Return Receipt Fax Memo

For: Charlie Ice

Charlie. Enclosed are the following items:

- [✓] WCR I for Pauwela-Lewis #1 5620-03 with Driller's log form
- [✓] Constant rate pump test
- [✓] Well Survey
- [✓] Color well diagram

-Water level incorrectly calculated at 4.9', rate not entered on form - calculated at av. 37.92 gpm.

- [✓] WCR I for Pauwela-Lewis #2 5620-04 with signed form
- [✓] Driller's log form
- [✓] Constant rate pump test
- [✓] Well Survey
- [✓] Color well diagram

- Driller's log form: calculated av. Q = 48.25 gpm
- Calculated according to as-built, top of casing (132.26') is below grade (133.26'), water level measured from ToC

Please confirm receipt by checking off the enclosed items and faxing a copy of this memo to me at 808-572-0925.

From: Mike Robertson

My error in not catching fluid before as w/ Maui Vista, I overlooked that we have no appl. for PIP. Please submit w/ fee.

Thank you:

Mike Robertson
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June 25, 2002

Mr. Lawrence Wilson
Kihei Akahi Condominium Association
2531 South Kihei Road
Kihei, HI 96753

Dear Mr. Wilson:

Well Completion Report for Well No. 4327-07

We received your Well Completion Report Part II for the Kihei Akahi AOAO Irrigation Well (Well No. 4327-07) and acknowledge that it is complete. We received payment in full on March 27, 2002, for fines assessed by the Commission on March 20, 2002. This completes the permitting requirements for this well.

If you have any questions, please contact Charley Ice of the Commission staff at 587-0251 or toll-free at 984-2400 extension 70251.

Sincerely,

Linnel T. Nishioka
Deputy Director

cc: Wailani Drilling, Inc.
MEMO and ROUTE SLIP
05/09/01

WCR 2 Check for Well No. 4327-07 (survey to regulation memo)

1. **Pump Tests Check** (special condition of PIP? Yes/No) Glenn Bauer (initial if yes)
   
   Yes  No  If no, describe deficiency
   
   Step-Drawdown Test:
   
   followed WCPI Stds
   analysis attached
   proposed pump cap o.k.
   
   Aquifer Pump Test:
   
   followed WCPI Stds  
   T & S analysis attached
   
   Well Interference:
   estimated Steady-State 
   drawdown at 1-mile radius is __________ ft.  
   analysis attached
   
   Stream Surface Water Impacted:  
   
   2. **Pump Installation Check** Mitch Ohye (initial) 5-15-9
   
   Yes  No  If no, describe deficiency
   
   data complete 
   followed WCPI Stds 
   well database updated
   
   PIP is for 125 gpm  
   Actual GPM for Pump is 160 gpm  
   Other than that - O.K.  
   see highlight on WCR 2
   
   3. Charley/Lenore/Ryan (initial) take action based on above analysis
   
   4. Roy (initial) check
   
   5. Susan Subia (initial) finalize
   
   6. Linnel (initial) signature
   
   7. Charley/Lenore/Ryan File
**DEPARTMENT OF LAND AND NATURAL RESOURCES**

**UAC OR ATTACHED WORKSHEET**

**DATE:** 3/28/02

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**REMARKS:**

LINE (1) Fines for Well No. 4327-07 (payment for driller and applicant)

**NAME/DESCRIPTION (WANG INPUT):**

Wailani Drilling, Inc.

---

**WAILANI DRILLING INC.**

PH: (808) 572-2673
655 KULIKE ROAD
HAiku, MAUI, Hi 96708

PAY TO THE ORDER OF Water Resource Commission

Date: 3/22/2002

One Thousand Five Hundred and 00/100 DOLLARS

Water Resource Commission
P. O. Box 621
Honolulu, Hawaii 96809

Fine paid in full for Kihei Akahi violations

**Signature:** Ann Roberts
March 22, 2002

Mr. Mike Robertson  
Wailani Drilling Company  
655 Kulike Road  
Haiku, HI 96708  

Dear Mr. Robertson:

Notice of Commission Action  
Pump Installation Permit Violations  
Kihei Akahi AOAO Irrigation Well (Well No. 4327-07)

This letter serves as your official notice of action taken by the Commission on Water Resource Management (Commission) on the subject submittal. By a unanimous vote of the Commission at their meeting on March 20, 2002, the Commission accepted the recommendations to:

A. Find driller Wailani Drilling Company and permittee Kihei Akahi Condominium Association in violation of HAR §13-168-12(a) for installing a permanent pump without a permit.

B. Find driller Wailani Drilling Company and permittee Kihei Akahi Condominium Association in violation of HAR §13-169-3 for violating a condition of the permit.

C. Impose a fine of $750 each, on Wailani Drilling Company and on Kihei Akahi Condominium Association for the violations in "A" and "B", payable within 30 days.

D. Suspend action on any applications from Wailani Drilling, Inc. or Kihei Akahi Condominium Association until the respective fine in "C" is paid in full.

If you have any questions, please contact Charley Ice of the Commission staff at 587-0251, or toll-free at 984-2400, extension 70251.

Sincerely,

LINNIEL T. NISHIOKA  
Deputy Director

Please sign and fax back as receipt.

To 808 5720925.

Received 3/27/02.
March 22, 2002

Mr. Mike Robertson  
Wailani Drilling Company  
655 Kulike Road  
Haiku, HI 96708

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Pump Installation Permit Violations  
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Sincerely,

LINNEL T. NISHIOKA  
Deputy Director

Class  
Please sign and fax back as receipt.  
To 808 572-0925.

Received 3/27/02
March 22, 2002

Mr. Mike Robertson
Wailani Drilling Company
655 Kulike Road
Haiku, HI 96708

Dear Mr. Robertson:

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Pump Installation Permit Violations
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Sincerely,

LINNEL T. NISHIOKA
Deputy Director
March 22, 2002

Mr. Lawrence Wilson
Kihei Akahi Condominium Association
2531 South Kihei Road
Kihei, HI 96753

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Pump Installation Permit Violations
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Sincerely,

Linnel T. Nishioka
Deputy Director
FROM: Charley

TO: BAUER, G.
    FUJII, N.
    OHYE, M.
    JINNAI, R.
    IMATA, R.
    NAKAMA, L.
    HIGA, D.

TO: HARDY, R.
    HIRANO, E.
    SAKODA, E.
    NAKANO, D.
    NISHIOKA, L
    DANBARRA
    SUBIA, S.
    YODA, K.

FOR: Approval
    Signature
    Information
    Type Draft
    Type Final
    File
    Xerox copies
    Take Action:

PLEASE:

572 0925 (Water)

Susan: please address & send separately
AGENDA
FOR THE MEETING OF THE
COMMISSION ON WATER RESOURCE MANAGEMENT

DATE: March 20, 2002
TIME: 9:00 am
PLACE: DLNR Board Room
         Kalanimoku Building

1. Minutes of the February 27, 2002 meeting
2. Old Business/Announcements
4. Hawaiian Marine Enterprises APPLICATION FOR A WATER USE PERMIT, HME-1 Well (Well No. 4157-12), TMK 5-6-002: 009, Future (Aquaculture) Use for 0.300 mgd, Koolauloa Ground Water Management Area, Oahu
5. Mr. David Barratt, Kahui Pono, LLC After-the-Fact Application for a Stream Channel Alteration Permit (SCAP MA-330), Excavation /Bulldozing of Vegetation in Stream Channel, Honokala Stream, Makawao, Maui (TMK: (2) 2-9-02: 21 & 24)
6. Application for a Stream Channel Alteration Permit (SCAP KA-333), Mr. John Wells, Construct Two Roadway Crossings, Puu Ka Ele Stream, (TMK: 5-2-02: 11 & 12) Kilauea, Kauai
8. Executive Session: Approve Executive Session Minutes of February 27, 2002
9. Other Business

Materials related to items on this agenda are available for review at our office at 1151 Punchbowl Street, Room 227, and also will be available at the meeting.

Any person may testify or present information on any meeting agenda item, unless the item involves a proceeding in an existing contested case. In addition, if you have a legal interest that may be adversely affected by the proposed action, you may have a right to an administrative contested case hearing. You must make the request for such a hearing either orally or in writing at the public hearing or meeting for which this notice is given. Hawaii Administrative Rules (H.A.R.) Section 13-167-52(a).

If you request a contested case hearing, you will have the opportunity to present to the Commission oral or written evidence or testimony or both to establish your standing. You may present your testimony or evidence on standing at the meeting or public hearing described above or, alternatively, at a hearing set by the Commission at a later date.

If you request a contested case hearing either orally or in writing, you must also complete and file (or mail and postmark) a written petition for a contested case with the Commission within ten days after the date of the public hearing or meeting noticed here. Petition forms are available from the Commission. H.A.R. Section 13-167-52(e). If you do not make such a request or fail to file a timely written petition with the Commission, the consequence is that you will be precluded from later obtaining a contested case hearing and seeking judicial review of any adverse decision. H.A.R. Chapter 13-167.

Disabled individuals planning to attend the public hearing or meeting are asked to contact the Commission at the above address or phone (Kauai) 274-3141 ext. 70214, (Molokai) 964-2400 ext. 70214, (Hawaii) 974-4000 ext. 70214, (Molokai or Lanai) 1-800-GOV-INHI ext. 70214 or 587-0214 at least three days in advance of the public hearing or meeting to indicate if they have special needs which require accommodation.
Kihei Akahi Condominium Association and Wailani Drilling Company

AFTER-THE-FACT PUMP INSTALLATION PERMIT VIOLATIONS

Kihei Akahi Irrigation Well (Well No. 4327-07)

Well Construction: 6 inches Casing Diameter, 110 ft. Deep Well
Pump Installation: 125 gpm for landscape irrigation use

TMK 3-9-2 1, 2531 South Kihei Road, Maui

APPLICANT:
Kihei Akahi Condominium Association
2531 South Kihei Road
Kihei, HI 96753

LANDOWNER:
Kihei Akahi Condominium Association
2531 South Kihei Road
Kihei, HI 96753

DESCRIPTION:
Location: (See Exhibit 1)

BACKGROUND:
July 7, 2000
A completed Well Construction Permit (WCP) Application was received for a well at 55 ft elevation, with a note that the well would probably need to be deeper than one-fourth the theoretical unconfined basal aquifer thickness because of an anticipated confining layer of lava dipping below sea level. The application also supplied the proposed pump installation information, specifying installation of a 125 gpm pump, but did not check the “Pump Installation” box at the top of the page.

August 9, 2000
WCP approved without language addressing the potential well depth issue.

November 6, 2000
WCP returned signed, as required, prior to commencing work.

November 8, 2000
Well construction completed.

November 9, 2000
Pump installed. Pump testing completed in two days; pump left in well.

Item 7
January 3, 2001
An incomplete Well Completion Report Part 1 (WCR1) was submitted. The driller and permittee were notified that the report did not include the as-built drawing, had discrepancies in the elevations provided, and lacked required signatures. The report form was returned for signatures.

February 5, 2001
Corrected Well Completion Report Part 1 (WCR1) filed with as-built drawing (Exhibit 6). The wellbore encountered a 22-ft layer of “blue rock”, and a second, 18-ft “hard blue rock” layer. Once the wellbore went below the second layer, the static water-level rose to +1.12 ft, msl. The elevation at one-fourth the theoretical basal depth is -10.36 ft, msl, while the elevation at one-half the theoretical basal depth is -21.84 ft, msl. The total well depth is shown in the as-built drawing as 80 ft, or -25 ft msl. Initial chlorides were measured at 640 mg/l, more than twice the EPA guideline limit for potable use. The depth of the at least partially confined aquifer is unknown.

A copy of the pump tests showed the original measurements of total dissolved solids (TDS) converted to chloride readings, as the form calls for. The driller was asked by phone why chlorides did not change in the step-drawdown test although they had done so in the constant-rate test. The driller stated only that the apparent discrepancies in chloride readings between tests are typical of pumping performance in confined conditions common to the driller’s experience on Maui.

February 9, 2001
Pump Installation Permit (PIP) approved (Exhibit 2) and WCR1 accepted as complete.

April 26, 2001
Well Completion Report Part 2 (WCR2) filed (Exhibit 3). The date of pump installation was noted as November 9, 2000, the same pump for testing as eventually completed as permanent prior to the issuance of the permit. At this time, the penalty policy was being formulated; no Notice of Violation was sent although an inquiry clarified that the test pump remained to become the permanent pump.

November 14, 2001
Staff went to the Commission with potential violations in this case. The submittal was withdrawn by staff following discussions with the driller.

December 4, 2001
Letter received from Wailani Drilling Inc. detailing its position, procedures and assumptions on installing pumps (Exhibit 4).

WATER AVAILABILITY:
Kamaole Aquifer System of the Central Sector
Estimated Sustainable Yield: 11 mgd
Proposed Use: 0.05 mgd., landscape irrigation

ISSUES/ANALYSIS:

There are two main issues: 1) installation of permanent pump without a pump installation permit, and 2) installation of a pump exceeding the permitted capacity.
After-the-fact Pump Installation:

HAR §13-168-12(a) states:

"No well shall be constructed, altered, or repaired and no pump or pumping equipment shall be installed, replaced, or repaired without an appropriate permit from the commission."

Well Construction Permits (Exhibit 7) bear two standard provisions affecting installation of pumps for testing:

1) The caption reads: 
"...this document permits the construction and testing..." (emphasis added)

2) Standard Condition #7 reads:
"The following shall be submitted to the Chairperson within sixty (60) days after completion of work:
...e. Complete pumping test records,..."

Staff operates under the assumption, from long experience with large municipal wells, that pump testing will be done with a line-shaft pump owned by the driller that is removed following testing and prior to issuance of the pump installation permit. The well construction permit covers "drilling and testing", and well completion reports require filing, among other things, the complete pumping test records. Once the completion report with pump test results is reviewed with satisfaction, the pump installation permit is issued, and an appropriately-designed pump is permanently installed in the well. Over the years, line-shaft pumps have begun to give way to submersibles, which have some advantages and now have improved technology. The Commission has allowed a combined well construction/pump installation permit application, with the understanding that the process proceeds in separate steps for each permit. Under this process, it is considered a violation to install the permanent pump without the pump installation permit (PIP). The intent of this procedure is to assure that the pump tests and other well construction standard conditions can be reviewed circumspectly to assure proper data collection and protection of the resource prior to installation of the permanent pump and ability to use the well, and avoiding the added expense of requiring a permanent pump to be removed should it prove to be too large or testing is inadequate. However, for small pumps, and at the request of this very same driller, DEC-ADM 98-G5 (Exhibit 8) allows using the permanent pump for testing where the capacity is less than 70 gpm. Requested pump capacity for this well was 125 gpm.

Wailani Drilling Company started up work in 1995, finding a niche in drilling small-bore wells for individuals living in the country. The company’s approach has been to install a small permanent submersible pump for pump testing, which was approved via DEC-ADM 98-G5. However, the driller has been using this approach for pumps larger than 70 gpm. The driller states that they disconnect pump controls to render the pump inoperable, and once the pump tests have been reviewed and a pump installation permit issued, permanent wiring is installed with a controller and the connecting piping is completed. Wailani asserts that without the controller, a closed water supply system completed by an unscrupulous party could blow apart when the pump is turned on. Staff’s assumption follows practice that a permanent pump is the one installed within the well casing without regard to external appurtenances such as controllers, meters, piping, permanent hard-wiring, etc.

Wailani reads the Hawai‘i Well Construction and Pump Installation Standards (HWCPIS) adopted in January 1997 to make no distinction between “test” pumps and “permanent” pumps, and no requirement to remove “test” pumps following the aquifer pump tests. The driller concurs with the need to protect the
aquifer from overpumping and to protect the well owner from contamination liability, and has followed a procedure to prevent the owner from using the well. Wailani Drilling further points out that, on several occasions, further testing has been required, and also believes that removal during the brief review period before re-installing causes unnecessary additional risk and expense. Wailani followed what it believed to be the common sense conclusion that the pump they used for testing did not qualify as the permanent pump installation specified in the Rules and by the Standards. Therefore, the company felt it was not only on solid legal ground, but on responsible contractual grounds as well, to proceed with an inoperable pump left in the ground until the pump installation permit is approved.

Although staff recognizes the economical and safety benefits from using the permanent pump for testing, the submersible pumps may not provide a wide enough range of pumping rates to meet the standard step-drawdown tests. The HWCPIS specify that the step-drawdown test rates should be chosen to show changes in water levels. DEC-ADM 98-G5 was approved by the Commission partly because pumps less than 70 gpm do not require step-drawdown tests under 2.9(b) of the HWCPIS. Using a submersible pump for proposed larger capacity wells do not necessarily show this crucial information. Therefore, there is a tradeoff between data collection and reduction of costs and added safety. In this case, although the HWCPIS were followed in providing different levels of pumping, the results do not show change in water level. This is one aspect of the Standards that staff is examining for possible amendment.

Meanwhile, working with this and other drillers, staff has proposed a procedure for installing pumps for pump testing when the pump will eventually become the “permanent” pump. This procedure was approved by the Commission on January 30, 2002 for the PIA-Kona Limited Partnership Well (Well No. 4757-03 & 04), as follows:

- a. The pump tests shall be started within one week of the installation of the pumps or staff requests that the pump test be rerun. Otherwise, the pumps shall be removed.
- b. The applicant shall submit pump test results within one day of the completion of the pump tests.
- c. Staff will complete its analysis of pump results within one business day and issue pump installation permit if pump tests are satisfactory.
- d. In the event that pump tests are not satisfactory to Commission staff, the applicant shall rerun the pump tests in accordance with a, b, and c above until they are in compliance with standard pump test requirements.

This is acceptable to staff in the tradeoff between assuring good pump test data and reduced cost and risk to the permittee.

**Installing Larger Pump than Permitted:**

HAR §13-169-3(a) states. *“Any person who violates any provision of this chapter or any permit condition or who fails to comply with any order of the commission may be subject to a fine imposed by the commission. Such fine shall not exceed $1,000 per violation. For a continuing offense, each day's continuance is a separate violation.”*

The application requested a pump capacity of 125 gpm. Pump testing was done at 160 gpm, and supported the higher pumping rate for the long-term test. However, there was no notice or request for an increase in the rated pump capacity at the time of transmitting the pump tests and prior to issuance of the pump installation permit. Therefore the permit was for 125 gpm, as requested. It was not until the WCR2 was transmitted that staff learned that the installed pump was rated at 150 gpm against 221 feet of head.
Penalty Calculation

Minimum Fines: This case poses two potential violations:

1) Installing a permanent pump without a permit: minimum fine $250.
2) Installing a larger pump than permitted: minimum fine $250.

As these are first time violations, daily fines are not recommended.

Gravity Component:

1) Number of incidents. The fact that Wailani Drilling, Inc. has pursued this approach of installing pumps contrary to staff’s assumptions about the meaning and expectations of proper procedures raises a concern of willful violation of these procedures. Staff believes, however, that the driller has followed another line of logic that makes business sense and conforms to the facts at hand, with no contrary intent.
2) The larger pump should not have been installed without it being expressly permitted. All permits are required to be signed and returned to the Commission prior to commencement of work as verification that the permittee and driller understand and agree with the conditions therein. Therefore, a gravity component of $125 is being added to each violation.

Mitigating Components:

1) The driller has been diligent in trying to conform to staff expectations, once notified. Because a pump must be installed to run aquifer tests, and because the Code and the Rules are silent as to the distinction between a “test pump” and a “permanent pump”, and are additionally silent about when to remove a “test pump”, staff is persuaded that the contractor had reason to believe that the chosen procedure was sound and in conformance with existing rules, even though staff’s understanding of the applicability of the Rules has been a distinct contrast. Although this is the second time this contractor comes before the Commission with this type of potential violation, in the first instance the Commission supported the contractor’s position, and issued a Declaratory Ruling subsequently benefiting many other small well owners. At that time, the sequence of “test” pump installation and “permanent” pump completion was not addressed. This may also have encouraged the contractor to believe that it is an acceptable procedure to the Commission.

As a result of this case, Wailani Drilling has met with staff in our office twice, after the fact, to discuss the meaning of the pump installation process, compare staff’s expectations with the driller’s procedures, and to propose an alternative means of assuring the Commission’s purposes in preventing installation of a pump without a permit, which staff is reviewing for upcoming changes in the HWCPIS. This activity shows diligence in seeking a sound solution to serve both the needs of protecting resource and in minimizing costs and risks to clients and consultants alike.

This brackish aquifer has many wells pumping water with chlorides at this level and higher. Many of these can use the water directly on irrigated uses, but many with the higher chlorides must blend with potable water brought from the Iao Aquifer. This well might be considered a relatively “good” well among others in this aquifer, and has beneficial use for its owners.
2) The pump tests were run at a rate that supports the larger pump, indicating attentiveness to the Standards.

Staff believes this case has produced progress in understanding a more complex drilling environment than has been true in the past, and the need to clarify inconsistencies or gaps in the Rules and the Standards as well as convey the import of staff's strict adherence to established procedure. Staff's position remains that the language of permits has clearly and consistently represented the Water Code and the Rules. In addition, staff tries to be responsive to the regulated community by updating materials and procedures to match actual working conditions. However, staff expects applicants or permittees to seek advice or approval prior to risking a violation by going ahead with work when there is unclear understanding. Therefore, no reduction to the fines is being recommended.

RECOMMENDATION:

That the Commission:

A. Find driller Wailani Drilling Company and permittee Kihei Akahi Condominium Association in violation of HAR §13-168-12(a) for installing a permanent pump without a permit.

B. Find driller Wailani Drilling Company and permittee Kihei Akahi Condominium Association in violation of HAR §13-169-3 for violating a condition of the permit.

C. Impose a fine of $750 each, on Wailani Drilling Company and on Kihei Akahi Condominium Association for the violations in “A” and “B”, as summarized in Exhibit 5, payable within 30 days.

D. Suspend action on any applications from Wailani Drilling, Inc. or Kihei Akahi Condominium Association until the fine in “C” is paid in full.

Respectfully submitted,

LINNEL T. NISHIOKA
Deputy Director

Exhibit(s): 1 (Location Map)
2 (Pump Installation Permit for Well No. 4327-07)
3 (Well Completion Report Part 2 for Well No. 4327-07)
4 (December 4, 2001 letter from Wailani Drilling Inc.)
5a (Penalty Calculation spreadsheet -- driller)
5b (Penalty Calculation spreadsheet -- owner)
6 (As-built)
7 (Well Construction Permit)
8 (DEC-ADM 98-G5)
Kihei Akahi Irrigation Well  
4327-07
Mr. Lawrence Wilson  
Kihei Akahi Condominium Association  
2531 South Kihei Road  
Kihei, Maui, HI 96753

Dear Mr. Wilson:

Pump Installation Permit  
Kihei Akahi Irrigation Well (Well No. 4327-07)

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). Please note the corrected well number for this well, for future reference. As part of the Chairperson's approval, the following special conditions were added and are part of your permit under Permit Condition 11:

**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, well operator, and/or well owner are responsible for all conditions of the permit. This includes ensuring that the pump installation contractor submits a completed Part II of the Well Completion Report form (enclosed) within sixty (60) days after the pump installation work is completed. Be advised that you may be subject to fines of up to $1000 per day for any violations of your permit conditions starting from the permit approval date.

Please sign and have the contractor sign both permit originals and return one for our files. A copy of the Well Completion Report (Part II) and a copy of your water use report form are enclosed for your use.

**IMPORTANT** - Pump Installation shall not commence until a fully signed permit is returned to the Commission. Except for the monthly water use report form, please provide copies of all the information in this packet to your pump installation contractor.

Finally, this letter is notice that we have accepted your Well Completion Report - Part I as complete as of February 9, 2001.

If you have any questions, please call Charley Ice of the Commission staff at 587-0251 or toll-free at 984-2400, extension 70251.

Aloha,

GILBERT S. COLOMA-AGARAN
Chairperson

Enclosure  
c. Wailani Drilling Company
PUMP INSTALLATION PERMIT
Kihei Akahi Irrigation Well, Well No. 4327-07

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 Kihei Akahi Irrigation Well (Well No. 4327-07) at 2531 South Kihei Road, Mau, TMK 3-9-20:2, subject to the Hawaii Well Construction & Pump Installation Standards (1/23/97) 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.

2. The pump installation permit shall be for installation of a 125 gpm capacity, or less, pump in the well.

3. The permittee, well operator, and/or well owner shall provide and maintain an approved meter or other appropriate means for measuring and reporting withdrawals and water levels, and appropriate devices or means for measuring chlorides and temperature. These data shall be measured monthly and reported to the Commission on an annual basis, on forms provided by the Chairperson (attached).

4. The proposed use 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 pump water from a well shall not constitute a determination of correlative water rights. The permittee, well operator, and/or well owner are notified and by this provision understands that the quantity of water taken from the well could be reduced by the Commission in the future. This permit is not a commitment that the pump capacity permitted here or even some lesser amount is guaranteed in the future.

5. The permittee, well operator, and/or well owner shall complete and submit as-built drawings and Part II - (Permanent) Pump Installation Report of the Well Completion Report (attached) to the Chairperson within sixty (60) days after completion of work.

6. 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.

7. The pump installation permit application is incorporated into this permit by reference and is subject to the Hawaii Well Construction & Pump Installation Standards (1/23/97). If the HWCPIS are not followed and as a consequence water is wasted or contaminated, a lien on the property may result.

8. The permit may be revoked if work is not started within six (6) months after the date of approval or if work is suspended or abandoned for six (6) months, unless otherwise specified. 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 three (3) months prior to the date the permit expires. If the commencement date is not met, the Commission may revoke the permit after giving the permittee, well operator, and/or well owner notice of the proposed action and an opportunity to be heard.

9. If the well is not to be used it must be properly capped. If the well is to be abandoned then the permittee, well operator, and/or well owner must apply for a well abandonment permit in accordance with §13-168-12(f) prior to any well sealing or plugging work.

10. 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.

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

Date of Approval: February 9, 2001
Expiration Date: February 9, 2003

GILBERT S. COLOMA-AGARAN, 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 also understand that non-compliance with any permit condition may be grounds for revocation and fines of up to $1000 per day starting from the permit date of approval.

Permittee's Signature: ___________________________ Date: __________
Printed Name: ___________________________ Firm or Title: ___________________________

Installer's Signature: ___________________________ C-57, C-57a, or A License #: __________ Date: __________
Printed Name: ___________________________ Firm or Title: ___________________________

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

Attachments

Wailani Drilling Company

Department of Health/ Safe Drinking Water & Wastewater Branch

Mau, Department of Water Supply

USSS
**WELL COMPLETION REPORT - PART II**

**Pump Installation**

Instructions: Please print in ink or type and send completed report (with attachments, if applicable) to the Commission on Water Resource Management, P.O. Box 621, Honolulu, Hawaii 96809. The Commission may not accept incomplete reports. This form shall be submitted within 60 days of the completion of work. For assistance, please consult the Hawaii Well Construction and Pump Installation Standards or call the Regulation Branch at 587-0225. For updates to this form or additional information, please visit our website at http://www.state.hi.us/dlnr/cwrm/.

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1. State Well No.: **4327-07**  
   Well Name: **Kehei-AKAHI**  
   Island: **MAUI**

2. Address: **2531 South Kehei Rd.**  
   Tax Map Key: **3-9-020-002**

3. Pump Installation Company: **WAILANI DRILLING**

4. Date Pump Installed: **11/9/00**

5. **PERMANENT PUMP INFORMATION**

   - **Pump Type, Make, Serial No.:** Grundfos, Submersible, A12B606  
   - **Rated Capacity:** 150 gpm
   - **Motor Type, H.P., Voltage, rpm:** Franklin 15HP, 200V, 3450 rpm
   - **Type of flow meter:** Turbine which measures in **GALLONS/ MINUTE**

6. **Method of flow measurement:**
   - [ ] Flowmeter
   - [ ] Manufacturer **McWormic** Make **M-3** Size **3''**
   - [ ] Weir
   - [ ] Open Pipe
   - [ ] Orifice
   - [ ] Other, explain below

7. Fill in the as-built section on the other side of this sheet.

8. **Other remarks/comments:**
   - **† Rated @ 150 gpm @ 221 FT of HEAD**
   - Actual gpm was 160 gpm @ Head (intake set @ 62 FT)
   - **† NOTE: Pump was installed & Hung on 11/9/00 & Tested with Generator only. "No Controller" Final Installation with Controller on 4/10/01**

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**Pump Installation Contractor (print):** **Mike Robertson**  
**C-57/C-57a/A Lic. No.:** 20115

**Signature**

**Date:** 4/10/01

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**Permittee (print):** **Lawrence Wilson**

**Signature**

**Date:** 4/10/01

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WCR2 Form 5/2000

EXHIBIT 3
To: Linnel T. Nishioka  
Deputy Director of C.W.R.M.  

Subject: Alleged Pump Permit Violations (Staff Submittal 11/14/01)

Dear Linnel:

I would like to attempt to clarify the issue regarding the alleged pump installation violations. First of all I would like to say that the last 8 years as the WRC staff has been developing standards and procedure, it has been a learning process for both WRC staff and us here at Wailani Drilling. There have been clerical and procedural mistakes made on both sides as we move ahead without clear understanding and interpretation of the standards.

I feel bad sometimes for Charlie because he gets caught in the middle as he communicates to us his view or interpretation of procedures (as he perceives it from your start) and then later he finds out that his and our perception of what you want is wrong. This is difficult for us and Charlie because we have over the years developed a friendship with Charlie and very much appreciate his “extra mile” helpfulness.

Miscommunication and misunderstanding are precisely the case in this issue.

Our Position

A few years ago we were having trouble keeping up with the reporting and paperwork to the Commission so I hired Bill Steele to do this job. Bill is very meticulous and goal oriented and set out to wrap up any loose ends we had with the commission. Bill started, owned and managed a very successful machine boring and drilling company with over 70 employees, and yet he has become somewhat, as I have, concerned with the increasing difficulty of understanding the expectations of WCRM staff and with the well construction processing procedure.

Neither Bill or myself are the type to disregard rules or even the principles of the rules. I have owned and managed several business over the past 28 years. neither of us have ever been in violation of any government agency rules or laws in the past. We have been commended by John Mink as a preferred drilling company and by most all of the Hydrogeologist and many Engineers in the State, including Steve Bowles, John Stubbart, Gordon Tribble, Steve Gingrich, and many other professionals.

Even people with which we have had conflicting viewpoints in the past, such as David Craddick and Tom Nance, continue to recommend our company and tell people that we drill some of the straightest and highest quality wells of any company in the State.

We have never left any tools in the ground, even when it has taken weeks to retrieve them because of the fact that we do not want to jeopardize the integrity of the Aquifer.

At this point and in the past we have always had 100% customer satisfaction.

page 1

Certified by and a member of the National Ground Water Association

EXHIBIT 4
The Misunderstanding

As Bill began to fill out the WCR-II forms he always wrote on line 4. date pump installed, the date of the test pump installation and since we always use the test pump (except in some county jobs) as the permanent pump, he would enter all the pump information about the test pump which would later become the permanent pump on the form. This was done with Charlie's full knowledge and our belief that this was acceptable to the Commission. Everything was going fairly smooth until he completed WCR-II forms for 2 wells which were over the 70 g.p.m. rule. He continued to record the data as before, and yet it was flagged by someone in your office as a violation.

I can understand how this happened because the processing person only responded to the dates which he saw in front of him, however it is clear from the dates on the form that Bill was referring to the test pump installation because in the case of Kihei Akahi, the pump installation date Bill wrote on the WCR I form was 11/9/00 and the date of the pump test was 11/10/00. This demonstrates that this pump was installed at this time for test purposes.

We were gathering information for the water commission as the standards require, certainly not for our benefit or the benefit of the well owner.

This can also be verified from the date on the pump test forms which we turned in to your office. According to the Standards, the pump test must be performed, analyzed and approved by the commission before the well can be used.

We followed procedure exactly as written in this order:

#1 Began constructing well on 10/25/00 after signing well construction permit on 8/9/00.
#2 Installed test pump on 11/9/00.
#3 Performed pump test on 11/10/00.
#4 11/10/00 At 5:00 p.m. All Construction Stopped Pump line capped no control available. No water lines or systems in place to even use the water.
#5 PIP issued and signed 4/3/01 Began Installing permanent pump equipment (install VFD controller, regulator valve, flowmeter and other control equip.) Connect to irrigation system 4/16/01
#6 Started using water for irrigation on May 1st 2001

The pump controller did not even arrive until April 9th and as shown in 2 letters enclosed from the condo manager and the irrigation contractor, they were notified that no water could be used until the permanent pump permit was issued. All of our clients are informed of the 2 step process and that no permanent pump installations may be done until the pump permit is issued. No water was used until May 1st 2000 which was after we received the permanent pump permit.

If there had been any water pumped or used after the pump test then there would be a clear violation of the standards and the purpose of the standards, but there was not. There is no definition of what constitutes a test pump verses a permanent pump. There is nothing written in the standards which requires the test pump to be removed within a certain time frame. The point could be debated as to what the definition of a test pump is, verses a permanent pump, but one point that can be clearly established is the fact that on 11/9/00 at Kihei Akahi, the pump was installed and being used for testing purposes only.

Certified by and a member of the National Ground Water Association
This is also exactly the case with the Front Street project. (addressed in detail in Bills letter - enclosed). Charlie informed us that there would need to be pump test data submitted for this already existing well so this is what we set out to do with the understanding on our and Charlie’s part that we were satisfying the requirements of the commission.

Both Bill and I have read the HAWAII Well Construction & Pump Installation STANDARDS several times and referenced them many times in an effort to apply them to our well construction and pump installation work. We believe we have neither violated the standards in regard the pump installation nor violated especially the purpose and scope of the standards.

Part I ADMINISTRATIVE STRUCTURE. part c. 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, agricultural uses” etc.

[174C-86] (b) states “if any well construction or pump installation standard is violated and as a consequence ground water is wasted or any well is contaminated, the commission, after giving notice of the defect to the owner of the land on which the well is located and giving the owner a reasonable time to correct the defect, may itself correct the defect and charge the landowner for the cost of such correction.

Continuing through the STANDARDS part VII. WELLS (174C-81) Definitions, paragraph 2 states: “Installation of pumps and pumping equipment” means the procedure employed in the placement and preparation for operation of pumps and pumping equipment, including all construction involved in making entrance to the well and establishing seals and repairs to existing installations.

Paragraph 4 states: “Pumps and pumping equipment” means any equipment or materials utilized or intended for use in withdrawing or obtaining ground water. It includes seals, tanks, fittings and controls.

{174C-15} Penalties and Common Law Remedies. (b) Any person who violates any provision of this chapter may be subject to a fine imposed by the commission. Such fine shall not exceed $1000.00. For a continuing offense, each day during which the offense is committed is a separate violation. A continuing offense could not be considered continuing unless it was first established that there actually was an offense. This goes against due process in which a person is presumed innocent until proven guilty. To me, just because a person did not know how to fill out a form or even made a mistake on a form does not mean he is guilty of the violation in question.

Referring back to {174C-86} paragraph (b), “...after giving notice to the owner...”. In the case of these alleged violations no notice was ever given the owner or to Wailani Drilling. If there had been a violation or a notice of violation, Wailani Drilling would have taken immediate steps to remedy the situation. In speaking to a State attorney it was pointed out that according to State and Federal Constitutional Law, the purpose of a continuing fine is to apply motivation to correct the defect or violation, not to intimidate property owners of some potentially devastating monetary penalty walking in fear that they did not dot all their i’s or cross all their t’s.

Linnel, I know you are an attorney and I have known you to be a fair person. This is why I believe if I can communicate all of the facts to you, you can look at this matter objectively. I don't believe we have communicated all of the facts to you, as we have not spoken much with you directly.

Certified by and a member of the National Ground Water Association
Our Assessment Now and Proposed Solutions

After thoroughly researching the Hawaii water well and pump standards, we believe there are many undefined areas of the standards. In particular, there is no definition of what constitutes a test pump versus a permanent pump. There is also nothing written in the standards which requires the test pump to be removed within a certain time frame. In fact, in keeping with the test procedure, the test pump should not be removed until the State Water Commission has evaluated and determined that the test pump results are acceptable with no further testing being necessary.

Many wells which Wailani Drilling has tested, including some large County municipal wells, have required that the test equipment remain for several months until all the appropriate agencies (i.e., Dept. of Health, Board of Water Supply, Water Commission, etc.) have been satisfied. Omaopio-Esty Well, Kula Meadows Well, Launiupoko Well 2, Maunaolu Well and numerous others have required further testing days, weeks or sometimes months after the initial pump test.

Usually this is requested by the State department of health but sometimes like in the case of Launiupoku the hydrogeologist, (Tom Nance), wanted to do some experimentation with various pump tests and special instrumentation. In the case of Maunaolu, the laboratory botched the test and required more samples. Every time in each of these cases we had to reschedule generator rental, take all of the control equipment back to the well site and coordinate everyone involved.

As I hope you can see, it would be very inefficient, counterproductive, costly, unnecessarily risky, and we believe, contrary to the purpose of the standards, to require the test pump to be removed prior to the Commission issuing the permanent pump permit, and at the risk of sounding redundant, there is nothing written in the standards which requires removal of the test pump. Pump installation is very dangerous work, especially in deeper installations. I personally know of 5 well drilling/pump installing personnel who have died in the State of Hawaii in the last ten years due to on the job accidents. One as recently as 6 months ago in Lahaina who worked for Beylik Drilling. Also one pump installer had almost every bone in his face broken when a line shaft pump coupling came loose and the pump fell as the wrench broke in half, before it hit him in the face. This is not to mention the numerous wells that have had to be completely abandoned because of the pump being dropped for some reason and being jammed in so badly it can not be recovered.

Because of this high risk and liability which the contractor assumes, the pump installation prices are high. The average pump installation labor price on a shallow well is $2000-$3,000. and on deeper wells such as the Waiki Ranch well they got estimates for up to $250,000.00 to replace their pump.

The point I would like to make here is this: The water resource can be protected and managed just as well without going to such great expense and risk of life and limb. Since there is nothing written in the standards addressing this, I believe it was never the intention of those who wrote the rules to require test pump removal before approval and if it was, then they could not have contemplated all of the reasons why it is not appropriate.

There is also nothing in the standards which state that the test pump cannot be utilized as the permanent pump once the permanent pump permit is issued. Maui Board of Water Supply did this on at least one, 1 million gallon per day well with a test pump which they purchased from us. All we removed was the Diesel power head. They left the line shaft pump in the well and as soon as they received the pump permit, they installed an electric
power unit and began using the well. It is still in use after 2 years. Also very deep wells have been constructed, tested and utilized with the original test pump (a submersible) because of the excessive cost of removing test pump and installing another pump, such as in the case of the Waiki Ranch Well on the Big Island. Some wells are too deep to even use a line shaft pump.

In our view the gaps in the standards and definitions of the standards need to be filled in so they are clearly understood and easy to apply in order to accomplish their purpose and scope as defined in Part 1, section 1: “

protecting and preventing the pollution, contamination and wasting of ground water in the State of Hawaii.

We are prepared to work together with you and to propose and develop new rule amendments just as we did with Dec. ruling ADM98- G5 which allows pumps of less than 70 gpm to be installed before the pump permit.

Our desire, and I am sure it is yours also, is to see the whole process streamlined so that there is less of a burden on everyone, as the process is simplified and the responsibility is spread out more evenly among all parties involved. I am sure the Commissioners do not enjoy having to deal with matters of administration procedure unnecessarily.

Test pumps can be capped and locked and they all have sealed flowmeters. There are many ways to prevent a land owner from using the resource prior to pump approval.

If you could look at this for a moment from our point of view, the drilling contractor, at this point assumes almost all of the liability and risks associated with drilling, testing and documenting a well. If for example the tools twist of and cannot be retrieved from the hole, the driller could be liable for providing an entry point for contaminates and fined large fines.

We are acting as your agent to collect information and enforce the standards. There have been times in the past when we could have, to protect ourselves, falsified information, but we did not, because we have been more concerned with our reputation and the accuracy of the groundwater model.

Well construction is not an exact science. Some speculation is done even when the well construction permit form is filled out due to unknown variables.

Some leeway needs to be given to the driller (just as the standards state that “the State water code shall be liberally interpreted) so he can make decisions on the site which stay within the scope and purpose of the Well Standards.

An example is the drilling depth issue. A person can only speculate what the static head will be before they drill the well. In 95% of the wells drilled on Maui there is no water encountered at sea level in fact sometimes not within 70 feet below sea level. When the confining layer is drilled through then the water will come up to its static level. How can you determine what your legal drilling depth is until you encounter the water bearing zone. It’s a catch 22. The driller if he speculated wrong about the static head and it was too low, he could unknowingly be drilling too deep according to the Ghyben-Herzberg Theory and the rule based on this theory. However most all of the wells drilled through this confining layer produce very good water, but if a well did not, there is still no damage to the resource, because if the Water Commission decided they didn’t like the results, the well could be back sealed or sealed off completely with grout.
Ghyben and Herzberg Developed a formula in the 1920’s based on the specific gravity differential between fresh water and sea water and the measurement of a lense of fresh water with a static head above sea level being held at a certain level because of fresh water being lighter than salt water. According to the rule, the interface zone depth can be calculated if there are no confining rock ledges or shelves caused by dense lava flows. This enables us to more accurately speculate on the thickness of the fresh water lense. Although this can be demonstrated in the lab with a U shaped test tube and with controlled absolute values, and does apply true in many wells in Hawaii. It can only be theoretically applied. It has been our experience that there are too many other variables in the real world of geology for this theory to hold true across the board. For example confining layers of impermeable bluerock above and below the lense, or a steep sloping dike condition with a corresponding confining layer under it, can both be conditions which will make the Ghyben-Herzberg Theory totally inapplicable.

A good example is the Maui Beach Hotel Well. They had previously a 15 ft. dug well at 8 ft. elevation with 1500 ppm chlorides. We constructed a well which tapped a confined lense 50 ft. deep and pumped water with only 250 ppm chlorides. There are many such wells as this one. Any well drilled in an area where there is a dense lava flow which has submerged below sea level, the G.-H. theory will not be accurate. In fact the only places on Maui I have experienced the success of this theory are in areas with Alluvial fill (the Olowalu Well) and sandy coral marshy areas where there is no lava ledge anywhere near sea level. This is addressed in more detail in my letter to you dated 9/22/00 and your submittal on 10/26/00.

The goal of this letter in Summary

Is to encourage continued cooperation with one another, in the same spirit of grace, trust and mutual respect as we have had in the past. I also hope that we can not get snagged and bogged down with technical mistakes or typographical errors, but that we can work together to streamline this process, as stewards of a valuable public trust; The Hawaii’s water resource.

I am also asking that you consider withdrawing the violation submittals from the commission agenda, because I hope this letter has demonstrated that we have not violated any of the scope or purpose of the standards, intentionally or unintentionally. We just ask, and I believe you will anyway, interpret and apply the standards in the spirit and the purpose for which they were written.

If we are overlooking any applicable Standard, Code, or State or Federal Law, please show us the Standard, Code or Law, we are in violation of and we will gladly comply.

Bill and I look forward to meeting with you on December 5th. At that time we will have some other visual aids (timelines, color well logs etc.) to hopefully communicate our message better than I can here, by letter.

Thank You For Your Attention In This Matter.

Sincerely,
Mike Robertson
President of Wailani Drilling Inc.
### DAILY FINES

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<th>Repeat violation (min $250)</th>
<th>Gravity component</th>
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<th>Compliance within 30 days (yes/no)</th>
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### DURATION CALCULATION

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### TOTAL FINES

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**NOTES**

- **Item No**: Description - description of the violation, see submittal text for specific rules violated
- **Finding of violation (min. $250)** - where there is a violation, there is a minimum daily fine of $250
- **Occurring in WMA (min. $250)** - When the violation is in a designated Water Management Area, there is a minimum additional daily fine of $250
- **Repeat violation (min. $250)** - When the violator has committed violations in the past, there is a minimum additional daily fine of $250
- **Gravity component** - allows for the increase of the daily fine
- **Mitigative component** - allows for the decrease of the daily fine
- **TOTAL DAILY FINES** - the sum of the values in columns C through G
- **Start date** - the date where calculation of daily fines begins (date of notice of violation, or permit approval, or permit fully signed, or violation occurred, or CWRM order)
- **End date** - the date of the end of the violation or latest CWRM meeting or completed permit application
- **Days toled** - the amount of days that are toled, to be subtracted from the total duration of the violation
- **No. of days** - calculated between start and end dates and subtracting the toled days
- **Compliance within 30 days (yes/no)** - If the applicant complies with the Commission staff's notice of violation requirements within 30 days, the duration shall be the total days of the violation. However, gravity circumstances can increase the total days even if the 30 day compliance is met.
- **Alternate settlement (yes / no)** - an alternate settlement in lieu of the daily fine was recommended
- **Subtotal fine for one incident** - per incident fine
- **No. of incidents** - of violation that occurred for this investigation
- **Subtotal fines** - the subtotal of fines, calculated by multiplying (per incident fine) * (no. of incidents)

Kihei Akahi Irrigation Well PIP Violations: **Wailani Drilling Company**

Pen. Calc. Form 10/2/01
### Kihei Akahi Irrigation Well PIP Violations

- **Kihei Akahi Condominium Association**

#### Notes:
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- **Days tolled** - the amount of days that are tolled, to be subtracted from the total duration of the violation
- **Compliance within 30 days (yes/no)** - if the applicant complies with the Commission staff's notice of violation requirements within 30 days
- **Alternate settlement (yes/no)** - an alternate settlement in lieu of the daily fine was recommended
- **Subtotal fine for one incident** - per incident fine
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#### Total Fines:

- **TOTAL FINES**: $750
Wailani Drilling Company  Lic. # C20115
Mike Robertson  655 Kulike Road  Haiku, Maui, Hawaii 96708  Kihei Akahi Well
Ph. 808 572-2673  Fax 572-0925  Cellular 264-7076  final drawing*  11/08/00

Kihei Akahi Irrigation Well  State Well- # 4327-06  Elevation 54.68 ft. m.s.l. @ Well Head

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NOTE: WELLHEAD IS 12" BELOW GROUND LEVEL

Static water level @ 54.68 ft.
Static Head @ +1.12 ft.

Total Well Depth 80 ft.
initial chlorides 640 ppm

Pump tested at 160 gpm for 24 hours with maximum drawdown of .30 ft.

*Note: not drawn to scale

EXHIBIT 6
Mr. Lawrence Wilson
Kihei Akahi Condominium Association
2531 South Kihei Road
Kihei, HI 96753

Dear Wilson:

Well Construction Permit
Kihei-Akahi Irrigation Well (Well No. 4327-96)

Enclosed are two (2) copies of your approved Well Construction Permit for the captioned well(s) that authorizes well construction activities but excludes installation work for your permanent pump. As part of the Chairperson's approval, the following special conditions were added and are part of your permit under Permit Condition 13:

Special Conditions

1. Attached for your information is a copy 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.

This permit does not authorize work for your permanent pump installation. Approval and issuance of your pump installation permit is contingent upon information provided to and accepted by Commission staff as required in the Well Construction & Pump Installation Standards (1/23/97) and any special conditions performed under this permit. However, a permanent pump may be installed prior to the permanent pump installation permit issuance in accordance with the Commission's April 15, 1998 Declaratory Ruling No. DEC-ADM98-G5, which states:

"Permanent pump installation for capacities between 0-70 gpm and where the proposed use is for private individual needs in non-ground-water management areas may be allowed prior to the final pump installation permit issuance. When required as a condition of the well construction permit, subsequent pumping tests shall validate the acceptability of the permanent pump. The permanent pump installed prior to final pump installation permit issuance is subject to removal if the testing shows that a smaller pump is required to reduce the potential of affecting neighboring wells and localized upconing at the applicant's well."
If you qualify and wish to take advantage of this ruling, please include a written request to install the permanent pump prior to final pump installation permit issuance when you return to us your validated well construction permit.

Please sign and have the contractor sign both permit originals and return one for our files. Also, copies of the aquifer pump test worksheet and the well completion report form are enclosed for your use.

IMPORTANT - Drilling work may not proceed without a fully signed permit returned to the Commission. Please provide all the information in this packet to your well drilling contractor. The permittee, well operator, and/or well owner are responsible for all conditions of the permit. This includes ensuring that the well construction contractor, or other party who constructs the well(s), submits a completed Part I of the Well Completion Report form (enclosed) within sixty (60) days after the well construction work is completed. Be advised that you may be subject to fines of up to $1000 per day for any violations of your permit conditions, starting from the date of this permit approval.

If you have any questions, please call the Commission staff at 587-0251 or toll-free at 984-2400, extension 70251.

Aloha,

TIMOTHY E. JOHNS
Chairperson

Enclosures

c: Wailani Drilling Company
WELL CONSTRUCTION PERMIT
Kihei-Akahai Irrigation Well, Well No. 4327-06

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 Kihei-Akahai Irrigation Well (Well No. 4327-06) at Kamaole, Kihei, Wailuku, Maui, TMK 3-20:1, subject to the Hawaii Well Construction & Pump Installation Standards (1/23/97) 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 §13-168-13, Hawaii Administrative Rules.

2. The well construction permit shall be for construction and testing of the well only. A minimum one-inch diameter monitor tube shall be permanently installed, in a manner acceptable to the Chairperson, to accurately record water levels. The permittee, well operator, and/or well owner shall coordinate with the Chairperson and conduct a pumping test in accordance with the Standards (a pumping test worksheet is attached). The permittee, well operator, and/or well owner shall submit to the Chairperson the test results as a basis for supporting an application to install a permanent pump and withdraw water for use. No permanent pump may be installed until a pump installation permit is approved and issued by the Chairperson.

3. 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.

4. The permittee, well operator, and/or well owner 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.

5. In the event that subsurface cultural remains such as artifacts, burials, or concentrations of shells or charcoal are encountered during construction, the permittee, well operator, and/or well owner shall stop work and contact the Department's Historic Preservation immediately.

6. 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.

7. The following shall be submitted to the Chairperson within sixty (60) days after completion of work:
   b. Elevation (referenced to mean sea level, msl) survey by a Hawaii-licensed surveyor.
   c. As-built sectional drawing of the well.
   d. Plot plan and map showing the exact location of the well.
   e. Complete pumping test records, including time, pumping rate, drawdown, chloride content, and other data.

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

9. The well construction permit application is incorporated into this permit by reference and is subject to the Hawaii Well Construction & Pump Installation Standards (January 23, 1997; HWCPIS). If the HWCPIS are not followed and as a consequence water is wasted or contaminated, a lien on the property may result.

10. The permit may be revoked by the Commission if work is not started within six (6) months after the date of approval or if work is suspended or abandoned for six (6) months, unless otherwise specified. The work proposed in the well construction permit application shall be completed within two (2) years from the date of permit approval, unless otherwise specified. The permit may be extended by the 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 three (3) months prior to the date the permit expires. If the commencement date is not met, the Commission may revoke the permit after giving the permittee, well operator, and/or well owner notice of the proposed action and an opportunity to be heard.

11. If the well is not to be used it must be properly capped. If the well is to be abandoned then the permittee, well operator, and/or well owner must apply for a well abandonment permit in accordance with §13-168-12(f) prior to any well sealing or plugging work.

12. 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.

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

Date of Approval: August 9, 2000
Expiration Date: August 9, 2002

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 and the driller has signed, dated, and returned the permit to the Commission. I also understand that non-compliance with any permit condition may be grounds for revocation and fines of up to $1000 per day starting from the permit date of approval.

Permittee's Signature: [Signature]
Printed Name: LAWRENCE NIELSON
Firm or Title: KIHEI AKAAH, A04C
Driller's Signature: [Signature]
C-57 License #: 2015
Date: 8/26/00
Printed Name: MIKE ROBERTSON
Firm or Title: WAILUA DREDGING CO
Date: [Signature]

Please sign both copies of this permit, return one to the Chairperson, and retain the other for your records.
Declaratory Ruling No. DEC-ADM98-G5

Declaratory Order on:
Permanent Pump Installation Prior to Pump Testing and Permit Issuance

BACKGROUND:

On March 18, 1998, the Commission on Water Resource Management (Commission) approved a declaratory ruling on issuing a declaratory order that permanent pump installations for capacities between 0-70 gallons per minute (gpm), where the proposed use is for individual well owner needs, may be allowed prior to pump testing. Further, the permanent pump would be subject to removal if the testing shows that a smaller pump is required to reduce the potential of affecting neighboring wells and localized upconing at the applicant's well. This submittal formalizes the Commission action by meeting Chapter 91 requirements.

ANALYSIS/ISSUES:

The Code, Rules, and the Well Construction Standards are clear about the requirement for permits prior to well construction or permanent pump installation. §174-C, Hawaii Revised Statutes, §13-168-12(a), Hawaii Administrative Rules, and Sections 1.7, 2.1, and 4.1 of the Hawaii Well Construction and Pump Installation Standards (HWCPIS) provide that:

"No well shall be constructed, altered, or repaired and no pump or pumping equipment shall be installed, replaced, or repaired without an appropriate permit from the Commission...The owner of a well shall make an application or cause an application to be made by the driller..."

Pursuant to the January 23, 1997 Commission approval of the HWCPIS and delegation of authority to approve well construction and pump installation permits to the Chairperson and staff, the current process of approving these permits is a two-step process. The purpose of the two-phase well construction and pump installation permit approval is to:

1. Assure acceptable well completion reporting.
2. Assure acceptable pumping tests were performed and reported.
3. Assure installation of a permanent pump with a capacity that can be sustainably used without creating adverse impacts on neighboring wells or unacceptable upconing.
4. Allow for individual well construction or pump installation activities.

First, the well construction permit is issued. Every permit issued (see Exhibit 1) clearly states, under Standard Condition #2:

"The well construction permit shall be for construction and testing of the well only... No permanent pump may be installed until a pump installation permit is approved and issued by the Commission."
Two copies of the well construction permits are sent to the applicant, with instructions to sign both and return one. The transmittal letter states the applicant's responsibility for all conditions, including assuring that the well driller is made aware of them, particularly the transmittal of the required well completion report. The driller's signature is required to validate the permit. Therefore, both the applicant and the driller are responsible for the terms of the well construction permit. If the conditions of the well construction permit are met, then the Chairperson/staff issues a pump installation permit with the same signatory requirements. This bifurcated approach has increased well completion and pump testing reporting timeliness and compliance with permit conditions.

However, this two-step approach has proven to be costly and burdensome to owners of smaller individual and privately owned and used wells. In several cases, despite the clear language of the well construction permits, individual well owners and their drillers have installed permanent pumps before submitting acceptable well completion reports with required pump test data to staff in the effort to save on construction costs by eliminating the extra step of rigging a temporary pump. Allowing permanent pump installation is beneficial since it provides for a better pump test with a more controllable and quiet electric pump, rather than a variable and noisy diesel-powered pump. In most cases, the pumping tests for these smaller wells do not show much, if any, drawdown, unless they are in very low water-yielding geology.

To further highlight the modest impacts from smaller wells, the HWCPIS specify that wells with pumps capacities under 70 gpm do not require step-drawdown tests but only constant-rate tests (8 hours). Further, wells with pump capacities under 50 gpm do not require a constant-rate test in addition to the step-drawdown test exemption. Therefore, staff believes that allowing this type of pump installation for capacities under 70 gpm in non-ground-water management areas are reasonable.

RECOMMENDATION:

That the Commission approve the following declaratory order:

DECISION AND ORDER:

Permanent pump installation for capacities between 0-70 gpm and where the proposed use is for private individual needs in non-ground-water management areas may be allowed prior to the final pump installation permit issuance. When required as a condition of the well construction permit, subsequent pumping tests shall validate the acceptability of the permanent pump. The permanent pump installed prior to final pump installation permit issuance is subject to removal if the testing shows that a smaller pump is required to reduce the potential of affecting neighboring wells and localized upconing at the applicant's well.


APPROVED BY THE COMMISSION ON WATER RESOURCE MANAGEMENT AT ITS MEETING ON MARCH 18, 1998.

APPROVED AND SO ORDERED:

MICHAEL D. WILSON, Chairperson
Many kinds of pumps used for testing.
County job: 3rd used pump for testing, bought and left in
"test pump" - construction must still be done to make permanent
can only, or on or off, drill or silt throughout.
WCRs is no start, just finish date.
2 is start, no finish date.
Roy: bound by process; historical experience was that large incumbent pump came out, what the law says, what the standard says. What if it's not stated in the law?
Cands: substantial mitigative conditions.
alternative to fine - in-kind contributions.
5th to clear air - variance process (see submitted water pump issue claim.
option: spec. cond. or variance (flag variance, return call)
no The pos. until cleared by owner.

(Kibbi Front 4: delete "repeat"

(Kibbi)

CWRZ when pump edge was noticed, should have written notice notice of violation

Installed 10'6"
to 11'

failing?
testing purposes only.
<table>
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<tr>
<th>FirstLastNam</th>
<th>Company</th>
<th>Violation</th>
<th>ViolationDescription</th>
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## Violations

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<td>see also next p. ATP 1 add fine</td>
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<td>Overpumpage of WUP 231 (modified to WUP 570) for Pump 12 (4057-07).</td>
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To: Linnel T. Nishioka  
Deputy Director of C.W.R.M.  
Subject: Alleged Pump Permit Violations (Staff Submittal 11/14/01)

Dear Linnel:

I would like to attempt to clarify the issue regarding the alleged pump installation violations. First of all I would like to say that the last 8 years as the WRC staff has been developing standards and procedure, it has been a learning process for both WRC staff and us here at Wailani Drilling. There have been clerical and procedural mistakes made on both sides as we move ahead without clear understanding and interpretation of the standards.

I feel bad sometimes for Charlie because he gets caught in the middle as he communicates to us his view or interpretation of procedures (as he perceives it from your staff) and then later he finds out that his and our perception of what you want is wrong. This is difficult for us and Charlie because we have over the years developed a friendship with Charlie and very much appreciate his “extra mile” helpfulness.

**Miscommunication and misunderstanding** are precisely the case in this issue.

**Our Position**

A few years ago we were having trouble keeping up with the reporting and paperwork to the Commission so I hired Bill Steele to do this job. Bill is very meticulous and goal oriented and set out to wrap up any loose ends we had with the commission. Bill started, owned and managed a very successful machine boring and drilling company with over 70 employees, and yet he has become somewhat, as I have, concerned with the increasing difficulty of understanding the expectations of WCRM staff and with the well construction processing procedure.

Neither Bill or myself are the type to disregard rules or even the principles of the rules. I have owned and managed several business over the past 28 years. neither of us have ever been in violation of any government agency rules or laws in the past. We have been commended by John Mink as a preferred drilling company and by most all of the Hydrogeologist and many Engineers in the State, including Steve Bowles, John Stubbart, Gordon Tribble, Steve Gingrich, and many other professionals.

Even people with which we have had conflicting viewpoints in the past, such as David Craddick and Tom Nance, continue to recommend our company and tell people that we drill some of the straightest and highest quality wells of any company in the State.

We have never left any tools in the ground, even when it has taken weeks to retrieve them because of the fact that we do not want to jeopardize the integrity of the Aquifer.

At this point and in the past we have always had 100% customer satisfaction.
The Misunderstanding

As Bill began to fill out the WCR-II forms he always wrote on line 4. date pump installed, the date of the test pump installation and since we always use the test pump (except in some county jobs) as the permanent pump, he would enter all the pump information about the test pump which would later become the permanent pump on the form. This was done with Charlie's full knowledge and our belief that this was acceptable to the Commission. Everything was going fairly smooth until he completed WCR-II forms for 2 wells which were over the 70 g.p.m. rule. He continued to record the data as before, and yet it was flagged by someone in your office as a violation.

I can understand how this happened because the processing person only responded to the dates which he saw in front of him, however it is clear from the dates on the form that Bill was referring to the test pump installation because in the case of Kihei Akahi, the pump installation date Bill wrote on the WCR I form was 11/9/00 and the date of the pump test was 11/10/00. This demonstrates that this pump was installed at this time for test purposes.

We were gathering information for the water commission as the standards require, certainly not for our benefit or the benefit of the well owner.

This can also be verified from the date on the pump test forms which we turned in to your office. According to the Standards, the pump test must be performed, analyzed and approved by the commission before the well can be used.

We followed procedure exactly as written In this order:
#1 Began constructing well on 10/25/00 after signing well construction permit on 8/9/00.
#2 Installed test pump on 11/9/00.
#3 Performed pump test on 11/10/00.
#4 11/10/00 At 5:00 p.m. All Construction Stopped Pump line capped no control available. No water lines or systems in place to even use the water.
#5 PIP issued and signed 4/3/01 Began Installing permanent pump equipment (install VFD controller, regulator valve, flowmeter and other control equip.) Connect to irrigation system 4/16/01
#6 Started using water for irrigation on May 1st 2001

The pump controller did not even arrive until April 9th and as shown in 2 letters enclosed from the condo manager and the irrigation contractor; they were notified that no water could be used until the permanent pump permit was issued. All of our clients are informed of the 2 step process and that no permanent pump installations may be done until the pump permit is issued. No water was used until May 1st 2000 which was after we received the permanent pump permit.

If there had been any water pumped or used after the pump test then there would be a clear violation of the standards and the purpose of the standards, but there was not. There is no definition of what constitutes a test pump verses a permanent pump. There is nothing written in the standards which requires the test pump to be removed within a certain time frame. The point could be debated as to what the definition of a test pump is, verses a permanent pump, but one point that can be clearly established is the fact that on 11/9/00 at Kihei Akahi, the pump was installed and being used for testing purposes only.

Certified by and a member of the National Ground Water Association
This is also exactly the case with the Front Street project. (addressed in detail in Bills letter - enclosed). Charlie informed us that there would need to be pump test data submitted for this already existing well so this is what we set out to do with the understanding on our and Charlie’s part that we were satisfying the requirements of the commission.

Both Bill and I have read the HAWAII Well Construction & Pump Installation STANDARDS several times and referenced them many times in an effort to apply them to our well construction and pump installation work. We believe we have neither violated the standards in regard the pump installation nor violated especially the purpose and scope of the standards.

Part I ADMINISTRATIVE STRUCTURE. Part c. 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, agricultural uses” etc.

[174C-86] (b) states “if any well construction or pump installation standard is violated and as a consequence ground water is wasted or any well is contaminated, the commission, after giving notice of the defect to the owner of the land on which the well is located and giving the owner a reasonable time to correct the defect, may itself correct the defect and charge the landowner for the cost of such correction.

Continuing through the STANDARDS part VII. WELLS {174C-81} Definitions, paragraph 2 states: “Installation of pumps and pumping equipment” means the procedure employed in the placement and preparation for operation of pumps and pumping equipment, including all construction involved in making entrance to the well and establishing seals and repairs to existing installations.

Paragraph 4 states: “Pumps and pumping equipment” means any equipment or materials utilized or intended for use in withdrawing or obtaining ground water. It includes seals, tanks, fittings and controls.

{174C-15} Penalties and Common Law Remedies. (b) Any person who violates any provision of this chapter may be subject to a fine imposed by the commission. Such fine shall not exceed $1000.00. For a continuing offense, each day during which the offense is committed is a separate violation. A continuing offense could not be considered continuing unless it was first established that there actually was an offense. This goes against due process in which a person is presumed innocent until proven guilty. To me, just because a person did not know how to fill out a form or even made a mistake on a form does not mean he is guilty of the violation in question.

Referring back to {174C-86} paragraph (b), “...after giving notice to the owner...”. In the case of these alleged violations no notice was ever given the owner or to Wailani Drilling. If there had been a violation or a notice of violation, Wailani Drilling would have taken immediate steps to remedy the situation. In speaking to a State attorney it was pointed out that according to State and Federal Constitutional Law, the purpose of a continuing fine is to apply motivation to correct the defect or violation, not to intimidate property owners of some potentially devastating monetary penalty walking in fear that they did not dot all their i’s or cross all their t’s.

Linnel, I know you are an attorney and I have known you to be a fair person. This is why I believe if I can communicate all of the facts to you, you can look at this matter objectively. I don’t believe we have communicated all of the facts to you, as we have not spoken much with you directly.

Certified by and a member of the National Ground Water Association
Our Assessment Now and Proposed Solutions

After thoroughly researching the Hawaii water well and pump standards, we believe there are many undefined areas of the standards. In particular, there is no definition of what constitutes a test pump verses a permanent pump. There is also nothing written in the standards which requires the test pump to be removed within a certain time frame. In fact, in keeping with the test procedure, the test pump should not be removed until the State Water Commission has evaluated and determined that the test pump results are acceptable with no further testing being necessary.

Many wells which Wailani Drilling has tested, including some large County municipal wells, have required that the test equipment remain for several months until all the appropriate agencies (i.e., Dept. of Health, Board of Water Supply, Water Commission, etc.) have been satisfied. Omaopio-Estv Well, Kula Meadows Well, Launiupokop Well 2, Maunaolu Well and numerous others have required further testing days, weeks or sometimes months after the initial pump test.

Usually this is requested by the State department of health but sometimes like in the case of Launiupoku the hydrogeologist, (Tom Nance), wanted to do some experimentation with various pump tests and special instrumentation. In the case of Maunaolu, the laboratory botched the test and required more samples. Every time in each of these cases we had to reschedule generator rental, take all of the control equipment back to the well site and coordinate everyone involved.

As I hope you can see, it would be very inefficient, counterproductive, costly, unnecessarily risky, and we believe, contrary to the purpose of the standards, to require the test pump to be removed prior to the Commission issuing the permanent pump permit, and at the risk of sounding redundant, there is nothing written in the standards which requires removal of the test pump. Pump installation is very dangerous work, especially in deeper installations. I personally know of 5 well drilling/pump installing personnel who have died in the State of Hawaii in the last ten years due to on the job accidents. One as recently as 6 months ago in Lahaina who worked for Beylik Drilling. Also one pump installer had almost every bone in his face broken when a line shaft pump coupling came loose and the pump fell as the wrench broke in half, before it hit him in the face. This is not to mention the numerous wells that have had to be completely abandoned because of the pump being dropped for some reason and being jammed in so badly it can not be recovered.

Because of this high risk and liability which the contractor assumes, the pump installation prices are high. The average pump installation labor price on a shallow well is $2000-$3,000. and on deeper wells such as the Waiki Ranch well they got estimates for up to $250,000.00 to replace their pump.

The point I would like to make here is this: The water resource can be protected and managed just as well without going to such great expense and risk of life and limb. Since there is nothing written in the standards addressing this, I believe it was never the intention of those who wrote the rules to require test pump removal before approval and if it was, then they could not have contemplated all of the reasons why it is not appropriate.

There is also nothing in the standards which state that the test pump cannot be utilized as the permanent pump once the permanent pump permit is issued. Maui Board of Water Supply did this on at least one, 1 million gallon per day well with a test pump which they purchased from us. All we removed was the Diesel power head. They left the line shaft pump in the well and as soon as they received the pump permit, they installed an electric
power unit and began using the well. It is still in use after 2 years. Also very deep wells have been constructed, tested and utilized with the original test pump (a submersible) because of the excessive cost of removing test pump and installing another pump, such as in the case of the Waiki Ranch Well on the Big Island. Some wells are too deep to even use a line shaft pump.

In our view the gaps in the standards and definitions of the standards need to be filled in so they are clearly understood and easy to apply in order to accomplish their purpose and scope as defined in Part 1. section 1: “protecting and preventing the pollution, contamination and wasting of ground water in the State of Hawaii.

We are prepared to work together with you and to propose and develop new rule amendments just as we did with Dec. ruling ADM98- G5 which allows pumps of less than 70 gpm to be installed before the pump permit.

Our desire, and I am sure it is yours also, is to see the whole process streamlined so that there is less of a burden on everyone, as the process is simplified and the responsibility is spread out more evenly among all parties involved. I am sure the Commissioners do not enjoy having to deal with matters of administration procedure unnecessarily.

Test pumps can be capped and locked and they all have sealed flowmeters. There are many ways to prevent a land owner from using the resource prior to pump approval.

If you could look at this for a moment from our point of view, the drilling contractor, at this point assumes almost all of the liability and risks associated with drilling, testing and documenting a well. If for example the tools twist of and cannot be retrieved from the hole, the driller could be liable for providing an entry point for contaminates and fined large fines.

We are acting as your agent to collect information and enforce the standards. There have been times in the past when we could have, to protect ourselves, falsified information, but we did not, because we have been more concerned with our reputation and the accuracy of the groundwater model.

Well construction is not an exact science. Some speculation is done even when the well construction permit form is filled out due to unknown variables.

Some leeway needs to be given to the driller (just as the standards state that “the State water code shall be liberally interpreted) so he can make decisions on the site which stay within the scope and purpose of the Well Standards.

An example is the drilling depth issue. A person can only speculate what the static head will be before they drill the well. In 95% of the wells drilled on Maui there is no water encountered at sea level in fact sometimes not within 70 feet below sea level. When the confining layer is drilled through then the water will come up to its static level. How can you determine what your legal drilling depth is until you encounter the water bearing zone. It’s a catch 22. The driller if he speculated wrong about the static head and it was too low, he could unknowingly be drilling too deep according to the Ghyben-Herzberg Theory and the rule based on this theory. However most all of the wells drilled through this confining layer produce very good water, but if a well did not, there is still no damage to the resource, because if the Water Commission decided they didn’t like the results, the well could be back sealed or sealed off completely with grout.
Ghyben and Herzberg developed a formula in the 1920’s based on the specific gravity differential between fresh water and sea water and the measurement of a lense of fresh water with a static head above sea level being held at a certain level because of fresh water being lighter than salt water. According to the rule, the interface zone depth can be calculated if there are no confining rock ledges or shelves caused by dense lava flows. This enables us to more accurately speculate on the thickness of the fresh water lense. Although this can be demonstrated in the lab with a U shaped test tube and with controlled absolute values, and does apply true in many wells in Hawaii. It can only be theoretically applied. It has been our experience that there are too many other variables in the real world of geology for this theory to hold true across the board. For example confining layers of impermeable bluerock above and below the lense, or a steep sloping dike condition with a corresponding confining layer under it, can both be conditions which will make the Ghyben-Herzberg Theory totally inapplicable.

A good example is the Maui Beach Hotel Well. They had previously a 15 ft. dug well at 8 ft. elevation with 1500 ppm chlorides. We constructed a well which tapped a confined lense 50 ft. deep and pumped water with only 250 ppm chlorides. There are many such wells as this one. Any well drilled in an area where there is a dense lava flow which has submerged below sea level, the G.-H. theory will not be accurate. In fact the only places on Maui I have experienced the success of this theory are in areas with Alluvial fill (the Olowalu Well) and sandy coral marshy areas where there is no lava ledge anywhere near sea level. This is addressed in more detail in my letter to you dated 9/22/00 and your submittal on 10/26/00.

The goal of this letter in Summary

Is to encourage continued cooperation with one another, in the same spirit of grace, trust and mutual respect as we have had in the past. I also hope that we can not get snagged and bogged down with technical mistakes or typographical errors, but that we can work together to streamline this process, as stewards of a valuable public trust; The Hawaii’s water resource.

I am also asking that you consider withdrawing the violation submittals from the commission agenda, because I hope this letter has demonstrated that we have not violated any of the scope or purpose of the standards, intentionally or unintentionally. We just ask, and I believe you will anyway, interpret and apply the standards in the spirit and the purpose for which they were written.

If we are overlooking any applicable Standard, Code, or State or Federal Law, please show us the Standard, Code or Law, we are in violation of and we will gladly comply.

Bill and I look forward to meeting with you on December 5th. At that time we will have some other visual aids (timelines, color well logs etc.) to hopefully communicate our message better than I can here, by letter.

Thank You For Your Attention In This Matter.

Sincerely,
Mike Robertson
President of Wailani Drilling Inc.

Certified by and a member of the National Ground Water Association
I WAS CONTACTED BY KIHEI AKAHI TO ASSIST IN THE DESIGN AND TROUBLESHOOTING OF THE KIHEI AKAHI IRRIGATION WELL #4327-07. I SUPERVISED THE ELECTRICAL INSTALLATION WHICH WAS COMPLETED BY KIHEI AKAHI. ALSO AT THE TIME THAT THE PERMANENT PUMP WAS PUT ON LINE WHICH WAS MAY 1 2001, I WORKED WITH KIHEI AKAHI PERSONNEL IN BALANCING THE PUMP TO THE IRRIGATION SYSTEM. I SUPPLIED A PRESSURE REGULATING VALVE AS WELL AS A HIGH PRESSURE SHUT-OFF DEVICE FOR SAFETY PURPOSES. THERE WERE DELAYS IN THE START-UP AS THE PUMP CONTROLLER WAS LATE IN DELIVERY. WE WERE INFORMED BY WAILANI DRILLING THAT NO WORK COULD PROCEED ON THIS PROJECT UNTIL PUMP PERMIT WAS ISSUED AND SIGNED. WE TESTED THE PERMANENT PUMP ON MAY 1 2001. WE COMMENCED WORK ON THIS PROJECT THE WEEK OF APRIL 9 2001. THE PUMP PERMIT WAS EXECUTED APRIL 3 2001. IF YOU HAVE ANY OTHER QUESTIONS PLEASE FEEL FREE TO GIVE ME A CALL.

BRYAN SARASIN
Kihei Akahi Condominium Association  
2531 S. Kihei Rd  
Kihei, Hawaii 96753  

Oct. 15, 2001

Wailani Drilling Inc.  
655 Kulike Rd.  
Haiku, HI. 96708

Re. Confirmation of facts

This letter is written on behalf of Wailani Drilling to whom it may concern:
The Kihei Akahi Board members are concerned about an alleged violation of State Water Commission Standards during our well construction project.
We do not understand the issue at hand as we believe that Wailani Drilling was handling our drilling project in a very professional manner. We were informed by Wailani Drilling that the drilling project was a two part process and that no water could be pumped or used until the pump permit was issued.
We were told by Wailani that this could take up to 90 days so we scheduled the rest of our irrigation renovation project accordingly. I can verify that after the pump test was performed on Nov. 10, 2000, that the pump was inoperable until we began installing power and water lines on April 3, 2000.
No water was pumped again until May 1, 2000 when we first started the system and made adjustments. There were other contractors also involved in the project who can verify that their portion of the project was not completed until after April 9, 2000.

I am sure this is just a misunderstanding of the facts and I hope this helps to clear things up.

If I can answer any questions or help in any way please give me a call.

Lawrence Wilson - Manager
Ph. 879-1881  
Cell. 280-3291  
Pager 893-3190  
Fax. 875-4344
Subject: Timeline and process for Front Street Permanent pump installation #5341-02 in order to resolve alleged violation.

Linnel please review the following information:

Timeline:

<table>
<thead>
<tr>
<th>Date</th>
<th>Procedure</th>
<th>Hawaii Well Construction &amp; Pump Installation Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>On/or before 11/30/99</td>
<td>Went to Front Street site did a rough inspection to see if existing well was possibly suitable for irrigation well.</td>
<td>None</td>
</tr>
<tr>
<td>1. Measured depth of well (used well camera)</td>
<td>2.9 (a) Minimum Well Testing pg 2-17</td>
<td></td>
</tr>
<tr>
<td>2. Measured depth of casing (used well camera)</td>
<td>2.9 (a) Minimum Well Testing pg 2-17</td>
<td></td>
</tr>
<tr>
<td>3. Measured static water level (used well camera)</td>
<td>2.9 (a) Minimum Well Testing pg 2-17</td>
<td></td>
</tr>
<tr>
<td>4. Measured open hole (used well camera)</td>
<td>2.9 (a) Minimum Well Testing pg 2-17</td>
<td></td>
</tr>
<tr>
<td>5. Took water sample</td>
<td>2.9 (a) Minimum Well Testing pg 2-17</td>
<td></td>
</tr>
<tr>
<td>On/or before 11/30/99</td>
<td>Verbally reported finding to property owner &amp; developer that the existing well was probably once used for irrigation and would most likely meet their needs but further state required testing would determine for sure if existing well would appropriately produce their irrigation needs.</td>
<td>2.9 (a) Minimum Well Testing pg 2-17</td>
</tr>
<tr>
<td>On/or before 05/22/00</td>
<td>PIP Application was submitted to CWRM</td>
<td>2.9 (a) Minimum Well Testing pg 2-17</td>
</tr>
<tr>
<td>Note: We were originally going to send in Well testing data/results (step drawn down &amp; constant rate tests) along with PIP application to assist in the feasibility of issuing a PIP, but was unable to get the pump tests schedule in prior to submittal of PIP application.</td>
<td>2.9 (a) Minimum Well Testing pg 2-17</td>
<td></td>
</tr>
<tr>
<td>07/06/00</td>
<td>PIP permit approved</td>
<td>2.9 (a) Minimum Well Testing pg 2-17</td>
</tr>
<tr>
<td>09/13/00</td>
<td>Test pump installed (only), not permanent pump</td>
<td>2.9 (a) Minimum Well Testing pg 2-17</td>
</tr>
<tr>
<td>09/16/00</td>
<td>Ran required pump tests</td>
<td>2.9 (a) Minimum Well Testing pg 2-17</td>
</tr>
<tr>
<td>1. Step draw down test</td>
<td>2.9 (a) Minimum Well Testing pg 2-17</td>
<td></td>
</tr>
</tbody>
</table>
2. Constant rate test

09/17/00  Removed controller, generator, and water meter
Capped test pump
All work stopped.

09/20/00  Well owner signed PIP permit
Required

10/01/00  Installer signed PIP permit
Required

10/20/00  Work began on installation of permanent pump & equipment
Installed permanent wellhead equipment.
Note: Well owner elected to use test pump for permanent pump.

On/or before
11/01/00  Submitted WCR II to CWRM
4.7 Pump Installation Report  pg 4-8
Note: On the WCR II line item 4 Date Pump Installed: 07/13/00 that
is incorrect. No test pump or permanent pump was installed
on that date.

04/06/01  Final permanent pump & equipment installed
1. Installed permanent controller to office complex and
   hard wired to electrical panel
2. Laid underground conduit to controller from junction box on wellhead
3. Pulled pump control wires from controller to wellhead and spliced.
4. Installed irrigation controller to pump controller
5. Plumbed in pump to irrigation system
6. Pump now permanently installed and operational for its permitted use.

Approximately
04/15/01  Was informed by Charlie Ice that because of the date on the WCR II
of 7/13/00 that we were in violation of PIP permit. I explained to him
that was the date of the test pump installation (please note actual
test pump installation was 9/13/00) and that I was new at filling
out state forms and since the form says Date Pump Installed:
I inadvertently put the date of the test pump installed instead of putting down
the date for the permanent pump & equipment. Charlie was also informed
that all my previous WCR II were filled out in the same manner, with
the date of the test pumps installation.

I believed that this explanation would be sufficient to exonerated Wailani from any wrong doing and no fines would be imposed, but I was informed that since we started work prior to the signature dates on the PIP permit Wailani was in violation and would be fined. Linnel, I have to strongly disagree with this finding. Lets look at the facts:
Hawaii Well Construction & Pump Installation STANDARDS:

Section 1.4 Definitions –

**Well construction**: means the drilling, tunneling, digging, or otherwise constructing a well for whatever purpose, including any alterations or repairs of an existing well, **but excluding the installation of pumps and pumping equipment.**

Section 2.1 Well Construction Permits pg 2-2-

Every permit for construction or modification of a water supply well shall **require** a pumping test,

Section 2.9 Minimum Well Testing (a) Purpose pg 2-17-

**Well testing is required** when new wells are drilled or when existing wells are modified and have not been previously tested in accordance with the provisions in these Standards. Well testing shall normally consist of a short step-drawdown test and a long-term constant rate test. The purpose of well testing in the prescribed manner is to obtain hydrologic information needed to determine the well’s performance and efficiency with regard to yield and drawdown: the well’s trend with regard to drawdown, recovery, and salinity; and the nearby hydraulic properties of the aquifer.

Linnel, I believe Wailani Drilling has never contested the fact of installing a test pump for Front Street prior to the pump permit being signed. It is my understanding we are not required to obtain a permit to install a test pump on a constructed well. **(see definition well construction above and Section 2.1 Well Construction Permits),** but in fact we are required to test the existing well: **(see Section 2.9 Minimum Well Testing above)** Furthermore, I would have done the test pumping prior to sending in the PIP application, if time permitted us to do so, for the sole purpose of assisting the CWRM with required data to help determine feasibility of issuing PIP permit. Linnel I ask you, isn’t this the reason why pump test are conducted, are we not working within the scope, purpose, and more importantly the intent of the standards and guide lines set by the CWRM? Every well is tested prior to issuance of a PIP.

Reviewing the information the CWRM sent us notifying us of the violation (page 2, Pump Installation without a Permit). It states “The timeline for the pump installation prepared by the installer (Exhibit 2) confirms that the pump was installed prior to issuance of pump permit, a violation of the Water Code”. This was an installation of a test pump on 9/13/00 (note: 7/13/00 incorrect date), on 9/16/00 well was tested as required by CWRM see Section 2.9 (a) Minimum Well Testing pg 2-17.

Also states “Wailani Drilling believes that the spirit of the Administration Rules is meet by the fact that the installed pump was not operational and making it so, would have been very difficult.” This is absolutely a false statement and definitely taken out of context. Wailani Drilling and I, do everything possible to stay within the scope and more importantly the intent of the Administration Rules as they are written and as Wailani and the CWRM staff understand them. In other words, Wailani Drilling is not attempting to reinterpret or change the rules. We are not claiming to install a permanent pump and ask to be excused for this. We installed the pump at that point in time for testing purposes only, with the full realization that the Commission could decide to not issue a permanent pump permit and we could be required to remove the test pump permanently.

**Lets dissect this point:**

1. All wells are test pumped (except monitor wells) prior to PIP.
2. The testing is required part of WCP. (even though the definition of well construction excludes any pump installation)
3. After all requirements of WCP are complete all construction stops
4. There is “no rule” requiring the removal of test pump and/or test pump equipment (there is an assumption by some of the staff at the CWRM that the test pump is required to be removed)
5. It is within the scope of CWRM and State Health Department to request additional testing at anytime and/or sampling and have done so, on several occasions. Because of this, removing the test pump prior to the tests results being reviewed and approved by the CWRM would be impractical.
6. The CWRM staff and Wailani Drilling should agree that prior to the PIP, the test pump sole purpose is for testing and water sampling ONLY, **as required by Section 2.1 Well Construction Permit pg 2-1 and Section 2.9 (a) Minimum Well Testing pg 2-17.** Wailani Drilling have always explained to the well owner that once the WCP is completed no further work can commence until PIP is issued and signed.
7. Once the test data was been submitted to the CWRM, Wailani Drilling then removes “all” test pump equipment rendering the test pump unusable. Though this is not required for use to do so and would cost us more if further tests
were required, we do this to prevent unauthorized and non-permitted use of the aquifer. (example: prevents someone from accidentally turning on test pump, remote well locations prevents vandals turning on test pump, removes the temptation from over zealous well owner, etc...)

It also states, "Staff operates on the assumption that a well is test-pumped with a driller's temporary lineshaft pump that is not permanently installed".

1. Let me try to explain how this assumption originated. When drillers install lineshaft pumps, the lineshaft pump was installed to test pump the well but just as importantly it was used to develop and clean the well of drilling finds and silt and for surging the well and cleaning out excess cutting cause by older drilling methods with cable tool rigs, and mud rotary drilling with bentonite clay. The pump often stays in the hole until PIP is approved. Then the lineshaft pump was replaced with a permanent lineshaft or submersible pump. In most cases the lineshaft test pump was not purchased for permanent pump because there is no warranty, and it has been put to extreme use.

2. Also lineshaft pumps cannot be use in all wells. They are restricted to casing size and depth of well. Typically it is not feasible to use a lineshaft pump to depths of greater than 1500 ft.

3. With modern drilling technology (air rotary drilling) the borehole is surged clean with air and foam (basically environmentally safe liquid dishwashing soap), there is very little if any initial wear on the test pump and we offer a full warranty.

4. Another reason line shaft pumps were primarily used is because it is simple to vary the speed of the diesel drive motor thereby varying the flow rate to facilitate a good step draw down test. There again with modern pumping equipment (better designed submersible pumps and motors and variable frequency drive controllers (V.F.D) we can just as effectively vary the speed of the pump electrically, eliminating the need for a noisy diesel power unit.

5. The Staff cannot possibly make this assumption (that a drillers temporary lineshaft pump will be temporarily installed) because a. It is not stated anywhere in the Standards and b. Again. It is not even possible in many situations to use a lineshaft pump.

Lin nel, after reviewing this, I hope you have a better understanding of why I feel so strongly that we have not only stayed within the Rules but have fulfilled the scope of rules for proper use and preservation of the aquifer.

Our only regret is that we have not played a more active role in helping to develop the Standards. There are many adjustments that could be made in the administrative procedure that would facilitate a smoother flow of information from the contractors to the Water Resource Staff.

We have been in effect functioning as agents of the commission for research, development, data collection, reporting and enforcement of the rules to the general public and the well owner.

We look forward to resolving and clarifying these issues so we can all enjoy our jobs more.

Look forward to meeting with you on Dec, 5th.

Thank You For Your Attention In These Matters

Sincerely;

Bill Steele  G.M.
STAFF SUBMITTAL

for the meeting of the
COMMISSION ON WATER RESOURCE MANAGEMENT

November 14, 2001
Wailuku, Maui

Kihei Akahi Condominium Association and Wailani Drilling Company
AFTER-THE-FACT PUMP INSTALLATION PERMIT
AND PUMP INSTALLATION PERMIT VIOLATIONS
Kihei Akahi Irrigation Well (Well No. 4327-07)
Well Construction: 6-inch Casing Diameter, 110-ft. Deep Well
Pump Installation: 125 gpm for Landscape Irrigation Use
TMK 3-9-2-1, 2531 South Kihei Road, Maui

APPLICANT:
Kihei Akahi Condominium Association
2531 South Kihei Road
Kihei, HI 96753

LANDOWNER:
same

DESCRIPTION:
Location: (See Exhibit 1)

BACKGROUND:

July 7, 2000
A completed Well Construction Permit (WCP) Application was received, with a note that the well would probably need to be deeper than one-fourth the theoretical unconfined basal aquifer thickness because of an anticipated confining layer of lava dipping below sea level.

August 9, 2000
WCP approved without language addressing the potential well depth issue.

November 6, 2000
WCP returned signed, as required prior to commencing work.

November 8, 2000
Well construction completed, according to Well Completion Report Part 1 (WCR1).

November 9, 2000
Permanent pump installed.

November 11, 2000
Pump testing completed.

January 5, 2001
Well Completion Report Part 1 (WCR1) routed to staff with no date stamp for receipt. The driller and permittee were notified that the report did not include the as-built drawing, had discrepancies in the elevations provided, and required signatures. The report form was returned for signatures.

Item 6
Corrected Well Completion Report Part 1 (WCR1) filed with as-built drawing; a copy of the pump tests converted total dissolved solids (TDS) to chloride readings, as the form calls for. The driller was asked by phone why chlorides did not change in the step-drawdown test although they had done so in the constant-rate test. The driller explained that the apparent discrepancies in chloride readings between tests are typical of pumping performance in confined conditions common to the driller's experience on Maui.

Pump Installation Permit (PIP) approved (Exhibit 2) and WCR1 accepted as complete. Well Completion Report Part 2 (WCR2) filed (Exhibit 3). The date of pump installation was noted as November 9, 2000, prior to the issuance of the permit.

WATER AVAILABILITY:

Kamaole Aquifer System of the Central Sector
Estimated Sustainable Yield: 11 mgd
Proposed Use: 0.05 mgd., landscape irrigation

ISSUES/ANALYSIS:

HAR §13-168-12(a) states that:

No well shall be constructed, altered, or repaired and no pump or pumping equipment shall be installed, replaced, or repaired without an appropriate permit from the commission.

After-the-fact Pump Installation:

The Commission has long allowed a joint well construction/pump installation permit application, with the understanding that the process proceeds in separate steps for each permit. Under this process, a permanent pump may not be installed until pump tests are completed, reviewed, and accepted at the end of the well construction permit (WCP) stage; then a pump installation permit (PIP) is issued. The intent of this procedure is to assure that the pump tests and other well construction standard conditions can be reviewed circumspectly to assure protection of the resource prior to installation of the permanent pump and ability to use the well. A permanent pump used for testing and then left in the well is only allowed in certain cases.

Declaratory Rule G5 (April 15, 1998) allows pumps of less than 70 gpm capacity to be installed prior to issuing the permit, with the understanding that if pump tests do not support the capacity of the installed pump, it would have to be removed. This simplifies and reduces the cost of the construction process for both well owner and driller/installer. To date, no such pumps have had to be removed. The 70 gpm watershed is also used to preclude the need for a step-drawdown test for smaller pumps, as it is difficult to read aquifer effects at that level of pumpage. However, put into context, a 70 gpm pump run 24 hours a day can produce just over 100,000 gallons per day, sufficient to supply 168 homes or 20 acres of agriculture under Maui duties. That is, despite the fact that impacts to the aquifer are small, the amounts are significant from a human use standpoint.

Dec Rule G5 arose in a case of three wells drilled by Wailani Drilling Company on Maui, in which the pumps were installed prior to permitting. The Commission found that, in such cases, the two-step approach to permitting was burdensome to owners of small wells, and promoted better testing via quieter submersible pumps. Wailani Drilling Company does a large number of wells with less than 70 gpm capacity pumps. The driller professed confusion as to whether both boxes on the application could be checked for pumps of larger than 70 gpm capacity, once Declaratory Rule G5 was put in place. In this case, there was also the uncertainty of drilling results and appropriate pump size from drilling deeper to penetrate an expected confining layer of lava, commonly found in the driller's experience on the north slope of Maui.

The application in this case was for a 125-gpm pump. In May 2001, following up on the apparent violation showing on the WCR2, staff spoke by phone with Wailani Drilling. Wailani clarified that the intent was to proceed directly from well construction to pump installation, as a normal procedure. The driller was operating under the mistaken understanding that a pump installed without controller and power supply, and therefore inoperable, conformed to the meaning of the statute of not permanently installing a pump without a permit. However, standard language in permits have been simple and consistent not to commence installation of a
permanent pump without a permit. Staff remains open to considering fully feasible alternative procedures, but these should be raised prior to a violation of existing rules, not after the fact.

**Pump Capacity:**

The application requested a pump capacity of 125 gpm. Pump testing was done at 160 gpm, and supported the higher pumping rate. However, there was no notice or request for an increase in the rated pump capacity at the time of transmitting the pump tests and prior to issuance of the pump installation permit, and therefore the permit was for 125 gpm, as requested. It was not until the WCR2 was transmitted that staff realized that the permanent pump had been installed prior to issuance of the permit, rated at 150 gpm. This violation of the permit is also subject to fines.

**Penalty Calculation**

**Minimum Fines**

This is a repeat violation for the driller, the first violation for the applicant. This case poses two violations. Installing a pump without a permit incurs both the minimum $250 and a repeat $250 component, for $500.

**Gravity Component**

In addition, the installed pump is larger than permitted, compounding the violation. Staff recommends this be treated as an additional gravity component of $50. In this case, the installed pump capacity is supported by the pumping tests, so there appears to be little potential harm to the brackish water in this aquifer from this size pump.

**Mitigating Component**

Several years of experience with Wailani Drilling have impressed staff with the responsive performance and sincerity of the driller to do a good job, protect the aquifer, and to learn a complex process. It has also been instructive as to how a conscientious contractor can nonetheless misunderstand things, make reporting mistakes, and forget to perform certain details on occasion. The driller has responded with flexibility and innovation. Staff appreciates Wailani's position on minimizing risk and cost to clients and themselves while trying to conform with statutory requirements to protect the aquifer. Wailani produces some of the most comprehensive and high-quality reports that staff sees on a daily basis, even while there are often details that must be corrected. Their communications are prompt, cooperative, and sincere. By reputation, their drilling work is unusually straight, and their experience with Maui geology has led to more productive wells than previous contractors in the same area. Additionally, staff has field checked their procedures for drilling and pump tests and found them to be accurate.

Because the practice of installing a pump prior to permitting has not previously resulted in enforcement, but actually has been supported by a Declaratory Ruling for the smaller pumps they more commonly do, and because they have been so forthright in trying to comply with procedures on behalf of resource protection, Wailani has been able to proceed believing perhaps that what they are doing is on the right track. As a result of this case, Wailani Drilling came into the staff office for a meeting, and proposes an alternative means of assuring the Commission's purposes in preventing installation of a pump without a permit, which staff is in the process of shaping into a proposed Declaratory Ruling which is not ready at this time. However, this activity shows diligence in seeking a sound solution to serve both the needs of protecting resource and in minimizing costs and risks to clients and consultants alike.

Staff's position remains that the language of permits has clearly and consistently represented the Water Code and the Rules. In addition, staff tries to be responsive to the regulated community by updating materials and procedures to match actual working conditions. In a case such as this, we wish for applicants or permittees to seek advice or approval prior to risking a violation.

**Summary**

The penalty calculation is summarized in Exhibit 4. Fifty-five days elapsed between the completion of pump testing, when the pump would hypothetically be removed, and the receipt of the WCR1, which would be the earliest nominal date for approval of a pump installation permit. Staff recommends the total daily fine of $550 reduced by $250 to $300, times 55 days for a total fine of $16,500.

The applicant, a condominium owners association, is relying on the knowledge and skill of the consultant to advise them. Staff believes the association bears responsibility for reading and observing the terms of its permits, but also that it would accept the interpretation of the consultant. As a first-time violation for a non-water management area brackish water source, staff recommends the minimum $250.
RECOMMENDATION:

That the Commission:

A. Find Wailani Drilling Company, the driller, and Kihei-Akahi Condominium Association, the permittee, in violation of HAR §13-168-12(a) for installing a pump without a permit

B. Find the driller and permittee in violation of HAR §13-168-12(a) for installing a pump larger than the permit specified.

C. Impose a fine of $16,500 on the driller as summarized in Exhibit 4, payable within 30 days, and impose a fine of $250 on the permittee.

Respectfully submitted,

LINNEL T. NISHIOKA
Deputy Director

Exhibit(s):

1 (Location Map)
2 (Pump Installation Permit for Well No. 4327-07)
3 (Well Completion Report Part 2 for Well No. 4327-07)
4a (Penalty Calculation spreadsheet -- driller)
4b (Penalty Calculation spreadsheet -- owner)
Return Receipt Fax Memo

For: Charlie Ice

Charlie. Enclosed are the following items:

- WCR I for Pauwela-Lewis #1 5620-03 with: signed form ✓
  - Drillers log form ✓
  - Constant rate pump test ✓ rate not entered on form - calculated @ av. 37.92 gpm.
  - Well Survey ✓
  - Color well diagram ✓

- WCR I for Pauwela-Lewis #2 5620-04 with: signed form ✓
  - Drillers log form ✓
  - Constant rate pump test ✓ calculated av. Q = 48.26 gpm
  - Well Survey ✓
  - Color well diagram ✓

- PIP for Kihei Akahi well # 4327-07 with: WCR II and color well diagram ✓

Please confirm receipt by checking off the enclosed items and faxing a copy of this memo to me at 808-572-0925.

From: Mike Robertson

My error in not catching this before: as we. Maui Vista, I overlooked that we have no appl. for PIP. Please submit w/ fee.

Thank you:
Mike Robertson
**Commission on Water Resource Management**

**ROUTE SLIP FOR PERMIT ISSUANCE**

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<thead>
<tr>
<th>FROM</th>
<th>DATE</th>
<th>SUSPENSE DATE</th>
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</thead>
<tbody>
<tr>
<td>CHARLEY</td>
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**TO:**

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<td>JINNAI, R.</td>
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<td>KUNIMURA, I.</td>
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<td>YODA, K.</td>
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**WELL NUMBER**

| WELL NAME | | |
|-----------|------------------|
| | Pip |

**ATTACHMENTS FOR WELL CONSTRUCTION PERMIT:**

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<td>3</td>
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<td>LAND DIV. COMMENTS</td>
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<td>WCR FORM</td>
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TO BE SENT TO APPLICANT

FOR OFFICE USE ONLY

**ATTACHMENTS FOR PUMP INSTALLATION PERMIT:**

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<tr>
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<td>WCR FORM</td>
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<td>6</td>
<td>WUR FORM</td>
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</table>

TO BE SENT TO APPLICANT

FOR OFFICE USE ONLY

See attached MEMO (following page)

WCRA materials, earlier letter
MEMO To File

4327-07 Kihei Akahi Irrigation Well

WCR1

First transmittal of WCR1 rec'd prior to 08 Jan 01 (no time-stamp, reviewed by G. Bauer 08 Jan 01) was deficient.

Acknowledgement letter dated 25 Jan 01 noted items for completion:
- as-built drawing
- clarified elevations for wellhead
- clarified water level measurement
- signatures

Second transmittal rec'd 05 Feb 01 completed the as-built drawing, clarified elevations and water level, provided signatures, and included new chloride figures for step-drawdown and constant-rate pump tests.

Original transmittal contained measurements of TDS rather than Cl⁻. These were changed to chlorides in the second transmittal, but without the same number of readings and without showing change during the long-term test as evidenced in original.

A phone call 09 Feb 01 resulted in a faxed copy sent same day showing long-term test chlorides climbing as expected, but the step-drawdown test still showed no chloride increase. The driller finds that often the step-drawdown test does not reveal a rise in chlorides as the long-term test does.

The original transmittal sheets are kept as part of the record, and the corrected sheets from the second and third transmittals are kept separately, with the balance of the completed WCR1.

G. Bauer maintains he needs to see the pump test being conducted, to assure the valid measuring of water levels at the key time intervals. Otherwise, the report is complete.
Mr. Lawrence Wilson  
Kihei Akahi Condominium Association  
2531 South Kihei Road  
Kihei, Maui, HI 96753 

Dear Mr. Wilson: 

Pump Installation Permit  
Kihei Akahi Irrigation Well (Well No. 4327-07) 

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). Please note the corrected well number for this well, for future reference. As part of the Chairperson’s approval, the following special conditions were added and are part of your permit under Permit Condition 11: 

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, well operator, and/or well owner are responsible for all conditions of the permit. This includes ensuring that the pump installation contractor submits a completed Part II of the Well Completion Report form (enclosed) within sixty (60) days after the pump installation work is completed. Be advised that you may be subject to fines of up to $1000 per day for any violations of your permit conditions starting from the permit approval date. 

Please sign and have the contractor sign both permit originals and return one for our files. A copy of the Well Completion Report (Part II) and a copy of your water use report form are enclosed for your use. 

IMPORTANT - Pump installation shall not commence until a fully signed permit is returned to the Commission. Except for the monthly water use report form, please provide copies of all the information in this packet to your pump installation contractor. 

Finally, this letter is notice that we have accepted your Well Completion Report - Part I as complete as of February 9, 2001. 

If you have any questions, please call Charley Ice of the Commission staff at 587-0251 or toll-free at 984-2400, extension 70251.  

Aloha, 

GILBERT S. COLOMA-AGARAN  
Chairperson 

Enclosure 

c. Wailani Drilling Company
PUMP INSTALLATION PERMIT

Kiiha Akahi Irrigation Well, Well No. 4327-07

In accordance with Department of Land and Natural Resources, Commission on Water Resource Management’s Administrative Rules, Section 13-188, entitled “Water Use Wells, and Stream Diversion Works”, this document pertains to the pump installation for Kiiha Akahi Irrigation Well (Well No. 4327-07) at 2331 South Kiihi Road, Maui, TMK 8-9-23, subject to the Hawaii Well Construction & Pump Installation Standards (1220-97) 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, Hana, HI 96713, shall be notified, in writing, at least ten (10) days before any work covered by this permit commences and shall be allowed to inspect installation activities in accordance with §81-106-10, Hawaii Administrative Rules.

2. The pump installation permit shall be for installation of a 129 gpm capacity, or less, pump in the well.

3. The permittee, well operator, and/or well owner shall provide and maintain an approved meter or other appropriate means for measuring and reporting withdrawals and water level, and other devices or means for measuring continuous and temperature. These data shall be measured monthly and reported to the Commission on an annual basis, in forms provided by the Chairperson (attached).

4. The proposed use shall not adversely affect existing or future legal uses of water in the area, including any surface water or established stream flow standards. This permit or the authorization to pump water from a well shall not constitute a determination of water rights. The permittee, well operator, and/or well owner are notified by the Commission understands that the quantity of water taken from the well could be reduced by the Commission in the future. This permit is not a commitment that the pump capacity permitted here or even some lesser amount is guaranteed in the future.

5. The permittee, well operator, and/or well owner shall complete and submit a well drawings and Part 10 - (Permanent) Pump Installation Report of the Wellington Report (attached) to the Chairperson within sixty (60) days after completion of work.

6. 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.

7. The pump installation permit application is incorporated into this permit by reference and is subject to the Hawaii Well Construction & Pump Installation Standards (1220-97). If the HWCCP is not followed and as a consequence water is wasted or contaminated, a lien on the property may result.

8. The permit may be revoked if work is not started within six (6) months after the date of approval or if work is suspended or abandoned for six (6) months, unless otherwise specified. 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 amended 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 thirty (30) days prior to the date the permit expires. If the commencement date is not met, the Commission may revoke the permit after giving the permittee, well operator, and/or well owner notice of the proposed action and an opportunity to be heard.

9. If the well is not to be used it must be properly capped. If the well is to be abandoned then the permittee, well operator, and/or well owner must apply for a well abandonment permit in accordance with §81-106-120 prior to any well casing or plugging work.

10. The permittee, his 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.

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

Date of Approval: February 9, 2001
Expiration Date: February 9, 2003

GILBERT S. COLOMA-AGARAN, 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 understanding 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 also understand that non-compliance with any permit condition may be grounds for revocation and fines of up to $10,000 per day from the permit date of approval.

Permittee's Signature: [Signature]
Date: 4-3-2001
Printed Name: Lawrence Wilson
Title: Kiiha Akahi Manager

Installer's Signature: [Signature]
Date: 4-3-2001
Printed Name: Mike Robertson
License #: 367-C-842
Title: Wailani Drilling

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

Attachments:
1. USGS
Department of Health/State Drinking Water & Wastewater Branch

Date: 3-2001 09:19 AM
P.01
1-808-572-0826
**State of Hawaii**  
**COMMISSION ON WATER RESOURCE MANAGEMENT**  
Department of Land and Natural Resources  
**WELL COMPLETION REPORT - PART II**  
**Pump Installation**

**Instructions:** Please print in ink or type and send completed report (with attachments, if applicable) to the Commission on Water Resource Management, P.O. Box 621, Honolulu, Hawaii 96809. The Commission may not accept incomplete reports. This form shall be submitted within 60 days of the completion of work. For assistance, please consult the Hawaii Well Construction and Pump Installation Standards or call the Regulation Branch at 887-0225. For updates to this form or additional information, please visit our website at [http://www.state.hi.us/dlnr/cwrm/](http://www.state.hi.us/dlnr/cwrm/)

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<th>1. State Well No.</th>
<th>4327-07</th>
<th>Well Name:</th>
<th>Kehei - Akahi</th>
<th>Island:</th>
<th>Maui</th>
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<td>2. Address:</td>
<td>2531 South Kehei Rd.</td>
<td>Tax Map Key:</td>
<td>3-9-020-002</td>
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<td>3. Pump Installation Company:</td>
<td>Wailani Drilling</td>
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<td>4. Date Pump Installed:</td>
<td>11/9/00</td>
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<td>5. PERMANENT PUMP INFORMATION</td>
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<td>Pump Type, Make, Serial No.:</td>
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<td>Motor Type, H.P., Voltage, rpm:</td>
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<td></td>
<td>Weir*</td>
<td>Open Pipe*</td>
<td>Orifice*</td>
<td>Other*, explain below</td>
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<td>Other, explain below</td>
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<td>7. Fill in the as-built section on the other side of this sheet.</td>
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<td>8. Other remarks/comments:</td>
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<td>Rated @ 150 gpm @ 221 FT of HEAD</td>
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<td>Actual gpm was 160gpm @ HEAD (entree set @ 62 FT)</td>
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<td>NOTE: Pump was installed &amp; hung on 11/9/00 &amp; tested with generator only. &quot;No controller&quot; final installation with controller on 4/10/01</td>
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<th>Mike Robertson</th>
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<tr>
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<td>Mike Robertson</td>
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<td>4/10/01</td>
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<td>Permittee (print)</td>
<td>Lawrence Wilson</td>
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<td>Lawrence Wilson</td>
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EXHIBIT 2
9. AS-BUILT PUMP SECTION (Please attach as-built if different from diagram provided below)

Bench mark elevation surveyed to nearest 0.01 ft. = 54.68 ft. mean sea level

identify reference point elevation for water level measurements through chase tube 54.68 ft. mean sea level
describe reference point:

Bench Mark

Pump intake depth = \( \frac{1}{2} \) ft. (referenced to bench mark)

Chase tube depth = \( \frac{1}{2} \) ft. (referenced to bench mark)

If airline installed, bottom of airline elevation = \( \frac{1}{4} \) ft. mean sea level
Mr. Lawrence Wilson  
Kihei Akahi Condominium Association  
2531 South Kihei Road  
Kihei, Maui, HI 96753  

Dear Mr. Wilson:  

Pump Installation Permit  
Kihei Akahi Irrigation Well (Well No. 4327-07)  

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). Please note the corrected well number for this well, for future reference. As part of the Chairperson's approval, the following special conditions were added and are part of your permit under Permit Condition 11:  

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, well operator, and/or well owner are responsible for all conditions of the permit. This includes ensuring that the pump installation contractor submits a completed Part II of the Well Completion Report form (enclosed) within sixty (60) days after the pump installation work is completed. Be advised that you may be subject to fines of up to $1000 per day for any violations of your permit conditions starting from the permit approval date.  

Please sign and have the contractor sign both permit originals and return one for our files. A copy of the Well Completion Report (Part II) and a copy of your water use report form are enclosed for your use.  

IMPORTANT - Pump installation shall not commence until a fully signed permit is returned to the Commission. Except for the monthly water use report form, please provide copies of all the information in this packet to your pump installation contractor.  

Finally, this letter is notice that we have accepted your Well Completion Report - Part I as complete as of February 9, 2001.  

If you have any questions, please call Charley Ice of the Commission staff at 587-0251 or toll-free at 984-2400, extension 70251.  

Aloha,  

GILBERT S. COLOMA-AGARAN  
Chairperson  

Enclosure  
c. Wailani Drilling Company
PUMP INSTALLATION PERMIT
Kihei Akahi Irrigation Well, Well No. 4327-07

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 Kihei Akahi Irrigation Well (Well No. 4327-07) at 2531 South Kihei Road, Maui, TMK 3-9-20:2, subject to the Hawaii Well Construction & Pump Installation Standards (1/23/97) 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.

2. The pump installation permit shall be for installation of a 125 gpm capacity, or less, pump in the well.

3. The permittee, well operator, and/or well owner shall provide and maintain an approved meter or other appropriate means for measuring and reporting withdrawals and water levels, and appropriate devices or means for measuring chlorides and temperature. These data shall be measured monthly and reported to the Commission on an annual basis, on forms provided by the Chairperson (attached).

4. The proposed use 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 pump water from a well shall not constitute a determination of correlative water rights. The permittee, well operator, and/or well owner are notified and by this provision understands that the quantity of water taken from the well could be reduced by the Commission in the future. This permit is not a commitment that the pump capacity permitted here or even some lesser amount is guaranteed in the future.

5. The permittee, well operator, and/or well owner shall complete and submit as-built drawings and Part II - (Permanent) Pump Installation Report of the Well Completion Report (attached) to the Chairperson within sixty (60) days after completion of work.

6. 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.

7. The pump installation permit application is incorporated into this permit by reference and is subject to the Hawaii Well Construction & Pump Installation Standards (1/23/97). If the HWCPIS are not followed and as a consequence water is wasted or contaminated, a lien on the property may result.

8. The permit may be revoked if work is not started within six (6) months after the date of approval or if work is suspended or abandoned for six (6) months, unless otherwise specified. 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 three (3) months prior to the date the permit expires. If the commencement date is not met, the Commission may revoke the permit after giving the permittee, well operator, and/or well owner notice of the proposed action and an opportunity to be heard.

9. If the well is not to be used it must be properly capped. If the well is to be abandoned then the permittee, well operator, and/or well owner must apply for a well abandonment permit in accordance with §13-168-12(f) prior to any well sealing or plugging work.

10. 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.

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

Date of Approval: February 9, 2001
Expiration Date: February 9, 2003
GILBERT S. COLOMA-AGARAN, 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 also understand that non-compliance with any permit condition may be grounds for revocation and fines of up to $1000 per day starting from the permit date of approval.

Permittee's Signature: __________________________ Date: __________
Printed Name: _______________________________ Firm or Title: _______________________________

Installer's Signature: __________________________ C-57, C-57a, or A License #: __________ Date: __________
Printed Name: _______________________________ Firm or Title: _______________________________

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

Attachments
- USGS
  Department of Health/ Safe Drinking Water & Wastewater Branch
  Maui Department of Water Supply
  Wallani Drilling Company
**CONSTANT-RATE PUMP TEST DATA**

Pumped Well No. 4327-**67**  
Pumped Well Name Kike Akahi  
Target Q 1160 gpm  

Observation well no.  
Distance between Obs. & Pumped Well 11A ft.  
Reference pt. for depth to water 54.6 ft. msl  
Static Water Level @ start of test 1.12 ft. msl

Water level measurements by: ☑ steel tape □ pressure transducer □ airline

**START TEST**  
Date: 11/16/60  
Time of day: 12:00 Pm

<table>
<thead>
<tr>
<th>Flow Meter Reading Start: 41,450 gals</th>
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Data in this table is for:
- Pumped Well
- Observation Well

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: 271,838 gals

1 Chloride sampling required
2 Use same ending drawdown figure as start for recovery
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<th>Suggested elapsed time</th>
<th>Actual elapsed time</th>
<th>Depth to water (nearest 0.1 ft)</th>
<th>Recovery Drawdown (unadjusted to nearest 0.1 ft)</th>
<th>Pumping rate Q (gpm)</th>
<th>EC (umhos)</th>
<th>Cl- (mg/l)</th>
<th>Temp. °F or °C</th>
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</table>

END TEST Date: 11/11/00  Time of day: 12:00 PM

ADDITIONAL REMARKS:

Person in charge of pump test (print): [Signature]

Signature: WILL H. STEELE

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>Number</th>
<th>Description</th>
<th>Details</th>
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<tr>
<td>1</td>
<td>State Well No.</td>
<td>6527-06</td>
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<td>2</td>
<td>Well Name</td>
<td>Kiholo - Aukai</td>
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<td>3</td>
<td>Address</td>
<td>2534 South Kili Rd.</td>
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<td>Tax Map Key</td>
<td>3-9-020-00A.01</td>
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<td>Operating Company</td>
<td>Waialani Drilling Inc.</td>
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<td>6</td>
<td>Initial water level encountered</td>
<td>10.8 below ground</td>
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<td>Step-Drawdown Test completed?</td>
<td>Yes</td>
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<td>Constant Rate Pump Test completed?</td>
<td>Yes</td>
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<td>9</td>
<td>Water level</td>
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<td>Conductivity</td>
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<td>Temperature</td>
<td>71.9°F</td>
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<td>Remarks</td>
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<td>Licensed Driller (print)</td>
<td>Waialani Drilling Inc.</td>
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<td>Mike O'Leary</td>
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<td>Lawrence Wilson</td>
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<td></td>
<td>Signature</td>
<td>Lawrence Wilson</td>
</tr>
</tbody>
</table>
1. **Pump Tests Check**  
   Glenn Bauer  
   ![Initial](initial)  
   Yes  
   No  
   If no, describe deficiency  
   
   **Step-Drawdown Test:**  
   - followed WCPI Stds  
     - [ ]  
   - analysis attached  
     - [ ]  
   - proposed pump cap o.k.  
     - [ ]  
   
   **Aquifer Pump Test:**  
   - followed WCPI Stds  
     - [X]  
   - T & S analysis attached  
     - [ ]  
   
   **Well Interference:**  
   - estimated Steady-State drawdown at 1-mile radius is ________ ft.  
   - analysis attached  
     - [ ]  
   
   **Stream Surface Water Impacted:**  
   - [ ]  
   - [ ]  
   - If yes, identify most probable stream  

2. **Construction Check**  
   Mitch Ohye  
   ![Initial](initial)  
   Yes  
   No  
   If no, describe deficiency  
   
   data complete  
   - [ ]  
   followed WCPI Stds  
   - [ ]  
   well database updated  
   - [ ]  
   
   Needs to fill out back of WCR. (Completely)  

3. Charley/Lenore/Ryan  
   ![Initial](initial)  
   take action based on above analysis  

4. Roy  
   ![Initial](initial)  
   check  

5. Susan Subia  
   ![Initial](initial)  
   finalize  

6. Linnel  
   ![Initial](initial)  
   signature  

7. Charley/Lenore/Ryan File  
   Missing driller's signature
Mssrs. Mike Robertson and
Will Steele
Wailani Drilling Company
655 Ku'ulike Road
Ha'iku'u, Maui, HI 96708

Dear Mssrs. Robertson and Steele:

Well Completion Report for Well No. 4327-06

We have received your Well Completion Report Part I for the Kihei-Akahi (Well No. 4327-06). However, matters which must be addressed before we accept your report as complete are as follows:

1. Complete enclosed as-built well section, including materials section.
2. Check indicated elevation — is it top of casing, benchmark, or ground level?
3. Check indicated water level — you have listed two different numbers.

Please respond to the above item(s) within sixty (60) days of this letter's date. Failure to do so may result in fines of up to $1000 per day.

If you have any questions, please contact Charley Ice of the Commission staff at 587-0251 or toll-free at 984-2400, extension 70251.

Sincerely,

LINNEL T. NISHIOKA
Deputy Director

Cl: ky
Attachments
Alternative way for determining T from step-drawdown data (Mink, per. comm)

\[ Q = \text{ft}^3/\text{d} \]

\[ Q_1 \text{ (gpm)} = 160 = 30800 \text{ ft}^3/\text{d} \]

\[ s = \text{ft} \]

\[ Q_2 \text{ (gpm)} = 60 = 11550 \text{ ft}^3/\text{d} \]

Set up two equations:

\[ s_1 = jQ_1 + nQ_1^2 \]

\[ s_2 = jQ_2 + nQ_2^2 \]

\[ Q_2 = 11550 \]

\[ s_2 = 0.01 \]

\[ Q_1 = 30800 \]

\[ s_1 = 0.03 \]

Well Depth below sea level = 113

Radius of well (ft) = 0.33 = r

\[ n = s_1 - (Q_1/Q_2)s_2/Q_1(Q_1-Q_2) = 5.6E-12 \]

\[ j = s/Q - nQ = 8E-07 \]

Laminar flow equation:

\[ s = jQ = 0.024667 \quad 82.22\% \quad \text{Head loss due to laminar flow} \]

Thiem Eq.

\[ T = \frac{1}{2\pi j} \ln(\frac{re}{r}) \]

\[ re = \text{Well Depth BSL} \times 1.6 = 25 \]

Therefore:

\[ T = \frac{1}{2\pi j} \ln(\frac{re}{r}) = 86006 \text{ ft}^2/\text{d} \]
November 20, 2000

Kihei Akahi Condominium
2531 S. Kihei Road
Kihei, HI 96753

Attention: Mr. Lawrence Wilson
Resident Manager

Re: Elevation Survey
Proposed Irrigation Well Site at Kihei Akahi Condominium
At Kihei, Maui, Hawaii
TMK: (2) 3-9-20:01

Gentlemen:

Pursuant to your request, we conducted an elevation survey on the proposed irrigation well site on the subject property on November 17, 2000.

The elevation of the top plate over the proposed well site on the east (rear) side of the complex is 54.68 feet (MSL).

Thank you for the opportunity to perform this task for you.

Should you have any questions or comments, please do not hesitate to call me.

Very truly yours,

Kirk T. Tanaka, P.E., L.S.
President

871 KOLU STREET SUITE 201 • WAILUKU, MAUI, HAWAII 96793-1438 • PHONE 242-6561
Wailani Drilling Company  Lic. # C20115
Mike Robertson  655 Kulike Road  Haiku, Maui, Hawaii 96708  Kihei Akahi Well
Ph. 808 572-2673  Fax 572-0925  Cellular 264-7076  final drawing*  11/10/00
Kihei Akahi Irrigation Well  State Well- # 4327-06  Elevation 54.68 ft @ wellhead, m.s.l.

Static water level  54.68 ft.

Total Well Depth 80 ft.
initial chlorides 640 ppm

Pump tested at 160 gpm for 24 hours with maximum drawdown of .30 ft.

*Note: not drawn to scale
## STEP-DRAWDOWN PUMP TEST DATA

(not required for wells producing < 100,000 gpd or 70 gpm)

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<tbody>
<tr>
<td>Pumped Well Name</td>
<td>Kiea Akahe</td>
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<tr>
<td>Target Q</td>
<td>160 gpm</td>
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<tr>
<td>Observation well no.</td>
<td>N/A</td>
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<tr>
<td>Distance between Obs. &amp; Pumped Well</td>
<td>N/A ft</td>
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<tr>
<td>Reference pt. for depth to water</td>
<td>54.8 ft msl</td>
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<tr>
<td>Static Water Level @ start of test</td>
<td>1.17 ft msl</td>
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</table>

Water level measurements by:  
✓ steel tape  □ pressure transducer  □ airline

**START TEST**  
Date: 11/10/00  Time of day: 7:00 AM

Flow Meter Reading Start: 2850 gals

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<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 (at least 3 steps) (gpm)</th>
<th>EC (umhos)</th>
<th>TDS (mg/l)</th>
<th>Termp. oF or oC</th>
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Flow Meter Reading End: 1585 gals  
Flow Meter readings taken by:  
steel tape  pressure transducer  airline

Telecom O9 07 601
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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: 32,460 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
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END TEST Date: 11/10/00 Time of day: 11:00 AM

ADDITIONAL REMARKS:

Person in charge of pump test (print): WILL H. STEELE

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.

Pg. 3 of
### CONSTANT-RATE PUMP TEST DATA

Pumped Well No. **4327-2609**

Pumped Well Name **Kii - AKAI**

Target Q **160** gpm

Distance between Obs. & Pumped Well **N/A** ft.

Reference pt. for depth to water **54.68** ft. msl

Static Water Level @ start of test **1.12** ft. msl

Water level measurements by: □ steel tape □ pressure transducer □ airline

**START TEST Date:** 11/10/00  **Time of day:** 12:00 PM

**Flow Meter Reading Start:** **41,450** gals

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Notes:
\textsuperscript{1} Chloride sampling required
\textsuperscript{2} Use same ending drawdown figure as start for recovery

Begin recovery data next page
Flow meter reading at end of pumped period: 271,836 gals
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END TEST Date: 11/11/00 Time of day: 12:00 PM.

ADDITIONAL REMARKS: 306 3

Person in charge of pump test (print): [Signature]

Signature: WILL H. STEELE

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.
**STEP-DRAWDOWN PUMP TEST DATA**

(not required for wells producing < 100,000 gpd or 70 gpm)

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Water level measurements by: steel tape □ pressure transducer □ airline

START TEST  Date: 11/10/00  Time of day: 7:00 AM

Flow Meter Reading Start: 2850 gals

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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:

6-4327-07

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
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END TEST Date: 11/10/00 Time of day: 11:00 AM

ADDITIONAL REMARKS:

Person in charge of pump test (print): Will H. Steele

Signature: [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.

Page 3 of 3
Kihei Akahi Irrigation Well
State Well- # 4327-P4  Elevation 54.68 ft, m.s.l. @ Well Head

Static water level @ 54.68 ft.
Static Head @ +1.12 ft.

Total Well Depth 80 ft.
initial chlorides 640 ppm

Pump tested at 160 gpm for 24 hours with maximum drawdown of .30 ft.

*Note: not drawn to scale
Wailani Drilling Company
Lic.#C20115
Mike Robertson 655 Kulike Road Haiku, Maui, Hawaii 96708
Ph 808/572-2673 Fax 572-0925 Cellular 264 7079

FAX MEMO

For: Charlie Ice
From: Mike Robertson
Re: Start Work

10/30/00 7:30 AM

This is to provide notice as required by the Water Commission of Work to Start on the following Wells:

Kilei Akahi # 4327-60-07
Manawai-Vandezande # 5616-05

Please call in fax to confirm.

Notification is sufficient - confirmation not necessary. Vandezande has not filed signature copy validating his permit. Please do so immediately.

Thank you: Mike Robertson
Mr. Lawrence Wilson
Kihei Akahi Condominium Association
2531 South Kihei Road
Kihei, HI 96753

Dear Wilson:

Well Construction Permit
Kihei-Akahi Irrigation Well (Well No. 4327-86)

Enclosed are two (2) copies of your approved Well Construction Permit for the captioned well(s) that authorizes well construction activities but excludes installation work for your permanent pump. As part of the Chairperson's approval, the following special conditions were added and are part of your permit under Permit Condition 13:

Special Conditions

1. Attached for your information is a copy 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.

This permit does not authorize work for your permanent pump installation. Approval and issuance of your pump installation permit is contingent upon information provided to and accepted by Commission staff as required in the Well Construction & Pump Installation Standards (1/23/97) and any special conditions performed under this permit. However, a permanent pump may be installed prior to the permanent pump installation permit issuance in accordance with the Commission's April 15, 1998 Declaratory Ruling No. DEC-ADM98-G5, which states:

"Permanent pump installation for capacities between 0-70 gpm and where the proposed use is for private individual needs in non-ground-water management areas may be allowed prior to the final pump installation permit issuance. When required as a condition of the well construction permit, subsequent pumping tests shall validate the acceptability of the permanent pump. The permanent pump installed prior to final pump installation permit issuance is subject to removal if the testing shows that a smaller pump is required to reduce the potential of affecting neighboring wells and localized upconing at the applicant's well."
If you qualify and wish to take advantage of this ruling, please include a written request to install the permanent pump prior to final pump installation permit issuance when you return to us your validated well construction permit.

Please sign and have the contractor sign both permit originals and return one for our files. Also, copies of the aquifer pump test worksheet and the well completion report form are enclosed for your use.

IMPORTANT - Drilling work may not proceed without a fully signed permit returned to the Commission. Please provide all the information in this packet to your well drilling contractor. The permittee, well operator, and/or well owner are responsible for all conditions of the permit. This includes ensuring that the well construction contractor, or other party who constructs the well(s), submits a completed Part I of the Well Completion Report form (enclosed) within sixty (60) days after the well construction work is completed. Be advised that you may be subject to fines of up to $1000 per day for any violations of your permit conditions, starting from the date of this permit approval.

If you have any questions, please call the Commission staff at 587-0251 or toll-free at 984-2400, extension 70251.

Aloha,

TIMOTHY E. JOHNS
Chairperson

Enclosures

c: Wailani Drilling Company
WELL CONSTRUCTION PERMIT
Kihei-Akahi Irrigation Well, Well No. 4327-06

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 Kihei-Akahi Irrigation Well (Well No. 4327-06) at Kamaole, Kihei, Wailuku, Maui, TMK 3-9-20;1, subject to the Hawaii Well Construction & Pump Installation Standards (1/23/97) 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.

2. The well construction permit shall be for construction and testing of the well only. A minimum one-inch diameter monitor tube shall be permanently installed, in a manner acceptable to the Chairperson, to accurately record water levels. The permittee, well operator, and/or well owner shall coordinate with the Chairperson and conduct a pumping test in accordance with the Standards (a pump testing worksheet is attached). The permittee, well operator, and/or well owner shall submit to the Chairperson the test results as a basis for supporting an application to install a permanent pump and withdraw water for use. No permanent pump may be installed until a pump installation permit is approved and issued by the Chairperson.

3. 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.

4. The permittee, well operator, and/or well owner 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.

5. In the event that subsurface cultural remains such as artifacts, burials or concentrations of shells or charcoal are encountered during construction, the permittee, well operator, and/or well owner shall stop work and contact the Department's Historic Preservation immediately.

6. 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.

7. The following shall be submitted to the Chairperson within sixty (60) days after completion of work:
   b. Elevation (referenced to mean sea level, msl) survey by a Hawaii-licensed surveyor.
   c. As-built sectional drawing of the well.
   d. Plot plan and map showing the exact location of the well.
   e. Complete pumping test records, including time, pumping rate, drawdown, chloride content, and other data.

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

9. The well construction permit application is incorporated into this permit by reference and is subject to the Hawaii Well Construction & Pump Installation Standards (January 23, 1997; HWCPIS). If the HWCPIS are not followed and as a consequence water is wasted or contaminated, a lien on the property may result.

10. The permit may be revoked by the Commission if work is not started within six (6) months after the date of approval or if work is suspended or abandoned for six (6) months, unless otherwise specified. The work proposed in the well construction permit application shall be completed within two (2) years from the date of permit approval, unless otherwise specified. The permit may be extended by the 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 three (3) months prior to the date the permit expires. If the commencement date is not met, the Commission may revoke the permit after giving the permittee, well operator, and/or well owner notice of the proposed action and an opportunity to be heard.

11. If the well is not to be used it must be properly capped. If the well is to be abandoned then the permittee, well operator, and/or well owner must apply for a well abandonment permit in accordance with §13-168-12(f) prior to any well sealing or plugging work.

12. 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.

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

Date of Approval: August 9, 2000
Expiration Date: August 9, 2002

TIMOTHY E. JOHNS, 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 and the driller have signed, dated, and returned the permit to the Commission. I also understand that non-compliance with any permit condition may be grounds for revocation and fines of up to $1000 per day starting from the permit date of approval.

Permittee's Signature: ____________________________ Date: ______________
Printed Name: ____________________________ Firm or Title: ____________________________

Driller's Signature: ____________________________ C-57 License #: ______________ Date: ______________
Printed Name: ____________________________ Firm or Title: ____________________________

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

Attachment:

C: USGS
Department of Healthy Safe Drinking Water, Wastewater, and Clean Water Branches
Maul Department of Water Supply
WELL CONSTRUCTION PERMIT
Kihei-Akahi Irrigation Well, Well No. 4327-06

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 Kihei-Akahi Irrigation Well (Well No. 4327-06) at Kamole, Kihei, Wailuku, Maui, TMK 3-9-20:1, subject to the Hawaii Well Construction & Pump Installation Standards (1/23/97) 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.

2. The well construction permit shall be for construction and testing of the well only. A minimum one-inch diameter monitor tube shall be permanently installed, in a manner acceptable to the Chairperson, to accurately record water levels. The permittee, well operator, and/or well owner shall coordinate with the Chairperson and conduct a pumping test in accordance with the Standards (a pump testing worksheet is attached). The permittee, well operator, and/or well owner shall submit to the Chairperson the test results as a basis for supporting an application to install a permanent pump and withdraw water for use. No permanent pump may be installed until a pump installation permit is approved and issued by the Chairperson.

3. 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.

4. The permittee, well operator, and/or well owner 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.

5. In the event that subsurface cultural remains such as artifacts, burials or concentrations of shells or charcoal are encountered during construction, the permittee, well operator, and/or well owner shall stop work and contact the Department's Historic Preservation immediately.

6. 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.

7. The following shall be submitted to the Chairperson within sixty (60) days after completion of work:
   b. Elevation (referenced to mean sea level, msl) survey by a Hawaii-licensed surveyor.
   c. As-built sectional drawing of the well.
   d. Plot plan and map showing the exact location of the well.
   e. Complete pumping test records, including time, pumping rate, drawdown, chloride content, and other data.

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

9. The well construction permit application is incorporated into this permit by reference and is subject to the Hawaii Well Construction & Pump Installation Standards (January 23, 1997; HWCPIS). If the HWCPIS are not followed and as a consequence water is wasted or contaminated, a lien on the property may result.

10. The permit may be revoked by the Commission if work is not started within six (6) months after the date of approval or if work is suspended or abandoned for six (6) months, unless otherwise specified. The work proposed in the well construction permit application shall be completed within two (2) years from the date of permit approval, unless otherwise specified. The permit may be extended by the 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 three (3) months prior to the date the permit expires. If the commencement date is not met, the Commission may revoke the permit after giving the permittee, well operator, and/or well owner notice of the proposed action and an opportunity to be heard.

11. If the well is not to be used it must be properly capped. If the well is to be abandoned then the permittee, well operator, and/or well owner shall apply for a well abandonment permit in accordance with §13-168-12(f) prior to any well sealing or plugging work.

12. 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.

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

Date of Approval: August 9, 2000
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TIMOTHY E. JOHNS, 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 and the driller have signed, dated, and returned the permit to the Commission. I also understand that non-compliance with any permit condition may be grounds for revocation and fines of up to $1000 per day starting from the permit date of approval.

Permittee's Signature: Lawrence Wilson Date: 8/3/97
Printed Name: Lawrence Wilson Firm or Title: KIHEI AKARI
Driller's Signature: Mike Robertson C-57 License #: 2015 Date: 8/29/00
Printed Name: Mike Robertson Firm or Title: Waioli Drilling

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

Attachment

C: USGS
Department of Health/ Safe Drinking Water, Wastewater, and Clean Water Branches
Maul Department of Water Supply
TO:       Mel Homano                        Date: 11 August 99
FROM:    Charley Fee

Thank you for your help on this. The applicants are calling every day, eager to proceed, and I promised a call and fax when it's ready, but mentioned you had through the end of this week to respond.

If possible today, fine...

(Kihei Atalali review request)
Well No. 4327-96 01
Well Name Kihei-Akahi Irrigation
Applicant Kihei-Akahi Condominium Assoc
Date of Review 8/10/00
Reviewer RRI

SECTION 1: WELL LOCATION INFORMATION

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<td>Aquifer Sector</td>
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<td>System Sustainable Yield</td>
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SECTION 2: WELL SECTION DATA (enter data in grey cells only)

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<th>Elevation at top of casing</th>
<th>ft., m.s.l.</th>
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<tr>
<td>Ground Elevation</td>
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<td>Cement Grout</td>
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<td>Rock Packing</td>
<td>ft.</td>
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<td>Hole Diameter</td>
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<tr>
<td>Total Depth</td>
<td>ft.</td>
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| Estimated Head | ft., m.s.l. |
| Calculated Aquifer Thickness | 41 ft. |
| County Water Supply (Y/N ?) | N/A |

| Solid Casing |
| Material |
| Designation |
| Length | ft. |
| Diameter | in. |
| Wall Thickness | in. |

| Casing |
| Material |
| Designation |
| Length | ft. |
| Diameter | in. |
| Wall Thickness | in. |
| Openings | sq.in./ft. |

| Open Hole |
| Length | ft. |
| Diameter | in. |

SECTION 3: CHECKLIST (values to check are shaded)

Well Depth

| Theoretical Thickness of Aquifer | 41 ft. |
| 1/4 Aquifer Thickness | 10.25 ft. |
| Depth of Well below Sea Level | 50 ft. |

- too deep (refer to HWCPIS Section 2.2)

Well Casing

| Minimum Wall Thickness |
| County or Non-County | Steel |
| Minimum Thickness per standards | non-county |
| Wall Thickness Provided | 0.250 in. | #N/A |
| Minimum Length of Solid Casing | 90% of ground to top of aquifer | 53.1 ft. |

- Length of solid casing Provided | 90 ft. |
| Casing Material | ASTM A139 |

- #N/A (refer to HWCPIS Section 2.4 c)

- okay (refer to HWCPIS Section 2.4 d)

Annular Space

| Depth of Grouting |
| Calculated Depth of Grouting | 41.3 ft. |
| Depth of Grouting provided | 45 ft. |
| Thickness of Annular Space | 3.25 in. |

- okay (refer to HWCPIS Section 2.6 c)

- okay (refer to HWCPIS Section 2.6 d)
TO: Honorable Bruce S. Anderson, Director  
Department of Health  
Attention: Dennis Tulang, Wastewater Branch  
William Wong, Safe Drinking Water Branch  

FROM: Timothy E. Johns, Chairperson  
Commission on Water Resource Management  

SUBJECT: Well Construction Permit Application  
Kihei Akahi Irrigation Well (Well No. 4327-06)  

Transmitted for your review and comment is a copy of the captioned well application. We would appreciate your comments on the captioned application for any conflicts or inconsistencies with the programs, plans, and objectives specific to your department. Please respond by returning this cover memo form by August 11, 2000.

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 587-0251.

RESPONSE:  
This well qualifies as a source which will serve as a source of potable water to a public water system (serving 25 or more people at least 60 days per year or has 15 or more service connections) and must receive Director of Health approval prior to its use to comply with Hawaii Administrative Rules (HAR), Title 11, Chapter 20, Rules Relating to Potable Water Systems, §11-20-29.

This well does not qualify as a source serving a public water system (serves less than 25 people or more people at least 60 days per year or 15 service connections) and if the well water is used for drinking, the private owner should test for bacteriological and chemical presence before initiating such use and routinely monitor the water quality thereafter. However, if future planned use from this source increases to meet the public water system definition then Director of Health approval is required prior to implementation.

If the well is used to supply both potable and non-potable purposes in a single system, the user shall eliminate cross-connections and backflow connections by physically separating potable and non-potable systems by an air gap or an approved backflow preventer, and by clearly labeling all non-potable spigots with warning signs to prevent inadvertent consumption of non-potable water. Backflow prevention devices should be routinely inspected and tested.

It does not appear that this well will be used for consumptive purposes and is not subject to Safe Drinking Water Regulations.

For the applicant's information, a source of possible wastewater contamination is not located near the proposed well (information attached).

Other relevant DOH rules/regulations, information, or recommendations are attached. No comments/objections.

Contact Person: Lani N. Rajiwara  
Phone: 808-424-5864  
Signed: Lani N. Rajiwara  
Date: 8-4-2000
TO: Dean Y. Uchida, Administrator  
Land Division  
FROM: Linnel T. Nishioka, Deputy Director  
Commission on Water Resource Management  
SUBJECT: Well Construction/Pump Installation Permit Application  
Kihei Akahi Irrigation Well (Well No. 4327-06)  

Transmitted for your review and comment is a copy of the captioned well application which includes a request for a pump installation permit.

We would appreciate your comments on the captioned with regard to the programs, plans, and objectives specific to your division. Please respond by returning this cover memo form by August 11, 2000.

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 587-0251.

Clip(s)  
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: Original source of title is Grant 10070 issued in 1932.

Contact Person: Gary Martin  
Phone: 587-0421

Signed: Gary Martin  
Date: AUG - 4
TO: Honorable Bruce S. Anderson, Director  
Department of Health  
Attention: Dennis Tulang, Wastewater Branch  
William Wong, Safe Drinking Water Branch

FROM: Timothy E. Johns, Chairperson  
Commission on Water Resource Management

SUBJECT: Well Construction Permit Application  
Kihei Akahi Irrigation Well (Well No. 4327-96)

Transmitted for your review and comment is a copy of the captioned well application.

We would appreciate your comments on the captioned application for any conflicts or inconsistencies with the programs, plans, and objectives specific to your department. **Please respond by returning this cover memo form by August 11, 2000.**

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 587-0251.

**Cl:ss**  
**Attachment(s)**

**RESPONSE:**

[ ] This well qualifies as a source which will serve as a source of potable water to a public water system (serving 25 or more people at least 60 days per year or has 15 or more service connections) and must receive Director of Health approval prior to its use to comply with Hawaii Administrative Rules (HAR), Title 11, Chapter 20, Rules Relating to Potable Water Systems, §11-20-29.

[ ] This well does not qualify as a source serving a public water system (serves less than 25 people or more people at least 60 days per year or 15 service connections) and if the well water is used for drinking, the private owner should test for bacteriological and chemical presence before initiating such use and routinely monitor the water quality thereafter. However, if future planned use from this source increases to meet the public water system definition then Director of Health approval is required prior to implementation.

**If the user receives water from the Maui Department of Water Supply,**

- The user shall eliminate cross-connections and backflow connections by physically separating potable and non-potable systems by an air gap or an approved backflow preventer, and by clearly labeling all non-potable spigots with warning signs to prevent inadvertent consumption of non-potable water. Backflow prevention devices should be routinely inspected and tested.

- The Maui Department of Water Supply must be notified as they may require a backflow preventer on their service connection to the Kihei Akahi Condominiums.

- For the applicant’s information, a source of possible wastewater contamination is not located near the proposed well site (information attached).

- Other relevant DOH rules/regulations, information, or recommendations are attached.

- No comments/objections

**Contact Person:** William Wong  
**Phone:** 586-4258

**Signed:**  
**Date:** 8/03/00
The Department of Health, Clean Water Branch has the following comments:

1. For Well-Drilling Activities

Any discharge to State waters of treated process wastewater effluent associated with well drilling activities is regulated by Hawaii Administrative Rules, Title 11, Chapter 55, Appendix I, effective September 22, 1997. Treated process wastewater effluent covered by this general permit includes well drilling slurries, lubricating fluids wastewaters, and well purge wastewaters. This general permit does not cover well pump testing. The applicable Notice of Intent Forms and filing fee shall be submitted at least thirty (30) days before the start of discharge to the Department of Health, Clean Water Branch at 919 Ala Moana Boulevard, Room 301, Honolulu, Hawaii 96814-4920 or P.O. Box 3378, Honolulu, Hawaii 96801-3378. Inquiries may be directed to the Clean Water Branch at (808) 586-4309 or by fax at (808) 586-4352.

2. For Well Pump Testing

The discharger shall take all measures necessary to prevent the discharge of pollutants from entering State waters. Such measures shall include, if necessary, containment of the initial discharge until the discharge is essentially free of pollutants. If the discharge is entering a stream or river bed, best management practices shall be implemented to prevent the discharge from disturbing the clarity of the receiving water. If the discharge is entering a storm drain, the discharger must obtain written permission from the owner of that storm drain prior to discharge. Furthermore, best management practices shall be implemented to prevent the discharge from collecting sediments and other pollutants prior to entering the storm drain.

JS/cr
Charley - please amend permit to include special condition on well depth limit. Irrigation well limit on Cl is 1000 ppm which is 99% fresh still!
Mr. Lawrence Wilson
Kihei Akahi Condominium Association
2531 South Kihei Road
Kihei, Hawaii 96753

Dear Mr. Wilson:

Well Construction / Pump Installation Permit Application for Well No. 4327-06

We acknowledge receipt, on July 7, 2000, of your completed well construction / pump installation permit application for the Kihei Akahi Irrigation Well (Well No. 4327-06). You can expect your application to be processed within ninety (90) days from this date.

For your information, the process of constructing a well is normally regulated and permitted in two (2) steps. First, a well construction permit is issued for drilling and testing purposes only. Based upon information provided by you through a Well Completion Report Part 1 (Well Construction), a pump installation permit (upon completed application) may then be issued to authorize pump work. If a pump is installed then a Well Completion Report Part 2 (Pump Installation) is required.

If you have any questions about your permit application, please contact Charley Ice of the Commission staff at 587-0251 or toll-free at 984-2400, extension 70251.

Sincerely,

LINNEL T. NISHIOKA
Deputy Director
TO: Honorable Bruce S. Anderson, Director  
Department of Health  
Attention: Dennis Tulang, Wastewater Branch  
William Wong, Safe Drinking Water Branch  

FROM: Timothy E. Johns, Chairperson  
Commission on Water Resource Management  

SUBJECT: Well Construction Permit Application  
Kihei Akahi Irrigation Well (Well No. 4327-06)  

Transmitted for your review and comment is a copy of the captioned well application. We would appreciate your comments on the captioned application for any conflicts or inconsistencies with the programs, plans, and objectives specific to your department. Please respond by returning this cover memo form by August 11, 2000.

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 587-0251.

RESPONSE:

[ ] This well qualifies as a source which will serve as a source of potable water to a public water system (serving 25 or more people at least 60 days per year or has 15 or more service connections) and must receive Director of Health approval prior to its use to comply with Hawaii Administrative Rules (HAR), Title 11, Chapter 20, Rules Relating to Potable Water Systems, §11-20-29.

[ ] This well does not qualify as a source serving a public water system (serves less than 25 people or more people at least 60 days per year or 15 service connections) and if the well water is used for drinking, the private owner should test for bacteriological and chemical presence before initiating such use and routinely monitor the water quality thereafter. However, if future planned use from this source increases to meet the public water system definition then Director of Health approval is required prior to implementation.

[ ] If the well is used to supply both potable and non-potable purposes in a single system, the user shall eliminate cross-connections and backflow connections by physically separating potable and non-potable systems by an air gap or an approved backflow preventer, and by clearly labeling all non-potable spigots with warning signs to prevent inadvertent consumption of non-potable water. Backflow prevention devices should be routinely inspected and tested.

[ ] It does not appear that this well will be used for consumptive purposes and is not subject to Safe Drinking Water Regulations.

[ ] For the applicant's information, a source of possible wastewater contamination is not located near the proposed well site (information attached).

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

[ ] No comments/objections

Contact Person:  
Phone:  
Signed: ____________________ Date: ___________ _
TO:  Dean Y. Uchida, Administrator  
     Land Division

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

SUBJECT:  Well Construction/Pump Installation Permit Application  
          Kihei Akahi Irrigation Well (Well No. 4327-06)

Transmitted for your review and comment is a copy of the captioned well application  
which includes a request for a pump installation permit.

We would appreciate your comments on the captioned with regard to the programs,  
plans, and objectives specific to your division.  Please respond by returning this cover memo  
form by August 11, 2000.

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 587-0251.

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: ____________________________
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<thead>
<tr>
<th>F</th>
<th>F</th>
<th>Y</th>
<th>A</th>
<th>P</th>
<th>D</th>
<th>SRC/</th>
<th>OBJ</th>
<th>COST</th>
<th>CTR</th>
<th>PROJECT</th>
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<td></td>
<td>(1)</td>
<td>25.00</td>
<td>Wailani Drilling Inc.</td>
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REMARKS: LINE (1) Well No. 4327-06 (WOPA/PIPA)
LINE (2) 
LINE (3) 
LINE (4) 

TOTAL 25.00

Check from Wailani Drilling Inc. for $25.00 to Water Resources Commission.
<table>
<thead>
<tr>
<th>FROM: CHARLEY</th>
<th>DATE: 18 July 00</th>
<th>SUSPENSE DATE:</th>
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<tbody>
<tr>
<td>TO: BAUER, G.</td>
<td>INIT. A</td>
<td>TO: LUM, A.</td>
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<td>CHING, F.</td>
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<td>NAKAMA, L.</td>
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<td>FUJII, N.</td>
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<td>NAKANO, D.</td>
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<tr>
<td>HARDY, R.</td>
<td>INIT. R</td>
<td>OHYE, M.</td>
</tr>
<tr>
<td>HIGA, D.</td>
<td></td>
<td>NISHIOKA, L.</td>
</tr>
<tr>
<td>HIRANO, E.</td>
<td></td>
<td>SAKODA, E.</td>
</tr>
<tr>
<td>ICE, C.</td>
<td></td>
<td>SUBIA, S.</td>
</tr>
<tr>
<td>IMATA, R.</td>
<td>INIT. 2</td>
<td>SWANSON, S.</td>
</tr>
<tr>
<td>JINNAI, R.</td>
<td></td>
<td>UYENO, D.</td>
</tr>
<tr>
<td>KUNIMURA, I.</td>
<td></td>
<td>YODA, K.</td>
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**WELL NUMBER** 4327-06  **WELL NAME** Kihei-Akahii Irrigation Well

**ATTACHMENTS FOR APPLICATION**

1. TRANS. LETTER
2. CWRM MAP
3. APPL. FORM (3X)
4. USGS MAPS (3X)
5. TAX MAPS (3X)
6. PARCEL OWNER VERIF.
7. CONTRACTOR VERIF.
8. ALL INFO FILLED IN
9. BACKGOUND CHECK

**FOLDER:**

- [ ] MADE NEW FILE FOLDER, ATTACHED
- [ ] FILE FOLDER ALREADY MADE, IN FILE CABINET

**INCOMPLETE ACTION DATES:**

<table>
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</table>

*Glenn - look at Item #9 Comments: are we seeing this in Kihei as well? See 4226-15 (attached; please return)*

*Most likely well very
drilled water - beyond limits
of irrigation quality C3. Water levels are only 1-2' in*
the region.*
Dear Mr. Robertson:

Well Construction/Pump Installation Permit Application for
Kihei Akahi Condominium Association

We have received the well construction / pump installation permit application and filing fee for the Kihei Akahi Condominium Association Well. However, the application is incomplete. We are returning the application form to complete as follows before we accept the application for processing:

1. Check if application is for Pump Installation as well as Well Construction.
2. Indicate acreage of landscaping to be served.
3. Indicate whether other legal actions are required (CDUA, SMA, etc.).
4. Have applicant sign application.

Upon receipt of the above information, we will accept your application as complete and you can then expect your application to be processed within ninety (90) days.

If you have any questions about your permit application, please contact Charley Ice of the Commission staff at 587-0251 or toll free at 984-2400, extension 70251.

Sincerely,

LINNEL T. NISHIOKA
Deputy Director

Cl:ss

c: Kihei Akahi Condominium Association
<table>
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<tr>
<th>TO:</th>
<th>INIT.</th>
<th>TO:</th>
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<th>FOR:</th>
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<td>BAUER, G.</td>
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<td>Approval</td>
<td>See Me</td>
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<td>CHING, F.</td>
<td></td>
<td>NAKAMA, L.</td>
<td></td>
<td>Signature</td>
<td>Review &amp; Comment</td>
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<tr>
<td>DANBARA, S.</td>
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<td>NAKANO, D.</td>
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<td>Information</td>
<td>Take Action</td>
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<td>FUJII, N.</td>
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<td>NISHIOKA, L.</td>
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<td>HARDY, R.</td>
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<td>OHYE, M.</td>
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<td>Type Final</td>
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<td>HIRANO, E.</td>
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<td>SUBIA, S.</td>
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<td>ICE, C.</td>
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<td>SWANSON, S.</td>
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<td>JINNAI, R.</td>
<td></td>
<td>YODA, K.</td>
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</tbody>
</table>

pump installation too?
signature of applicant/landowner required
realize lots of applicant/surveyor missing pieces
who should go after applicant for signature violations.
<table>
<thead>
<tr>
<th><strong>APPLICATION INFORMATION</strong></th>
<th>1. (a) WELL OWNER: Kīhei, AKAHI Drilling</th>
<th>Phone: 879-1881</th>
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<tbody>
<tr>
<td>Mailing Address:</td>
<td>2531 S. Kīhei Rd. Kīhei HI 96753</td>
<td></td>
</tr>
<tr>
<td>Fax (COR):</td>
<td>875-4944</td>
<td></td>
</tr>
<tr>
<td>Contact Person:</td>
<td>Lawrence Wilson</td>
<td></td>
</tr>
<tr>
<td>(b) LAND OWNER:</td>
<td>Same</td>
<td></td>
</tr>
<tr>
<td>Mailing Address:</td>
<td>2531 S. Kīhei Rd. Kīhei HI 96753</td>
<td></td>
</tr>
<tr>
<td>Fax: 908-875-4344</td>
<td>E-mail:</td>
<td></td>
</tr>
<tr>
<td>CONTRACTOR:</td>
<td>Wailani Drilling</td>
<td></td>
</tr>
<tr>
<td>Mailing Address:</td>
<td>655 Kuilike Rd. Haiku HI</td>
<td></td>
</tr>
<tr>
<td>Fax: 572-0925</td>
<td>E-mail:</td>
<td></td>
</tr>
<tr>
<td>Fields Checked By:</td>
<td>Lic #: 20115</td>
<td></td>
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<thead>
<tr>
<th><strong>WELL &amp; PUMP INFORMATION</strong></th>
<th>(Please fill in the diagram on the back of this form.)</th>
<th>Island: Maui</th>
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<tbody>
<tr>
<td>2. ADDRESS:</td>
<td>2531 S. Kīhei Rd. Kīhei HI 96753</td>
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<tr>
<td>Mailing Address:</td>
<td></td>
<td></td>
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<tr>
<td>Tax Map Key:</td>
<td>3-020-001</td>
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<tr>
<th><strong>PROPOSED WORK:</strong></th>
<th>(Check all that apply)</th>
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<tbody>
<tr>
<td>Drill New Well</td>
<td>Install New Pump</td>
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</tr>
<tr>
<td>Deepen</td>
<td>Modify Pump</td>
<td></td>
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<tr>
<td>Modify Existing Well</td>
<td>Replace Pump</td>
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<tr>
<td>Abandon/ Seal</td>
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<th><strong>CONSTRUCTION:</strong></th>
<th>(Please describe.)</th>
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<tbody>
<tr>
<td>Dog</td>
<td>Bored</td>
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<tr>
<td>Driven</td>
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<td>Radial</td>
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<thead>
<tr>
<th><strong>PROPOSED PUMP INFORMATION:</strong></th>
<th>Rated Pump Capacity:</th>
<th>125 gallons per minute</th>
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<tbody>
<tr>
<td>Pump Type</td>
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<tr>
<td>Deep Well Turbine</td>
<td>Rotary</td>
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<td>Submersible</td>
<td>Reciprocating</td>
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<td>Municipal (including hotels, stores, etc.)</td>
<td>Industrial</td>
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<tr>
<td>Domestics (individual, noncommercial water system)</td>
<td>No. of Dwelling Units:</td>
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<tr>
<td>Irrigation (crop), landscape plants</td>
<td>No. of Acres:</td>
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<td>Military</td>
<td>Other (explain):</td>
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<tr>
<th><strong>PROPOSED AMOUNT OF WITHDRAWAL:</strong></th>
<th>50,000 gallons per day</th>
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<th><strong>METHOD OF FLOW MEASUREMENT:</strong></th>
<th>Flowmeter</th>
<th>Open Pipe</th>
<th>Weir</th>
<th>Orifice</th>
<th>Other (explain):</th>
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</table>

**OTHER IMPORTANT INFORMATION:**

8. PENDING ACTIONS: | CDUA | SMA | EIS | EA | NONE | Other (explain): |

9. REMARKS, EXPLANATIONS: ________________________________

(if more space is needed, please attach additional sheet)

I understand that approval of this application attaches the following standard conditions: 1) the proposed work is to be completed within 2 or 3 years of the approval date; 2) the contractor shall submit to the Commission a well completion/abandonment report within 30 days after the completion date of the permitted work; 3) monthly water use data shall be submitted to the Commission; 4) such approval shall not constitute a determination of correlative water rights and shall not guarantee the pump capacity or future use up to the permitted pump capacity.

Well Owner: ___________ Signature: ___________

Date: ___________

Contractor: Wailani Drilling Signature: ___________

Date: ___________

Field Checked By: ___________ Aquifer System Name: ___________

Date: ___________ State Well No. ___________

WCPFORM (31/00)
11. PROPOSED WELL SECTION

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 - 0.25 Water Level Elevation)

Example: Estimated = 2 ft. Water Level Elev. → Bottom Elevation of Wall Limit = (2 - 2.5 ft) = 1.5 ft.

* 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.

Solid Casing Material:

Steel: compliant with (check one or more):
- ANSI/AWWA C200
- API Spec. 5L
- ASTM A53
- ASTM A139
- Other

And compliant with (check one or more):
- ASTM A242
- Type E
- Type S
- Grade B
- Other

Stainless Steel: (check one):
- ASTM A409
- ASTM A312

ABS Plastic conforming to ASTM F460 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)
- Filament Wound Resin Pipe conforming to ASTM D2996
- Centrifugally Cast Resin Pipe conforming to ASTM D2897
- Reinforced Plastic Motor 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:

Steel: compliant with (check one or more):
- ANSI/AWWA C200
- API Spec. 5L
- ASTM A53
- ASTM A139
- Other

And compliant with (check one or more):
- ASTM A242
- Type E
- Type S
- Grade B
- Other

Stainless Steel: (check one):
- ASTM A409
- ASTM A312

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)
- Filament Wound Resin Pipe conforming to ASTM D2996
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- Reinforced Plastic Motor 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

Please refer to the HAWAII WELL-CONSTRUCTION AND PUMP INSTALLATION STANDARDS to assure that your construction plans are in compliance with all existing regulations.
Charlie,

This is the completed well permit ap. for Kilai Akali. You should still have the 2 maps and check for the application fee.

Thanks
Mike

We were waiting for lassitomer signature on this. Original application came in on 6/14/00. This is follow-up
State of Hawaii
COMMISSION ON WATER RESOURCE MANAGEMENT
Department of Land and Natural Resources
APPLICATION FOR PERMIT

Well Construction and/or □ Pump Installation

Instructions: Please print in ink or type and send completed application with attachments to the Commission on Water Resource Management, P.O. Box 621, Honolulu, Hawaii 96829. Application must be accompanied by 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.state.hi.us/dlnr.hsw.

APPLICANT INFORMATION: (Fill out all three, if applicable, and place a check next to the primary contact)

1. (a) □ WELL OWNER: Kikei Akahi Coda Assn. Contact Person: Lawrence Wilson Phone: 879-1881
   Mailing Address: 2531 S Kikei Pl, Kikei, HI 96753
   Fax: 875-9344 E-mail:
   (b) □ LAND OWNER: Same As Above Contact Person: Phone: 
   Mailing Address: Fax: E-mail:
   (c) □ CONTRACTOR: Weilani Drilling Inc Contact Person: Mike Roberts Phone: 572-8273
   Mailing Address: 655 Kukele Rd, Hauku HI 96788
   Fax: 572-9925 E-mail:
   Lic #: 20115 (circle one) C50, C51, C57a, or A

WELL & PUMP INFORMATION: (Please fill in the diagram on the back of this form.)

2. WELL NAME: Kikei Akahi Well Location: Maui
   Address 2531 S Kikei Pl, Maui, HI 96753 Tax Map Key:
   Zone: 39 Sec: 1 Plat: 1 Parcel: 9
   Attach the relevant portion of (a) a 7.5-Minute Series USGS topographic map (scale 1:24,000) and include the name of the quad map, and (b) a property tax map, showing well location referenced to established property boundaries.

3. PROPOSED WORK: (check all that apply)
   (a) Construct New Well
   (b) Install New Pump
   (c) Modify Existing Well
   (d) Abandon/Seal
   *State Well No.: (unknown, please contact Commission at 587-0225)

4. CONSTRUCTION:
   (a) Drilled
   (b) Dug
   (c) Shaft
   (d) Tunnel
   Is this well part of a battery of wells? □ Yes □ No (Please describe)

5. PROPOSED PUMP INFORMATION: Rated Pump Capacity: Gallons per minute
   Pump Type (check one):
   □ Deep Well Turbine
   □ Submersible
   □ Centrifugal
   □ Rotary
   □ Rotary-Displacement
   □ Rotary-Gear
   □ Propeller
   □ Impulse
   □ 15 HP Electric
   □ Other (explain):

6. PROPOSED USE: (check all that apply)
   □ Municipal (including hotels, stores, etc.)
   □ Industrial
   □ Domestic (individual, noncommercial water system)
   □ No. of Dwelling Units:
   □ Irrigation (crop)
   □ No. of Acres:
   □ Landscape
   □ Other (explain):
   □ 3 acres in planta

7. (a) PROPOSED AMOUNT OF WITHDRAWAL: Gallons per day
   (b) METHOD OF FLOW MEASUREMENT:
   □ Flowmeter □ Open-pipe □ Weir □ Orifice □ Other(explain)

OTHER IMPORTANT INFORMATION

8. LEGAL REQUIREMENTS:

9. REMARKS, EXPLANATIONS:

10. Understand that approval of this application: the approval date; 2) the contractor shall at the permitted work; 3) monthly water use d water rights and shall not guarantee the pu

Well Owner Lawrence Wilson
Signature Lawrence Wilson
Date 7/15/00

For Official Use Only

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DO JUL 7 10:27
COMM/ON WATER RESOURCE MANAGEMENT

Contractor: Weilani Drilling Inc
Signature: Mike Roberts
Date: 7/15/00

For official use only

Latitude: Aquifer System No.
Longitude: State Well No.
Kumaha
4827 965

WCPRA Form
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 - ft. x Water Level Elevation) / 4

Example: Estimated + 2 ft. Water Level Elev. → Bottom Elevation of Well Limit = (2 - ft. x 1.5 ft.) = -18.5 ft.

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