MEMORANDUM FOR THE RECORD

FROM: Kevin Gooding
Lenore Nakama

SUBJECT: Water Use Reporting Requirements for Ewa by Gentry Nonpotable Caprock Wells

On July 18, 2003, CWRM staff met with Paul Young, manager of the Sunrise residential complex in Ewa by Gentry, who requested that CWRM staff explain the water use data gathering and reporting requirements for Ewa by Gentry developments under the management of Certified Management. In addition to Sunrise, these include the Coronado, Palm Villas I, and Palm Villas II residential complexes. Other managerial staff present included Roger (Coronado, Well No. 2001-09), Frenchy and Randy Texeira (Palm Villas I, Well No. 2001-06), Linda (Palm Villas II, Well No. 2001-08), and Albert (Sunrise, Well No. 2001-04).

CWRM staff explained that the most important piece of information at this time is monthly total pumpage. Total water use should be recorded every month based on meter readings, but bimonthly or quarterly reporting is fine. Only 1 copy of the report is needed. The reports can be faxed in to CWRM, if that is more convenient than regular mail.

Because water levels in the caprock are only about 1 foot above mean sea level, any measurements would need to be very precise to be useful. In addition, water levels are impacted by the tides and other pumping wells. For these reasons, water levels need not be measured.

Chlorides can be measured using a Hach kit or by the drip (titration) method, which is more exact. Hach kits can be purchased online or from any pool supply store. For Ewa Caprock wells, buy the highest range test strip (300-6000 ppm). Water samples can be taken from sprinkler heads, as long as it is certain that the water source is the caprock well, and not water from the municipal system. Sampling every other month should be sufficient. CWRM staff distributed chloride graphs for Ewa Caprock wells (300-800 ppm) and explained the relationship to drinking water (250 ppm) and seawater (19,000 ppm).

Water temperature data is not important and need not be collected.

Summary of reporting requirements and intervals:

<table>
<thead>
<tr>
<th>Data Type</th>
<th>Sampling Schedule</th>
<th>Reporting Schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pumpage</td>
<td>Monthly</td>
<td>Monthly to Quarterly</td>
</tr>
<tr>
<td>Water Levels</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Chlorides</td>
<td>Monthly to Bimonthly</td>
<td>Monthly to Quarterly</td>
</tr>
<tr>
<td>Temperature</td>
<td>None</td>
<td>None</td>
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</tbody>
</table>

CWRM staff explained the purpose of water data reporting:
- Loss of OSCo return irrigation recharge since 1994
- New equilibrium being established
- Trend towards increasing salinities in caprock water
- Concerns of golf courses and other users
- Sustainable yield is defined as 1000 ppm at irrigation wells
- Monitoring pumpage to ensure the aquifer doesn’t salt up to the point that municipal water is needed for irrigation purposes
Mr. Randolph K. Ouye  
Gentry Homes, Ltd.

Dear Mr. Ouye:

Thank you for your letter of March 21, 1995 regarding the transfer of ownership of the well and pump for Palm Villa I Well (Well No. 2001-06) to the Palm Villa I Association.

This is to inform you that a transfer of the water use permit for Well No. 2001-06 from Gentry Homes, Ltd. to Palm Villa I Association has been made pursuant to HRS 174C-59.

If you have any questions, please contact Lenore Nakama at [redacted].

Sincerely,

[Signature]

RAE M. LOUI  
Deputy Director

LN:ss

c:  Mr. Steven Lopez, Palm Villa I Association
Mr. Mike Wilson  
Commission on Water Resource Management  
Department of Land and Natural Resources  
State of Hawaii  

Dear Mr. Wilson:

Transfer of Ownership for  
Ewa by Gentry, Palm Villa I Well (State No. 2001-06)

Gentry Development Company is the current owner of Well 2001-06 in Ewa by Gentry. Gentry drilled and outfitted the well to irrigate common areas for the Palm Villa I project. We have completed the pump installation and have transferred ownership of the well and its pump to the Association of Apartment Owners of Palm Villa I. Enclosed is a copy of the executed agreement which documents the ownership and transfer. The contact person for the Palm Villa I Association is Steven Lopez, Resident Manager. The effective date of the transfer is November 18, 1994.

If you have any questions regarding this matter, please do not hesitate to call me at [redacted].

Sincerely,

GENTRY HOMES, LTD.

[Signature]

Randolph K. Ouye,  
Vice President

Enclosure  
RKO:ev  
/wellxfer-wewa
NON-POTABLE IRRIGATION SYSTEM TURNOVER AGREEMENT

This agreement is made and executed the 15th day of November 1994, by and between GENTRY HOMES, LTD, hereinafter called the “Developer”, ROSCOE MOSS HAWAII, INC., hereinafter called the “Contractor”, and Association of Apartment Owners of Palm Villas, hereinafter called the “Association”.

RECITALS:

A. The Developer has installed a non-potable well system for the use by the Association as an irrigation system water source for landscaping requirements within the Association premises. The non-potable well system consists of the following:

The well, well vault, well pump and related piping and controls, which will be provided to the Association by the Developer.

B. The Contractor has been retained to provide materials, equipment and labor necessary to install the system. The Developer, Contractor, and Association mutually agree to the following terms to be effective at the time of acceptance of the non-potable well by the Association.

AGREEMENT:

1. The Developer shall provide an Operation and Maintenance Manual to the Association. By signing this agreement, the Association acknowledges receipt of the Manual. The Manual shall include a description of the pump operation, record drawings, and manufacturer’s product information.

2. The Developer shall pay for the first year of maintenance (“Maintenance Period”), and all maintenance shall be performed by the Contractor during the Maintenance Period. It is understood the start of said Maintenance Period is from the date of acceptance of the system by the Developer. The date of the Developer’s acceptance of the system shall be the 1st day of November 1994, which may or may not coincide with the date of this Agreement. Terms of maintenance during the Maintenance Period are described below.

3. As a requirement of the Temporary Water Use Permit obtained from the State Water Commission for use of the well, a Monthly Water Use Report must be submitted to the State Water Commission. The Developer shall train an Association representative designated by the Board of Directors to prepare the Monthly Ground Water Use Report to the State Water Commission. The Developer shall provide the initial test equipment needed to gather the required information for said report. This equipment shall include a HACH kit to determine chloride concentration, a thermometer to determine water temperature, and a well sounder to determine well water level. A procedure for completing and submitting the report is included as part of the Manual.

4. The Developer shall formally notify and obtain approval from the State Water Commission for the transfer of the Well Construction, Pump Installation and Temporary Water Use Permits to the Association.

5. The Contractor shall maintain the system at least quarterly during the Maintenance Period. Maintenance of the system shall include all labor, materials and equipment necessary to make repairs needed due to normal and reasonable use of the system. The Contractor, as part of the maintenance agreement, shall perform, at a minimum, quarterly maintenance checks. These maintenance checks shall include lubricating valves; cleaning strainers and solenoids; flushing the diaphragm seal; recording pressures, amperages and run times. Monitoring system performance includes conducting complete electrical check of the VFD and control electronics; and checking the pressure transducer for full scale output. Twice yearly, the maintenance check should also include monitoring system performance with a data recorder. The Contractor shall submit quarterly written reports of its findings both to the Developer and Association.
6. The Contractor agrees to purchase computerized test equipment required to perform said monitoring of system performance, and shall retain ownership of said equipment.

7. For equipment covered by the manufacturer's limited warranty, the limited warranty shall include the replacement of damaged equipment if the Association and Contractor mutually agree that the damage was not due to abnormal and/or unreasonable use.

   Items covered by the manufacturer's warranty are:

   A) The first three months from the date of this Agreement: The AGM Current Trip;

   B) The first six months from the date of this Agreement: the T-Hydronics Pressure Transducer; and

   C) The first year from the date of this Agreement: Magnetek VFD and Line Reactor, General Electric Micro PLC, Franklin Motor, M&G Diaphragm Seal, and the Flowmatic Check Valve and Solenoid Control Valve.

   Items such as the pressure reducing valve, butterfly/gate/ball valves and MCC components have been used for a period of time prior to this Agreement. These items are not covered by a manufacturer's warranty, shall be maintained covered by the Contractor during the Maintenance Period.

8. The Association shall perform general maintenance of the inside of the well vault as necessary to keep the inside of the vault clean and free of debris including, but not limited to, cleaning the floor of the well vault, clearing and keeping the sump clear of debris, and cleaning the piping and related appurtenances.

9. The Association shall perform general maintenance of the exterior of the well vault including, but not limited to, keeping the top of the vault clean and free of dirt, debris and vegetation and ensuring that water from the irrigation system is directed away from the vault. Maintenance shall also include measures to prevent dirt and other debris from falling into the well vault.

10. The Association shall accept the Well Construction, Pump Installation and Temporary Water Use Permits and all conditions set forth in said documents, including future requirements as may be imposed by the State Water Commission. The State Water Commission's current major requirements are performing monthly tests and readings, submitting these finding on the appropriate form to the State Water Commission, and keeping the water use within the limits of the permit as noted in paragraph 3 above.

11. The Association shall keep maintenance logs, such as a repair/maintenance log and a potable water use log. Said logs are for use by the Association.

12. The Association shall be responsible for the costs of repairs due to abnormal and/or unreasonable use during the Maintenance Period. The terms abnormal and unreasonable cannot be defined in exact terms, and therefore shall be negotiated between the Association and the Contractor. The Developer shall not be responsible for any repair costs beyond the date of this Agreement.

13. The Association is responsible for all maintenance beyond the Maintenance Period. The Association shall negotiate the terms of the maintenance contract and may or may not continue their relationship with the Contractor.

14. The Association is responsible for all costs for electrical power required to run the well pump and controls, and for the cost of potable water used as a back-up system to the non-potable well.

15. The Association shall be responsible for renewing the Temporary Water Use Permit with the State Water Commission.

16. The Developer makes no guarantees or assurances regarding the quantity or quality of water pumped from the well. Furthermore, the Association understands that due to natural ground water conditions
beyond the Developer’s control, the ground water aquifer from which the well pumps may dry up or quality of water may deteriorate to make it unusable in the future. The Association may be required to work with the State Water Commission on the implementation of an alternative water source plan.

17. MANDATORY MEDIATION AND ARBITRATION OF DISPUTES. If any dispute arises between Developer, Contractor and/or the Association, arising out of or relating the non-potable well system or this Agreement, the parties agree that prior to engaging in arbitration, they will make good faith efforts to reach a settlement of their dispute by negotiation, and then by mediation under the Mediation Rules of the American Arbitration Association. If the parties are unable to settle their dispute, then any unresolved dispute arising out of this Agreement or relating to the non-potable well system shall be resolved by arbitration before a single arbitrator administered by the American Arbitration Association in accordance with its Commercial Arbitration Rules, and judgment upon the arbitrator’s award may be entered in any court having jurisdiction thereof. If both parties agree, the person serving as mediator may also serve as arbitrator for the dispute. Each party shall be responsible for the administrative fees incurred by that party, and the arbitrator’s and mediator’s compensation shall be shared equally by the parties. The prevailing party, if any, shall be entitled to an award of reasonable attorney’s fees, and the arbitrator shall be the sole judge in determining the reasonableness of attorney’s fees to be awarded and in determining which party is the prevailing party. The parties, the American Arbitration Association, and the mediator and arbitrator shall keep the content and results of any mediation or arbitration confidential.

IN WITNESS WHEREOF, the parties hereto have executed this agreement on the day and year first above written.

Developer:
Gentry Homes, Ltd.

By: Randolph K. Ouye
It’s Vice President

Contractor:
Roscoe Moss Hawaii, Inc.

By: William A. Moss
It’s Vice President

Association:
Association of Apartment Owners of Palm Villas

By: Peter Leong
It’s PRESIDENT

Non-potable Well Turnover Agreement
<table>
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<th>TO</th>
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<th>REMARKS</th>
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<td></td>
<td>See Me</td>
<td>REDUCED WATER SAMPLES</td>
</tr>
<tr>
<td>F. Ching</td>
<td></td>
<td>Call</td>
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</tr>
<tr>
<td>R. Jinnai</td>
<td></td>
<td>Review &amp; Comment</td>
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<tr>
<td>M. Ohye</td>
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<td>Take Action</td>
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<tr>
<td>I. Kunimura</td>
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**FOR YOUR:**

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<th>① 2001-08 Palm Villa II 675 ppm</th>
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<td>R. LOUI</td>
<td></td>
<td>Signature</td>
<td>② 2001-06 Palm Villa I 670 ppm</td>
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<tr>
<td>S. Kokubun</td>
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<td>Information</td>
<td>③ 2002-12 Palm Courtyard 985 ppm</td>
</tr>
<tr>
<td>E. SAKODA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E. HIRANO</td>
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</tbody>
</table>
June 8, 1994

Mr. Keith Ahue
Commission on Water Resource Management
Department of Land and Natural Resources
State of Hawaii

Re: Temporary Water Use Permits; Ewa Caprock Ground Water Management Area, Oahu; Ewa By Gentry

Dear Mr. Ahue:

This letter is in response to the Commission's May 18, 1994 deferral of action on our request to renew temporary water use permits for the Ewa Caprock Aquifer, and the May 26, 1994 letter from Commission staff requesting substantially the same information. At the Commission meeting and in the letter, staff identified areas that needed supplemental information. They are:

1. Our water shortage plan;

2. Data from caprock wells generated by Gentry not previously submitted;

3. Updated annual non-potable demand projections for the four-year period through 1997;

4. Updated status of Geiger Apartment well and Soda Creek III well (Well Nos. 2001-04 and -05), with time estimate for actual use of sources.

5. Water level and chloride data collected to date, with explanation for any missing data.

We understand that our renewal request has been tentatively scheduled for the July 13, 1994 meeting of the Commission.
Included in this letter and its enclosures is information intended to answer the informational needs of the Commission and its staff:

**Water Shortage Plan**

If the Commission declares a water shortage in the Ewa Caprock Groundwater Management Area requiring a reduction in pumpage from our wells, Gentry has one short-term — and several long-term — options. Each individual irrigation system has a back-up connection to the Board of Water Supply's potable system. In the short term, irrigation supply would be provided through this connection. However, BWS would not accept this as a permanent solution. Long-term options available to us are discussed in our alternate Non-Potable Source Plan, previously submitted: Honouliuli Wastewater Treatment Plant effluent; Waiahole Ditch; and basalt aquifer wells. Within the Ewa By Gentry-East project, we are sizing pipelines to accommodate all of these possibilities.

**Caprock Data Generation and Participation**

We feel that the pumpage and chloride levels that we have submitted monthly provide the best record of the caprock’s viability; however, we have generated other information and it has been previously submitted. Three small diameter observation holes have been drilled through the upper limestone layer into the underlying calcareous mud. Locations of these holes are shown on Figure 1. Due to excavation for drainage and other purposes, the borehole located next to Kaloi Gulch and labeled "Gentry GC" no longer exists. However, development has not yet closed the boreholes labeled "FGE 1" and "FGE 2," which are on the east side of Ft. Weaver Road. Table 2 is a compilation of the elevation and dimensions of all three boreholes. Respective salinity profiles through their water columns are shown on Figure 2 (these were previously included in our alternate Non-Potable Source Plan). Recently recorded water levels in FGE 1 are reproduced as Figure 3.

We have not been approached by your staff to participate in a regional data gathering effort or monitoring network, but are certainly willing to do so. Access to any of our wells or boreholes can be arranged at any time on reasonable notice. If a program is put into place, we will be pleased to cooperate in the joint effort. Since the water level recorder is still operating in FGE 1 borehole, any data gathering from it should be coordinated with our consultant.

**Updated Four-year Non-Potable Water Use Projections**

Table 1 contains our updated Non-Potable Water Use Projections for the four-year period through 1997. It includes present uses and all projects requiring non-potable supply that we expect to develop within the next four years.
Updated Status of Geiger Apartment Well and Soda Creek III Well

Wells have been drilled for both projects. Pumps have been ordered and are expected to be installed and in operation in three to five weeks.

Water Levels

Air lines were installed in all of the operating wells within Ewa By Gentry. None were hooked up to recorders because the water level requirement was not then understood. Thus, no water level information has yet been generated. We are in the process of converting these air lines to one-inch sounding tubes as an easier way to obtain water level data, particularly since the operation and maintenance responsibilities for each well have been or will eventually be turned over to the homeowner associations that they serve. The first sounding tube has just been installed in the Arbors well. Its water level readings will be provided starting with the next monthly report. Sounding tubes will be installed in the other wells as each is converted to a variable frequency drive. We anticipate completion of these sequentially over the next three to four months. This will enable water levels to be measured and reported on a monthly basis.

It is hoped that the foregoing will be satisfactory to the Commission and its staff. Please feel free to contact me, Randy Ouye, or our consultant, Tom Nance, if additional information is required.

Sincerely,

Barry Edwards
Project Director - Ewa By Gentry
Gentry Homes

Enclosures

cc: Ms. Rae Loui (w/encl)
    Mr. Randy Ouye (w/encl)
    Mr. Tom Nance (w/encl)
Table 2
Compilation of Data on the Three Observation Holes in Ewa by Gentry

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Gentry GC</th>
<th>FGE1</th>
<th>FGE2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ground Elevation (Ft msl)</td>
<td>40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Top of Casing Elevation (Ft msl)</td>
<td>Not surveyed</td>
<td>31.52</td>
<td>31.01</td>
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<tr>
<td>Original Depth of the Borehole (Ft)</td>
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<td>121</td>
<td>140</td>
</tr>
<tr>
<td>Thickness of the Overlying Alluvial Silt (Ft)</td>
<td>5</td>
<td>5</td>
<td>4</td>
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<tr>
<td>Thickness of the Limestone Layer (Ft)</td>
<td>110</td>
<td>105</td>
<td>130</td>
</tr>
<tr>
<td>Elevation at the Bottom of the Limestone (Ft msl)</td>
<td>(-)75</td>
<td>(-)79</td>
<td>(-)103</td>
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<tr>
<td>Penetration Into the Mud Layer (Ft)</td>
<td>5</td>
<td>11</td>
<td>6</td>
</tr>
<tr>
<td>Elevation at the Bottom of the Originally Drilled Borehole (Ft msl)</td>
<td>(-)80</td>
<td>(-)90</td>
<td>(-)109</td>
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<tr>
<td>Groundwater Level (Ft msl)</td>
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<td>1.2 to 1.6</td>
<td>1.2 to 1.5</td>
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<td>Present Status</td>
<td>Lost to Construction</td>
<td>2-Inch PVC Casing to the Bottom</td>
<td>2-Inch PVC Casing Removed; Lower 15 Feet of Hole Lost</td>
</tr>
</tbody>
</table>

Notes:
1. All three boreholes were drilled by Fewell Geotechnical Engineering. Gentry GC was done in August 1992. FGE 1 and 2 were done in July 1993.

2. An elevation benchmark was not established for the Gentry GC borehole. Its elevation is estimated by the depth to groundwater.
Figure 1
Observation Holes in Ewa by Gentry
Notes:

1. Locations of the 2-inch observation holes are shown on Figure 1. All penetrate through the top limestone layer into the mud aquiclude below.

2. The Gentry GC profile was made on September 5, 1992.

3. The FGE1 and FGE2 profiles were made on December 1, 1993.

Figure 2
Salinity Profiles of Observation Holes in Ewa by Gentry
Figure 3
Recorded Water Level in FGE 1
April 12 to May 14, 1994
## CONDITIONS OF TEMPORARY CAPROCK PERMITS

<table>
<thead>
<tr>
<th>Applicant</th>
<th>Monthly Reports</th>
<th>Water Shortage Plan</th>
<th>Data Generation &amp; Participation</th>
<th>Conservation Plan</th>
<th>Ewa Caprock Regional Plan</th>
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<tr>
<td></td>
<td>Pumpage</td>
<td>Water Level</td>
<td>Chlorides</td>
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<td>Updated 4-yr Projections</td>
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<tr>
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<td>*</td>
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<td>No</td>
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<td>Campbell Estate</td>
<td>*</td>
<td>*</td>
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<tr>
<td>Gentry Hawaii, Ltd.</td>
<td>Yes</td>
<td>No</td>
<td>Yes*</td>
<td>No</td>
<td>No</td>
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<td>State HFDC</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
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<tr>
<td>Hawaii Prince</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
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</table>

* Not in use
Yes* Intermittent
FROM: P
DATE: 5/5/93
FILE IN:

TO: INIT:
E. SAKODA
K. Oshiro
D. Higa
R. Hardy
J. Zhang
Paul
S. Kokubun
G. MATSUMOTO
Y. SHIROMA

PLEASE:
See Me
Call
Review & Comment
Take Action
Investigate & Report
Draft Reply
Acknowledge Receipt
Type Draft
Type Final
Xerox ___ copies

FOR YOUR:
Approval
Signature
Information

REMARKS:
Can you verify these numbers? I know we have for 2001-02 and are < 36,300 gpa. Others?
only have data for 2001-02.
I've scratched all over my copy but it is (hopefully) still legible. It appears that usage has been comfortably less than permit amounts.

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<th>Avg. Use (CFS)</th>
<th>User</th>
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<td>20,000 to 30,000</td>
<td>ENTRY</td>
</tr>
<tr>
<td>2001-03</td>
<td>25,000 to 30,000</td>
<td>Caprock Park</td>
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<tr>
<td>2001-06</td>
<td>25,000 to 30,000</td>
<td>Palm Villas 4</td>
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<td>2002-12</td>
<td>27,000 to 35,000</td>
<td>Palm Court</td>
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### EWA - GRICER PARK WELL NO. 1
**Consumption Record**

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<th>METER READING</th>
<th>WATER CONSUMED</th>
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<th>AVG DAILY CONSUMPTION</th>
<th>AVG CHLORIDE READING</th>
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*(No power for balance of mo.)*

### EWA - PALM VILLAGE WELL NO. 2
**Consumption Record**

(TOTAL ACRES: 31.06)  **PV-1**  15.0  **PV-2**  16.0

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<th>DAYS</th>
<th>AVG DAILY CONSUMPTION</th>
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### EWA - PALM COURT WELL NO. 3
**Consumption Record**

(TOTAL ACRES: 21.40)  **PL-1**  12.0  **PL-2**  9.0

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**5,873,930**  27.5

27,517 GD
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*Meter broken - Readings unreliable between 11/92 - 02/93.*

**WELL 2001-02**

Note:
## EWA - ENTRY WATER FEATURE
### Consumption Record

#### 2001-02

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**Summary:**
- **Total Water Consumed:** 2,818,894,510 gallons
- **Total Chloride Expended:** 2,794,940 tons
- **Average Daily Water Consumption:** 2,656,288 gallons/day
- **Average Daily Chloride Consumption:** 73,698 tons/day

**File:** 254.37

---

**Notes:**
- Year-round consumption
- High consumption in August
- Consumption drops significantly in February
- Consumption increases in March

---

**Graph:**
- Line graph showing consumption trends over the year.
- Peaks in August and troughs in February.

---

**Additional Observations:**
- Consumption peaks in August due to increased usage.
- Consumption drops in February due to reduced usage.
To: ROY HARDY - CWRM  
From: Tom Nance  
Subject: WATER USE PERMIT APPLICATIONS FOR GENTLY  
cc Barry Edwards 2/8

I've indicated the project-by-project quantities for the Gently Projects. Their two existing permits -- the entry area and Area 1B (Palm Villa) -- are specific to those separate projects and not transferable to other within Future by Gently. Ownership transfer are in the works and there are no interconnecting between systems.

The four other areas -- Areas 11, 3, 4, and 1C -- are also stand alone systems without interconnections. They need to be dealt with as separate entities, each of which will be owned by different owner/resident associations.

If you have any problem with any of these, please give me a call.

Sincerely,

Tom
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<th>Zoning Code</th>
<th>Acres</th>
<th>GPD/AC</th>
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<th>Existing Permits (MGD)</th>
<th>Additional Required Allocation (MGD)</th>
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**PUALOA CAPROCK AREA SUBTOTAL**

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*Not including salt water use
**16.194 mgd permitted to Oahu Sugar, to be cutback to 12,030 mgd in 1995.

Notes:
2. 0.08 mgd formerly permitted to Aloha State Corp.
3. 0.08 mgd formerly permitted to Gentry Development Corp.
4. 0.06 mgd formerly permitted to the Hyers Corp.
5. 0.60 mgd formerly permitted to Pualoa Homes, and 0.10 mgd formerly permitted to Sogo, Hawaii Inc.

= Pualoa Total
= 1.071 mgd
## Pump Data Information

- Confirmed w/ Bill Moore 1/14/93

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February 16, 1993

Ms. Rae M. Loui, Deputy Director
Commission on Water Resource Management
Department of Land and Natural Resources
State of Hawaii

Dear Ms. Loui:

Subject: Updated Information on Water Use Permit Applications

Pursuant to your request of February 4, 1993, we submit the attached additional information to support our applications for Well Nos. 2001-03, 2001-07, 2001-08 and 2002-12.

We understand that you will be taking these applications before the Commission tomorrow for action. We would appreciate your recommendation for approval.

Please feel free to call me if I can be of further service.

Very truly yours,

GENTRY HAWAII, LTD.

Ronald M. Uemura, PE
Vice President - Engineering
# EWA BY GENTRY - STATUS OF NON-POTABLE WELLS

**DATE:** FEBRUARY 12, 1993

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<th>WATER USE PERMITS</th>
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* TEMPORARY LONG TERM PUMPING USE - EXPIRES 5/29/92; MUST APPLY FOR PERMANENT USE.

** APPROVAL GOOD FOR ONLY 2 YEARS.

*X* - CANNOT ACCOUNT FOR DATE.
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STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

FIELD MEMORANDUM

DECLARANT (FILE REF.): GENTRY PACIFIC
DATE: January 7, 1993

PRESENT: Reggie Valdez (Gentry), M. Ohye

LOCATION:

SOURCE(S): Well 2001-06 Palm Villa 1 (Brackish Caprock Source)

USE(S): Landscape Irrigation - Palm Villa 1 Multi-Family Development common areas

FIELD NOTES:

LOCATION - SOURCE: TMK 9-1-50:92 Well 2001-06 Palm Villa 1 is located on the Northwest side of the community swimming pool and off of Puamae 'Ole st.. GPS Latitude 21°20'51.7" Longitude 158°01'56.1"


SOURCE: Well 2001-06 Palm Villa 1 was completed on July 15, 1989, has a total depth of 60 ft. and is cased with a 12 inch diameter steel casing. A 10 horse power submersible pump with a capacity of 100 gallons per minute was installed in September 1989.

QUANTITY: Water is measured with a flowmeter/totalizer. Reading at time of visit 5249850 (9:50 a.m.). The typical times of use are night and early morning.

NOTE: Irrigation system will be turned over to the Palm Villa 1 Community Association.

FIELD INSPECTION INFORMATION CHECKLIST (Ver 4/3/91)

PART I: USE OF WATER

Declarant's File Reference: GENTRY PACIFIC

1. Tax Map Key where the water is used: ____________. Does the declarant own this land? _____ If not, who does? ____________________________

2. What is the water used for? ____________ LANDSCAPE IRRIGATION
   If for irrigation, how many acres are being irrigated by crop type? ____________________________
   If for livestock, how many and what kind? ____________________________
   If for drinking, at how many houses? ____________ by how many people?

3. Is the quantity of water use being measured? YES If yes, document the location of the measurement point and method of measurement; also get use records if these were not submitted previously.

4. If this person takes from a multi-user pipe or ditch system:
   How is the water taken from the system? ____________________________
   What is the capacity for taking (gpm)? ____________________________
   How often is it taken (used)? ____________________________

PART II: WATER SOURCE

Source #: 2001-06 Name: PALM VILLA

1. Where does the water come from / what kind of source is this? DRILLED WELL
   Types of sources include:
   1) Wells (drilled, dug, tunnel)
   2) Diversions (ditch, pipe, pump, or livestock from a stream, spring, swamp, pond)
   3) Multi-source systems. (Declared use cannot be traced to a single well or diversion)
      NOTE: If a multi-user system: take from pipe or ditch (need to determine whether this is a multi-source or single-source system before the data can be input to the computer)
   4) Instream (i.e., crops planted along water edge)

2. Show the source location on maps, determine latitude and longitude, and document the nature of source development by measurements, sketches, and photographs. How is the water taken? ____________ PUMPED - 10 U.P. SUBMERSIBLE
   What is the capacity for taking (gpm)? ____________ 100 GPM
   How often is it taken (used)? ____________ DAILY 

3. Tax Map Key at the source: 9 - 1 - 50 - 92. Determine declarant’s relation to source. Does the declarant:
   1) Operate and maintain the source? YES If not, who does? ____________________________
   2) Own the land at the source? YES If not, who does? ____________________________
   3) Use the water from this source? YES If not, who does? ____________________________
   4) Own the land where the water is being used? ____________________________
   5) None of the above? YES If so, why did they file? ____________________________

4. Does anyone else also use water from this source? NO If yes, is their use included in this user’s declaration? YES Who are the other users? ____________________________ Did they file? ____________________________

VERIFIED BY: M. OLIVE DATE: 1-7-93
GENTRY PACIFIC

Entrance to Palm Villa development

Well 2001-06 Palm Villa I
Well 2001-06 Palm Villa I

Hersey meter/totalizer
Landscaped areas - Irrigated with sprinklers

Common areas - In between multi-family units
WUP Appl. for 9/13/89
NLJ 30 Aug.

Water Use Plan as per
condition 5 of well constr.
permit.

filigree fee for Waikoloa Rent Utl.
CHECKLIST FOR WATER USE PERMITS

SOURCE NAME or LOCATION: Palm Villa Irrigation Well (2002-13)
OWNER or OPERATOR: Gentra Development Company
ADDRESS: ________________
TELEPHONE: (Norman Dyer)

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<td>Date application accepted</td>
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<td>Date filing fee deposited</td>
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<td>Date application approved or disapproved</td>
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<td>Date applicant notified of decision</td>
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REMARKS: * D&S, Campbell & Co, Paul J. Yee, The Mayfair Corp (trans 7/21/89)

See Cond 5 of Well Construction Permit

Pending water use plan & Ag Review
Mr. Ronald M. Uemura, PE  
Vice President, Engineering  
Gentry Hawaii, Ltd.

Dear Mr. Uemura:

Long-term Pumping Test of Caprock Irrigation Wells:  
Well Nos. 2001-03 (Geiger Park), 2001-07 (Golf Villa 1/"Arbors"),  
2001-08 (Palm Villa 2) and 2002-12 (Palm Court 3)

We acknowledge receipt of your letter requesting permission to conduct a long-term  
pumping test of the above wells located at Ewa, Oahu.

We understand that you are requesting the temporary use of the wells to determine  
any trends in the drawdowns and salinities of the wells under pumping conditions. We  
further understand that you will not pump more than 100,000 gallons per day from each well  
and no more than 300,000 gallons per day total from all of the four wells.

By this letter your request is approved subject to the following conditions:

1. You shall provide and maintain approved meters or other appropriate devices or  
means for measuring and reporting total water usage on a monthly basis.  
Monthly water use reports shall be sent to the Division of Water Resource  
Management (DWRM).

2. Water samples shall be collected and tested for chloride content on a monthly  
basis and the results sent to DWRM.

3. The temporary use of the wells shall be for a period of six months from the  
date of this letter. Water use permits shall be obtained from the Commission  
on Water Resource Management for permanent use of the wells.

If you have any questions, please contact Manabu Tagomori, Deputy Director, at  


Very truly yours,

WILLIAM W. PATY
Mr. William Paty, Chairman  
Commission on Water Resource Management  
Department of Land & Natural Resources  
State of Hawaii  

Dear Mr. Paty:

Subject: Long-Term Pump Test of the System of Caprock Irrigation Wells Within the Ewa Gentry Site

The Ewa by Gentry Project is in the process of developing a system of shallow, low-capacity wells in the Puuola Sector of the Ewa Caprock Aquifer. The first two of these wells, #2001-02 at the project's entry and #2001-06 in Palm Villa, Increment 1, have obtained water use permits and are presently in service.

Four other wells, #2001-03 (Geiger Park), #2001-07 (Golf Villa 1/"Arbors"), #2001-08 (Palm Villa 2) and #2002-12 (Palm Court 3) have been drilled and pump-tested. Before these wells are put into service, we would like to continue to test these wells for additional data on drawdown and chloride levels. We do not expect to draw more than 100,000 GPD from each well and no more than 300,000 GPD total from all of these four wells.

Your expeditious attention to this request and approval will greatly facilitate our planning and engineering efforts.

Very truly yours,

GENTRY HAWAII, LTD.

Ronald M. Uemura, PE  
Vice President, Engineering

Attachment
Dear F2:

Public Notice for Water Use Permit Applications
Pearl Harbor Water Management Area, Oahu

In accordance with the Department of Land and Natural Resources Administrative Rules, Section 13-171-17(a), we are sending you a public notice which was published in the Star Bulletin.

Please submit any comments to us by July 31, 1991.

Very truly yours,

Manabu Tagomori

for WILLIAM W. PATY

Enc.
Honorable Clayton H.W. Hee, Chair
Office of Hawaiian Affairs

Ms. Marjorie Ziegler
Sierra Club Legal Defense Fund, Inc.

Mr. Hee

Ms. Ziegler

Honorable Hoaliku Drake, Chair
Department of Hawaiian Home Lands
Old Federal Building

Mr. Randy Wong
Department of Housing and
Community Development

Mrs. Drake

Mr. Wong

Mr. Kazu Hayashida
Manager and Chief Engineer
Board of Water Supply
City and County of Honolulu

Department of Public Works
Wastewater Management Division
City and County of Honolulu

Mr. Hayashida

Mr. Arizumi

Mr. Thomas E. Arizumi, Chief
Environmental Management Division
Department of Health
Five Waterfront Plaza

Mr. Arizumi

Ewa Plain Water Development Corp.

Mr. Don Hibbard
Historic Preservation Division
Department of Land and Natural Resources
State of Hawaii

Mr. Hibbard

Honorable Frank F. Fasi
Mayor
City and County of Honolulu
City Hall

Mr. Joseph K. Conant, Director
Housing and Finance and Development Corp.

Mr. Conant

Finance Realty

Gentlemen

The Estate of James Campbell

Gentlemen

Gentlemen

Honorable Frank F. Fasi
Mayor
City and County of Honolulu
City Hall

Mayor Fasi

Gentlemen

Gentlemen
Mr. William D. Balfour, Jr.
President and Manager
Oahu Sugar Company

Mr. Balfour

Seibu Hawaii, Inc.

Gentlemen

Honorable Arnold Morgado, Jr.
Chair, County Council
City and County of Honolulu
City Hall

Chair and Members
PUBLIC NOTICE

Applications for Water Use Permits
Pearl Harbor Water Management Area, Oahu

Applications for the following water use permits have been received and are hereby made public in accordance with Department of Land and Natural Resources Administrative Rules 13-171, "Designation and Regulation of Water Management Areas."

1. EWA-GENTRY CAPROCK WELL (Well No. 2001-03)

APPLICANT: Gentry Pacific, Ltd.
Date Application Received: April 29, 1991
Source of Water Supply: Honouliuli-Puuloa Sector, Caprock Aquifer, Pearl Harbor Water Management Area.
Location of Well: Ewa Beach, Oahu, at Tax Map Key: 9-1-12:34.
Quantity Requested: 50,000 gallons per day.
Proposed Water Use: Irrigation
Place of Water Use: 10-acre park near Geiger and Fort Weaver Roads

2. PALM COURT IRRIGATION WELL (Well No. 2002-12)

APPLICANT: Gentry Pacific, Ltd.
Date Application Received: June 10, 1991
Source of Water Supply: Honouliuli-Puuloa Sector, Caprock Aquifer, Pearl Harbor Water Management Area.
Location of Well: Ewa Beach, Oahu, at Tax Map Key: 9-1-12:1.
Quantity Requested: 80,000 gallons per day.
Proposed Water Use: Landscape irrigation
Place of Water Use: Palm Court Project

3. PALM VILLA 2 IRRIGATION WELL (Well No. 2001-08)

APPLICANT: Gentry Pacific, Ltd.
Date Application Received: June 10, 1991
Source of Water Supply: Honouliuli-Puuloa Sector, Caprock Aquifer, Pearl Harbor Water Management Area.
Location of Well: Ewa Beach, Oahu, at Tax Map Key: 9-1-12:33.
Quantity Requested: 80,000 gallons per day.
Proposed Water Use: Landscape irrigation
Place of Water Use: Palm Villa 2 Project
4. GOLF VILLA 1 IRRIGATION WELL (Well No. 2001-07)

APPLICANT: Gentry Pacific, Ltd.

Date Application Received: June 10, 1991
Source of Water Supply: Honouliuli-Puuloa Sector, Caprock Aquifer, Pearl Harbor Water Management Area.
Location of Well: Ewa Beach, Oahu, at Tax Map Key: 9-1-12:33.
Quantity Requested: 80,000 gallons per day.
Proposed Water Use: Landscape irrigation
Place of Water Use: Golf Villa 1 Project

5. PUULOA GOLF COURSE IRRIGATION WELL (Well No. 1900-21)

APPLICANT: Puuloa Homes, Ltd./Sogo Hawaii, Inc.

Date Application Received: June 20, 1991
Source of Water Supply: Honouliuli-Puuloa Sector, Caprock Aquifer, Pearl Harbor Water Management Area.
Location of Well: Ewa Beach, Oahu, at Tax Map Key: 9-1-01:27.
Quantity Requested: 250,000 gallons per day.
Proposed Water Use: Golf course irrigation.
Place of Water Use: Puuloa Golf Course.

Written objections or comments on the applications for water use may be filed by any person who has property interest in any land within the hydrologic unit of the source of water supply or who will be directly and immediately affected by the proposed water uses. Written objections shall: (1) state property or other interest in the matter; (2) set forth questions of procedure, fact, law, or policy, to which objections are taken; and (3) state all grounds for objections to the proposed permits. Send written objections by July 31, 1991, to the Division of Water Resource Management, P.O. Box 373, Honolulu, Hawaii 96809.

COMMISSION ON WATER RESOURCE MANAGEMENT

WILLIAM W. PATY
Chairperson

Dated: Jul 3 1991

FACSIMILE TRANSMITTAL PAGE

Please deliver the following pages to:

Name: Ron Uemura
Company: Gentry Hawaii, Ltd.
From: Ed Sakaida
Date: 2-4-91       Time: 1:49 pm

Message: We need water use plans to attach to permit when issued. See condition 1.

Total number of pages (including Transmittal Page): 4

If you do not receive all of the pages legibly, please call back: [redacted]

Sending Facsimile Number: [redacted]

TRANSMISSION REPORT

THIS DOCUMENT (REDUCED SAMPLE ABOVE) WAS SENT

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</tbody>
</table>

TOTAL 0:02'52"   4  XEROX TELESOPIER 7020
The applicant is hereby granted a permit to withdraw and use water from the source identified above in accordance with Chapter 174C, HRS, State Water Code; Chapter 13-171, Hawaii Administrative Rules; and the following:

General Conditions: (1) the water use authorized by this permit must be for the reasonable-beneficial use described in this permit; (2) the use must not interfere with any existing legal use of water; and (3) modification of any permit condition must be approved by the Commission.

Additional Conditions:

(1) The applicant must comply with the approved water use plan (attached).

(2) The Commission may reduce the amount initially granted the permittee should long-term pumpage from the well interfere with existing legal uses in the area.

(3) An approved flowmeter(s) must be installed to measure withdrawals and a record of the withdrawals must be kept and reported to the Department of Land and Natural Resources, Division of Water and Land Development, P.O. Box 373, Honolulu, Hawaii 96809, on a monthly basis.

(4) The development of the ground-water source shall be completed within 24 months from the date of permit issuance.
Mr. Ronald Uemura, PE
Director of Engineering
Gentry Development Company

Dear Mr. Uemura:

Thank you for your letter and the report prepared by Tom Nance Water Resources Engineering concerning your plans to use non-potable caprock water for the Ewa by Gentry project.

We agree with the report that anticipated draft and recharge for the project area, after its completion, will be substantially lower than Oahu Sugar Company's pre-existing land use. However, draft will continue to exceed recharge by irrigation return flow, causing increasing salinization of the aquifer.

A condition of the Palm Villa Irrigation Well (Well No. 2002-13) permit and a similar condition of the well construction permits for the Ewa-Gentry Caprock Wells (Well Nos. 1902-02, 2001-03 to 05, 2002-11,12) requires a water use plan, to be approved by the Chairperson, "recommending possible measures to prevent or minimize saltwater contamination and establish courses of action to prevent the aquifer from becoming too saline to use". The purpose of the water use plan is to anticipate and identify future problems and to begin the search for practical solutions to those problems. Upon approval by the Chairperson, the plan will satisfy the conditions of the Palm Villa Well water use permit and pump installation permit, and the well construction permits for the Ewa-Gentry Caprock Wells.

Please submit the water use plan at your earliest convenience. Call Manabu Tagomori at [redacted] if you have any questions.

Very truly yours,
May 4, 1990

Mr. William W. Paty, Chairperson
Commission on Water Resource Management
Department of Land and Natural Resources
State of Hawaii

Dear Mr. Paty:

Subject: Ewa by Gentry - Non-Potable Water Use Plan

We are pleased to submit this report prepared by Tom Nance Water Resources Engineering dated April 26, 1990 regarding the effect on the caprock aquifer by our project. Also included is a preliminary land use plan with the proposed non-potable well sites shown and proposed dates when the projects are expected to be occupied (start of closings).

I am hopeful that this information should adequately address your concerns on the projects effect on the caprock aquifer.

Sincerely,

GENTRY DEVELOPMENT COMPANY

Ronald M. Uemura, PE
Director of Engineering

Enclosures
Mr. Norm Dyer  
The Gentry Companies

Dear Norm:

Evaluation of the Effect of the Ewa by Gentry Project  
on the Honolulu-Puuola Sector of the Ewa Limestone Aquifer

As requested, I have made an assessment of expected changes to the Ewa limestone aquifer as a result of converting the 1000-acre Ewa by Gentry site from sugarcane to residential, golf course, and other urban land uses. This letter report summarizes my analysis. Information it contains responds to concerns raised by the State Water Commission regarding your water use permit application for the Palm Villa irrigation well.

Oahu Sugar Company's pre-existing land use on the 1000-acre site is summarized on Table 1. Prior to urbanization, Oahu Sugar Company had 964 acres in cane and the balance was open and unused. Of the 964 cane acres, 340 were irrigated by basalt aquifer wells; most of this land has already been taken down by Gentry. The other 624 acres in cane, most of which is still being cultivated, are irrigated by wells drawing from the limestone aquifer. Takedowns of the remaining cane lands are scheduled in three increments: December 1990, 1993, and 1994.

Table 2 is a capsule summary of OSCO's draft from limestone wells and recharge to the aquifer by irrigation return flow over the 1000-acre site. (The basis of irrigation application rates, plant evapotranspiration, and all other details of the analysis can be found in an enclosure to this letter.) The net draft from the aquifer is (2.065) MGD, representing the excess of its draft from wells over the irrigation return flow. The basalt-irrigated fields are a significant benefit in this regard; they contribute to irrigation return flow with water brought in from sources outside the limestone aquifer.

Table 3 is a similar summary of anticipated draft and recharge for the Ewa by Gentry Project after its completion. Draft by wells and recharge by irrigation return flow will both be substantially reduced in comparison to the pre-existing land use. More significantly, the excess of draft over recharge would be just 0.429 MGD or 21 percent of the net draft that occurred during full use of the land for cane cultivation.

Sincerely,

Tom Nance

TN:It

cc:  Ron Uemura  
TH, PT, RO  
J. BURNAS

Enclosures
Table 1

Land Use by Oahu Sugar Company Prior to the Ewa by Gentry

<table>
<thead>
<tr>
<th>General Area</th>
<th>Land Use</th>
<th>Field Number</th>
<th>Area (Acres)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Above Geiger, West of Fort Weaver</td>
<td>Basalt-Irrigated Sugarcane</td>
<td>49</td>
<td>33.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>67 (Portion)</td>
<td>80.2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>69</td>
<td>105.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>72</td>
<td>79.9</td>
</tr>
<tr>
<td></td>
<td></td>
<td>73</td>
<td>41.4</td>
</tr>
<tr>
<td></td>
<td>Open and Unused</td>
<td></td>
<td>9.0</td>
</tr>
<tr>
<td>Below Geiger, West of Fort Weaver</td>
<td>Limestone-Irrigated Sugarcane</td>
<td>74 (Portion)</td>
<td>57.8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>92</td>
<td>76.8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>93 (Portion)</td>
<td>116.4</td>
</tr>
<tr>
<td>Above Iroquois, East of Fort Weaver</td>
<td>Limestone-Irrigated Sugarcane</td>
<td>64 (Portion)</td>
<td>116.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>66 (Portion)</td>
<td>109.0</td>
</tr>
<tr>
<td></td>
<td>Open and Unused</td>
<td></td>
<td>20.0</td>
</tr>
<tr>
<td>Below Iroquois, East of Fort Weaver</td>
<td>Limestone-Irrigated Sugarcane</td>
<td>75</td>
<td>96.4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>89 (Portion)</td>
<td>51.6</td>
</tr>
<tr>
<td></td>
<td>Open and Unused</td>
<td></td>
<td>7.0</td>
</tr>
</tbody>
</table>
Table 2
Oahu Sugar Company’s Limestone Aquifer Draft and Recharge on the 1000-Acre Ewa by Gentry Site

<table>
<thead>
<tr>
<th>Land Use</th>
<th>Area (Acres)</th>
<th>Draft by Limestone Wells (MGD)</th>
<th>Recharge to Limestone Aquifer (MGD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sugarcane: Irrigated by Basalt Aquifer Wells</td>
<td>340</td>
<td>0.000</td>
<td>1.142 (44%)</td>
</tr>
<tr>
<td>Sugarcane: Irrigated by Limestone Aquifer Wells</td>
<td>624</td>
<td>4.680</td>
<td>1.473 (56%)</td>
</tr>
<tr>
<td>Open and Unused</td>
<td>36</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>1000</strong></td>
<td><strong>4.680</strong></td>
<td><strong>2.615 (54%)</strong></td>
</tr>
</tbody>
</table>

Table 3
Anticipated Limestone Aquifer Draft and Recharge After Completion of the Ewa by Gentry Project

<table>
<thead>
<tr>
<th>Land Use</th>
<th>Area (Acres)</th>
<th>Draft by Limestone Wells (MGD)</th>
<th>Recharge to Limestone Aquifer (MGD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential: Single Family</td>
<td>511</td>
<td>0.000</td>
<td>0.291</td>
</tr>
<tr>
<td>Residential: Multi-Family</td>
<td>191</td>
<td>0.286</td>
<td>0.201</td>
</tr>
<tr>
<td>Golf Course: Irrigated Area</td>
<td>182</td>
<td>0.910</td>
<td>0.340</td>
</tr>
<tr>
<td>Golf Course: Clubhouse and Parking</td>
<td>6</td>
<td>0.000</td>
<td>0.001</td>
</tr>
<tr>
<td>Park</td>
<td>24</td>
<td>0.096</td>
<td>0.021</td>
</tr>
<tr>
<td>School</td>
<td>6</td>
<td>0.000</td>
<td>0.001</td>
</tr>
<tr>
<td>Commercial</td>
<td>11</td>
<td>0.000</td>
<td>0.002</td>
</tr>
<tr>
<td>Industrial</td>
<td>30</td>
<td>0.000</td>
<td>0.006</td>
</tr>
<tr>
<td>Drainage Sumps</td>
<td>39</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>1000</strong></td>
<td><strong>1.292</strong></td>
<td><strong>0.863 (54%)</strong></td>
</tr>
</tbody>
</table>
Basis of Computed Draft by Wells and Recharge by Irrigation Return Flow Rates for Various Land Uses

Sugarcane Fields Irrigated by Basalt Aquifer Wells

1. The only fields irrigated by basalt aquifer wells are 49, a portion of 67, 69, 72, and 73 and these total 340 acres (all are mauka of Geiger Road and west of Fort Weaver Road).

2. Average irrigation is 0.85 MGD per 100 acres, the approximate application rate in the 1980s.

3. Sugarcane evapotranspiration is equivalent to 100 percent of the pan evaporation rate or 90 inches per year (Figure 14 in DLNR Report R74, "Pan Evaporation: State of Hawaii, 1894-1983").

4. Average rainfall, based on the long-term records of gages 741 and 744, is 21 inches per year.

5. Recharge by irrigation return is irrigation application plus rainfall minus evapotranspiration:

<table>
<thead>
<tr>
<th>Flow Component</th>
<th>Inches per Year</th>
<th>MGD/100 Ac.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inflow:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Irrigation Application</td>
<td>114</td>
<td>0.850</td>
</tr>
<tr>
<td>Rainfall</td>
<td>21</td>
<td>0.156</td>
</tr>
<tr>
<td>Total Inflow</td>
<td>135</td>
<td>1.006</td>
</tr>
<tr>
<td>Loss to Evapotranspiration</td>
<td>90</td>
<td>0.670</td>
</tr>
<tr>
<td>Net Recharge</td>
<td>45</td>
<td>0.336 x 3.4 = 1.142</td>
</tr>
</tbody>
</table>

Sugarcane Fields Irrigated by Limestone Aquifer Wells

1. Fields within the 1000-acre Ewa by Gentry site irrigated by limestone aquifer wells are as follows:

<table>
<thead>
<tr>
<th>Area</th>
<th>Field No.</th>
<th>Acres</th>
</tr>
</thead>
<tbody>
<tr>
<td>Makai of Geiger, West of Fort Weaver</td>
<td>74 (portion)</td>
<td>57.8</td>
</tr>
<tr>
<td></td>
<td>92</td>
<td>76.8</td>
</tr>
<tr>
<td></td>
<td>93 (portion)</td>
<td>116.4</td>
</tr>
<tr>
<td>Makai of Iroquois, East of Fort Weaver</td>
<td>75</td>
<td>96.4</td>
</tr>
<tr>
<td></td>
<td>89 (portion)</td>
<td>51.6</td>
</tr>
<tr>
<td>Mauka of Iroquois, East of Fort Weaver</td>
<td>64 (portion)</td>
<td>108.5</td>
</tr>
<tr>
<td></td>
<td>66 (portion)</td>
<td>116.5</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>624.0</td>
</tr>
</tbody>
</table>
Average irrigation in the 1980s was approximately 0.75 MGD per 100 acres, slightly less than on the basalt-irrigated fields.

Evapotranspiration and rainfall are the same as for basalt-irrigated fields.

Recharge by irrigation return is computed as follows:

<table>
<thead>
<tr>
<th>Flow Component</th>
<th>Inches per Year</th>
<th>MGD/100 Ac.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inflow:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Irrigation Application</td>
<td>101</td>
<td>0.750</td>
</tr>
<tr>
<td>Rainfall</td>
<td>21</td>
<td>0.156</td>
</tr>
<tr>
<td>Total Inflow</td>
<td>122</td>
<td>0.906</td>
</tr>
<tr>
<td>Loss to</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evapotranspiration</td>
<td>90</td>
<td>0.670</td>
</tr>
<tr>
<td>Net Recharge</td>
<td>32</td>
<td>0.236 x 6.24 = 1.473</td>
</tr>
</tbody>
</table>

Golf Course Irrigated by Caprock Aquifer Wells

The irrigation application rate will average 5000 gallons per day per acre.

Evapotranspiration from turfgrass will be 70 percent of the pan evaporation rate.

Computed recharge to the limestone aquifer is as follows:

<table>
<thead>
<tr>
<th>Flow Component</th>
<th>Inches per Year</th>
<th>MGD/100 Ac.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inflow:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Irrigation Application</td>
<td>67</td>
<td>0.500</td>
</tr>
<tr>
<td>Rainfall</td>
<td>21</td>
<td>0.156</td>
</tr>
<tr>
<td>Total Inflow</td>
<td>86</td>
<td>0.656</td>
</tr>
<tr>
<td>Loss to</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evapotranspiration</td>
<td>63</td>
<td>0.469</td>
</tr>
<tr>
<td>Net Recharge</td>
<td>23</td>
<td>0.187</td>
</tr>
</tbody>
</table>

Parks Dedicated to the City and County

Irrigation will be by limestone aquifer wells at 4000 GPD per acre.

All other parameters are the same as for golf courses.

Computed recharge is as follows:

<table>
<thead>
<tr>
<th>Flow Component</th>
<th>Inches per Year</th>
<th>MGD/100 Ac.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inflow:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Irrigation Application</td>
<td>54</td>
<td>0.400</td>
</tr>
<tr>
<td>Rainfall</td>
<td>21</td>
<td>0.156</td>
</tr>
<tr>
<td>Total Inflow</td>
<td>69</td>
<td>0.556</td>
</tr>
<tr>
<td>Loss to</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evapotranspiration</td>
<td>63</td>
<td>0.469</td>
</tr>
<tr>
<td>Net Recharge</td>
<td>6</td>
<td>0.087</td>
</tr>
</tbody>
</table>
Multi-Family Development with Caprock-Irrigated Landscaping

(1) Irrigation will be by limestone aquifer wells at 3000 GPD per irrigated acre; half of each MF site will be landscaped and irrigated.

(2) Evapotranspiration for the range of plant materials will average 0.6 times the pan evaporation rate.

(3) Computed recharge is as follows:

<table>
<thead>
<tr>
<th>Flow Component</th>
<th>Inches per Year</th>
<th>MGD/100 Gross Ac.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inflow:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Irrigation Application</td>
<td>20</td>
<td>0.150</td>
</tr>
<tr>
<td>Rainfall</td>
<td>21</td>
<td>0.158</td>
</tr>
<tr>
<td>Total Inflow</td>
<td>42</td>
<td>0.306</td>
</tr>
<tr>
<td>Loss to</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evapotranspiration</td>
<td>27</td>
<td>0.201</td>
</tr>
<tr>
<td>Net Recharge</td>
<td>15</td>
<td>0.105</td>
</tr>
</tbody>
</table>

Single-Family Residential and Other Urban Land Uses

(1) All other urban land uses will be irrigated through the BWS potable water system.

(2) Net recharge will be small but will definitely occur. Data from Dames & Moore test holes in the Seibu/Myers golf course site and from testing of the Puuloa Golf Course well, all next to existing Ewa beach residential development, confirm this.

(3) Recharge is estimated using "Land Use Effects on the Water Balance of a Tropical Island" by Thomas W. Giambelluca, National Geographic Research 2(2):125–151 (1986) as follows:

<table>
<thead>
<tr>
<th>Land Use</th>
<th>Net Recharge</th>
</tr>
</thead>
<tbody>
<tr>
<td>SF Residential</td>
<td>7.7</td>
</tr>
<tr>
<td>Commercial</td>
<td>2.5</td>
</tr>
<tr>
<td>School</td>
<td>3.0</td>
</tr>
<tr>
<td>Industrial</td>
<td>2.5</td>
</tr>
<tr>
<td>Drainage Sumps</td>
<td>0.0</td>
</tr>
</tbody>
</table>
GV-1 Project 8/91
Start of closings

PROPOSED NON-POTABLE WELL SITE
<table>
<thead>
<tr>
<th>TO:</th>
<th>INITIAL:</th>
<th>PLEASE:</th>
<th>REMARKS:</th>
</tr>
</thead>
<tbody>
<tr>
<td>M. Tagomori</td>
<td></td>
<td>See Me</td>
<td></td>
</tr>
<tr>
<td>G. Matsumoto</td>
<td></td>
<td>Take Action By</td>
<td></td>
</tr>
<tr>
<td>G. Akita</td>
<td></td>
<td>Route to Your Branch</td>
<td></td>
</tr>
<tr>
<td>L. Chang</td>
<td></td>
<td>Review &amp; Comment</td>
<td></td>
</tr>
<tr>
<td>Y. Shiroma</td>
<td></td>
<td>Draft Reply</td>
<td></td>
</tr>
<tr>
<td>E. Sakoda</td>
<td></td>
<td>Acknowledge Receipt</td>
<td></td>
</tr>
<tr>
<td>D. Nakano</td>
<td></td>
<td>Xerox copies</td>
<td></td>
</tr>
<tr>
<td>W. Rozeboom</td>
<td></td>
<td>File</td>
<td></td>
</tr>
<tr>
<td>S. Samuels</td>
<td></td>
<td>Mail</td>
<td></td>
</tr>
<tr>
<td>E. Hirano</td>
<td></td>
<td>For Information</td>
<td></td>
</tr>
<tr>
<td>T. Kam</td>
<td></td>
<td>S. Kokubun</td>
<td></td>
</tr>
<tr>
<td>A. Monden</td>
<td></td>
<td>L. Nanbu</td>
<td></td>
</tr>
<tr>
<td>H. Young</td>
<td></td>
<td>F. Ching</td>
<td></td>
</tr>
<tr>
<td>D. Lee</td>
<td></td>
<td>L. Choo</td>
<td></td>
</tr>
<tr>
<td>G. Miyashiro</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
May 4, 1990

Mr. William W. Paty, Chairperson
Commission on Water Resource Management
Department of Land and Natural Resources
State of Hawaii

Dear Mr. Paty:

Subject: Ewa by Gentry - Non-Potable Water Use Plan

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I am hopeful that this information should adequately address your concerns on the projects effect on the caprock aquifer.

Sincerely,

GENTRY DEVELOPMENT COMPANY

Ronald M. Uemura, PE
Director of Engineering

RMU:me

Enclosures
Mr. Norm Dyer  
The Gentry Companies

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Sincerely,

Tom Nance

TN:It

cc: Ron Uemura

TH, PT, RO

J. BURNS

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<th>Land Use</th>
<th>Field Number</th>
<th>Area (Acres)</th>
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<tbody>
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<td>Basalt-Irrigated Sugarcane</td>
<td>49</td>
<td>33.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>67 (Portion)</td>
<td>80.2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>69</td>
<td>105.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>72</td>
<td>79.9</td>
</tr>
<tr>
<td></td>
<td></td>
<td>73</td>
<td>41.4</td>
</tr>
<tr>
<td></td>
<td>Open and Unused</td>
<td>-</td>
<td>9.0</td>
</tr>
<tr>
<td>Below Geiger, West of Fort Weaver</td>
<td>Limestone-Irrigated Sugarcane</td>
<td>74 (Portion)</td>
<td>57.8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>92</td>
<td>76.8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>93 (Portion)</td>
<td>116.4</td>
</tr>
<tr>
<td>Above Iroquois, East of Fort Weaver</td>
<td>Limestone-Irrigated Sugarcane</td>
<td>64 (Portion)</td>
<td>116.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>66 (Portion)</td>
<td>109.0</td>
</tr>
<tr>
<td></td>
<td>Open and Unused</td>
<td>-</td>
<td>20.0</td>
</tr>
<tr>
<td>Below Iroquois, East of Fort Weaver</td>
<td>Limestone-Irrigated Sugarcane</td>
<td>75</td>
<td>96.4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>89 (Portion)</td>
<td>51.6</td>
</tr>
<tr>
<td></td>
<td>Open and Unused</td>
<td>-</td>
<td>7.0</td>
</tr>
</tbody>
</table>
### Table 2

**Oahu Sugar Company's Limestone Aquifer Draft and Recharge on the 1000-Acre Ewa by Gentry Site**

<table>
<thead>
<tr>
<th>Land Use</th>
<th>Area (Acres)</th>
<th>Draft by Limestone Wells (MGD)</th>
<th>Recharge to Limestone Aquifer (MGD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sugarcane: Irrigated by Basalt Aquifer Wells</td>
<td>340</td>
<td>0.000</td>
<td>1.142</td>
</tr>
<tr>
<td>Sugarcane: Irrigated by Limestone Aquifer Wells</td>
<td>624</td>
<td>4.680</td>
<td>1.473</td>
</tr>
<tr>
<td>Open and Unused</td>
<td>36</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>1000</strong></td>
<td><strong>4.680</strong></td>
<td><strong>2.615</strong></td>
</tr>
</tbody>
</table>

### Table 3

**Anticipated Limestone Aquifer Draft and Recharge After Completion of the Ewa by Gentry Project**

<table>
<thead>
<tr>
<th>Land Use</th>
<th>Area (Acres)</th>
<th>Draft by Limestone Wells (MGD)</th>
<th>Recharge to Limestone Aquifer (MGD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential: Single Family</td>
<td>511</td>
<td>0.000</td>
<td>0.291</td>
</tr>
<tr>
<td>Multi-Family</td>
<td>191</td>
<td>0.286</td>
<td>0.201</td>
</tr>
<tr>
<td>Golf Course: Irrigated Area</td>
<td>182</td>
<td>0.910</td>
<td>0.340</td>
</tr>
<tr>
<td>Golf Course: Clubhouse and Parking</td>
<td>6</td>
<td>0.000</td>
<td>0.001</td>
</tr>
<tr>
<td>Park</td>
<td>24</td>
<td>0.096</td>
<td>0.021</td>
</tr>
<tr>
<td>School</td>
<td>6</td>
<td>0.000</td>
<td>0.001</td>
</tr>
<tr>
<td>Commercial</td>
<td>11</td>
<td>0.000</td>
<td>0.002</td>
</tr>
<tr>
<td>Industrial</td>
<td>30</td>
<td>0.000</td>
<td>0.006</td>
</tr>
<tr>
<td>Drainage Sumps</td>
<td>39</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>1000</strong></td>
<td><strong>1.292</strong></td>
<td><strong>0.863</strong></td>
</tr>
</tbody>
</table>
Basis of Computed Draft by Wells and Recharge by Irrigation Return Flow Rates for Various Land Uses

**Sugarcane Fields Irrigated by Basalt Aquifer Wells**

(1) The only fields irrigated by basalt aquifer wells are 49, a portion of 67, 69, 72, and 73 and these total 340 acres (all are mauka of Geiger Road and west of Fort Weaver Road).

(2) Average irrigation is 0.85 MGD per 100 acres, the approximate application rate in the 1980s.

(3) Sugarcane evapotranspiration is equivalent to 100 percent of the pan evaporation rate or 90 inches per year (Figure 14 in DLNR Report R74, "Pan Evaporation: State of Hawaii, 1894–1983").

(4) Average rainfall, based on the long-term records of gages 741 and 744, is 21 inches per year.

(5) Recharge by irrigation return is irrigation application plus rainfall minus evapotranspiration:

<table>
<thead>
<tr>
<th>Flow Component</th>
<th>Inches per Year</th>
<th>MGD/100 Ac.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inflow: Irrigation Application</td>
<td>114</td>
<td>0.850</td>
</tr>
<tr>
<td>Rainfall</td>
<td>21</td>
<td>0.156</td>
</tr>
<tr>
<td>Total Inflow</td>
<td>135</td>
<td>1.006</td>
</tr>
<tr>
<td>Loss to Evapotranspiration</td>
<td>90</td>
<td>0.670</td>
</tr>
<tr>
<td>Net Recharge</td>
<td>45</td>
<td>0.336</td>
</tr>
</tbody>
</table>

**Sugarcane Fields Irrigated by Limestone Aquifer Wells**

(1) Fields within the 1000-acre Ewa by Gentry site irrigated by limestone aquifer wells are as follows:

<table>
<thead>
<tr>
<th>Area</th>
<th>Field No.</th>
<th>Acres</th>
</tr>
</thead>
<tbody>
<tr>
<td>Makai of Geiger, West of Fort Weaver</td>
<td>74 (portion)</td>
<td>57.8</td>
</tr>
<tr>
<td></td>
<td>92</td>
<td>76.8</td>
</tr>
<tr>
<td></td>
<td>93 (portion)</td>
<td>116.4</td>
</tr>
<tr>
<td>Makai of Iroquois, East of Fort Weaver</td>
<td>75</td>
<td>96.4</td>
</tr>
<tr>
<td></td>
<td>89 (portion)</td>
<td>51.6</td>
</tr>
<tr>
<td>Mauka of Iroquois, East of Fort Weaver</td>
<td>64 (portion)</td>
<td>108.5</td>
</tr>
<tr>
<td></td>
<td>68 (portion)</td>
<td>116.5</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>624.0</td>
</tr>
</tbody>
</table>
(2) Average irrigation in the 1980s was approximately 0.75 MGD per 100 acres, slightly less than on the basalt-irrigated fields.

(3) Evapotranspiration and rainfall are the same as for basalt-irrigated fields.

(4) Recharge by irrigation return is computed as follows:

<table>
<thead>
<tr>
<th>Flow Component</th>
<th>Inches per Year</th>
<th>MGD/100 Ac.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inflow:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Irrigation Application</td>
<td>101</td>
<td>0.750</td>
</tr>
<tr>
<td>Rainfall</td>
<td>21</td>
<td>0.158</td>
</tr>
<tr>
<td>Total Inflow</td>
<td>122</td>
<td>0.906</td>
</tr>
<tr>
<td>Loss to</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evapotranspiration</td>
<td>90</td>
<td>0.670</td>
</tr>
<tr>
<td>Net Recharge</td>
<td>32</td>
<td>0.236</td>
</tr>
</tbody>
</table>

**Golf Course Irrigated by Caprock Aquifer Wells**

(1) The irrigation application rate will average 5000 gallons per day per acre.

(2) Evapotranspiration from turfgrass will be 70 percent of the pan evaporation rate.

(3) Computed recharge to the limestone aquifer is as follows:

<table>
<thead>
<tr>
<th>Flow Component</th>
<th>Inches per Year</th>
<th>MGD/100 Ac.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inflow:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Irrigation Application</td>
<td>67</td>
<td>0.500</td>
</tr>
<tr>
<td>Rainfall</td>
<td>21</td>
<td>0.156</td>
</tr>
<tr>
<td>Total Inflow</td>
<td>86</td>
<td>0.656</td>
</tr>
<tr>
<td>Loss to</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evapotranspiration</td>
<td>63</td>
<td>0.469</td>
</tr>
<tr>
<td>Net Recharge</td>
<td>23</td>
<td>0.187</td>
</tr>
</tbody>
</table>

**Parks Dedicated to the City and County**

(1) Irrigation will be by limestone aquifer wells at 4000 GPD per acre.

(2) All other parameters are the same as for golf courses.

(3) Computed recharge is as follows:

<table>
<thead>
<tr>
<th>Flow Component</th>
<th>Inches per Year</th>
<th>MGD/100 Ac.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inflow:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Irrigation Application</td>
<td>54</td>
<td>0.400</td>
</tr>
<tr>
<td>Rainfall</td>
<td>21</td>
<td>0.156</td>
</tr>
<tr>
<td>Total Inflow</td>
<td>69</td>
<td>0.556</td>
</tr>
<tr>
<td>Loss to</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evapotranspiration</td>
<td>63</td>
<td>0.469</td>
</tr>
<tr>
<td>Net Recharge</td>
<td>6</td>
<td>0.087</td>
</tr>
</tbody>
</table>
Multi-Family Development with Caprock-Irrigated Landscaping

(1) Irrigation will be by limestone aquifer wells at 3000 GPD per irrigated acre; half of each MF site will be landscaped and irrigated.

(2) Evapotranspiration for the range of plant materials will average 0.6 times the pan evaporation rate.

(3) Computed recharge is as follows:

<table>
<thead>
<tr>
<th>Flow Component</th>
<th>Inches per Year</th>
<th>MGD/100 Gross Ac.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Irrigation Application</td>
<td>20</td>
<td>0.150</td>
</tr>
<tr>
<td>Rainfall</td>
<td>21</td>
<td>0.156</td>
</tr>
<tr>
<td>Total Inflow</td>
<td>42</td>
<td>0.306</td>
</tr>
<tr>
<td>Loss to Evapotranspiration</td>
<td>27</td>
<td>0.201</td>
</tr>
<tr>
<td>Net Recharge</td>
<td>15</td>
<td>0.105</td>
</tr>
</tbody>
</table>

Single-Family Residential and Other Urban Land Uses

(1) All other urban land uses will be irrigated through the BWS potable water system.

(2) Net recharge will be small but will definitely occur. Data from Dames & Moore test holes in the Seibu/Myers golf course site and from testing of the Puuloa Golf Course well, all next to existing Ewa beach residential development, confirm this.

(3) Recharge is estimated using "Land Use Effects on the Water Balance of a Tropical Island" by Thomas W. Giambelluca, National Geographic Research 2(2):125–151 (1986) as follows:

<table>
<thead>
<tr>
<th>Land Use</th>
<th>Net Recharge Inches/Year</th>
<th>MGD/100 Ac.</th>
</tr>
</thead>
<tbody>
<tr>
<td>SF Residential</td>
<td>7.7</td>
<td>0.057</td>
</tr>
<tr>
<td>Commercial</td>
<td>2.5</td>
<td>0.019</td>
</tr>
<tr>
<td>School</td>
<td>3.0</td>
<td>0.022</td>
</tr>
<tr>
<td>Industrial</td>
<td>2.5</td>
<td>0.019</td>
</tr>
<tr>
<td>Drainage Sumps</td>
<td>0.0</td>
<td>0.000</td>
</tr>
</tbody>
</table>
Project 8/9

Start of Closings

April 12, 1990

PROPOSED NON-POTABLE WELL SITE
September 27, 1989

Gentry Development Company

Gentlemen:

The Commission on Water Resource Management approved your application for a water use permit and pump installation permit for the Palm Villa Irrigation Well (Well No. 2002-13) at its meeting on September 13, 1989.

Due to the reduction of sugar cane cultivation in the area and resulting increased salinity expected, a condition of the approval requires the applicant to submit a water use plan, for the Chairman's approval, recommending possible measures to prevent or minimize saltwater contamination and establish courses of action to prevent the aquifer from becoming too saline to use. The above condition is similar to Condition 5 contained in the well construction permits for Ewa-Gentry Caprock Wells issued by the Commission on May 24, 1989. One alternative which should be explored is the future use of treated effluent from the Honouliuli Wastewater Treatment Plant for direct application or for recharge of the caprock aquifer.

The water use permit and pump installation permit will be issued upon receipt and approval of the water use plan, and upon approval by the attorney general's office, which is presently reviewing all water use permits in general.

If you have any questions, please contact Dan Lum at [redacted].

Sincerely,

MANABU TAGOMORI
Deputy Director

ES:ko
Gentry Development Company

Gentlemen:

The Commission on Water Resource Management (Commission) approved your request for a water use permit for Palm Ville Irrigation Well (2002-13) at its meeting on September 13, 1989.

Water use permits recently approved by the Commission are presently being reviewed by the attorney general. We will send you the permit as soon as the review is completed.

Sincerely,

MANABU TACONORI
Deputy Director

ES:ko
cc: Attorney General
Motion was made to accept the request for extension, unanimously approved (Fujimura/Cox).

Dr. Chun asked staff to write to the Sierra Club to notify them that the Wailuku River Hydro Project item will be decided at the October 18th meeting in Honolulu.

ITEM 3 GENTRY DEVELOPMENT COMPANY APPLICATION FOR WATER USE PERMIT AND PUMP INSTALLATION PERMIT, PALM VILLA IRRIGATION WELL, EWA, OAHU

Mr. Fujimura felt Condition No. 1 was too broad and that it would be logical to stop the pumping. It should show some sort of action similar to that in Condition No. 2. Mr. Sakoda said solutions couldn’t be made yet because the developers would be forced to stop since the grass can’t take the salt. Staff had in mind the alternative of using re-use water. Dr. Lewin asked if the project was close enough to the Honolulu Treatment Plant so the secondary treated sewage could be used for the project. Mr. Sakoda replied staff is hoping they can meet some of their future needs with that source.

Mr. Fujimura suggested the following change to Condition No. 1:

"The permit shall be subject to the Chairperson's approval of water use plan recommending possible measures to prevent or minimize saltwater contamination and establish courses of action to prevent the aquifer from becoming too saline to use. The applicant must follow the approved plan".

Unanimously approved as amended (Cox/Fujimura).

ITEM 4 CITIZENS UTILITIES COMPANY APPLICATION FOR WELL CONSTRUCTION PERMIT, PORT ALLEN POWER STATION SALT WATER WELLS, PORT ALLEN, KAUAI

Unanimously approved (Fujimura/Cox).

ITEM 5 FINANCE REALTY COMPANY APPLICATION FOR WELL CONSTRUCTION PERMIT, MAKAKILO GOLF COURSE WELL, MAKAKILO, OAHU

Dr. Lewin stated he is concerned no one will want to use secondary treated water and the caprock will become more and more saline. He felt that when
Chairperson and Members
Commission on Water Resource Management
State of Hawaii
Honolulu, Hawaii

Gentlemen:

Gentry Development Company
Application for Water Use Permit
Palm Villa Irrigation Well, Ewa, Oahu

Applicant: Gentry Development Company

Action Requested: Approval of a water use permit and a pump installation permit to use 0.08 million gallons per day (mgd) from Palm Villa Irrigation Well (Well No. 2002-12) for landscape irrigation.

Place of Use: Water developed by this well will be used for landscape irrigation for the Palm Villa condominium project in Ewa.

Well Location: The well is located within the project area at Tax Map Key: 9-1-12:1 (see attached map). The well taps the Ewa caprock aquifer.

Impact on Surrounding Wells: The Palm Villa Irrigation Well is one of seven brackish water wells being developed in the Ewa caprock aquifer. Five are to be used for multi-family landscape irrigation to meet the Honolulu Board of Water Supply's dual system requirement. The remaining two will be used for golf course irrigation. The combined draft is expected to be approximately 1.39 mgd. Initial quantities and qualities from the seven sources are expected to be adequate. However, removal of sugar cane acreage will reduce recharge to the caprock aquifer resulting in increased chloride concentrations. The wells are expected to become increasingly saline unless steps are taken to increase recharge to the aquifer.

Public Notice: In accordance with DLNR Administrative Rules, a public notice was published in the Star Bulletin on July 27 and August 3, 1989. In addition, copies of the public notice were sent to the Mayor's office, the Department of Health, Oahu Sugar Company, the Estate of James Campbell, The Meyers Corporation, and Puu Loa Homes, Ltd. Written objections to the proposed permit were to be submitted to the Commission by August 17, 1989. No objections have been filed.
RECOMMENDATION:

That the Commission approve the issuance of a water use permit and a pump-installation permit to Gentry Development Company for 0.08 mgd of brackish caprock water for landscape irrigation use from Palm Villa Irrigation Well.

The approval shall be subject to the requirements of other applicable laws, rules, and ordinances, and the following conditions:

(1) The permit shall be subject to the Chairperson's approval of a water use plan recommending possible measures to prevent or minimize saltwater contamination and establish courses of action to follow should the aquifer become too saline to use.

(2) The Commission may reduce the amount initially granted the permittee should long-term pumpage from the well interfere with existing legal uses in the area.

(3) An approved flowmeter shall be installed to measure water withdrawals.

(4) The development of the ground-water source shall be completed within 24 months from the date of permit issuance.

Respectfully submitted,

MANABU TAGOMORI
Deputy Director

APPROVAL FOR SUBMITTAL:

WILLIAM W. PATY, Chairperson
September 8, 1989

Gentry Development Company

Gentlemen:

The Commission on Water Resource Management will be acting on your permit application for Palm Villa Irrigation Well at their meeting on September 13, 1989, at 2:00 p.m. Please note that the meeting will take place in Lihue, Kauai, at the State Office Building, Conference Rooms A and B.

Your application will be included on the agenda as Item 3 (attached).

You or your representative are invited to attend the meeting.

Sincerely,

[Signature]

MANABU TAGOMORI
Deputy Director

ES:bm
Attach.
August 22, 1989

The Honorable William W. Paty, Chairperson
Commission on Water Resource Management
Department of Land and Natural Resources
State of Hawaii

Dear Mr. Paty:

SUBJECT: PUBLIC NOTICE FOR WATER USE PERMIT APPLICATION
PEARL HARBOR WATER MANAGEMENT AREA, OAHU
PALM VILLA IRRIGATION WELL
STATE WELL NO. 2002-13
EWA, OAHU
TMK: 9-1-12:1

Thank you for the opportunity to comment on the public notice for the water use permit application for the Palm Villa Irrigation Well.

Because the well will be for irrigation purposes, the State's Potable Water Systems Regulations, Chapter 20, Title 11, Administrative Rules, are not applicable.

If you have any questions, please contact the Safe Drinking Water Branch at [redacted].

Very truly yours,

JOHN C. LEWIN, M.D.
Director of Health
August 17, 1989

Dear Mr. Paty:

Subject: Your Letter of August 1, 1989 Regarding Public Notice for Water Use Permit Application for the Well 2002-13 for Palm Villa

We have no objections to the use of Well 2002-13 for irrigation. It is a caprock well and should not impact the basal groundwater.

Thank you for letting us review and comment on the well application.

Very truly yours,

KAZU HAYASHIDA
Manager and Chief Engineer
August 8, 1989

Mr. William W. Paty, Chairperson
Commission on Water Resource Management
Department of Land and Natural Resources
State of Hawaii

Dear Mr. Paty,

Subject: Your Letter Regarding Public Notice for Water Use Permit Application for the Use of Well 2002-13 for Palm Villa

As I understand, Well 2002-13 is a caprock well and will not impact basal groundwater in the Pearl Harbor Ground Water Control Area. I fully support such projects matching water quality to the quality required for the particular type of use being proposed, to optimize the water resources of Oahu.

Please keep the Board of Water Supply apprised of wells that are proposed for irrigation use. They may have comments concerning details of the project that may be helpful to you.

Warm personal regards.

Sincerely yours,

FFF:jj
Honorable John C. Lewin, M.D.
Director of Health
Department of Health

Dear Dr. Lewin:

Public Notice for Water Use Permit Application
Pearl Harbor Water Management Area, Oahu

Enclosed for your information is a public notice concerning the Palm Villa Irrigation Well in Ewa, which was published in the Star Bulletin.

If you have any comments, please submit them to us by August 17, 1989.

Very truly yours,

WILLIAM W. PATY

Enc.
Honorable Frank F. Fasi  
Mayor, City and County of Honolulu  
City Hall

Dear Mayor Fasi:

Public Notice for Water Use Permit Application  
Pearl Harbor Water Management Area, Oahu

In accordance with the Department of Land and Natural Resources Administrative Rules, Section 13-171-17 (a), we are sending you a public notice concerning the Palm Villa Irrigation Well in Ewa, which was published in the Star Bulletin.

If you have any comments, please submit them to us by August 17, 1989.

Very truly yours,

WILLIAM W. PATY

Enc.
August 1, 1989

The Meyers Corporation

Gentlemen:

Public Notice for a Water Use Permit Application
Pearl Harbor Water Management Area, Oahu

Attached for your information is a public notice concerning the Palm Villa Irrigation Well in Ewa, which was published in the Star Bulletin.

If you have any comments, please submit them to us by August 17, 1989.

Sincerely,

MANABU TAGOMORI
Deputy Director

ES:bm
Enc.
August 1, 1989

Mr. Kazu Hayashida
Manager & Chief Engineer
Board of Water Supply
City and County of Honolulu

Dear Mr. Hayashida:

Public Notice for a Water Use Permit Application
Pearl Harbor Water Management Area, Oahu

Attached for your information is a public notice concerning the Palm Villa Irrigation Well in Ewa, which was published in the Star Bulletin.

If you have any comments, please submit them to us by August 17, 1989.

Sincerely,

MANABU TAGOMORI
Deputy Director

ES:bm
Enc.
August 1, 1989

Puuloa Homes, Ltd.

Gentlemen:

Public Notice for a Water Use Permit Application
Pearl Harbor Water Management Area, Oahu

Attached for your information is a public notice concerning the Palm Villa Irrigation Well in Ewa, which was published in the Star Bulletin.

If you have any comments, please submit them to us by August 17, 1989.

Sincerely,

MANABU TAGOMORI
Deputy Director

ES:bm
Enc.
August 1, 1989

Mr. William D. Balfour, Jr.
President and Manager
Oahu Sugar Company, Ltd.

Dear Mr. Balfour:

Public Notice for a Water Use Permit Application
Pearl Harbor Water Management Area, Oahu

Attached for your information is a public notice concerning the Palm Villa Irrigation Well in Ewa, which was published in the Star Bulletin.

If you have any comments, please submit them to us by August 17, 1989.

Sincerely,

MANABU TAGOMORI
Deputy Director

ES:bm
Enc.
August 1, 1989

Mr. Samuel L. Keala, Jr.
The Estate of James Campbell

Dear Mr. Keala:

Public Notice for a Water Use Permit Application
Pearl Harbor Water Management Area, Oahu

Attached for your information is a public notice concerning the Palm Villa Irrigation Well in Ewa, which was published in the Star Bulletin.

If you have any comments, please submit them to us by August 17, 1989.

Sincerely,

MANABU TAGOMORI
Deputy Director

ES: bm
Enc.
<table>
<thead>
<tr>
<th>DATE</th>
<th>AD Type</th>
<th>DESCRIPTION</th>
<th>CLASSIFIED</th>
<th>SPACE</th>
<th>RATE OF REFERENCE</th>
<th>AMOUNT</th>
<th>STATE TAX</th>
<th>AMOUNT DUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>MO</td>
<td>DAY</td>
<td>YR</td>
<td>CLASS</td>
<td>LINES</td>
<td>Ti</td>
<td></td>
<td></td>
<td></td>
</tr>
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<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>239.29</td>
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$248.86 *

GOODS/SERVICES REC'D IN SATISFACTORY CONDITION

Signature

Invoice Rec'd  
OK to Pay

Fwd to Div Off (opt.)

Circle PARTIAL

MAKE CHECKS PAYABLE TO: HAWAII NEWSPAPER AGENCY, INC.
INVOICE

Please return one copy with your remittance

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Fwd to Div Off (opt.)
Circle PARTIAL FINAL

MAKE CHECKS PAYABLE TO: HAWAII NEWSPAPER AGENCY, INC.
Please return one copy with your remittance

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**GOODS/SERVICES REC'D IN SATISFACTORY CONDITION**

**Signature**

**Date**

- Invoice Rec'd
- OK to Pay
- Fwd to Div Off (opt.)

**Circle**

- PARTIAL
- FINAL

MAKE CHECKS PAYABLE TO: HAWAII NEWSPAPER AGENCY, INC.
IN THE MATTER OF PUBLIC NOTICE

STATE OF HAWAII,
City and County of Honolulu.

Valerie L. Yanagihara, being duly sworn, deposes and says that she is a clerk, duly authorized to execute this affidavit, of the HAWAII NEWSPAPER AGENCY, INC., agent for HONOLULU ADVERTISER, INC., publisher of THE HONOLULU ADVERTISER and SUNDAY STAR-BULLETIN & ADVERTISER, and agent for GANNETT PACIFIC CORPORATION, publisher of HONOLULU STAR-BULLETIN; that said newspapers are newspapers of general circulation in the state of Hawaii; that the attached notice is a true notice as was published in the afore-referenced newspapers as follows: The Honolulu Advertiser .......... times, on ............................................................

Honolulu Star-Bulletin: two times, on July 27, 1989
August 3, 1989

Sunday Star-Bulletin & Advertiser: ....... times, on ........

and that affiant is not a party to or in any way interested in the above entitled matter.

Subscribed and sworn to before me this 3rd. day of August, 1989.

Notary Public of the First Judicial Circuit, State of Hawaii
IN THE MATTER OF

PUBLIC NOTICE

Application for Water Use Permit
Pearl Harbor Water Management Area, Oahu

An application for a water use permit has been received and is hereby made public in accordance with Administrative Rules 15-171, "Designation and Regulation of Water Management Areas."

Applicant: Gentry Development Company, P.O. Box 295, Honolulu, Hawaii 96809

Date Application Received: June 30, 1989

Source of Water Supply: Caprock aquifer, existing well 2002-131

Location of Well: Palm Villa, Ewa, Oahu. Tax Map Key: 8-2-121

Place of Water Use: Water will be used for the multi-family Palm Villa Project, Ewa, Oahu.

QUANTITY APPLIED FOR: 0.08 million gallons per day

PROPOSED WATER USE: Landscape Irrigation

STATE OF HAWAII,
City and County of Honolulu.

Valerie L. Yanagihara, being duly sworn, deposes and says that she is a clerk, duly authorized to execute this affidavit, of the HAWAII NEWSPAPER AGENCY, INC., agent for HONOLULU ADVERTISER, INC., publisher of THE HONOLULU ADVERTISER and SUNDAY STAR-BULLETIN & ADVERTISER, and agent for GANNETT PACIFIC CORPORATION, publisher of HONOLULU STAR-BULLETIN; that said newspapers are newspapers of general circulation in the state of Hawaii; that the attached notice is a true notice as was published in the afore-referenced newspapers as follows: The Honolulu Advertiser times, on

Honolulu Star-Bulletin: times, on

SUNDAY STAR-BULLETIN & ADVERTISER: times, on

and that affiant is not a party to or in any way interested in the above entitled matter.

Subscribed and sworn to before me this 3rd day of August, A.D. 1989.

Notary Public of the First Judicial Circuit, State of Hawaii
My commission expires March 7, 1992
PUBLIC NOTICE

Application for Water Use Permit
Pearl Harbor Water Management Area, Oahu

An application for a water use permit has been received and is hereby made public in accordance with Administrative Rules 13-171, "Designation and Regulation of Water Management Areas.s"

Applicant: Gentry Development Company, P.O. Box 285, Honolulu, Hawaii 96809

Date Application Received: June 30, 1989

Source of Water Supply: Caprock aquifer, existing well 2003-13

Location of Well: Palm Villa, Ewa, Oahu, Tax Map Key: 9-1-12:1

Quantity Applied for: 0.08 million gallons per day

Proposed Water Use: Landscape Irrigation

Place of Water Use: Water will be used for the multi-family Palm Villa Project, Ewa, Oahu.

Written objections or comments on the application for water use may be filed by any person who has a property interest in any land within the hydrologic unit of the source of water supply or who will be directly and immediately affected by the proposed water use. Written objections shall: (1) state property or other interest in the matter; (2) set forth questions or procedure, fact, law or policy to which objections are taken; and (3) state all grounds for objections to the proposed permit. Send written objections by August 17, 1989, to the Division of Water Resource Management, State of Hawaii, Commission on Water Resource Management, WILLIAM W. PATY, Chairperson.

State of Hawaii
Commission on Water Resource Management
Dated: July 24, 1989
(Hon. S.-B., July 27; Aug. 3, 1989)
(SB-0153)

RECEIVED

STATE OF HAWAII,
City and County of Honolulu.

Valerie L. Yanagihara, being duly sworn, deposes and says that she is a clerk, duly authorized to execute this affidavit, of the HAWAII NEWSPAPER AGENCY, INC., agent for HONOLULU ADVERTISER, INC., publisher of THE HONOLULU ADVERTISER and SUNDAY STAR-BULLETIN & ADVERTISER, and agent for GANNETT PACIFIC CORPORATION, publisher of HONOLULU STAR-BULLETIN; that said newspapers are newspapers of general circulation in the state of Hawaii; that the attached notice is a true notice as was published in the afore-referenced newspapers as follows: The Honolulu Advertiser ......... times, on ............................................................

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July 27, 1989

August 3, 1989

Sunday Star-Bulletin & Advertiser: ............. times, on ............................................................

and that affiant is not a party to or in any way interested in the above entitled matter.

Subscribed and sworn to before me this 3rd day of August, A.D. 1989.

Elise A. Masuyama, Notary Public of the First Judicial Circuit, State of Hawaii
My commission expires March 7, 1992
PUBLIC NOTICE

Application for Water Use Permit
Pearl Harbor Water Management Area, Oahu

An application for a water use permit has been received and is hereby made public in accordance with Administrative Rules 13-171, "Designation and Regulation of Water Management Areas."

Applicant:

Gentry Development Company

Date Application Received: June 30, 1989

Source of Water Supply: Caprock aquifer, existing well 2002-13

Location of Well: Palm Villa, Ewa, Oahu, Tax Map Key: 9-1-12:1

Quantity Applied for: 0.08 million gallons per day

Proposed Water Use: Landscape Irrigation

Place of Water Use: Water will be used for the multi-family Palm Villa Project, Ewa, Oahu.

Written objections or comments on the application for water use may be filed by any person who has property interest in any land within the hydrologic unit of the source of water supply or who will be directly and immediately affected by the proposed water use. Written objections shall: (1) state property or other interest in the matter; (2) set forth questions of procedure, fact, law or policy, to which objections are taken; and (3) state all grounds for objections to the proposed permit. Send written objections by August 17, 1989, to the Division of Water Resource Management, P.O. Box __________, State of Hawaii Commission on Water Resource Management.

Dated: July 24, 1989

WILLIAM W. PATY, Chairperson

**Publication of Legal Public Notice**

Public Notice application for Water Use Permit.
Gentry Development Company, Ewa, Oahu


If you have any questions contact Doris at [REDACTED]

Price List 89-48

---

**Publication of Legal Public Notice**

The State of Hawaii is an EQUAL EMPLOYMENT OPPORTUNITY and AFFIRMATIVE ACTION employer. We encourage the participation of women and minorities in all phases of employment.
July 24, 1989

Gentry Development Company

Gentlemen:

We acknowledge receipt of your water use and pump installation permit applications and accompanying filing fees for Palm Villa Irrigation Well (2202-13).

My staff will contact your staff should there be any questions.

Sincerely,

Makoto Tagomori
Deputy Director

ES:ko
cc: Tom Nance
DIVISION OF WATER RESOURCE MANAGEMENT

FROM: M. Tagomori  DATE: 7-3  FILE IN:

TO: INITIAL:

PLEASE:

__ See Me
__ Take Action By
__ Route to Your Branch
__ Review & Comment
__ Draft Reply
__ Acknowledge Receipt

__ Xerox ___ copies
__ File
__ Mail
__ For Information

REMARKS:

If not, please renew at your earliest convenience.

Please forward this request for the purchase of water use permits.
Mr. William Paty, Chairman  
Commission on Water Resource Management  
Division of Water Resource Management  
Department of Land and Natural Resources

Dear Mr. Paty:

Applications for Water Use and Pump Installation Permits

On behalf of the Gentry Companies, we are submitting the enclosed applications and filing fees for Water Use and Pump Installation Permits for a recently drilled landscape irrigation well. The well is located within the Palm Villa condominium project in Ewa. It would be outfitted with a 135 GPM submersible pump and utilize an estimated 80,000 GPD for landscape irrigation.

The well is drilled into the Puuola Sector of Ewa Limestone (Caprock) Aquifer. It would be the first of up to seven small to moderate capacity well sites that may ultimately be developed within the Ewa by Gentry Project on the west side of Fort Weaver Road. Use of this non-potable source for irrigation follows a BWS-approved water master plan. Drilling permits have previously been obtained for these other well sites.

If you need additional information or clarification, please call me at [redacted] or Randy Ouye of the Gentry Companies at [redacted].

Sincerely,

Tom Nance

Sincerely,

Tom Nance

TN:it

Enclosures

cc: Randy Ouye
**THE GENTRY COMPANIES • HONOLULU, HAWAII**

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**Palm Villa Irrigation Well (2002-13)**

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PLEASE DETACH THIS PORTION AND RETAIN FOR YOUR RECORDS.

---

**THE GENTRY COMPANIES**

PAY: FIFTY DOLLARS AND NO CENTS

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PAY TO THE ORDER OF DEPT OF LAND & NATURAL RESOURCES

GENTRY DEVELOPMENT CO.

WATER USE AND IRRIGATION LIMIT FEES (WELL 2002-13)
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<tr>
<th>1. WATER MANAGEMENT AREA</th>
<th>Pearl Harbor Water Management Area, Caprock Aquifer, Puuloa Sector</th>
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<tbody>
<tr>
<td>2. (a) WELL/DIVERSION OWNER:</td>
<td>Firm Name: Gentry Development Company</td>
</tr>
<tr>
<td>Contact Person: Norman Dyer</td>
<td></td>
</tr>
<tr>
<td>(b) LANDOWNER:</td>
<td>Firm Name: Gentry Development Company</td>
</tr>
<tr>
<td>Contact Person: Norman Dyer</td>
<td></td>
</tr>
<tr>
<td>3. SOURCE TYPE:</td>
<td>□ Spring □ Dike-confined □ Stream □ Perched □ Basal □ Caprock</td>
</tr>
<tr>
<td>4. SOURCE NAME AND NUMBER</td>
<td>Well No. 2002-13 (well or stream diversion name/number)</td>
</tr>
<tr>
<td>5. SOURCE LOCATION:</td>
<td>Island: Oahu Tax Map Key: 9-1-60.7</td>
</tr>
<tr>
<td>Address: Palm Villa - Ewa, Oahu</td>
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<tr>
<td>(Attach a USGS map (scale 1&quot;=2000') and property tax map showing source location referenced to established property boundaries.)</td>
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<tr>
<td>6. LOCATION OF PROPOSED WATER USE (if different from #5)</td>
<td>Same as #5 9-1-50.91-9.97</td>
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<tr>
<td>(Indicate location of water use on same map showing source location.)</td>
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<tr>
<td>7. QUANTITY OF WATER REQUESTED</td>
<td>80,000 (1,391) gallons per day</td>
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<tr>
<td>8. QUALITY OF WATER REQUESTED</td>
<td>□ Fresh □ Brackish □ Salt □ Potable □ Non-Potable</td>
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<td>9. PROPOSED USE</td>
<td>□ Municipal (including hotels, stores, etc) □ Military</td>
</tr>
<tr>
<td>□ Domestic (individual, noncommercial water sys.) □ Industrial</td>
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<tr>
<td>□ Irrigation (specify) Landscaping for Multi-Family □ Other (specify)</td>
<td>Palm Villa Project</td>
</tr>
<tr>
<td>10. DESCRIBE ANY POTENTIAL RESTRICTIONS ON USE (i.e., instream standards variations)</td>
<td>No Restrictions</td>
</tr>
<tr>
<td>11. PROPOSED TIME OF WATER WITHDRAWAL OR DIVERSION</td>
<td>Typically Night a Early Morning</td>
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<tr>
<td>(Indicate hours of operation)</td>
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<tr>
<td>12. PROPOSED METHOD OF TAKING THE WATER</td>
<td>□ Artesian Flow □ Diverted Flow □ Centrifugal Pump</td>
</tr>
<tr>
<td>□ Submersible Pump □ Vertical Turbine Pump</td>
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</tr>
<tr>
<td>13. NO. OF RESIDENTIAL OR COMMERCIAL UNITS TO BE SERVED (specify)</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>14. TOTAL ACRES PROPOSED FOR IRRIGATION</td>
<td>Applicable Type of Crop</td>
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**Remarks, Explanations** Refer to Back Side

---

Owner (print) ___________________________  Landowner (print) ___________________________

Signature ___________________________  Signature ___________________________

Date ___________________________  Date ___________________________

**For Official Use Only:**

Date Received _______________  Hydrologic Unit _______________

Date Accepted _______________  Diversion Works No. _______________

State Well No. _______________
The Honolulu Board of Water Supply has required installation of a dual water system for the Ewa by Gentry project. This well, drilled earlier this year by Roscoe Moss Company, will be outfitted with a 7.5 horsepower, 130 GPM submersible pump. It will be operated by electric timer to irrigate the landscaping of Palm Villa, a multi-family project within Ewa by Gentry. A number of other brackish, caprock wells will provide irrigation water to other areas of Ewa by Gentry.
APPLICATION FOR

WELL CONSTRUCTION PERMIT

PUMP INSTALLATION PERMIT

INSTRUCTIONS: Please print or type and send completed application with attachments to the Division of Water and Land Development. Application must be accompanied by a non-refundable filing fee of $15.00 payable to the Department of Land and Natural Resources. (Filing fee waived for government agencies.) If necessary, phone 3-6564 for assistance.

1. WELL LOCATION

Island Oahu
Tax Map Key 9-1-12:1
Address Palm Villa, Ewa by Gentry - Ewa, Oahu
(Attach a USGS map (scale 1"=2000') and property tax map showing well location referenced to established property boundaries.)

2. WELL OWNER

Firm Name Gentry Development Company
Contact Person Norman Dyer

LANDOWNER

Firm Name Gentry Development Company
Contact Person Norman Dyer

3. PROPOSED CONTRACTOR FOR:

Name Roscoe Moss Company
Address

PROPOSED WORK

Drill New Well
Deepen
Redrill
Install New Pump
Seal
Abandon

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

4. PROPOSED USE

Municipal (including hotels, stores, etc.)
Domestic (individual, noncommercial water systems)
Irrigation (specify) Landscaping of Palm Villa Condominium
Military
Industrial
Other (specify)

5. PROPOSED AMOUNT OF WITHDRAWAL

80,000 gallons per day

6. PROPOSED PUMP INFORMATION

Pump Type: Vertical Turbine
Submersible
Centrifugal
Motor: Diesel
Gas
Electric: 7.5 Rated Horsepower

Rated Pump Capacity 135 gallons per minute (gpm)

Well Owner (print) ____________________________ Landowner (print) ____________________________

Signature ____________________________ Signature ____________________________

Date ____________________________ Date ____________________________

For Official Use Only:

Field Checked By ____________________________ Latitude ____________ Hydrologic Unit

Date ____________________________ Longitude ____________ State Well No. 2002-13
Briefly describe the proposed work:
A submersible pump will be installed in Well 2002-13 drilled earlier this year. Well operation will be automatic, utilizing pressure and flow sensors for starting and stopping.

*(Roscoe Moss has submitted a Driller's Report on the well.)*

*Approximate elevation at time of filing application. Final elevation (msl) by a surveyor licensed by the State must be submitted at start of construction.*
WATER USE PERMIT NO. 157

This report has been prepared in accordance with 13-171-22(b) of the Hawaii Revised Statutes requiring a 20-year review of issued water use permits to determine permit compliance. Following is a summary of permit information, site characteristics, methodology, findings, and recommendations for this State permit file.

Permit Information

Water User: Palm Villa I Association  
Landowner of Source: Palm Villa I Association  
Permitted Withdrawal Rate: 0.080 mgd (Based upon a 12-month moving average)  
Water Management Area: Puuloa  
Island: Oahu  
Aquifer Sector/System: Ewa Caprock/Puuloa  
System Sustainable Yield: 1000 mg/l  
Water Type: Brackish  
Original CWRM Date: September 12th, 1989  
Standard Conditions: 9, 10, 20  
Special Conditions: 117

Water Source

State Well Number(s): 2001-06  
Well Name: Palm Villa 1  
Water Source TMK Number(s): 1st Division, 9-1-050:099  
State Land Use Classification(s): Urban  
County Zoning Classification(s): A-1  
Geographical Coordinates: Latitude 21° 20' 36.6” North  
Longitude 158° 01’ 47.1” West

End Use

End Use TMK Number(s): 1st Division, 9-1-050:091  
State Land Use Classification(s): Urban  
County Zoning Classification(s): A-1  
Beneficial Use Explanation: Use for irrigation of 15 acres of palm villas

BROWN AND CALDWELL
Summary Report for Water Use Permit No. 157
Background Information

There are no consistent monthly water use records on file for State Well No. 2001-06. Although water use was reported sporadically in the past, there have been no reports made to the Commission since mid-2005. Consistent salinity level reporting is also not available. Reference the permit file for additional information on reporting history.

Water Use Permit 157 was approved during the September 12th, 1989 Commission on Water Resource Management meeting. This water source has been in use for approximately 20 years by the Palm Villa 1 Association. Standard conditions 9, 10 & 20 and special condition 117 are the governing conditions for this water use permit. A complete list of all standard and special conditions is given in the final summary report to the Legislature for this 20-year Water Use Permit Review.

Field Investigation Information

Contact: Philip Huth

Site Address:

Brown and Caldwell conducted a field investigation on March 25th, 2008 from 1:00 p.m. until 1:45 p.m. with Mr. Philip Huth, who is the Resident Manager for Palm Villas 1. During this time, type of water usage was verified, GPS coordinates of well head(s) were recorded, flow meter installation and functionality were documented, and property TMK information was verified. The wellhead, its related appurtenances, and water usage area were visually inspected to assess compliance with permit conditions. Visual inspection of water loss/waste was limited to outdoor areas within the usage boundary. Reference the TMK and GIS maps in the permit file for a visual representation of the site.

Summary of Findings for Water Use Permit No. 157

State Well No. 2001-06 is located on TMK parcel 9-1-050:099 at 21° 20' 36.6' N, 158° 01' 47.1” W, with a real time accuracy of ±15 feet. Currently, water is being drawn from the well, metered, and sent into two pressure tanks located at the well site. From the tanks, water is sent to common areas across TMK parcel 9-1-050:091 for irrigation purposes. A control system located in a nearby maintenance building initiates the system. Reference the Appendix for photographs of the previously describe system components.
Based upon visual inspection of the system, all components appear to be in full working order. The permittee demonstrated functionality of an installed flowmeter and provided access to the site grounds where no wasting of water or water loss was observed. Visual inspection also confirmed that water use was within the permitted TMK boundaries. Although there are no consistent water use or salinity records on file for State Well No. 2001-06, there is no specific condition which mandates reporting. Rather, the variation of Standard Condition (10) given in WUP 157 simply states that a ‘flowmeter shall be installed to measure water withdrawals’. As such, the permittee appears to be in compliance with all standard and special conditions given in Water Use Permit 157.

Recommendations

- Address the following discrepancies between the Commission’s electronic database and actual field investigation findings:
  - Change permittee contact to ‘Resident Manager’ at (]
  - Water source TMK parcel number
  - State land use and county zoning classifications
- No disciplinary action required for this WUP since the permittee is in compliance with all standard and special conditions.
20-Year Water Use Permit Review
Water Use Permit No. 157

APPENDIX

Field Investigation Photographs
Figure 1 – State Well No. 2001-06

Figure 2 – Pressure tanks
Figure 5 – Typical end use area
Water Use Permit Survey
(Please complete one survey form for each WUP)

WUP Number: 157
Well Number(s): 2001-06

Contact Information: (of the person who will be present at site visit):
Name: Philip Hughes (Resident Manager)
Fax:
Best time to reach for phone interview: Can be rescheduled

Property Information: (of the water use/well location):

Well Location TMK (list all if multiple wells present):
Water Use TMK (list all if used on multiple lots):

Water Use/Well Information:
Is the water source currently in use? Yes ☑ No ☐
If no, please explain:

What are you currently using the water for? (example: "Use for 45 acres of diversified agriculture and 3 residences"): Irrigation for farming property

Is a flow meter installed and working properly? Unsure Yes ☐ No ☐
If no, please explain:

Do you submit monthly water use reports to the State? Yes ☐ No ☑
If no, please explain: Was not aware

Field Investigations:
A representative from Brown and Caldwell will be visiting wells in your area over the next several months between the times of 9:00 am and 5:00 pm. Each site investigation will take approximately 1-2 hours. Please indicate up to three potential days of the week and availability times for an on-site inspection of the well location and verification of water use compliance. The permit holder must provide Brown and Caldwell with at least five (5) working days notice of the need to reschedule.

Option #1 Date (M-F): ____________ Time: 9:00 am ☐ 12:00 pm ☐ 3:00 pm ☐
Option #2 Date (M-F): ____________ Time: 9:00 am ☐ 12:00 pm ☐ 3:00 pm ☐
Option #3 Date (M-F): ____________ Time: 9:00 am ☐ 12:00 pm ☐ 3:00 pm ☐

Once this survey is returned, a Brown and Caldwell representative will be contacting you to conduct a phone interview and finalize the exact date and time of your field investigation. Please fax/mail completed surveys by March 5th, 2008 and direct any questions related to this survey to Mr. Milo Smith of Brown and Caldwell at:

For Official Use Only
Received: 3/5/08 Information Updated: 3/21/08 Phone Interview Complete: 3/21/08

Notes/Comments:
Phone Interview

WUP Number: __
Well Number(s): __

Contact Name: Philip Huth
Phone Number: 

Attempt #1: Date/Time: 3/21/06 (3:00)
Result: Reached

Attempt #2: Date/Time: N/A
Result: N/A

Well Location TMK(s): 9-1-050: 099
Water Use TMK(s): 9-1-050: 091

Currently using water source? Yes ☒ No ☐
Notes/Comments: Use for irrigation of Palm Villas

How often is the water source being used? Daily ☒ Weekly ☐ Monthly ☐
Notes/Comments:

How long have you been using this water source?: Approx 20 years

Has there been any rezoning of the water source/water use properties? Yes ☐ No ☒
Have you reported the rezoning to the State? Yes ☐ No ☐ N/A ☒
If no, explain:

Scheduled field investigation day/time: 3/25/06 @ 1:00 pm

Notes (Special directions, site conditions, potential hazards, general notes, etc.):

Comments To Make:
• Although we prefer that you do not change your scheduled field investigation time, if you require a reschedule, you must provide Brown and Caldwell with at least five (5) working days notice of the need to reschedule.
• A representative from Brown & Caldwell will be making a reminder phone call to you sometime during the week prior to your scheduled field investigation.
• It is very important that you provide access to the site at the day and time agreed upon. Due to a very tight schedule, if you fail to provide access at the agreed upon time and/or do not reschedule with at least a five (5) working day notice, a makeup date will not be allowed.
• If for some reason you don’t know where your well head is located, it would be a good idea to locate it prior to your field investigation to help make the visit go quickly and smoothly.

Interviewed By: M.S. Date: 3/21/06 Time: 3:00 pm
**Field Investigation Checklist**

**Water Source**
WUP Number: 157
Well Number(s): 2001-06

Well Location TMK(s): 9-1-050:099
Well Head GPS Coordinates:
Latitude: 21° 20' 36.6" N
Longitude: 156° 01' 47.1" W
Well Type: Submersible Pump

Currently using water source? Yes ☑ No ☐

Notes/Comments: Use for irrigation of common areas

Is there a flow meter installed? Yes ☑ No ☐
Is the flow meter operational? Yes ☑ No ☐

Notes/Comments:

**Water Use**
Water Use TMK(s): 9-1-050:091

What is the water being used for? Irrigation

Is the water being used within the permitted boundaries? Yes ☑ No ☐
If no, explain

Is there any observed wasting of water or water loss? Yes ☐ No ☑
If no, explain

Are the permit conditions being complied with? Yes ☐ No ☑
If no, explain: No monthly water use reports being submitted/No salinity levels being reported

**Other**
Photographs of: Water Source ☑ Water Meter ☑ Usage Area ☑ Pump/Motor ☑

General Notes/Comments:

Cedric Chang
Certified Management Inc.

Investigated By: MS. Date: 3/25/06 Time: 1:00 p.m.
Standard Conditions List

1. The water described in this water use permit may only be taken from the location described and used for the reasonable beneficial use described at the location described above. Reasonable beneficial uses means “the use of water in such a quantity as is necessary for economic and efficient utilization, which is both reasonable and consistent with State and County land use plans and the public interest.” (HRS § 174C-3)

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

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

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

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

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

7. The water use permit application and submittal, as amended, approved by the Commission at its <Insert Date> meeting are incorporated into this permit by reference.

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

Variations of Standard Condition (8) are as follows:
   i. Modification of any permit condition shall be approved by the Commission. Modification of any permit condition without notification may result in the revocation of the water use permit.
9. This permit may be modified by the Commission and the amount of water initially granted to the permittee may be reduced if the Commission determines it is necessary to:
   a. Protect the water sources (quantity or quality);
   b. Meet other legal obligations including other correlative rights;
   c. Insure adequate conservation measures;
   d. Require efficiency of water uses;
   e. Reserve water for future uses, provided that all legal existing uses of water as of June, 1987 shall be protected;
   f. Meet legal obligations to the Department of Hawaiian Home Lands, if applicable; or
   g. Carry out such other necessary and proper exercise of the State’s and the Commission’s police powers under law as may be required.

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

10. An approved flowmeter(s) must be installed to measure monthly withdrawals and a monthly record of withdrawals, salinity, temperature, and pumping times must be kept and reported to the Commission on Water Resource Management on forms provided by the Commission on a monthly basis (attached).

Variations of Standard Condition (10) are as follows:
   i. The applicant shall keep monthly pumpage estimates to be submitted annually to the Commission.
   ii. An approved flowmeter(s) need not be installed to measure monthly withdrawals and a monthly record of withdrawals, salinity, temperature, and pumping times must be kept and reported to the Commission on Water Resource Management on forms provided by the Commission on a yearly basis (attached).
   iii. An approved flowmeter(s) must be installed to measure withdrawals and a monthly record of withdrawals, water-levels, salinity, and temperature must be kept and reported to the Commission on a monthly basis in accordance with the Commission's September 16, 1992 action on reporting requirements.
   iv. Approved flowmeters must be installed to measure monthly withdrawals and a monthly record of withdrawals must be kept and reported to the Commission on Water Resource Management on a monthly basis.
   v. An approved flowmeter(s) must be installed to measure monthly withdrawals and a monthly record of withdrawals, salinity, temperature, and pumping times must be kept and reported to the Commission on Water Resource Management on forms provided by the Commission on a quarterly/yearly basis (attached).
   vi. An approved flowmeter shall be installed to measure water withdrawals
   vii. An approved flowmeter(s) must be installed to measure withdrawals; and a record of the withdrawals must be kept and reported to the Department of
Land and Natural Resources, Division of Water and Land Development, P.O. Box 373, Honolulu, HI 96809, on a monthly basis.

viii. Although not stated as a condition of the permit §13-168-7 HAR requires you to keep a record of your monthly total pumpage, water level, salinity, and water temperature. This information must be submitted to the Commission on a regular monthly basis using the enclosed water use report form.

ix. An approved flowmeter shall be installed and the withdrawal from Well 1851-73 shall be recorded and reported to DLNR on a monthly basis by the owner and/or operator of the well.

x. The withdrawals from these wells shall be recorded and reported to the DLNR on a monthly basis by the BWS.

xi. The applicant shall provide and maintain an approved meter or other appropriate device or means for measuring and reporting water usage on a monthly basis.

xii. The applicant shall provide and maintain an approved meter or other appropriate device or means for measuring and reporting total water usage. Water usage shall be measured on a monthly basis and reported to the Commission.

xiii. The applicant shall provide and maintain an approved meter or other appropriate device or means for measuring and reporting total water usage. Water usage shall be measured on a monthly basis and reported to the Commission along with water level and salinity measurements.

11. This permit shall be subject to the Commission's periodic review of the <Aquifer> Aquifer System's sustainable yield. The amount of water authorized by this permit may be reduced by the Commission if the sustainable yield of the <Aquifer> Aquifer System, or relevant modified aquifer(s), is reduced.

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

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

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

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

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

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

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

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

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

20. If the ground-water source does not presently exist, the new well shall be completed, i.e. able to withdraw water for the proposed use on a regular basis, within twenty-four (24) months from the date the water use permit is approved.

Variations of Standard Condition (20) are as follows:
   i. The permit may be revoked if work is not started within six months of the date of issuance or if work is suspended or abandoned for six months. The work proposed in the permit application shall be completed within two years from the date of permit issuance.

21. This permit may not be transferred or the use rights granted by this permit sold or in any other way alienated. Pursuant to HRS § 174C-59 and the requirements of Chapter 174C, the Commission on Water Resource Management has the authority to allow the transfer of the permit and the use rights granted by this permit in a manner consistent with HRS § 174C-59. Any such transfer shall only occur with the Commission’s prior express written approval. Any sale, assignment, lease, alienation, or other transfer of any interest in this permit shall be void.

22. The water use permit granted shall be an interim water use permit, pursuant to HRS § 174C-50. The final determination of the water use quantity shall be made within five (5) years of the filing of the application to continue the existing use.

23. The water use permit shall be issued only after agricultural review.

24. That scheduled adjustments to Oahu Sugar Co. permitted use shall be initiated upon discontinuance of agricultural uses.
25. The issuance of this permit was approved by the Commission on Water Resource Management at its meeting on <Insert Date>.

26. The permit shall be subject to the review by the Attorney General.

27. The permit holder may be required to relinquish this permit at any time or specified time after issuance to the Board of Land and Natural Resources in accordance with Chapter 166 of Title 13.

28. The applicant shall obtain the necessary land acquisition documents from the Hawaii Housing Authority.
Special Conditions List

1. Should an alternate permanent source of water be found for this use, then the Commission reserves the right to revoke this permit, after a hearing.

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

3. The applicant shall contact the Environmental Management Division, State Department of Health, at 586-4304, concerning “GUIDELINES APPLICABLE TO GOLF COURSES IN HAWAII” date <Insert Date & Version #>.

4. The applicant may continue this existing use of ground water within the limits approved by the Commission, and the actual issuance of the interim permit shall not be a reason to interrupt this existing use.

5. The interim water use permit shall cease to become interim and shall be subject to HRS § 174C-55 upon administrative review of the quantity within five (5) years, provided that all conditions of the use (including the review of the quantity which shall not be greater than the amount initially granted) remain the same. Enforcement of the allocation limit shall be stayed pending staff’s review and issuance of a permanent water use permit.

6. As-built drawings of the well and pump, and a complete pumping test record shall be submitted within sixty (60) days.

7. In the event the pump tests show that aquifer boundary conditions do not support the requested withdrawals, the Commission reserves the right to amend this permit, after a hearing, to a level that is supported by the pump tests.

8. The existing use may be continued within the levels approved by the Commission, and the actual issuance of the permit document shall not be a reason to interrupt the approved level of use.

9. The filing of an application by Kukui, Inc. for a new or modified water use permit for the Kualapuu Aquifer in excess of 2.0 mgd (total system withdrawal) shall be just cause for re-consideration of this interim permit by the Commission.

10. Upon completion of a new transmission line for the transport of water use by Well #17, the permit shall be modified to reduce the allocation amount by the additional 79,220 gallons per day allocated for use of the Molokai Irrigation System.

11. Within six (6) months from the date of approval of a water use permit for the well, the applicant shall conduct a feasibility study and submit a report describing
alternative sources of nonpotable water for irrigation uses at the resort area. It is suggested that the developer consider use of dual lines in the subdivisions so that effluent may be used in the existing reuse system. Another consideration is the development of brackish water wells in the Kaluaokki Aquifer system for mixing with the effluent generated at the resort.

13. Within six (6) months from the date of approval of a water use permit for the well, the application shall evaluate the filter back discharges into Kakaako Gulch to determine if excessive preventable waste is occurring and identify possible measures to eliminate or reduce such waste. The evaluation shall be conducted in cooperation with the Commission staff and staff of the Department of Health’s Safe Drinking Water Branch, which regulates the drinking water system.

14. Within six (6) months from the date of approval of a water use permit for the well, the applicant shall 1) implement a leakage control and detection system and compete repairs to prevent such leakage and 2) implement use of xeriscaping and low-flow fixtures.

15. Action on the future use portion of the water use permit application for Well #17 (Well No. 0901-01) is deferred pending the establishment of existing uses in the aquifer. Kukui Inc.’s application for uses in excess of those uses existing on July 15, 1992 will be considered “new” uses and will be taken up by the Commission as soon as other existing use applications have been decided. In the interim, 
   a. The Commission shall recognize that there is disagreement between the applicant’s staff calculations of reasonable-beneficial existing use
   b. The Applicant will have the burden of proof to show within six (6) months reasonable-beneficial existing use calculations that support the applicant’s request as opposed to staff’s calculations.
   c. The Commission’s enforcement of the approved existing use allocation will be suspended for six (6) months.

16. The permittee shall submit a notice of intent and written request to continue the use at least ninety (90) days prior to the expiration of the interim five-year permit.

17. The Commission shall delegate to Maui Department of Water Supply the authority to allocate the use of water for municipal purposes, as provided in §174C-48(b).

18. Maui Department of Water Supply shall be exempt from the requirements for permit modifications, as provided in §174C-57(c).

19. The permittee must meter water use and monitor chloride concentrations on a monthly basis and submit monthly reports of water use and chloride concentrations to the Commission.

20. Standard Condition 16 is waived for saltwater wells.

21. The permit will be revoked if (1) stream monitoring shows that pumping the well reduces stream flow, or (2) the electromagnetic resistivity survey indicates that the
well was drilled into a dike compartment, unless the applicant submits a petition for an amendment to the interim instream flow standard with the well completion report. However, no use of the water may be made without a Pump Installation Permit, which cannot be issued during consideration of the amendment of the interim instream flow standard.

22. The applicant shall present the results of the electromagnetic resistivity survey, pump tests, and stream monitoring to a community meeting as well as to the Commission.

23. A final determination of water use quantity shall be made within five (5) years of the filing date of the application (<Insert Date>) to continue existing use.

24. The applicant shall implement, by December 31, 1995, a biological and hydraulic monitoring program for a minimum 2-year period that: 1) documents the existing operating procedure, 2) seeks to identify the impacts of all operating alternatives on Waikolu Stream, and 3) seeks to identify the effectiveness of weir modifications (Dam No. 1). This program shall incorporate the three new wells, Wells #4-6 (Well Nos. 0855-06, -05, &-04, respectively), which may be pumped within the approved limits, for monitoring and testing purposes only. Further, semi-annual reports summarizing data and preliminary findings shall be submitted to the Commission. It is suggested that the Department of Agriculture work with the State Division of Aquatic Resources and other affected agencies to prepare the monitoring program in light of the difficult technical questions raised by this application. A particular concern is the coordination of this monitoring program with the ongoing National Park Service study by Anne Brasher. A draft of this plan shall be submitted to the Commission staff within ninety (90) days for technical review and comment. Results of the monitoring program shall be used to make recommendations to the Commission on any additional use of the wells, and shall be made readily available to all interested parties.

25. That the Commission approves the well construction permit for the Kamiloloa-Waiola Well (Well No. 0759-01), subject to the standard well construction conditions and the special conditions for the pumping well for the aquifer tests.

26. That the Commission authorizes the Chairperson to approve and issue a pump installation permit upon acceptance of adequate pump test result, subject to the standard pump installation conditions.

27. Should the well be used for back-up domestic supply, applicant is advised to contact DOH or otherwise ensure safe drinking water quality is maintained.

28. The applicant shall follow the agreed monitoring plan.

29. If pesticides used by the applicant are found in ground or surface water and can be traced to the applicant's use, the CWRM may revoke the permit immediately upon such finding.
30. Issuance of the interim permit shall be withheld until the reservation of water for DHHL is set by rule. Applicant may continue this existing use within the approved limits.

31. The applicant shall submit well modification and pump installation permit applications for administrative approval by chairperson prior to beginning any work required to complete well.

32. Should any stream flow impacts result from use, petition to amend interim instream flow standards shall be submitted.

33. Should any dewatering result from use, pumping shall cease immediately.

34. Shall submit accurate schematic diagram of distribution system for the battery of 5 wells.

35. Shall be subject to a 6-month independent audit & monitoring.

36. Final pump capacity shall be determined from pump test results & approved administratively by signature of chair.

37. The permittee shall seek and submit to the Commission within ninety (90) days written confirmation from the Department of Land Utilization of the non-conforming use.

38. Pumping shall cease immediately if the chloride reports show that the brackish water developed in the well exceeds 1,000 mg/l of chloride, unless a variance from the chloride limit has been granted. The authority to approve future variance requests is delegated to the chairperson.

39. The duration of the interim permit shall be:
   a. To July 1, 2006, or
   b. Until treated wastewater is available and acceptable for use, or
   c. Until such time that a significant change in permitted, actual, or projected uses or water supply occurs.

40. Action on any interim permit may be initiated by the Commission or any permittee upon letter request or pursuant to §174C-57 Haw. Rev. Stat. (Modification of permit terms).

41. This permit is approved under the assumption that wastewater will become available for reuse as an alternative supply source.

42. Require adherence to the chloride sampling protocol and the submittal of weekly chloride data. The authority to approve variances from the weekly reporting requirement is delegated to the Chairperson.

43. Require adherence to the Conservation Conditions.
44. In the event a water shortage is declared by the Commission, permittees in the <Insert Aquifer System> shall comply with the <Insert Aquifer System> water shortage plan adopted by the Commission.

45. The permittee shall contact the Department of Health, Clean Water Branch and obtain the necessary discharge permit(s).

46. Permit shall be interim and replaces existing WUP for 2051-07 & 11.

47. Applicant shall submit an acceptable archaeological inventory survey report to DHP. If historic sites affected, a plan to mitigate these affects must be accepted by DHP and completed by applicant.

48. Should the well be used for back-up domestic supply, applicant is advised to contact DOH or otherwise ensure safe drinking water quality is maintained.

49. (The permittee) may report monthly pumpage on yearly basis.

50. Prior to issuance of any permits, must submit filing fee for after-the-fact pump installation permit.

51. The term of this permit shall be twenty years from the date of issuance of the permit with a five-year Board review to determine compliance with the provisions of the permit.

52. The amount of water to be withdrawn under this permit shall be 0.19 mgd, averaged annually, for irrigation use. This permitted use of 0.19 mgd when added to a preserved use of 0.27 mgd amounts to a total of 0.46 mgd, averaged annually, which may be withdrawn from well 1646-01.

53. The use authorized by the permit must not interfered substantially and materially with existing individual household uses and existing uses.

54. The use of this well shall be subject to the shortage and emergency powers of the Board of Land and Natural Resources (BLNR).

55. This permit may be suspended or revoked, in accordance with Chapter 166.

56. The permit holder may be required to relinquish this permit to BLNR, in accordance with Chapter 166

57. The withdrawal from Well 1646-10 shall be recorded and reported to DLNR on a monthly basis by the permittee.

58. In the event that emergency water use occurs, the permittee shall notify the Commission in writing within one (1) day of pumping, to in form the Commission as to the nature of the emergency and the expected duration of the emergency. A water
use report shall also be filed pursuant to Standard Condition 10 and Administrative Rule 13-168-7.

59. Note DOH's requirements related to non-potable water systems (attached to original permit).

60. Standard Condition 16 requiring the submittal of a water shortage plan is waived.

61. All non-potable spigots and piping shall be clearly labeled as “DO NOT DRINK, NON-POTABLE” to prevent direct human consumption.

62. Standard Condition 10 is modified. Due to the inability to take water level measurements, the requirement to measure monthly water levels is waived. In addition, as long as the U.S. Geological Survey is collecting and analyzing the chloride content of the well water, the requirement for the permittee to measure and report chlorides is also waived.

63. Well elevation components must be surveyed by a licensed surveyor and this information must be submitted to commission prior to issuance of permanent permit.

64. The permittee shall obtain approvals from the Department of Health and the U.S. Environmental Protection Agency prior to use of the water.

65. This water use permit, WUP No. <Insert #>, shall supersede WUP No. <Insert #>.

66. WUP No. <Insert #> is revoked

67. Standard Condition 17 is waived.

68. Standard Condition 22 for interim water use permits shall not apply.

69. To supplement our records, we request that you provide a map of the Galbraith Est. lands west of Wahiawa (2100 ac+-) and the associated TMK's for use area.

70. Deferred action on portion requested for golf course irrigation pending further refinement of irrigation requirement and a feasibility study for utilization of surface water sources, including Wahiawa Reservoir.

71. Written justification be provided for any 'cushion' of 0.5 mgd.

72. The water use permit shall be an interim permit. The duration of the interim permit shall be until treated wastewater is available and acceptable for use. The permittee shall continue discussions with Honolulu Board of Water Supply regarding the use of reclaimed water.

73. The permittee is put on notice that this is a qualified approval in that this permit may be modified or revoked prior to the expiration of the interim permit if the
Commission decides that the use of additional basal ground water for dust control and landscape irrigation is not reasonable-beneficial use.

74. The permittee encouraged to use drought-tolerant landscaping to conserve water.

75. Should the applicant provide written evidence that the county DHCD approves a 201E exemption for the elderly affordable housing project then the applicant may modify a corresponding portion of their existing aquacultural use to be used by the exemption approved project within the Commission approved water use permit limits under recommendation 5.

76. The applicant shall obtain a water lease/permit from Land Division prior to actual use of the well water.

77. Require the permittee to sign a contract by May 14, 1998 with the City Department of Wastewater Management to buy and use 0.400 mgd of R-1 water for a corresponding reduction in allocation for Well Nos. 1900-02, 17 to 20, and 1901-03.

78. Standard Condition 9 is waived.

79. Standard Condition 10 is modified to exempt the permittee from monthly measurements of salinity and temperature.

80. Standard Condition 10 is waived.

81. Applicant must seek a determination from BLNR and Land Mgt Div as to whether water license required. If required, license must be obtained prior to issuance of permit. If not, permit will be issued w/out further action.

82. Commission defers action on use in excess of 452,000 gpd pending additional info from BWS and further staff analysis.

83. The permit shall be subject to the Commission’s sustainable yield review by December 1990.

84. The Commission shall delegate to the Honolulu Board of Water Supply the authority to allocate the use of water for municipal purposes, in accordance with §174C-48(b) HRS.

85. Honolulu Board of Water Supply shall be exempt from the requirements of permit modifications as provided in §174C-57.

86. BWS must participate in discussions, to be coordinated by Commission Staff, regarding a monitoring program to address impacts to Kaneohe Bay water quality, prior to any action on applications for future municipal uses.

87. A pump installation permit application must be made and approved prior to the installation of a permanent pump.
88. The water withdrawn shall be 0.7 mgd for municipal use.

89. The installed pump capacity of the well shall not be more than 700 gpm or 1.01 mgd.

90. The term of permit shall automatically expire twelve months from the date of issuance.

91. The Honolulu Board of Water Supply may continue to submit monthly water data on their own form, provided that the data are submitted in a format that is acceptable to the Commission staff.

92. Standard Condition 7 shall not apply.

93. Standard Condition 22 shall not apply.

94. Standard Condition 10 is modified to exempt the permittee from monthly measurements of salinity and temperature.

95. This permit shall be subject to conditions providing for stream restoration if the Commission determines that additional water should be returned to the streams.

96. HECO 1 mgd for industrial use

97. Campbell Estate 1 mgd for municipal use through BWS, by separate agreement with HECO

98. BWS 1 mgd for municipal use.

99. The permit shall be subject to the Commission’s sustainable yield review by <Insert Date>.

100. The applicant shall obtain the current version of the Department of Health’s Guidelines Applicable to Golf Courses in Hawaii. Where relevant and viable, items of the guidelines should be implemented and sustained appropriately. To obtain the current version, contact the Safe Drinking Water Branch, Environmental Management Division at [Contact Information] (Honolulu).

101. The future use portion of the application shall be deferred until existing uses in the Koolauloa area are established.

102. The water to be withdrawn under this permit shall be a total of 0.03 mgd (0.02 mgd preserved plus an additional 0.01 mgd permitted use), averaged annually, for domestic and irrigation use

103. Existing well 1851-09 shall be properly sealed by a licensed drilling contractor. A well modification permit application, enclosed, shall be submitted to the Department for approval of the well sealing. A filing fee for sealing the well will not be required.
104. The permittee is required to test the source using a certified private laboratory and submit the test results to the Commission within three (3) months. The Commission will then forward the results to the Department of Health for their review. The Department of Health recommends that the well be routinely tested for microbiological and chemical parameters thereafter.

105. The permittee is required to submit a completed Registration of Well and Declaration of Water use by <Insert Date>.

106. The permittee shall contact the Department of Health for a written determination on the status of their water system and comply with any Department of Health requirements for monitoring and testing.

107. In the event that the original spring source decontaminates, the new well authorized will be shut down.

108. That within each aquifer the total permitted use shall not exceed the sustainable yield.

109. That any water available for allocation shall be for in-district use.

110. That scheduled reductions to Oahu Sugar Co. permitted use shall be initiated upon final termination of an Osco lease or sub-lease, whichever occurs later.

111. That permits for water use issued in accordance with the proposed schedule shall be interim permits subject to review and adjustment by 1995.

112. That the permit shall be an interim permit for a new use which is afforded to existing users as specified in §13-171-20.

113. That the original allocation of 0.200 mgd shall be taken to hearing for possible revocation at a later date to complete the transfer of the water use permit entirely to Well No. 3407-02. This revocation would reduce the current allocation afforded to the Kunihiro Well (Well No. 3406-06) to zero.

114. This allocation incorporates the unspecified domestic needs of the applicant and therefore necessitates a single meter be installed at the well.

115. Should any impacts to nearby wells or streams be established by the use of this well, the applicant shall address these issues to the satisfaction of the Commission.

116. If an economically feasible nonpotable source is identified, the applicant shall convert to the alternative nonpotable source.

117. The permit shall be subject to the Chairperson's approval of a water use plan recommending possible measures to prevent or minimize saltwater contamination and establish courses of action to follow should the aquifer become to saline to use.
118. Permittee shall provide the necessary end-use information on the 10th residence to allow regulation of the use under Chapter 174C.

119. Standard Conditions 10 & 18 shall not apply.

120. Standard Condition 10 is modified to exempt the permittee from the requirement to install a flowmeter. Salt water withdrawals may instead be estimated based on pumping capacity and run time.

121. The applicant shall review the existing year long period of pumpage and streamflow data and provide analysis on ground and surface water interaction. Deadline is January 25, 1994.

122. The water use permit for Well Nos. 2301-27 to -32 for 0.75 mgd (WUP No. 419) shall be revoked upon issuance of a pump installation permit for the well.

123. The permittee shall use mulching to decrease evaporative losses and manage irrigation scheduling to minimize water demand.

124. The permittee shall submit a detailed agricultural plan to support any future water use permit application for increased agricultural use at this parcel.

125. If not already obtained, the permittee shall seek and obtain any necessary permits from the Department of Health for the proposed discharge to Malaekahana Stream.

126. Standard Condition 10 is modified to waive the requirement for installing a water meter on Well Nos. 2358-21, 22, and 29. The permittee shall install a water meter on Well No. 2358-26 to measure total monthly flow through the discharge line. This quantity should then be assumed to be the rate of natural flow from the other three wells for monthly reporting purposes.

127. The permit shall be effective upon submittal of documentation by Navy that it has met the DOH requirements for a public system.

128. This WUP shall be subject to Army's application for a WUP to reduce the permitted use of the Army's Schofield Shaft (2901-02 to 04, 10) by 0.208 mgd to a new total of 5.648 mgd. The Army's application shall be submitted within 60 days after the approval of this WUP or this WUP shall be void. Approval of the modification request shall be obtained from the CWRM prior to use of Well No. 3100-02 and issuance of this WUP.

129. Navy shall submit an after-the-fact PIPA, and approval of the permit shall be obtained prior to use of the well.

130. The well shall not be used for drinking water purposes unless it is properly tested and treated.
131. This permit is approved subject to reclaimed water becoming a practical alternative and provided that the Department of Health approves the reuse application.

132. Should any opae ula be recovered in the well water, the permittee shall notify the Division of Aquatic Resources and provide specimens to the Division of Aquatic Resources for analysis.

133. If a single meter at the well is used, the Commission shall allow an additional 1,000 gallons per day to the water use permit amount for the domestic needs of two residences, although a permit for individual domestic consumption is not required. Otherwise, the applicant must provide a meter to separately measure the irrigation consumption.

134. This permit is approved under the requirement that conversion to either: 1) treated wastewater becoming available for reuse as an alternative supply source, provided that Department of Health concerns over the use of treated effluent over the potable water aquifer have been addressed; and/or 2) other nonpotable source becoming available will occur in a timely manner.

135. These permits shall be subject to a review of actual use within four years for possible modification of the permitted amount.

136. The permit shall be reviewed in two (2) years for possible additional revocation due to nonuse.

137. The allocation is based on the projects listed in Exhibit 5 (of Item 10 of the May 20, 1998 Staff Submittal), except for the Queen’s Beach GC (TMK 139-11-2,3), Lot 9 (TMK 139-17-51), and Varsity Place (TMK 128-24-35).

138. Kamehameha Schools Bishop Estate/Honolulu Board of Water Supply shall transfer the water use permit within ninety (90) days of the effective date of the transfer of the pump station to the Honolulu Board of Water Supply, pursuant to §174C-59 Hawaii Revised Statutes.

139. The permittee shall ensure that the water is recycled by either directing it into the Waiahole Ditch for use by downstream farmers (subject to the approval of the Agribusiness Development Corporation’s Board) or into Waikele Farm’s existing irrigation system.

140. The permittee shall file a completed application to modify WUP No. 758 to reduce the allocation by 0.100 mgd within 60 days. If a completed water use permit modification application is not received within 60 days from this submittal’s date, then the subject water use permit application (WUPA No. 767) shall be deemed denied without prejudice without the need for another hearing.

141. The water withdrawn shall be for municipal use. No improvements to the existing sources are required as the existing source capacities are greater than the increase.
142. Water license must be determined through LM.

143. Proposed other uses will be considered at a later date.
WUP 157 - 12 Month Moving Average

- MGD
- MAV12
- WUP
Chairperson and Members
Commission on Water Resource Management
State of Hawaii
Honolulu, Hawaii

Gentlemen:

Gentry Development Company
Application for Water Use Permit
Palm Villa Irrigation Well, Ewa, Oahu

Applicant: Gentry Development Company

Action Requested: Approval of a water use permit and a pump installation permit to use 0.08 million gallons per day (mgd) from Palm Villa Irrigation Well (Well No. 2002-10) for landscape irrigation.

Place of Use: Water developed by this well will be used for landscape irrigation for the Palm Villa condominium project in Ewa.

Well Location: The well is located within the project area at Tax Map Key: 9-1-12:1 (see attached map). The well taps the Ewa caprock aquifer.

Impact on Surrounding Wells: The Palm Villa Irrigation Well is one of seven brackish water wells being developed in the Ewa caprock aquifer. Five are to be used for multi-family landscape irrigation to meet the Honolulu Board of Water Supply's dual system requirement. The remaining two will be used for golf course irrigation. The combined draft is expected to be approximately 1.39 mgd. Initial quantities and qualities from the seven sources are expected to be adequate. However, removal of sugar cane acreage will reduce recharge to the caprock aquifer resulting in increased chloride concentrations. The wells are expected to become increasingly saline unless steps are taken to increase recharge to the aquifer.

'Public Notice': In accordance with DLNR Administrative Rules, a public notice was published in the Star Bulletin on July 27 and August 3, 1989. In addition, copies of the public notice were sent to the Mayor's office, the Department of Health, Oahu Sugar Company, the Estate of James Campbell, The Meyers Corporation, and Puu Loa Homes, Ltd. Written objections to the proposed permit were to be submitted to the Commission by August 17, 1989. No objections have been filed.

ITEM 3
RECOMMENDATION:

That the Commission approve the issuance of a water use permit and a pump-installation permit to Gentry Development Company for 0.08 mgd of brackish caprock water for landscape irrigation use from Palm Villa Irrigation Well.

The approval shall be subject to the requirements of other applicable laws, rules, and ordinances, and the following conditions:

(1) The permit shall be subject to the Chairperson's approval of a water use plan recommending possible measures to prevent or minimize saltwater contamination and establish courses of action to follow should the aquifer become too saline to use.

(2) The Commission may reduce the amount initially granted the permittee should long-term pumpage from the well interfere with existing legal uses in the area.

(3) An approved flowmeter shall be installed to measure water withdrawals.

(4) The development of the ground-water source shall be completed within 24 months from the date of permit issuance.

Respectfully submitted,

MANABU TAGOMORI
Deputy Director

APPROVAL FOR SUBMITTAL:

WILLIAM W. PATY, Chairperson
PROJECT TITLE  EWA CAPROCK GROUNDWATER QUALITY SURVEY

WELL DESCRIPTION:
Well Name: Palm Villa.1
Well I.D. No.: 3-2001-06
Well Location: Lat. 21° 20' 51" N
Long. 158° 01' 53" W
Well Owner: Gentry Pacific
Contact Person: Reggie Valdez
Type: Irrigation
Flow ____________________________
Remarks: _________________________

WELL CONSTRUCTION:
Casing Stick Up (A) __________ ft.
Ground Elevation (B) 41 ft.
Diameter of Boring (C) 16 in.
Total Depth of Boring (D) 60 ft.
Grouted Interval (E) 30 ft.
Filter-Pack Interval (F) ________ ft.
Msr'd Dpth to Wtr Tbl/ Approx Elev/ Elev Per DLNR Indx (G) _____/_____ 1.0 ft.

<table>
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<th>LENGTH (FT)</th>
<th>TOP/BOT.ELEV.(FT)</th>
<th>MATERIAL</th>
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<td>41/1</td>
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<tr>
<td>Perforated Casing (I)</td>
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<td>20</td>
<td>1/-19</td>
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<tr>
<td>Open Hole (J)</td>
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JOURNAL OF SAMPLE COLLECTIONS:
Date December 1, 1992
Time 12:45 P.M.
Person JT, KW, MB
Weather Fair
Remarks Sampled at well head

DRAFT
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<tr>
<th>Date of Sample Collection</th>
<th>12/01/92</th>
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<tbody>
<tr>
<td><strong>ANALYTICAL PARAMETERS</strong></td>
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<tr>
<td>Total Dissolved Solids (mg/l)</td>
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<tr>
<td>Total Suspended Solids (mg/l)</td>
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<td>Hardness (mg equiv. Ca CO3/l)</td>
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<td>Alkalinity (as Ca CO3) (mg/l)</td>
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<td>Total Phosphorus (mg/l)</td>
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<td>Orthophosphate (mg/l)</td>
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<td>Total Organic Carbon (mg/l)</td>
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<td>Biochemical Oxygen Demand-5 Day (mg/l)</td>
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<td>Chemical Oxygen Demand (mg/l)</td>
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<td>Total Coliform (COL/100ml)</td>
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<tr>
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<td>1,1,1-Trichloroethane (ppb)</td>
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<td>Benzene (ppb)</td>
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<tr>
<td>1,2-Dichloroethane (ppb)</td>
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<tr>
<td>Trichloroethylene (ppb)</td>
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<tr>
<td>p-Dichlorobenzene (ppb)</td>
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<tr>
<td>1,2,3-Trichloropropane (ppb)</td>
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<tr>
<td>cis-1,2-Dichloroethene (ppb)</td>
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<td>1,2-Dichloropropane (ppb)</td>
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<tr>
<td>Toluene (ppb)</td>
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<tr>
<td>o-Dichlorobenzene (ppb)</td>
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<td>m-Xylene (ppb)</td>
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<td>p-Xylene (ppb)</td>
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<td>Bromomethane (ppb)</td>
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<tr>
<td>Chloroethane (ppb)</td>
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</table>

(a) - Fecal Positive  
(b) - Fecal Negative  
(c) - Sample Holding Time Exceeded  
(d) - Lost in Extraction  

TNTC - Too Numerous To Count  
NF - None Found
## PALM VILLA 1

### Date of Sample Collection

| Date of Sample Collection | 12/01/92 |

### ANALYTICAL PARAMETERS

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unit</th>
<th>Result</th>
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<tr>
<td>Methylene Chloride</td>
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<td>2,2-Dichloropropane</td>
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<td>Chloroform</td>
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<td>Bromodichloromethane</td>
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<tr>
<td>cis-1,3-Dichloropropene</td>
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<tr>
<td>1,1,2-Trichloroethane</td>
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<td>4-Chlorotoluene</td>
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<td>1,3-Dichlorobenzene</td>
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<td>1,2-Dibromo-3-Chloropropane</td>
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### RESULTS

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<td>TNTC - Too Numerous To Count</td>
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<tr>
<td>NF - None Found</td>
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<td></td>
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(a) - Fecal Positive
(b) - Fecal Negative
(c) - Sample Holding Time Exceeded
(d) - Lost in Extraction
### PALM VILLA 1

<table>
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<tr>
<th>Date of Sample Collection</th>
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<td><strong>RESULTS</strong></td>
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<td>Aldicarb</td>
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<td>Aldicarb Sulfone</td>
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<td>Aldicarb Sulfoxide</td>
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<td>Oxamyl</td>
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<td>Methomyl</td>
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<td>3-OH Carbofuran</td>
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<td>Propoxur</td>
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<td>Carbaryl</td>
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<td>Dalapon</td>
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<td>Mevinphos</td>
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(a) - Fecal Positive  
(b) - Fecal Negative  
(c) - Sample Holding Time Exceeded  
(d) - Lost in Extraction  

TNTC - Too Numerous To Count  
NF - None Found
November 21, 1994

Gentry Homes, Ltd.
560 N. Nimitz Highway, Second Floor

Attn: Mr. Jon Young, P. E.

Gentlemen:

On Friday, November 18, 1994 we completed the elevation survey of six (6) wells within the Ewa by Gentry Development at Honouliuli, Ewa, Oahu, Hawaii.

The origin of the benchmark for this project is the City and County Street Monument at the intersection of Farrington Highway and Makakilo Drive. The elevation being 115.79 msl. This datum has been used by Tom Nance, Water Resources Engineering for their studies of the Ewa Plain. We used a supplemental benchmark set by our firm during the original study for the Estate of James Campbell. Said benchmark is a ":NO" cut on the Waianae/makai end of the bridge south of the Ewa Municipal Golf Course on Fort Weaver Road.

The survey was run using a Wild NA3000 precise level with digital readout. The error of our run over 6 miles was 0.01 feet.

The results are as follows:

<table>
<thead>
<tr>
<th>Description</th>
<th>Elevation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supplemental benchmarks, &quot;NO&quot; cut on curb fronting guard shack on Fort Weaver at Kolowaka</td>
<td>29.07 msl</td>
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<tr>
<td>Sun Terr well (State No. 2001-05)</td>
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<tr>
<td>&quot;NO&quot; top of vault</td>
<td>36.12 msl</td>
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<tr>
<td>top of sounding tube</td>
<td>31.99 msl</td>
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<td>Sunrise Well (State No. 2001-04)</td>
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<td>&quot;NO&quot; top of vault</td>
<td>38.14 msl</td>
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<td>top of sounding tube</td>
<td>34.06 msl</td>
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### Description

<table>
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<th>Units</th>
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<td>msl</td>
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<td>msl</td>
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<td>Palm Court Well (State No. 2002-12)</td>
<td>40.11</td>
<td>msl</td>
</tr>
<tr>
<td>&quot;☐&quot; top of vault</td>
<td>35.89</td>
<td>mls</td>
</tr>
<tr>
<td>top of sounding tube</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Please call, should you have any questions on this matter.

Very truly yours,

WALTER P. THOMPSON, INC.

[Signature]

James R. Thompson  
President

JRT:hf
CHECKLIST

WELL CONSTRUCTION and PUMP INSTALLATION PERMITS

WELL NAME or LOCATION: Palm Villa Irrigation Well
WELL NUMBER: 2002-12
OWNER or OPERATOR: Gentry Development Company
(Norman Dyer)

Date application received: 6/30/88
Date acknowledged receipt: 
Date of request for more information: 
Date application accepted: 
Suspense date (90 days): 
Date filing fee deposited: 7/21/89
Date sent to DOH for comments: NA
Date comments received from DOH: NA
Date application approved or disapproved: 
Date applicant notified of decision: 8/8/88

REMARKS: Water Use Permit first (same Comp. mtg.)
<table>
<thead>
<tr>
<th>Well #</th>
<th>Use Paint?</th>
<th>Paint Name</th>
<th>GPM</th>
<th>HP</th>
<th>Volt</th>
<th>Ph</th>
<th>TDH</th>
<th>Date Installed</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001-06</td>
<td>Yes</td>
<td>Palm Villa I</td>
<td>100</td>
<td>10</td>
<td>230</td>
<td>1φ</td>
<td>293</td>
<td>Sept 99</td>
</tr>
<tr>
<td>2002-12</td>
<td>Temp Use</td>
<td>Palm Court 3</td>
<td>105</td>
<td>5</td>
<td>230</td>
<td>1φ</td>
<td>130</td>
<td>Apr 92</td>
</tr>
<tr>
<td>2001-03</td>
<td>Temp Use</td>
<td>Geiger Park</td>
<td>80</td>
<td>7½</td>
<td>480</td>
<td>3φ</td>
<td>200</td>
<td>Aug 92</td>
</tr>
<tr>
<td>2001-05</td>
<td>Temp Use</td>
<td>Palm Villa II</td>
<td>120</td>
<td>7½</td>
<td>230</td>
<td>1φ</td>
<td>140</td>
<td>Rmp In No Elec.</td>
</tr>
<tr>
<td>2001-07</td>
<td>Temp Use</td>
<td>Arbors</td>
<td>100</td>
<td>7½</td>
<td>208</td>
<td>3φ</td>
<td>180</td>
<td>LMC not started yet</td>
</tr>
</tbody>
</table>

Note: All measurements are in feet unless otherwise specified.
### Description
- **Date of report**: July 10, 1990
- **Person filing report**: L.H.
- **Date received**: 8:45

#### A. Owner
- **Name**: Gentry
- **Well Name**: Palm Court
- **ISLAND**: Oahu

#### B. General Location
- **Location**: Ewa Gentry

#### C. Drilling Company
- **Name**: Roscoe Moss Company

#### D. Type of Rig
- **Tool**: Cabled tool
- **Drilling completed**: 7/90

#### E. Elevation, m/s
- **Height of drilling platform above ground surface**: ft.
- **Top of drilling platform**: ft.
- **Bottom of drilling platform**: ft.

#### F. Hole Size
- **Depth below drilling platform**: ft.
- **Diameter**: inch

#### G. Casing Installed
- **Type**:...in. I.D. x...312 in. wall solid section to 40 ft.
- **in. I.D. x...312 in. wall perforated section to**: 60 ft.

#### H. Annulus
- **GROUTED**:
- **Gravel packed**: ft.

#### I. Permanent Pump Installation
- **Pump type, make, serial no.**: g.p.m.
- **Motor type, H.P., voltage, r.p.m.**:
- **Depth of pump intake setting**: ft.
- **Depth of bottom of airline**: ft.

### Hydrology
- **Initial Water Level**: 40 ft.
- **Initial Chloride**: ppm
- **Sampling Date**: June 27, 1990

#### L. Pumping Tests

<table>
<thead>
<tr>
<th>Date</th>
<th>Start water level</th>
<th>End water level</th>
<th>Depth of well</th>
<th>Rate (gpm)</th>
<th>Draw-down (ft.)</th>
<th>Cl (ppm)</th>
<th>Temp. °F</th>
<th>Elapsed Time (hours)</th>
</tr>
</thead>
<tbody>
<tr>
<td>July 3, 1990</td>
<td>40' 2&quot;</td>
<td>40' 2&quot;</td>
<td>60'</td>
<td>340</td>
<td>1.38</td>
<td>600</td>
<td>to</td>
<td></td>
</tr>
<tr>
<td>10:45 to 11:45</td>
<td>to</td>
<td>to</td>
<td>to</td>
<td>to</td>
<td>to</td>
<td>to</td>
<td>to</td>
<td></td>
</tr>
<tr>
<td>11:45 to 4:30</td>
<td>500</td>
<td>5.45</td>
<td>600</td>
<td>to</td>
<td>to</td>
<td>to</td>
<td>to</td>
<td></td>
</tr>
</tbody>
</table>

### Subsurface Formation

#### M. Driller's Log

<table>
<thead>
<tr>
<th>Depth, ft.</th>
<th>Rock Description &amp; Remarks</th>
<th>Water Level, ft.</th>
<th>Depth, ft.</th>
<th>Rock Description &amp; Remarks</th>
<th>Water Level, ft.</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 33</td>
<td>Brown Clay</td>
<td>to</td>
<td>to</td>
<td>Brown Clay</td>
<td>to</td>
</tr>
<tr>
<td>33 to 60</td>
<td>Coral</td>
<td>to</td>
<td>to</td>
<td>Coral</td>
<td>to</td>
</tr>
</tbody>
</table>

### N. Remarks

---

### Instructions
- **Send three(3) copies to**: Manager-Chief Engineer, Division of Water and Land Development, P.O. Box 373, Honolulu, Hawaii 96809.

---

### For Official Use
- **Latitude**: 21° 20' 51"
- **Longitude**: 159° 01' 53"
- **Well No.**: 2001-06
PUMPING TEST RECORD

for

ELWA GENTuKU-Puna Coast Well 2001/06

(Name) (No.)

Island 12-90 R Project or Job No. 7/8 1990

Description of Well--
1. Elevation: ground surface 40.7 ft., top of casing 59 ft., rotary table ___ ft., referenced to ___ bechmark.
2. Total depth of well 58.5 ft.; or ___ ft. elevation, msl
3. Static water level on ___ ft. depth, perforated to 58.5 ft. depth
4. Measured ___ ft. elevation msl

Description of Pump and Pump Setting--
5. Type: ___ stage bowl assembly
6. Gasoline diesel, electric, power with ___ horsepower
7. Shaft speed: ___ rpm at ___ qpm flow
8. Depth of pump intake: ___ ft. below ground; or ___ ft. elev. msl
9. Depth of airline bottom: ___ ft. below ground; or ___ ft.elev. msl
10. Center of gage: ___ ft. elev., msl. Flow measured with ___ meter

Test conducted by ___

<table>
<thead>
<tr>
<th>Date &amp; Time</th>
<th>Sample No.</th>
<th>Pumping rate (gpm)</th>
<th>Airline flow (feet)</th>
<th>Drawdown (feet)</th>
<th>Chlorides (ppm)</th>
<th>Temp. (°F)</th>
<th>Cond. (mmhos 25°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>7/31/90</td>
<td>10:30</td>
<td>4.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10:45</td>
<td>3.8</td>
<td>1.46</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10:55</td>
<td>3.6</td>
<td>1.92</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11:20</td>
<td>3.4</td>
<td>1.38</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11:45</td>
<td>2.4</td>
<td>3.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12:00</td>
<td>2.2</td>
<td>4.62</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12:30</td>
<td>1.8</td>
<td>5.58</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1:00 P</td>
<td>1.45</td>
<td>5.89</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1:05</td>
<td>2.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1:15</td>
<td>1.6</td>
<td>5.54</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2:00</td>
<td>1.6</td>
<td>5.54</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3:00</td>
<td>1.6</td>
<td>5.54</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4:00</td>
<td>1.6</td>
<td>5.54</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4:30</td>
<td>1.6</td>
<td>5.54</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4:32</td>
<td>4.2</td>
<td>7.46</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4:33</td>
<td>4.2</td>
<td>7.46</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4:34</td>
<td>4.2</td>
<td>7.46</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4:45</td>
<td>4.2</td>
<td>7.46</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Sheet No. 1 of 1 Sheets
Test Pump Set 50'
500 GPM
5.54' Drawdown
1000 Chlorides

16' Bore hole
12' Casing + Screen
22' Surface Seal

22' Cement Basket + Heat Cement

38.5' - 5/16" x 12" Blank Casing

59.5' - 20' x 5/16" x 12" Sutter Screen

60' - Bottom of Bore Hole 16'
**Drilling Log**

- **Date:** June 23, 1990
- **Job No.:** 66-746
- **Hole No.:** 1001-6
- **Elevation:** 117 ft.

**Customer:** Bank Engineering

**Location:** Covina Road Cabin

**Driller:** Jerry Brown
- **Hrs.:** 24
- **Rig:** 281

**Helper:** R. W. Neff
- **Hrs.:** 24
- **Gas:** Oil

**Helper:** Frank C. Feenish
- **Hrs.:** 24
- **Repairs:**

**Arv. Job:**
**Lw. Job:**
**Hrs.:**

**Bit-Size:**
**Type:**

**Casing-Size:**
- **in., Length in hole:**
- **ft., in., Amt. Perforated:**

**Depth Start:**
- **ft., Depth Stop:**
- **ft., Feet Drilled:**

**Water Levels:**
- **Time M ft., Time M ft.**

**Measurements**

<table>
<thead>
<tr>
<th>Depth</th>
<th>Formation</th>
<th>Remarks</th>
<th>Top</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Remarks:**

- Unplanned curve went out S.C.P. and leading string pulled rig out and took to End Hilation.
- Went up checked cement level at 398.

**Signed:** Jerry Brown
**Date:** June 23, 1990
**DRILLING LOG**

**Date:** June 25, 1990  
**Job No.:** 12-90R  
**Hole No.:** 2001-06  
**Elevation:** 40.71 ft.

**Customer:** EWA GENTRY - PALM COURT  
**Location:** EUC09

- **Driller:** JAKE WOERNER  
  - Hrs.: 10
- **Helper:** JAMES COFFMAN  
  - Hrs.: 10
- **Rig:** 60-C
- **Gas:**  
- **Oil:**
- **Hrs. Repairs:**
- **Arv. Job:**  
- **Lv. Job:**  
- **Or. No.:**

**Bit-Size:** 
**Type:**

**Casing-Size:** in., Length in hole ft., in., Amt. Perforated ft., in.
**Depth Start:** ft., Depth Stop ft., Feet Drilled

**Water Levels, Time:** M ft., Time M ft.

<table>
<thead>
<tr>
<th>Depth</th>
<th>Formation</th>
<th>Remarks</th>
<th>Top</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>MOVE 60-C &amp; EQUIPMENT FROM</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>WINTER TO EVA. &amp; SETUP</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Haul water &amp; spud in</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Remarks:**

Signed:  
**Date:** 6/25/90
## Drilling Log

**Date:** June 26, 1980  
**Job No.:** 12-90R  
**Hole No.:** 2001-06  
**Elevation:** 40.71 ft.

**Customer:** EWA Gentry  
**Location:** EUA

**Driller:** Jake Woerner  
**Helper:** James Coffman  
**Rig:** 60-L  
**Gas:** Oil  
**Repair:**

<table>
<thead>
<tr>
<th>Driller</th>
<th>Helper</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jake Woerner</td>
<td>James Coffman</td>
<td>10</td>
</tr>
</tbody>
</table>

**Bit Size:** 16"  
**Type:** ST  

**Casing Size:** 9  
**Depth Start:** 0 ft.  
**Depth Stop:** 17 ft.  
**Feet Drilled:** 17 ft.

**Water Levels, Time:** M ft., Time: M ft.

### Depth Table

<table>
<thead>
<tr>
<th>Depth</th>
<th>Formation</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>0/17</td>
<td>Br. Clay</td>
<td></td>
</tr>
</tbody>
</table>

**Remarks:**

**Signed:** J. Woerner  
**Date:** 6/26 1980
**DRILLING LOG**

**Date:** June 27, 1990  
**Job No.:** 12-90R  
**Hole No.:** 2001-06  
**Elevation:** 40.71 ft.

**Customer:** EWA Gentry  
**Location:** EUA

**Driller:** Jake Woerner  
**Hrs.:** 10  
**Rig:** 60-L

**Helper:** James Coffman  
**Hrs.:** 10

**Arv. Job:**  
**Lv. Job:**  
**Hrs.:**

**Bit-Size:** 10  
**Type:** 874R

**Casing-Size:** Surf. in., Length in hole  
**ft.:**  
**in., Amt. Perforated:**  
**ft.:**  
**in.**

**Depth Start:** 17 ft.  
**Depth Stop:** 40 ft.  
**Feet Drilled:** 23

**Water Levels, Time:**  
**40 M: 40 ft., Time:**  
**M:** __ ft.

<table>
<thead>
<tr>
<th>Depth</th>
<th>Formation</th>
<th>Remarks</th>
<th>Top</th>
</tr>
</thead>
<tbody>
<tr>
<td>17</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>33</td>
<td>Dr. Clay</td>
<td></td>
<td></td>
</tr>
<tr>
<td>33</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>40</td>
<td>Coal</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Remarks:**

Signed: Jake Woerner  
**Date:** 6/27/90
## DRILLING LOG

**Date:** 4/28 1990  
**Job No.:** 12-90  
**Hole No.:** 2001-06  
**Elevation:** 40.71 ft.

**Customer:** Emma Greenby  
**Location:**

**Driller:** Jake Wozner  
**Hrs.:** 10  
**Rig:** 60-L

**Helper:** James Coffman  
**Hrs.:** 10  
**Gas:**  
**Oil:**

**Helper:**  
**Hrs.:**  
**Repairs:**

**Arv. Job:**  
**Lv. Job:**  
**Hrs.:**

**Bit-Size:** 16"  
**Type:** STAR

**Casing-Size:** 12 in.  
**Length in hole:** 60 ft.  
**Amt. Perforated:** 20 ft.  
**in.**

**Depth Start:** 40 ft.  
**Depth Stop:** 60 ft.  
**Feet Drilled:** 20

**Water Levels, Time:**  
**M. ft., Time:**  
**M. ft.,**

### Depth Formations

<table>
<thead>
<tr>
<th>Depth</th>
<th>Remarks</th>
<th>Top</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>60</td>
<td>Coral</td>
<td></td>
</tr>
</tbody>
</table>

**Remarks:**

- Install 12" casing to 60', including
- 20' of screen
- Cement Basket at 80'

**Signed:** J. Warmer  
**Date:** 6/28 1090
# DRILLING LOG

**Date:** June 29, 1990  
**Job No.** 12-90 P  
**Hole No.** Tool-06  
**Elevation:** 40.71 ft.

**Customer:** EWA GENTRY  
**Location:** EWI

<table>
<thead>
<tr>
<th>Driller</th>
<th>10 Hrs.</th>
<th>Rig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jake Woffner</td>
<td></td>
<td>60 - C</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Helper</th>
<th>10 Hrs.</th>
<th>Gas</th>
</tr>
</thead>
<tbody>
<tr>
<td>James Coffman</td>
<td></td>
<td>Oil</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Helper</th>
<th>Hrs.</th>
<th>Repairs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Bit-Size:** 16  
**Type:** ST

**Casing-Size:** 12 in., Length in hole 60 ft.  
**in., Amt. Perforated:** 20 ft.  
**in.**

**Depth Start:** ft., **Depth Stop:** 60 ft., **Feet Drilled:**

**Water Levels, Time:** M ft., **Time:** M ft.

<table>
<thead>
<tr>
<th>Measurements</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Depth</th>
<th>Formation</th>
<th>Remarks</th>
<th>Top</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Made New Cement Basket</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Placed at 22' &amp; Cement Plug</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Install 50' of Pump Column</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>+ Bailer - 6'' Pump</td>
<td></td>
</tr>
</tbody>
</table>

**Remarks:**

Signed: J. Warner  
**Date:** 6/29 1990
# DRILLING LOG

**Date:** June 30, 1990  
**Job No.:** 12-90  
**Hole No.:** 2001-08  
**Elevation:** 40.7 ft.  
**Customer:** Ewing Gentry  
**Location:** Ewing

**Driller:** John Warmer  
**Rig:** 60-L  
**Helper:** James Coffman  
**Gas:**  
**Oil:**  
**Repairs:**

**Arv. Job:**  
**Lv. Job:**  
**Or. No.:**

---

**Bit-Size:**  
**Type:**

**Casing-Size:** 12 in.  
**Length in hole:** 60 ft.  
**Amt. Perforated:** 20 ft.  
**Depth Start ft., Path:**  
**Depth Stop ft., Feet Drilled:**

**Water Levels, Time:** M ft., Time: M ft.

---

<table>
<thead>
<tr>
<th>Depth</th>
<th>Formation</th>
<th>Remarks</th>
<th>Top</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Got pump parts &amp; equip. togeth</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Finished cementing in casing</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Need 300' of alum discharge</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pipe</td>
<td></td>
</tr>
</tbody>
</table>

**Remarks:**

---

**Signed:** J. Warmer  
**Date:** 1/30, 1990
**Dowland Form 71/11**

**State of Hawaii**
**DEPARTMENT OF LAND & NATURAL RESOURCES**
**DIVISION OF WATER AND LAND DEVELOPMENT**

**DRILLER'S REPORT**

- **Date of report**: July 10, 1990
- **Person filing report**: L.H. Runnels
- **Well Name**: Gentry
- **Location**: Waialua, Island of Oahu
- **Driller**: Jake Woerner

### Description

- **A. Owner**: Gentry
- **B. General Location**: Waialua
- **C. Drilling Company**: Rossco Moss Company
- **D. Type of Rig**: Cable tool
- **E. Drilling Platform**: Height above ground level: _____ ft., Bench mark and method used to determine elevation: _____ ft.
- **F. Hole Size**: 16 inch dia. to 60 ft. below drilling platform.
- **G. Casing Installed**: 12 in. I.D. x 3 1/2 in. Wall solid section to 60 ft. below drilling platform.
- **H. Annulus**: Grouted _____ ft. to _____ ft. below drilling platform.
- **I. Permanent Pump Installation**: Capacity _____ g.p.m.

### Hydrology

- **J. Initial Water Level**: 40 ft. below drilling platform. Date of measurement: June 27, 1990
- **K. Initial Chloride**: ppm, total depth of well _____ ft. below drilling platform.

### Pumping Tests

<table>
<thead>
<tr>
<th>Date</th>
<th>Start water level</th>
<th>End water level</th>
<th>Depth of well</th>
<th>Rate (gpm)</th>
<th>Draw-down (ft.)</th>
<th>Temp. (°F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>July 3, 1990</td>
<td>40 to 27</td>
<td>40 to 27</td>
<td>60</td>
<td>140</td>
<td>1.32</td>
<td>60</td>
</tr>
</tbody>
</table>

### Subsurface Formation

<table>
<thead>
<tr>
<th>Depth, ft.</th>
<th>Rock Description &amp; Remarks</th>
<th>Water Level</th>
<th>Depth, ft.</th>
<th>Rock Description &amp; Remarks</th>
<th>Water Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 33</td>
<td>Brown Clay</td>
<td>ft.</td>
<td>33 to 60</td>
<td>Coral</td>
<td>ft.</td>
</tr>
</tbody>
</table>

### N. Remarks:

**INSTRUCTIONS**: Send three (3) copies to Manager/Chief Engineer, Division of Water and Land Development, BEE/BOSS, Room 200, State Capitol, Honolulu, Hawaii 96813. FOR OFFICIAL USE. Latitude, Longitude.
TO: Gentry Development Company

In accordance with the Department of Land and Natural Resources Administrative Rules, Section 13-168, entitled "Water Use, Wells, and Stream Diversion Works", your application to construct and test Well No. 2002-13 for multi-family common area landscape irrigation within Tax Map Key: 9-1-12 is approved subject to the following conditions:

1. The Division of Water and Land Development (DOWALD), Geology-Hydrology Section, shall be notified at 548-7619, before any work covered by this permit commences.

2. The permit shall be for construction and testing only. No permanent pump may be installed and no water used from the well without the necessary water use and pump installation permits from the Commission.

3. The issuance of the well construction permit shall in no way prejudice any future consideration by the Commission on the issuance or non-issuance of a water use permit for the well.

4. The following shall be submitted to DOWALD within 30 days after completion of the well:
   a. Well Completion Report form.
   b. Elevation (referenced to mean sea level) 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 record; including time, pumping rate, drawdown, chloride content, and water quality data.
5. Following drilling and testing of the well, the applicant shall develop and submit a water use plan summarizing the results of the testing, recommending possible measures preventing or minimizing saltwater contamination, and establishing courses of action to follow should the aquifer become too saline to use.

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

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

WILLIAM W. PATY, Chairperson
Commission on Water Resource Management

MAY 24 1989
Date of Issuance

cc: USGS
Department of Health,
   Drinking Water Program
   Ground Water Protection Program
Honolulu Board of Water Supply
9/11/89
A water use plan must be approved by the Chairperson before this permit is issued (see submitted)

Draft Iss. 9/21 type
State of Hawaii
COMMISSION ON WATER RESOURCE MANAGEMENT
Department of Land and Natural Resources

Pearl Harbor Water Management Area
WATER USE PERMIT

Applicant: Gentry Development Company
Address: [Redacted]
Water Management Area: Pearl Harbor Subarea: Caprock aquifer
Well(s) Name: Palm Villa Irrigation Well Well No.(s): 2002-13
Amount of Withdrawal (Average Annual): 0.08 million gallons per day
Reasonable-Beneficial Use: Landscape irrigation
Area or Projects Served: Palm Villa condominium in Ewa

The applicant is hereby granted a permit to withdraw and use water from the source identified above in accordance with Chapter 174C, HRS, State Water Code; Chapter 13-171, Hawaii Administrative Rules; and the following:

General Conditions: (1) the water use authorized by this permit must be for the reasonable-beneficial use described in this permit; (2) the use must not interfere with any existing legal use of water; and (3) modification of any permit condition must be approved by the Commission.

Additional Conditions:

(1) The applicant must comply with the approved water use plan (attached).

(2) The Commission may reduce the amount initially granted the permittee should long-term pumpage from the well interfere with existing legal uses in the area.

(3) An approved flowmeter(s) must be installed to measure withdrawals and a record of the withdrawals must be kept and reported to the Department of Land and Natural Resources, Division of Water and Land Development, on a monthly basis.

(4) The development of the ground-water source shall be completed within 24 months from the date of permit issuance.

The issuance of this permit was approved by the Commission on Water Resource Management at its meeting of September 13, 1989

WILLIAM W. PATY, Chairperson

Date of Issuance: ______________
State of Hawaii

COMMISSION ON WATER RESOURCE MANAGEMENT
Department of Land and Natural Resources

Pearl Harbor Water Management Area

WATER USE PERMIT

Applicant: Honolulu Board of Water Supply
Address: 650 South Beretania Street, Honolulu, Hawaii 96813

Water Management Area: Pearl Harbor
Subarea: Waimanalo Aquifer
Well(s) Name: Honolulu 1-Palm Villa
Well No.(s): 3809-04 2002-13

Amount of Withdrawal (Average Annual): 4.95 million gallons per day
Reasonable-Beneficial Use: Municipal
Area or Projects Served: City, State, and private projects on the Ewa Plain
Palm Villa condominium in Ewa.

The applicant is hereby granted a permit to withdraw and use water from the source identified above in accordance with Chapter 174C, HRS, State Water Code; Chapter 13-171, Hawaii Administrative Rules; and the following:

General Conditions: (1) the water use authorized by this permit must be for the reasonable-beneficial use described in this permit; (2) the use must not interfere with any existing legal use of water; and (3) modification of any permit condition must be approved by the Commission.

Additional Conditions:

(1) The permit shall be subject to the Commission's sustainable yield review by December 1990.

(2) The Commission may reduce the amount initially granted the permittee should long-term pumpage from the well interfere with existing legal uses in the area.

(3) An approved flowmeter(s) must be installed to measure withdrawals and a record of the withdrawals must be kept and reported to the Department of Land and Natural Resources, Division of Water and Land Development, P.O. Box 432497, Honolulu, Hawaii 96815, on a monthly basis.

(4) The development of the ground-water source shall be completed within 24 months from the date of permit issuance.

WILLIAM W. PATY, Chairperson

The issuance of this permit was approved by the Commission on Water Resource Management at its meeting of July 19, 1989

Date of Issuance: September 12, 1989
APPLICATION FOR

WELL CONSTRUCTION PERMIT
PUMP INSTALLATION PERMIT

INSTRUCTIONS: Please print or type and send a completed application with attachments to the Division of Water and Land Development. Application must be accompanied by a non-refundable filing fee of $15.00 payable to the Department of Land and Natural Resources. (Filing fee waived for government agencies.) If necessary, phone 541-7362, Hydrology/Geology Section for assistance.

1. WELL LOCATION
   Island Oahu    Tax Map Key 9-1-12:1
   Address Ewa, Oahu; to be Well No. 2002-13
   (Attach a USGS map (scale 1"=2000') and property tax map showing well location referenced to established property boundaries.)

2. WELL OWNER
   Firm Name Gentry Development Company
   Contact Person Mr. Norman Dyer
   LANDOWNER
   Firm Name Gentry Development Company
   Contact Person Mr. Norman Dyer

3. PROPOSED CONTRACTOR FOR:  
   Name Will Be Competitively Bid
   Phone
   Address
   Contractor's License No.

4. PROPOSED WORK
   • Drill New Well
   • Deepen
   • Altern
   • Install New Pump
   • Replace Pump
   • Re-drill
   • Abandon
   • Modify Pump
   (Briefly describe the proposed work and fill in the diagram on the back of this form.)

5. PROPOSED USE
   • Municipal (including hotels, stores, etc.)
   • Military
   • Domestic (individual, non-commercial water systems)
   • Industrial
   • Irrigation (specify) Multi-Family Common Area
   • Other (specify)

6. PROPOSED AMOUNT OF WITHDRAWAL
   148,000 gallons per day

7. PROPOSED PUMP INFORMATION
   Pump Type:  
   • Vertical Turbine
   • Submersible
   Motor:  
   • Diesel
   • Gas
   • Electric: 30
   Rated Pump Capacity 400 gallons per minute (gpm)

GENTRY DEVELOPMENT COMPANY
a Hawaii limited partnership
By Gentry-Pacific, Ltd.
Its General Partner

Well Owner (print)
Signature
Date Jan 31 1989

Landowner (print)
Signature
Date Jan 31 1989

For Official Use Only:
Field Checked By
Latitude
Hydrologic Unit
Date
Longitude
State Well No. 2002-13
Briefly describe the proposed work:

PROPOSED SECTION OF WELL

Elevation at top of casing
38 ft., msl.

Cement Grout 37 ft.

Hole Dia. 16 in.

Total Depth 52 ft.

Ground Elev. 37 ft., msl*

Solid Casing:
Material PVC Schedule 80
Length 38 ft.
Diameter 12 in.
Wall thickness 0.687 in.

Casing: /X/Perforated / /Screen
Material PVC Schedule 80
Length 15 ft.
Diameter 12 in.
Wall thickness 0.687 in.
Openings 60 sq. in./L.F.

Open Hole:
Length 0
Diameter 0 in.

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