1.0</td>
<td>4.6</td>
<td>125.3</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
<td>0.0</td>
<td>0.0</td>
<td>4.3</td>
<td>4.3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>0.8</td>
<td>1.0</td>
<td>25.9</td>
<td>0.6</td>
<td>0.5</td>
<td>0.5</td>
<td>0.0</td>
<td>0.0</td>
<td>1.5</td>
<td>1.5</td>
</tr>
<tr>
<td>6</td>
<td>1.0</td>
<td>1.2</td>
<td>32.5</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
<td>0.1</td>
<td>0.0</td>
<td>1.5</td>
<td>1.5</td>
</tr>
<tr>
<td>7</td>
<td>1.2</td>
<td>1.4</td>
<td>38.0</td>
<td>0.4</td>
<td>0.4</td>
<td>0.4</td>
<td>0.0</td>
<td>0.0</td>
<td>1.6</td>
<td>1.6</td>
</tr>
<tr>
<td>8</td>
<td>1.1</td>
<td>1.3</td>
<td>34.3</td>
<td>0.6</td>
<td>0.5</td>
<td>0.5</td>
<td>0.0</td>
<td>0.0</td>
<td>1.6</td>
<td>1.6</td>
</tr>
<tr>
<td>9</td>
<td>1.2</td>
<td>1.5</td>
<td>39.7</td>
<td>0.5</td>
<td>0.4</td>
<td>0.4</td>
<td>0.0</td>
<td>0.0</td>
<td>1.7</td>
<td>1.7</td>
</tr>
<tr>
<td>10</td>
<td>1.1</td>
<td>1.3</td>
<td>34.4</td>
<td>0.6</td>
<td>0.5</td>
<td>0.5</td>
<td>0.0</td>
<td>0.0</td>
<td>1.7</td>
<td>1.7</td>
</tr>
<tr>
<td>11</td>
<td>1.4</td>
<td>1.6</td>
<td>44.8</td>
<td>0.6</td>
<td>0.5</td>
<td>0.5</td>
<td>0.1</td>
<td>0.0</td>
<td>1.8</td>
<td>1.8</td>
</tr>
<tr>
<td>12</td>
<td>1.2</td>
<td>1.5</td>
<td>39.6</td>
<td>0.4</td>
<td>0.4</td>
<td>0.4</td>
<td>0.0</td>
<td>0.0</td>
<td>1.8</td>
<td>1.8</td>
</tr>
<tr>
<td>13</td>
<td>1.3</td>
<td>1.6</td>
<td>42.9</td>
<td>0.5</td>
<td>0.4</td>
<td>0.4</td>
<td>0.1</td>
<td>0.0</td>
<td>1.8</td>
<td>1.8</td>
</tr>
<tr>
<td>14</td>
<td>1.4</td>
<td>1.7</td>
<td>44.9</td>
<td>0.5</td>
<td>0.4</td>
<td>0.4</td>
<td>0.1</td>
<td>0.0</td>
<td>1.9</td>
<td>1.9</td>
</tr>
<tr>
<td>15</td>
<td>1.7</td>
<td>2.0</td>
<td>54.2</td>
<td>0.3</td>
<td>0.2</td>
<td>0.2</td>
<td>0.0</td>
<td>0.0</td>
<td>1.9</td>
<td>1.9</td>
</tr>
<tr>
<td>16</td>
<td>1.4</td>
<td>1.7</td>
<td>45.1</td>
<td>0.3</td>
<td>0.3</td>
<td>0.3</td>
<td>0.0</td>
<td>0.0</td>
<td>1.9</td>
<td>1.9</td>
</tr>
<tr>
<td>17</td>
<td>1.7</td>
<td>2.0</td>
<td>53.6</td>
<td>0.2</td>
<td>0.1</td>
<td>0.1</td>
<td>0.0</td>
<td>0.0</td>
<td>1.9</td>
<td>1.9</td>
</tr>
<tr>
<td>18</td>
<td>1.9</td>
<td>2.2</td>
<td>59.3</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
<td>0.0</td>
<td>0.0</td>
<td>2.0</td>
<td>2.0</td>
</tr>
<tr>
<td>19</td>
<td>1.8</td>
<td>2.1</td>
<td>57.6</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.0</td>
<td>0.0</td>
<td>2.0</td>
<td>2.0</td>
</tr>
<tr>
<td>20</td>
<td>1.6</td>
<td>1.9</td>
<td>51.5</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
<td>0.0</td>
<td>0.0</td>
<td>2.0</td>
<td>2.0</td>
</tr>
<tr>
<td>21</td>
<td>1.9</td>
<td>2.3</td>
<td>61.9</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.0</td>
<td>0.0</td>
<td>2.0</td>
<td>2.0</td>
</tr>
<tr>
<td>22</td>
<td>2.0</td>
<td>2.4</td>
<td>64.6</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.0</td>
<td>0.0</td>
<td>2.1</td>
<td>2.1</td>
</tr>
<tr>
<td>23</td>
<td>2.1</td>
<td>2.4</td>
<td>65.7</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.0</td>
<td>0.0</td>
<td>2.1</td>
<td>2.1</td>
</tr>
<tr>
<td>24</td>
<td>2.0</td>
<td>2.3</td>
<td>63.3</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.0</td>
<td>0.0</td>
<td>2.2</td>
<td>2.2</td>
</tr>
<tr>
<td>25</td>
<td>2.1</td>
<td>2.5</td>
<td>67.8</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>2.2</td>
<td>2.2</td>
</tr>
<tr>
<td>26</td>
<td>2.0</td>
<td>2.4</td>
<td>65.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.0</td>
<td>0.0</td>
<td>2.2</td>
<td>2.2</td>
</tr>
<tr>
<td>27</td>
<td>2.0</td>
<td>2.3</td>
<td>63.3</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.0</td>
<td>0.0</td>
<td>2.2</td>
<td>2.2</td>
</tr>
<tr>
<td>28</td>
<td>2.1</td>
<td>2.5</td>
<td>67.8</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.0</td>
<td>0.0</td>
<td>2.2</td>
<td>2.2</td>
</tr>
<tr>
<td>29</td>
<td>2.0</td>
<td>2.3</td>
<td>62.6</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.0</td>
<td>0.0</td>
<td>2.2</td>
<td>2.2</td>
</tr>
<tr>
<td>30</td>
<td>2.0</td>
<td>2.4</td>
<td>63.9</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.0</td>
<td>0.0</td>
<td>2.2</td>
<td>2.2</td>
</tr>
<tr>
<td>31</td>
<td>1.9</td>
<td>2.2</td>
<td>59.4</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.0</td>
<td>0.0</td>
<td>2.2</td>
<td>2.2</td>
</tr>
<tr>
<td>32</td>
<td>2.2</td>
<td>2.6</td>
<td>71.5</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.0</td>
<td>0.0</td>
<td>2.2</td>
<td>2.2</td>
</tr>
<tr>
<td>33</td>
<td>1.9</td>
<td>2.3</td>
<td>61.8</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.0</td>
<td>0.0</td>
<td>2.2</td>
<td>2.2</td>
</tr>
<tr>
<td>34</td>
<td>2.0</td>
<td>2.3</td>
<td>63.4</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.0</td>
<td>0.0</td>
<td>2.1</td>
<td>2.1</td>
</tr>
<tr>
<td>35</td>
<td>2.0</td>
<td>2.3</td>
<td>62.6</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.0</td>
<td>0.0</td>
<td>2.1</td>
<td>2.1</td>
</tr>
</tbody>
</table>
CROP TYPE = GENERIC CROP (PERENNIAL)

ROOT ZONE DEPTH IRRIGATED (INCHES) = 24.0  
TOTAL CROP ROOT ZONE DEPTH (INCHES)= 48.0

MONTH

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>KC=</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>ALDP=</td>
<td>0.50</td>
<td>0.50</td>
<td>0.50</td>
<td>0.50</td>
<td>0.50</td>
<td>0.50</td>
<td>0.50</td>
<td>0.50</td>
<td>0.50</td>
<td>0.50</td>
<td>0.50</td>
</tr>
</tbody>
</table>

IRRIGATION SEASON = 1-1 TO 12-31  
LENGTH = 365 DAYS

IRRIGATION SYSTEM : TYPE = TRICKLE, DRIP  
DESIGN APPLICATION EFFICIENCY = 85 %  
FRACTION OF SOIL SURFACE IRRIGATED = 50 %  
FRACTION EXTRACTED FROM IRRIGATED ZONE = 40 %

NORMAL IRRIGATION: SOIL WILL BE IRRIGATED TO FIELD CAPACITY AT EACH IRRIGATION

CLIMATE DATA BASE: LOCATION = kuala 1957 and 64 are incomplete  
LENGTH = 26 YEARS (1950~1977)

NO. OF BLANK RAIN: 1623  
NO. OF BLANK ET: 0

NO. OF MISSING DAYS (FILLED WITH AVERAGE VALUES): 0  
APPLIED RATIOS: 0.4588(RAIN), 1.0211(ET)

SCS CURVE NUMBER = 78  
MAX LAI = 1.000

GROSS RAINFALL IS USED FOR SCS TR21 EFFECTIVE RAINFALL CALCULATION

SOIL : SERIES = Very stony land, eroded, eroded  
TEXTURE = XST-SICL

XST-SICL BDRK  
SOIL LAYER DEPTHS (INCHES) AND WATER CONTENTS  
DEPTH(I)= 10 30 40

Page 7
<table>
<thead>
<tr>
<th>DR</th>
<th>I2W</th>
<th>NIR</th>
<th>GIR</th>
<th>GAL_A</th>
<th>G_RAIN</th>
<th>N_RAIN</th>
<th>ER</th>
<th>RO</th>
<th>INT</th>
<th>Eto</th>
<th>ET</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0</td>
<td>1</td>
<td>3.9</td>
<td>4.5</td>
<td>123.6</td>
<td>1.0</td>
<td>0.9</td>
<td>0.0</td>
<td>0.0</td>
<td>2.9</td>
<td>2.9</td>
<td></td>
</tr>
<tr>
<td>0.0</td>
<td>2</td>
<td>1.9</td>
<td>2.3</td>
<td>61.9</td>
<td>1.1</td>
<td>1.0</td>
<td>1.0</td>
<td>0.1</td>
<td>2.9</td>
<td>2.9</td>
<td></td>
</tr>
<tr>
<td>0.0</td>
<td>3</td>
<td>2.1</td>
<td>2.4</td>
<td>65.7</td>
<td>1.1</td>
<td>1.0</td>
<td>1.0</td>
<td>0.1</td>
<td>3.1</td>
<td>3.1</td>
<td></td>
</tr>
<tr>
<td>0.0</td>
<td>4</td>
<td>2.3</td>
<td>2.7</td>
<td>72.1</td>
<td>1.0</td>
<td>0.9</td>
<td>0.9</td>
<td>0.0</td>
<td>3.2</td>
<td>3.2</td>
<td></td>
</tr>
<tr>
<td>0.0</td>
<td>5</td>
<td>2.3</td>
<td>2.8</td>
<td>74.7</td>
<td>1.0</td>
<td>1.0</td>
<td>0.9</td>
<td>0.1</td>
<td>3.4</td>
<td>3.4</td>
<td></td>
</tr>
<tr>
<td>0.0</td>
<td>6</td>
<td>2.6</td>
<td>3.1</td>
<td>83.9</td>
<td>1.0</td>
<td>0.9</td>
<td>0.9</td>
<td>0.1</td>
<td>3.6</td>
<td>3.6</td>
<td></td>
</tr>
<tr>
<td>0.0</td>
<td>7</td>
<td>2.7</td>
<td>3.2</td>
<td>86.6</td>
<td>1.0</td>
<td>0.8</td>
<td>0.8</td>
<td>0.1</td>
<td>3.7</td>
<td>3.7</td>
<td></td>
</tr>
<tr>
<td>0.0</td>
<td>8</td>
<td>3.2</td>
<td>3.8</td>
<td>102.3</td>
<td>0.6</td>
<td>0.5</td>
<td>0.5</td>
<td>0.0</td>
<td>3.8</td>
<td>3.8</td>
<td></td>
</tr>
<tr>
<td>0.0</td>
<td>9</td>
<td>3.4</td>
<td>4.0</td>
<td>107.6</td>
<td>0.4</td>
<td>0.3</td>
<td>0.3</td>
<td>0.0</td>
<td>3.9</td>
<td>3.9</td>
<td></td>
</tr>
<tr>
<td>0.0</td>
<td>10</td>
<td>3.4</td>
<td>4.0</td>
<td>109.3</td>
<td>0.4</td>
<td>0.3</td>
<td>0.3</td>
<td>0.0</td>
<td>3.9</td>
<td>3.9</td>
<td></td>
</tr>
<tr>
<td>0.0</td>
<td>11</td>
<td>3.8</td>
<td>4.4</td>
<td>120.8</td>
<td>0.2</td>
<td>0.1</td>
<td>0.1</td>
<td>0.0</td>
<td>4.1</td>
<td>4.1</td>
<td></td>
</tr>
<tr>
<td>0.0</td>
<td>12</td>
<td>4.0</td>
<td>4.7</td>
<td>128.8</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.0</td>
<td>4.3</td>
<td>4.3</td>
<td></td>
</tr>
<tr>
<td>0.0</td>
<td>13</td>
<td>4.0</td>
<td>4.7</td>
<td>127.6</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.0</td>
<td>4.3</td>
<td>4.3</td>
<td></td>
</tr>
<tr>
<td>0.0</td>
<td>14</td>
<td>3.9</td>
<td>4.6</td>
<td>123.7</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
<td>0.0</td>
<td>4.3</td>
<td>4.3</td>
<td></td>
</tr>
<tr>
<td>0.0</td>
<td>15</td>
<td>4.0</td>
<td>4.7</td>
<td>128.9</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
<td>0.0</td>
<td>4.3</td>
<td>4.3</td>
<td></td>
</tr>
<tr>
<td>0.0</td>
<td>16</td>
<td>3.9</td>
<td>4.6</td>
<td>125.6</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
<td>0.0</td>
<td>4.3</td>
<td>4.3</td>
<td></td>
</tr>
<tr>
<td>0.0</td>
<td>17</td>
<td>3.9</td>
<td>4.6</td>
<td>125.2</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
<td>0.0</td>
<td>4.3</td>
<td>4.3</td>
<td></td>
</tr>
<tr>
<td>0.0</td>
<td>18</td>
<td>3.8</td>
<td>4.5</td>
<td>122.5</td>
<td>0.2</td>
<td>0.1</td>
<td>0.1</td>
<td>0.0</td>
<td>4.1</td>
<td>4.1</td>
<td></td>
</tr>
<tr>
<td>0.0</td>
<td>19</td>
<td>3.7</td>
<td>4.4</td>
<td>118.8</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.0</td>
<td>3.9</td>
<td>3.9</td>
<td></td>
</tr>
<tr>
<td>0.0</td>
<td>20</td>
<td>3.3</td>
<td>3.9</td>
<td>104.7</td>
<td>0.3</td>
<td>0.2</td>
<td>0.2</td>
<td>0.0</td>
<td>3.8</td>
<td>3.8</td>
<td></td>
</tr>
<tr>
<td>0.0</td>
<td>21</td>
<td>3.2</td>
<td>3.7</td>
<td>101.3</td>
<td>0.5</td>
<td>0.4</td>
<td>0.4</td>
<td>0.0</td>
<td>3.6</td>
<td>3.6</td>
<td></td>
</tr>
<tr>
<td>0.0</td>
<td>22</td>
<td>2.9</td>
<td>3.5</td>
<td>93.7</td>
<td>0.6</td>
<td>0.5</td>
<td>0.5</td>
<td>0.1</td>
<td>3.5</td>
<td>3.5</td>
<td></td>
</tr>
<tr>
<td>0.0</td>
<td>23</td>
<td>2.7</td>
<td>3.2</td>
<td>86.5</td>
<td>0.9</td>
<td>0.7</td>
<td>0.7</td>
<td>0.1</td>
<td>3.3</td>
<td>3.3</td>
<td></td>
</tr>
<tr>
<td>0.0</td>
<td>24</td>
<td>2.5</td>
<td>2.9</td>
<td>79.8</td>
<td>0.8</td>
<td>0.7</td>
<td>0.7</td>
<td>0.1</td>
<td>3.2</td>
<td>3.2</td>
<td></td>
</tr>
<tr>
<td>0.0</td>
<td>25</td>
<td>2.3</td>
<td>2.7</td>
<td>72.2</td>
<td>1.0</td>
<td>0.9</td>
<td>0.9</td>
<td>0.1</td>
<td>3.1</td>
<td>3.1</td>
<td></td>
</tr>
</tbody>
</table>

BI-WEEKLY GROSS IRRIGATION REQUIREMENT (INCHES)

imansys_out.txt
| 13 | 1.5 | 1.7 | 46.7 | 0.5 | 0.4 | 0.4 | 0.1 | 0.0 | 1.8 | 1.8 |
| 14 | 1.3 | 1.5 | 40.0 | 0.5 | 0.4 | 0.4 | 0.1 | 0.0 | 1.9 | 1.9 |
| 15 | 1.6 | 1.9 | 52.1 | 0.3 | 0.2 | 0.2 | 0.0 | 0.0 | 1.9 | 1.9 |
| 16 | 1.6 | 1.9 | 50.3 | 0.3 | 0.3 | 0.3 | 0.0 | 0.0 | 1.9 | 1.9 |
| 17 | 1.7 | 2.0 | 53.2 | 0.2 | 0.1 | 0.1 | 0.0 | 0.0 | 1.9 | 1.9 |
| 18 | 1.7 | 2.0 | 54.4 | 0.2 | 0.2 | 0.2 | 0.0 | 0.0 | 2.0 | 2.0 |
| 19 | 1.7 | 2.0 | 55.0 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 2.0 | 2.0 |
| 20 | 1.7 | 2.0 | 54.3 | 0.2 | 0.2 | 0.2 | 0.0 | 0.0 | 2.0 | 2.0 |
| 21 | 1.9 | 2.2 | 59.2 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 2.0 | 2.0 |
| 22 | 1.9 | 2.3 | 61.6 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 2.1 | 2.1 |
| 23 | 2.0 | 2.4 | 64.8 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 2.1 | 2.1 |
| 24 | 2.0 | 2.4 | 63.9 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 2.2 | 2.2 |
| 25 | 2.1 | 2.4 | 65.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.2 | 2.2 |
| 26 | 1.9 | 2.3 | 61.7 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 2.2 | 2.2 |
| 27 | 2.0 | 2.3 | 63.4 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 2.2 | 2.2 |
| 28 | 1.9 | 2.2 | 60.3 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 2.2 | 2.2 |
| 29 | 2.1 | 2.4 | 66.3 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 2.2 | 2.2 |
| 30 | 2.0 | 2.3 | 62.7 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 2.2 | 2.2 |
| 31 | 2.0 | 2.3 | 62.9 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 2.2 | 2.2 |
| 32 | 2.0 | 2.3 | 62.7 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 2.2 | 2.2 |
| 33 | 2.0 | 2.4 | 65.0 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 2.2 | 2.2 |
| 34 | 1.9 | 2.2 | 60.2 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 2.1 | 2.1 |
| 35 | 2.0 | 2.4 | 64.4 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 2.1 | 2.1 |
| 36 | 1.8 | 2.1 | 58.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 2.0 | 2.0 |
| 37 | 1.9 | 2.2 | 59.5 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 2.0 |
| 38 | 1.9 | 2.2 | 59.2 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 2.0 | 1.9 |
| 39 | 1.5 | 1.8 | 47.9 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 1.9 | 1.9 |
| 40 | 1.8 | 2.1 | 56.8 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 1.9 | 1.9 |
| 41 | 1.7 | 2.0 | 55.7 | 0.2 | 0.1 | 0.1 | 0.0 | 0.0 | 1.8 | 1.8 |
| 42 | 1.4 | 1.7 | 45.6 | 0.3 | 0.3 | 0.3 | 0.0 | 0.0 | 1.8 | 1.8 |
| 43 | 1.5 | 1.8 | 47.8 | 0.2 | 0.1 | 0.1 | 0.0 | 0.0 | 1.8 | 1.7 |
| 44 | 1.4 | 1.7 | 45.9 | 0.5 | 0.4 | 0.4 | 0.1 | 0.0 | 1.7 | 1.7 |
**SUMMARY**

**SOILS:** Holomua (0.186), Very stony land, eroded, eroded (0.814)

**ANNUAL IRRIGATION REQUIREMENT (INCHES)**

<table>
<thead>
<tr>
<th>NIR</th>
<th>GIR</th>
<th>GAL_A</th>
<th>G_RAIN</th>
<th>N_RAIN</th>
<th>ER</th>
<th>ER21</th>
<th>RO</th>
<th>INT</th>
<th>ETO</th>
<th>ET</th>
</tr>
</thead>
<tbody>
<tr>
<td>82.1</td>
<td>96.6</td>
<td>2622.4</td>
<td>15.4</td>
<td>13.7</td>
<td>13.6</td>
<td>15.4</td>
<td>1.0</td>
<td>0.8</td>
<td>96.1</td>
<td>95.9</td>
</tr>
</tbody>
</table>

**GIR STATISTICS**

Mean, Median, XMAX, XMIN, 50%, 80%, 90%, 95%

<table>
<thead>
<tr>
<th>MEAN</th>
<th>MED</th>
<th>XMAX</th>
<th>XMIN</th>
<th>50%</th>
<th>80%</th>
<th>90%</th>
<th>95%</th>
</tr>
</thead>
<tbody>
<tr>
<td>96.6</td>
<td>97.1</td>
<td>106.8</td>
<td>85.7</td>
<td>97.2</td>
<td>101.4</td>
<td>103.3</td>
<td>104.7</td>
</tr>
</tbody>
</table>

**NIR STATISTICS**

Mean, Median, XMAX, XMIN, 50%, 80%, 90%, 95%

<table>
<thead>
<tr>
<th>MEAN</th>
<th>MED</th>
<th>XMAX</th>
<th>XMIN</th>
<th>50%</th>
<th>80%</th>
<th>90%</th>
<th>95%</th>
</tr>
</thead>
<tbody>
<tr>
<td>82.1</td>
<td>82.5</td>
<td>90.8</td>
<td>72.9</td>
<td>82.6</td>
<td>86.2</td>
<td>87.8</td>
<td>89.0</td>
</tr>
</tbody>
</table>

**MONTHLY IRRIGATION REQUIREMENT (INCHES)**

<table>
<thead>
<tr>
<th>ET</th>
<th>DR</th>
<th>MO</th>
<th>NIR</th>
<th>GIR</th>
<th>GAL_A</th>
<th>G_RAIN</th>
<th>N_RAIN</th>
<th>ER</th>
<th>ER21</th>
<th>RO</th>
<th>INT</th>
<th>ETO</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.5</td>
<td>0.0</td>
<td>1</td>
<td>5.9</td>
<td>6.9</td>
<td>188.4</td>
<td>2.5</td>
<td>2.2</td>
<td>2.2</td>
<td>2.4</td>
<td>0.2</td>
<td>0.1</td>
<td>6.5</td>
</tr>
<tr>
<td>6.3</td>
<td>0.0</td>
<td>2</td>
<td>4.5</td>
<td>5.3</td>
<td>143.1</td>
<td>1.9</td>
<td>1.8</td>
<td>1.8</td>
<td>1.9</td>
<td>0.1</td>
<td>0.1</td>
<td>6.3</td>
</tr>
<tr>
<td>7.8</td>
<td>0.0</td>
<td>3</td>
<td>5.6</td>
<td>6.6</td>
<td>180.4</td>
<td>2.4</td>
<td>2.1</td>
<td>2.1</td>
<td>2.5</td>
<td>0.2</td>
<td>0.1</td>
<td>7.8</td>
</tr>
<tr>
<td>8.1</td>
<td>0.0</td>
<td>4</td>
<td>6.7</td>
<td>7.8</td>
<td>212.7</td>
<td>1.3</td>
<td>1.1</td>
<td>1.1</td>
<td>1.5</td>
<td>0.1</td>
<td>0.1</td>
<td>8.1</td>
</tr>
<tr>
<td>8.8</td>
<td>0.0</td>
<td>5</td>
<td>7.9</td>
<td>9.3</td>
<td>251.8</td>
<td>0.6</td>
<td>0.6</td>
<td>0.6</td>
<td>0.8</td>
<td>0.0</td>
<td>0.1</td>
<td>8.9</td>
</tr>
<tr>
<td>9.2</td>
<td>0.0</td>
<td>6</td>
<td>8.6</td>
<td>10.1</td>
<td>275.4</td>
<td>0.3</td>
<td>0.3</td>
<td>0.3</td>
<td>0.2</td>
<td>0.0</td>
<td>0.0</td>
<td>9.2</td>
</tr>
<tr>
<td>9.6</td>
<td>0.0</td>
<td>7</td>
<td>8.8</td>
<td>10.3</td>
<td>280.2</td>
<td>0.4</td>
<td>0.4</td>
<td>0.4</td>
<td>0.5</td>
<td>0.0</td>
<td>0.1</td>
<td>9.6</td>
</tr>
<tr>
<td>9.5</td>
<td>0.0</td>
<td>8</td>
<td>8.7</td>
<td>10.3</td>
<td>279.2</td>
<td>0.5</td>
<td>0.4</td>
<td>0.4</td>
<td>0.5</td>
<td>0.0</td>
<td>0.1</td>
<td>9.5</td>
</tr>
<tr>
<td>8.4</td>
<td>0.0</td>
<td>9</td>
<td>7.7</td>
<td>9.0</td>
<td>244.8</td>
<td>0.4</td>
<td>0.3</td>
<td>0.3</td>
<td>0.4</td>
<td>0.0</td>
<td>0.0</td>
<td>8.4</td>
</tr>
<tr>
<td>8.0</td>
<td>0.0</td>
<td>10</td>
<td>7.1</td>
<td>8.3</td>
<td>226.7</td>
<td>1.0</td>
<td>0.9</td>
<td>0.9</td>
<td>1.0</td>
<td>0.0</td>
<td>0.1</td>
<td>8.0</td>
</tr>
<tr>
<td>7.0</td>
<td>0.0</td>
<td>11</td>
<td>5.8</td>
<td>6.8</td>
<td>184.0</td>
<td>1.9</td>
<td>1.6</td>
<td>1.6</td>
<td>1.7</td>
<td>0.2</td>
<td>0.1</td>
<td>7.0</td>
</tr>
<tr>
<td>7.2</td>
<td>0.0</td>
<td>12</td>
<td>4.9</td>
<td>5.7</td>
<td>155.8</td>
<td>2.2</td>
<td>2.0</td>
<td>2.0</td>
<td>2.1</td>
<td>0.1</td>
<td>0.1</td>
<td>6.7</td>
</tr>
</tbody>
</table>

Page 13
<table>
<thead>
<tr>
<th>TO:</th>
<th>INIT.</th>
<th>TO:</th>
<th>INIT.</th>
<th>FOR:</th>
<th>PLEASE:</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHENG, C.</td>
<td></td>
<td>KUNIMURA, I.</td>
<td></td>
<td>Approval</td>
<td>See Me</td>
</tr>
<tr>
<td>CHING, F.</td>
<td></td>
<td>MILLS, D.</td>
<td></td>
<td>Signature</td>
<td>Review &amp; Comment</td>
</tr>
<tr>
<td>CHONG, R.</td>
<td></td>
<td>OHYE, L.</td>
<td></td>
<td>Information</td>
<td>Take Action</td>
</tr>
<tr>
<td>DANBARA, S.</td>
<td></td>
<td>OHYE, M.</td>
<td></td>
<td></td>
<td>Type Draft</td>
</tr>
<tr>
<td>ENGLAND, D.</td>
<td></td>
<td>OSHIRO, K.</td>
<td></td>
<td></td>
<td>Type Final</td>
</tr>
<tr>
<td>FUJII, N.</td>
<td></td>
<td>SAKODA, E.</td>
<td></td>
<td></td>
<td>File</td>
</tr>
<tr>
<td>HARDY, R.</td>
<td></td>
<td>SWANSON, S.</td>
<td></td>
<td></td>
<td>Xerox ___ copies</td>
</tr>
<tr>
<td>HOAGBIN, S.</td>
<td></td>
<td>TORRES, R.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ICE, C.</td>
<td></td>
<td>UYENO, D.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IMATA, R.</td>
<td></td>
<td>YODA, K.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KAWAHARA, K.</td>
<td></td>
<td>YOSHINAGA, M.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KIMURA, J.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For tomorrow's meeting.
February 5, 2009

TO: Laura H. Thielen, Chairperson
Commission on Water Resource Management
Department of Land and Natural Resources

FROM: Orlando Davidson, Executive Officer

SUBJECT: Water Use Permit Application
Kaluakoi Groundwater Management Area, Molokai

We have reviewed the subject application forwarded by your transmittal dated January 6, 2009. Based on the generalized representation of the proposed well site on the accompanying maps, it appears that the site is located within the State Land Use Agricultural District.

With respect to your request as to whether the current designation is appropriate for the proposed use, please be advised that pursuant to sections 205-2(d) and 205-4.5(a)(1), Hawaii Revised Statutes, permitted activities within the Agricultural District include uses characterized by, among other things, the cultivation of crops, including but not limited to flowers, vegetables, foliage, fruits, forage, and timber. To the extent that the water will be used for irrigation of fruit trees, the proposed use appears to be consistent with the aforementioned statutorily permitted uses, and is therefore an appropriate use within the Agricultural District.

Thank you for the opportunity to comment on the subject application. As requested, we are returning the cover memo for the subject application.

Please feel free to contact Bert Saruwatari of my office at 587-3822, should you require clarification or any further assistance.

Enclosure
TO: Mr. Dan Davidson, Executive Officer  
Land Use Commission

FROM: Laura H. Thielen, Chairperson  
Commission on Water Resource Management

SUBJECT: WATER USE PERMIT APPLICATION  
Kaluakoi Ground Water Management Area, Molokai

Transmitted for your review and comment is a copy of a water use permit application (WUPA No. 869) for Zappacosta Tellos, LP for Well No. 0916-01. Public notice of this application will be published in the Maui News issues of January 7, 2009 and January 14, 2009.

We would appreciate your review of the proposed use that is described in the attached application (i.e. line item 6 or Table 1). Specifically, we request that you inform us of the current state land use designation for the TMK parcel, or portion thereof, for the proposed use area(s) and, secondly, whether the current state land use designation is appropriate for the proposed project.

We have attached a TMK map(s) that covers the proposed use area(s). Where water is proposed for use only on a portion of a TMK parcel, or on parcels with multiple zoning, the proposed use area(s) has been clearly delineated on the attached map. Please respond by returning this cover memo along with your review comments by January 29, 2009, which is the legal deadline for objections. If we do not receive your comments by this date, we will assume you have no objections to this application.

If you have any questions, require additional information, or would like to request an extension of the review period for this application, please contact Charley Ice at 587-0218.

Response:

( ) We have no objections or comments
( ) Objections attached
( ) Only comments attached

Contact person: Best Sakurai Phone: 587-3822
Signed: Best Sakurai Date: January 28, 2009
<table>
<thead>
<tr>
<th>TO:</th>
<th>INIT.</th>
<th>TO:</th>
<th>INIT.</th>
<th>FOR:</th>
<th>PLEASE:</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHENG, C.</td>
<td></td>
<td>KUNIMURA, I.</td>
<td></td>
<td>Approval</td>
<td>See Me</td>
</tr>
<tr>
<td>CHING, F.</td>
<td></td>
<td>MILLS, D.</td>
<td></td>
<td>Signature</td>
<td>Review &amp; Comment</td>
</tr>
<tr>
<td>CHONG, R.</td>
<td></td>
<td>OHYE, L.</td>
<td></td>
<td>Information</td>
<td>Take Action</td>
</tr>
<tr>
<td>DANBARA, S.</td>
<td></td>
<td>OHYE, M.</td>
<td></td>
<td></td>
<td>Type Draft</td>
</tr>
<tr>
<td>ENGLAND, D.</td>
<td></td>
<td>OSHIRO, K.</td>
<td></td>
<td></td>
<td>Type Final</td>
</tr>
<tr>
<td>FUJII, N.</td>
<td></td>
<td>SAKODA, E.</td>
<td></td>
<td></td>
<td>File</td>
</tr>
<tr>
<td>HARDY, R.</td>
<td></td>
<td>SWANSON, S.</td>
<td></td>
<td></td>
<td>Xerox copies</td>
</tr>
<tr>
<td>HOAGBIN, S.</td>
<td></td>
<td>TORRES, R.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ICE, C.</td>
<td></td>
<td>UYENO, D.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IMATA, R.</td>
<td></td>
<td>YODA, K.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KAWAHARA, K.</td>
<td></td>
<td>YOSHINAGA, M.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KIMURA, J.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Lori Buchanan
Commissioner
Molokai Planning Commission
P.O. Box 133
Hoolehua, Hawaii 96729
(808) 336-0625 mobile

Re: Request for comment for WUP Kaluakoi Ground Water Management Area, Molokai

Dear Mr. Kawahara,

Thank you for the opportunity to comment on the water use application for Kaluakoi, Molokai by applicant Pierluigi Zappocosta. To my knowledge this is the first case of this type of application involving a residential application for drilling of a well with the intent to draw brackish water to be desalinized for their agricultural/landscaping use. While I cannot foresee an issue with this current application, I do have some long term concern in the event other landowners would like to do the same. I envision at some yet to be determined point in time, should multiple permits be requested, the state would move to fund research on possible adverse impacts from multiple well draws in the Kaluakoi Ground Water Management Area. A more immediate concern for the current applicant would be what their mitigation plan for water use will be in the event their ability to desalinate well water is compromised. In any event, I hope the Commissioners begin discussions to address potential long term impacts in the event it is asked to review similar applications in the future.

Sincerely,

Lori Buchanan
Commissioner
Molokai Planning Commission
<table>
<thead>
<tr>
<th>TO:</th>
<th>INIT.</th>
<th>TO:</th>
<th>INIT:</th>
<th>FOR:</th>
<th>PLEASE:</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHENG, C.</td>
<td></td>
<td>KUNIMURA, I.</td>
<td></td>
<td>Approval</td>
<td>See Me</td>
</tr>
<tr>
<td>CHING, F.</td>
<td></td>
<td>MILLS, D.</td>
<td></td>
<td>Signature</td>
<td>Review &amp; Comment</td>
</tr>
<tr>
<td>CHONG, R.</td>
<td></td>
<td>OHYE, L.</td>
<td></td>
<td>Information</td>
<td>Take Action</td>
</tr>
<tr>
<td>DANBARA, S.</td>
<td></td>
<td>OHYE, M.</td>
<td></td>
<td></td>
<td>Type Draft</td>
</tr>
<tr>
<td>ENGLAND, D.</td>
<td></td>
<td>OSHIRO, K.</td>
<td></td>
<td></td>
<td>Type Final</td>
</tr>
<tr>
<td>FUJII, N.</td>
<td></td>
<td>SAKODA, E.</td>
<td></td>
<td></td>
<td>File</td>
</tr>
<tr>
<td>HARDY, R.</td>
<td></td>
<td>SWANSON, S.</td>
<td></td>
<td></td>
<td>Xerox ___ copies</td>
</tr>
<tr>
<td>HOAGBIN, S.</td>
<td></td>
<td>TORRES, R.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ICE, C.</td>
<td></td>
<td>UYENO, D.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IMATA, R.</td>
<td></td>
<td>YODA, K.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KAWAHARA, K.</td>
<td></td>
<td>YOSHINAGA, M.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KIMURA, J.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
February 4, 2009

Honorable Laura H. Thielen
Chairperson
State of Hawaii
Department of Land and Natural Resources
Commission on Water Resource Management
P. O. Box 621
Honolulu, Hawaii 96809

Dear Chairperson Thielen:

**SUBJECT: NOTICE OF AN APPLICATION FOR A WATER USE PERMIT KALUAKOI GROUND WATER MANAGEMENT AREA, MOLOKAI**

Thank you for the opportunity to comment on the water use permit application (WUPA No. 869) for Zappacosta Tellos, LP for Well No. 0916-01.

WUPA No. 869 is consistent with the County of Maui (County) land use plans and policies. The County has no objection to the application in the amount requested, 0.008 million gallons per day.

Should you have any questions, please contact our Department of Water Supply, Water Resource & Planning Division at 808-244-8550.

Sincerely,

CHARMAINE TAVARES
Mayor, County of Maui

CT:JE/jw
c: Jeffrey K. Eng, Director, Department of Water Supply
    Jane E. Lovell, Deputy Corporation Counsel
    Edward S. Kushi, Jr., Deputy Corporation Counsel
February 6, 2009

Subject: WATER USE PERMIT APPLICATION NO. 869
PAPOHAKU – ZAPPACOSTA WELL
State Well No. 4-0916-04
TMK: 5-1-008:49

This letter responds to the various comment letters that were received regarding the subject application. The questions and our responses are presented in the order they were received.

1. Question: Does he (applicant) have a hydrologist report on the prospects of finding water?
   Answer: No. The available water studies for the area, which are supported by several monitoring wells, suggests that the area has a thin basal lens of brackish water.

2. Question: What is the size and depth of well he is proposing?
   Answer: 8,000 gallons per day. Depth and well diameter will be a function of pump testing during construction.

3. Question: How will the well and distillation be powered—electric, diesel or alternate energy source?
   Answer: The applicant is exploring solar distillation; however conventional processes may ultimately be used such as Reverse Osmosis (RO).

4. Question: Will he agree to (a). Share what he has learned about the process of desalinization? (b). Agree that he will not use potable water in case he finds too many problems and costs with distillation? (c). That he will never mix potable water with water from this well (very difficult to enforce)?
   Answer: (a) Yes, (b) Yes, however to be clear, water service from Molokai Public Utilities, Inc. will be used to provide potable water for the dwelling. (c) Yes.

5. Question: There is a difference between 8,000 GPD (quantity requested) and Box M, Item 11, (page 2) Table 1.
   Answer: 8,000 GPD is the total requested use. Table 1 is the total usage for the orchard crops. Uses that are not otherwise scheduled include make-up water for a pool and the brine from the distillation process that will be disposed of in an injection well.
6. **Question:** What is the sustainability of this well, i.e. is there a comparable well on the west end of Molokai?

   **Answer:** The available literature identifies numerous wells on the west end that have been pump tested. None are currently in operation as potable water was not found. The 2 MGD sustainable yield of the west end is considerably in excess of the .008 MGD being requested so yield should not be an issue.

7. **Question:** Describe the Desalination process. Is there adequate power for this process? How will waste water be disposed of and the membranes?

   **Answer:** Several processes will be evaluated. While solar distillation will be explored, it will likely require an excessive amount of land area. Several conventional seawater RO packaged units are available that could be operated with the standard electrical service connection to the property. Wastewater would be disposed of via an injection well. The membranes would be disposed of in the county landfill.

8. **Question:** How will the waste stream be disposed of?

   **Answer:** Wastewater would be disposed of via an injection well.

9. **Question:** The Letter dated January 20, 2009 from the Maui Department of Water Supply did not pose questions but rather recommends that best management practices be adopted.

   **Answer:** The application is amendable to the reasonable standards imposed by the CWRM applicable to similar well applications or permits.

---

**Sincerely,**

Luigi Manera
<table>
<thead>
<tr>
<th>SRC/ COST</th>
<th>PROJECT</th>
<th>PH ACT</th>
<th>AMOUNT</th>
<th>NAME/DESCRIPTION (WANG INPUT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>F YR APP D OBJ CTR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>09 326 C 4000 0752</td>
<td></td>
<td></td>
<td>$337.50</td>
<td>Luigi Manera</td>
</tr>
</tbody>
</table>

**REMARKS:**

LINE (1) Reimbursement for Public Notice cost for WUPA No. 869

LINE (2)
LINE (3)
LINE (4)
LINE (5)
LINE (6)
LINE (7)
LINE (8)
LINE (9)
LINE (10)
PLEASE DELIVER ASAP TO:

Name: Charley Lee
Fax: (808) 587-0219
Phone: 
From: Jeffrey K. Eng. Director
County of Maui/Water Supply
Date: February 5, 2009
Subject: Notice of an Application for WUPA No. 869
Pages: 3 includes cover sheet)

Aloha Charley...transmitting the Maui DWS response to the January 6, 2009 CWRM Request for Comments on the water use permit application (WUPA No. 869) for Zappacosta Tellos, I.P. The letter was reviewed by Jane Lovell, who had no comments or suggested changes. Thank you for granting the extension (February 6, 2009) to submit our response. The staff planner who worked on the response is out sick today. If you have any questions, you may call Ellen, 808-244-8540.

Mahalo.

(rewritten introductory paragraph)
February 4, 2009

Ms. Laura H. Thielen, Chairperson
State of Hawaii
Department of Land and Natural Resources
Commission on Water Resource Management
P.O. Box 621
Honolulu, Hawaii 96809

Dear Ms. Thielen:

RE: Notice of an Application for a Water Use Permit (WUPA No. 869)
For Zappacosta Tellos, LP, Papohaku-Zappacosta Well (Well No. 0916-01)
Tax Map Key (2) 5-1-008:049
Kaluakoi Ground Water Management Area, Molokai

Thank you for the opportunity to comment on this application.

The Water Use Permit Application (WUPA) does not conflict or interfere with the Department of Water Supply's programs, plans and objectives. The Department has no objection to the Zappacosta Tellos, LP WUPA in the amount requested, 0.008 million gallons per day.

However, the Department has several concerns for existing, as well as, proposed private wells. These concerns include:

1. The maintenance and operation of these wells.
2. The creation of multiple conduits for contamination of ground water resources.
3. The non-reporting of water use and the status of existing wells.
4. The difficulty in tracking the existing wells.

In order to protect the ground water resources, DWS recommends that the applicant adopt best management practices for well construction/pump installation to prevent

"By Water, All Things Find Life"

The Department of Water Supply is an equal opportunity provider and employer. To file a complaint of discrimination, write: USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 14th and Independence Avenue, SW, Washington, DC 20250-0110. Or call (202) 720-5964 (voice and TDD).
contamination during the construction, as well as, maintenance of the well. These practices include:

1. Inspect exposed parts of the well periodically for problems such as cracked or corroded well casing, broken or missing well cap, damaged protective casing and settling or cracking of surface seals.
2. Slope the area around the well so that surface runoff drains away from the well.
3. Provide a well cap or sanitary seal to prevent unauthorized use of or entry into the well.
4. Provide for sediment removal or well cleaning as necessary.
5. Have the well tested at least once a year for fecal coliform or other constituents of concern.
6. Avoid mixing or using pesticides, fertilizers, herbicides, degreasers, fuels or other pollutants near the well.
7. Do not locate any type of potentially polluting activity up slope from the well.
8. Keep accurate records of any well maintenance, such as, disinfection or sediment removal, that require the use of chemicals in the well.

Should you have any questions, please contact our Water Resources & Planning Division at 808-244-8550.

Sincerely,

JEFFREY K. ENG
Director

DWS Engineering Division
Jane E. Lovell, Deputy Corporation Counsel
Edward S. Kushi, Jr., Deputy Corporation Counsel
January 29, 2009

Mr. Ken C. Kawahara, Deputy Director
Commission on Water Resources Management
Department of Land and Natural Resources
Kalanikau Bldg.
1151 Punchbowl Street
Honolulu, Hawai‘i 96813

Dear Mr. Kawahara:

SUBJECT: Chapter 6E-8 Historic Preservation Review—
Water Use Permit Application—
Kaluakoi Groundwater Management Area, Moloka‘i Island, Hawai‘i
TMK: (3) 5-1-008:049

Thank you for providing the opportunity to review this application for a permit (Water Use Application for Kaluakoi Groundwater Management Area, Moloka‘i Island, Hawai‘i) which we received on January 6, 2009. This project consists of an application for a permit to drill a well in the Kaluakoi Groundwater Management Area.

Photographs of the area reveal non-Jaucas sands matrix. Also, there is a very small area affected by the well drilling activities. Therefore, we determine that there will be no effect to historic properties.

In the event that historic resources, including human skeletal remains, are identified during the drilling activities, all work needs to cease in the immediate vicinity of the find, the find needs to be protected from additional disturbance and the State Historic Preservation Division contacted at (808) 692-8015.

Please contact Wendy Tolleson at (808) 692-8024 if you have any questions or concerns regarding this letter.

Aloha,

Nancy A. McMahon
State Historic Preservation Officer

Cc: Denise Mills, DLNR, Water Resources Commission Staff
January 29, 2009

Mr. Ken C. Kawahara, Deputy Director
Commission on Water Resources Management
Department of Land and Natural Resources
Kalanikulou Building
1151 Punchbowl Street
Honolulu, Hawai‘i 96813

Dear Mr. Kawahara:

SUBJECT: Chapter 6E-8 Historic Preservation Review—
Water Use Permit Application—
Kaluakoi Groundwater Management Area, Moloka‘i Island, Hawai‘i
TMK: (3) 5-1-008:049

Thank you for providing the opportunity to review this application for a permit (Water Use
Application for Kaluakoi Groundwater Management Area, Moloka‘i Island, Hawai‘i) which we
received on January 6, 2009. This project consists of an application for a permit to drill a well in
the Kaluakoi Groundwater Management Area.

Photographs of the area reveal non-Jauca Sands matrix. Also, there is a very small area affected
by the well drilling activities. Therefore, we determine that there will be no effect to historic
properties.

In the event that historic resources, including human skeletal remains, are identified during the drilling
activities, all work needs to cease in the immediate vicinity of the find, the find needs to be protected
from additional disturbance and the State Historic Preservation Division contacted at (808) 692-8015.

Please contact Wendy Tolleson at (808) 692-8024 if you have any questions or concerns
regarding this letter.

Alo‘i

SHPO)

Services Commission Staff
MEMORANDUM

Log No: 2009.0450
Doc No: 0901WT10

TO: Ken C. Kawahara, Deputy Director
Commission on Water Resource Management

FROM: Nancy A. McMahon, Deputy Administrator
and Deputy State Historic Preservation Officer
State Historic Preservation Division

Subject: Chapter 6E-8 Historic Preservation Review—
Well Construction/Pump Installation Permit Application, Papohaku-Zappacosta
Well (Well No. 0916-01) at a Single Family Residence (Permit SMX-2008),
Kaunakakai, Island of Molokai, Hawaii
TMK: (2) 5-1-008: 049

Thank you for the opportunity to review this permit application which we received on January 6, 2009. The project (Well Construction/Pump Installation Permit Application, Papohaku-Zappacosta Well (Well No. 0916-01) at a Single Family Residence (Permit SMX-2008), Kaunakakai, Island of Molokai, Hawaii, TMK: (2) 5-1-008: 049) is the drilling of a salt-water well and the installation of a pump on the Papohaku-Zappacosta single family parcel.

We determine that no historic properties will be affected by this project because:

- Intensive cultivation has altered the land
- Residential development/urbanization has altered the land
- Previous grubbing/grading has altered the land
- An accepted archaeological inventory survey (AIS) found no historic properties
- SHPD previously reviewed this project and mitigation has been completed
- Other: Based on pictures of the project area, it appears the soil matrix is non-Jaucas soil overlying basalt.

In the event that historic resources, including human skeletal remains, are identified during the drilling and construction activities, all work needs to cease in the immediate vicinity of the find, the find needs to be protected from additional disturbance and please contact the State Historic Preservation Division at (808) 692-8015.

Please call Wendy Tolleson at (808) 692-8024 if you have any questions or concerns regarding this letter.
February 2, 2009

Lori Buchanan
Commissioner
Molokai Planning Commission
P.O. Box 133
Hoolehua, Hawaii 96729
(808) 336-0625 mobile
lbuchanan@tnc.org

Re: Request for comment for WUP Kaluakoi Ground Water Management Area, Molokai

Dear Mr. Kawahara,

Thank you for the opportunity to comment on the water use application for Kaluakoi, Molokai by applicant Pierluigi Zappocosta. To my knowledge this is the first case of this type of application involving a residential application for drilling of a well with the intent to draw brackish water to be desalinized for their agricultural/landscaping use. While I cannot foresee an issue with this current application, I do have some long term concern in the event other landowners would like to do the same. I envision at some yet to be determined point in time, should multiple permits be requested, the state would move to fund research on possible adverse impacts from multiple well draws in the Kaluakoi Ground Water Management Area. A more immediate concern for the current applicant would be what their mitigation plan for water use will be in the event their ability to desalinate well water is compromised. In any event, I hope the Commissioners begin discussions to address potential long term impacts in the event it is asked to review similar applications in the future.

Sincerely,

Lori Buchanan
Commissioner
Molokai Planning Commission
January 6, 2009

TO: Other Interested Parties

FROM: Ken C. Kawahara, P.E., Deputy Director
Commission on Water Resource Management

SUBJECT: Request for Comments
Water Use Permit Application
Kaluakoi Ground Water Management Area, Molokai

In addition to serving you notice as required by 174C-52 (a), HRS, we transmit for your review and comment a copy of a water use permit application (WUPA No. 869) for Zappacosta Tellos, LP for Well No. 0916-01. Public notice of this application will be published in the Maui News issues of January 7, 2009 and January 14, 2009.

We would appreciate your review of the attached application for any conflicts or interferences with the programs, plans, and objectives of the organization or agency that you represent. Written objections should be made in accordance with Section 13-171-18 of our Administrative Rules and must be filed by the January 29, 2009 deadline. If we do not receive your comments by this date, we will assume you have no objections to this application.

If you have any questions, require additional information, or would like to request an extension of the review period for this application, please contact Charley Ice at 587-0218.

CI: ss
Attachment(s)

Response:

( ) We have no objections or comments
( ) Objections attached
X Only comments attached

Contact person: Bill Feeter
Phone: 808-553-9857
Date: 1-27-2009

Signed:
COMMENTS/QUESTIONS

1. There is a difference between 8000 GPD (quantity requested) and Box M, Item 11, (page 2) Table 1.
2. What is the sustainability of this well, i.e.: is there a comparable well on the west end of Molokai?
3. Describe the desalination process. Is there adequate electric power for this process? How will the waste water be disposed of and the membranes?
January 27, 2009

Mr. Luigi Manera  
P.O. Box 1718  
Kaunakakai, HI 96748

Dear Mr. Manera:

Invoice for Public Notice  
Water Use Permit Application for Well No. 0916-01  
(WUPA No. 869)

We are attaching a copy of the Affidavit of Publication and Invoice/Receipt for the subject notice. Please submit a check payable to the Department of Land and Natural Resources at the address shown above for the Amount Due by the Due Date specified below:

Amount Due: $337.50  
Due Date: February 12, 2009

Failure to submit the full Amount Due by the Due Date will result in a rejection of your application, which will be considered null and void. If you decide to proceed with this project in the future, a new water use permit application must be made, and you will be required to pay for the costs of both this public notice and the new public notice.

If you have any questions, please contact Charley Ice at 587-0218.

Sincerely,

KEN C. KAWAHARA, P.E.  
Deputy Director

CI:ss

c: Pierluigi Zappacosta
January 6, 2009

TO: Aquatic Resources
    Forestry and Wildlife/Natural Area Reserve System
    Historic Preservation
    State Parks

FROM: Ken C. Kawahara, P.E., Deputy Director
      Commission on Water Resource Management

SUBJECT: Request for Comments
        Water Use Permit Application
        Kaluakoi Ground Water Management Area, Molokai

Transmitted for your review and comment is a copy of a water use permit application (WUPA No. 869) for Zappacosta Tellos, LP for Well No. 0916-01. Public notice of this application will be published in the Maui News issues of January 7, 2009 and January 14, 2009.

We would appreciate your review of the attached application for any conflicts or inconsistencies with the programs, plans, and objectives specific to your division only. Please respond by returning this cover memo form by January 29, 2009, which is the legal deadline for objections. If we do not receive your comments by this date, we will assume you have no objections to this application.

If you have any questions, require additional information, or would like to request an extension of the review period for this application, please contact Charley Ice at 587-0218.

Class Attachment(s)

Response:

( ) We have no objections or comments
( ) Objections attached
( ) Only comments attached

Contact person: Brie Ruecas
Phone: 577-6696

Signed: ____________
Date: January 22, 2009

Kung Hee Fat Choy Charlie! Here's hoping all the best for you and your family during 2009.

Regarding the situation with Zappacosta and their proposal to drill a well at Kaluakoi, this has no bearings to our concerns at DAR as there is no long standing surface water supporting native aquatic organisms at the proposed site. However if you don’t mind me putting in my two-cents, it seems to me that it would be in CWRM’s best interest to proceed with caution before allowing anyone in Kaluakoi to sink in a well for personal use. As you are well aware I’m sure, the potable water situation for that side of the island is tenuous at best. Allowing any individual private access to
January 6, 2009

TO: Aquatic Resources
Forestry and Wildlife/Natural Area Reserve System
Historic Preservation
State Parks

FROM: Ken C. Kawahara, P.E., Deputy Director
Commission on Water Resource Management

SUBJECT: Request for Comments
Water Use Permit Application
Kaluakoi Ground Water Management Area, Molokai

Transmitted for your review and comment is a copy of a water use permit application (WUPA No. 869) for Zappacosta Tellos, LP for Well No. 0916-01. Public notice of this application will be published in the Maui News issues of January 7, 2009 and January 14, 2009.

We would appreciate your review of the attached application for any conflicts or inconsistencies with the programs, plans, and objectives specific to your division only. Please respond by returning this cover memo form by January 29, 2009, which is the legal deadline for objections. If we do not receive your comments by this date, we will assume you have no objections to this application.

If you have any questions, require additional information, or would like to request an extension of the review period for this application, please contact Charley Ice at 587-0218.

Response:
(✓) We have no objections or comments
( ) Objections attached
( ) Only comments attached

Contact person: Daniel S. Arvin
Phone: 587-0200

Signed: [Signature]
Date: 1/18/09
January 6, 2009

TO: 
Honorable Micah Kane, Director
Department of Hawaiian Home Lands

☑ Honorable Chiyome L. Fukino, M.D., Director
Department of Health

Mr. Clyde W. Namu'o, Administrator
Office of Hawaiian Affairs

Honorable G. Riki Hokama, Chairperson
County Council
County of Maui

Mr. Jeffery K. Eng, Director
Department of Water Supply
County of Maui

Mr. Jeffrey S. Hunt, Director
Planning Department
County of Maui

FROM: 
Laura H. Thielen, Chairperson
Commission on Water Resource Management

SUBJECT: 
Water Use Permit Application
Kaluakoi Ground Water Management Area, Molokai

Transmitted for your review and comment is a copy of a water use permit application (WUPA No. 869) for Zappacosta Tellos, LP for Well No. 0916-01. Public notice of this application will be published in the Maui News issues of January 7, 2009 and January 14, 2009.

We would appreciate your review of the proposed use that is described in the attached application (i.e. line item 6 or Table 1) for any conflicts or inconsistencies with the land use designations, programs, plans, or objectives specific to your organization or department only. Please respond by returning this cover memo form by January 29, 2009, which is the legal deadline for objections. If we do not receive your comments by this date, we will assume you have no objections to this application.

If you have any questions, require additional information, or would like to request an extension of the review period for this application, please contact Charley Ice at 587-0218.

Cl: ss
Attachment(s)

Response:
( ) We have no objections or comments
( ) Objections attached
( X) Only comments attached

Contact person: Stuart Yamada Phone: 586-4258
Signed: Date: 01/12/09
January 9, 2009

TO: The Honorable Laura H. Thielen, Chairperson
Commission on Water Resource Management

FROM: Chiyome Leinaala Fukino, M.D.
Director of Health

SUBJECT: WATER USE PERMIT APPLICATION NO. 869
PAPOHAKU-ZAPPACOSTA WELL
State Well NO. 4-0916-04
TMK: 5-1-008: 49

As the water from the proposed well will be desalinated to produce water for irrigation we generally would have no objections. However, there may be concerns about how the waste stream from the desalination facility will be disposed of, any chemical cleaning, system redundancy, and maintenance considerations.

Finally, we would like to point out that there is a discrepancy on the application form GWUPA-N. Item no. 6, Total Quantity of Water Requested, shows 8,460 gallons per day (?), yet Table 1 shows no potable use and 1,105 gallons per day of total non-potable use (Box L).

If you have any questions on wastewater disposal, please contact Mr. Tomas See, Chief, Wastewater Branch at (808)586-4294.

C: Tomas See, Wastewater Branch
January 6, 2009

TO: Other Interested Parties

FROM: Ken C. Kawahara, P.E., Deputy Director
Commission on Water Resource Management

SUBJECT: Request for Comments
Water Use Permit Application
Kaluakoi Ground Water Management Area, Molokai

In addition to serving you notice as required by 174C-52 (a), HRS, we transmit for your review and comment a copy of a water use permit application (WUPA No. 869) for Zappacosta Tellos, LP for Well No. 0916-01. Public notice of this application will be published in the Maui News issues of January 7, 2009 and January 14, 2009.

We would appreciate your review of the attached application for any conflicts or interferences with the programs, plans, and objectives of the organization or agency that you represent. Written objections should be made in accordance with Section 13-171-18 of our Administrative Rules and must be filed by the January 29, 2009 deadline. If we do not receive your comments by this date, we will assume you have no objections to this application.

If you have any questions, require additional information, or would like to request an extension of the review period for this application, please contact Charley Ice at 587-0218.

CI: ss
Attachment(s)

Response:

(✓) We have no objections or comments at this time
( ) Objections attached
( ) Only comments attached

Contact person: Debra Kelly
Phone: 808-547-6868 x 102

Signed: Debra Kelly
Date: 1/31/09
January 6, 2009

TO: Morris Atta, Administrator
Land Division

FROM: Ken C. Kawahara, P.E., Deputy Director
Commission on Water Resource Management

SUBJECT: Request for Comments
Water Use Permit Application
Kaluakoi Ground Water Management Area, Molokai

Transmitted for your review and comment is a copy of a water use permit application (WUPA No. 869) for Zappacosta Tellos, LP for Well No. 0916-01. Public notice of this application will be published in the Maui News issues of January 7, 2009 and January 14, 2009.

We would appreciate your review of the attached application for any conflicts or inconsistencies with the programs, plans, and objectives specific to your division only. Please respond by returning this cover memo form by January 29, 2009, which is the legal deadline for objections. If we do not receive your comments by this date, we will assume you have no objections to this application.

If you have any questions, require additional information, or would like to request an extension of the review period for this application, please contact Charley Ice at 587-0218.

Response:

( ) A water lease/permit is required of this applicant and an application for such will be requested by our division.

K( ) A water lease/permit is not required of this applicant.

( ) A water lease/permit has been obtained by the applicant through lease no.

( ) Other relevant Land Division rules/regulations, information, or recommendations are attached.

K( ) No objections

K( ) Other comments: Original source of private title is Grant 3146 issued before statehood.

Contact person: Gary Martin Phone: 587-0421

Signed: ____________

Date: ____________

JAN 13 2009
January 6, 2009

TO: Other Interested Parties

FROM: Ken C. Kawahara, P.E., Deputy Director
Commission on Water Resource Management

SUBJECT: Request for Comments
Water Use Permit Application
Kaluakoi Ground Water Management Area, Molokai

In addition to serving you notice as required by 174C-52 (a), HRS, we transmit for your review and comment a copy of a water use permit application (WUPA No. 869) for Zappacosta Tellos, LP for Well No. 0916-01. Public notice of this application will be published in the Maui News issues of January 7, 2009 and January 14, 2009.

We would appreciate your review of the attached application for any conflicts or interferences with the programs, plans, and objectives of the organization or agency that you represent. Written objections should be made in accordance with Section 13-171-18 of our Administrative Rules and must be filed by the January 29, 2009 deadline. If we do not receive your comments by this date, we will assume you have no objections to this application.

If you have any questions, require additional information, or would like to request an extension of the review period for this application, please contact Charley Ice at 808-620-9218.

Response:

☐ We have no objections or comments
☐ Objections attached
☐ Only comments attached

Contact person: Darrell Yagodich Phone: (808) 620-9500
Signed: Darrell Yagodich Date: 1-7-09
January 6, 2009

Transmitted for your review and comment is a copy of a water use permit application (WUPA No. 869) for Zappacosta Tellos, LP for Well No. 0916-01. Public notice of this application will be published in the Maui News issues of January 7, 2009 and January 14, 2009.

We would appreciate your review of the attached application for any conflicts or inconsistencies with the programs, plans, and objectives specific to your division only. Please respond by returning this cover memo form by January 29, 2009, which is the legal deadline for objections. If we do not receive your comments by this date, we will assume you have no objections to this application.

If you have any questions, require additional information, or would like to request an extension of the review period for this application, please contact Charley Ice at 587-0218.

Response:

[ ] We have no objections or comments
[ ] Objections attached
[ ] Only comments attached

Contact person: [Signature]

Phone: 7-4175

Signed: [Signature]

Date: Jan 6, 2009
Dear Charley:

Please forward this to Ken Kawahara and any other appropriate desk. Thanks.

I have quite a few questions regarding this application and are listed as follows:

1. Does he have a hydrologist report on the prospects of finding water?
2. What is the size and depth of the well he is proposing?
3. How will the well and desalinization be powered - electric, diesel or alternate energy source?
4. Will he agree to:
   - Share what he has learned about the process of desalinization?
   - Agree that he will not use potable water in case he finds to many problems and cost with desalinization?
   - That he will never mix potable water with water from his well. (very difficult to enforce)

A good number of years ago, Harold Edwards, when he was with Molokai Ranch, told me that it would cost $4.00/000 gallons to convert salt water to potable. I expect the cost is higher now. I think many people will be suspicious that this is a scheme to justify more fresh water to the West End users. It would be less expensive to purchase the fruit in the market place than grow them using desalinized water for irrigation.

Thank you for the opportunity to review this.

Robert Granger
January 9, 2009

TO: The Honorable Laura H. Thielen, Chairperson
Commission on Water Resource Management

FROM: Chiyome Leinaala Fukino, M.D.
Director of Health

SUBJECT: WATER USE PERMIT APPLICATION NO. 869
PAPOHAKU-ZAPPA COSTA W ell
State Well No. 4-0916-04
TMK: 5-1-008: 49

As the water from the proposed well will be desalinated to produce water for irrigation we generally would have no objections. However, there may be concerns about how the waste stream from the desalination facility will be disposed of, any chemical cleaning, system redundancy, and maintenance considerations.

Finally, we would like to point out that there is a discrepancy on the application form GWUPA-N. Item no. 6, Total Quantity of Water Requested, shows 8,460 gallons per day (?), yet Table 1 shows no potable use and 1,105 gallons per day of total non-potable use (Box L).

If you have any questions on wastewater disposal, please contact Mr. Tomas See, Chief, Wastewater Branch at (808) 586-4294.

c: Tomas See, Wastewater Branch

Original to follow in the mail.
January 6, 2009

TO:            Honorable Micah Kane, Director
                Department of Hawaiian Home Lands

            /Honorable Chiyome L. Fukino, M.D., Director
            Department of Health

            Mr. Clyde W. Namu'o, Administrator
            Office of Hawaiian Affairs

            Honorable G. Riki Hokama, Chairperson
            County Council
            County of Maui

            Mr. Jeffery K. Eng, Director
            Department of Water Supply
            County of Maui

            Mr. Jeffrey S. Hunt, Director
            Planning Department
            County of Maui

FROM:        Laura H. Thielen, Chairperson
            Commission on Water Resource Management

SUBJECT: Water Use Permit Application
Kaluakoi Ground Water Management Area, Molokai

Transmitted for your review and comment is a copy of a water use permit application (WUPA No. 869) for Zappacosta Tellos, LP for Well No. 0916-01. Public notice of this application will be published in the Maui News issues of January 7, 2009 and January 14, 2009.

We would appreciate your review of the proposed use that is described in the attached application (i.e. line item 6 or Table 1) for any conflicts or inconsistencies with the land use designations, programs, plans, or objectives specific to your organization or department only. Please respond by returning this cover memo form by January 29, 2009, which is the legal deadline for objections. If we do not receive your comments by this date, we will assume you have no objections to this application.

If you have any questions, require additional information, or would like to request an extension of the review period for this application, please contact Charley Ice at 587-0218.

CLASS
Attachment(s)

Response:
( ) We have no objections or comments
( ) Objections attached
(X) Only comments attached

Contact person: Stuart Yamada
Signed: [Signature]
Phone: 586-4258
Date: 01/12/09

Laura H. Thielen
Commission on Water Resource Management
Mr. Luigi Manera  
Zappacosta Tellos, LP  
98 Faxon Road  
Atherton, CA  94027-4046

Dear Mr. Manera:

We acknowledge completion, on December 4, 2008, of your water use permit application (WUPA No. 869), received November 25, 2008, for the Papohaku Zappacosta Well (Well No. 0916-01). You can expect your application to be processed within ninety (90) days from December 4, 2008 unless there are objections to your application.

Enclosed is a copy of the public notice for your water use permit application which will be published in the Maui News issues of January 7, 2009 and January 14, 2009. You will be required to pay for the cost of the public notice, which runs about $400. We will send you an invoice shortly after your notice is published.

Please be aware that there may be objections to your application. If objections are made, the objector is required to file such objections with the Commission and is also required to send you a copy of the objections.

You, or any other party, may respond to objections by filing a brief in support of your application with the Commission within ten (10) days of the filing of an objection. You, or the other party, must also send a copy of the response to the objector.

If you have any questions, please contact Charley Ice at 587-0218.

Sincerely,

KEN C. KAWAHARA, P.E.  
Deputy Director

Cl:ss  
Enclosure
January 6, 2009

TO:          Aquatic Resources
            Forestry and Wildlife/Natural Area Reserve System
            Historic Preservation
            State Parks

FROM:        Ken C. Kawahara, P.E., Deputy Director
            Commission on Water Resource Management

SUBJECT:     Request for Comments
            Water Use Permit Application
            Kaluakoi Ground Water Management Area, Molokai

Transmitted for your review and comment is a copy of a water use permit application (WUPA No. 869) for Zappacosta Tellos, LP for Well No. 0916-01. Public notice of this application will be published in the Maui News issues of January 7, 2009 and January 14, 2009.

We would appreciate your review of the attached application for any conflicts or inconsistencies with the programs, plans, and objectives specific to your division only. Please respond by returning this cover memo form by January 29, 2009, which is the legal deadline for objections. If we do not receive your comments by this date, we will assume you have no objections to this application.

If you have any questions, require additional information, or would like to request an extension of the review period for this application, please contact Charley Ice at 587-0218.

Response:

( ) We have no objections or comments
( ) Objections attached
( ) Only comments attached

Contact person: ___________________________ Phone: ________________

Signed: ___________________________ Date: ___________________________
January 6, 2009

TO: Morris Atta, Administrator
   Land Division

FROM: Ken C. Kawahara, P.E., Deputy Director
      Commission on Water Resource Management

SUBJECT: Request for Comments
         Water Use Permit Application
         Kaluakoi Ground Water Management Area, Molokai

Transmitted for your review and comment is a copy of a water use permit application (WUPA No. 869) for Zappacosta Tellos, LP for Well No. 0916-01. Public notice of this application will be published in the Maui News issues of January 7, 2009 and January 14, 2009.

We would appreciate your review of the attached application for any conflicts or inconsistencies with the programs, plans, and objectives specific to your division only. Please respond by returning this cover memo form by January 29, 2009, which is the legal deadline for objections. If we do not receive your comments by this date, we will assume you have no objections to this application.

If you have any questions, require additional information, or would like to request an extension of the review period for this application, please contact Charley Ice at 587-0218.

CI: ss
Attachment(s)

Response:

( ) A water lease/permit is required of this applicant and an application for such will be requested by our division.
( ) A water lease/permit is not required of this applicant.
( ) A water lease/permit has been obtained by the applicant through lease no.
( ) Other relevant Land Division rules/regulations, information, or recommendations are attached.
( ) No objections
( ) Other comments:

Contact person: ____________________________ Phone: ________________

Signed: ____________________________ Date: ________________
TO: Mr. Dan Davidson, Executive Officer  
Land Use Commission  
FROM: Laura H. Thielen, Chairperson  
Commission on Water Resource Management  
SUBJECT: WATER USE PERMIT APPLICATION  
Kaluakoi Ground Water Management Area, Molokai  

Transmitted for your review and comment is a copy of a water use permit application (WUPA No. 869) for Zappacosta Tellos, LP for Well No. 0916-01. Public notice of this application will be published in the Maui News issues of January 7, 2009 and January 14, 2009.

We would appreciate your review of the proposed use that is described in the attached application (i.e. line item 6 or Table 1). Specifically, we request that you inform us of the current state land use designation for the TMK parcel, or portion thereof, for the proposed use area(s) and, secondly, whether the current state land use designation is appropriate for the proposed project.

We have attached a TMK map(s) that covers the proposed use area(s). Where water is proposed for use on only a portion of a TMK parcel, or on parcels with multiple zoning, the proposed use area(s) has been clearly delineated on the attached map. Please respond by returning this cover memo along with your review comments by January 29, 2009, which is the legal deadline for objections. If we do not receive your comments by this date, we will assume you have no objections to this application.

If you have any questions, require additional information, or would like to request an extension of the review period for this application, please contact Charley Ice at 587-0218.

Response:

( ) We have no objections or comments  
( ) Objections attached  
( ) Only comments attached

Contact person: ___________________________ Phone: ___________________________  
Signed: ___________________________ Date: ___________________________
January 6, 2009

TO: Honorable Micah Kane, Director
Department of Hawaiian Home Lands

Honorable Chiyome L. Fukino, M.D., Director
Department of Health

Mr. Clyde W. Namu’o, Administrator
Office of Hawaiian Affairs

Honorable G. Riki Hokama, Chairperson
County Council
County of Maui

Mr. Jeffery K. Eng, Director
Department of Water Supply
County of Maui

Mr. Jeffrey S. Hunt, Director
Planning Department
County of Maui

FROM: Laura H. Thielen, Chairperson
Commission on Water Resource Management

SUBJECT: Water Use Permit Application
Kaluakoi Ground Water Management Area, Molokai

Transmitted for your review and comment is a copy of a water use permit application (WUPA No. 869) for Zappacosta Tellos, LP for Well No. 0916-01. Public notice of this application will be published in the Maui News issues of January 7, 2009 and January 14, 2009.

We would appreciate your review of the proposed use that is described in the attached application (i.e. line item 6 or Table 1) for any conflicts or inconsistencies with the land use designations, programs, plans, or objectives specific to your organization or department only. Please respond by returning this cover memo form by January 29, 2009, which is the legal deadline for objections. If we do not receive your comments by this date, we will assume you have no objections to this application.

If you have any questions, require additional information, or would like to request an extension of the review period for this application, please contact Charley Ice at 587-0218.

Response:
( ) We have no objections or comments
( ) Objections attached
( ) Only comments attached

Contact person: ___________________________ Phone: ___________________________

Signed: ___________________________ Date: ___________________________
Ms. Sri Ten Cate
Molokai Public Libraries
P.O. Box 395
Kaunakakai, HI 96748

Dear Ms. Ten Cate:

Please find enclosed 1) a copy of an application for water use permit and 2) the public notice for the application that will be published in the Maui News issues of January 7, 2009 and January 14, 2009. We request your assistance in posting the enclosed items at the Molokai Public Library for public review and access.

Thank you for your consideration in this matter. If you have any questions, or are unable to accommodate this request, please contact Charley Ice at 587-0218.

Sincerely,

KEN C. KAWAHARA, P.E.
Deputy Director

CI:ss
Attachment(s)
January 6, 2009

Mr. Brian Kau
Department of Agriculture
Molokai Irrigation Service
P.O. Box 205
Hoolehua, HI 96729

Dear Mr. Kau:

Please find enclosed 1) a copy of an application for water use permit and 2) the public notice for the application that will be published in the Maui News issues of January 7, 2009 and January 14, 2009. We request your assistance in posting the enclosed items on the Department of Agriculture bulletin board in Hoolehua.

Thank you for your consideration in this matter. If you have any questions, or are unable to accommodate this request, please contact Charley Ice at 587-0218.

Sincerely,

KEN C. KAWAHARA, P.E.
Deputy Director

Cl:ss
Attachment(s)
Honorable Charmaine Tavares, Mayor  
County of Maui  
200 South High Street  
Wailuku, HI 96793

Dear Mayor Tavares:

Notice of an Application for a Water Use Permit  
Kaluakoi Ground Water Management Area, Molokai

In accordance with the Department of Land and Natural Resources Administrative Rules, Section 13-171-17(a), we are sending you a copy of the public notice for the water use permit application (WUPA No. 869) for Zappacosta Tellos, LP for Well No. 0916-01, which will be published in the Maui News.

In addition, Section 13-171-13(b) of our Administrative Rules states:

"Within sixty days after receipt of notice of a permit application, the county shall inform the commission if the proposed use is inconsistent with the county land use plans and policies."

We have attached a copy of the application for your review and would appreciate receiving your comments, within the next sixty (60) days, on whether this water use is consistent with county plans and policies.

Sincerely,

Laura H. Thielen  
Chairperson

Enclosures
TO: Other Interested Parties

FROM: Ken C. Kawahara, P.E., Deputy Director
Commission on Water Resource Management

SUBJECT: Request for Comments
Water Use Permit Application
Kaluakoi Ground Water Management Area, Molokai

January 6, 2009

In addition to serving you notice as required by 174C-52 (a), HRS, we transmit for your review and comment a copy of a water use permit application (WUPA No. 869) for Zappacosta Tellos, LP for Well No. 0916-01. Public notice of this application will be published in the Maui News issues of January 7, 2009 and January 14, 2009.

We would appreciate your review of the attached application for any conflicts or interferences with the programs, plans, and objectives of the organization or agency that you represent. Written objections should be made in accordance with Section 13-171-18 of our Administrative Rules and must be filed by the January 29, 2009 deadline. If we do not receive your comments by this date, we will assume you have no objections to this application.

If you have any questions, require additional information, or would like to request an extension of the review period for this application, please contact Charley Ice at 587-0218.

CI: ss
Attachment(s)

Response:

( ) We have no objections or comments
( ) Objections attached
( ) Only comments attached

Contact person: ____________________________ Phone:______________
Signed: ____________________________ Date: ________________
PUBLIC NOTICE

Application for Water Use Permit
Kaluakoi Ground Water Management Area, Molokai

The following application for water use permit has been received by the Commission on Water Resource Management and is hereby made public in accordance with Section 13-171, Hawaii Administrative Rules, "Designation and Regulation of Water Management Areas."

WUPA No. 869 Papohaku Zappacosta Well (Well No. 0916-01)

Applicant: Zappacosta Tellos, LP
98 Faxon Road
Atherton, CA 94027-4046

Landowner: Zappacosta Tellos, LP
98 Faxon Road
Atherton, CA 94027-4046

Date Application Filed as Complete: December 4, 2008
Hydrologic Unit: Aquifer Areas: Kaluakoi System, West Molokai Sector, Molokai
Water Source: Papohaku Zappacosta (Well No. 0916-01) at 4300 Pohakuloa Road, Molokai, Tax Map Key (2) 5-1-008:049
Quantity Requested: 0.008 million gallons per day.
Existing/New Use: New desalted Irrigation of 3.5 acres of fruit trees
Place of Water Use: Pohakuloa Road, Kaluakoi at Tax Map Key: (2) 5-1-008:049

Written objections or comments on the above application may be filed by any person who has property interest in any land within the hydrologic unit of the source of water supply, any person who will be directly and immediately affected by the proposed water use, or any other interested person. Written objections shall: (1) state property or other interest in the matter (provide TMK information); (2) set forth questions of procedure, fact, law, or policy, to which objections are taken; and (3) state all grounds for objections to the proposed permit. Written objections must be received by January 29, 2009. Objections must be sent to 1) the Commission on Water Resource Management, P.O. Box 621, Honolulu, Hawaii 96809 and 2) the applicant at the above address.

COMMISSION ON WATER RESOURCE MANAGEMENT

KEN C. KAWAHARA, Deputy Director for
LAURA H. THIELEN, Chairperson

Dated: December 30, 2008

**WELL NUMBER:** 0916-01  
**WELL NAME:** Papohaku Zappacosta  
**WUP Number:** New= 869

**ATTACHMENTS FOR APPLICATION PROCESSING** - Both applicant & staff generated

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
</table>
| 1 | TRANS. LETTER | See yellow & tab comments.  
WUPA not complete |
| 2 | PERMIT PROCESS TABLE |   |
| 3 | CRWRM MAP |   |
| 4 | APPL. FORM (11 COPIES) |   |
| 5 | USGS MAPS (11 COPIES) |   |
| 6 | TAX MAPS (11 COPIES) |   |
| 7 | PARCEL OWNER VERIF. |   |
| 8 | CONTRACTOR VERIF. |   |
| 9 | ALL INFO FILLED IN DCCA LICENSE SCREEN PRINTOUT |   |
| 10 | BACKGROUND CHECK MLS PRINTOUT |   |
| 11 | $25 FEE DEPOSIT SLIP DCCA LICENSE SCREEN PRINTOUT |   |
| 12 | DHP/CDUP/SMA pre-screen SMA map printout http://gis.hicentral.com/website/parcelzoning/viewer.htm, or INGRID'S SMA/CD MAP (LUC map printout http://luc.state.hi.us/luc_maps.htm, or INGRID'S SMA/CD MAP) |   |

**FOLDER:**

- [x] MADE NEW FILE FOLDER, ATTACHED
- [ ] FILE FOLDER ALREADY MADE, IN FILE CABINET

**INCOMPLETE ACTION DATES:**

<table>
<thead>
<tr>
<th>DATE</th>
<th>ACTION</th>
</tr>
</thead>
</table>
| 2 Dec 08 | I think we can fill in some items - he just submitted WPCA, wouldn't know name of #. 
I anterior system sector easy enough, transfer total 8 from all to 6. I think question on Table 1 is answered on Table 2. |

**PLEASE:**

- See Me  
- Review & Comment  
- Take Action  
- Type Draft acknow letter  
- Type Final, label file folder, update People db  
- File  
- Xerox copies
<table>
<thead>
<tr>
<th>F Y R</th>
<th>APP D</th>
<th>SRC/ OBJ</th>
<th>COST</th>
<th>PROJECT</th>
<th>PH ACT</th>
<th>AMOUNT</th>
<th>NAME/DESCRIPTION (WANG INPUT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>S 09</td>
<td>326</td>
<td>C 1026</td>
<td>0752</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$25.00</td>
<td>Valleey Well Drilling LLC</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$25.00</td>
<td>Luigi Manera</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$25.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$25.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$25.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$25.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$25.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$25.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$25.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$25.00</td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$50.00</td>
<td></td>
</tr>
</tbody>
</table>

REMARKS:  
LINE (1) Kauai Natural Artesian Well  
LINE (2) Luigi Manera  
LINE (3)  
LINE (4)  
LINE (5)  
LINE (6)  
LINE (7)  
LINE (8)  
LINE (9)  
LINE (10)
Hi Charley,

The 35"-40"/year figures refers to the inches of water used to irrigate the specified crop – this 35"-40"/year figure is equivalent to 2,500 gallons of water/week/acre (noted in Table 2, Column "I"). The breakdown is rendered in Table 1 for each proposed crop. I enlarged the figures for you to review. In addition to the references provided on Page 3, under “comments,” I contacted Makalapua Landscapes on Molokai (License No. C18464) for irrigation consultation.

I hope this helps. Email me if you have any other questions. Thank you, Luigi

From: Charley.F.Ice@hawaii.gov [mailto:Charley.F.Ice@hawaii.gov]
Sent: Thursday, December 04, 2008 9:37 AM
To: Luigi Manera
Subject: RE: water use permit application

This is helpful, but I'm not understanding the 35"-40"/year figures -- what does that mean? If those are acre-inches, I'll do a conversion to the gpd we use -- or have you done that already with the next column: 2500 gal/ac/wk (~357 g/a/day)?

Also the irrigation practice equivalents are fine -- somehow our instructions do not make it clear that we'd like to know how you derived those figures -- is that advice given by some agricultural authority? from a table or other reference?

Charley Ice
Hydrologist
Hawaii Water Commission
1151 Punchbowl 227 Kalanikolu
P.O. Box 621, Honolulu 96809
(808) 587-0218

Aloha Charley,
The following must be attached before this application is accepted as complete:

- Portion of 7.5-Minute Series USGS topographic map (scale 1:24,000) with source location labeled and include the name of the quad map.
- Property tax map, showing source location referenced to established property boundaries.
- Photograph(s) of the source(s) and location(s) of proposed end use(s), if applicable.

APPLICANT INFORMATION

1. APPLICANT’S INFORMATION

Name/Company: FERLUIJI ZAPPACOSTA
Telephone: (808) 858-3040
Fax: (808) 858-3040

Name/Company: FERLUIJI ZAPPACOSTA
Telephone: (808) 858-3040
Fax: (808) 858-3040

Contact Person: LUCIA MANSON
Mailing Address: 98 FAXON ROAD, AHERTON, CA 94027-4044

SOURCE INFORMATION

4. GROUND-WATER USE(S):

- Irrigation
- Domestic
- Industrial
- Municipal

5. SOURCE INFORMATION

Attach additional sheets, if necessary.

PROPOSED USE INFORMATION §§174C-51(4), (5), (6), HRS

6. TOTAL QUANTITY OF WATER REQUESTED: In the space below enter total from Box M in Item 11 (Table 1) of this application.

8460

7. PROPOSED USE(S):

- Agriculture
- Domestic
- Industrial
- Military
- Municipal

Check all that apply:

8. LOCATION OF PROPOSED WATER USE(S): Show the location of the proposed use. Otherwise, attach similar maps. See Item 11 (Table 1, column B) of this application.

NOTE: Signing below indicates that the signatories understand and affirm that the information they have submitted is true and to the best of their knowledge. Further, the signatories understand that: (1) if necessary, further information may be required by the Commission, and (2) if a water use permit is granted by the Commission, this permit is subject to any existing standards, reserved uses as defined by the Commission, and Hawaiian Home Lands future notice fees associated with this application.

9. APPLICANT

Signature: FERLUIJI ZAPPACOSTA
Print Name: FERLUIJI ZAPPACOSTA
Date: 11/18/08

10. SOURCE LANDOWNER

Signature: FERLUIJI ZAPPACOSTA
Print Name: FERLUIJI ZAPPACOSTA
Date: 11/18/08
## PROPOSED NEW USE OR MODIFIED USE INFORMATION

11. TABLE 1: LAND USE CONSISTENCY / EFFICIENCY OF USE (Attach additional copies, if necessary.)

<table>
<thead>
<tr>
<th>LAND USE CONSISTENCY</th>
<th>EFFICIENCY OF USE</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>B</td>
</tr>
<tr>
<td>PURPOSE / WATER USE CATEGORY (See the instructions for water use category descriptions.)</td>
<td>LAND USE CONSISTENCY</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### USES THAT REQUIRE POTABLE (DRINKING) WATER

<table>
<thead>
<tr>
<th>PROPERTY</th>
<th>PLAN</th>
<th>DATE</th>
<th>WATER USE</th>
<th>ZONE</th>
<th>POTABLE WATER USES</th>
<th>QUANTITY</th>
<th>JUSTIFICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avocado Crop</td>
<td>0.08</td>
<td>049</td>
<td>AG</td>
<td>Yes, date approved.</td>
<td>0.5</td>
<td>357</td>
<td>178.5</td>
</tr>
<tr>
<td>Mango Crop</td>
<td>0.08</td>
<td>049</td>
<td>AG</td>
<td>Yes, date approved.</td>
<td>0.5</td>
<td>426</td>
<td>214</td>
</tr>
<tr>
<td>Citrus Crop</td>
<td>0.08</td>
<td>049</td>
<td>AG</td>
<td>Yes, date approved.</td>
<td>2.5</td>
<td>285</td>
<td>712.5</td>
</tr>
</tbody>
</table>

### USES THAT DO NOT REQUIRE POTABLE WATER

<table>
<thead>
<tr>
<th>PROPERTY</th>
<th>PLAN</th>
<th>DATE</th>
<th>WATER USE</th>
<th>ZONE</th>
<th>JUSTIFICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>None.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TOTAL QUANTITY OF WATER REQUESTED (sum of total potable use)

L 1105 GPD

M GPD

Please explain if there are any limitations (e.g., legal, contractual) on the proposed water use(s) described in Table 1. Ref. §174C-51(5), HRS.

NONE.
PROPOSED NEW USE OR MODIFIED USE INFORMATION (continued)

12. TABLE 2: IRRIGATION INFORMATION
List all crops that will be grown, including landscape and golf course irrigation uses. Copy Table 2 and attach additional sheets to complete your list, if necessary.

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Table 2: Irrigation Information</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>List all crops that will be grown, including landscape and golf course irrigation uses. Copy Table 2 and attach additional sheets to complete your list, if necessary.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Table 2: Irrigation Information</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CROP</th>
<th>TOTAL ACREAGE</th>
<th>NET IRRIGATED ACREAGE</th>
<th>BEGIN GROWTH PERIOD (month)</th>
<th>END GROWTH PERIOD (month)</th>
<th>IRRIGATION SYSTEM (refer to instructions)</th>
<th>IRRIGATION PRACTICE (refer to instructions)</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>AVOCADO</td>
<td>6.569</td>
<td>0.5</td>
<td>OCTOBER</td>
<td>ONGOING</td>
<td>DRIFF</td>
<td>25&quot;-40&quot;/YR EQUIVALENT TO 7,000 GAL. WATER/WK/ACRE</td>
<td></td>
</tr>
<tr>
<td>MANGO</td>
<td>6.569</td>
<td>0.5</td>
<td>OCTOBER</td>
<td>ONGOING</td>
<td>DRIFF</td>
<td>30&quot;-45&quot;/YR EQUIVALENT TO 9,000 GAL. WATER/WK/ACRE</td>
<td></td>
</tr>
<tr>
<td>CITRUS</td>
<td>6.569</td>
<td>2.5</td>
<td>OCTOBER</td>
<td>ONGOING</td>
<td>DRIFF</td>
<td>28&quot;-32&quot;/YR EQUIVALENT TO 7,000 GAL. WATER/WK/ACRE</td>
<td></td>
</tr>
</tbody>
</table>

Comments (Continued below, if necessary):

- Crop (i.e., the row in table) these comments relate to.

- The above information is based upon average annual temperatures and environmental conditions. Also soil structure and pre-plant soil amendments as provided. Above information based upon maximum soil suction as determined by tensiometer. The avocado and citrus will be trimmed at 7 years of growth.

Reference Materials:
- Department of Primary Industries (DPI) Queensland Australia
- Compendium of Citrus Diseases - APS Peas
- The Citrus Industry - University of California
- The Mango Botany, production & uses - CABI International
- Makalapua Landscapes, Inc. Molokai (#8464)
### TABLE 3: ALTERNATIVES ANALYSIS

<table>
<thead>
<tr>
<th></th>
<th>A. Analysis of potable alternatives</th>
<th>B. Analysis of non-potable alternatives</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Municipal sources</strong></td>
<td></td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Wastewater reuse</strong></td>
<td></td>
<td>No wastewater reuse is available in the area owned by Molokai Ranch</td>
</tr>
<tr>
<td><strong>Ditch system</strong></td>
<td></td>
<td>There is no existing ditch system</td>
</tr>
<tr>
<td><strong>Desalinization</strong></td>
<td></td>
<td>This is the proposed system of use</td>
</tr>
<tr>
<td><strong>Surface water</strong></td>
<td></td>
<td>No surface water present</td>
</tr>
<tr>
<td><strong>Other (specify)</strong></td>
<td></td>
<td>N/A</td>
</tr>
</tbody>
</table>

### 14. PUBLIC INTEREST

§ 174C-2(C), HRS states: *The state water code shall be liberally interpreted to obtain maximum beneficial use of the waters of the State for purposes such as domestic uses, aquaculture uses, irrigation and other agricultural uses, power development, and commercial and industrial uses. However, adequate provision shall be made for the protection of traditional and customary Hawaiian rights, the protection and propagation of fish and wildlife, the maintenance of proper ecological balance and scenic beauty, and the preservation and enhancement of waters of the State for municipal uses, public recreation, public water supply, agriculture, and navigation. Such objectives are declared to be in the public interest.*

An independent water source will be created and utilized for irrigation (non-potable) purposes.

### 15. INTERFERENCE WITH THE RIGHTS OF THE DEPARTMENT OF HAWAIIAN HOME LANDS

Explain how the proposed new use(s) of water will not interfere with the rights of the Department of Hawaiian Home Lands, as provided in section 221 of the Hawaiian Homes Commission Act.

The property is located in excess of 10 statute miles from Hawaiian Homelands properties. There are no existing or pre-existing Hawaiian gathering rights located within the boundaries of this property or other properties bordering this lot. No water for the irrigation of the above referenced trees will be taken from any fresh water aquifer currently in use designated for the betterment of the Hawaiian population. All lands intended for the production of fruit are currently designated as agricultural.

### 16. INTERFERENCE WITH ANY EXISTING LEGAL USES

Explain how the proposed new use(s) of water will not interfere with any other existing legal use(s) of water.

There is no ground water or surface water available for use or present in the area. Salt water will undergo a desalinization process to produce water for irrigation.
ZAPPACOSTA, Pierluigi
TMK (2) 5-1-008-0.10

http://accelagis.co.mauhi.us:8080/agis/map/viewer.jsp
April 26, 2011

Mr. Pierluigi Zappacosta
Tellos, LP
98 Faxon Road
Atherton, CA 94027-4046

Dear Mr. Zappacosta:

Certificate of Well Construction Completion for Well No. 0916-01 (TMK (2) 5-1-008:049)

We are pleased to inform you that the Well Construction work permitted for the Papohaku-Zappacosta (Well No. 0916-01) is complete and acceptable and welcome you as a new member to the community of well owners and ground water users in Hawaii.

The original permit was issued to Clift Cullen, and we understand that the work has been assigned to a new driller, Tomas Fernandez of Precision Drilling Services, LLC. Please transmit a letter verifying your choice of a new contractor.

To protect Hawaii’s natural ground water resources for the benefit of all, the following requirements apply to the use of your well:

1. Before this well can be pumped on a regular basis, a certificate of pump installation completion must be obtained.

2. If the well is not in use it must be properly capped.

3. If the well is to be abandoned then the landowner must cause a licensed contractor to apply for a well abandonment permit in accordance with §13-168-12(f), HAR, prior to any well sealing or plugging work.

4. In the event that the well operator and/or landowner changes, the Commission shall be notified prior to the change.
5. In the event the benchmark in the concrete base of the well is altered in any way, an updated version of the Well Elevation page of the Well Completion Report Part I shall be submitted to the Commission. If a licensed surveyor had estimated the original benchmark elevation then a licensed surveyor must establish the new benchmark elevation. The Well Elevation portion of the Well Completion Report Part I can be obtained by contacting Commission staff or at our website at www.hawaii.gov/dlnr/cwm/resources_permits.htm.

Because ground water in Hawaii is a public trust, and adverse effects at one well may affect other water resources, any violation of the above conditions or any other provision of the Hawaii Administrative Rules may be subject to fines of up to $5,000 per day. The Commission needs your help and asks that you do your part in utilizing this shared resource. We prefer to work with you in meeting the goal of protecting our ground water resources together.

If you have any questions, please contact Charley Ice of the Commission staff at 587-0218 or toll-free at 1-800-468-4644 (Lanai & Molokai), extension 70218.

Sincerely,

WILLIAM M. TAM
Deputy Director

Cl:ss

c: Precision Drilling Services, LLC
Luigi Manera
April 26, 2011

Mr. Tomas Fernandez
Precision Drilling Services, LLC
373 Waiopua Place
Honolulu, HI 96825

Dear Mr. Fernandez:

Well Completion Report Part I for Well No. 0916-01

We received your Well Completion Report Part I for the Papohaku-Zappacostas (Well No. 0916-01) on February 1, 2011 and acknowledge that it is complete.

This completes your obligation under the well construction permit. A certificate of well construction completion will be issued to the well operator/landowner and you will receive a copy. This certificate transfers responsibility of specific aspects of well usage and maintenance from you to the well operator/landowner.

If you have any questions, please contact Charley Ice of the Commission staff at 587-0218 or toll-free at 1-800-468-4644 (Lanai & Molokai), extension 70218.

Sincerely,

WILLIAM M. TAM
Deputy Director

CI: ss

c: Tellos, LP
    Luigi Manera
    Clift Cullen
MEMO and ROUTE SLIP (ver. 5/11110) 04/12/11

WCR 1 Check for Well No. 0916-01 (GW regulation route) Zappacosta

1. From Roy (initial) Yes No
   - Initial entry in to well index
   - Ingrid's spreadsheet updated needed/done

**Pump Tests Check**

- Step-Drawdown Test: followed WCPI Stds analysis attached □ □ □<70 gpm no test required
- Constant Rate Test: followed WCPI Stds analysis attached □ □ □<50 gpm no test required
- Potential Well Interference: □ □
- Potential Stream Impacts: □ □ If yes, stream name(s):
- Additional Testing or Data Required: □ □
- Pump Test Comments Attached: □ □
- Proposed Pump Capacity is OK.: □ □

2. Well Log Check
   - Geology Code for Well Index: □ Fm Name Volcanics Jeremy (initial)
   - Location in TMK: 5-1-08:49, Location in GIS different from Google Earth location
   - Location verification? □ attached
   - Landowner change? □ No □ Yes □ see tabs
   - New driller? □ attached
   - If yes, is SMA, CD, TMK changed? □ □

3. Construction Check
   - Charley Ryan (initial)
   - data complete □ □ □
   - followed Special Cond & elevations □ □ □
   - location unchanged from WCPIPA? □ □ □
   - If yes, is SMA, CD, TMK changed? □ □ □

   If no, describe deficiency

   - red penciled completed location too.
   - not necessary – only WCP or BOTH.

   ATTACHMENTS FOR PUMP INSTALLATION PERMIT (2x):
   - COVER LETTER
   - COUNTY COMMENTS (DWS/SMA)
   - DOH COMMENTS
   - DLNR COMMENTS (LD/OCCUDHP)
   - WCR 1 Accept
   - WELL CONST. COMPLETION CERTIFICATE
   - USGS MAP UPDATED
   - PARCEL CHECK
   - WELL DATABASE INPUT CHECK
   - PUMP TEST WORKSHEET
   - WELL As-Built CHECK PRINT

   To be sent to driller/pump installer

   - Tomas Fernandez
   - Precision Drilling Services, LLC
   - 373 Waiapua Pl.
   - Honolulu, HI 96815
   - 396 3367, 282 2655
   - Tel: (808) 943-2655
   - e-mail: tolandowner18@hawaii.rr.com

   To Landowner

   Staff internal □

4. Roy (initial) check (Entered WCR 1/WCCC accept date into database)
5. Susan H. (initial) finalize
6. Bill (initial) signature
7. Charley Ryan File & Enter PIP issue date if attached/required
Charley,

Attached please find Mr. Zappacosta’s Application for the supply well with Precision Drilling Services LLC’s information provided.

Thank you for the kind words, I look forward to working together side by side in the near future.

Best Regards,
Tomas Fernandez

=====Precision Drilling Services LLC =====
“Solution for All your Drilling needs”
Tomas Fernandez
Cell (808)282-2055
Ph (808)396-1365 Fax (808)396-3369
373 Waiopua Pl. Honolulu, HI 96825
PDSLLC@hawaii.rr.com
**STATE OF HAWAII**
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
APPLICATION FOR A WELL CONSTRUCTION / PUMP INSTALLATION PERMIT

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 96803. Application must be accompanied by the copies and 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 808-586-2225. For further information and updates to this application form, visit http://www.hawaii.gov/wrm.

**WELL LOCATION INFORMATION**

<table>
<thead>
<tr>
<th>1. STATE WELL NO. (if already assigned)</th>
<th>2. WELL NAME</th>
<th>3. ISLAND</th>
<th>4. TMC</th>
</tr>
</thead>
<tbody>
<tr>
<td>W-276</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The following must be attached before this application is accepted as complete:
- Plot map on Conda Series USGS topographic maps (scale 1:24,000) with well location labeled and include the name of the map
- Property tax map, showing well location referenced to established property boundaries
- Photograph of the proposed well site
- A schematic diagram showing the well site, access road and proposed well infrastructure
- For dug wells, attach a grading plan with cross section profiles showing raising and finish grades

**WELL OPERATOR/NAME COMPANY**

<table>
<thead>
<tr>
<th>Contact Name</th>
<th>Address</th>
<th>Phone</th>
<th>Fax</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLIFF C. CULLEN</td>
<td>502 LANALO ST., KAILUA, HI 96734</td>
<td>(808) 236-4208</td>
<td></td>
</tr>
</tbody>
</table>

**PROPOSED WELL CONSTRUCTION**

<table>
<thead>
<tr>
<th>7. Proposed Work</th>
<th>8. Construction Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conextend New Well</td>
<td>Drilled</td>
</tr>
<tr>
<td>Modify Existing Well</td>
<td>Dog</td>
</tr>
<tr>
<td>Abandoned Seal Well</td>
<td>Shaft</td>
</tr>
<tr>
<td>Tunnel</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total New Pump</td>
<td>(gallons per minute)</td>
</tr>
<tr>
<td>Recharge Pump</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>12. Proposed Amount of Withdrawal, gpd (gallons per day)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

**PROPOSED PUMP INSTALLATION**

<table>
<thead>
<tr>
<th>13. Method of Flow measurement</th>
<th>14. Proposed Surveyor name and license number (a surveyor is required for all Well Construction Permits and may be required for some Pump Installation Permits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dial</td>
<td>NPCOMER-LEE LAND SURVEY, NO. 7-276</td>
</tr>
</tbody>
</table>

**PROPOSED USE**

- □ Municipal (water systems serving greater than 25 individuals or 15 service connections)
- □ Domestic
- □ Industrial (describe)...
- □ Irrigation (crop and no. of acres)...
- □ Military (describe)...
- □ Other (describe)...

**OTHER LEGAL REQUIREMENTS**

- □ Conservation District Use Permit (CDUP)
  - Required, CDUP #...
  - Not Required (attach documentation from applicable County agency)
- □ Special Management Area Permit (SMAP)
  - Required, SMAP #...
  - Not Required (attach documentation from applicable County agency)
- □ State Historic Preservation Division (SHPD)
  - Required, SHPD #...
  - Not Required (attach documentation from Historical Sites)
- □ Hawaiian Community Water System Act (HCWS)
  - Required, HCWS #...
  - Not Required (attach documentation from Tribal Community)

**NOTE**

- Signing below indicates that the signature understands and attests to the information provided is accurate and true to the best of their knowledge. Further, the signature understands that by signing the permit application: 1) the proposed work is to be completed within two (2) years of the approval date; 7) the contractor shall submit to the Commission a well completion/abandonment report within 60 days after the completion date of the permitted work; 3) in the event the application is not completed correctly, any permit may be suspended until the item is brought to compliance, and any work done while the application is not completed correctly may result in fines of up to $500/day.

**PUMP INSTALLER**

<table>
<thead>
<tr>
<th>Installer's name</th>
<th>License No.</th>
<th>Business name</th>
<th>License No.</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="mailto:PEDLACO@HAWAII.COM">PEDLACO@HAWAII.COM</a></td>
<td>P-57C-57A</td>
<td><a href="mailto:PDLCO@HAWAII.COM">PDLCO@HAWAII.COM</a></td>
<td>P-57C-57A</td>
</tr>
</tbody>
</table>

For Official Use Only:

**WCPI Application Form 3/1/2007**

**Print Date**
PUBLIC RECORD DATA

<table>
<thead>
<tr>
<th>Taxkey</th>
<th>Subdiv/Condo</th>
<th>Tnr</th>
<th>Address</th>
<th>Owner/Lessee</th>
<th>Bds</th>
<th>Bths</th>
<th>Land area</th>
<th>Liv area</th>
<th>Last Sale</th>
<th>Sale Instr</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-5-1-8-49 Papohaku Ranchlands</td>
<td>F</td>
<td>4300</td>
<td>Pohakuloa Rd</td>
<td>TELLOS LP</td>
<td>0</td>
<td>0</td>
<td>6.57 ac</td>
<td>0</td>
<td>9/2/2005</td>
<td>DEED</td>
<td>$1,000</td>
</tr>
</tbody>
</table>

This information has been supplied by third parties and has not been independently verified by Hawaii Information Service and is, therefore, not guaranteed.

Copyright ©4/13/2011 by Hawaii Information Service
**Professional and Vocational Licensing (PVL) Search - Employees Screen**

<table>
<thead>
<tr>
<th>POSITION</th>
<th>POSITION STATUS</th>
<th>EMPLOYEE NAME</th>
<th>LIC ID</th>
<th>LIC STATUS</th>
<th>DUAL RME</th>
<th>EFFECTIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>RESPONSIBLE MANAGING EMPLOYEE</td>
<td>PRINCIPAL</td>
<td>FERNANDEZ TOMAS E</td>
<td>CT-29153</td>
<td>CURRENT, VALID &amp; IN GOOD STANDING</td>
<td></td>
<td>07/21/2008</td>
</tr>
</tbody>
</table>

http://pvl.ehawaii.gov/pvlsearch/app?_f=n&_a=EE&licno=29152&lictp=CT&off=0&nm=PRECISION%20DRILLING%20SERVICES%20LLC... 4/13/2011
**Professional and Vocational Licensing (PVL) Search - Search Results**

<table>
<thead>
<tr>
<th>Business/Person Name</th>
<th>License</th>
<th>Location</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRECISION DRILLING SERVICES LLC</td>
<td>CT-29152</td>
<td>373 WAIOPUA PL HONOLULU HI 96825</td>
<td></td>
</tr>
</tbody>
</table>

[http://pvl.ehawaii.gov/pvlsearch/app;jsessionid=36A63A973EC82EE9D2EC3214E8E16F76.liona](http://pvl.ehawaii.gov/pvlsearch/app;jsessionid=36A63A973EC82EE9D2EC3214E8E16F76.liona)
# Professional and Vocational Licensing (PVL) Search - General Licensee

## GENERAL LICENSEE

<table>
<thead>
<tr>
<th>LIC ID: CT-29152</th>
<th>Active/Inactive: ACTIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>NAME: PRECISION DRILLING SERVICES LLC</td>
<td></td>
</tr>
<tr>
<td>TRADE NAME:</td>
<td></td>
</tr>
<tr>
<td>STATUS: CURRENT, VALID &amp; IN GOOD STANDING</td>
<td></td>
</tr>
<tr>
<td>ENTITY: ORGANIZATION (LIMITED LIABILITY COMPANY)</td>
<td>BUSINESS CODE:</td>
</tr>
<tr>
<td>ORIG LIC DATE: 07/21/2008</td>
<td>EXPIRE DATE: 09/30/2012</td>
</tr>
<tr>
<td>CLASS PREFIX: C</td>
<td>SPECIAL PRIVILEGE:</td>
</tr>
<tr>
<td>RESTRICTION:</td>
<td>EDUCATION CODE:</td>
</tr>
<tr>
<td>CONDITIONS AND LIMITATIONS:</td>
<td></td>
</tr>
<tr>
<td>BUSINESS ADDR: 373 WAIOPUA PL HONOLULU HI 96825</td>
<td></td>
</tr>
<tr>
<td>MAILING ADDR:</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OTHER BUSINESS/PERSON NAMES</th>
<th>NAME EFFECTIVE DATE</th>
<th>NAME END DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRECISION DRILLING SERVICE LLC</td>
<td>07/21/2008</td>
<td>07/21/2008</td>
</tr>
</tbody>
</table>

Click here to enter search criteria for prior complaints history ->
For prior complaints and disciplinary history, contact licensing and business information center at (808) 587-3295.

License information on this site reflects information in the Professional and Vocational Licensing Division as of April 13, 2011; however, applications and forms are subject to standard processing time, and the information here does not reflect pending changes which are being reviewed. The site is updated daily, Monday through Friday, except holidays.

The State of Hawaii makes no guarantees as to the accuracy of the information accessed, the timeliness of the delivery of transactions, delivery to the correct party, preservation of the privacy and security of users and makes no warranties, including warranty of merchantability and fitness for a particular purpose. User is advised that if the information obtained herein is to be reasonably relied upon, user should confirm the accuracy of such information with the provider thereof.
Charlie's pin on provided GPS lat-long.
looks good to me!
1. State Well No.: 0916-01  
Well Name: Pepehoku-Zappacosta  
Island: Molokai

2. Address: 4300 Pohakuloa Rd, Kalaikoi, Molokai  
Tax Map Key: 5-1-08:49

3. Drilling Company: Precision Drilling Services LLC

4. Drilling method used during construction:  
   - Rotary  
   - Percussion  
   - Other (describe)

5. Date Well Construction (drilled, cased, grouted) completed: 11-15-10  
   Attach Completed Driller's Log

6. Was the subject well cored?  
   - Yes  
   - No

7. Step-Drawdown Test completed?  
   - No  
   - Yes  
   Attach Step-Drawdown Test form (12/17/97 SDPTD Form)

8. Constant Rate Aquifer Test completed?  
   - No  
   - Yes  
   Attach Constant Rate Aquifer Test form (12/17/97 CRPTD Form)

9. Initial encountered during drilling  
   (this should also be filled in on the driller’s log)  
   Reference point elevation = 50 ft. msl  
   Depth to water (feet) = 48.7  
   Water Level ft. above mean sea level (see note below) = 11-13-10

10. Just prior to casing installation  
    Reference point elevation = 50 ft. msl  
    Depth to water (feet) = 48.7  
    Water Level ft. above mean sea level (see note below) = 11-15-10

11. After casing installation  
    (this information should be before any pump tests are performed with casing installed)  
    Ground elevation = 50 ft. msl  
    Chloride: 9600 ppm, Temperature: 81.2°F  
    Difference between benchmark and this point is: 48.7 ft.

   Water Level Data:

<table>
<thead>
<tr>
<th>Reference point elevation</th>
<th>Depth to water (feet)</th>
<th>Water Level ft. above mean sea level (see note below)</th>
<th>Date/time of measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ground = 50 ft. msl</td>
<td>48.7</td>
<td>11-13-10</td>
<td></td>
</tr>
<tr>
<td>Ground = 50 ft. msl</td>
<td>48.7</td>
<td>11-15-10</td>
<td></td>
</tr>
<tr>
<td>If this reference point is not the benchmark, the difference between the benchmark and this point is: 48.7 ft.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

   note: for all elevations referenced to mean sea level, take the ground elevation (surveyed or estimated if survey not required at this time) and subtract the depth to the water level.

12. As-built section filled in completely

13. Photograph of well and concrete pad showing benchmark on concrete pad attached

14. GPS coordinates provided in degrees, minutes, seconds  
   - 21°09'7.1"N 76°15'65.2"W  
   - NAD 83

15. If a pump is not planned to be installed, please describe (below in the remarks section) how well is secured to prevent unauthorized access (example: lockable cover, threaded coupling, etc.)

16. Remarks:  
   - 4' x 4' x 6" Concrete pad  
   - 2 foot stick up (6")  
   - 6" Slip cap on top glued and taped

Licensed Driller (print)  
Tomas Fernandez  
C-57 Lic. No. 29152  
Date 12-15-10
12. AS-BUILT WELL SECTION (Please attach as-built if different from diagram provided below)

**Solid Casing Material:**
- Carbon Steel: compliant with (check one or more):  □ ANSI/AWWA C200  □ API Spec. 5L □ ASTM A53 □ ASTM A139
- And compliant with (check one or more):  □ ASTM A242 or A606 □ Type E □ Type S □ Grade B □ Other
- Stainless Steel: (check one):  □ ASTM A409 (production wells) □ ASTM A312 (monitor wells)
- ABS Plastic conforming to ASTM F480 and ASTM D1527: (check one):  □ Schedule 40 □ Schedule 80
- PVC Plastic conforming to ASTM F480 and (ASTM D1785 or ASTM D2241): (check one):  □ Schedule 40 □ Schedule 80 □ Schedule 120
- Thermoset Plastic: (check one)
  - □ Filament Wound Resin Pipe conforming to ASTM D2996
  - □ Centrifugally Cast Resin Pipe conforming to ASTM D2997
  - □ Reinforced Plastic Mortar Pressure Pipe conforming to ASTM D3517
  - □ Glass Fiber Reinforced Resin Pressure Pipe conforming to AWWA C950
  - □ PTFE Fluorocarbon Tubing conforming to ASTM D3296
  - □ FEP Fluorocarbon Tubing conforming to ASTM D3296

**Open Casing Material:**
- Carbon Steel: compliant with (check one or more):  □ ANSI/WWA C200 □ API Spec. 5L □ ASTM A53 □ ASTM A139
- And compliant with (check one or more):  □ ASTM A242 or A606 □ Type E □ Type S □ Grade B □ Other
- Stainless Steel: (check one):  □ ASTM A409 (production wells) □ ASTM A312 (monitor wells)
- ABS Plastic conforming to ASTM F480 and ASTM D1527: (check one):  □ Schedule 40 □ Schedule 80
- PVC Plastic conforming to ASTM F480 and (ASTM D1785 or ASTM D2241): (check one):  □ Schedule 40 □ Schedule 80 □ Schedule 120
- Thermoset Plastic: (check one)
  - □ Filament Wound Resin Pipe conforming to ASTM D2996
  - □ Centrifugally Cast Resin Pipe conforming to ASTM D2997
  - □ Reinforced Plastic Mortar Pressure Pipe conforming to ASTM D3517
  - □ Glass Fiber Reinforced Resin Pressure Pipe conforming to AWWA C950
  - □ PTFE Fluorocarbon Tubing conforming to ASTM D3296
  - □ FEP Fluorocarbon Tubing conforming to ASTM D3296
**DRILLER'S LOG**

*Supply Well*

**WELL NUMBER:** Zeppacosta

In addition to the driller's log, if a geologic log was prepared, please submit with this form.

<table>
<thead>
<tr>
<th>Depths (ft.)</th>
<th>Rock Description</th>
<th>Water Level</th>
<th>CI</th>
<th>Dates</th>
<th>Depths (ft.)</th>
<th>Rock Description</th>
<th>Water Level</th>
<th>CI</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 8</td>
<td>Soil</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 to 15</td>
<td>Weathered rock</td>
<td>11-13-10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15 to 21</td>
<td>Basalt (black)</td>
<td>11-13-10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21 to 45</td>
<td>Grey basalt</td>
<td>11-13-10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>45 to 49</td>
<td>Black scoria 48'</td>
<td>11-13-10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>49 to 52</td>
<td>Red scoria 48'</td>
<td>11-13-10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>52 to 55</td>
<td>Red/black scoria</td>
<td>11-13-10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>55 to 65</td>
<td>Cinder 48'</td>
<td>11-13-10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Remarks:**

WCR1 Form 6/12/07 Page 3 of 5
Attach photos of completed well and concrete pad

NAD83:
Latitude: 21 degrees 09 min 7-1 sec
Longitude: 157 degrees 6 min 52.5 sec

SKETCH OF WELL LOCATION
(Referenced to permanent landmark, i.e. building, road, fence, etc.)
Provide Latitude and Longitude of well referenced to NAD83 to nearest second
## STEP-DRAWDOWN PUMP TEST DATA
(not required for wells producing < 100,000 gpd or 70 gpm)

<table>
<thead>
<tr>
<th>Target Q (gpm)</th>
<th>Pumped Well No.</th>
<th>Observation Well No.</th>
<th>Distance between Obs. &amp; Pumped Well (ft)</th>
<th>Reference pt. for depth to water (ft.)</th>
<th>Static Water Level @ start of test (ft.) msl</th>
</tr>
</thead>
<tbody>
<tr>
<td>33.47 1770</td>
<td>0916-01</td>
<td>None</td>
<td>150</td>
<td></td>
<td>52.20</td>
</tr>
</tbody>
</table>

Water level measurements by:  
- ✔ electrical sounder  
- ☐ pressure transducer  
- ☐ airline

### START TEST
- Date: 12-2-2010  
- Time of day: 12:00 Noon

Flow Meter Reading Start: **NEW** gallons

<table>
<thead>
<tr>
<th>Suggested Elapsed Time (min)</th>
<th>Actual Elapsed Time (min)</th>
<th>Depth to Water (nearest 0.1 ft)</th>
<th>Drawdown S (unadjusted to nearest 0.1 ft)</th>
<th>Pumping rate Q (at least 3 steps) (gpm)</th>
<th>EC (μmhos)</th>
<th>Temp. °F or °C</th>
<th>Cl- (mg/l)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>-45</td>
<td>-40</td>
<td>52.20</td>
<td>Ø</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-30</td>
<td>-30</td>
<td>Ø</td>
<td>Ø</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-15</td>
<td>-20</td>
<td>Ø</td>
<td>Ø</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>-10</td>
<td>Ø</td>
<td>Ø</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>0</td>
<td>52.20</td>
<td>Ø</td>
<td>37</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>51.84</td>
<td>0.36</td>
<td></td>
<td>28.600</td>
<td>96.00</td>
<td>812</td>
<td></td>
</tr>
<tr>
<td>2.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>51.86</td>
<td>0.34</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>51.86</td>
<td>0.34</td>
<td>37.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>51.85</td>
<td>0.35</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>6</td>
<td>51.86</td>
<td>0.34</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>7</td>
<td>51.83</td>
<td>0.37</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>8</td>
<td>51.85</td>
<td>0.35</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>9</td>
<td>51.85</td>
<td>0.35</td>
<td>32.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>10</td>
<td>51.86</td>
<td>0.34</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>12</td>
<td>51.84</td>
<td>0.36</td>
<td>32.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>14</td>
<td>51.85</td>
<td>0.35</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>16</td>
<td>51.86</td>
<td>0.34</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30²</td>
<td>18</td>
<td>51.82</td>
<td>0.38</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>51.85</td>
<td>0.35</td>
<td>33.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>25</td>
<td>51.84</td>
<td>0.36</td>
<td>33.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Data in this table is for:  
- ✔ Pumped Well  
- ☐ Observation Well

Remarks:  
- Start test/ Step 1  
- Start pump  
- Chloride sample taken  
- Step 2 begin?  
- Original pump size expected  
- *15 gpm
<table>
<thead>
<tr>
<th>Suggested Elapsed time (min)</th>
<th>Actual Elapsed time (min)</th>
<th>Depth to water (nearest 0.1 ft)</th>
<th>Drawdown S (unadjusted to nearest 0.1 ft)</th>
<th>Pumping rate Q (at least 3 steps) (gpm)</th>
<th>EC (μhos)</th>
<th>Cl (mg/l)</th>
<th>Temp. X °F or °C</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>31</td>
<td>51.84</td>
<td>0.36</td>
<td>33.4</td>
<td>28400</td>
<td>95.50</td>
<td>81.1</td>
<td>END OF 1st STEP</td>
</tr>
<tr>
<td>1</td>
<td>31</td>
<td>51.83</td>
<td>0.37</td>
<td>47</td>
<td></td>
<td></td>
<td></td>
<td>UP GPM 33-47</td>
</tr>
<tr>
<td>2</td>
<td>32</td>
<td>51.84</td>
<td>0.36</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>33</td>
<td>51.84</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>34</td>
<td>51.84</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>35</td>
<td>51.84</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>36</td>
<td>51.84</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>37</td>
<td>51.84</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>38</td>
<td>51.84</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>39</td>
<td>51.85</td>
<td>0.35</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>40</td>
<td>51.84</td>
<td>0.36</td>
<td>48.7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>42</td>
<td>51.85</td>
<td>0.35</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>44</td>
<td>51.86</td>
<td>0.34</td>
<td>49.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>46</td>
<td>51.85</td>
<td>0.35</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>48</td>
<td>51.85</td>
<td>0.35</td>
<td>49.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>50</td>
<td>51.85</td>
<td>0.35</td>
<td>49.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>55</td>
<td>51.86</td>
<td>0.34</td>
<td>49.7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>60</td>
<td>51.89</td>
<td>0.31</td>
<td>49.7</td>
<td>28300</td>
<td>95.30</td>
<td>80.0</td>
<td>END OF 2nd STEP</td>
</tr>
<tr>
<td>1</td>
<td>61</td>
<td>51.89</td>
<td>0.31</td>
<td>66.3</td>
<td></td>
<td></td>
<td></td>
<td>UP GPM 47-70</td>
</tr>
<tr>
<td>2</td>
<td>62</td>
<td>51.89</td>
<td>0.31</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>63</td>
<td>51.88</td>
<td>0.32</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>64</td>
<td>51.89</td>
<td>0.31</td>
<td>67.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>65</td>
<td>51.88</td>
<td>0.32</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>66</td>
<td>51.89</td>
<td>0.31</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>67</td>
<td>51.89</td>
<td>0.31</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>68</td>
<td>51.89</td>
<td>0.31</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>69</td>
<td>51.88</td>
<td>0.32</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>70</td>
<td>51.90</td>
<td>0.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>72</td>
<td>51.90</td>
<td>0.3</td>
<td>67.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>74</td>
<td>51.91</td>
<td>0.29</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>76</td>
<td>51.90</td>
<td>0.30</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>78</td>
<td>51.90</td>
<td>0.30</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suggested Elapsed Time (min)</td>
<td>Actual Elapsed Time (min)</td>
<td>Depth to water (nearest 0.1 ft)</td>
<td>Drawdown S (unadjusted to nearest 0.1 ft)</td>
<td>Pumping rate Q (gpm)</td>
<td>EC (μmhos)</td>
<td>Cl⁻ (mg/l)</td>
<td>Temp. °F or °C</td>
<td>Remarks</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>--------------------------</td>
<td>---------------------------------</td>
<td>------------------------------------------</td>
<td>----------------------</td>
<td>-----------</td>
<td>----------</td>
<td>-------------</td>
<td>---------</td>
</tr>
<tr>
<td>20</td>
<td>80</td>
<td>51.92</td>
<td>0.28</td>
<td>67.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>85</td>
<td>51.93</td>
<td>0.27</td>
<td>67.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>90</td>
<td>51.93</td>
<td>0.27</td>
<td>67.5</td>
<td></td>
<td>28.300</td>
<td>9530</td>
<td>80.0 END OF 3rd STEP</td>
</tr>
</tbody>
</table>

Max possible duration, water level or quality did not stabilize for any 24 period.

Begin recovery data next page
Flow meter reading at end of pumped period: 4500 gals

1 starting pumping rate Q
2 minimum length of step period of constant pumping rate
3 minimum mandatory Chloride (Cl⁻) measurement/sampling at end of every step
4 Use same ending drawdown figure as start for recovery
CONSTANT-RATE PUMP TEST DATA
(not required for wells producing < 50 gpm)

Pumped Well No. 0916-01  Observation Well No. None
Pumped Well Name Papohaku-Zappacosta  Distance between Obs. & Pumped Well 150 ft.
Target Q 70 gpm  Reference pt. for depth to water ______ ft. msl
Static Water Level @ start of test 52.20 ft. msl

Water level measurements by: ☑ electrical sounder  ☐ pressure transducer  ☐ airline

START TEST Date: 12-2-2010  Time of day: 2 PM

Flow Meter Reading Start: 4,500 gallons

<table>
<thead>
<tr>
<th>Suggested elapsed time</th>
<th>Actual elapsed time</th>
<th>Depth to water (nearest 0.1 ft)</th>
<th>Drawdown S (unadjusted to nearest 0.1 ft)</th>
<th>Pumping rate Q (gpm)</th>
<th>EC (μmhos)</th>
<th>Cl⁻ (mg/l)</th>
<th>Temp. (°F or °C)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>-45</td>
<td>-30</td>
<td>52.20</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-30</td>
<td>-15</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-15</td>
<td>-5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>0</td>
<td>✔ 0.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>52.20</td>
<td></td>
<td>69.46</td>
<td>28,300</td>
<td>9530</td>
<td>81/3</td>
<td>Start test</td>
</tr>
<tr>
<td>1.5</td>
<td>2</td>
<td>52.20</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>52.22</td>
<td></td>
<td>69.58</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.5</td>
<td>4</td>
<td>52.22</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>5</td>
<td>52.33</td>
<td></td>
<td>69.97</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>6</td>
<td>52.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>7</td>
<td>52.1</td>
<td></td>
<td>68.87</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>8</td>
<td>52.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>9</td>
<td>52.1</td>
<td></td>
<td>69.76</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>10</td>
<td>52.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>12</td>
<td>52.14</td>
<td></td>
<td>69.54</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>14</td>
<td>52.25</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>16</td>
<td>52.25</td>
<td></td>
<td>69.67</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>18</td>
<td>52.26</td>
<td></td>
<td>68.30</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>20</td>
<td>52.27</td>
<td></td>
<td>69.56</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>40</td>
<td>25</td>
<td>52.30</td>
<td></td>
<td>69.56</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>50</td>
<td>30</td>
<td>52.30</td>
<td></td>
<td>69.49</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>60</td>
<td>60</td>
<td>52.39</td>
<td></td>
<td>69.58</td>
<td>28,300</td>
<td>9530</td>
<td>81/3</td>
<td></td>
</tr>
<tr>
<td>Suggested elapsed time (min)</td>
<td>Actual elapsed time (min)</td>
<td>Depth to water (nearest 0.1 ft)</td>
<td>Drawdown S (unadjusted to nearest 0.1 ft)</td>
<td>Pumping rate Q (gpm)</td>
<td>EC (µhos)</td>
<td>Cl⁻ (mg/l)</td>
<td>Temp. X °F or °C</td>
<td>Remarks</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>---------------------------</td>
<td>--------------------------------</td>
<td>------------------------------------------</td>
<td>----------------------</td>
<td>----------</td>
<td>-----------</td>
<td>---------------</td>
<td>-------------------------</td>
</tr>
<tr>
<td>70</td>
<td>90</td>
<td>52.48</td>
<td></td>
<td>69.42</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>80</td>
<td>120</td>
<td>52.55</td>
<td></td>
<td>69.66</td>
<td>28.200</td>
<td>9530</td>
<td>81.2</td>
<td></td>
</tr>
<tr>
<td>90</td>
<td>150</td>
<td>52.60</td>
<td></td>
<td>69.82</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>180</td>
<td>52.65</td>
<td></td>
<td>70.01</td>
<td>28.200</td>
<td>9530</td>
<td>81.2</td>
<td></td>
</tr>
<tr>
<td>150</td>
<td>210</td>
<td>52.65</td>
<td></td>
<td>69.31</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>200</td>
<td>240</td>
<td>52.65</td>
<td></td>
<td>70.01</td>
<td>28.200</td>
<td>9530</td>
<td>81.2</td>
<td></td>
</tr>
<tr>
<td>250</td>
<td>270</td>
<td>52.65</td>
<td></td>
<td>70.86</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>300</td>
<td>300</td>
<td>52.60</td>
<td></td>
<td>70.29</td>
<td>28.200</td>
<td>9530</td>
<td>81.2</td>
<td></td>
</tr>
<tr>
<td>400</td>
<td>330</td>
<td>52.51</td>
<td></td>
<td>70.06</td>
<td></td>
<td></td>
<td></td>
<td>Cl⁻ sample taken</td>
</tr>
<tr>
<td>500</td>
<td>360</td>
<td>52.41</td>
<td></td>
<td>70.31</td>
<td>28.200</td>
<td>9530</td>
<td>81.2</td>
<td></td>
</tr>
<tr>
<td>600</td>
<td>390</td>
<td>52.30</td>
<td></td>
<td>70.38</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>700</td>
<td>420</td>
<td>52.20</td>
<td></td>
<td>70.33</td>
<td>28.200</td>
<td>9530</td>
<td>81.2</td>
<td></td>
</tr>
<tr>
<td>800</td>
<td>450</td>
<td>52.05</td>
<td></td>
<td>70.11</td>
<td></td>
<td></td>
<td></td>
<td>Cl⁻ sample taken</td>
</tr>
<tr>
<td>900</td>
<td>480</td>
<td>51.90</td>
<td></td>
<td>70.28</td>
<td>28.200</td>
<td>9530</td>
<td>81.2</td>
<td></td>
</tr>
<tr>
<td>1000</td>
<td>510</td>
<td>51.75</td>
<td></td>
<td>70.30</td>
<td></td>
<td></td>
<td></td>
<td>Cl⁻ sample taken</td>
</tr>
<tr>
<td>1500</td>
<td>540</td>
<td>51.60</td>
<td></td>
<td>69.72</td>
<td>28.400</td>
<td>9550</td>
<td>81.2</td>
<td>Cl⁻ sample taken</td>
</tr>
<tr>
<td>2000</td>
<td>570</td>
<td>51.50</td>
<td></td>
<td>69.58</td>
<td></td>
<td></td>
<td></td>
<td>Cl⁻ sample taken</td>
</tr>
<tr>
<td>2500</td>
<td>600</td>
<td>51.35</td>
<td></td>
<td>70.08</td>
<td>28.400</td>
<td>9550</td>
<td>81.2</td>
<td>Cl⁻ sample taken</td>
</tr>
<tr>
<td>3000</td>
<td>630</td>
<td>51.32</td>
<td></td>
<td>70.29</td>
<td></td>
<td></td>
<td></td>
<td>Cl⁻ sample taken</td>
</tr>
<tr>
<td>4000</td>
<td>660</td>
<td>51.30</td>
<td></td>
<td>70.32</td>
<td>28.500</td>
<td>9580</td>
<td>81.2</td>
<td>Cl⁻ sample taken</td>
</tr>
<tr>
<td>5000</td>
<td>690</td>
<td>51.31</td>
<td></td>
<td>70.16</td>
<td></td>
<td></td>
<td></td>
<td>Cl⁻ sample taken</td>
</tr>
<tr>
<td>6000</td>
<td>720</td>
<td>51.33</td>
<td></td>
<td>70.28</td>
<td>28.500</td>
<td>9580</td>
<td>81.2</td>
<td>Cl⁻ sample taken</td>
</tr>
<tr>
<td>7000</td>
<td>750</td>
<td>51.35</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Cl⁻ sample taken</td>
</tr>
<tr>
<td>8000</td>
<td>780</td>
<td>51.40</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Cl⁻ sample taken</td>
</tr>
<tr>
<td>9000</td>
<td>810</td>
<td>51.45</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Cl⁻ sample taken</td>
</tr>
<tr>
<td>10000</td>
<td>840</td>
<td>51.50</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Max possible duration, water level or quality did not stabilize for any 24 period</td>
</tr>
</tbody>
</table>

1 Chloride sampling required
2 Use same ending drawdown figure as start for recovery

Begin recovery data next page
Flow meter reading at end of pumped period: 54,200 gals
**CRPTD Form 10/25/2004**

**Suggested elapsed time**  | **Actual elapsed time**  | **Depth to water**  | **Recovery Drawdown S**  | **Pumping rate Q**  | **EC (µhos)**  | **Cl⁻ (mg/l)**  | **Temp. °F or °C**  | **Data in this table is for:**
---|---|---|---|---|---|---|---|---
0  | 0  | 0  | 0  | 0  | 0  | 0  |   |   |
1  | 1  | 51.25  | 0  |   |   |   |   | □ Pumped Well
1.5  | 2  | 51.25  | 0  |   |   |   |   |   |
2  | 3  | 51.24  | 0  |   |   |   |   |   |
2.5  | 4  | 51.23  | 0  |   |   |   |   | □ Observation Well
3  | 5  |   | 0  |   |   |   |   |   |
4  | 6  |   | 0  |   |   |   |   |   |
5  | 7  |   | 0  |   |   |   |   |   |
6  | 8  |   | 0  |   |   |   |   |   |
7  | 9  | 51.22  | 0  |   |   |   |   |   |
8  | 10  |   | 0  |   |   |   |   |   |
10  | 12  |   | 0  |   |   |   |   |   |
15  | 14  | 51.23  | 0  |   |   |   |   |   |
20  | 16  | 51.23  | 0  |   |   |   |   |   |
25  | 18  | 51.22  | 0  |   |   |   |   |   |
30  | 20  | 51.22  | 0  |   |   |   |   |   |
40  | 25  | 51.22  | 0  |   |   |   |   |   |
50  | 30  | 51.23  | 0  |   |   |   |   |   |
60  |   | 0  |   |   |   |   |   |   |
70  |   | 0  |   |   |   |   |   |   |
80  |   | 0  |   |   |   |   |   |   |
90  |   | 0  |   |   |   |   |   |   |
100  |   | 0  |   |   |   |   |   |   |
150  |   | 0  |   |   |   |   |   |   |
200  |   | 0  |   |   |   |   |   |   |
250  |   | 0  |   |   |   |   |   |   |

**END TEST**  Date: **12-3-10**  Time of day: **2:30 AM**

**ADDITIONAL REMARKS:**

______________________________

Person in charge of pump test (print): ________________________________

**Signature:** ________________________________

The signature above indicates that the data reported on this form is accurate and true to the best of the person's knowledge who operated this pump test.
<table>
<thead>
<tr>
<th>Suggested elapsed time</th>
<th>Actual elapsed time</th>
<th>Depth to Water (nearest 0.1 ft)</th>
<th>Recovery Drawdown S (unadjusted to nearest 0.1 ft)</th>
<th>Pumping rate Q (gpm)</th>
<th>EC (μmhos)</th>
<th>Cl(^{-}) (mg/l)</th>
<th>Temp. (\circ)F or (\circ)C</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>51.92</td>
<td></td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.5</td>
<td>2</td>
<td>51.91</td>
<td></td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.5</td>
<td>4</td>
<td></td>
<td></td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>5</td>
<td>51.90</td>
<td></td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>6</td>
<td></td>
<td></td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>7</td>
<td></td>
<td></td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>8</td>
<td></td>
<td></td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>9</td>
<td></td>
<td></td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>10</td>
<td>51.91</td>
<td></td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>12</td>
<td>51.91</td>
<td></td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>14</td>
<td>51.92</td>
<td></td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>16</td>
<td>51.91</td>
<td></td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>18</td>
<td></td>
<td></td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>20</td>
<td></td>
<td></td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>40</td>
<td>25</td>
<td>51.93</td>
<td></td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>50</td>
<td>30</td>
<td>51.94</td>
<td></td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>60</td>
<td>0</td>
<td></td>
<td></td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>70</td>
<td>0</td>
<td></td>
<td></td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>80</td>
<td>0</td>
<td></td>
<td></td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>90</td>
<td>0</td>
<td></td>
<td></td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>0</td>
<td></td>
<td></td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>150</td>
<td>0</td>
<td></td>
<td></td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>200</td>
<td>0</td>
<td></td>
<td></td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>250</td>
<td>0</td>
<td></td>
<td></td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\(\checkmark\) 80% recovery achieved
\(\square\) 80% recovery not achieved

END TEST  Date: 12-2-10  Time of day: 1 PM

ADDITIONAL REMARKS: ________________________________

Person in charge of pump test (print): ________________________________

Signature: ________________________________

The signature above indicates that the data reported on this form is accurate and true to the best of the person's knowledge who operated this pump test.
March 2, 2009

Mr. Clift C. Cullen
562 Iana Street
Kailua, HI 96734

Dear Mr. Cullen:

Pump Installation Permit

Papohaku-Zappacosta Well (Well No. 0916-01)

Enclosed are two (2) originals of your approved Pump Installation Permit for the captioned well(s) that authorize permanent pump installation work for your well(s). As part of the Chairperson's approval, the following special conditions were added and are part of your permit under Permit Condition 14:

**Special Conditions**

1. **If the elevation benchmark needs to be altered, the permittee, well operator, and/or well owner shall ensure that the benchmark is transferred (or the well resurveyed) and documentation of the new benchmark shall be submitted to the Commission within sixty (60) days after the pump is installed.**

The permittee is responsible for **all** conditions of the permit. This includes ensuring the submission of a completed Well Completion Report Part II form within sixty (60) days after the pump installation work is completed. Be advised that you may be subject to fines of up to $5,000 per day for any violations of your permit conditions starting from the permit approval date.

Please sign both permit originals and return one copy to the Commission office for our files.

**IMPORTANT** - Pump installation shall not commence until a fully signed permit is returned to the Commission.

If you have any questions, please call Charley Ice of the Commission staff at 587-0218.

Sincerely,

[v signatures]

LAURA H. THIELEN
Chairperson

Enclosure

c: Luigi Manera
   Pierluigi Zappacosta
   USGS
   Maui DWS
In accordance with Department of Land and Natural Resources, Commission on Water Resource Management's Administrative Rules, Section 13-168, entitled "Water Use, Wells, and Stream Diversion Works", this document permits the pump installation for Papohaku-Zappacosta Well (Well No. 0916-01) at TMK (2) 5-1-008:049, Molokai, subject to the Hawaii Well Construction & Pump Installation Standards (HWCPIS - February 2004) which include but are not limited to the following conditions:

1. The Chairperson to the Commission on Water Resource Management (Commission), P.O. Box 621, Honolulu, HI 96809, shall be notified, in writing, at least two (2) weeks before any work covered by this permit commences and staff shall be allowed to inspect installation activities in accordance with §13-168-15, Hawaii Administrative Rules (HAR).

2. No withdrawal of water shall be made other than for testing until a Certificate of Pump Installation Completion has been issued by the Commission.

3. The pump installation permit shall be prominently displayed, or made available, at the site of construction work until work is completed.

4. The pump installation permit shall be for installation of a 15 gpm rated capacity, or less, pump in the well. This permanent capacity may be reduced in the event that the pump test data does not support the capacity.

5. A water-level measurement access shall be permanently installed, in a manner acceptable to the Chairperson, to accurately record water levels.

6. The permitee shall install an approved meter or other appropriate means for measuring and reporting withdrawals and appropriate devices or means for measuring chlorides and temperature at the well head.

7. Well Completion Report Part II shall be submitted to the Chairperson within sixty (60) days after completion of work (please contact staff or visit www.hawaii.gov/dlnr/cwrm/resources_permits.htm for current form).

8. The permitee, well operator, and/or well owner shall comply with all applicable laws, rules, and ordinances, and non-compliance may be grounds for revocation of this permit.

9. The pump installation permit application and, if relevant, any related staff submittal approved by the Commission are incorporated into this permit by reference.

10. If the HWCPIS are not followed and as a consequence water is wasted or contaminated, a lien on the property may result.

11. Any variances from the HWCPIS shall be approved by the Chairperson prior to invoking the variance.

12. The work proposed in the pump installation 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 Chairperson upon a showing of good cause and good-faith performance. A request to extend the permit shall be submitted to the Chairperson no later than the date the permit expires.

13. The permitee, its successors, and assigns shall indemnify, defend, and hold the State of Hawaii harmless from and against any loss, liability, claim, or demand for property damage, personal injury, or death arising out of any act or omission of the applicant, assigns, officers, employees, contractors, and agents under this permit or relating to or connected with the granting of this permit.

14. Special conditions in the attached cover transmittal letter are incorporated herein by reference.

Date of Approval: February 18, 2009
Expiration Date: February 18, 2011

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 and understand that I shall not commence work until I and the pump installer have signed, dated, and returned the permit to the Commission. I understand that this permit is not to be transferred to any other entity. I also understand that non-compliance with any permit condition may be grounds for revocation and fines of up to $5,000 per day starting from the permit date of approval.

Installer’s Signature: ___________________________ C-57, C-57a, or A License #: C-27841 Date: ___________________________
Printed Name: Clift C. Cullen Firm or Title: ___________________________

Please sign both copies of this permit, return one copy to the Commission office, and retain the other for your records.

Attachments
March 2, 2009

Dear Mr. Cullen:

Well Construction Permit
Papohaku-Zappacosta Well (Well No. 0916-01)

Enclosed are two (2) copies of your approved Well Construction Permit for the captioned well(s) that authorize well construction activities but excludes installation work for a permanent pump. As part of the Chairperson's approval, the following special conditions were added and are part of your permit under Permit Condition 17:

**Special Conditions**

1. Attached for your information are copies of the Department of Health's (DOH) review comments. Please note DOH's requirements related to discharge of effluent from well drilling and testing activities. Also, please contact the Noise Radiation and Indoor Air Quality Branch at 586-4700 to check compliance with construction noise permit requirements for this project.

2. Attached for your information is a copy of the State Department of Land and Natural Resources Land Division's comments related to water lease requirements.

3. Attached for your information is a copy of your county's Department of Water Supply comments related to their concerns.

Please refer to the Permit Processes Worksheet (transmitted with your acknowledgement letter) for further information regarding the process of drilling a well and installing a pump.

No withdrawal of water shall be made other than for testing purposes until a certificate of pump installation completion has been issued by the Commission.

Please sign both permit originals and return one copy to the Commission office for our files. For copies of the aquifer pump test worksheet, please call staff or visit www.state.hi.us/dlnr/cwrm/forms.htm.

**IMPORTANT** - Drilling work shall not commence until a fully signed permit is returned to the Commission. The permit shall be prominently displayed or made available at the construction site during construction. Be advised that you may be subject to fines of up to $5,000 per day for any violations of your permit conditions starting from the permit approval date.

If you have any questions, please call Charley Ice of the Commission staff at 587-0218.

Sincerely,

Laura H. Thielen
Chairperson

Enclosures

c: Luigi Manera
   Pierluigi Zappacosta
   USGS
   Maui DWS
WELL CONSTRUCTION PERMIT
Papohaku-Zappacosta Well, Well No. 0916-01

Note: This permit shall be prominently displayed at the construction site until the work is completed.

In accordance with Department of Land and Natural Resources, Commission on Water Resource Management's Administrative Rules, Section 13-168, entitled "Water Use, Wells, and Stream Diversion Works", this document permits the construction and testing of Papohaku-Zappacosta Well (Well No. 0916-01) at TMK (2) 5-1-008:049, Molokai, subject to the Hawaii Well Construction & Pump Installation Standards (HWCPIS - February 2004) which include but are not limited to the following conditions:

1. The Chairperson of the Commission on Water Resource Management (Commission), P.O. Box 621, Honolulu, HI 96809, shall be notified, in writing, at least two (2) weeks before any work authorized by this permit commences and staff shall be allowed to inspect installation activities in accordance with §13-168-15, Hawaii Administrative Rules (HAR).

2. This permit shall be prominently displayed, or made available, at the site of construction work until work is completed.

3. The well construction permit shall be for construction and testing of the well only. The permittee shall coordinate with the Chairperson and conduct a pumping test in accordance with the HWCPIS (the latest pump test worksheet can be obtained by contacting Commission staff or at www.hawaii.gov/dlnr/cwrmlresources_permits.htm). The permittee shall submit to the Chairperson the test results as a basis for supporting an application to install a permanent pump. No permanent pump may be installed until a pump installation permit is approved and issued by the Chairperson. No withdrawal of water shall be made for purposes other than testing without a Certificate of Pump Installation Completion. The permitted pump capacity described on the pump installation permit may be reduced in the event that the pump test does not support the capacity.

4. In basal ground water, the depth of the well may not exceed one-fourth (1/4) of the theoretical thickness (41 times initial head) of the basal ground water unless otherwise approved by the Chairperson. If it can be shown that the well does not tap basal ground water then this condition may be waived after consultation with and acceptance by Commission staff. However, in no instance can the well be drilled deeper than one-half (1/2) of the theoretical thickness without Commission approval.

5. The permittee shall incorporate mitigation measures to prevent construction debris from entering the aquatic environment, to schedule work to avoid periods of high rainfall, and to revegetate any cleared areas as soon as possible.

6. In the event that historically significant remains such as artifacts, burials or concentrations of shells or charcoal are encountered during construction, the permittee shall stop work and immediately contact the Department of Land and Natural Resources' State Historic Preservation Division. Work may recommence only after written concurrence by the State Historic Preservation Division.

7. 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.

8. The Well Completion Report Part I shall be submitted to the Chairperson within sixty (60) days after completion of work (please contact staff or visit www.hawaii.gov/dlnr/cwrmlresources_permits.htm for current form).

9. The permittee shall comply with all applicable laws, rules, and ordinances; non-compliance may be grounds for revocation of this permit.

10. The well construction permit application and, if relevant, any related staff submittal approved by the Commission are incorporated herein by reference.

11. If the HWCPIS are not followed and as a consequence water is wasted or contaminated, a lien on the property may result.

12. Any variances from the HWCPIS shall be approved by the Chairperson prior to invoking the variance.

13. 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 Chairperson upon a showing of good cause and good-faith performance. A request to extend the permit shall be submitted to the Chairperson no later than the date the permit expires.

14. If the well is not to be used it must be properly capped. If the well is to be abandoned during the course of the project then the permittee must apply for a well abandonment permit in accordance with §13-168-12(f), HAR, prior to any well sealing or plugging work.

15. The permittee, its successors, and assigns shall indemnify, defend, and hold the State of Hawaii harmless from and against any loss, liability, claim, or demand for property damage, personal injury, or death arising out of any act or omission of the applicant, assigns, officers, employees, contractors, and agents under this permit or relating to or connected with the granting of this permit.

16. This permit shall apply to the location shown on the application only. If the well is to be relocated, the permittee shall apply for a new well construction/pump installation permit in accordance with §13-168-12(f), HAR.

17. Special conditions in the attached cover transmittal letter are incorporated herein by reference.

Date of Approval: February 18, 2009
Expiration Date: February 18, 2011

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 and understand that I shall not commence work until I have signed, dated, and returned the permit to the Commission. I understand that this permit is not to be transferred to any other entity. I also understand that non-compliance with any permit condition may be grounds for revocation and fines of up to $5,000 per day starting from the permit date of approval.

Driller’s Signature: ______________________ C-57 License #: C-27841 Date: ______________________

Printed Name: Clift Cullen Firm or Title: Clift Cullen

Please sign both copies of this permit, return one copy to the Commission office, and retain the other for your records.
COMMISSION ON WATER RESOURCE MANAGEMENT

ROUTE SLIP FOR PERMIT ISSUANCE 5/19/05

FROM: CHARLEY ANAKALEA, P.
TO: KUNIMURA, I.
BAUER, G.
NAKAMA, L.
NING, F.
NAKANO, D.
CHING, F.
OHYE, M.
DANBARA, S.
SAKODA, E.
FUJI, N.
SUBIA, S.
GOODING, K.
SWANSON, S.
HARDY, R.
YODA, K.
HIGA, D.
UYENO, D.
ICE, C.
YOSHINAGA, M.
IMATA, R.

DUE DATE: **********

APPROVAL SIGNATURE
INFORMATION

PLEAS:
See Me
1. Review & Comment
2. Take Action
3. Type Draft
4. Type Final
5. File
6. Xerox copies

WELL NUMBER 0916-01

WELL CONSTRUCTION

Papohaku-Zappacosta

ATTACHMENTS FOR WELL CONSTRUCTION PERMIT:
1. COVER LETTER
2. PERMIT (2x)
3. COMMENTS:
   SDWB
4. WWB
5. CWB
6. HEER
7. LD
8. HP
9. OCCL
10. SMA
11. WELL CHECK PRINTOUT

TO BE SENT TO APPLICANT

ATTACHMENTS FOR PUMP INSTALLATION PERMIT:
1. COVER LETTER
2. PERMIT (2x)
3. COMMENTS:
   SDWB
4. WWB
5. CWB
6. HEER
7. LD
8. HP
9. OCCL
10. SMA
11. GLENN'S WORKSHEET

TO BE SENT TO APPLICANT

WUP 869

* we did not receive stand WCPA review comments - reported were an WUPA... should we copy standard replies from other WCPAs?

7 comment deadline 1/23/09 so if no comments 3/6. - brakish well anyway. just combine 6/6 WUP &

- WCP form not attached!
COMMISSION ON WATER RESOURCE MANAGEMENT

| FROM: ROY | DATE: FEB - 9 2009 | SUSPENSE DATE: |

<table>
<thead>
<tr>
<th>TO:</th>
<th>INIT.</th>
<th>TO:</th>
<th>INIT.</th>
<th>FOR:</th>
<th>PLEASE:</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHENG, C.</td>
<td></td>
<td></td>
<td></td>
<td>Approval</td>
<td>See Me</td>
</tr>
<tr>
<td>CHING, F.</td>
<td></td>
<td></td>
<td></td>
<td>Signature</td>
<td>Review &amp; Comment</td>
</tr>
<tr>
<td>CHONG, R.</td>
<td></td>
<td></td>
<td></td>
<td>Information</td>
<td>Take Action</td>
</tr>
<tr>
<td>DANBARA, S.</td>
<td></td>
<td></td>
<td></td>
<td>Type Draft</td>
<td>Type Final</td>
</tr>
<tr>
<td>ENGLAND, D.</td>
<td></td>
<td></td>
<td></td>
<td>Type Final</td>
<td>File</td>
</tr>
<tr>
<td>FUJII, N.</td>
<td></td>
<td></td>
<td></td>
<td>Type Final</td>
<td>Xerox copies</td>
</tr>
<tr>
<td>HARDY, R.</td>
<td></td>
<td>R</td>
<td></td>
<td>File</td>
<td></td>
</tr>
<tr>
<td>HOAGBIN, S.</td>
<td></td>
<td></td>
<td></td>
<td>File</td>
<td></td>
</tr>
<tr>
<td>ICE, C.</td>
<td></td>
<td></td>
<td></td>
<td>File</td>
<td></td>
</tr>
<tr>
<td>IMATA, R.</td>
<td></td>
<td></td>
<td></td>
<td>File</td>
<td></td>
</tr>
<tr>
<td>KAWAHARA, K.</td>
<td></td>
<td></td>
<td></td>
<td>File</td>
<td></td>
</tr>
<tr>
<td>KIMURA, J.</td>
<td></td>
<td></td>
<td></td>
<td>File</td>
<td></td>
</tr>
</tbody>
</table>

(11/08)
January 20, 2009

Ms. Laura H. Thielen, Chairperson
Department of Land and Natural Resources, State of Hawaii
Commission on Water Resource Management
P.O. Box 621
Honolulu, Hawaii 96809

Dear Ms. Thielen:

RE: Well Construction/Pump Installation Permit Review and Application
   Papohaku-Zappacosta Well (Well No. 0916-01)
   TMK: (2)5-1-008:049

Thank you for the opportunity to comment on this review and application.

The Department of Water Supply (DWS) has several concerns for existing as well as proposed private wells. These concerns include:

1. The maintenance and operation of these wells.
2. The creation of multiple conduits for contamination of ground water resources.
3. The non-reporting of water use and the status of existing wells.
4. The difficulty in tracking the existing wells.

In order to protect the ground water resources, DWS recommends that the applicant adopt best management practices for well construction/pump installation to prevent contamination during the construction as well as maintenance of the well. These practices include:

1. Inspect exposed parts of the well periodically for problems such as cracked or corroded well casing, broken or missing well cap, damaged protective casing and settling or cracking of surface seals.
2. Slope the area around the well so that surface runoff drains away from the well.
3. Provide a well cap or sanitary seal to prevent unauthorized use of or entry into the well.
4. Provide for sediment removal or well cleaning as necessary.
5. Have the well tested at least once a year for fecal coliform or other constituents of concern.
6. Avoid mixing or using pesticides, fertilizers, herbicides, degreasers, fuels or other pollutants near the well.

"By Water All Things Find Life"

The Department of Water Supply is an Equal Opportunity provider and employer. To file a complaint of discrimination, write: USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 14th and Independence Avenue, SW, Washington DC 20250-9410. Or call (202) 720-5964 (voice and TDD)
7. Do no locate any type of potentially polluting activity up slope from the well.
8. Keep accurate records of any well maintenance, such as disinfection or sediment removal, that require the use of chemicals in the well.

Should you have any questions, please contact our Water Resources & Planning Division at 244-8550.

Sincerely,

JEFFREY K. ENG, DIRECTOR

cc: Engineering Division
ADS
Architectural Drafting Services

LUIGI MANERA

P. O. Box 1718
Kaunakakai, Hi 96748

Ph: (808) 553-9045
Cell: (808) 870-3499
Fax: (808) 553-3952

email: luigis@aloha.net
**COMMISSION ON WATER RESOURCE MANAGEMENT**

**ROUTE SLIP FOR NEW APPLICATIONS**

**FROM:** CHARLEY  |  **DATE:** 25-Nov-08  |  **SUSPENSE DATE:** 2-Dec-08

<table>
<thead>
<tr>
<th>TO</th>
<th>INIT.</th>
<th>TO</th>
<th>INIT.</th>
<th>FOR</th>
<th>PLEASE</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHING, F.</td>
<td></td>
<td>FUKU, N.</td>
<td></td>
<td></td>
<td>See Me</td>
</tr>
<tr>
<td>GOODING, K.</td>
<td></td>
<td>HARDY, R.</td>
<td></td>
<td>Approval</td>
<td>Review &amp; Comment</td>
</tr>
<tr>
<td>HIGA, D.</td>
<td></td>
<td>HOAGBY, S.</td>
<td></td>
<td>Signature</td>
<td>Take Action</td>
</tr>
<tr>
<td>IMATA, K.</td>
<td></td>
<td>KAWAHA, K.</td>
<td></td>
<td>Information</td>
<td>Type Draft acknow letter</td>
</tr>
</tbody>
</table>

**WELL NUMBER:** 0916-01  |  **WELL NAME:** Cullen  |  **WUP Number:** New= ???

- [ ] WELL CONSTRUCTION  |  - [X] PUMP INSTALLATION  |  - [ ] WUPA (saltwater)

**ATTACHMENTS FOR APPLICATION PROCESSING - Both applicant & staff generated**

<p>| | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>TRANS. LETTER</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>PERMIT PROCESS TABLE</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>CWRM MAP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>APPL. FORM (11 COPIES)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>USGS MAPS (11 COPIES)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>TAX MAPS (11 COPIES)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>PARCEL OWNER VERIF.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>CONTRACTOR VERIF.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>DPC IPF FILE FOLDER ALREADY MADE, IN FILE CABINET</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>ALL INFO FILLED IN</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>BACKGROUND CHECK</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>$25 FEE DEPOSIT SLIP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**FOLDER:**

- [ ] MADE NEW FILE FOLDER, ATTACHED
- [X] FILE FOLDER ALREADY MADE, IN FILE CABINET

**INCOMPLETE ACTION DATES:**

<table>
<thead>
<tr>
<th>DATE</th>
<th>ACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>26 Nov 08</td>
<td>WUPA required; applicant has form</td>
</tr>
</tbody>
</table>
January 6, 2009

Mr. Clift C. Cullen
562 Iana Street
Kailua, HI 96734

Dear Mr. Cullen:

Well Construction/Pump Installation Permit Application for Well No. 0916-01

We acknowledge receipt, on November 20, 2008, of your completed Well Construction/Pump Installation permit application (in conjunction with your water use permit application) and filing fee for the Papohaku-Zappacosta Well (Well No. 0916-01). You can expect your application to be processed within ninety (90) days from this date.

For your information, the attached table describes the process, responsible parties, and deadline requirements for drilling or modifying a well and installing, modifying, or replacing a pump.

By this acceptance letter, we are also notifying the well operator/landowner that water may not be pumped for purposes other than testing until the certificate of well construction/pump installation completion letter is issued to the well operator and landowner. As Molokai is a Ground Water Management Area, an approved water use permit will be necessary prior to issuance of a pump installation permit; the appropriate application was filed by the well operator, accepted, and is scheduled for review.

Additionally, the permitted pump capacity described on the pump installation permit may be reduced in the event that the pump test does not support the capacity. No certificate of pump installation will be issued until the Commission has determined that the pump capacity will not have adverse effects on the aquifer, other nearby wells, or streams. In other words, you may need to remove the pump and install a smaller pump at the Commission's discretion before you can withdraw water for purposes other than testing.

If you have any questions about your permit application, please contact Charley Ice of the Commission staff at 984-2400 (Maui), extension 70218.

Sincerely,

KEN C. KAWAHARA, P.E.
Deputy Director

Cl: ss
Attachment

c: Pierluigi Zappacosta
TO: Morris Atta, Administrator  
Land Division  

FROM: Ken C. Kawahara, P.E., Deputy Director  
Commission on Water Resource Management  

SUBJECT: Well Construction/Pump Installation Permit Application  
Papohaku-Zappacosta Well (Well No. 0916-01) TMK (2) 5-1-008:049

January 6, 2009

Transmitted for your review and comment is a copy of the captioned Well Construction/Pump Installation permit application.

We would appreciate your comments on the captioned application with regard to the programs, plans, and objectives specific to your division. Please respond by returning this cover memo form by February 6, 2009 or a request for additional review time by this date, we will assume you have no comments.

Please find the attached maps to locate the proposed well. If you have any questions about this permit application, request additional information, or request additional review time, please contact Charley Ice of the Commission staff at 587-0218.

RESPONSE:

[ ] A water lease/permit is required of this applicant and an application for such will be requested by our division.

[ ] A water lease/permit is not required of this applicant.

[ ] A water lease/permit has been obtained by the applicant through lease no. _________________.

[ ] Other relevant Land Division rules/regulations, information, or recommendations are attached.

[ ] No objections

[ ] Other comments:

Contact Person: ____________________________ Phone: ______________

Signed: ____________________________ Date: ______________
January 6, 2009

TO: Dr. Puaalaokalani Aiu, Administrator
    Historic Preservation
FROM: Ken C. Kawahara, P.E., Deputy Director
      Commission on Water Resource Management
SUBJECT: Well Construction/Pump Installation Permit Application
         Papohaku-Zappacosta Well (Well No. 0916-01) TMK: (2) 5-1-008:049

Transmitted for your review and comment is a copy of the captioned Well Construction/Pump Installation permit application.

We would appreciate your comments on the captioned application with regard to the programs, plans, and objectives specific to your division. Please respond by returning this cover memo form by February 6, 2009. If we do not receive comments or a request for additional review time by this date, we will assume you have no comments.

Please find the attached maps to locate the proposed well. If you have any questions about this permit application or request additional review time, please contact Charley Ice of the Commission staff at 587-0218. If you require additional information regarding specific information that can be provided by the applicant, please contact the applicant directly at the contact information provided on the application form.

CI:ss
Attachment(s)

RESPONSE:

[ ] This is a [ ] public (county or state) project [ ] private project and [ ] will [ ] may disturb historic sites.

[ ] We concur that the work described under this permit will not disturb historic sites.

[ ] We do not concur that the work described under this permit will not disturb historic sites. We require the following for our concurrence:

Contact Person: _______________ Phone: _______________

Signed: ___________________ Date: _______________
January 6, 2009

Mr. Jeffrey S. Hunt, Director
Planning Department
County of Maui
250 South High Street
Wailuku, HI 96793

Dear Mr. Hunt:

Transmitted for your review and comment is a copy of the captioned Well Construction/Pump Installation permit application.

We would appreciate your comments on the captioned application with regard to the SMA permitting requirements specific to your division. Please respond by returning this cover memo form by February 6, 2009. If we do not receive comments or a request for additional review time by this date, we will assume you have no comments.

Please find the attached maps to locate the proposed well. If you have any questions about this permit application, request additional information, or request additional review time, please contact Charley Ice of the Commission staff at 587-0218.

Sincerely,

[Signature]
LAURA H. THIELEN
Chairperson

RESPONSE:

[ ] This well project [ ] requires [ ] does not require a SMA. If a SMA is required it [ ] has [ ] has not been approved and [ ] is [ ] is not currently active.

[ ] Other relevant rules/regulations, information, or recommendations are attached.

[ ] No objections

[ ] Other comments:

Contact Person: ____________________________ Phone: ____________________________

Signed: ____________________________ Date: ____________________________
January 6, 2009

Mr. Jeffery K. Eng, Director
Department of Water Supply
County of Maui
200 South High Street
Wailuku, HI 96793

Dear Mr. Eng:

Well Construction/Pump Installation Permit Review
Well Construction/Pump Installation Permit Application
Papohaku-Zappacosta Well (Well No. 0916-01)

Transmitted for your review and comment is a copy of the captioned Well Construction/Pump Installation permit application. If you have any comments on this application, please submit them by February 6, 2009. If we do not receive comments we will assume you have no comments.

If you have any questions about this permit application, please contact Charley Ice of the Commission staff at 587-0251.

Sincerely,

[Signature]
LAURA H. THIELEN
Chairperson

CI:ss
Attachment
<table>
<thead>
<tr>
<th>F. YR</th>
<th>APP D</th>
<th>OBJ</th>
<th>CTR</th>
<th>PROJECT</th>
<th>PH</th>
<th>ACT</th>
<th>AMOUNT</th>
<th>NAME/DESCRIPTION (WANG INPUT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>S 09</td>
<td>326</td>
<td>C 1026</td>
<td>0752</td>
<td></td>
<td></td>
<td></td>
<td>$25.00</td>
<td>Luigi Manera</td>
</tr>
<tr>
<td>(1)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(3)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(4)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(5)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(6)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(7)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(8)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(9)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(10)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**TOTAL** $25.00

**REMARKS:**
- LINE (1): TMK: 5-1-008:049
- LINE (2)
- LINE (3)
- LINE (4)
- LINE (5)
- LINE (6)
- LINE (7)
- LINE (8)
- LINE (9)
- LINE (10)
January 6, 2009

TO: Morris Atta, Administrator
   Land Division

FROM: Ken C. Kawahara, P.E., Deputy Director
       Commission on Water Resource Management

SUBJECT: Well Construction/Pump Installation Permit Application
         Papohaku-Zappacosta Well (Well No. 0916-01) TMK (2) 5-1-008:049

Transmitted for your review and comment is a copy of the captioned Well Construction/Pump Installation permit application.

We would appreciate your comments on the captioned application with regard to the programs, plans, and objectives specific to your division. Please respond by returning this cover memo form by February 6, 2009 or a request for additional review time by this date, we will assume you have no comments.

Please find the attached maps to locate the proposed well. If you have any questions about this permit application, request additional information, or request additional review time, please contact Charley Ice of the Commission staff at 587-0218.

RESPONSE:

[ ] A water lease/permit is required of this applicant and an application for such will be requested by our division.

XX A water lease/permit is not required of this applicant.

[ ] A water lease/permit has been obtained by the applicant through lease no. ________________________

[ ] Other relevant Land Division rules/regulations, information, or recommendations are attached.

[ ] No objections

XX Other comments: Original source of private title is Grant 3146 issued before statehood.

Contact Person: Gary Martin Phone: 587-0421

Signed: ___________________________ Date: JAN 13 2009
PUBLIC NOTICE

Application for Water Use Permit
Kaluakoi Ground Water Management Area, Molokai

The following application for water use permit has been received by the Commission on Water Resource Management and is hereby made public in accordance with Section 13-171, Hawaii Administrative Rules, "Designation and Regulation of Water Management Areas."

WUPA No. 869 Papohaku Zappacosta Well (Well No. 0916-01)

Applicant: Zappacosta Tellos, LP
98 Faxon Road
Atherton, CA 94027-4046

Landowner: Zappacosta Tellos, LP
98 Faxon Road
Atherton, CA 94027-4046

Date Application Filed as Complete: December 4, 2008
Hydrologic Unit: Aquifer Areas: Kaluakoi System, West Molokai Sector, Molokai
Water Source: Papohaku Zappacosta (Well No. 0916-01) at 4300 Pohakuloa Road, Molokai, Tax Map Key (2) 5-1-008:049
Quantity Requested: 0.008 million gallons per day.
Existing/New Use: New desalted Irrigation of 3.5 acres of fruit trees
Place of Water Use: Pohakuloa Road, Kaluakoi at Tax Map Key: (2) 5-1-008:049

Written objections or comments on the above application may be filed by any person who has property interest in any land within the hydrologic unit of the source of water supply, any person who will be directly and immediately affected by the proposed water use, or any other interested person. Written objections shall: (1) state property or other interest in the matter (provide TMK information); (2) set forth questions of procedure, fact, law, or policy, to which objections are taken; and (3) state all grounds for objections to the proposed permit. Written objections must be received by January 29, 2009. Objections must be sent to 1) the Commission on Water Resource Management, P.O. Box 621, Honolulu, Hawaii 96809 and 2) the applicant at the above address.

COMMISSION ON WATER RESOURCE MANAGEMENT

KEN C. KAWAHARA, Deputy Director for
LAURA H. THIELEN, Chairperson

Dated: December 30, 2008

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
APPLICATION FOR A WELL CONSTRUCTION / PUMP INSTALLATION PERMIT

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 10 copies and 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. For further information and updates to this application form, visit http://www.hawaii.gov/dlnr/cwrm.

RECVIED
NOV 20 A10:17

WELL LOCATION INFORMATION

1. STATE WELL NO. if (already assigned) 2. WELL NAME 3. ISLAND 4. TMK
(If known)

The following must be attached before this application is accepted as complete:

• Property tax map, showing well location referenced to established property boundaries
• Photograph of the proposed well site
• A schematic diagram showing well site, access road and proposed well infrastructure

For additional information and updates to this application form, visit http://www.hawaii.gov/dlnr/cwrm.

Well Operator's Name/Company: CLIFT C. CULLEN
Well Operator's Contact: (808) 738-0105
Well Operator's E-mail: clift@hawaii.rr.com

Well Operator's Mailing Address
582 TANA ST, KAILUA, HI 96734

Well Operator's Phone: (808) 738-0105
Well Operator's Fax: (808) 294-8521

PROPOSED WELL CONSTRUCTION

7. Proposed Work
Yes No
□ New Well
□ Modify Existing Well
□ Abandon/Seal Well

8. Construction Type
□ Bored Drilled
□ Dug
□ Shaft
□ Tunnel

10. Proposed Work
□ Install New Pump
□ Replace Pump

11. Proposed Pumping Rate, gpm (gallons per minute)

12. Proposed Amount of Withdrawal, gpd (gallons per day)

13. Method of flow measurement
□ Diverter
□ Bucket
□ Other (explain)

Is this well part of a battery of wells?
Yes No

14. Proposed Surveyor name and license number (a surveyor is required for all Well Construction Permits and may be required for some Pump Installation Permits)

PROPOSED PUMP INSTALLATION

15. Municipal (water systems serving greater than 25 individuals or 15 service connections)
□ Domestic
□ Industrial (describe)
□ Irrigation (describe crop and no. of acres) AGRICULTURE
□ Military (describe)
□ Other (describe)

OTHER LEGAL REQUIREMENTS

If required, Items 21, 22 and 25 must be obtained before the Commission can legally issue a permit:

21 Conservation District Use Permit (CDUP)
□ Well is in Conservation District
□ Required, CDUP # date approved
□ Not Required
□ I have not consulted with CDUP regarding potential impacts of well construction activities on historic sites. I have attached applicable documentation from the HPD.

22 Special Management Area Permit (SMAP)
□ Required, SMAP # date approved
□ Not Required
□ I have not consulted with the HPD regarding potential impacts of well construction activities or historic sites. I have attached applicable documentation from the HPD.

23 State Historic Preservation Division (SHPD) of the Department of Land and Natural Resources
□ I have consulted with the HPD regarding potential impacts of well construction activities on historic sites. I have attached applicable documentation from the HPD.
□ I have not consulted with the HPD regarding potential impacts of well construction activities on historic sites. I understand that checking with the HPD prior to making this application may expedite my review. I further understand that issues raised by this agency may delay or result in denial of the permit issuance. Additional, the history of past land use is attached.
**PROPOSED WELL SECTION** (Please attach schematic if different from diagram provided below)

- **Hole Diameter:** 6 in.
- **Minimum of 2' Radius & 4' Thick Concrete Pad (to contain benchmark surveyed to nearest 0.01 ft.)**
- **Ground Elevation:** 12 ft., msl

**Grouting method:**
- □ Positive displacement
- □ Other

**Annular space between hole and casing (1.5" for positive displacement; 3" for other methods):**
- 2 in.

**Rock or Gravel Packing:**
- □ Saturated Gravel
- □ Crushed Basalt

**Estimated Water Level Elevation:** 30 ft., msl

**Solid Casing:** (≥ 90% x (Ground Elev.-Water Level Elev))
- **Total Length:** 4 1/8 ft.
- **Nominal Diameter:** 12 in.
- **Wall Thickness:** 0.25 in.
- **Bottom Elevation:** 9 3/4 ft., msl

**Open Casing:**
- □ Perforated
- □ Screen

- **Total Length:** 15 ft.
- **Nominal Diameter:** 12 in.
- **Wall Thickness:** 0.25 in.
- **Bottom Elevation:** 9 3/4 ft., msl

- **Open Hole:**
  - **Length:** 41 1/4 ft.
  - **Diameter:** 15 in.
  - **Bottom Elevation:** 9 3/4 ft., msl

- **Grout:**
  - □ Cement Grout
  - □ Filament Wound Resin Pipe conforming to ASTM D2996
  - □ Reinforced Plastic Mortar Pressure Pipe conforming to ASTM D3517
  - □ Glass Fiber Reinforced Resin Pressure Pipe conforming to AWWA C950
  - □ PTFE Fluorocarbon Tubing conforming to ASTM D3296
  - □ FEP Fluorocarbon Tubing conforming to ASTM D3296

- **Other:**
  - □ Centrifugally Cast Resin Pipe conforming to ASTM D2997
  - □ Reinforced Plastic Mortar Pressure Pipe conforming to ASTM D3517
  - □ Glass Fiber Reinforced Resin Pressure Pipe conforming to AWWA C950
  - □ PTFE Fluorocarbon Tubing conforming to ASTM D3296
  - □ FEP Fluorocarbon Tubing conforming to ASTM D3296

---

**Solid Casing Material:**
- Carbon Steel: compliant with (check one or more):
  - □ ANSI/AWWA C200
  - □ API Spec. 5L
  - □ ASTM A53
  - □ ASTM A139
- Stainless Steel: (check one):
  - □ ASTM A409 (production wells)
  - □ ASTM A312 (monitor wells)
  - □ Other
- ABS Plastic conforming to ASTM F480 and ASTM D1527: (check one)
  - □ Schedule 40
  - □ Schedule 80
- PVC Plastic conforming to ASTM F480 and ASTM D1785 or ASTM D2241: (check one)
  - □ Schedule 40
  - □ Schedule 80
- Thermoset Plastic: (check one)
  - □ Centrifugally Cast Resin Pipe conforming to ASTM D2997
  - □ Reinforced Plastic Mortar Pressure Pipe conforming to ASTM D3517
  - □ Glass Fiber Reinforced Resin Pressure Pipe conforming to AWWA C950
  - □ PTFE Fluorocarbon Tubing conforming to ASTM D3296
  - □ FEP Fluorocarbon Tubing conforming to ASTM D3296

**Open Casing Material:**
- Carbon Steel: compliant with (check one or more):
  - □ ANSI/AWWA C200
  - □ API Spec. 5L
  - □ ASTM A53
  - □ ASTM A139
- Stainless Steel: (check one):
  - □ ASTM A409 (production wells)
  - □ ASTM A312 (monitor wells)
  - □ Other
- ABS Plastic conforming to ASTM F480 and ASTM D1527: (check one)
  - □ Schedule 40
  - □ Schedule 80
- PVC Plastic conforming to ASTM F480 and ASTM D1785 or ASTM D2241: (check one)
  - □ Schedule 40
  - □ Schedule 80
- Thermoset Plastic: (check one)
  - □ Centrifugally Cast Resin Pipe conforming to ASTM D2997
  - □ Reinforced Plastic Mortar Pressure Pipe conforming to ASTM D3517
  - □ Glass Fiber Reinforced Resin Pressure Pipe conforming to AWWA C950
  - □ PTFE Fluorocarbon Tubing conforming to ASTM D3296
  - □ FEP Fluorocarbon Tubing conforming to ASTM D3296

---

* The approximate elevation must be referenced to mean sea level (msl) at the time of application filing. Final elevations of well components shall be submitted in the Well Completion/Well Abandonment reports and referenced to a benchmark which has been established by a surveyor licensed by the State.

For non-salt water Basal Wells - bottom elevation of well should not be deeper than 1/4 of aquifer thickness or,

Bottom Elevation of Well Limit = (Water Elevation - Water Level Elev. / 4)

Example: Estimated + 2 ft. Water Level Elev. - Bottom Elevation of Well Limit = (- 2. 41 1/2) = -18.5 ft.

**HAWAII WELL CONSTRUCTION AND PUMP INSTALLATION STANDARDS**

To ensure that your as-built is in compliance with applicable standards.

WCPI Application Form 02/20/2007
INSTRUCTIONS FOR FILLING OUT WELL CONSTRUCTION/PUMP INSTALLATION PERMIT APPLICATION FORM

CHECKLIST FOR A COMPLETE APPLICATION
☐ Fill in the most recent application form.
☐ Fill every line in (both sides of application).
☐ Enclose a check for $25 payable to the Department of Land and Natural Resources.
☐ Mark the proposed well location on: the appropriate USGS quad map, the TMK map, the photo and the schematic, and attach to the application.
☐ For dug wells, attach a grading plan and cross section profiles showing existing and finished grades.
☐ Attach the original and 10 copies of the application form, maps, photo and schematic.
☐ Attach letters from OCCL and appropriate county agencies regarding items 21 to 23.
☐ Sign the application form.

Send the application and maps, copies, and the filing fee to:
Commission on Water Resource Management
P.O. Box 621
Hilo, HI 96720

DESCRIPTIONS FOR LINES ON APPLICATION

WELL LOCATION INFORMATION
1. STATE WELL NO. If you already have a state well number assigned, please fill it out here. Otherwise, leave it blank and a well number will be assigned by the CWRM.
2. WELL NAME Give the well a short concise name that will differentiate it from other wells. It is what you want to call the well.
3. ISLAND The island name that the well is located on.
4. TMK Tax Map Key number
5. Well operator's information Fill in the information for the well operator. This should be the entity that will be responsible for reporting the pumpage when the construction is completed.
6. Landowner’s information Fill in the information for the landowner of the property where the well is located.

PROPOSED WELL CONSTRUCTION
7. Proposed work The proposed work can be the construction of a new well, the modification (deepening, etc.) of an existing well, or the abandonment and sealing of an existing well. Check one box only.
8. Construction type The construction type can be drilled, dug, shaft, or tunnel.
9. Battery Is this well part of a battery of wells? A battery is defined as two or more wells in close proximity that for all intents and purposes functions as a single source.

PROPOSED PUMP INSTALLATION
10. Proposed work The proposed work can be either the installation of a new pump or the replacement of an existing pump. Replacement of an existing pump requires a permit only if the pump is of greater capacity than the existing installed pump. Otherwise, a replacement will only require the submission of a Well Completion Report Part II.
11. Proposed pumping rate The proposed pumping rate of the pump in gallons per minute.
12. Proposed amount of withdrawal The proposed amount of withdrawal in gallons per day, not to exceed (the proposed pumping rate in gallons per minute) x 1440 minutes/day.
13. Method of flow measurement This is the proposed method the operator will be using to measure pumpage for reporting purposes.

PROPOSED SURVEYOR
14. Proposed surveyor name and license number A Hawaii licensed surveyor must establish benchmark elevations for wells where proposed pumps of 70 gpm or more are to be installed, to comply with the well completion report requirements. Proposed pumps less than 70 gpm may have this requirement deferred until the Commission deems it necessary. If you wish to defer this requirement and your pump is less than 70 gpm, please write “deferred” in this space.

PROPOSED USE
15. Municipal Use is domestic, industrial, and commercial use of water through public services available to persons of a county for the promotion and protection of their health, comfort, and safety, for the protection of property from fire, and for the purposes listed under the term "domestic use".
16. Domestic Use is any use of water for individual personal needs and for household purposes such as drinking, bathing, heating, cooking, noncommercial gardening, and sanitation.
17. Industrial Use is for uses such as cooling or processing water, etc.
18. Irrigation Use is for golf courses, agriculture, etc.
19. Military Use is water used by the military from military operated water supply systems.
20. Other Use not described in items 15 through 19. Please add a description.

OTHER LEGAL REQUIREMENTS
21. Conservation District Use Permit (CDUP) To find out if your well is located in a Conservation District (CD), you should first check with the Land Use Commission (LUC) (http://www.hawaii.gov/dlnr/dlup/). If the well is not in a CD, then you may check out a CD box.
22. Special Management Area Permit (SMA) To determine if an SMA is necessary, on Oahu call 527-5374; on Hawaii call 961-8288; for Maui County call 270-7235; on Kauai call 241-6675.
23. Historic Preservation regulation If the parcel(s) affected by construction (well location/access road/infrastructure for well) has been reviewed by the State Department of Land and Natural Resources Historic Preservation Division (SHDP) or through an OEQC Environmental Review, Special Management Area Permit, etc.), check “yes” and attach any relevant documentation from SHDP. If the affected parcel(s) has not undergone SHDP review, attach a photograph of the affected area, a schematic diagram (showing the well location, access road and infrastructure for the well), and a short description of the prior use(s) of the land on which the well resides.

*Please note: You are strongly advised to contact the SHPD to obtain a pre-review of your project. In the event that you do not get an HP pre-review and if during the course of either review or the permit itself it is determined that you need SHDP’s concurrence, your application or permit may be held in abeyance or denied until issues with HP are resolved. To contact SHDP, please call 692-8015.

SIGNATURES
24. Well Driller This section must be filled out completely for the Well Construction Permit application to be accepted as complete.
25. Pump Installer This section must be filled out completely for the Pump Installation Permit application to be accepted as complete.

WCP Permit Instructions and Process Worksheets 2/26/2007
<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
<th>Responsible Party</th>
<th>Legal Deadline</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ensure that if items 21 to 23 of the application are required, they are</td>
<td>Applicant</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>obtained prior to applying for a permit. Otherwise, post-application comments</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>obtained from these agencies may delay processing of your application.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Application for Well Construction (or modification) and/or Pump Installation</td>
<td>Licensed Well Driller (for Well</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>(or replacement with larger capacity than existing pump - see note B below).</td>
<td>Construction) and/or Licensed Pump</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(See note C below).</td>
<td>Installer for Pump Installation)</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Issuance of Well Construction Permit to Well Driller (if applied for).</td>
<td>CWRM</td>
<td>Within 90 days of acceptance of completed application &amp;</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>contingent upon other agencies' legal requirements.</td>
</tr>
<tr>
<td></td>
<td>(See note A below)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Issuance of Pump Installation Permit to Pump Installer (if applied for).</td>
<td>CWRM</td>
<td>Within 90 days of acceptance of completed application &amp;</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>contingent upon other agencies' legal requirements.</td>
</tr>
<tr>
<td></td>
<td>(See note A below)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Execute/Sign Permit.</td>
<td>Licensed Well Driller or Licensed</td>
<td>Before work activity begins.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pump Installer</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Start of Work Notice.</td>
<td>Licensed Well Driller or Licensed</td>
<td>2 weeks prior to beginning of work activity.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pump Installer</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Post copy of permit at the work site.</td>
<td>Licensed Well Driller or Licensed</td>
<td>During entire period of work activity at the site.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pump Installer</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Construction of well. Note:</td>
<td>Licensed Well Driller</td>
<td>Within 2 years of issuance of Well Construction</td>
</tr>
<tr>
<td></td>
<td>a) If the well is to be abandoned during the course of the Well</td>
<td></td>
<td>Permit.</td>
</tr>
<tr>
<td></td>
<td>Construction Permit, and no further work is to be done, the applicant</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>shall apply for and obtain a Well Abandonment Permit prior to doing any</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>abandonment work.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>b) If the well is to be abandoned and relocated during the course of the</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Well Construction Permit, the applicant shall apply for and obtain a Well</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Abandonment Permit prior to doing any abandonment work, and a new Well</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Construction Permit shall be applied for and obtained prior to doing any</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>new work (i.e. go back to step 1 above).</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Installation of a temporary test pump that can adequately conduct a</td>
<td>Licensed Well Driller or Licensed</td>
<td>Within 2 years of issuance of Well Construction</td>
</tr>
<tr>
<td></td>
<td>step-drawdown test (if proposed pump &gt; 70 gpm).</td>
<td>Pump Installer</td>
<td>Permit.</td>
</tr>
<tr>
<td>10</td>
<td>Installation of permanent pump.</td>
<td>Licensed Pump Installer</td>
<td>Within 2 years of issuance of Pump Installation Permit.</td>
</tr>
<tr>
<td>11</td>
<td>Application for permit extension (if required).</td>
<td>Licensed Well Driller</td>
<td>None</td>
</tr>
<tr>
<td>12</td>
<td>Well Completion Report Part I (including Elevation Survey and Pump Tests, if</td>
<td>Licensed Well Driller</td>
<td>Within 60 days of completion of Well Construction</td>
</tr>
<tr>
<td></td>
<td>applicable) to be returned completed to CWRM.</td>
<td></td>
<td>(the date that ALL aspects of Well Completion Report</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Part I can be filled in).</td>
</tr>
<tr>
<td>13</td>
<td>Well Completion Report Part II to be returned to CWRM.</td>
<td>Licensed Pump Installer</td>
<td>Within 60 days of completion of Pump Installation</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(the date that ALL aspects of Well Completion Report</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Part II can be filled in).</td>
</tr>
<tr>
<td>14</td>
<td>Acceptance of Well Completion Report Part I, Elevation Survey.</td>
<td>CWRM</td>
<td>None</td>
</tr>
<tr>
<td>15</td>
<td>Issuance of Certificate of Well Construction Completion to Landowner.</td>
<td>CWRM</td>
<td>None</td>
</tr>
<tr>
<td>16</td>
<td>Acceptance of Well Completion Report Part II.</td>
<td>CWRM</td>
<td>None</td>
</tr>
<tr>
<td>17</td>
<td>Issuance of Certificate of Pump Installation Completion to Landowner.</td>
<td>CWRM</td>
<td>None</td>
</tr>
<tr>
<td>18</td>
<td>Pumpage may commence, Water Use Reporting required.</td>
<td>Well Operator</td>
<td>Monthly recording.</td>
</tr>
<tr>
<td>19</td>
<td>Abandonment (initiated in Step 2 of process).</td>
<td>Landowner</td>
<td>Until well sealed.</td>
</tr>
</tbody>
</table>

NOTES:
A. For non-compliance of other agencies' legal requirements that preclude the Commission from issuing a permit, your application may:
   a) Have the 90-day deadline for approval waived (at your request); or
   b) Be denied and you can seek recourse at a Commission hearing.
B. If a pump replacement of equal or less than the existing capacity is done, then only step 10 is required (Well Completion Report Part II).
C. If a contractor is not selected, the application will not be accepted as complete, but may be routed for comments. If the application undergoes a satisfactory review, a letter of assurance will then be issued indicating that a permit will be issued upon selection of a contractor without outstanding issues with the Commission.
# ZONING AND FLOOD CONFIRMATION

<table>
<thead>
<tr>
<th><strong>APPLICANT INFORMATION</strong> (To be completed by applicant)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>APPLICANT</strong></td>
</tr>
<tr>
<td><strong>TELEPHONE</strong></td>
</tr>
<tr>
<td><strong>E-MAIL</strong></td>
</tr>
</tbody>
</table>

| **PROJECT NAME** | Pierluigi Zappacosta |
|**ADDRESS/LOCATION** | |

| **TAX MAP KEY NO(S)** | (2)5-1-008:049 |

## ZONING INFORMATION (To be completed by ZABD)

| **COMMUNITY PLAN DESIGNATION(S)** | AG |
| **COUNTY ZONING(S)** | AG |
| **STATE LAND USE DISTRICT(S)** | AG |
| **SPECIAL DISTRICT(S)** | SMA/SHORELINE |

## FLOOD INFORMATION (To be completed by ZABD)

| **FLOOD HAZARD AREA ZONE(S)** | C |
| **BASE FLOOD ELEVATION(S)** | mean sea level, 1929 National Geodetic Vertical Datum; or |
| **FLOODWAY** | ☐ Yes ☑ No |

**FLOOD DEVELOPMENT PERMIT REQUIRED**: ☐ Yes ☑ No

*For flood hazard area zones B or C, a flood development permit would be required if any work is done in any drainage facility or stream area that would reduce the capacity of the drainage facility, river, or stream, or adversely affect downstream property.*

## REMARKS/COMMENTS

| ☐ Additional information required | ☐ Information submitted is correct |
| ☐ Required for Agricultural Subdivisions | ☐ Correction has been made and initialed |

**Reviewed and Confirmed by**:  

[Signature]

(Date)  

For AARON SHINMOTO, Planning Program Administrator  
Zoning Administration and Enforcement Division  
WAILUKU, HAWAII 96793  
E-mail: planning@mauicounty.gov
May 27, 2008

Nancy McPherson
County of Maui, Planning Department
250 South High Street
Wailuku, Hawai‘i 96793

Dear Ms. McPherson:

Kaunakakai, Island of Moloka‘i
TMK: (2) 5-1-008: 049

The aforementioned permit is for an additional single family residence.

We believe that “no historic properties will be affected,” because:

☐ Intensive cultivation has altered the land
☒ Residential development/urbanization has altered the land
☒ Previous grubbing/grading has altered the land
☐ An accepted archaeological inventory survey (AIS) found no historic properties
☐ SHPD previously reviewed this project and mitigation has been completed
☒ Other: Based on pictures of the project area, it appears to be fill.

In the event that historic resources, including human skeletal remains, are identified during routine construction activities, all work needs to cease in the immediate vicinity of the find, the find needs to be protected from additional disturbance, and the State Historic Preservation Division, needs to be contacted immediately at (808) 692-8015.

If you have any questions, please call me, at 652-1510.

Aloha,

Nancy McPherson, Deputy SHPO/State Archaeologist
Historic Preservation Manager/Deputy Administrator
State Historic Preservation Division

NM:
☒

C: Luigi Manera, Architectural Drafting Service, P.O. Box 1718, Kaunakakai, HI 96748
ZAPPACOSTA, Pierluigi
TMK (2) 5-1-008:049
Assessed Values reflect tax year 2008.

Search criteria: TMK Taxkey 2-5-1-8-49

<table>
<thead>
<tr>
<th>Taxkey</th>
<th>Subdiv/Condo</th>
<th>Tnr</th>
<th>Address</th>
<th>Owner/Lessee</th>
<th>Bds</th>
<th>Bths</th>
<th>Land area</th>
<th>Liv area</th>
<th>Last Sale</th>
<th>Sale Instr</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-5-1-8-49</td>
<td>Papohaku</td>
<td>F</td>
<td>4300 POHAKUOA RD</td>
<td>TELLOS LP</td>
<td>0</td>
<td>0</td>
<td>6.57 ac</td>
<td>0</td>
<td>9/2/2005</td>
<td>DEED $1,001</td>
<td></td>
</tr>
</tbody>
</table>

This information has been supplied by third parties and has not been independently verified by Hawaii Information Service and is, therefore, not guaranteed.

Copyright ©11/25/2008 by Hawaii Information Service