<table>
<thead>
<tr>
<th>WELL NO</th>
<th>Head</th>
<th>Dia-meter</th>
<th>Aquifer Thickness</th>
<th>Active Length</th>
<th>THEIS</th>
<th>COOPER-JACOB</th>
<th>HARR $10^4$</th>
<th>HARR $10^6$</th>
<th>RECOVERY</th>
<th>ZANGAR</th>
<th>POLUBARIN</th>
<th>THOMAS</th>
<th>OVA SON</th>
<th>AVERAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>3925-01</td>
<td>0.2</td>
<td>0.20</td>
<td>9.3</td>
<td>9.3</td>
<td>790</td>
<td>630</td>
<td>700</td>
<td>490</td>
<td>420</td>
<td>860</td>
<td>950</td>
<td>1500</td>
<td></td>
<td>1100</td>
</tr>
<tr>
<td>3926-11</td>
<td>0.3</td>
<td>0.15</td>
<td>3.0</td>
<td>4.5</td>
<td>810</td>
<td>760</td>
<td>920</td>
<td>770</td>
<td>2000</td>
<td>2200</td>
<td></td>
<td></td>
<td></td>
<td>610</td>
</tr>
<tr>
<td>4026-13</td>
<td>0.3</td>
<td>0.15</td>
<td>2.7</td>
<td>3.6</td>
<td>140</td>
<td>360</td>
<td>400</td>
<td>480</td>
<td>2000</td>
<td>2100</td>
<td></td>
<td></td>
<td></td>
<td>1200</td>
</tr>
<tr>
<td>4125-02</td>
<td>1.1</td>
<td>0.25</td>
<td>6.4</td>
<td>9.4</td>
<td>1900</td>
<td>2100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>350</td>
</tr>
<tr>
<td>4126-03</td>
<td>0.3</td>
<td>0.30</td>
<td>6.4</td>
<td>6.7</td>
<td>140</td>
<td>360</td>
<td>400</td>
<td>480</td>
<td>2000</td>
<td>2100</td>
<td></td>
<td></td>
<td></td>
<td>100</td>
</tr>
<tr>
<td>4226-13</td>
<td>0.4</td>
<td>0.30</td>
<td>6.1</td>
<td>6.5</td>
<td>390</td>
<td>440</td>
<td>760</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>530</td>
</tr>
<tr>
<td>4226-15</td>
<td>1.2</td>
<td>0.15</td>
<td>6.1</td>
<td>9.7</td>
<td>520</td>
<td>460</td>
<td>780</td>
<td>510</td>
<td>1300</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>720</td>
</tr>
<tr>
<td>4226-17</td>
<td>0.7</td>
<td>0.15</td>
<td>2.4</td>
<td>2.8</td>
<td>450</td>
<td>340</td>
<td>380</td>
<td>240</td>
<td>2200</td>
<td>560</td>
<td>630</td>
<td>1100</td>
<td>1400</td>
<td>1500</td>
</tr>
<tr>
<td>4326-09</td>
<td>0.5</td>
<td>0.15</td>
<td>7.3</td>
<td>9.9</td>
<td>360</td>
<td>380</td>
<td>410</td>
<td>300</td>
<td>950</td>
<td>1200</td>
<td>1400</td>
<td>1500</td>
<td></td>
<td>820</td>
</tr>
<tr>
<td>4327-07</td>
<td>0.4</td>
<td>0.15</td>
<td>7.7</td>
<td>7.7</td>
<td>2300</td>
<td>2300</td>
<td>890</td>
<td>740</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1500</td>
</tr>
<tr>
<td>4527-10</td>
<td>0.3</td>
<td>0.61</td>
<td>2.1</td>
<td>2.4</td>
<td>40</td>
<td>40</td>
<td>30</td>
<td>20</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>30</td>
</tr>
<tr>
<td>4527-14</td>
<td>0.4</td>
<td>0.15</td>
<td>8.8</td>
<td>23.9</td>
<td>2</td>
<td>20</td>
<td>30</td>
<td>20</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>4727-08</td>
<td>1.0</td>
<td>0.20</td>
<td>6.7</td>
<td>8.0</td>
<td>690</td>
<td>860</td>
<td>210</td>
<td>160</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>480</td>
</tr>
<tr>
<td>4821-01</td>
<td>0.3</td>
<td>0.15</td>
<td>15.2</td>
<td>18.6</td>
<td>90</td>
<td>100</td>
<td>150</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>110</td>
</tr>
<tr>
<td>4822-01</td>
<td>1.2</td>
<td>0.15</td>
<td>16.5</td>
<td>19.5</td>
<td>90</td>
<td>90</td>
<td>50</td>
<td>40</td>
<td>60</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>60</td>
</tr>
<tr>
<td>4824-01</td>
<td>1.3</td>
<td>0.30</td>
<td>13.1</td>
<td>15.6</td>
<td>240</td>
<td>180</td>
<td>80</td>
<td>60</td>
<td>2200</td>
<td>810</td>
<td>890</td>
<td>1200</td>
<td>1400</td>
<td>1200</td>
</tr>
<tr>
<td>4830-01</td>
<td>1.3</td>
<td>0.20</td>
<td>9.1</td>
<td>11.2</td>
<td>20</td>
<td>30</td>
<td>90</td>
<td>40</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>40</td>
</tr>
<tr>
<td>4831-01</td>
<td>1.4</td>
<td>0.20</td>
<td>15.8</td>
<td>17.4</td>
<td>170</td>
<td>170</td>
<td>80</td>
<td>70</td>
<td>700</td>
<td>760</td>
<td>960</td>
<td></td>
<td></td>
<td>460</td>
</tr>
<tr>
<td>4834-01</td>
<td>0.6</td>
<td>0.15</td>
<td>2.9</td>
<td>2.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>700</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>700</td>
</tr>
<tr>
<td>4835-04</td>
<td>0.8</td>
<td>0.15</td>
<td>3.1</td>
<td>3.9</td>
<td>20</td>
<td>10</td>
<td>20</td>
<td>10</td>
<td>20</td>
<td>50</td>
<td>50</td>
<td>70</td>
<td></td>
<td>30</td>
</tr>
<tr>
<td>4930-01</td>
<td>2.3</td>
<td>0.15</td>
<td>6.1</td>
<td>11.1</td>
<td>50</td>
<td>50</td>
<td>70</td>
<td>50</td>
<td>60</td>
<td>220</td>
<td>240</td>
<td>210</td>
<td>210</td>
<td>120</td>
</tr>
<tr>
<td>4936-01</td>
<td>1.5</td>
<td>0.25</td>
<td>8.8</td>
<td>8.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>120</td>
<td>140</td>
<td>140</td>
<td>220</td>
<td></td>
<td>160</td>
</tr>
<tr>
<td>5129-03</td>
<td>1.4</td>
<td>0.25</td>
<td>12.2</td>
<td>13.6</td>
<td>350</td>
<td>370</td>
<td>130</td>
<td>120</td>
<td>1100</td>
<td>240</td>
<td>270</td>
<td>370</td>
<td></td>
<td>370</td>
</tr>
<tr>
<td>5130-01</td>
<td>3.7</td>
<td>0.20</td>
<td>57.3</td>
<td>66.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>5130-02</td>
<td>4.9</td>
<td>0.51</td>
<td>152.4</td>
<td>157.9</td>
<td>5</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>5131-01</td>
<td>5.6</td>
<td>0.46</td>
<td>32.0</td>
<td>37.9</td>
<td>410</td>
<td>550</td>
<td>140</td>
<td>130</td>
<td>250</td>
<td>210</td>
<td>230</td>
<td>270</td>
<td>270</td>
<td>270</td>
</tr>
<tr>
<td>5137-01</td>
<td>1.6</td>
<td>0.30</td>
<td>9.4</td>
<td>12.0</td>
<td>90</td>
<td>100</td>
<td>90</td>
<td>60</td>
<td>90</td>
<td>240</td>
<td>270</td>
<td>360</td>
<td></td>
<td>160</td>
</tr>
<tr>
<td>5138-01</td>
<td>1.4</td>
<td>0.41</td>
<td>13.7</td>
<td>14.8</td>
<td>220</td>
<td>160</td>
<td>90</td>
<td>70</td>
<td>880</td>
<td>970</td>
<td>1500</td>
<td></td>
<td></td>
<td>550</td>
</tr>
<tr>
<td>5220-01</td>
<td>1.4</td>
<td>0.41</td>
<td>16.3</td>
<td>16.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>530</td>
<td>590</td>
<td>930</td>
<td></td>
<td></td>
<td>680</td>
</tr>
<tr>
<td>5230-03</td>
<td>2.6</td>
<td>0.51</td>
<td>33.2</td>
<td>35.8</td>
<td>510</td>
<td>710</td>
<td>210</td>
<td>180</td>
<td>210</td>
<td>270</td>
<td>300</td>
<td>400</td>
<td></td>
<td>350</td>
</tr>
<tr>
<td>5238-01</td>
<td>1.9</td>
<td>0.36</td>
<td>16.5</td>
<td>16.5</td>
<td>660</td>
<td>700</td>
<td>230</td>
<td>200</td>
<td>320</td>
<td>340</td>
<td>380</td>
<td>580</td>
<td></td>
<td>430</td>
</tr>
<tr>
<td>5240-07</td>
<td>2.1</td>
<td>0.15</td>
<td>4.2</td>
<td>4.2</td>
<td>40</td>
<td>50</td>
<td>30</td>
<td>20</td>
<td>300</td>
<td>110</td>
<td>120</td>
<td>200</td>
<td></td>
<td>110</td>
</tr>
<tr>
<td>5317-01</td>
<td>3.7</td>
<td>0.46</td>
<td>37.8</td>
<td>41.8</td>
<td>90</td>
<td>90</td>
<td>30</td>
<td>30</td>
<td>540</td>
<td>240</td>
<td>270</td>
<td>330</td>
<td></td>
<td>200</td>
</tr>
<tr>
<td>5320-01</td>
<td>0.3</td>
<td>0.30</td>
<td>9.8</td>
<td>10.0</td>
<td>1500</td>
<td>1600</td>
<td>2100</td>
<td>1400</td>
<td>2000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1700</td>
</tr>
</tbody>
</table>
Dear Mr. Peroff:

Pump Installation Permit
Rainforest Village Well (Well No. 4727-08)

Enclosed are two (2) originals of your approved Pump Installation Permit for the captioned well(s) which authorizes permanent pump installation work for your well(s). As part of the Chairperson's approval, the following special conditions were added and are part of your permit under Permit Condition 10:

Special Conditions

1. None

The well owner is responsible for all conditions of the permit. This includes ensuring that the pump installation contractor, or other party who installs the pump, 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.

To validate your pump installation permit, 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. 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.

If you have any questions, please call the Commission staff at 587-0251.

Aloha,

MICHAEL D. WILSON
Chairperson

Enclosures
PUMP INSTALLATION PERMIT

Rainforest Village Well, Well No. 4727-08

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 Rainforest Village Well (Well No. 4727-08) at Waiakea, Kihel, Maui, TMK 3-8-77-9, 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 120 gpm capacity, or less, pump in the well.

3. The permittee 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 a monthly 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 is 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 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 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).

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 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 must apply for a well abandonment permit in accordance with §13-168-12(f) prior to any well sealing or plugging work.

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

Date of Approval: August 26, 1997
Expiration Date: August 26, 1999

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. I also understand that non-compliance with any permit condition may be grounds for revocation and fines of up to $1000 per day.

Permittee's Signature: ___________________________ Date: ____________
Printed Name: ___________________________ Firm or Title: ___________________________
Installer's Signature: ___________________________ 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 Branches
- Maui Department of Water Supply
- Dan Lum, Water Resource Associates
- Tracy Runnels, Roscoe Moss Hawaii, Inc.
**WELL COMPLETION REPORT 97 AUG 14**

**State of Hawaii**  
**COMMISSION ON WATER RESOURCE MANAGEMENT**  
**Department of Land and Natural Resources**

**PART I. WELL CONSTRUCTION REPORT**

1. **State Well No.:** 4727-08  
   **Well Name:** RAINFOREST VILLAGE  
   **Island:** MAUI  
   **Location/Address:** WAIAKOA, KIHEI, MAUI  
   **Tax Map Key:** 3-8-77:9

### Decks (ft.)

<table>
<thead>
<tr>
<th>Depth (ft.)</th>
<th>Rock Description, Water Level, Dates, etc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 7</td>
<td>dirt &amp; rubble</td>
</tr>
<tr>
<td>7 to 12</td>
<td>very hard blue rock</td>
</tr>
<tr>
<td>12 to 33</td>
<td>med hard blue rock</td>
</tr>
<tr>
<td>33 to 40</td>
<td>loose red cinders</td>
</tr>
</tbody>
</table>

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

2. **Drilling Company:** ROSCOE MOSS HAWAII, INC.  
3. **Type of rig/construction:** CABLE TOOL  
4. **Date(s) Well Construction and pump tests (if any) completed:** 6/19/97 CONSTR.  
   **PUMP TEST** 6/24/97

5. **Ground Elevation** (referred to mean sea level, msl): **18.0** ft.  
   **Well Bench Mark (description/locatior):** TOP OF CASING  
   **Elevation (msl):** 17.42 ft.

6. **Driller's Log:** Please attach geologic log (if available or if required by permit)

<table>
<thead>
<tr>
<th>Depths (ft.)</th>
<th>Rock Description, Water Level, Dates, etc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 7</td>
<td>dirt &amp; rubble</td>
</tr>
<tr>
<td>7 to 12</td>
<td>very hard blue rock</td>
</tr>
<tr>
<td>12 to 33</td>
<td>med hard blue rock</td>
</tr>
<tr>
<td>33 to 40</td>
<td>loose red cinders</td>
</tr>
</tbody>
</table>

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

7. **Total depth of well below ground:** 40 ft.  
8. **Hole size:** 14" inch dia. from 0 ft. to 40 ft. below ground

9. **Casing installed:** 8 in.  
   **I.D. x 250 in. wall solid section to 18.0 ft. below ground**  
   **8 in. I.D. x 250 in. wall perforated section to 39.0 ft. below ground**

10. **Annulus:** Grouted from 0 ft. below ground to 14 ft. below ground
   **Gravel packed from NA ft. below ground to NA ft. below ground**

11. **Initial water level:** 14.25 ft. below ground.  
    **Initial chloride:** 395 ppm  
    **Initial temperature:** 77.5 °F

12. **PUMPING TESTS:** Reference Point (R.P.) used: top of casing, which elevation is **17.42** ft.

   (1) **Step-Drawdown Test Date** 6/20/97
   **Start water level ATTACHED ft. below R.P.**
   **End water level ATTACHED ft. below R.P.**

   (2) **Long-term Aquifer Test Date** 6/23/97
   **Start water level ATTACHED ft. below R.P.**
   **End water level ATTACHED ft. below R.P.**

13. **Aquifer Pump Test Procedures data & graphs (1/9/96 LTAT Form) attached?** Yes __ No

14. **As-built drawings attached?** Yes __ No

15. **Other remarks/comments:** (On back of this form)

---

**Signature**  
**Date:** 7-17-97  
**Surveyor (print):** Bruce R. Lee  
**Lic. No.:** 5983-LS  
**Applicant (print):** Valentine Peroff  
**Date:** 8-7-97

---

**Instructions:** Please print or type and submit completed report within 30 days after well completion. The Commission on Water Resource Management, P.O. Box 621, Honolulu, Hawaii 96809. An as-built drawing of the well and chemical analysis should also be submitted. For assistance call the Commission Regulation Branch at 587-0225, or 1-800-468-4644 Extension 7022.
**PART II. (PERMANENT) PUMP INSTALLATION REPORT**

20. Pump Installation Company: ________________________________

21. Name of person performing work: __________________________

22. Date Pump Installation Completed: _________________________

23. PUMP INSTALLATION:
   
   Pump Type, Make, Serial No.: ________________________________
   Capacity: _______ gpm
   
   Motor type, H.P., Voltage, rpm: ________________________________
   
   Depth of Pump Intake Setting _________ ft. below _________, which elevation is _________ ft.
   
   Depth to bottom of airline _________ ft. below _________, which elevation is _________ ft.
   
   Pumping Head is _________ ft. Type of flow meter: ____________ which measures in ________

24. As-built drawings attached?  _ Yes _ No

25. Other remarks/comments: (See below)

<table>
<thead>
<tr>
<th>Pump Installation Contractor (print)</th>
<th>C-57 Lic. No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Signature</td>
<td>Date</td>
</tr>
<tr>
<td>Applicant (print)</td>
<td></td>
</tr>
<tr>
<td>Signature</td>
<td>Date</td>
</tr>
</tbody>
</table>

8. (cont'd) DRILLER'S LOG (cont'd):

<table>
<thead>
<tr>
<th>Water Level Dates (ft.)</th>
<th>Water Level Dates (ft.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Level Depth (ft.)</td>
<td>Rock Description, Remarks</td>
</tr>
<tr>
<td></td>
<td>Rock Description, Remarks</td>
</tr>
<tr>
<td>____________ to ____________</td>
<td>____________ to ____________</td>
</tr>
<tr>
<td><strong>__ to __</strong></td>
<td><strong>__ to __</strong></td>
</tr>
<tr>
<td>__ to __</td>
<td>__ to __</td>
</tr>
<tr>
<td>__ to __</td>
<td>__ to __</td>
</tr>
<tr>
<td>__ to __</td>
<td>__ to __</td>
</tr>
<tr>
<td>__ to __</td>
<td>__ to __</td>
</tr>
</tbody>
</table>

19. & 25. Remarks:

____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
Ms. Rae Loui, Deputy Director
Commission on Water Resource Management
Department of Land & Natural Resources
P.O. Box 621
Honolulu, Hawaii 96809

Dear Ms. Loui:

Well Completion Report
Rainforest Village Well (4727-08), Kihei, Maui

Enclosed for your files is the Well Completion Report for the Rainforest Village Well (4727-08), Kihei, Maui.

If there are any questions, please call me.

Sincerely,

DAN LUM

Enc.
c: Mr. Val Peroff w/enc.
    Mr. Bert Toba, W/enc.
JUL 21 1997

Mr. David Craddick
Maui Department of Water Supply
200 S. High Street
Wailuku, Hawaii 96793

Dear Mr. Craddick:

Rainforest Village Well (Well No. 4727-08)
(Approved as "Zoofari Well")

We received your faxed note with pump test results from the captioned well, requesting comment on the reliability of the well as a source of brackish irrigation water. We understand that the applicant for the Pump Installation Permit has requested County water service as a backup for its own source.

We have not yet received a well completion report with pump test results from the applicant, required prior to decision making on the Pump Installation Permit Application. The faxed results you sent show that drawdown in the well stabilized at 1.16 feet over eight hours of pumping (following twelve hours of increasing drawdown), but that chlorides did not stabilize. In fact, the chlorides seemed to have risen gradually throughout the pump test, The data do not suggest where to project the stabilization point. We also note that the pump test was done at a fairly consistent rate of 175 gpm, while the recommendation is for a 120 gpm pump without corresponding data.

Once we receive the results directly from the applicant we will run an analysis to determine whether the proposed pumpage would affect other legal users. It is not clear that the proposed pumping rate can be sustained at a stabilized chloride level.

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

Sincerely,

RAE M. LOUI
Deputy Director

Cl:ss
**WELL COMPLETION REPORT**

**PART I. WELL CONSTRUCTION REPORT**

<table>
<thead>
<tr>
<th>1. State Well No.: 4727-08</th>
<th>Well Name: RAINFOREST VILLAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Location/Address: WAIAKOA, KIHEI, MAUI</td>
<td>Island: MAUI</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3. Drilling Company: ROSCOE MOSS HAWAI'I, INC.</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. Name of driller who performed work: TIMOTHY SMITH</td>
</tr>
<tr>
<td>5. Type of rig/construction: CABLE TOOL</td>
</tr>
</tbody>
</table>

6. Date(s) Well Construction and pump tests (if any) completed: 6/19/97 CONSTR. 6/24/97 PUMP TEST

7. GROUND ELEVATION (referenced to mean sea level, msl): 10.0 ft.

8. DRILLER'S LOG: Please attach geologic log (if available or if required by permit)

9. Depths (ft.)
   - 0 to 7: dirt & rubble
   - 7 to 12: very hard blue rock
   - 12 to 33: medium hard blue rock
   - 33 to 40: loose red cinders

10. Total depth of well below ground: 40 ft.

11. Hole size:
   - 14 inch dia. from 0 ft. to 40 ft. below ground
   - 8 in. I.D. x 250 in. wall solid section to 18.0 ft. below ground
   - 8 in. I.D. x 250 in. wall perforated section to 39.0 ft. below ground

12. Casing installed:
   - 8 in. I.D. x 250 in. wall solid section to 18.0 ft. below ground
   - 8 in. I.D. x 250 in. wall perforated section to 39.0 ft. below ground
   - Casing Material/Slot Size: Copper-bearing steel, louver 38 sq in opening per ft.

13. Initial water level: 14.25 ft. below ground. Date and time of measurement: 6/23/97 09:00 am

14. Initial chloride: 395 ppm Date and time of sampling: 6/23/97 11:00 am

15. Initial temperature: 77.5 °F Date and time of measurement: 6/23/97 09:15 am

16. PUMPING TESTS: Reference Point (R.P.) used: top of casing, which elevation is 17.42 ft.
   - (1) Step-Drawdown Test Date 6/20/97
   - Start water level ATTACHED ft. below R.P.
   - End water level ATTACHED ft. below R.P.

   - (2) Long-term Aquifer Test Date 6/23/97
   - Start water level ATTACHED ft. below R.P.
   - End water level ATTACHED ft. below R.P.

17. Aquifer Pump Test Procedures data & graphs (1/96 LTAT Form) attached? Yes _ No

18. As-built drawings attached? Yes _ No

19. Other remarks/comments: On back of this form

---

**Well Drilling Contractor** (print): ROSCOE MOSS HAWAI'I, INC. C-57 Lic. No. C-16437

Signature: [Signature]
Date: 7-17-97

**Surveyor** (print): [Signature]
Date: [Date]
Lic. No.: [Lic. No.]

**Applicant** (print): [Signature]
Date: [Date]
8. Remarks, Explanations (cont'd):  

**WELL 4711.08**

9. PROPOSED WELL SECTION

**Elevation at top of casing**
completed 19.44 ft., msl
while pumped 17.42 ft., msl

Cement Grout: 14 ft.
Rock Packing: NA ft.
Hole Diameter: 14 in.
Total Depth: 40 ft.

Ground Elevation: 11.0 ft., msl

**Solid Casing:**
Material: Copper bearing steel
Length: 18 ft.
Diameter: 8 inch I.D.
Wall thickness: .250 in.

**Casing: XX Perforated □ Screen**
Material: Copper bearing steel
Length: 21 ft.
Diameter: 8 inch I.D.
Wall thickness: .250 in.
Openings: 38 sq. in./A.F.

Open Hole:
Length: 1 ft.
Diameter: 8" in.

*Approximate elevation at time of filing application. Ground elevation above mean sea level (msl) by a surveyor licensed by the State must be submitted at start of construction. Final elevations of well components shall be submitted in the well completion/well abandonment reports.
Will Freeman @ MBWS is concerned that Cl did not stabilize after 8h @ stable drawdown. The applicant proposes County backup, and Will believes the County would be placing itself in a position where it would have to supply 100% because the well salts up. Did the pump test quit too soon?
Charlie,

I imagine the Cl- will stabilize at some point, since there is a 3.3 ppm level to work with. I don't know where that point will be.

Perhaps the purge test should be re-run for a longer period of time to monitor the Cl- levels. Random stabilized quickly, so by the standards, the length of the test was OK (see also Table 9, p. 2-10).

If the County is concerned then they should have commented when they were consulted.
RESULTS OF DRILLING AND TESTING

Rainforest Village Well (4727-08), Maui

Prepared for

SATO & ASSOCIATES, INC.
Wailuku, Maui

Prepared by

WATER RESOURCE ASSOCIATES
1188 Bishop Street, Suite 1708
Honolulu, Hawaii 96813-3307

Honolulu, Hawaii
June 1997
RESULTS OF DRILLING AND TESTING
Rainforest Village Well (4727-08), Maui

Physical Description of the Well. The Rainforest Village Well was drilled at a ground surface elevation of approximately 17 feet to a total depth of 40 feet. The well is cased with 12" diameter steel casing to a depth of 39 feet with the bottom 21 feet perforated with full-flow louvers. The casing is grouted from the surface to a depth of 14 feet.

Geology and Hydrology. The well penetrated 7 feet of fill material, hard blue rock from a depth of 7 to 21 feet, and porous rock from a depth of 21 to 40 feet. The well taps a brackish basal aquifer with a head of 3.31 feet and a chloride content of 430 mg/l at a distance of 1,400 feet inland from the coastline.

Step-Drawdown Test. On June 20, 1997, a step-drawdown test was performed on the well at pumping rates ranging from 100 gallons per minute (gpm) to 349 gpm. The drawdown ranged from 1.0 feet to 3.1 feet (see attached graph).

Constant-Rate Test. On June 23-24, 1997, the well was pump tested at a constant rate of 176 gpm for a total of 22 hours. The drawdown in the well was stable at approximately 1.2 feet (see attached graph). The chloride content of the pumped water ranged from 395 milligrams per liter (mg/l) to a final 430 mg/l. The temperature of the water was approximately 77.5°F (see Pumping Test Record).

Conclusions. The Rainforest Village Well is capable of producing upwards of 200,000 gallons per day of brackish water suitable for landscape irrigation and other nonpotable uses from a basal aquifer with a head of 3.3 feet. The drawdown in the well was stabilized at approximately 1.2 feet at a pumping rate of 176 gpm (253,000 gallons per day). The chloride content of the pumped water showed a slight increase from 395 mg/l to 430 mg/l during the 22 hours of pumping. It is estimated that the salinity of the well will stabilize somewhere between 450 mg/l and 550 mg/l on a long-term basis. Because of the slight increase in chloride content, it
is recommended that the production rate of the well be set at a rate less than 176 gpm.

**Recommended Pump Capacity.** Based upon the pumping test results and Water Resource Associates' experience with brackish basal aquifers, the recommended capacity of the permanent pump to be installed in this well is 120 gpm (172,000 gpd)

Water Resource Associates
June 1997
PUMPING TEST RECORD

Well Name: Rainforest Village  
Project: Rainforest Village  

DEPTH (Below Ground Surface):
- Solid Csg: 18'  
- Perforated Csg: 39.0'
Total Depth: 40.0'
Depth to Water: 14.11'

*Remarks: Below TOC: TOC=5" above grd

TEST PUMP:
- Type: Subm.
- Intake Elev: -9.6 ft

ELEVATIONS (Mean Sea Level):
- Ground Surface: 18.0 ft.
- Top of Casing: 17.42 ft.
- Rotary Table: __ ft.
- Bot. of Solid Csg: -0.6 ft.
- Bot. of Well: -21.8 ft.
- Static Water Level: 3.31 ft

DRAWDOWN MEASUREMENT:
- Manometer  
- Pressure Gage  
- Elect. Probe

DISCHARGE MEASUREMENT: □ Flowmeter  □ Other

PRESENT AT TEST: Dan Lum, T.J. Smith, Bill Prentiss

<table>
<thead>
<tr>
<th>Time (am)</th>
<th>Flow (gpm)</th>
<th>Head (ft)</th>
<th>Drawdown (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6/23/97</td>
<td></td>
<td>14.25</td>
<td></td>
</tr>
<tr>
<td>9:00 am</td>
<td>0</td>
<td>14.25</td>
<td>0.65</td>
</tr>
<tr>
<td></td>
<td>START PUMP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9:01</td>
<td>14.90</td>
<td>0.65</td>
<td></td>
</tr>
<tr>
<td>9:02</td>
<td>14.92</td>
<td>0.67</td>
<td></td>
</tr>
<tr>
<td>9:03</td>
<td>14.92</td>
<td>0.67</td>
<td></td>
</tr>
<tr>
<td>9:10</td>
<td>177</td>
<td>15.54</td>
<td>1.29</td>
</tr>
<tr>
<td>9:12</td>
<td></td>
<td>15.50</td>
<td>1.25</td>
</tr>
<tr>
<td>9:15</td>
<td>176</td>
<td>15.50</td>
<td>1.25</td>
</tr>
<tr>
<td>9:20</td>
<td>176</td>
<td>15.50</td>
<td>1.25</td>
</tr>
<tr>
<td>9:25</td>
<td>176</td>
<td>15.50</td>
<td>1.25</td>
</tr>
<tr>
<td>9:30</td>
<td>176</td>
<td>15.50</td>
<td>1.25</td>
</tr>
<tr>
<td>9:45</td>
<td>176</td>
<td>15.49</td>
<td>1.24</td>
</tr>
<tr>
<td>10:00</td>
<td>176</td>
<td>15.49</td>
<td>1.24</td>
</tr>
<tr>
<td>10:30</td>
<td>173</td>
<td>16.49</td>
<td>1.24</td>
</tr>
<tr>
<td>11:00</td>
<td>174</td>
<td>16.49</td>
<td>1.24</td>
</tr>
<tr>
<td>12:00</td>
<td>175</td>
<td>15.59</td>
<td>1.25</td>
</tr>
<tr>
<td>12:30 pm</td>
<td>176</td>
<td>15.52</td>
<td>1.27</td>
</tr>
<tr>
<td>1:00</td>
<td>174</td>
<td>15.52</td>
<td>1.27</td>
</tr>
<tr>
<td>2:00</td>
<td>175</td>
<td>15.50</td>
<td>1.25</td>
</tr>
</tbody>
</table>

Water Resource Associates
099_PumpTestRec
<table>
<thead>
<tr>
<th>Time (min.)</th>
<th>Date &amp; Time</th>
<th>Pumping Rate (gpm)</th>
<th>Drawdown (feet)</th>
<th>Adjusted Drawdown (feet)</th>
<th>Sample No.</th>
<th>Chlorides (ppm)</th>
<th>Temp. (°F)</th>
<th>Cond. (mS/cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6/23/97</td>
<td>3:00 pm</td>
<td>176</td>
<td>15.45</td>
<td>1.2</td>
<td>3</td>
<td>388</td>
<td>2170</td>
<td></td>
</tr>
<tr>
<td>420</td>
<td>4:00</td>
<td>176</td>
<td>15.38</td>
<td>1.13</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>480</td>
<td>5:00</td>
<td>174</td>
<td>15.34</td>
<td>1.08</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>540</td>
<td>6:00</td>
<td>175</td>
<td>15.31</td>
<td>1.08</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>600</td>
<td>7:00</td>
<td>175</td>
<td>15.28</td>
<td>1.03</td>
<td>4</td>
<td>400</td>
<td>2200</td>
<td></td>
</tr>
<tr>
<td>660</td>
<td>8:00</td>
<td>173</td>
<td>15.28</td>
<td>1.01</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>720</td>
<td>9:00</td>
<td>171</td>
<td>15.28</td>
<td>1.03</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>780</td>
<td>10:00</td>
<td>172</td>
<td>15.31</td>
<td>1.06</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>840</td>
<td>11:00</td>
<td>171</td>
<td>15.35</td>
<td>1.10</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>900</td>
<td>12:00 M</td>
<td>175</td>
<td>15.40</td>
<td>1.15</td>
<td>5</td>
<td>420</td>
<td>2250</td>
<td></td>
</tr>
<tr>
<td>6/24/97</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>960</td>
<td>1:00 am</td>
<td>175</td>
<td>15.40</td>
<td>1.15</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1020</td>
<td>2:00</td>
<td>172</td>
<td>15.41</td>
<td>1.18</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1080</td>
<td>3:00</td>
<td>171</td>
<td>15.42</td>
<td>1.17</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1140</td>
<td>4:00</td>
<td>172</td>
<td>15.43</td>
<td>1.18</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1200</td>
<td>5:00</td>
<td>171</td>
<td>15.44</td>
<td>1.19</td>
<td>6</td>
<td>430</td>
<td>2290</td>
<td></td>
</tr>
<tr>
<td>1260</td>
<td>6:00</td>
<td>168</td>
<td>15.41</td>
<td>1.16</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1320</td>
<td>7:00</td>
<td>168</td>
<td>15.41</td>
<td>1.16</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STOP PUMP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1322</td>
<td>7:02</td>
<td>0</td>
<td>14.29</td>
<td>0.04</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1323</td>
<td>7:03</td>
<td>14.26</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1324</td>
<td>7:04</td>
<td>14.25</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1325</td>
<td>7:05</td>
<td>14.25</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1328</td>
<td>7:08</td>
<td>14.25</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1330</td>
<td>7:10</td>
<td>14.25</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1333</td>
<td>7:15</td>
<td>14.25</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1335</td>
<td>7:20</td>
<td>14.25</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1336</td>
<td>7:25</td>
<td>14.25</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1338</td>
<td>7:30</td>
<td>14.25</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Water Resource Associates
PUMPING RATE-DRAWDOWN CURVE
Rainforest Village Well (4727-08), Maui
Date of Test: June 20, 1997, TD=39 ft.
Grd. El. = 18.0 ft.

Drawdown, in ft.

Pumping Rate, in gpm
TIME-DRAWDOWN CURVE
Rainforest Village Well (4727-08), Maui
Date of Test: June 23-24, 1997

Head = 3.61 ft.

Ave. pumping rate = 176 gpm

Recovery

Time since pumping started, in minutes

Drawdown (ft)

Water Resource Associates
9990601
RESULTS OF DRILLING AND TESTING
Rainforest Village Well (4727-08), Maui

Prepared for
SATO & ASSOCIATES, INC.
Wailuku, Maui

Prepared by
WATER RESOURCE ASSOCIATES
1188 Bishop Street, Suite 1708
Honolulu, Hawaii 96813-3307

Honolulu, Hawaii
June 1997
RESULTS OF DRILLING AND TESTING
Rainforest Village Well (4727-08), Maui

Physical Description of the Well. The Rainforest Village Well was drilled at a ground surface elevation of approximately 17 feet to a total depth of 40 feet. The well is cased with 12" diameter steel casing to a depth of 39 feet with the bottom 21 feet perforated with full-flow louvers. The casing is grouted from the surface to a depth of 14 feet.

Geology and Hydrology. The well penetrated 7 feet of fill material, hard blue rock from a depth of 7 to 21 feet, and porous rock from a depth of 21 to 40 feet. The well taps a brackish basal aquifer with a head of 3.31 feet and a chloride content of 430 mg/l at a distance of 1,400 feet inland from the coastline.

Step-Drawdown Test. On June 20, 1997, a step-drawdown test was performed on the well at pumping rates ranging from 100 gallons per minute (gpm) to 349 gpm. The drawdown ranged from 1.0 feet to 3.1 feet (see attached graph).

Constant-Rate Test. On June 23-24, 1997, the well was pump tested at a constant rate of 176 gpm for a total of 22 hours. The drawdown in the well was stable at approximately 1.2 feet (see attached graph). The chloride content of the pumped water ranged from 395 milligrams per liter (mg/l) to a final 430 mg/l. The temperature of the water was approximately 77.5°F (see Pumping Test Record).

Conclusions. The Rainforest Village Well is capable of producing upwards of 200,000 gallons per day of brackish water suitable for landscape irrigation and other nonpotable uses from a basal aquifer with a head of 3.3 feet. The drawdown in the well was stabilized at approximately 1.2 feet at a pumping rate of 176 gpm (253,000 gallons per day). The chloride content of the pumped water showed a slight increase from 395 mg/l to 430 mg/l during the 22 hours of pumping. It is estimated that the salinity of the well will stabilize somewhere between 450 mg/l and 550 mg/l on a long-term basis. Because of the slight increase in chloride content, it
is recommended that the production rate of the well be set at a rate less than 176 gpm.

**Recommended Pump Capacity.** Based upon the pumping test results and Water Resource Associates’ experience with brackish basal aquifers, the recommended capacity of the permanent pump to be installed in this well is 120 gpm (172,000 gpd)
CERTIFICATION LETTER

July 8, 1997

SATO & ASSOCIATES, INC.
2115 Wells Street
Wailuku, Maui, HI 96793

RE: WELL LOCATION AND ELEVATION AT KIHEI GATEWAY PROJECT SITE - "ZOOPARI IRRIGATION WELL"
TAX MAP KEY: (2) 3-8-077; PORTION 009
PULEHUNUI, WAIAKOAA, MAUl, HAWAI I

On June 23, 1997 the well at the Kihei Gateway Project Site was surveyed by a survey crew under my direction and the Latitude, Longitude and Elevation for the "Zoofari Irrigation Well" are as follows:

Latitude = 20°-47'-07.1"
Longitude = 156°-27'-44.7"
Elevation = 17.42 MSL

This elevation (to the top of the pipe casting) is reference to USGS Benchmark No. 7 at the former Kihei Post Office (Roboiresis French Restaurant) and Suda Store. Elevation = 7.46 Mean Sea Level. The undersigned hereby certifies this elevation as being the true elevation at the time of this survey.

NEWCOMER-LEE LAND SURVEYORS, INC.
A Hawaii Corporation,

BRUCE R. LEE
Licensed Professional Land Surveyor Certificate No. 5983-LS

RECEIVED
JUL 08 1997
SATO & ASSOC., INC. MAUl OFFICE
CERTIFICATION LETTER

July 8, 1997

SATO & ASSOCIATES, INC.
2115 Wells Street
Wailuku, Maui, HI 96793

RE: WELL LOCATION AND ELEVATION AT KIHEI GATEWAY
PROJECT SITE - "ZOOPARI IRRIGATION WELL"
TAX MAP KEY: (2) 3-8-077; PORTION 009
PULEHUNUI, WAIKOA, MAUI, HAWAII

On June 23, 1997 the well at the Kihei Gateway Project Site was surveyed
by a survey crew under my direction and the Latitude, Longitude and
Elevation for the "Zoopari Irrigation Well" are as follows:

Latitude = 20°-47'-07.1"
Longitude = 156°-27'-44.7"
Elevation = 17.42 MSL

This elevation (to the top of the pipe casting) is reference to USGS
Benchmark No. 7 at the former Kihei Post Office (Roboires French
Restaurant) and Suda Store. Elevation = 7.46 Mean Sea Level. The
undersigned hereby certifies this elevation as being the true elevation
at the time of this survey.

NEWCOMER-LEE
LAND SURVEYORS, INC.
A Hawaii Corporation

BRUCE R. LEE
Licensed Professional Land
Surveyor Certificate No. 5983-LS

RECEIVED
JUL 08 1997
SATO & ASSOC., INC.
MAUI OFFICE
TIME-DRAWDOWN CURVE
Rainforest Village Well (4727-08), Maui
Date of Test: June 23-24, 1997

Feet

-0.2

-0.4

-0.6

-0.8

-1

-1.2

-1.4

0

Feet

Ave. pumping rate = 178 gpm

Recovery

Drawdown (ft)

Time since pumping started, in minutes

Water Resource Associates
099TDC1
WELL SITE

KIHOLI RD

"KINHI VILLAGE PHASE I"

"KINHI VILLAGE PHASE II"

"KINHI VILLAGE PHASE III"

PIILANI HIGHWAY

20.205 AC.

KINHE, MAUI, HAWAII. (Formerly parc. 3-8-04)
RESULTS OF DRILLING AND TESTING
Rainforest Village Well (4727-08), Maui

Prepared for

SATO & ASSOCIATES, INC.
Wailuku, Maui

Prepared by

WATER RESOURCE ASSOCIATES
1188 Bishop Street, Suite 1708
Honolulu, Hawaii 96813-3307

Honolulu, Hawaii
June 1997
RESULTS OF DRILLING AND TESTING
Rainforest Village Well (4727-08), Maui

**Physical Description of the Well.** The Rainforest Village Well was drilled at a ground surface elevation of approximately 17 feet to a total depth of 40 feet. The well is cased with 12" diameter steel casing to a depth of 39 feet with the bottom 21 feet perforated with full-flow louvers. The casing is grouted from the surface to a depth of 14 feet.

**Geology and Hydrology.** The well penetrated 7 feet of fill material, hard blue rock from a depth of 7 to 21 feet, and porous rock from a depth of 21 to 40 feet. The well taps a brackish basal aquifer with a head of 3.31 feet and a chloride content of 430 mg/l at a distance of 1,400 feet inland from the coastline.

**Step-Drawdown Test.** On June 20, 1997, a step-drawdown test was performed on the well at pumping rates ranging from 100 gallons per minute (gpm) to 349 gpm. The drawdown ranged from 1.0 feet to 3.1 feet (see attached graph).

**Constant-Rate Test.** On June 23-24, 1997, the well was pump tested at a constant rate of 176 gpm for a total of 22 hours. The drawdown in the well was stable at approximately 1.2 feet (see attached graph). The chloride content of the pumped water ranged from 395 milligrams per liter (mg/l) to a final 430 mg/l. The temperature of the water was approximately 77.5°F (see Pumping Test Record).

**Conclusions.** The Rainforest Village Well is capable of producing upwards of 200,000 gallons per day of brackish water suitable for landscape irrigation and other nonpotable uses from a basal aquifer with a head of 3.3 feet. The drawdown in the well was stabilized at approximately 1.2 feet at a pumping rate of 176 gpm (253,000 gallons per day). The chloride content of the pumped water showed a slight increase from 395 mg/l to 430 mg/l during the 22 hours of pumping. It is estimated that the salinity of the well will stabilize somewhere between 450 mg/l and 550 mg/l on a long-term basis. Because of the slight increase in chloride content, it
is recommended that the production rate of the well be set at a rate less than 176 gpm.

Recommended Pump Capacity. Based upon the pumping test results and Water Resource Associates' experience with brackish basal aquifers, the recommended capacity of the permanent pump to be installed in this well is 120 gpm (172,000 gpd)

Water Resource Associates
June 1997
RAINFOREST VILLAGE WELL (4727-08)
Waikoa, Kihei, Maui

As-Built Section

completed 19.42 ft. msl.
while pumped 17.42 ft.

Elevation at top of casing

Cement Grout: 14 ft.

Rock Packing: NA

Hole Diameter: 14 in.

Total Depth: 40 ft.

Ground Elevation: 18.0 ft. msl

Solid Casing:
Material: copper bearing steel
Length: 18 ft
Diameter: 8 inch I.D.
Wall thickness: .250 in.

Casing: □ Perforated  □ Screen
Material: copper bearing steel
Length: 21 ft
Diameter: 8 inch I.D.
Wall thickness: .250 in.
Openings: 38 sq. in./A.F.

Open Hole:
Length: 1 ft
Diameter: 8"
**PUMPING TEST RECORD**

**Well Name**  Rainforest Village  
**Project**  Rainforest Village  
**State Well No.**  4727-08  
**Island**  Maui

**DEPTH (Below Ground Surface):**
- Solid Csg: 18'
- Perforated Csg: 39.0'
- Total Depth: 40.0'
- Depth to Water: 14.11'

*Remarks: Below TOC: TOC=5" above grd

**TEST PUMP:**
- Type: Subm.  
- Intake Elev: -9.6 ft

**ELEVATIONS (Mean Sea Level):**
- Ground Surface: 18.0 ft.
- Top of Casing: 17.42 ft.
- Rotary Table: ______ ft.
- Bot. of Solid Csg: -0.6 ft.
- Bot. of Well: -21.6 ft.
- Static Water Level: 3.31 ft

**DRAWDOWN MEASUREMENT:**
- Type: □ Subm. Intake Elev: 18.0 ft  
- Manometer  
- Pressure Gage  
- Elect. Probe  

**PRESENT AT TEST:**
- Dan Lum, T.J. Smith, Bill Prentiss
- Beginning Meter Rdg: 1,989,650 gal.
- End Meter Rdg: 2,216,100

<table>
<thead>
<tr>
<th>Elapsed Time (min.)</th>
<th>Date &amp; Time</th>
<th>Pumping Rate (gpm)</th>
<th>□ Airline</th>
<th>□ DTW Reading</th>
<th>Observed Drawdown (feet)</th>
<th>Adjusted Drawdown (feet)</th>
<th>Sample No.</th>
<th>Chlorides (gpm)</th>
<th>Temp. (°F)</th>
<th>Cond. (l/min max 25°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>9:00 am</td>
<td>14.25</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>9:01</td>
<td>14.90</td>
<td>0.85</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>9:02</td>
<td>14.92</td>
<td>0.87</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>9:03</td>
<td>14.92</td>
<td>0.87</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>9:10</td>
<td>177</td>
<td>15.54</td>
<td>1.29</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>9:12</td>
<td>15.50</td>
<td>1.25</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>9:15</td>
<td>176</td>
<td>15.50</td>
<td>1.25</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>9:20</td>
<td>176</td>
<td>15.50</td>
<td>1.25</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>9:25</td>
<td>176</td>
<td>15.50</td>
<td>1.25</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>9:30</td>
<td>176</td>
<td>15.50</td>
<td>1.25</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>45</td>
<td>9:45</td>
<td>176</td>
<td>15.49</td>
<td>1.24</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>60</td>
<td>10:00</td>
<td>176</td>
<td>15.49</td>
<td>1.24</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>90</td>
<td>10:30</td>
<td>176</td>
<td>15.49</td>
<td>1.24</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>120</td>
<td>11:00</td>
<td>174</td>
<td>15.48</td>
<td>1.24</td>
<td>1</td>
<td>395</td>
<td>77.5</td>
<td>2170</td>
<td></td>
<td></td>
</tr>
<tr>
<td>180</td>
<td>12:00 N</td>
<td>175</td>
<td>15.50</td>
<td>1.25</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>210</td>
<td>12:30 pm</td>
<td>176</td>
<td>15.52</td>
<td>1.27</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>240</td>
<td>1:00</td>
<td>174</td>
<td>15.52</td>
<td>1.27</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>300</td>
<td>2:00</td>
<td>175</td>
<td>15.50</td>
<td>1.25</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Pumping Test Record (Cont'd)

**Well Name:** Rainforest Village  
**State Well No.:** 4727-08

<table>
<thead>
<tr>
<th>Elapsed Time (min.)</th>
<th>Date &amp; Time</th>
<th>Pumping Rate (gpm)</th>
<th>Airline</th>
<th>Observed Drawdown (feet)</th>
<th>Adjusted Drawdown (feet)</th>
<th>Sample No.</th>
<th>Chlorides (ppm)</th>
<th>Temp. (°F)</th>
<th>Cond. (mmhos 25°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>360</td>
<td>6/23/97 3:00 pm</td>
<td>176</td>
<td>15.45</td>
<td>1.2</td>
<td></td>
<td>3</td>
<td>398</td>
<td>2170</td>
<td></td>
</tr>
<tr>
<td>420</td>
<td>4:00</td>
<td>176</td>
<td>15.38</td>
<td>1.13</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>480</td>
<td>5:00</td>
<td>174</td>
<td>15.34</td>
<td>1.09</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>540</td>
<td>6:00</td>
<td>175</td>
<td>15.31</td>
<td>1.06</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>600</td>
<td>7:00</td>
<td>175</td>
<td>15.28</td>
<td>1.03</td>
<td>4</td>
<td>400</td>
<td>2200</td>
<td></td>
<td></td>
</tr>
<tr>
<td>660</td>
<td>8:00</td>
<td>173</td>
<td>15.26</td>
<td>1.01</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>720</td>
<td>9:00</td>
<td>171</td>
<td>15.28</td>
<td>1.03</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>780</td>
<td>10:00</td>
<td>172</td>
<td>15.31</td>
<td>1.06</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>840</td>
<td>11:00</td>
<td>171</td>
<td>15.35</td>
<td>1.10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>900</td>
<td>12:00 M</td>
<td>175</td>
<td>15.40</td>
<td>1.15</td>
<td>5</td>
<td>420</td>
<td>2250</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>6/24/97 1:00 am</td>
<td>175</td>
<td>15.40</td>
<td>1.15</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>960</td>
<td>2:00</td>
<td>172</td>
<td>15.41</td>
<td>1.16</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1020</td>
<td>3:00</td>
<td>171</td>
<td>15.42</td>
<td>1.17</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1080</td>
<td>4:00</td>
<td>172</td>
<td>15.43</td>
<td>1.18</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1140</td>
<td>5:00</td>
<td>171</td>
<td>15.44</td>
<td>1.19</td>
<td>6</td>
<td>430</td>
<td>2290</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1200</td>
<td>6:00</td>
<td>168</td>
<td>15.41</td>
<td>1.16</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1260</td>
<td>7:00</td>
<td>169</td>
<td>15.41</td>
<td>1.16</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>STOP PUMP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1322</td>
<td>7:02</td>
<td>0</td>
<td>14.29</td>
<td>0.04</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1323</td>
<td>7:03</td>
<td></td>
<td>14.25</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1324</td>
<td>7:04</td>
<td></td>
<td>14.25</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1325</td>
<td>7:05</td>
<td></td>
<td>14.25</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1326</td>
<td>7:06</td>
<td></td>
<td>14.25</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1330</td>
<td>7:10</td>
<td></td>
<td>14.25</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1345</td>
<td>7:15</td>
<td></td>
<td>14.25</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1350</td>
<td>7:20</td>
<td></td>
<td>14.25</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1355</td>
<td>7:25</td>
<td></td>
<td>14.25</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1360</td>
<td>7:30</td>
<td></td>
<td>14.25</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Water Resource Associates  
0991PumpTest.Rec

Sheet 2 of 2
PUMPING RATE–DRAWDOWN CURVE
Rainforest Village Well (4727-08), Maui
Date of Test: June 20, 1997, TD=39ft.
Grd. El. = 18.0 ft.

Drawdown, in ft.

Pumping Rate, in gpm
PUMPING TEST RECORD

Well Name: Rainforest Village
Project: Rainforest Village

State Well No.: 4727-08
Island: Maui

DEPTH (Below Ground Surface):
- Solid Csg: 18'
- Perforated Csg: 39.0'
- Total Depth: 40.0'
- Depth to Water: 14.11' *

Remarks: Below TOC; TOC=5" above grd

TEST PUMP:
- Type: Subm.
- Intake Elev: -9.6 ft

ELEVATIONS (Mean Sea Level):
- Ground Surface: 48.6 ft
- Top of Casing: 17.42 ft
- Rotary Table: ft
- Bot. of Solid Csg: -0.6 ft
- Bot. of Perf. Csg: -21.6 ft
- Bot. of Well: -21.6 ft
- Static Water Level: 3.31 ft

DRAWDOWN MEASUREMENT:
- Type: Subm.
- Intake Elev: -9.6 ft
- Manometer
- Pressure Gage
- Elect. Probe

DISCHARGE MEASUREMENT:
- Flowmeter
- Other
- Beginning Meter Rdg: 1,989,650 gal.
- End Meter Rdg: 2,216,100

PRESENT AT TEST: Dan Lum, T.J. Smith, Bill Prentiss

<table>
<thead>
<tr>
<th>Elapsed Time (min)</th>
<th>Date &amp; Time</th>
<th>Pumping Rate (gpm)</th>
<th>Airline</th>
<th>Observed Drawdown (feet)</th>
<th>Adjusted Drawdown (feet)</th>
<th>Sample No.</th>
<th>Chlorides (gpm)</th>
<th>Temp. (°F)</th>
<th>Cond. (µhos 25°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>9:00 am</td>
<td>0</td>
<td></td>
<td>14.25</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>START</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>9:01</td>
<td>14.90</td>
<td></td>
<td>0.65</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>9:02</td>
<td>14.92</td>
<td></td>
<td>0.67</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>9:03</td>
<td>14.92</td>
<td></td>
<td>0.67</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>9:10</td>
<td>177</td>
<td>15.54</td>
<td>1.29</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>9:12</td>
<td>15.50</td>
<td></td>
<td>1.25</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>9:15</td>
<td>176</td>
<td>15.50</td>
<td>1.25</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>9:20</td>
<td>15.50</td>
<td></td>
<td>1.25</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>9:25</td>
<td>15.50</td>
<td></td>
<td>1.25</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>9:30</td>
<td>176</td>
<td>15.50</td>
<td>1.25</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>45</td>
<td>9:45</td>
<td>176</td>
<td>15.49</td>
<td>1.24</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>60</td>
<td>10:00</td>
<td>176</td>
<td>15.49</td>
<td>1.24</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>90</td>
<td>10:30</td>
<td>176</td>
<td>15.49</td>
<td>1.24</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>120</td>
<td>11:00</td>
<td>174</td>
<td>15.49</td>
<td>1.24</td>
<td></td>
<td>1</td>
<td>395</td>
<td>77.5</td>
<td>2170</td>
</tr>
<tr>
<td>180</td>
<td>12:00 N</td>
<td>175</td>
<td>15.50</td>
<td>1.25</td>
<td></td>
<td>1</td>
<td>395</td>
<td>77.7</td>
<td>2160</td>
</tr>
<tr>
<td>210</td>
<td>12:30 pm</td>
<td>176</td>
<td>15.52</td>
<td>1.27</td>
<td></td>
<td>1</td>
<td>395</td>
<td>76.6</td>
<td>2170</td>
</tr>
<tr>
<td>240</td>
<td>1:00</td>
<td>174</td>
<td>15.52</td>
<td>1.27</td>
<td></td>
<td>2</td>
<td>395</td>
<td>77.7</td>
<td>2170</td>
</tr>
<tr>
<td>300</td>
<td>2:00</td>
<td>175</td>
<td>15.50</td>
<td>1.25</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elapsed Time (min.)</td>
<td>Date &amp; Time</td>
<td>Pumping Rate (gpm)</td>
<td>Airline DTW Reading</td>
<td>Observed Drawdown (feet)</td>
<td>Adjusted Drawdown (feet)</td>
<td>Sample No.</td>
<td>Chlorides (ppm)</td>
<td>Temp. (°F)</td>
<td>Cond. (mhos 25°C)</td>
</tr>
<tr>
<td>---------------------</td>
<td>-------------</td>
<td>--------------------</td>
<td>---------------------</td>
<td>--------------------------</td>
<td>--------------------------</td>
<td>------------</td>
<td>-----------------</td>
<td>------------</td>
<td>------------------</td>
</tr>
<tr>
<td>360</td>
<td>3:00 pm</td>
<td>176</td>
<td>15.45</td>
<td>1.2</td>
<td></td>
<td>3</td>
<td>398</td>
<td></td>
<td>2170</td>
</tr>
<tr>
<td>420</td>
<td>4:00</td>
<td>176</td>
<td>15.38</td>
<td>1.13</td>
<td></td>
<td>3</td>
<td>398</td>
<td></td>
<td>2170</td>
</tr>
<tr>
<td>480</td>
<td>5:00</td>
<td>174</td>
<td>15.34</td>
<td>1.09</td>
<td></td>
<td>3</td>
<td>398</td>
<td></td>
<td>2170</td>
</tr>
<tr>
<td>540</td>
<td>6:00</td>
<td>175</td>
<td>15.31</td>
<td>1.06</td>
<td></td>
<td>3</td>
<td>398</td>
<td></td>
<td>2170</td>
</tr>
<tr>
<td>600</td>
<td>7:00</td>
<td>175</td>
<td>15.28</td>
<td>1.03</td>
<td></td>
<td>3</td>
<td>400</td>
<td></td>
<td>2200</td>
</tr>
<tr>
<td>660</td>
<td>8:00</td>
<td>173</td>
<td>15.26</td>
<td>1.01</td>
<td></td>
<td>3</td>
<td>400</td>
<td></td>
<td>2200</td>
</tr>
<tr>
<td>720</td>
<td>9:00</td>
<td>171</td>
<td>15.28</td>
<td>1.03</td>
<td></td>
<td>3</td>
<td>400</td>
<td></td>
<td>2200</td>
</tr>
<tr>
<td>780</td>
<td>10:00</td>
<td>172</td>
<td>15.31</td>
<td>1.06</td>
<td></td>
<td>3</td>
<td>400</td>
<td></td>
<td>2200</td>
</tr>
<tr>
<td>840</td>
<td>11:00</td>
<td>171</td>
<td>15.35</td>
<td>1.10</td>
<td></td>
<td>3</td>
<td>400</td>
<td></td>
<td>2200</td>
</tr>
<tr>
<td>900</td>
<td>12:00 M</td>
<td>175</td>
<td>15.40</td>
<td>1.15</td>
<td></td>
<td>3</td>
<td>400</td>
<td></td>
<td>2250</td>
</tr>
<tr>
<td>960</td>
<td>1:00 am</td>
<td>175</td>
<td>15.40</td>
<td>1.15</td>
<td></td>
<td>3</td>
<td>400</td>
<td></td>
<td>2250</td>
</tr>
<tr>
<td>1020</td>
<td>2:00</td>
<td>172</td>
<td>15.41</td>
<td>1.16</td>
<td></td>
<td>3</td>
<td>400</td>
<td></td>
<td>2250</td>
</tr>
<tr>
<td>1080</td>
<td>3:00</td>
<td>171</td>
<td>15.42</td>
<td>1.17</td>
<td></td>
<td>3</td>
<td>400</td>
<td></td>
<td>2250</td>
</tr>
<tr>
<td>1140</td>
<td>4:00</td>
<td>172</td>
<td>15.43</td>
<td>1.18</td>
<td></td>
<td>3</td>
<td>400</td>
<td></td>
<td>2250</td>
</tr>
<tr>
<td>1200</td>
<td>5:00</td>
<td>171</td>
<td>15.44</td>
<td>1.19</td>
<td></td>
<td>3</td>
<td>400</td>
<td></td>
<td>2250</td>
</tr>
<tr>
<td>1260</td>
<td>6:00</td>
<td>168</td>
<td>15.41</td>
<td>1.16</td>
<td></td>
<td>3</td>
<td>400</td>
<td></td>
<td>2250</td>
</tr>
<tr>
<td>1320</td>
<td>7:00</td>
<td>169</td>
<td>15.41</td>
<td>1.16</td>
<td></td>
<td>3</td>
<td>400</td>
<td></td>
<td>2250</td>
</tr>
</tbody>
</table>

STOP PUMP

Water Resource Associates
099PumpTest.Rec
PUMPING RATE-DRAWDOWN CURVE
Rainforest Village Well (4727-08), Maui
Date of Test: June 20, 1997, TD=39ft.
Grd. El. = 18.0 ft.

Drawdown, in ft.

100

10

1

0.1

10

100

1000

10000

Pumping Rate, in gpm
TIME-DRAWDOWN CURVE
Rainforest Village Well (4727-08), Maui
Date of Test: June 23-24, 1997

Ave. pumping rate = 176 gpm

Head = 3.31 ft.

Drawdown (ft)

Time since pumping started, in minutes

Water Resource Associates
099TDC1
LETTER OF TRANSMITTAL

Date: June 16, 1997  Job: 335
Attn: Michael D. Wilson – Chairperson
RE: RAINFOREST VILLAGE – KIHEI TRIANGLE
       WELL NO. 4727–08

TO: Dept. of Land & Natural Resources
Commission on Water Resource Mgmt.
P.O. Box 621
Honolulu, HI 96809

Enclosed:

<table>
<thead>
<tr>
<th></th>
<th>Project Drawings</th>
<th>Subcontract</th>
<th>Project Forms</th>
<th>Color Charts</th>
<th>Specificatons</th>
<th>Samples</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>XX</td>
</tr>
</tbody>
</table>

If Enclosures are not as noted, kindly notify us at once.

<table>
<thead>
<tr>
<th>copies</th>
<th>Date</th>
<th>No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>05/27/97</td>
<td></td>
<td>Well Construction Permit – Well No. 4727–08</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(executed original)</td>
</tr>
</tbody>
</table>

THESE ARE TRANSMITTED as checked below:

- For Approval
- For Signature
- For fabrication & shipment
- For review & comment
- PRINTER RETURNED AFTER LOAN TO US
- PLEASE RETURN PRINTS ASAP TO THIS OFFICE

REMARKS:

cc: Val Peroff (KCOM Corp.)
Files

Arielle Shirland

Arielle Shirland
WELL CONSTRUCTION PERMIT
Zoofari Irrigation Well, Well No. 4720-08

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 Zoofari Irrigation Well (Well No. 4727-08) at Waiakoa, Kīhei, Maui, TMK 3-8-77:9 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.

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 shall coordinate with the Chairperson and conduct a pumping test in accordance with the attached Aquifer Pump Testing Procedure (attached). The permittee 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 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 shall stop work and contact the Department's Historic Preservation Division (587-0045) 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 shall comply with all applicable laws, rules, and ordinances, and 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 (1/23/97).

10. 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 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 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 must apply for a well abandonment permit in accordance with §13-168-12(f) prior to any well sealing or plugging work.

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

Date of Approval: May 22, 1997
Expiration Date: May 22, 1999

Michael D. Wilson, 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. I also understand that non-compliance with any permit condition may be grounds for revocation and fines of up to $1000 per day.

Permittee's Signature: Valentine Peroff, Jr.
Firm or Title: Kihei Gateway Partners
Date: May 27, 1997

Driller's Signature: Harry and Jeanette Weinberg Foundation, Inc.
Date: June 4, 1997

Printed Name: Harry and Jeanette Weinberg Foundation, Inc.
Firm or Title: Harry and Jeanette Weinberg Foundation, Inc.

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 & Clean Water Branches
Maui Department of Water Supply
Harry and Jeanette Weinberg Foundation, Inc.
Dear Mr. Wilson:

Well Construction Permit
Zoofari Irrigation Well (4727-08), Maui

In accordance with your letter of May 22, 1997, a fully executed Well Construction Permit for the Zoofari Irrigation Well is returned for your files.

Sincerely,

DAN LUM

Enc.
c: Mr. Valentine Peroff w/enc.
Mr. Bert Toba w/enc.
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 Zoofari Irrigation Well (Well No. 4727-08) at Waiakea, Kihei, Maui, TMK 3-8-77:9 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 4593, Honolulu, HI 96809, shall be notified, in writing, at least two (2) weeks before any work authorized by this permit commences.

2. The well construction permit shall be for construction and testing of the well only. A minimum one-inch diameter pipe shall be permanently installed, in a manner acceptable to the Chairperson, to accurately record water level in the common space coordinate with the Chairperson and conduct a pumping test in accordance with the attached Aquifer Pump Testing Procedure. The permittee 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 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 shall stop work and contact the Department's Historic Preservation Division (587-0045) 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 shall comply with all applicable laws, rules, and ordinances, and 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 (1/23/97).

10. 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 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 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 must apply for a well abandonment permit in accordance with §13-168-12(f) prior to any well sealing or plugging work.

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

Date of Approval: May 22, 1997
Expiration Date: May 22, 1999

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. I also understand that non-compliance with any permit condition may be grounds for revocation and fines of up to $1000 per day.

Permittee's Signature: Valentine Peroff, Jr.
Printed Name: Valentine Peroff, Jr.
Firm or Title: Kihei Gateway Partners
Date: May 27, 1997

Driller's Signature: Tracy Runnels
Printed Name: Tracy Runnels
Firm or Title: Rescuer Moss Hawaii, Inc.
Date: June 4, 1997

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

Attachment

USGS
Department of Health/ Safe Drinking Water, Wastewater & Clean Water Branches
Maui Department of Water Supply
Harry and Jeanette Weinberg Foundation, Inc.
Mr. Michael D. Wilson, Chairperson  
Commission on Water Resource Management  
Dept. of Land & Natural Resources  
P.O. Box 621  
Honolulu, Hawaii 96809

Dear Mr. Wilson:

Notice of Start of Construction  
Zoofari Irrigation Well (4727-08), Kihei, Maui

As required, this is to notify you that Roscoe Moss Hawaii, Inc. will begin construction of the subject well in approximately two weeks.

Sincerely,

DAN LUM

Enc.  
fc: Val Peroff  
    Bert Toba  
    Tracy Runnells
Mr. Valentine Peroff  
Kihei Gateway Partners  
99-1379 Koaha Place  
Aiea, Hawaii 96701

Dear Mr. Peroff:

Well Construction Permit  
Zoofari Irrigation Well (Well No. 4727-08)

Enclosed are two (2) copies of your approved Well Construction Permit for the captioned well(s) which 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 12:

Special Conditions

1. The depth of the well shall not exceed one-fourth the theoretical thickness (41 x head) of the basal ground water body.

2. The annular space shall be at least three (3) inches.


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 from the aquifer pumping test results, as required in Well Construction & Pump Installation Standards (1/23/97), performed under this permit.

The well owner is 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.

Please sign and have the contractor sign the permit originals and return one for our files. Also, copies of the aquifer pump test procedure and the well completion report form are enclosed for your use. Please provide all the information in this packet to your well drilling contractor.

Also attached for your information is a copy of the Department of Health's review comments.

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

Aloha,

MICHAEL D. WILSON  
Chairperson

Enclosures
WELL CONSTRUCTION PERMIT

Zoofari Irrigation Well, Well No. 4727-08

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 Zoofari Irrigation Well (Well No. 4727-08) at Waiakea, Kihel, Maui, TMK 3-8-77:9 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.

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 shall coordinate with the Chairperson and conduct a pumping test in accordance with the attached Aquifer Pump Testing Procedure (attached). The permittee 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 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 shall stop work and contact the Department's Historic Preservation Division (587-0045) 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 shall comply with all applicable laws, rules, and ordinances, and 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 (1/23/97).

10. 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 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 notice of the proposed action and an opportunity to be heard.

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

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

Date of Approval: May 22, 1997
Expiration Date: May 22, 1999

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. I also understand that non-compliance with any permit condition may be grounds for revocation and fines of up to $1000 per day.

Permittee's Signature: ___________________________  Date: __________

Printed Name: ___________________________  Firm or Title: ___________________________

Driller's Signature: ___________________________  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:
USGS
Department of Health/ Safe Drinking Water, Wastewater & Clean Water Branches
Maui Department of Water Supply
Harry and Jeanette Weinberg Foundation, Inc.
Pumping Test No. 1
Well No. 4727-08
Discharge 175.00 U.S. gal/min

Test conducted on: June 23-24, 1997

Transmissivity [ft²/d]: 2.85 x 10^4
Pumping Test No. 1  
Well No. 4727-08  
Discharge 175.00 U.S.gal/min  
Static water level: 14.25 ft below datum

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>0.00069</td>
<td>14.90</td>
</tr>
<tr>
<td>3</td>
<td>0.00139</td>
<td>14.92</td>
</tr>
<tr>
<td>4</td>
<td>0.00263</td>
<td>15.50</td>
</tr>
<tr>
<td>5</td>
<td>0.00693</td>
<td>15.50</td>
</tr>
<tr>
<td>6</td>
<td>0.13923</td>
<td>15.52</td>
</tr>
<tr>
<td>7</td>
<td>0.29167</td>
<td>15.58</td>
</tr>
<tr>
<td>8</td>
<td>0.54167</td>
<td>15.61</td>
</tr>
<tr>
<td>9</td>
<td>0.75000</td>
<td>15.42</td>
</tr>
</tbody>
</table>
Pumping Test No. 1
Well No. 4727-08
Discharge 175.00 U.S. gal/min

Test conducted on: June 23-24, 1997

Transmissivity [ft/d]: $2.85 \times 10^4$
### Commission on Water Resource Management
Dept. of Land and Natural Resources
Honolulu, Hawaii

#### Pumping test analysis
Time-Drawdown method after
COOPER & JACOB
Confined aquifer

Date: 05/08/1997
Project: Rainforest Village, Maui
Evaluated by: Glenn Bauer

---

**Pumping Test No. 1**

Well No. 4727-08

Discharge 175.00 U.S. gal/min

Static water level: 14.25 ft below datum

Test conducted on: June 23-24, 1997

Well 4727-08

Distance from the pumping well 1.00 ft

---

<table>
<thead>
<tr>
<th>Pumping test duration</th>
<th>Water level</th>
<th>Drawdown</th>
</tr>
</thead>
<tbody>
<tr>
<td>[d]</td>
<td>[ft]</td>
<td>[ft]</td>
</tr>
<tr>
<td>2</td>
<td>0.00069</td>
<td>14.90</td>
</tr>
<tr>
<td>3</td>
<td>0.00139</td>
<td>14.92</td>
</tr>
<tr>
<td>4</td>
<td>0.00833</td>
<td>15.50</td>
</tr>
<tr>
<td>5</td>
<td>0.02083</td>
<td>15.50</td>
</tr>
<tr>
<td>6</td>
<td>0.14583</td>
<td>15.52</td>
</tr>
<tr>
<td>7</td>
<td>0.29167</td>
<td>15.39</td>
</tr>
<tr>
<td>8</td>
<td>0.54167</td>
<td>15.31</td>
</tr>
<tr>
<td>9</td>
<td>0.75000</td>
<td>15.42</td>
</tr>
</tbody>
</table>
**Pumping Test No. 1**

**Well No. 4727-08**

Discharge 175.00 U.S. gal/min

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0.00</td>
<td>175.00</td>
<td>175.00</td>
</tr>
<tr>
<td>1080.00</td>
<td>175.00</td>
<td>175.00</td>
</tr>
</tbody>
</table>

Test conducted on: June 23-24, 1997

Drawdown method after COOPER & JACOB

Confined aquifer

Date: 05/06/1997

Project: Rainforest Village, Maui

Evaluated by: Glenn Bauer
TO: Honorable Lawrence Miike, Director  
Department of Health  
Attention: Dennis Tulang, Wastewater Branch  
William Wong, Safe Drinking Water Branch

FROM: Michael D. Wilson, Chairperson  
Commission on Water Resource Management

SUBJECT: Well Construction Permit Application  
ZooFari Irrigation Well (Well No. 4727-08)

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 May 2, 1997.

Please find a map, attached, 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 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 located near the proposed well site (information attached).

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

Contact Person:  
Loi Fajiwara  
Phone: 808 429-41

Signed:  
Loi Fajiwara  
Date: 4-28-97
TO: Honorable Lawrence Miike, Director
   Department of Health
   Attention: Dennis Tulang, Wastewater Branch
   William Wong, Safe Drinking Water Branch

FROM: Michael D. Wilson, Chairperson
   Commission on Water Resource Management

SUBJECT: Well Construction Permit Application
   Zoofari Irrigation Well (Well No. 4727-08)

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 May 2, 1997.

Please find a map, attached, 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 located near the proposed well site (information attached).

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

Contact Person: Bill Wong
Phone: 586-4258

Signed: Bill Wong
Date: 4/23/97
Mr. Valentine Peroff  
Kihei Gateway Partners  
99-1379 Koaha Pl.  
Aiea, Hawaii 96701  

Dear Mr. Peroff:  

Well Construction/Pump Installation Permit Application for Well No. 4727-08  

We acknowledge receipt, on March 17, 1997, of your completed well construction/pump installation permit application for the Zoofari Irrigation Well (Well No. 4727-08). You can expect your application to be processed within ninety (90) days from this date.  

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

Sincerely,  

RAE M. LOUI  
Deputy Director  

APR 21 1997
TO: Honorable Lawrence Miike, Director  
Department of Health  
Attention: Dennis Tulang, Wastewater Branch  
William Wong, Safe Drinking Water Branch

FROM: Michael D. Wilson, Chairperson  
Commission on Water Resource Management

SUBJECT: Well Construction Permit Application  
Zoofari Irrigation Well (Well No. 4727-08)

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 May 2, 1997.

Please find a map, attached, 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 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 located near the proposed well site (information attached).

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

Contact Person: _______________________________ Phone: _______________________________

Signed: _______________________________ Date: _______________________________
<table>
<thead>
<tr>
<th>DOCUMENT NO.</th>
<th>UAC OR ATTACHED WORKSHEET</th>
<th>DATE: 3/6/97</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>YR</td>
<td>APP</td>
</tr>
<tr>
<td>G</td>
<td>00</td>
<td>000</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**REMARKS:**
- **LINE (1):** Well No. 4727-08 (WCPA)
- **LINE (2):**
- **LINE (3):**

---

**STEELTECH, INC.**

<table>
<thead>
<tr>
<th>DATE</th>
<th>INVOICE NO.</th>
<th>DESCRIPTION</th>
<th>AMOUNT</th>
<th>DISCOUNT</th>
<th>NET AMOUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/6/97</td>
<td>044651</td>
<td>WELL CONSTRUCTION &amp; PUMP INSTALLATION PERMIT</td>
<td>25.00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Zoofari Irrigation, Maui (Kihei Gateway Partners)

---

**STEELTECH, INC.**

99-1379 KOAHA PLACE
AIEA, HAWAII 96701

**FIRST HAWAIIAN BANK**
Kapiolani Branch 59-101 1213

**PAY TO THE ORDER OF**

DEPARTMENT OF LAND AND NATURAL RESOURCES

******25 DOLLARS AND NO CENTS************

**DATE** 3-6-97
**CHECK NO.** 44651
**PAYEE ID.** DLNR

**PAY THIS AMOUNT:**

******$25.00******

---

Handwritten Signature
Ms. Rae Loui, Deputy Director
Commission on Water Resource Management
Dept. of Land & Natural Resources
P.O. Box 621
Honolulu, Hawaii 96809

Dear Ms. Loui:

Application for Well Construction and Pump Installation Permits, Zoofari Irrigation Well, Maui

Submitted herewith for approval is an application (original and two copies) for well construction and pump installation permits for an irrigation well at Kihei, Maui (TMK 3-8-77:9), together with a check for $25.00 (filing fee).

If you or your staff have any questions or need more information to process the application, please call me. Your earliest consideration will be appreciated.

Sincerely,

DAN LUM

Enc.
c: Val Peroff w/enc.
Bert Toba w/enc.
**SECTION 1: WELL LOCATION INFORMATION**

<table>
<thead>
<tr>
<th>Island</th>
<th>Maui</th>
<th>Proposed Use</th>
<th>Proposed Withdrawal</th>
<th>System Sustainable Yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aquifer System</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aquifer Sector</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**SECTION 2: WELL SECTION DATA**  
(enter data in grey cells only)

| Elevation at top of casing | 21 ft., m.s.l. | Solid Casing |
| Ground Elevation          | 20 ft., m.s.l. | PVC          |
| Cement GROUT             | 15 ft.        | Designation  |
| Rock Packing             | 0 ft.         | Length       |
| Hole Diameter            | 12 in.        | Diameter     |
| Total Depth              | 50 ft.        | Wall Thickness|

- Estimated Head
- Calculated Aquifer Thickness
- County Water Supply (Y/N ?)

**SECTION 3: CHECKLIST**  
(values to check are shaded)

<table>
<thead>
<tr>
<th>Well Depth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theoretical Thickness of Aquifer</td>
</tr>
<tr>
<td>1/4 Aquifer Thickness</td>
</tr>
<tr>
<td>Depth of Well below Sea Level</td>
</tr>
</tbody>
</table>

- Depth of Grouting provided | 15 ft. | okay  

- Thickness of Annular Space | 0.500 in. | too small

- Minimum Length of Solid Casing | 18 ft. | (refer to HWCPIS Section 2.4 d)

- Casing Material | Sch 80 | okay  

- Annular Space
- Depth of Grouting |

Page 1
APPLICATION FOR PERMIT
Well Construction or Pump Installation

Instructions: Please print in ink or type, attach required maps, and send the completed application and two (2) copies to the Commission on Water Resource Management, P.O. Box 621, Honolulu, Hawaii 96809. This application must be accompanied by a non-refundable filing fee of $25.00 payable to the Department of Land and Natural Resources. The Commission may not accept incomplete applications. For assistance in completing this application, please call the Commission's Regulation Branch at 587-0225.

1. APPLICANT: (circle primary contact(a), b, or c)
   - Firm/Name: Kihei Gateway Partners
   - Contact Person: Val Peroff
   - Address: 99–1379 Koaha Place, Aiea, Hawaii 96701
   - Phone: 487-1445
   - Primary Fax: 847-5307

2. LANDOWNER
   - Firm/Name: Harry & Jeanette Weinberg Foundation, Inc
   - Contact Person: Alvin Awaya
   - Address: 3660 Waialae Ave., Ste 400, Honolulu, HI 96816
   - Phone: 924-1000

3. CONTRACTOR
   - Firm/Name: not available
   - Address: _____________________
   - Contractor's License No. _____________________
   - Phone: _____________________
   - Ph: _____________________
   - Tax Map Key: 3-8-77:9

4. WELL LOCATION/NAME: Zoofari Irrigation
   - Island: Maui
   - Address: Kihei
   - Tax Map Key: _____________________

5. PROPOSED WORK: (a) Drill New Well (b) Install New Pump
   - New Pump
   - Modify Existing Well
   - Deepen
   - Redrill
   - Abandon/Seal
   - Modify Pump
   - Replace Pump
   - * Be sure to complete and submit well abandonment report upon completion of work.

   (b) WELL TYPE: 
   - Drill
   - Bored
   - Driven
   - Drilled
   - Radial
   - Cubic
   - Rotary-Gear
   - Impulse
   - Electric, rated horsepower: not available
   - Motor: _____________________
   - Deep Well Turbine
   - Rotary
   - Submersible
   - Centrifugal
   - Propeller
   - Reciprocating
   - Rotary-Gear
   - Impulse
   - Motor: _____________________
   - Deep Well Turbine
   - Rotary
   - Submersible
   - Centrifugal
   - Propeller
   - Reciprocating
   - Rotary-Gear
   - Impulse
   - Motor: _____________________

6. PROPOSED PUMP INFORMATION: Rated Pump Capacity: 180 gallons per minute
   - Pump Type:
     - Deep Well Turbine
     - Rotary
     - Centrifugal
     - Submersible
     - Propeller
     - Reciprocating
     - Rotary-Gear
     - Impulse
     - Motor: _____________________
   - Existing Pump Capacity: ___________ gallons per minute
   - Rated Pump Capacity: 180 gallons per minute
   - Motor: _____________________
   - Deep Well Turbine
   - Rotary
   - Submersible
   - Centrifugal
   - Propeller
   - Reciprocating
   - Rotary-Gear
   - Impulse
   - Motor: _____________________

7. PROPOSED USE: (a) Municipal (including hotels, stores, etc.) (b) Industrial
   - Domestic (individual, noncommercial water sys.)
   - Irrigation (crop) _____________________
   - Acres _____________________
   - Military
   - Other: _____________________

8. REMARKS, EXPLANATIONS: _____________________

I understand that approval of this application attaches the following standard conditions: 1) the proposed work is to be completed within two (2) years of the approval date; 2) the contractor shall submit to the Commission a well completion/abandonment report within 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: Kihei Gateway Partners
Landowner: Harry & Jeanette Weinberg
Contractor: ___________

Signature: _____________________
Date: ___________

Signature: _____________________
Date: ___________

State Well No. 4727-08
3 Jan 97 WCPMA Form
9. PROPOSED WELL SECTION

Elevation at top of casing 21 ft., msl.

Cement Grout: 15 ft.

Rock Packing: none ft.

Hole Diameter: 12 in.

Total Depth: 50 ft.

Ground Elevation: 20 ft., msl*

Solid Casing:
- Material: PVC
- Length: 22 ft.
- Diameter: 8 in.
- Wall thickness (Sched. 80): in.

Casing: □ Perforated □ Screen
- Material: PVC
- Length: 22 ft.
- Diameter: 8 in.
- Wall thickness (Sched. 80): in.
- Openings: 38 sq. in./ft.

Open Hole:
- Length: 10 ft.
- Diameter: 11 in.

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

SKOG, KIHEI, MAUl, HAWAII (Formerly per. 3-8-04)
<table>
<thead>
<tr>
<th>TO</th>
<th>INIT.</th>
<th>TO</th>
<th>INIT.</th>
<th>FOR</th>
<th>PLEASE</th>
</tr>
</thead>
<tbody>
<tr>
<td>BAUER, G.</td>
<td>1</td>
<td>LOUI, R.</td>
<td></td>
<td>Approval</td>
<td>See Me</td>
</tr>
<tr>
<td>CHING, F.</td>
<td></td>
<td>NAKAMA, L.</td>
<td></td>
<td>Signature</td>
<td>Review &amp; Comment</td>
</tr>
<tr>
<td>FUJII, N.</td>
<td></td>
<td>NAKANO, D.</td>
<td></td>
<td>Information</td>
<td>Take Action</td>
</tr>
<tr>
<td>HARDY, R.</td>
<td>3X</td>
<td>OHYE, M.</td>
<td>2X</td>
<td></td>
<td>Type Draft</td>
</tr>
<tr>
<td>HIGA, D.</td>
<td></td>
<td>SAKODA, E.</td>
<td>5</td>
<td></td>
<td>Type Final</td>
</tr>
<tr>
<td>HIRANO, E.</td>
<td></td>
<td>SUBIA, S.</td>
<td>4</td>
<td></td>
<td>File</td>
</tr>
<tr>
<td>ICE, C.</td>
<td>0X</td>
<td>SWANSON, S.</td>
<td></td>
<td></td>
<td>Xerox copies</td>
</tr>
<tr>
<td>IMATA, R.</td>
<td></td>
<td>UWAIN, J.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>JINNAI, R.</td>
<td></td>
<td>YODA, K.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KUNIMURA, I.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**SIGNATURES**
1. [Signature]
2. [Signature]
3. [Signature]