PUMP TEST RESULTS

FOR

PUNALUU-KAHANA WELL 3452-01 (OLD 404-1)

Prepared for

KOOLAU AGRICULTURAL COMPANY, LIMITED

Prepared by

MINK & YUEN, INC.
100 North Beretania Street, Suite 303
Honolulu, Hawaii 96817

November 30, 1990
A successful 48-hour continuous pumping test was performed on Well 404-1 (State No. 3452-01) between 10:00am on October 24, 1990, and 10:00am on October 26, 1990. For the first 100 minutes a step drawdown test was conducted at rates of 120 gpm, 215 gpm, 315 gpm, 410 gpm, 500 gpm and 600 gpm. A continuous rate of approximately 700 gpm was sustained for the remainder of the 48 hours.

The pumping rate was metered, the drawdown was measured by air line, and salinity was computed from specific conductivity measurements. The behavior of the well exceeded expectations with respect to the sustained rate of pumpage and salinity. Drawdown stabilized quickly at 11.6 feet at 700 gpm, and salinity of the water was invariant at 400 micromhos (about 75 mg/l chloride) in the latter portion of the test. When the pump was turned off, recovery was virtually instantaneous. Most of the drawdown was caused by well turbulence, not aquifer behavior. Although a reliable, accurate elevation at the well has not yet been made, head was estimated from previous records to be about 7 to 8 feet.
The aquifer can be developed to safely yield at least 1.0 to 3.0 mgd. A more specific estimate will be determined later. Based on past records, laboratory tests indicated that the water was of very good quality. Analyses are being updated and will be submitted as soon as they become available. The likelihood is that the quality will continue to be high.

A summary of the test results follows.
PUMP TEST WELL 3452-01 (OLD 404-1)
OCTOBER 24-26, 1990

ROSCOE MOSS, CONTRACTOR
JOHN F. MINK AND JOHN Y.C. CHANG, MINK & YUEN, INC
DAN JENKINS, KOOLAU AGRICULTURAL COMPANY

<table>
<thead>
<tr>
<th>TIME</th>
<th>AIR LINE</th>
<th>Q(gpm)</th>
<th>SP. COND.</th>
<th>CALCULATED</th>
<th>COMMENTS</th>
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<td>1009</td>
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<td>1005</td>
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### Records of Drilled Wells on Oahu

**Logs—Well 398 (Continued)**

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<th>Depth (ft)</th>
<th>Date</th>
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<td>0-0</td>
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<tr>
<td>0-3</td>
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<td>0-6</td>
<td>May 1, 1933</td>
<td>193</td>
</tr>
<tr>
<td>0-9</td>
<td>May 1, 1933</td>
<td>193</td>
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**Observations**

- In cane field about 900 yd. southeast of R. R. shop at Hauula. Owner, Kahu Plantation Co. Altitude, about 15 ft. Use, irrigation.

**Logs—Well 404-1 (Continued)**

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Date</th>
<th>Chloride (p.p.m.)</th>
</tr>
</thead>
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<td>0-10</td>
<td>June 19, 1934</td>
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<td>June 19, 1934</td>
<td>0</td>
</tr>
<tr>
<td>0-30</td>
<td>June 19, 1934</td>
<td>0</td>
</tr>
</tbody>
</table>

**Records of Drilled Wells on Oahu**

**401** (old 328). In cane field about 900 yd. southeast of R. R. shop at Hauula. Owner, Kahu Plantation Co. Altitude, about 15 ft. Use, irrigation.

**402** (old 329). At camp 1.7 miles southeast of Hauula and 100 yd. southwest of highway. Owner, Kahu Plantation Co. Altitude, about 6 ft. Use, irrigation.


**405** (old 331-1). In Kahana Valley about 700 ft. southeast of the highway and about 1,000 ft. south of the old Mary E. Foster home. Owner, Mary E. Foster estate. Drilled, 1933 by Kahu Plantation Co. Altitude, 6 ft. Diameter, 10 in. Depth, 441 ft. Use, domestic. Casing, 177 ft. Bench mark, top of blind flange on top of casing; altitude, 5.76 ft.


**Well No. 3452-01**

**404-1** (no old number). At end of road leading southwest from main highway at point 1,100 yd. southeast of Punalu bridge. Owner, Kahu Plantation Co. Drilled, 1937. Diameter, 12 in. Depth, 183 ft. Use, domestic supply. Casing, 50 ft.

**Ground Elev 26 ft Log Static Head 88.6**

**Meter test**

No flow from top of well. Used 3-in. deep-well meter used. Readings by K. N. Vakir, Aug. 25, 1937.
Chairperson and Members  
Commission on Water Resource Management  
State of Hawaii  

Gentlemen:

Koolau Agricultural Co., Ltd.  
Request to Drill Three 12-inch Diameter  
200-foot Deep Exploratory Wells  
Makalii Exploratory Wells I, II, and III  
(Well Nos. 3452-02, 3453-12 & 13)  
TMK 5-3-01: 41 and 5-3-03:1, Punaluu, Oahu  
1. Request for a Contested Case Hearing  
2. Application for Well Construction Permits

Applicant:  
Koolau Agricultural Co., Ltd.  
1100 Alakea Street, Suite 1201  
Honolulu, Hawaii 96813

Landowner:  
Kamehameha Schools/Bishop Estate  
567 South King St., Suite 200  
Honolulu, Hawaii 96813

Background:

December 18, 1991 The applicant submitted applications to construct four wells at Punaluu, Oahu.

March 18, 1992 The Commission (Commission on Water Resource Management) denied without prejudice the applications for the four wells. The Commission felt it would be more appropriate to consider the applications after the broader question regarding the designation of Windward Oahu as a water management area was answered.

April 8, 1992 The applicant requested that the Commission reconsider its decision to deny without prejudice the applications for well construction permits.

May 5, 1992 The Commission designated Windward Oahu as a ground water management area.

June 17, 1992 The Commission denied without prejudice the applications. The Commission felt it would be more appropriate to consider the application subject to the approval of a water use permit, since the area was recently designated as a ground water management area.

October 29, 1992 The applicant submitted completed water use permit applications for Makalii Wells I, II, and III.

April 28, 1993 The Commission denied without prejudice the water use permit applications for the three wells but invited the applicant "to resubmit a well construction permit application for Makalii III prior to July 15, 1993 for exploratory and hydrologic testing purposes only. Further, that agreement on the methodology to test for ground and surface water interaction will be required prior to approval of the well construction permit. Information regarding any interaction between ground and surface water will be an important predicate to later action on a water use permit."

ITEM 9
Chairperson and Members
Commission on Water Resource Management April 5, 1995

June 13, 1994
The applicant submitted a letter (attached) agreeing to the methodology to test for ground and surface water interaction. The applicant also requests approval to drill the three wells under a single contract, which would save at least $110,000.00 in additional costs over drilling the wells under separate contracts.

July 13, 1994
Request for a contested case hearing by the Punaluu Community Association and the Hawaii Laieikawai Association.

March 1, 1995
The Commission deferred taking action on the applicant’s request to construct and test three 12-inch diameter exploratory wells. All interested parties were asked to submit any additional information to the Commission with regard to their standing in this requested contested case hearing. Information was to be submitted within the next two weeks, or by March 15, 1995.

March 16, 1995
The Petitioners, The Hawaii-Laieikawai Association, Inc. and the Punaluu Community Association, submitted a letter to the Commission indicating they are willing to withdraw their request for a contested case hearing at this time, but only (a) upon the understanding that the application before the Commission is limited strictly to the drilling and limited testing of the exploratory wells, and no other activity, and (b) on condition that Koolau Agricultural Co., Ltd. is required, as a condition of its permit, to allow Petitioners’ groundwater hydrologist, and/or his representative(s), to be present during all phases of the proposed drilling, pump tests, and all other associated work, without unduly interfering with that work; to allow them to have full access to all data and material concerning the drilling, testing, and work; and to allow them to otherwise fully participate in all phases of the exploratory process.

*Action Requested: Permission to construct and test three 12-inch diameter exploratory wells (Well Nos. 3452-02 and 3453-11 & 12). Each well will be drilled to a minimum diameter which would permit analysis of the drill cores and test pumping. If the results are favorable, the well would then be drilled to its full diameter, cased and completed. If the results are not favorable, the well would be sealed. By not drilling to its full diameter, and if test results are unfavorable, about one-half the cost of drilling would be saved. The applicant’s consultants are of the opinion that favorable test results from one well does not guarantee similar success for the other two wells.*

The request for a contested case hearing by the Punaluu Community Association and the Hawaii Laieikawai Association on the above matter will be withdrawn if the applicant agrees to the proposed conditions.

*Well Location/Tax Map Key: The proposed well sites are at Punaluu, Oahu, at Tax Map Keys 5-3-01:41 and 5-3-03:1 (see attached map).*

<table>
<thead>
<tr>
<th>Well Description:</th>
<th>Well 1</th>
<th>Well 2</th>
<th>Well 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ground elevation:</td>
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<td>45 ft.</td>
<td>28 ft.</td>
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<tr>
<td>Casing diameter:</td>
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<td>12 in.</td>
<td>12 in.</td>
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<tr>
<td>Solid casing depth:</td>
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</tr>
<tr>
<td>Open hole:</td>
<td>100 ft.</td>
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</tr>
<tr>
<td>Total depth:</td>
<td>200 ft.</td>
<td>200 ft.</td>
<td>200 ft.</td>
</tr>
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</table>

*Agency Review: The applications were sent to the Honolulu Board of Water Supply, the State Historic Preservation Division, the Office of Hawaiian Affairs, and the State Departments of Health and Hawaiian Home Lands for review. There were no objections though the State Historic Preservation Division listed some concerns which need to be addressed by the applicant.*
The Koolauloa Neighborhood Board No. 28 requested that the Commission deny the applications. They had previously gone on record supporting the designation of Windward Oahu and felt that "well permits should not be granted until such time as the commission deals with this designation".

Analysis: The wells are expected to develop water from a fresh basal aquifer. The effect of pumping the wells on streams or existing wells in the area has not been determined.

The Commission issued a declaratory ruling (Declaratory Ruling G-2) on March 16, 1994, effective in designated water management areas, that where there is insufficient information, an applicant may be allowed to drill and test an exploratory well prior to applying for a water use permit. The applicant shall be informed that the issuance of the drilling permit shall in no way prejudice any future consideration by the Commission on the issuance or non-issuance of a water use permit. If the well is successful, the applicant will apply for a water use permit. If the well is not successful, the applicant will apply for a permit to seal/abandon the well, or properly secure it in a manner approved by the Commission.

Water Availability: The wells are located in the Windward Sector, Kahana System of Oahu (see attached map). Sustainable yield is estimated at 13 mgd in the system. Present use in the system is about one mgd. Total present and proposed developments amount to about 11 mgd.

Contested Case Hearing Request: The Department of the Attorney General has reviewed the requests for a contested case hearing of the Punaluu Community Association and the Hawaii Laieikawai Association and has recommended that the Commission deny the requests for the following reasons:

The well construction permit would allow Koolau Ag to drill, construct, and test a well to determine its hydrological characteristics. The well construction permit would not allow Koolau Ag to install a pump, pump the water, or grant any right to use ground water, other than for testing purposes. Those activities would require a separate pump installation permit and a water use permit, respectively.

The sole question on this application is whether the proposed well construction permit could have an adverse impact on the two petitioners' legal interests which would give them standing to request a contested case hearing.

The Commission must first determine whether petitioners have a constitutional, statutory, or common law right that may be directly affected by the proposed activity. In the case of a constitutional "due process" claim, the Hawaii Supreme Court has outlined a two part test when analyzing whether a hearing is required: 1) Is the particular interest which claimant seeks to protect by a hearing, "property" within the meaning of the due process clause of the state and federal constitutions; and 2) If the interest is "property", what specific procedures are required to protect it?

In order to determine if petitioners have any constitutional, statutory, or common law rights affected, it is necessary to: 1) examine what the permit or application would allow; and 2) determine whether the person objecting has a legal interest that could be harmed if the permit is approved as requested. In short, what is the scope and magnitude of the proposed activity and will it interfere with another's legally protected interest?

Whatever the circumstances, the objecting party must clearly and directly establish the nexus between the proposed action and the potentially harmed interest. It is not sufficient that individuals or groups simply have a different value preference or policy choice or wish to champion a cause. There must be a showing that the proposed action will lead to individualized harm.
A well drilling permit does not permanently affect any surface activity or surrounding property values like a land use change. A well drilling permit in an engineering permit to literally drill and test a well and nothing more.

A well drilling permit is distinct from a pump installation permit (which allows a particular sized pump). Neither of these permits grants any rights to use water in any way. By the well drilling permit’s own terms, it does not affect the water rights of any adjoining or neighboring land owners.

While the water rights of an adjoining landowner could be affected in the future by a water use permit application, that permit is not at issue here. Even that permit will be subject to the correlative water rights of other surface land owners.

Neither association nor their members could demonstrate how they would be injured by the simple drilling of a well. Generalized allegations are not enough. Whatever complaints they may have about future conduct under permits not yet even filed will have to be resolved when those applications are before the Commission.

Therefore, we conclude that given the limited impact that drilling a well poses, we can find no constitutional, statutory, or common law interests that would be affected by the drilling permit sought here. For the foregoing reasons we conclude that neither the Punaluu Community Association and Hawaii Laieikawai Association have standing to require a contested case hearing on Koolau Agricultural Co., Ltd.’s application for well drilling permits.

RECOMMENDATIONS:

1. That the Commission accept the Petitioners’ withdrawal of their request for a contested case hearing, if their proposed conditions are acceptable to the applicant.

2. That the Commission approve the issuance of well construction permits for Makalii Exploratory Wells I, II, and III, subject to the conditions proposed by the Petitioners and the following conditions:

   STANDARD WELL CONSTRUCTION PERMIT CONDITIONS

1. The Commission shall be notified before work commences.

2. The well construction permit shall be for construction and testing of the well only. The applicant shall coordinate with the Commission and conduct a pumping test in accordance with the attached protocol. A one-inch diameter (minimum) pipe shall be permanently installed, in a manner acceptable to the Commission, to accurately record water levels. No permanent pump may be installed and no water used from the well without first obtaining a water use permit and a pump installation permit from the Commission.

3. The proposed well construction shall not adversely affect existing or future legal uses of water in the area, including any surface water or established instream flow standards. This permit or the authorization to construct the well shall not constitute a determination of correlative water rights.

4. The following shall be submitted to the Commission within thirty (30) days after completion of work:
   a. Well completion report.
   b. Elevation (referenced to mean sea level, msl) survey by a Hawaii-licensed surveyor.
   c. As-built sectional drawing of the well.

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d. Plot plan and map showing the exact location of the well.
e. Complete pumping test records, including time, pumping rate, drawdown, chloride content, and other water quality data.

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

6. The well construction permit application and staff submittal approved by the Commission at its April 5, 1995 meeting are incorporated into the permit by reference.

7. The permit may be revoked if work is not started within six (6) months after the date of issuance or if work is suspended or abandoned for six (6) months, unless otherwise specified. The work proposed in the well construction permit application shall be completed within two (2) years from the date of permit approval, unless otherwise specified. The permit may be extended by the Commission upon a showing of good cause and good-faith performance. A request to extend the permit shall be submitted to the Commission no later than three (3) months prior to the date the permit expires. If the commencement or completion date is not met, the Commission may revoke the permit after giving the permittee notice of the proposed action and an opportunity to be heard.

SPECIAL CONDITIONS

1. The applicant is hereby informed, and agrees as a condition of this permit, that the issuance of the drilling permit shall in no way prejudice any future consideration by the Commission on the issuance or non-issuance of a water use permit. If a well is successful, and the applicant wants to use the water, the applicant will apply for a water use permit. If a well is not successful, the applicant will apply for a permit to seal/abandon the well, or properly secure it in a manner approved by the Commission.

2. The applicant shall notify the Commission at least two weeks prior to conducting the pumping test, and shall coordinate with and notify the Commission of any stream gaging conducted during the testing of a well.

3. If the testing demonstrates any measurable reduction of streamflow due to pumpage, and if the applicant wants to use the well, an amendment to the interim instream flow standard will be required.

4. Depending on the results of the pumping test, conversion to an operational status in the absence of a short-term definable effect on the stream may still require long-term monitoring of flows with possible shut-down during drought periods to assure maintenance of stream flows.

5. The applicant shall contact the State Historic Preservation Division at 587-0014 before starting any work on the project. The applicant shall obtain a written statement from the State Historic Preservation Division indicating that their concerns have been addressed, and a copy of that statement shall be sent to the Commission before work is started on the project.

6. The application before the Commission is limited strictly to the drilling and limited testing of the exploratory wells, and no other activity.
Chairperson and Members
Commission on Water Resource Management

April 5, 1995

7. Koolau Agricultural Co., Ltd. is required to allow The Hawaii Laieikawai's and the Punaluu Community Association's groundwater hydrologist, and/or his representative(s), to be present during all phases of the proposed drilling, pump tests, and all other associated work, without unduly interfering with that work; to allow them to have full access to all data and material concerning the drilling, testing, and work; and to allow them to otherwise fully participate in all phases of the exploratory process.

Respectfully submitted,

RAE M. LOUI
Deputy Director

Attachments

APPROVED FOR SUBMITTAL:

MICHAEL D. WILSON, Chairperson
Chairperson and Members
Commission on Water Resource Management
State of Hawaii

Gentlemen:

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Request to Drill Three 12-inch Diameter 200-foot Deep Exploratory Wells
Makalii Exploratory Wells I, II, and III (Well Nos. 3452-02, 3453-12 & 13)
TMK 5-3-01: 41 and 5-3-03:1, Punaluu, Oahu

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March 16, 1995
The Petitioners, The Hawaii-Laieikawai Association, Inc. and the Punaluu Community Association, submitted a letter to the Commission indicating they are willing to withdraw their request for a contested case hearing at this time, but only (a) upon the understanding that the application before the Commission is limited strictly to the drilling and limited testing of the exploratory wells, and no other activity, and (b) on condition that Koolau Agricultural Co., Ltd. is required, as a condition of its permit, to allow Petitioners’ groundwater hydrologist, and/or his representative(s), to be present during all phases of the proposed drilling, pump tests, and all other associated work, without unduly interfering with that work; to allow them to have full access to all data and material concerning the drilling, testing, and work; and to allow them to otherwise fully participate in all phases of the exploratory process.

Action Requested: Permission to construct and test three 12-inch diameter exploratory wells (Well Nos. 3452-02 and 3453-11 & 12). Each well will be drilled to a minimum diameter which would permit analysis of the drill cores and test pumping. If the results are favorable, the well would then be drilled to its full diameter, cased and completed. If the results are not favorable, the well would be sealed. By not drilling to its full diameter, and if test results are unfavorable, about one-half the cost of drilling would be saved. The applicant’s consultants are of the opinion that favorable test results from one well does not guarantee similar success for the other two wells.

The request for a contested case hearing by the Punaluu Community Association and the Hawaii Laieikawai Association on the above matter will be withdrawn if the applicant agrees to the proposed conditions.

Well Location/Tax Map Key: The proposed well sites are at Punaluu, Oahu, at Tax Map Keys 5-3-01:41 and 5-3-03:1 (see attached map).

Well Description:

<table>
<thead>
<tr>
<th>Well</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ground elevation:</td>
<td>44 ft.</td>
<td>45 ft.</td>
<td>28 ft.</td>
</tr>
<tr>
<td>Casing diameter:</td>
<td>12 in.</td>
<td>12 in.</td>
<td>12 in.</td>
</tr>
<tr>
<td>Solid casing depth:</td>
<td>100 ft.</td>
<td>100 ft.</td>
<td>100 ft.</td>
</tr>
<tr>
<td>Open hole:</td>
<td>100 ft.</td>
<td>100 ft.</td>
<td>100 ft.</td>
</tr>
<tr>
<td>Total depth:</td>
<td>200 ft.</td>
<td>200 ft.</td>
<td>200 ft.</td>
</tr>
</tbody>
</table>

Agency Review: The applications were sent to the Honolulu Board of Water Supply, the State Historic Preservation Division, the Office of Hawaiian Affairs, and the State Departments of Health and Hawaiian Home Lands for review. There were no objections though the State Historic Preservation Division listed some concerns which need to be addressed by the applicant.
The Koolauloa Neighborhood Board No. 28 requested that the Commission deny the applications. They had previously gone on record supporting the designation of Windward Oahu and felt that "well permits should not be granted until such time as the commission deals with this designation".

Analysis: The wells are expected to develop water from a fresh basal aquifer. The effect of pumping the wells on streams or existing wells in the area has not been determined.

The Commission issued a declaratory ruling (Declaratory Ruling G-2) on March 16, 1994, effective in designated water management areas, that where there is insufficient information, an applicant may be allowed to drill and test an exploratory well prior to applying for a water use permit. The applicant shall be informed that the issuance of the drilling permit shall in no way prejudice any future consideration by the Commission on the issuance or non-issuance of a water use permit. If the well is successful, the applicant will apply for a water use permit. If the well is not successful, the applicant will apply for a permit to seal/abandon the well, or properly secure it in a manner approved by the Commission.

Water Availability: The wells are located in the Windward Sector, Kahana System of Oahu (see attached map). Sustainable yield is estimated at 13 mgd in the system. Present use in the system is about one mgd. Total present and proposed developments amount to about 11 mgd.

Contested Case Hearing Request: The Department of the Attorney General has reviewed the requests for a contested case hearing of the Punaluu Community Association and the Hawaii Laieikawai Association and has recommended that the Commission deny the requests for the following reasons:

The well construction permit would allow Koolau Ag to drill, construct, and test a well to determine its hydrological characteristics. The well construction permit would not allow Koolau Ag to install a pump, pump the water, or grant any right to use ground water, other than for testing purposes. Those activities would require a separate pump installation permit and a water use permit, respectively.

The sole question on this application is whether the proposed well construction permit could have an adverse impact on the two petitioners' legal interests which would give them standing to request a contested case hearing.

The Commission must first determine whether petitioners have a constitutional, statutory, or common law right that may be directly affected by the proposed activity. In the case of a constitutional "due process" claim, the Hawaii Supreme Court has outlined a two part test when analyzing whether a hearing is required: 1) Is the particular interest which claimant seeks to protect by a hearing, "property" within the meaning of the due process clause of the state and federal constitutions; and 2) If the interest is "property", what specific procedures are required to protect it?

In order to determine if petitioners have any constitutional, statutory, or common law rights affected, it is necessary to: 1) examine what the permit or application would allow; and 2) determine whether the person objecting has a legal interest that could be harmed if the permit is approved as requested. In short, what is the scope and magnitude of the proposed activity and will it interfere with another's legally protected interest?

Whatever the circumstances, the objecting party must clearly and directly establish the nexus between the proposed action and the potentially harmed interest. It is not sufficient that individuals or groups simply have a different value preference or policy choice or wish to champion a cause. There must be a showing that the proposed action will lead to individualized harm.
A well drilling permit does not permanently affect any surface activity or surrounding property values like a land use change. A well drilling permit in an engineering permit to literally drill and test a well and nothing more.

A well drilling permit is distinct from a pump installation permit (which allows a particular sized pump). Neither of these permits grants any rights to use water in any way. By the well drilling permit's own terms, it does not affect the water rights of any adjoining or neighboring land owners.

While the water rights of an adjoining landowner could be affected in the future by a water use permit application, that permit is not at issue here. Even that permit will be subject to the correlative water rights of other surface land owners.

Neither association nor their members could demonstrate how they would be injured by the simple drilling of a well. Generalized allegations are not enough. Whatever complaints they may have about future conduct under permits not yet even filed will have to be resolved when those applications are before the Commission.

Therefore, we conclude that given the limited impact that drilling a well poses, we can find no constitutional, statutory, or common law interests that would be affected by the drilling permit sought here. For the foregoing reasons we conclude that neither the Punaluu Community Association and Hawaii Laieikawai Association have standing to require a contested case hearing on Koolau Agricultural Co., Ltd. 's application for well drilling permits.

RECOMMENDATIONS:

1. That the Commission accept the Petitioners' withdrawal of their request for a contested case hearing, if their proposed conditions are acceptable to the applicant.

2. That the Commission approve the issuance of well construction permits for Makalii Exploratory Wells I, II, and III, subject to the conditions proposed by the Petitioners and the following conditions:

   STANDARD WELL CONSTRUCTION PERMIT CONDITIONS

1. The Commission shall be notified before work commences.

2. The well construction permit shall be for construction and testing of the well only. The applicant shall coordinate with the Commission and conduct a pumping test in accordance with the attached protocol. A one-inch diameter (minimum) pipe shall be permanently installed, in a manner acceptable to the Commission, to accurately record water levels. No permanent pump may be installed and no water used from the well without first obtaining a water use permit and a pump installation permit from the Commission.

3. The proposed well construction shall not adversely affect existing or future legal uses of water in the area, including any surface water or established instream flow standards. This permit or the authorization to construct the well shall not constitute a determination of correlative water rights.

4. The following shall be submitted to the Commission within thirty (30) days after completion of work:

   a. Well completion report.
   b. Elevation (referenced to mean sea level, msl) survey by a Hawaii-licensed surveyor.
   c. As-built sectional drawing of the well.
Chairperson and Members
Commission on Water Resource Management

April 5, 1995

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

6. The well construction permit application and staff submittal approved by the Commission at its April 5, 1995 meeting are incorporated into the permit by reference.

7. The permit may be revoked if work is not started within six (6) months after the date of issuance or if work is suspended or abandoned for six (6) months, unless otherwise specified. The work proposed in the well construction permit application shall be completed within two (2) years from the date of permit approval, unless otherwise specified. The permit may be extended by the Commission upon a showing of good cause and good-faith performance. A request to extend the permit shall be submitted to the Commission no later than three (3) months prior to the date the permit expires. If the commencement or completion date is not met, the Commission may revoke the permit after giving the permittee notice of the proposed action and an opportunity to be heard.

SPECIAL CONDITIONS

1. The applicant is hereby informed, and agrees as a condition of this permit, that the issuance of the drilling permit shall in no way prejudice any future consideration by the Commission on the issuance or non-issuance of a water use permit. If a well is successful, and the applicant wants to use the water, the applicant will apply for a water use permit. If a well is not successful, the applicant will apply for a permit to seal/abandon the well, or properly secure it in a manner approved by the Commission.

2. The applicant shall notify the Commission at least two weeks prior to conducting the pumping test, and shall coordinate with and notify the Commission of any stream gaging conducted during the testing of a well.

3. If the testing demonstrates any measurable reduction of streamflow due to pumpage, and if the applicant wants to use the well, an amendment to the interim instream flow standard will be required.

4. Depending on the results of the pumping test, conversion to an operational status in the absence of a short-term definable effect on the stream may still require long-term monitoring of flows with possible shut-down during drought periods to assure maintenance of stream flows.

5. The applicant shall contact the State Historic Preservation Division at 587-0014 before starting any work on the project. The applicant shall obtain a written statement from the State Historic Preservation Division indicating that their concerns have been addressed, and a copy of that statement shall be sent to the Commission before work is started on the project.

6. The application before the Commission is limited strictly to the drilling and limited testing of the exploratory wells, and no other activity.
Chairperson and Members
Commission on Water Resource Management
April 5, 1995

7. Koolau Agricultural Co., Ltd. is required to allow The Hawaii Laiakawai's and the Punaluu Community Association's groundwater hydrologist, and/or his representative(s), to be present during all phases of the proposed drilling, pump tests, and all other associated work, without unduly interfering with that work; to allow them to have full access to all data and material concerning the drilling, testing, and work; and to allow them to otherwise fully participate in all phases of the exploratory process.

Respectfully submitted,

RAE M. LOUI
Deputy Director

Attachments

APPROVED FOR SUBMITTAL:

MICHAEL D. WILSON, Chairperson

USGS involvement = installation of recorders in wells & tidal recorders (2 1/2 days)
Crews staff to monitor pump test.
AQUIFER (PUMP) TEST PROCEDURES

The pump test procedure for new wells shall consist of a step-drawdown test followed by a long-term continuous aquifer test. Testing the well and aquifer in the prescribed manner should result in the hydrologic information needed to determine: 1) the well's performance with regard to yield and water quality (chloride concentration), and 2) the nearby hydraulic properties of the aquifer.

General Recording Requirements

The records required for analysis and the tolerance in measurement acceptable for the step-drawdown and long-term continuous aquifer test are as follows:

1. Discharge from the well shall not fluctuate beyond ±10 percent.
2. Depth to water measurements in the pumped well shall be accurate to 0.01 feet.
3. Time shall be accurate within ±1 percent.
4. Water discharged from the well during the step-drawdown and long-term test shall be carried away from the well to a distance sufficient to preclude circulation of the discharge water downward to the ground-water table.
5. Recording of data should be on a form similar to Table 1. All information shown in Table 1 shall be provided. In addition, data shall be plotted on Graph 1 and provided.

Step-Drawdown Test

The purpose of the step-drawdown test is to establish the efficiency of the well and to provide preliminary information on the yield of the well, both from a quantity and quality standpoint.

1. Measurement of water level in the pumped well shall be made every 12 hours for a period of no less than two days prior to the initiation of the step-drawdown test in order to obtain the pretest trend in water levels.
2. The step-drawdown test will consist of continuously pumping the well for four hours at four different rates.
   a. The change from one pumping rate to the next must be sufficient to induce an observable change in water level in the well from the previous pumpage rate.
   b. If desired, the four different rates should represent the full range of pump capacity (if the yield can sustain this), but this is not necessary.
3. Each pumping rate should be continued for one hour, after which the new rate should be instituted as rapidly as possible.
4. Pumping should begin at the lowest rate and conclude with the highest rate.
5. Pumping should be continuous through the entire step-drawdown test.
6. Measurement of chloride concentration and temperature of the discharge water shall be measured at least five times:
   a. at the end of each pumping rate during the step-drawdown test, and
   b. at the very beginning of the test.
7. A sufficient number of water level measurements shall be made in the pumped well following the termination of the step-drawdown test to establish that the water level fully recovers from each test to pretest levels.

Long-Term Continuous Test

The purpose of the long-term continuous test is to determine the hydraulic properties of the aquifer to explore for and identify nearby aquifer boundaries such as streams or dikes, and to observe the trend in chloride concentration of the discharge water.

1. The long-term test should not commence until the water level in the pumped well has fully recovered from the step-drawdown test. Generally, the time required for this recovery will be slightly greater than four hours. The water level in the pumped well should be measured immediately before initiation of the long-term test.
2. The pump rate for the long-term test should be sufficient to create an observable drawdown.
3. The test should be run 24 hours per day for at least seven days. The decision to extend the test beyond four days shall be determined by agreement between the applicant's consultant and the staff of the Commission. If during the test, the water level remains the same for a period of 24 hours, the test can be terminated.
4. Measurement of chloride concentration and temperature of the discharge water during the long-term test shall be made at the beginning of the test and every six hours thereafter.
5. Depth to water in all wells shall be measured with sufficient frequency that each logarithmic cycle in time on the data plots (Graph 1) contains at least 10 data points spread through the cycle. Thus, depth to water should be made at \( t=0 \) (immediately prior to start of the test), and as close as possible at \( t=1, 1.5, 2, 2.5, 3, 4, 5, 6, 7, \) and 8 minutes for the first ten minutes and at all succeeding decimal multiples of these numbers to the end of the test \( (t=10, 15, 20, 25, 30, 40, 50, 60, 70, \) and 80 minutes for the log cycle 10 to 100 minutes, etc.)

6. A sufficient number of water level measurements shall be made in the pumped well following termination of the long-term continuous test to establish that the water level fully recovers from each test to pretest levels.
June 13, 1994

Mr. Keith W. Ahue, Chairperson
Commission on Water Resource Management
Department of Land and Natural Resources
P.O. Box 621
Honolulu, Hawaii 96809

Re: Makalii Wells - Test Protocol and Request to Drill Three Wells

Dear Mr. Ahue:

Thank you for your letter of May 27, 1994 regarding our request to drill the three proposed wells as a single project, and your reference to the possibility of extending the pump test to seven days if warranted by field conditions.

Your request to allow for a seven-day test is acceptable to us. However, we recommend that the decision to extend the test be determined by agreement between our consultants and the staff of the Commission on Water Resource Management.

In regard to the question of considering the second and third wells as being exploratory in nature, we believe that all three of the Makalii wells should be regarded as exploratory wells in view of the fact that, historically, only one well has ever been drilled in the region between Kahana and Punaluu valleys. Our view is consistent with the position taken by the Water Commission staff that virtually nothing is known about the Makalii aquifer and, therefore, special conditions concerning drilling and testing are necessary. As a result of this position, we have not been able to proceed with our water development program for several years.

We plan to use an exploratory approach in the drilling of the three wells by first drilling to a minimum diameter which would permit analysis of the drill cores and test pumping. If the results are favorable, the wells would then be drilled to its full diameter, cased and completed. If the results are not favorable, the wells would then be sealed at our expense. By not drilling to their full diameters, and if test results are unfavorable, we would save about one-half the cost of drilling. Our consultants are of the opinion that favorable test results from the first well do not guarantee similar success for the other two wells.
The cost savings of drilling three wells under one contract would be substantial as compared with the cost of drilling the wells separately. Mobilization and demobilization costs of drilling one well is estimated at $25,000.00. For three wells, the cost is about $75,000.00, or a difference of $50,000.00. To gain access to the well sites for the drilling equipment it will be necessary to dismantle and restore fencing, paddocks, irrigation systems, electrical wiring, and to repair roadways after the equipment leaves. The total additional cost of this work, if the wells were drilled one at a time, is estimated at $60,000.00.

From the above, the total direct cost savings would be about $110,000.00. In addition, moving equipment into the area on three separate occasions would not only disrupt farm operations but may very likely result in time loss to the project due to the uncertainty of the contractor to return to the job promptly because of prior commitments of his equipment and manpower. These costs cannot be determined at the present time.

By extending the pump test from five to seven days, the estimated additional cost is $20,000.00. This is due to the added cost of manpower, supervision, and lab tests.

To summarize, the additional cost of drilling the three wells separately would be at least $110,000.00. If the pump test is extended to seven days, the additional cost would be about $20,000.00, making a grand total of $130,000.00 in additional costs.

In view of the above, may we again request approval to drill the three wells under a single contract. We wish to assure you of our full cooperation in seeing to it that all work will be performed satisfactorily and in compliance with all requirements.

Very truly yours,

Valerie L. Mendes
President

CC: Mink & Yuen Inc.
March 24, 1995

VIA FACSIMILE
(587-0390)
with original to follow

Chairperson Michael D. Wilson
Commission on Water Resource Management
Department of Land and Natural Resources
1121 Punchbowl Street, Room 227
Honolulu, Hawaii 96813

Re: Punalu'u Community Association and Hawai'i La'ieikawai Association's ("petitioners") Request for A Contested Case Hearing on Koolau Agricultural Co., Ltd.'s Application for Well Construction Permits at Makali'i I, II, III in Punalu'u, Oahu, Hawaii

Dear Chairperson Wilson:

On March 23, 1995, we received a copy of Richard Kiefer, Esq.'s letter to you.

Mr. Kiefer's letter again addresses matters beyond what was to be the limited issue of "standing." Therefore, again, on behalf of Koolau Agricultural Co., Ltd., we feel we must respond.

In regard to the Punalu'u III Exploratory Well (Well 3453-15), it is our understanding that the Board of Water Supply agreed that a hydrologist of a party's choice could observe the procedures in that situation. The situation involved there is very different from the instant matter. In particular, the sites involved in this matter are on the private property of Koolau Agricultural Co., Ltd. Koolau Agricultural Co., Ltd. will not agree to having a person chosen by the petitioners present during the phases of the proposed drilling and pump tests.

As previously stated, there is no basis or justification for a requirement that a person other than one with the Commission's Staff be present during the drilling and pump tests. However, in the event and only in the event that the Commission determines that the presence of a third party is absolutely necessary, Koolau Agricultural Co., Ltd. would agree to have a representative hydrologist/geologist of the University of Hawaii Water Resources Research Center be present with the Commission Staff during the proposed drilling and pump test procedures. In
addition, Koolau Agricultural Co., Ltd. would be agreeable to bearing the reasonable cost to have said person be present.

In the event the alternative procedure posed by Koolau Agricultural Co., Ltd. is not acceptable, it is again respectively submitted that the Staff's recommendation as presented at the March 1, 1995 hearing be approved as is and in its entirety.

Very truly yours,

MATSUBARA, LEE & KOTAKE

[Signature]

Gary B. K. P. Lee

GBL/sys

cc: Koolau Agricultural Co., Ltd.
    Richard Kiefer, Esq.
    Hawai‘i-La‘ieikawai Association, Inc.
    Punalu‘u Community Association
    William M. Tam, Esq.
March 22, 1995

Mr. Michael D. Wilson, Chairman
Commission on Water Resource Management
Department of Land & Natural Resources
1121 Punchbowl Street, Room 227
Honolulu, Hawaii 96813

Re: Makali'i Exploratory Wells
I, II, III Construction Permits

Dear Chairman Wilson:

On March 21, we received a copy of the letter to you from Ko'olau Agricultural Co., Ltd.'s attorney, Mr. Gary Lee, responding to my March 16 letter regarding the above-referenced matter.

While I believe that my March 16 letter adequately addresses the points Mr. Lee attempts to make in his letter, I would like to take this opportunity to briefly respond to Ko'olau Agriculture's adamant objection to the proposal that Dr. Robert Willis, a well-respected groundwater hydrologist, monitor Ko'olau Agriculture's testing by pointing out that the Commission has already approved such an arrangement in connection with the drilling of another well, the Punalu'u III Exploratory Well (Well No. 3453-15). Accordingly, we believe that approving the proposed monitoring would be in line with established Commission precedent.

Thank you for your attention to this matter.

Yours truly,

Richard Kiefer

cc: Hawai'i-La'ieikawai Association, Inc.
Punalu'u Community Association
William M. Tam, Esq.
Gary B.K.T. Lee, Esq.
March 21, 1995

Chairperson Michael D. Wilson
Commission of Water Resource Management
Department of Land and Natural Resources
1121 Punchbowl Street, Room 227
Honolulu, Hawaii 96813

Re: Punalu'u Community Association and Hawai'i La'ieikawai Association's ("petitioners") Request for a Contested Case Hearing on Koolau Agricultural Co., Ltd.'s Application for Well Construction Permits at Makali'i I, II, III in Punaluu, Oahu, Hawaii

Dear Chairperson Wilson:

On March 16, 1995, Koolau Agricultural Co., Ltd. received Richard Kiefer's letter dated March 14, 1995 which was addressed to you and in regard to the above-referenced matter.

On behalf of Koolau Agricultural Co., Ltd. we object to the letter to the extent that it discusses matters not directly responsive to the issue of whether the petitioners have the requisite "standing" to request a contested case hearing. At the hearing held on March 1, 1995, it was clearly stated that the parties could within two weeks from March 1, 1995 submit written information on the limited and sole issue of "standing". As the letter of March 14, 1995 discusses matters that are clearly beyond the scope of the limited purpose for which written statements could be submitted, those portions should not be considered.

Despite the foregoing, as petitioners have raised extraneous issues, Koolau Agricultural Co., Ltd. ("Koolau Agricultural") feels compelled to address them. In regard to these issues, Koolau Agricultural's position is as follows:

A. The Activities That Would Be Allowed Pursuant To The Requested Well Construction Permits.

The Staff of the Commission on Water Resource Management of the State of Hawaii ("Staff") submitted its Recommendations dated March 1, 1995. The Staff's Recommendations set forth the activities that can be conducted and how they are to be conducted in the event the well drilling permits that have been requested are
issued. Included in the Staff Recommendations are the detailed descriptions of the Aquifer (Pump) Test Procedures that are required.

In contrast, petitioners' description of the activities that they feel should be allowed is vague, provides no instructive guidance, and will probably only result in future disagreements as to what activities were permitted.

Therefore, the activities allowed as described in the Staff’s Recommendations should control.

B. Participation Of Persons Chosen By Petitioners.

Koolau Agricultural began the process in this matter in December 1991. Since that time, a substantial amount of time, effort, and expense have been expended. After five years, it has finally reached the present point where the Staff’s Recommendation is that this Commission approve Koolau Agricultural’s request for the issuance of the well construction permits.

As is evident, the procedures that are required to be followed as described in the Staff’s Recommendations were developed after much thought and effort. These procedures provide for Koolau Agricultural working cooperatively with the Commission’s Staff. On Koolau Agricultural’s behalf, certified, qualified, and experienced hydrologists and geologists will be implementing the prescribed procedures. In addition, the Commission’s Staff, which has the experience and resources to adequately and professionally participate in the activities, will also be involved. Therefore, there are presently more than adequate measures to assure that the process will be undertaken in a professional and objective manner.

Furthermore, in conjunction with the Staff’s Recommendations, Koolau Agricultural would make the test data and records available to all interested parties for their review and comment. This would result in an orderly distribution of information.

However, Koolau Agricultural is adamantly opposed to the participation of any person or persons of petitioners’ choosing as it is felt that this will only result in delay and unnecessary disputes.

The petitioners have throughout this process been opposed to the activities that Koolau Agricultural has sought to undertake. Therefore, it is Koolau Agricultural’s position that the person or persons chosen by the petitioners to participate in the well drilling process would not be unbiased or objective. It is
anticipated that such a person or persons would only unduly delay and disrupt the process and result in additional and unnecessary costs to Koolau Agricultural.

The participation of the Commission's Staff will provide an adequate means to validate the procedures that will be used. However, in the event the Commission determines that the presence of a third-party is necessary, Koolau Agricultural suggests that a neutral party such as the University of Hawaii Water Resources Research Center ("WRRC") have a representative present during all phases of the proposed drilling and pump tests. The WRRC is staffed with qualified and competent geologists and hydrologists and has a reputation of evaluating tests and procedures thoroughly and objectively.

In conclusion, it is respectfully submitted that the Staff's Recommendations as presented at the March 1, 1995 hearing be approved in its entirety.

Very truly yours,

Matsubara, Lee & Kotake

Gary B. K. T. Lee

cc: Koolau Agricultural Co., Ltd.
Richard Kiefer, Esq.
Hawai'i-La'ieikawai Association, Inc.
Punalu'u Community Association
William M. Tam, Esq.
Chairperson Michael D. Wilson  
Commission on Water Resource Management  
State of Hawaii  
Kalaninoku Building, Room 130  
1151 Punchbowl Street  
Honolulu, Hawaii 96813

Re: Punalu'u Community Association and Hawai'i La'ieikawai Association's Request for a Contested Case Hearing on Koolau Agricultural Co., Ltd.'s Application for Well Construction Permits at Makalii I, II and III in Punaluu, Oahu, Hawaii

Dear Chairperson Wilson:

On behalf of our client, Koolau Agricultural Co., Ltd. ("Koolau"), this office hereby submits this letter memorandum in opposition to Punalu'u Community Association and Hawai'i La'ieikawai Association's ("Petitioners") Request for a Contested Case Hearing on Koolau's Application for Well Construction Permits at Makalii I, II and III in Punaluu, Oahu, Hawaii as follows.

I. BACKGROUND

On or about December 18, 1991, Koolau submitted its applications to construct four wells in Punaluu, Oahu, Hawaii.

On or about March 18, 1992, the Commission on Water Resource Management ("Commission") denied without prejudice Koolau's applications to construct said four wells. The Commission ruled that Koolau's applications would be considered after the question of designation of Windward Oahu as a water management area was determined.

On or about April 8, 1992, Koolau petitioned the Commission to reconsider its decision to deny without prejudice Koolau's applications for well construction permits.

On or about May 5, 1992, the Commission designated Windward Oahu as a ground water management area.

On or about June 17, 1992, the Commission denied without prejudice Koolau's applications. The Commission determined that it would consider the applications subject to the approval of a water
use permit, since the area was recently designated as a ground water management area.

On or about October 29, 1992, Koolau submitted its water use permit applications for Makalii Wells I, II and III.

On or about April 28, 1993, the Commission denied without prejudice Koolau's water use permit applications for Makalii Wells I, II and III, but allowed Koolau to resubmit a well construction permit application for exploratory and hydrologic testing purposes only. Further, the Commission determined that there be an agreement on the methodology to test for ground and surface water interaction prior to approval of the well construction permit, and that information regarding any interaction between ground and surface water would be an important predicate to later action on a water use permit.

On or about June 13, 1994, Koolau submitted its letter agreement as to the methodology to test for ground and surface water interaction. Koolau also requested approval to drill the three well under a single contract to save at least $110,000.00 in additional costs over drilling the wells under separate contracts.

On or about July 13, 1994, Petitioners made their oral Request for Contested Case Hearing in this matter. On or about July 22, 1994, Petitioners made written confirmation of their oral request of July 13, 1994; and on or about July 23, 1994, Petitioners submitted their supplemental written support for their Request for Contested Case Hearing.

On or about March 1, 1995, Petitioners' Request for Contested Case Hearing came before the Commission, wherein Petitioners represented to the Commission that Koolau's sought after exploratory wells would interfere with their alleged surface water rights by causing certain alleged interaction between ground and surface water. The Commission decided to continue Petitioners' request and invited the submission of memoranda in opposition to said Request for Contested Case Hearing on the issue of Petitioners' standing to request a contested case hearing in this matter.

II. ARGUMENT

§ 91-1(5) of the Hawaii Revised Statutes ("HRS") defines a "contested case" as "a proceeding in which the legal rights, duties, or privileges of specific parties are required by law to be
determined after an opportunity for agency hearing." HRS § 91-1(5). Thus, if an agency hearing is "required by law," it is a contested case. Bush v. Hawaiian Homes Com'n, 76 Haw. 128, 134 (1994).

The phrase "required by law," in turn, embraces both statutory and constitutional law. Lono v. Ariyoshi, 63 Haw. 138, 146 (1981). Hence, if the statute or rule governing the activity in question mandates a hearing prior to the agency's decision-making, the actions of the agency are "required by law." Kona Old Hawaiian Trails Group v. Lyman, 69 Haw. 81, 90 (1987). Also, if the agency is constitutionally required to provide a hearing, the adjudicatory procedures of the Hawaii Administrative Procedure Act apply to such hearings. Aguiar v. Hawaii Housing Authority, 55 Haw. 478, 478 (1974).

Here, neither the Water Code nor the Commission's rules mandate that there be a hearing prior to the issuance of an exploratory well construction permit. Consequently, the remaining question is whether a hearing is constitutionally required.

In determining whether a contested case hearing is constitutionally mandated, the Commission is required to address the following two-part test:

1. Is the particular interest which the claimant seeks to protect by a hearing "property" within the meaning of the due process clauses of the federal and state constitutions; and

2. If the interest is "property," what specific procedures are required to protect it.

Aguiar, 55 Haw. at 495.

In the matter at hand, Petitioners seek to protect their alleged surface water rights, further alleging that the subject exploratory wells, when constructed, will cause an unacceptable interaction between ground water and surface water. The flaw in Petitioners' argument, however, is that there is no scientific proof that, in the area of the exploratory wells, such an unacceptable interaction between ground water and surface water exists or that there is any interaction between the subject ground and surface water. Therefore, there are no factual grounds to support their position that a contested case is "required to protect" their purported "property" rights.
Rather, the information submitted to this Commission is that there will be no effect on the streamflow as a result of removal of ground water. The Mink and Yuen, Inc., "KAHANA AQUIFER SYSTEM, Water Balance and Sustainable Yield," Report, dated March 26, 1992, a true and correct copy of which is attached hereto and incorporated herein as Exhibit "A", provides the following observations concerning the Makalii Basal Aquifer:

The Makalii basal aquifer is unused at the present. As single well was drilled into it in 1937 by Kahuku Plantation, and later the suburban Water system (subsequently incorporated in the Board of Water Supply) pumped a small amount for local consumption until the major BWS well field north of Punaluu went on stream.

The well was abandoned for about 30 years before Koolau Agricultural Co. reclaimed it last year and verified the existence of a developable aquifer by extensive pump tests. No one had shown any interest in this small aquifer, and never was it included in plans relating to future water developments.

* * *

The Makalii basal aquifer lies considerably seaward of the portion of Punaluu Valley where groundwater seepage from high level aquifers give rise to base flow. Removal of groundwater from the basal aquifer can have no effect on stream flow in either Punaluu Valley or Kahana Valley. Id. at pp. 4-6 (emphasis added).

If Koolau is granted the subject permit, and if evidence of an unacceptable interaction between ground water and surface water is established, then that evidence will be brought to light and Petitioners' concerns will be addressed. Deputy Director Rae M. Loui's submittal of March 1, 1995 regarding Petitioners' Request for a Contested Case Hearing, a true and correct copy of which is attached hereto and incorporated herein as Exhibit "B", establishes, among others, the following Standard Well Construction Permit Conditions and Special Conditions to safeguard stream flows:

STANDARD WELL CONSTRUCTION PERMIT CONDITIONS

* * *

3. The proposed well construction shall not adversely affect existing or future legal use of water in the area,
including any surface water or established instream flow standards. This permit or the authorization to construct the well shall not constitute a determination of correlative water rights.

* * *

SPECIAL CONDITIONS

1. The applicant is hereby informed, and agrees as a condition of this permit, that the issuance of the drilling permit shall in no way prejudice any future consideration by the Commission on the issuance or non-issuance of a water use permit. If the well is successful, and the applicant wants to use the water, the applicant will apply for a water use permit. If the well is not successful, the applicant will apply for a permit to seal/abandon the well, or properly secure it in a manner approved by the Commission.

2. The applicant shall notify the Commission at least two weeks prior to conducting the pumping test, and shall coordinate with and notify the Commission of any stream gaging conducted during the testing of the well.

3. If the testing demonstrates any measurable reduction of streamflow due to pumpage, and if the applicant wants to use the well, an amendment to the interim instream flow standard will be required.

4. Depending on the results of the pumping test, conversion to an operational status in the absence of a short-term definable effect on the stream may still require long-term monitoring of flows with possible shut-down during drought periods to assure maintenance of stream flows.

5. The applicant shall contact the State Historic Preservation Division at 587-0014 before starting any work on the project. The applicant shall obtain a written statement from the State Historic Preservation Division indicating that their concerns have been addressed, and a copy of that statement shall be sent to the Commission before work is started on the project. Id. at pp. 4-5. (emphasis added).
Turning back to the constitutional requirements of Aguiar, the dispositive answer to the second inquiry of the two-part test is that there are no specific procedures that are "required to protect" Petitioners' purported "property" rights, because there is no known or threatened harm that gives rise to any required protection of Petitioners' alleged "property" rights. In any event, if the subject permit is granted, Petitioners' concerns regarding ground and surface water interaction will be addressed based upon scientific information.

III. CONCLUSION

Based upon the foregoing, Koolau Agricultural Co., Ltd. respectfully requests that Petitioners' Request for Contested Case Hearing be denied.

Very truly yours,

MATSUBARA, LEE & KOTAKE

cc: Punalu'u Community Association
The Hawai'i-La'ieikawai Association, Inc.
Koolau Agricultural Co., Inc.
KAHANA AQUIFER SYSTEM

Water Balance and Sustainable Yield

Mink and Yuen, Inc.
March 26, 1992

The Kahana Aquifer System embraces 16.24 square miles lying between the lower reach of Punaluu Valley and the topographic divide between Makipuu and Waikane Valleys (see map). It was drawn as a separate Aquifer System because it falls between two distinctly different Systems, the Koolauloa Aquifer System to the north and the Koolaupoko Aquifer System to the south. In the Koolaupoko Aquifer System all groundwater is high level, from the crest of the Koolaus to the coast, while in the Koolauloa Aquifer System a band of high level groundwater occurs in the mountainous rift zone, but a large basal aquifer one to two miles wide extends parallel to the coast from lower Punaluu Valley northward to Kahuku, terminating about at Kawela.

The Kahana Aquifer System is geologically transitional from the predominantly flank lava terrain of Koolauloa to the amphitheater valleys terrain, typical of exposed rift zones, of Koolaupoko. Groundwater occurrence in the Kahana Aquifer System is mostly high level, but small basal aquifers exist in the sector between lower Punaluu and Kahana Valleys (the Makalii basal aquifer unit), in lower Kahana Valley, and

EXHIBIT "A"
along the coast from Kahana into Kaaawa Valley.

The Kahana Aquifer System comprises four units. The largest is Kahana Valley, all of which is in the System. The Makalii unit lies between the north drainage divide of Kahana and a straight line extension of lower Punaluu Stream to the Koolau crest. The whole of the Makalii unit includes, as a result, the major portion of the headwaters of Punaluu. To the south of Kahana all of Kaaawa is a single unit, and the most southerly segment of the System, Hakipuu, is also a single unit. High level and basal groundwaters occur in each unit with the exception of Hakipuu, where all groundwater is high level.

Water Balance of the Kahana Aquifer System

An attached flow chart illustrates the water balance of the whole of the Kahana Aquifer System. The balance is restricted to fluxes that are generated within the boundaries of the System and do not include groundwater underflows that may enter the System from the rift zone north of Punaluu. In his comprehensive investigation of the water resources of windward Oahu (USGS Water Supply Paper 1894), K.J. Takasaki estimated that groundwater flows on the order of 20 mgd move into the Kahana sector from Punaluu and Kaluanui. This estimate is not included in the balance discussed below.
Of the total average rainfall of 109 mgd, an estimated 31 mgd is consumed in evapotranspiration and another 6 mgd leaves the System by way of Waiahole Tunnel. The remaining 72 mgd is distributed among direct runoff, groundwater that seeps into streams, and groundwater that drains from high level aquifers into basal aquifers before discharging in caprock sediments along the coast.

Direct runoff refers to flow which accumulates in streams without first becoming groundwater. The groundwater component of stream flow initially infiltrates into a subsurface zone of saturation, then seeps into a stream channel to constitute perennial base flow. The portion of high level water that does not discharge into streams drains into basal aquifers. Equilibrium requires that basal groundwater leaks into caprock sediments from where it finally passes into the sea.

The flow diagram illustrates the apportionment of water in the hydrologic cycle. Ultimately an average total of about 44 mgd reaches the sea as stream flow from the valleys while about 29 mgd becomes basal groundwater. The Makalii basal aquifer accounts for a minimum of approximately 4 to 5 mgd of this total. Much of the remainder passes through the basal aquifer of lower Kahana Valley. Lesser proportions sustain the narrow basal aquifers along the coast between Kahana and
Kaaawa as well as the aquifer in the lower half of Kaaawa.

**Makalii Basal Aquifer**

The Makalii basal aquifer is unused at present. A single well was drilled into it in 1937 by Kahuku Plantation, and later the Suburban Water System (subsequently incorporated in the Board of Water Supply) pumped a small amount for local consumption until the major BWS well field north of Punaluu went on stream.

The well was abandoned for about 30 years before Koolau Agricultural Co. reclaimed it last year and verified the existence of a developable aquifer by extensive pump tests. No one had shown any interest in this small aquifer, and never was it included in plans relating to future water developments.

The estimate of 4 to 5 mgd groundwater flux passing through the Makalii basal aquifer is very conservative. The origin of the flux is rainfall infiltration over the aquifer and drainage from high level aquifers in the rift zone.

Because the basal head is at least 8 feet and may be as high as 12 feet, the sustainable yield of the aquifer is 2 to 2.5 mgd, or about 2.2 mgd. The proposed amount of pumpage will average about 1.5 mgd distributed between two wells. The estimated sustainable yield of the entire Kahana Aquifer...
System is 13 mgd. It must be stressed that these estimates are derived from a scanty data base and deliberately are skewed toward underestimates rather than given the advantage of liberal data interpretation.

No groundwater is currently extracted from the Makalii basal aquifer. In the entire Kahana Aquifer System groundwater exploitation takes place only in lower Kahana valley where BWS wells pump an average of 0.74 mgd, and a small quantity (less than 0.1 mgd) may still flow from an artesian well in Kaaawa. Thus less than 1 mgd of the estimated 13 mgd sustainable yield in the System is being used.

The BWS has suggested that it may develop as much as 10 mgd in the System in the far future, but this is an abstract notion that has not been pursued. The BWS did not target the Makalii basal aquifer for any of its proposed well sites. In any event, the groundwater taken from Makalii will be part of the BWS plan should it ever be carried through.

**Hydrological Effects Induced by Development of Makalii**

The Makalii basal aquifer lies considerably seaward of the portion of Punaluu Valley where groundwater seepage from high level aquifers gives rise to base flow. Removal of groundwater from the basal aquifer can have no effect on
stream flow in either Punaluu Valley or Kahana Valley.

Groundwater in the basal aquifer dissipates into the sedimentary sequence that forms a caprock which reaches inland to an elevation of about 20 feet and extends for a considerable distance offshore. In the strict water balance, leakage will be reduced by the amount of pumpage. Compared to the wetting effect of Punaluu Stream flow, however, this reduction will be quite small relative to the total water in the wetlands of the lower valley. The impact is not likely to be measurable.

Comments

The Makalii basal aquifer has not been utilized for three decades even though it is easily accessible and is a proven water resource. No one - planners, engineers, hydrologists, environmentalists - paid any attention to it until a year or so ago when Koolau Agricultural Co. decided to test the abandoned Suburban Water Supply well.

The proposal by Koolau Ag to drill additional wells is really a proposal to do exploratory drilling to prove the reliability of the aquifer to continuously provide potable water at a rate that could justify investment.
Windward Oahu Aquifer Systems
RAINFALL

Total Area 16.24 Square Miles

FLOW VALUES IN KGD

Leeward Oahu

KAIHANA AQUIFER SYSTEM

HAIKIIU, KAANAI, KAIHANA, HAKALII
Hand Delivery

Mr. Michael D. Wilson, Chairman  
Commission on Water Resource Management  
Department of Land & Natural Resources  
1121 Punchbowl Street, Room 227  
Honolulu, Hawaii 96813

Re: Hawai'i-La'ieikawai Association, Inc., & Punalu'u Community Association Request for Contested Case on Ko'olau Agricultural Co., Ltd.'s Application for Makali'i Exploratory Wells I, II, and Construction Permits

March 14, 1995

Dear Chairman Wilson:

We have been asked to advise petitioners The Hawai'i-La'ieikawai Association, Inc. and the Punalu'u Community Association on the question of standing that was raised at the March 1, 1995, Commission meeting on the above-referenced petition. After reviewing petitioners' contested case request, the Commission' staff recommendation regarding that request, and related materials, and after consulting with the petitioners, we hereby respond on their behalf to your request for additional information and/or briefing on the question of their standing to request a contested case.

The Petitioners continue to believe that they have amply demonstrated the requisite property right and interest to confer standing on them in this matter and, based on our review, we believe that they are correct. We also note that this conclusion has not been disputed by the Commission staff. Nevertheless, based on a further review of the matter and our consultations with them, The Hawai'i-La'ieikawai Association, Inc. and the Punalu'u Community Association are willing to withdraw their request for a contested case hearing at this time, but only (a) upon the understanding that the Application before the Commission is limited strictly to the drilling and limited testing of the exploratory wells, and no other activity, and (b) on condition that Applicant Ko'olau Agriculture Co., Ltd. is required, as a condition of its permit, to allow Petitioners' ground water hydrologist, Dr. Robert Willis, and/or his representative(s), to be present during all phases of the proposed drilling, pump
tests, and all other associated work (without, of course, unduly interfering with that work); to allow them to have full access to all data and materials concerning the drilling, testing and work; and to allow them to otherwise fully participate in all phases of the exploratory process.

To be clear, petitioners are not withdrawing their contested case petition because of any perceived lack of standing; for again, we believe that these organizations have amply proven standing to exist. Further, the withdrawal of the contested case request at this time is without prejudice to The Hawai‘i-Lā‘ieikawai Association, Inc.'s and the Punalu‘u Community Association's right to contest or object to further activities or applications regarding these wells.

Please contact The Hawai‘i-Lā‘ieikawai Association, Inc., and the Punalu‘u Community Association directly if there are any other matters outstanding with respect to their petition. Thank you for your consideration of the foregoing.

Sincerely yours,

Richard Kiefer

cc: Hawai‘i-Lā‘ieikawai Association, Inc.
    Punalu‘u Community Association
    William M. Tam, Esq.
    Gary Lee, Ko'olau Agricultural Co., Ltd.
State of Hawaii
Department of Land and Natural Resources
COMMISSION ON WATER RESOURCE MANAGEMENT
Honolulu, Hawaii
March 1, 1995

Chairperson and Members
Commission on Water Resource Management
State of Hawaii

Gentlemen:

REQUEST FOR A CONTESTED CASE HEARING,
Koolau Agricultural Co., Ltd.,
Application for Well Construction Permits,
Request to Drill Three 12-inch Diameter,
200-foot Deep Exploratory Wells,
Makalii Exploratory Wells I, II, and III
(Well Nos. 3452-02, 3453-12 & 15),
TMK 5-2-01: 41 and 5-3-03:1, Punalu'u, Oahu.

Applicant:
Koolau Agricultural Co., Ltd.
1100 Ala Moana Street, Suite 1201
Honolulu, Hawaii 96813

Landowners:
Kamehameha Schools/Bishop Estate
567 South King St., Suite 200
Honolulu, Hawaii 96813

Background:

December 18, 1991
The applicant submitted applications to construct four wells at Punalu'u, Oahu.

March 18, 1992
The Commission (Commission on Water Resource Management) denied without prejudice the applications for the four wells. The Commission felt it would be more appropriate to consider the applications after the broader question regarding the designation of Windward Oahu as a water management area was answered.

April 8, 1992
The applicant requested that the Commission reconsider its decision to deny without prejudice the applications for well construction permits.

May 5, 1992
The Commission designated Windward Oahu as a ground water management area.

June 17, 1992
The Commission denied without prejudice the applications. The Commission felt it would be more appropriate to consider the application subject to the approval of a water use permit, since the area was recently designated as a ground water management area.

October 29, 1992
The applicant submitted completed water use permit applications for Makalii Wells I, II, and III.

April 28, 1993
The Commission denied without prejudice the water use permit applications for the three wells but invited the applicant "to resubmit a well construction permit application for Makalii III prior to July 15, 1993, for exploratory and hydrologic testing purposes only. Further, that agreement on the methodology to test for ground and surface water interaction will be required prior to approval of the well construction permit. Information regarding any interaction between ground and surface water will be an important predicate to later action on a water use permit."

EXHIBIT "B"
ITEM 3
Agenda 1
Chairperson and Members
Commission on Water Resource Management

March 1, 1995

June 13, 1994

The applicant submitted a letter (attached) agreeing to the methodology to test for ground and surface water interaction. The applicant also requests approval to drill the three wells under a single contract, which would save at least $110,000 in additional costs over drilling the wells under separate contracts.

July 13, 1994

Request for a contested case hearing by the Punalu‘u Community Association and the Hawaii La‘ahita‘awal Association.

Action Requested: Permission to construct and test three 12-inch diameter exploratory wells (Well Nos. 3452-02 and 3453-11 & 12). Each well will be drilled to a minimum diameter which would permit analysis of the drill cores and test pumping. If the results are favorable, the well would then be drilled to its full diameter, cased and completed. If the results are not favorable, the well would be sealed. By not drilling to its full diameter, and if test results are unfavorable, about one-half the cost of drilling would be saved. The applicant's consultants are of the opinion that favorable test results from one well does not guarantee similar success for the other two wells.

Request for a contested case hearing by the Punalu‘u Community Association and the Hawaii La‘ahita‘awal Association on the above matter.

Well Location/Tax Map Key: The proposed well sites are at Punalu‘u, Oahu, at Tax Map Keys: 5-3-01:41 and 5-3-03:1 (see attached map).

Well Description:

<table>
<thead>
<tr>
<th>Well</th>
<th>Well 1</th>
<th>Well 2</th>
<th>Well 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ground elevation:</td>
<td>44 ft.</td>
<td>45 ft.</td>
<td>28 ft.</td>
</tr>
<tr>
<td>Casing diameter:</td>
<td>12 in.</td>
<td>12 in.</td>
<td>12 in.</td>
</tr>
<tr>
<td>Solid casing depth:</td>
<td>100 ft.</td>
<td>100 ft.</td>
<td>100 ft.</td>
</tr>
<tr>
<td>Open hole:</td>
<td>100 ft.</td>
<td>100 ft.</td>
<td>100 ft.</td>
</tr>
<tr>
<td>Total depth:</td>
<td>200 ft.</td>
<td>200 ft.</td>
<td>200 ft.</td>
</tr>
</tbody>
</table>

Assessor Review: The applications were sent to the Honolulu Board of Water Supply, the State Historic Preservation Division, the Office of Hawaiian Affairs, and the State Departments of Health and Hawaiian Home Lands for review. There were no objections though the State Historic Preservation Division listed some concerns which need to be addressed by the applicant.

The Koolmkaa Neighborhood Board No. 28 requested that the Commission deny the applications. They had previously gone on record supporting the designation of Windward Oahu and felt that "well permits should not be granted until such time as the commission deals with this designation".

Analysis: The wells are expected to develop water from a fresh basal aquifer. The effect of pumping the wells on streams or existing wells in the area has not been determined.

The Commission issued a declaratory ruling (Declaratory Ruling No. DEC-OA94-03) on March 16, 1994, effective in designated water management areas, that where there is insufficient information, an applicant may be allowed to drill and test an exploratory well prior to applying for a water use permit. The applicant shall be informed that the issuance of the drilling permit shall in no way prejudice any future consideration by the Commission on the issuance or non-issuance of a water use permit. If the well is successful, the applicant will apply for a water use permit. If the well is not successful, the applicant will apply for a permit to seal/abandon the well, or properly secure it in a manner approved by the Commission.

Water Availability: The wells are located in the Windward Sector, Kahana System of Oahu (see attached map). Sustainable yield is estimated at 13 mgd in the system. Present use in the system is about one mgd. Total present and proposed developments amount to about 11 mgd.
Committed Case Hearing Request: The Department of the Attorney General has reviewed the requests for a contested case hearing of the Punalu' Community Association and the Hawaii Lalei-kawal Association and has recommended that the Commission deny the requests for the following reasons:

The well construction permit would allow Koolau Ag to drill, construct, and test a well to determine its hydrological characteristics. The well construction permit would not allow Koolau Ag to install a pump, pump the water, or grant any right to use ground water, other than for testing purposes. Those activities would require a separate pump installation permit and a water use permit, respectively.

The sole question on this application is whether the proposed well construction permit could have an adverse impact on the two petitioners' legal interests which would give them standing to request a contested case hearing.

The Commission must first determine whether petitioners have a constitutional, statutory, or common law right that may be directly affected by the proposed activity. In the case of a constitutional "due process" claim, the Hawaii Supreme Court has outlined a two-part test when analyzing whether a hearing is required: 1) Is the particular interest which claimant seeks to protect by a hearing, "property" within the meaning of the due process clause of the state and federal constitutions; and 2) If the interest is "property", what specific procedures are required to protect it?

In order to determine if petitioners have any constitutional, statutory, or common law rights affected, it is necessary to: 1) examine what the permit or application would allow; and 2) determine whether the person objecting has a legal interest that could be harmed if the permit is approved as requested. In short, what is the scope and magnitude of the proposed activity and will it interfere with another's legally protected interest?

Whatever the circumstances, the objecting party must clearly and directly establish the nexus between the proposed action and the potentially harmed interest. It is not sufficient that individuals or groups simply have a different value preference or policy choice or wish to champion a cause. There must be a showing that the proposed action will lead to individualized harm.

A well drilling permit does not permanently affect any surface activity or surrounding property values like a land use change. A well drilling permit in an engineering permit to literally drill and test a well and nothing more.

A well drilling permit is distinct from a pump installation permit (which allows a particular sized pump). Neither of these permits grants any rights to use water in any way. By the well drilling permit's own terms, it does not affect the water rights of any adjoining or neighboring land owners.

While the water rights of an adjoining landowner could be affected in the future by a water use permit application, that permit is not at issue here. Even that permit will be subject to the cumulative water rights of other surface land owners.

Neither association nor their members could demonstrate how they would be injured by the simple drilling of a well. Generalized allegations are not enough. Whatever complaints they may have about future conduct under permits not yet even filed will have to be resolved when those applications are before the Commission.

Therefore, we conclude that given the limited impact that drilling a well poses, we can find no constitutional, statutory, or common law interests that would be affected by the drilling permit sought here. For the foregoing reasons we conclude that neither the Punalu' Community Association and Hawaii Lalei-kawal Association have standing to require a contested case hearing on Koolau Agricultural Co., Ltd.'s application for well drilling permits.
Chairperson and Members
Commission on Water Resource Management

March 1, 1995

RECOMMENDATIONS:

1. That the Commission consider and act on the request by the Punalu‘u Community Association and the Hawai‘i Leeward Association for a contested case hearing.

2. That if the request for a contested case hearing is denied, the Commission approve the issuance of well construction permits for Makali‘i Exploratory Wells I, II, and III, subject to the following conditions:

STANDARD WELL CONSTRUCTION PERMIT CONDITIONS

1. The Commission shall be notified before work commences.

2. The well construction permit shall be for construction and testing of the well only. The applicant shall coordinate with the Commission and conduct a pumping test in accordance with the attached protocol. A one-inch diameter (minimum) galvanized pipe shall be permanently installed, in a manner acceptable to the Commission, to accurately record water levels. No permanent pump may be installed and no water used from the well without first obtaining a water use permit and a pump installation permit from the Commission.

3. The proposed well construction shall not adversely affect existing or future legal uses of water in the area, including any surface water or established instream flow standards. This permit or the authorization to construct the well shall not constitute a determination of correlative water rights.

4. The following shall be submitted to the Commission within thirty (30) days after completion of work:

   a. Well completion report.
   b. Elevation (referenced to mean sea level, msl) survey by a Hawaii-licensed surveyor.
   c. As-built sectional drawing of the well.
   d. Plot plan and map showing the exact location of the well.
   e. Complete pumping test records, including time, pumping rate, drawdown, chloride content, and other water quality data.

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

6. The well construction permit application and staff submittal approved by the Commission at its March 1, 1995 meeting are incorporated into the permit by reference.

7. The permit may be revoked if work is not started within six (6) months after the date of issuance or if work is suspended or abandoned for six (6) months, unless otherwise specified. The work proposed in the well construction permit application shall be completed within two (2) years from the date of permit approval, unless otherwise specified. The permit may be extended by the Commission upon a showing of good cause and good-faith performance. A request to extend the permit shall be submitted to the Commission no later than three (3) months prior to the date the permit expires. If the commencement or completion date is not met, the Commission may revoke the permit after giving the permittee notice of the proposed action and an opportunity to be heard.

SPECIAL CONDITIONS

1. The applicant is hereby informed, and agrees as a condition of this permit, that the issuance of the drilling permit shall in no way prejudice any future consideration by the Commission on the issuance or non-issuance of a water use permit. If the well is
Chairperson and Members
Commission on Water Resource Management

March 1, 1995

successful, and the applicant wants to use the water, the applicant will apply for a water use permit. If the well is not successful, the applicant will apply for a permit to seal/abandon the well, or properly secure it in a manner approved by the Commission.

2. The applicant shall notify the Commission at least two weeks prior to conducting the pumping test, and shall coordinate with and notify the Commission of any stream gaging conducted during the testing of the well.

3. If the testing demonstrates any measurable reduction of streamflow due to pumping, and if the applicant wants to use the well, an amendment to the interim instream flow standard will be required.

4. Depending on the results of the pumping test, conversion to an operational status in the absence of a short-term definable effect on the stream may still require long-term monitoring of flows with possible shut-down during drought periods to assure maintenance of stream flows.

5. The applicant shall contact the State Historic Preservation Division at 587-0014 before starting any work on the project. The applicant shall obtain a written statement from the State Historic Preservation Division indicating that their concerns have been addressed, and a copy of that statement shall be sent to the Commission before work is started on the project.

Respectfully submitted,

[Signature]

RAB M. LOUI
Deputy Director

Attachments

APPROVED FOR SUBMITTAL:

[Signature]

MICHAEL D. WILSON, Chairperson
ACQUIFER (PUMP) TEST PROCEDURES

The pump test procedure for new wells shall consist of a step-drawdown test followed by a long-term continuous aquifer test. Testing the well and aquifer in the prescribed manner should result in the hydrologic information needed to determine: 1) the well's performance with regard to yield and water quality (chloride concentration), and 2) the nearby hydraulic properties of the aquifer.

General Recording Requirements

The records required for analysis and the tolerance in measurement acceptable for the step-drawdown and long-term continuous aquifer test are as follows:

1. Discharge from the well shall not fluctuate beyond ± 10 percent.
2. Depth to water measurements in the pumped well shall be accurate to 0.01 feet.
3. Time shall be accurate within ± 1 percent.
4. Water discharged from the well during the step-drawdown and long-term test shall be carried away from the well to a distance sufficient to preclude circulation of the discharge water downward to the ground-water table.
5. Recording of data should be on a form similar to Table 1. All information shown in Table 1 shall be provided. In addition, data shall be plotted on Graph 1 and provided.

Step-Drawdown Test

The purpose of the step-drawdown test is to establish the efficiency of the well and to provide preliminary information on the yield of the well, both from a quantity and quality standpoint.

1. Measurement of water level in the pumped well shall be made every 12 hours for a period of no less than two days prior to the initiation of the step-drawdown test in order to obtain the prestest trend in water levels.
2. The step-drawdown test will consist of continuously pumping the well for four hours at four different rates.
   a. The change from one pumping rate to the next must be sufficient to induce an observable change in water level in the well from the previous pumping rate.
   b. If desired, the four different rates should represent the full range of pump capacity (if the yield can sustain this), but this is not necessary.
3. Each pumping rate shall be continued for one hour, after which the new rate should be instituted as rapidly as possible.
4. Pumping should begin at the lowest rate and conclude with the highest rate.
5. Pumping should be continuous through the entire step-drawdown test.
6. Measurement of chloride concentration and temperature of the discharge water shall be measured at least five times:
   a. at the end of each pumping rate during the step-drawdown test, and
   b. at the very beginning of the test.
7. A sufficient number of water level measurements shall be made in the pumped well following the termination of the step-drawdown test to establish that the water level fully recovers from each test to pretest levels.

Long-Term Continuous Test

The purpose of the long-term continuous test is to determine the hydraulic properties of the aquifer to explore for and identify nearby aquifer boundaries such as streams or dikes, and to observe the trend in chloride concentration of the discharge water.

1. The long-term test should not commence until the water level in the pumped well has fully recovered from the step-drawdown test. Generally, the time required for this recovery will be slightly greater than four hours. The water level in the pumped well should be measured immediately before initiation of the long-term test.
2. The pump rate for the long-term test should be sufficient to create an observable drawdown.
3. The test should be run 24 hours per day for at least seven days. The decision to extend the test beyond four days shall be determined by agreement between the applicant's consultant and the staff of the Commission. If during the test, the water level remains the same for a period of 24 hours, the test can be terminated.
AQUIFER (PUMP) TEST PROCEDURES

4. Measurement of chloride concentration and temperature of the discharge water during the long-term test shall be made at the beginning of the test and every six hours thereafter.

5. Depth to water in all wells shall be measured with sufficient frequency that each logarithmic cycle in time on the data plots (Graph 1) contains at least 10 data points spread through the cycle. Thus, depth to water should be made at t=0 (immediately prior to start of the test), and as close as possible at t=1, 1.5, 2, 2.5, 3, 3.5, 5, and 8 minutes for the first ten minutes and at all succeeding decimal multiples of these numbers to the end of the test (t=10, 15, 20, 25, 30, 40, 50, 60, 70, and 80 minutes for the log cycle 10 to 100 minutes, etc.)

6. A sufficient number of water level measurements shall be made in the pumped well following termination of the long-term continuous test to establish that the water level fully recovers from each test to present levels.
June 13, 1994

Mr. Keith W. Ahue, Chairperson
Commission on Water Resource Management
Department of Land and Natural Resources
P.O. Box 621
Honolulu, Hawaii 96809

Re: Makalii Wells - Test Protocol and Request to Drill Three Wells

Dear Mr. Ahue:

Thank you for your letter of May 27, 1994 regarding our request to drill the three proposed wells as a single project, and your reference to the possibility of extending the pump test to seven days if warranted by field conditions.

Your request to allow for a seven-day test is acceptable to us. However, we recommend that the decision to extend the test be determined by agreement between our consultants and the staff of the Commission on Water Resource Management.

In regard to the question of considering the second and third wells as being exploratory in nature, we believe that all three of the Makalii wells should be regarded as exploratory wells in view of the fact that, historically, only one well has ever been drilled in the region between Kahana and Punalu'u valleys. Our view is consistent with the position taken by the Water Commission staff that virtually nothing is known about the Makalii aquifer and, therefore, special conditions concerning drilling and testing are necessary. As a result of this position, we have not been able to proceed with our water development program for several years.

We plan to use an exploratory approach in the drilling of the three wells by first drilling to a minimum diameter which would permit analysis of the drill cores and test pumping. If the results are favorable, the wells would then be drilled to its full diameter, cased and completed. If the results are not favorable, the wells would then be sealed at our expense. By not drilling to their full diameters, and if test results are unfavorable, we would save about one-half the cost of drilling. Our consultants are of the opinion that favorable test results from the first well do not guarantee similar success for the other two wells.

1100 Alaakua Street / Suite 1201 / Honolulu, Hawaii 96813 / Telephone: (808) 523-9230 / Fax: (808) 523-9222
The cost savings of drilling three wells under one contract would be substantial as compared with the cost of drilling the wells separately. Mobilization and demobilization costs of drilling one well is estimated at $25,000.00. For three wells, the cost is about $75,000.00, or a difference of $50,000.00. To gain access to the well sites for the drilling equipment it will be necessary to dismantle and restore fencing, paddocks, irrigation systems, electrical wiring, and to repair roadways after the equipment leaves. The total additional cost of this work, if the wells were drilled one at a time, is estimated at $80,000.00.

From the above, the total direct cost savings would be about $110,000.00. In addition, moving equipment into the area on three separate occasions would not only disrupt farm operations but may very likely result in time loss to the project due to the uncertainty of the contractor to return to the job promptly because of prior commitments of his equipment and manpower. These costs cannot be determined at the present time.

By extending the pump test from five to seven days, the estimated additional cost is $20,000.00. This is due to the added cost of manpower, supervision, and lab tests.

To summarize, the additional cost of drilling the three wells separately would be at least $110,000.00. If the pump test is extended to seven days, the additional cost would be about $20,000.00, making a grand total of $130,000.00 in additional costs.

In view of the above, may we again request approval to drill the three wells under a single contract. We wish to assure you of our full cooperation in seeing to it that all work will be performed satisfactorily and in compliance with all requirements.

Very truly yours,

Valerie L. Mendes
President

CC: Hink & Tuen Inc.
Hand Delivery

Mr. Michael D. Wilson, Chairman
Commission on Water Resource Management
Department of Land & Natural Resources
1121 Punchbowl Street, Room 227
Honolulu, Hawaii 96813

Re: Hawai’i-Lā‘ieikawai Association, Inc., & Punalu‘u Community Association Request for Contested Case on Ko‘olau Agriculture Co., Ltd.’s Application for Makali‘i Exploratory Wells I, II Construction Permits

Dear Chairman Wilson:

We have been asked to advise petitioners The Hawai’i-Lā‘ieikawai Association, Inc. and the Punalu‘u Community Association on the question of standing that was raised at the March 1, 1995, Commission meeting on the above-referenced petition. After reviewing petitioners’ contested case request, the Commission’ staff recommendation regarding that request, and related materials, and after consulting with the petitioners, we hereby respond on their behalf to your request for additional information and/or briefing on the question of their standing to request a contested case.

The Petitioners continue to believe that they have amply demonstrated the requisite property right and interest to confer standing on them in this matter and, based on our review, we believe that they are correct. We also note that this conclusion has not been disputed by the Commission staff. Nevertheless, based on a further review of the matter and our consultations with them, The Hawai’i-Lā‘ieikawai Association, Inc. and the Punalu‘u Community Association are willing to withdraw their request for a contested case hearing at this time, but only (a) upon the understanding that the Application before the Commission is limited strictly to the drilling and limited testing of the exploratory wells, and no other activity, and (b) on condition that Applicant Ko‘olau Agriculture Co., Ltd. is required, as a condition of its permit, to allow Petitioners’ ground water hydrologist, Dr. Robert Willis, and/or his representative(s), to be present during all phases of the proposed drilling, pump
Mr. Michael D. Wilson, Chairman  
Commission on Water Resource Management  
March 14, 1995  
page 2

tests, and all other associated work (without, of course, unduly interfering with that work); to allow them to have full access to all data and materials concerning the drilling, testing and work; and to allow them to otherwise fully participate in all phases of the exploratory process.

To be clear, petitioners are not withdrawing their contested case petition because of any perceived lack of standing; for again, we believe that these organizations have amply proven standing to exist. Further, the withdrawal of the contested case request at this time is without prejudice to The Hawai‘i-Lā‘ieikawai Association, Inc.'s and the Punalu‘u Community Association's right to contest or object to further activities or applications regarding these wells.

Please contact The Hawai‘i-Lā‘ieikawai Association, Inc., and the Punalu‘u Community Association directly if there are any other matters outstanding with respect to their petition. Thank you for your consideration of the foregoing.

Sincerely yours,

[Signature]

Richard Kiefer

cc: Hawai‘i-Lā‘ieikawai Association, Inc.  
Punalu‘u Community Association  
William M. Tam, Esq.  
Gary Lee, Ko‘olau Agricultural Co., Ltd.
Ms. Valerie L. Mendes, President
Koolau Agricultural Co., Ltd.
915 Fort Street, 6th Floor
Honolulu, HI 96813

Dear Ms. Mendes:

Makalii Exploratory Wells I, II, and III
(Well Nos. 3452-02, 3453-12 & 13)

The Commission on Water Resource Management, at its meeting of March 1, 1995, deferred acting on Koolau Agricultural Co., Ltd.'s application to construct and test the Makalii Wells. The deferral was to give the parties requesting a contested case hearing time to submit to the Commission any additional information related to whether they have standing in the matter.

The matter is to be taken up at the next meeting on Oahu, which is tentatively scheduled for April 5, 1995.

Please call me at 587-0214 if you have any questions.

Sincerely,

RAE M. LOUI
Deputy Director
Dear Dr. Anthony:

Makalii Exploratory Wells I, II, and III  
(Well Nos. 3452-02, 3453-12 & 13)

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The matter is to be taken up at the next meeting on Oahu, which is tentatively scheduled for April 5, 1995.

Please call Ed Sakoda at 587-0225 you have any questions.

Sincerely,

RAE M. LOUI  
Deputy Director

ES:ss
Mr. Creighton U. Mattoon, President
Punalu'u Community Association
P.O. Box 239
Hauula, Hawaii 96717

Dear Mr. Mattoon:

Makalii Exploratory Wells I, II, and III
(Well Nos. 3452-02, 3453-12 & 13)

The Commission on Water Resource Management, at its meeting of March 1, 1995, deferred acting on Koolau Agricultural Co., Ltd.'s application to construct and test the Makalii Wells. The deferral was to give the parties requesting a contested case hearing time to submit to the Commission any additional information related to whether they have standing in the matter. As stated at the meeting, additional information is to be submitted to the Commission within two weeks, or by March 15, 1995.

The matter is to be taken up at the next meeting on Oahu, which is tentatively scheduled for April 5, 1995.

Please call Ed Sakoda at 587-0225 you have any questions.

Sincerely,

RAE M. LOUI
Deputy Director

ES:ss
REQUEST FOR A CONTESTED CASE HEARING,
Koolau Agricultural Co., Ltd.,
Application for Well Construction Permits,
Request to Drill Three 12-inch Diameter,
200-foot Deep Exploratory Wells,
Makalii Exploratory Wells I, II, and III
(Well Nos. 3452-02, 3453-12 & 13),
TMK 5-3-01: 41 and 5-3-03: 1, Punaluu, Oahu

Applicant:
Koolau Agricultural Co., Ltd.
1100 Alakea Street, Suite 1201
Honolulu, Hawaii 96813

Landowner:
Kamehameha Schools/Bishop Estate
567 South King St., Suite 200
Honolulu, Hawaii 96813

Background:

December 18, 1991
The applicant submitted applications to construct four wells at Punaluu, Oahu.

March 18, 1992
The Commission (Commission on Water Resource Management) denied without prejudice the applications for the four wells. The Commission felt it would be more appropriate to consider the applications after the broader question regarding the designation of Windward Oahu as a water management area was answered.

April 8, 1992
The applicant requested that the Commission reconsider its decision to deny without prejudice the applications for well construction permits.

May 5, 1992
The Commission designated Windward Oahu as a ground water management area.

June 17, 1992
The Commission denied without prejudice the applications. The Commission felt it would be more appropriate to consider the application subject to the approval of a water use permit, since the area was recently designated as a ground water management area.

October 29, 1992
The applicant submitted completed water use permit applications for Makalii Wells I, II, and III.

April 28, 1993
The Commission denied without prejudice the water use permit applications for the three wells but invited the applicant "to resubmit a well construction permit application for Makalii III prior to July 15, 1993, for exploratory and hydrologic testing purposes only. Further, that agreement on the methodology to test for ground and surface water interaction will be required prior to approval of the well construction permit. Information regarding any interaction between ground and surface water will be an important predicate to later action on a water use permit."

ITEM 3
Agenda 1
Chairperson and Members  
Commission on Water Resource Management  

June 13, 1994  
The applicant submitted a letter (attached) agreeing to the methodology to test for ground and surface water interaction. The applicant also requests approval to drill the three wells under a single contract, which would save at least $110,000 in additional costs over drilling the wells under separate contracts.

July 13, 1994  
Request for a contested case hearing by the Punaluu Community Association and the Hawaii Laieikawai Association.

Action Requested: Permission to construct and test three 12-inch diameter exploratory wells (Well Nos. 3452-02 and 3453-11 & 12). Each well will be drilled to a minimum diameter which would permit analysis of the drill cores and test pumping. If the results are favorable, the well would then be drilled to its full diameter, cased and completed. If the results are not favorable, the well would be sealed. By not drilling to its full diameter, and if test results are unfavorable, about one-half the cost of drilling would be saved. The applicant's consultants are of the opinion that favorable test results from one well does not guarantee similar success for the other two wells.

Request for a contested case hearing by the Punaluu Community Association and the Hawaii Laieikawai Association on the above matter.

Well Location/Tax Map Key: The proposed well sites are at Punaluu, Oahu, at Tax Map Keys: 5-3-01:41 and 5-3-03:1 (see attached map).

<table>
<thead>
<tr>
<th>Well Description</th>
<th>Well 1</th>
<th>Well 2</th>
<th>Well 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ground elevation</td>
<td>44 ft.</td>
<td>45 ft.</td>
<td>28 ft.</td>
</tr>
<tr>
<td>Casing diameter</td>
<td>12 in.</td>
<td>12 in.</td>
<td>12 in.</td>
</tr>
<tr>
<td>Solid casing depth</td>
<td>100 ft.</td>
<td>100 ft.</td>
<td>100 ft.</td>
</tr>
<tr>
<td>Open hole</td>
<td>100 ft.</td>
<td>100 ft.</td>
<td>100 ft.</td>
</tr>
<tr>
<td>Total depth</td>
<td>200 ft.</td>
<td>200 ft.</td>
<td>200 ft.</td>
</tr>
</tbody>
</table>

Agency Review: The applications were sent to the Honolulu Board of Water Supply, the State Historic Preservation Division, the Office of Hawaiian Affairs, and the State Departments of Health and Hawaiian Home Lands for review. There were no objections though the State Historic Preservation Division listed some concerns which need to be addressed by the applicant.

The Koolauloa Neighborhood Board No. 28 requested that the Commission deny the applications. They had previously gone on record supporting the designation of Windward Oahu and felt that "well permits should not be granted until such time as the commission deals with this designation".

Analysis: The wells are expected to develop water from a fresh basal aquifer. The effect of pumping the wells on streams or existing wells in the area has not been determined.

The Commission issued a declaratory ruling (Declaratory Ruling No. DEC-OA94-G2) on March 16, 1994, effective in designated water management areas, that where there is insufficient information, an applicant may be allowed to drill and test an exploratory well prior to applying for a water use permit. The applicant shall be informed that the issuance of the drilling permit shall in no way prejudice any future consideration by the Commission on the issuance or non-issuance of a water use permit. If the well is successful, the applicant will apply for a water use permit. If the well is not successful, the applicant will apply for a permit to seal/abandon the well, or properly secure it in a manner approved by the Commission.

Water Availability: The wells are located in the Windward Sector, Kahana System of Oahu (see attached map). Sustainable yield is estimated at 13 mgd in the system. Present use in the system is about one mgd. Total present and proposed developments amount to about 11 mgd.
Contested Case Hearing Request: The Department of the Attorney General has reviewed the requests for a contested case hearing of the Punaluu Community Association and the Hawaii Laieikawai Association and has recommended that the Commission deny the requests for the following reasons:

The well construction permit would allow Koolau Ag to drill, construct, and test a well to determine its hydrological characteristics. The well construction permit would not allow Koolau Ag to install a pump, pump the water, or grant any right to use ground water, other than for testing purposes. Those activities would require a separate pump installation permit and a water use permit, respectively.

The sole question on this application is whether the proposed well construction permit could have an adverse impact on the two petitioners' legal interests which would give them standing to request a contested case hearing.

The Commission must first determine whether petitioners have a constitutional, statutory, or common law right that may be directly affected by the proposed activity. In the case of a constitutional "due process" claim, the Hawaii Supreme Court has outlined a two part test when analyzing whether a hearing is required: 1) Is the particular interest which claimant seeks to protect by a hearing, "property" within the meaning of the due process clause of the state and federal constitutions; and 2) If the interest is "property", what specific procedures are required to protect it?

In order to determine if petitioners have any constitutional, statutory, or common law rights affected, it is necessary to: 1) examine what the permit or application would allow; and 2) determine whether the person objecting has a legal interest that could be harmed if the permit is approved as requested. In short, what is the scope and magnitude of the proposed activity and will it interfere with another's legally protected interest?

Whatever the circumstances, the objecting party must clearly and directly establish the nexus between the proposed action and the potentially harmed interest. It is not sufficient that individuals or groups simply have a different value preference or policy choice or wish to champion a cause. There must be a showing that the proposed action will lead to individualized harm.

A well drilling permit does not permanently affect any surface activity or surrounding property values like a land use change. A well drilling permit in an engineering permit to literally drill and test a well and nothing more.

A well drilling permit is distinct from a pump installation permit (which allows a particular sized pump). Neither of these permits grants any rights to use water in any way. By the well drilling permit's own terms, it does not affect the water rights of any adjoining or neighboring land owners.

While the water rights of an adjoining landowner could be affected in the future by a water use permit application, that permit is not at issue here. Even that permit will be subject to the correlative water rights of other surface land owners.

Neither association nor their members could demonstrate how they would be injured by the simple drilling of a well. Generalized allegations are not enough. Whatever complaints they may have about future conduct under permits not yet even filed will have to be resolved when those applications are before the Commission.

Therefore, we conclude that given the limited impact that drilling a well poses, we can find no constitutional, statutory, or common law interests that would be affected by the drilling permit sought here. For the foregoing reasons we conclude that neither the Punaluu Community Association and Hawaii Laieikawai Association have standing to require a contested case hearing on Koolau Agricultural Co., Ltd.'s application for well drilling permits.
RECOMMENDATIONS:

1. That the Commission consider and act on the request by the Punaluu Community Association and the Hawaii Laieikawai Association for a contested case hearing.

2. That if the request for a contested case hearing is denied, the Commission approve the issuance of well construction permits for Makalii Exploratory Wells I, II, and III, subject to the following conditions:

STANDARD WELL CONSTRUCTION PERMIT CONDITIONS

1. The Commission shall be notified before work commences.

2. The well construction permit shall be for construction and testing of the well only. The applicant shall coordinate with the Commission and conduct a pumping test in accordance with the attached protocol. A one-inch diameter (minimum) galvanized pipe shall be permanently installed, in a manner acceptable to the Commission, to accurately record water levels. No permanent pump may be installed and no water used from the well without first obtaining a water use permit and a pump installation permit from the Commission.

3. The proposed well construction shall not adversely affect existing or future legal uses of water in the area, including any surface water or established instream flow standards. This permit or the authorization to construct the well shall not constitute a determination of correlative water rights.

4. The following shall be submitted to the Commission within thirty (30) days after completion of work:
   a. Well completion report.
   b. Elevation (referenced to mean sea level, msl) survey by a Hawaii-licensed surveyor.
   c. As-built sectional drawing of the well.
   d. Plot plan and map showing the exact location of the well.
   e. Complete pumping test records, including time, pumping rate, drawdown, chloride content, and other water quality data.

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

6. The well construction permit application and staff submittal approved by the Commission at its March 1, 1995 meeting are incorporated into the permit by reference.

7. The permit may be revoked if work is not started within six (6) months after the date of issuance or if work is suspended or abandoned for six (6) months, unless otherwise specified. The work proposed in the well construction permit application shall be completed within two (2) years from the date of permit approval, unless otherwise specified. The permit may be extended by the Commission upon a showing of good cause and good-faith performance. A request to extend the permit shall be submitted to the Commission no later than three (3) months prior to the date the permit expires. If the commencement or completion date is not met, the Commission may revoke the permit after giving the permittee notice of the proposed action and an opportunity to be heard.

SPECIAL CONDITIONS

1. The applicant is hereby informed, and agrees as a condition of this permit, that the issuance of the drilling permit shall in no way prejudice any future consideration by the Commission on the issuance or non-issuance of a water use permit. If the well is
Chairperson and Members  
Commission on Water Resource Management  
March 1, 1995  

successful, and the applicant wants to use the water, the applicant will apply for a water use permit. If the well is not successful, the applicant will apply for a permit to seal/abandon the well, or properly secure it in a manner approved by the Commission.

2. The applicant shall notify the Commission at least two weeks prior to conducting the pumping test, and shall coordinate with and notify the Commission of any stream gaging conducted during the testing of the well.

3. If the testing demonstrates any measurable reduction of streamflow due to pumpage, and if the applicant wants to use the well, an amendment to the interim instream flow standard will be required.

4. Depending on the results of the pumping test, conversion to an operational status in the absence of a short-term definable effect on the stream may still require long-term monitoring of flows with possible shut-down during drought periods to assure maintenance of stream flows.

5. The applicant shall contact the State Historic Preservation Division at 587-0014 before starting any work on the project. The applicant shall obtain a written statement from the State Historic Preservation Division indicating that their concerns have been addressed, and a copy of that statement shall be sent to the Commission before work is started on the project.

Respectfully submitted,

RAE M. LOUI  
Deputy Director

Attachments

APPROVED FOR SUBMITTAL:

MICHAEL D. WILSON, Chairperson

Before the next Council meeting:
- Submit within next 2 weeks additional wastewater flow info
- Council will notify at least 6 days prior to next meeting
AQUIFER (PUMP) TEST PROCEDURES

The pump test procedure for new wells shall consist of a step-drawdown test followed by a long-term continuous aquifer test. Testing the well and aquifer in the prescribed manner should result in the hydrologic information needed to determine: 1) the well's performance with regard to yield and water quality (chloride concentration), and 2) the nearby hydraulic properties of the aquifer.

General Recording Requirements

The records required for analysis and the tolerance in measurement acceptable for the step-drawdown and long-term continuous aquifer test are as follows:

1. Discharge from the well shall not fluctuate beyond ± 10 percent.
2. Depth to water measurements in the pumped well shall be accurate to 0.01 feet.
3. Time shall be accurate within ± 1 percent.
4. Water discharged from the well during the step-drawdown and long-term test shall be carried away from the well to a distance sufficient to preclude circulation of the discharge water downward to the ground-water table.
5. Recording of data should be on a form similar to Table 1. All information shown in Table 1 shall be provided. In addition, data shall be plotted on Graph 1 and provided.

Step-Drawdown Test

The purpose of the step-drawdown test is to establish the efficiency of the well and to provide preliminary information on the yield of the well, both from a quantity and quality standpoint.

1. Measurement of water level in the pumped well shall be made every 12 hours for a period of no less than two days prior to the initiation of the step-drawdown test in order to obtain the pretest trend in water levels.
2. The step-drawdown test will consist of continuously pumping the well for four hours at four different rates.
   a. The change from one pumping rate to the next must be sufficient to induce an observable change in water level in the well from the previous pumpage rate.
   b. If desired, the four different rates should represent the full range of pump capacity (if the yield can sustain this), but this is not necessary.
3. Each pumping rate should be continued for one hour, after which the new rate should be instituted as rapidly as possible.
4. Pumping should begin at the lowest rate and conclude with the highest rate.
5. Pumping should be continuous through the entire step-drawdown test.
6. Measurement of chloride concentration and temperature of the discharge water shall be measured at least five times:
   a. at the end of each pumping rate during the step-drawdown test, and
   b. at the very beginning of the test.
7. A sufficient number of water level measurements shall be made in the pumped well following the termination of the step-drawdown test to establish that the water level fully recovers from each test to pretest levels.

Long-Term Continuous Test

The purpose of the long-term continuous test is to determine the hydraulic properties of the aquifer to explore for and identify nearby aquifer boundaries such as streams or dikes, and to observe the trend in chloride concentration of the discharge water.

1. The long-term test should not commence until the water level in the pumped well has fully recovered from the step-drawdown test. Generally, the time required for this recovery will be slightly greater than four hours. The water level in the pumped well should be measured immediately before initiation of the long-term test.
2. The pump rate for the long-term test should be sufficient to create an observable drawdown.
3. The test should be run 24 hours per day for at least seven days. The decision to extend the test beyond four days shall be determined by agreement between the applicant's consultant and the staff of the Commission. If during the test, the water level remains the same for a period of 24 hours, the test can be terminated.
AQUIFER (PUMP) TEST PROCEDURES

4. Measurement of chloride concentration and temperature of the discharge water during the long-term test shall be made at the beginning of the test and every six hours thereafter.

5. Depth to water in all wells shall be measured with sufficient frequency that each logarithmic cycle in time on the data plots (Graph 1) contains at least 10 data points spread through the cycle. Thus, depth to water should be made at t=0 (immediately prior to start of the test), and as close as possible at t=1, 1.5, 2, 2.5, 3, 4, 5, 6, 7, and 8 minutes for the first ten minutes and at all succeeding decimal multiples of these numbers to the end of the test (t=10, 15, 20, 25, 30, 40, 50, 60, 70, and 80 minutes for the log cycle 10 to 100 minutes, etc.)

6. A sufficient number of water level measurements shall be made in the pumped well following termination of the long-term continuous test to establish that the water level fully recovers from each test to pretest levels.
June 13, 1994

Mr. Keith W. Ahue, Chairperson
Commission on Water Resource Management
Department of Land and Natural Resources
P.O. Box 621
Honolulu, Hawaii 96809

Re: Makalii Wells - Test Protocol and Request to Drill Three Wells

Dear Mr. Ahue:

Thank you for your letter of May 27, 1994 regarding our request to drill the three proposed wells as a single project, and your reference to the possibility of extending the pump test to seven days if warranted by field conditions.

Your request to allow for a seven-day test is acceptable to us. However, we recommend that the decision to extend the test be determined by agreement between our consultants and the staff of the Commission on Water Resource Management.

In regard to the question of considering the second and third wells as being exploratory in nature, we believe that all three of the Makalii wells should be regarded as exploratory wells in view of the fact that, historically, only one well has ever been drilled in the region between Kahana and Punalu'u valleys. Our view is consistent with the position taken by the Water Commission staff that virtually nothing is known about the Makalii aquifer and, therefore, special conditions concerning drilling and testing are necessary. As a result of this position, we have not been able to proceed with our water development program for several years.

We plan to use an exploratory approach in the drilling of the three wells by first drilling to a minimum diameter which would permit analysis of the drill cores and test pumping. If the results are favorable, the wells would then be drilled to its full diameter, cased and completed. If the results are not favorable, the wells would then be sealed at our expense. By not drilling to their full diameters, and if test results are unfavorable, we would save about one-half the cost of drilling. Our consultants are of the opinion that favorable test results from the first well do not guarantee similar success for the other two wells.
The cost savings of drilling three wells under one contract would be substantial as compared with the cost of drilling the wells separately. Mobilization and demobilization costs of drilling one well is estimated at $25,000.00. For three wells, the cost is about $75,000.00, or a difference of $50,000.00. To gain access to the well sites for the drilling equipment it will be necessary to dismantle and restore fencing, paddocks, irrigation systems, electrical wiring, and to repair roadways after the equipment leaves. The total additional cost of this work, if the wells were drilled one at a time, is estimated at $60,000.00.

From the above, the total direct cost savings would be about $110,000.00. In addition, moving equipment into the area on three separate occasions would not only disrupt farm operations but may very likely result in time loss to the project due to the uncertainty of the contractor to return to the job promptly because of prior commitments of his equipment and manpower. These costs cannot be determined at the present time.

By extending the pump test from five to seven days, the estimated additional cost is $20,000.00. This is due to the added cost of manpower, supervision, and lab tests.

To summarize, the additional cost of drilling the three wells separately would be at least $110,000.00. If the pump test is extended to seven days, the additional cost would be about $20,000.00, making a grand total of $130,000.00 in additional costs.

In view of the above, may we again request approval to drill the three wells under a single contract. We wish to assure you of our full cooperation in seeing to it that all work will be performed satisfactorily and in compliance with all requirements.

Very truly yours,

Valerie L. Mendes
President

CC: Mink & Yuen Inc.
Mr. Keith Ahue,  
Chairperson  
Department of Land and Natural Resources  
Commission on Water Resource Management  
P.O. Box 621  
Honolulu, Hawaii 96809  

Subject: Contested Case Request of Punaluu Community Ass. et. al  

Dear Mr. Ahue:  

Koolau Agricultural Co., Ltd. ("Koolau") has been awaiting a decision from the Commission on Water Resource Management ("CWRM") on whether the Punaluu Community Association and others will be granted a contested case hearing on the exploratory wells requested to be drilled by Koolau since July 13, 1994. Our last written communication with CWRM was on August 12, 1994 in its response to the request for a contested case. We have made several verbal requests to the CWRM staff regarding the status of our permits and have been told that the delay is the result of a backlog of work.  

The delay in receiving a timely response has created some hardship operationally because certain critical improvements such as relocation of surface water pipelines and cattle fencelines and provisions for a bypass road for our operation need to be made before drilling. Such improvements should be made closer to the start of well drilling to minimize and prevent unnecessary soil erosion during the winter period as well as minimize disruptions to our farm and ranch operations. Until the decision is rendered Koolau is in limbo as to what it will do in the areas set aside for well drilling. The delay has also pushed the probable drilling into the rainy season which may cause further delays and cost overruns.  

We realize that the CWRM is busy with other matters, but we'd like to request that consideration be given to providing us with a timely response. If there is anything that we can do to expedite the process, please let us know.

November 17, 1994
Thank you for your cooperation in this matter and look forward to hearing from you soon.

Sincerely,

Valerie L. Mendes
President
Dear Dr. Anthony:

Koolau Agricultural Co., Inc.
Well Construction Permit Applications for Makalii Wells I to III
(Well Nos. 3452-02, 3453-12 & 13)
Inquiry Whether an Environmental Impact Assessment is Required

Thank you for your letter of August 3, 1994 concerning the subject matter.

Under Hawaii’s EIS Law (Section 343-5, HRS), there are eight conditions which trigger the environmental review process. These conditions are as follows:

1. Use of State or County lands or funds.
2. Use of State Conservation District Lands.
3. Reclassification of State Conservation District Lands.
4. Use within the Shoreline Setback Area.
5. Use within the Waikiki Special District.
6. Use within any Historic Site or District.
7. Requires an amendment to a County General Plan.
8. Construction or modification of helicopter facilities.

We are not aware that any of the above conditions apply to Koolau Agricultural Co., Inc.’s applications. Therefore, the environmental review process is not required.

Please call Rae M. Loui, Deputy Director, at 587-0214 if you have any questions.

Very truly yours,

[Signature]
KEITH W. AHUE
August 12, 1994

Mr. Keith Ahue, Chair
Commission on Water Resource Management
Department of Land and Natural Resources
Kalanikau Building
1151 Punchbowl Street
Honolulu, Hawaii 96813

RE: Contested Case Request of Punalu'u Community Association
and The Hawai'i La'ieikawai Association, Inc.

Dear Mr. Ahue and Commissioners:

Koolau Agricultural Co., Ltd. ("Koolau") submits this letter in opposition to the request of the Punalu'u Community Association and the Hawai'i La'ieikawai Association, Inc. ("hereinafter collectively referred to as "Petitioners") for a contested case hearing in Koolau's Application of Well Construction Permits, Makalii Exploratory Wells I, II, and III, Punalu'u, Oahu. Koolau will address the claims for relief individually so that it is clear that Petitioners are not entitled to a contested case.

1. Petitioners claim that Koolau's application is incomplete as there is no evidence that the applicant is the well driller.

This claim for relief is misguided in that although Koolau will not be the actual party that drills the wells, it will be the party responsible for the supervision, guidance and payment for all drilling costs associated with the wells. Similarly in applying for building permits, the owner is the applicant even though it may not be the actual person doing the construction. Koolau is the responsible party in the well drilling that should occur.

2. Petitioners claim that the Department of Health review of the permit is not reflected in the record.

This permit application as well as all other permit applications submitted to the CWRM is distributed to the Department of Health for their review and comments. The Department of Health concerns are also reflected in the conditions of the well drilling permit issued.

3. The application is not based on empirical findings derived from ground water modelling studies and the Mink and Yuen study is "sloppy science".

Petitioners miss the point of drilling exploratory wells, when they point to the need for hard data. The lack of data is the very
reason why you need exploratory wells. Koolau also objects to the slanderous remarks about the report done by Mink and Yuen as Petitioners have not shown how in any way that the report is inaccurate.

4. Petitioners claim that they have already been impacted by the illegal taking of water by Koolau and that petitioners have property rights in close proximity to where the proposed wells will be drilled.

There has been no showing of illegal taking of water despite investigations done by the CWRM staff. The fact that Koolau will be allowed to drill exploratory wells does not impact the rights of any of the neighboring properties. The neighboring properties will not lose any rights nor will any of their rights be infringed upon should Koolau be allowed to drill the exploratory wells. In fact the drilling of exploratory wells may further define the hydrologic system of the valley and help delineate rights of the parties. It is important to remember that in exploratory wells the outcome is not who gets the water, but if there is water and what will the impacts be if the water is taken out.

5. Petitioners claim that Koolau will claim vested rights because it will expend money to drill the wells.

There are no guarantees that even if the wells prove to be successful that Koolau will be allowed to proceed to production. Koolau will be drilling these wells at its own risk and intends to seek approval to use some of the water at a later date if feasible.

6. Petitioners claim that there will be illegal taking of property rights of petitioners who have riparian and correlative water rights and who also have hunting and gathering rights which are intimately and systematically connected with the well being of the entire watershed ecosystem an the nearshore marine ecosystem all of which will be damaged by the transfer of millions of gallons of water.

Here again Petitioners wrongly believe that their rights will be affected by the granting of exploratory wells. No permission will be granted with this application to actually draw water out of the aquifer. There will be no effect on any ecosystem should Koolau drill these exploratory wells and no rights of the petitioners will be affected by the drilling of the wells.
Koolau’s management of the watershed and the ecosystems will continue using best management practices available. Gathering rights and hunting will not be impacted by well drilling. Further no riparian rights or correlative rights of petitioners will be affected by the drilling in the Makalii aquifer.

7. Petitioners claim that exploratory well drilling has already been accomplished and that John Mink states that Makalii is a proven water resource and therefore exploratory wells are unnecessary. Further that Koolau should file for a water use permit.

This claim is contradictory to claims made earlier in that it uses Mink and Yuen’s study to establish a water source, yet claims earlier in its petition that this study is based on sloppy science. Petitioners cannot have their cake and eat it too. Furthermore it was the CWRM that instructed Koolau to file for and drill an exploratory well. It makes no sense at all, to request that Koolau reverse the permit process.

8. Petitioners claim that an EIS may be required for this exploratory well drilling application.

It is clear that Petitioners did not research Chapter 343 before making their position known. If they had they would have seen that Koolau is not required to file an EIS for this proposal. No governmental funds are required, it is not in a conservation district nor in the Waikiki Special District, there is no proposal for amendment to the existing county general plan, nor any use within any historic site, no reclassification of any land designated as conservation land and is not a helicopter facility.

Based on the foregoing, Koolau Agricultural Co., Ltd. hereby requests that the Commission on Water Resource Management deny Petitioners/request for a contested hearing.

Sincerely,

[Signature]

Valerie L. Mendes
President
Ms. Valerie L. Mendes  
Koolau Agricultural Co., Ltd.  
915 Fort Street, 6th Floor  
Honolulu, HI 96813  

Dear Ms. Mendes:  

Notice of Petition for Contested Case Proceedings  
Makalii I, II, & III (Well Nos. 3452-02, 3453-12 & 13)  
Exploratory Well Drilling, Punaluu, Oahu  

At the July 13, 1994 meeting of the Commission on Water Resource Management, a request was made for a contested case hearing on your well construction permit application for the Makalii Wells (Well Nos. 3452-02, 3453-12 & 13).  

A copy of the attached petition and all supplementary memorandums to the petition have been sent to the Office of the Attorney General with a request for a determination as to standing of the parties named in the petition. We will inform you once a determination has been made.  

If you have any questions, please contact Lenore Nakama at 587-0218.  

Sincerely,  

 Rae M. Loui  
Deputy Director  

LN:ss  
Attach.
TO: Mr. Johnson H. Wong, Supervisor  
Division of Land/Transportation  
Office of the Attorney General

ATTN: Mr. William Tam, Deputy Attorney General

FROM: Rae M. Loui, Deputy Director  
Commission on Water Resource Management

SUBJECT: Petition for Contested Case Proceedings  
Makalii I, II, & III (Well Nos. 3452-02, 3453-12 & 13)  
Exploratory Well Drilling, Punaluu, Oahu

Please advise as to standing of the applicants named in the attached petition for contested case proceedings in the matter of Koolau Agricultural Co., Ltd.'s application for exploratory well drilling in Punaluu Valley, Oahu. Supplementary memorandums to the subject petition have also been enclosed.

An oral request was made prior to any decision-making at the July 13, 1994 meeting of the Commission on Water Resource Management. We have enclosed the appropriate property tax maps and well location maps for your review.

LN:ss  
Attach.
By Fax and by U.S. Mail

Keith Ahue, Chair
Commission on Water Resource Management
Kalanikolu Building
1151 Punchbowl Street
Honolulu, Hawai‘i 96813

Dear Mr. Ahue:

Pursuant to the provisions of Section 13-167-52 (a) we hereby request an extension of ten days from Friday, July 22, 1994 to submit our written application for a contested case hearing in the matter of Ko‘olau Agricultural Company’s application to drill three exploratory wells in Punalu‘u. This is the matter that was before the Commission on July 13, 1994 when we gave notice of our request for a contested case hearing. The reasons for this request are as follows:

1. Additional time is needed to consult with attorneys to frame the formal application so that it meets all of your criteria;

2. Our senior consultant hydrologist/geologist, Dr. Robert Willis, is on the mainland and we are having some difficulty in getting material to and from him for his review and approval;

3. Consultations with affected parties is proving more time consuming than we had anticipated.

We trust that these are grounds sufficient to enable you to grant this application.

Sincerely

[Signature]

Executive Director, Hawai‘i-La‘ieikawai Assn.

[Signature]

President, Punalu‘u Community Assn.

The Hawai‘i — Lā‘ieikawai Association, Inc. is a non-profit corporation whose activities include research and education related to Hawaiian cultural issues and the environment.
August 3, 1994

By Fax and by U.S. Mail

Keith Ahue, Chair
Commission on Water Resource Management
Kalanikou Building
1151 Punchbowl Street
Honolulu, Hawai‘i 96813

Dear Mr. Ahue:

In December 1980 the Board of Water Supply filed an Environmental Impact Assessment ("EIA") pursuant to Chapter 343, HRS as part of its application for Punalu‘u Exploratory (emphasis added) Well IV.

May I ask (a) whether an EIA has been filed as part of the pending application by Ko‘olau Agriculture for its proposed exploratory wells I, II, and III, and (b) if no such EIA has been filed may I please have an explanation as to why this has not been the case. If an EIA has been filed please provide me with a copy of it.

Thank you for your attention to this matter.

Sincerely yours

Jim Anthony
Executive Director

xc: Punalu‘u Community Association
Petitioners
The Hawai'i — Lā'ieikawai Association, Inc.
P.O. Box 720, Ka'a'awa, Hawai'i 96730 • Phone (808) 237-7015/(808) 237-7339 • Fax (808) 237-8962

FACSIMILE TRANSMISSION COVER SHEET

DATE: 8/3/94

TO: Keith Ahue

COWRM

YOUR FAX #: 587-0219 TEL.: 587-0214

FROM: DR. JIM ANTHONY, EXECUTIVE DIRECTOR

OUR FAX #: 808-237-8962 TEL.: 808-237-7339

NUMBER OF PAGES INCLUDING THIS COVER SHEET: 2

TYPE OF DOCUMENT TRANSMITTED:

copy of letter to you dated 8/3/94

COMMENTS/ADDITIONAL MESSAGE:

ORIGINAL TO BE MAILED: yes

The Hawai'i — Lā'ieikawai Association, Inc. is a non-profit corporation whose activities include research and education related to Hawaiian cultural issues and the environment
August 3, 1994

By Fax and by U.S. Mail

Keith Ahue, Chair
Commission on Water Resource Management
Kalanikou Building
1151 Punchbowl Street
Honolulu, Hawai‘i 96813

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In December 1980 the Board of Water Supply filed an Environmental Impact Assessment ("EIA") pursuant to Chapter 343, HRS as part of its application for Punalu‘u Exploratory (emphasis added) Well IV.

May I ask (a) whether an EIA has been filed as part of the pending application by Ko‘olau Agriculture for its proposed exploratory wells I, II, and III, and (b) if no such EIA has been filed may I please have an explanation as to why this has not been the case. If an EIA has been filed please provide me with a copy of it.

Thank you for your attention to this matter.

Sincerely yours

Jim Anthony
Executive Director

xc: Punalu‘u Community Association
Petitioners
The Hawai'i — Lā'ieikawai Association, Inc.
P.O. Box 720, Ka'a'awa, Hawai'i 96730 • Phone (808) 237-7015/(808) 237-7339 • Fax (808) 237-8962

Facsimile Transmission Cover Sheet

DATE: July 25, 1994 TIME: 9:15 Am

To: MR KEITH AHUE
CHAIR, COWRM

Your Fax #: 587-0219 TEL. # 587-0214

FROM: DR. JIM ANTHONY, EXECUTIVE DIRECTOR

Our Fax #: 237-8962 TEL. # 237-7339

This transmission is comprised of 12 pages including this cover sheet.

Type of Document Transmitted: ENVIRONMENTAL ASSESSMENT (EA)

FOR PUNALUU EXPLORATORY WELL IV (BD. OF WATER
SUPPLY, HONOLULU), 1980

Comments/Additional Message: Please provide us with an explanation as to why an EA is not being required now for the three exploratory wells for which Kobilau Ag. has applied.

This is an additional question that we seek to have included in our application for a contested case hearing dated July 22, 1994.

Original to be mailed: Yes: V No:

The Hawai'i — Lā'ieikawai Association, Inc. is a non-profit corporation whose activities include research and education related to Hawaiian cultural issues and the environment.
ENVIRONMENTAL ASSESSMENT
FOR
PUNALUU EXPLORATORY WELL IV
PUNALUU, KOOLAULOA, OAHU, HAWAII
BOARD OF WATER SUPPLY / CITY AND COUNTY OF HONOLULU

PREPARED BY

AUSTIN, TSUTSUMI & ASSOCIATES, INC.
ENGINEERS, SURVEYORS
HAWAII, GUAM
CITY AND COUNTY OF HONOLULU
BOARD OF WATER SUPPLY

ENVIRONMENTAL IMPACT ASSESSMENT
FOR
PUNALUU EXPLORATORY WELL IV
PUNALUU, Koolaualoa, Oahu, Hawaii

Tax Map Key: 5-3-07: Portion 14

This environmental document is prepared
pursuant to Chapter 343, HRS

Contact: Lawrence Whang
Board of Water Supply
630 South Beretania Street
Honolulu, Hawaii 96843

Board Members:
Yoshie H. Fujinaka, Chairman
Dat Quon Pang, Vice Chairman
Ryokichi Higashionna
Donna Howard
Wallace S. Miyahira
Robert A. Souza
Claude T. Yamamoto

KAZU HAYASHIDA
Manager and Chief Engineer

Date 12/12/80

NOVEMBER 1980
ENVIRONMENTAL IMPACT ASSESSMENT
FOR
PUNALUU EXPLORATORY WELL IV

I. DESCRIPTION OF THE PROPOSED PROJECT

A. Introduction

The Board of Water Supply (BWS), City and County of Honolulu, proposes to drill and case a 0.5 million gallon per day water well in Punaluu Valley on the Windward side of Oahu. The proposed project is part of the Board of Water Supply's 1975 Oahu Water Plan. The proposed well, to be called Punaluu Well IV, is to be drilled within the two acre site of the Board of Water Supply's existing Punaluu Wells III.

The drilling and testing of an exploratory well is the first phase of a two-phase program that the Board of Water Supply utilizes for development of new water wells. The second phase of the program is the converting of the exploratory well to a production well.

A well pump test is performed to determine the quantity and quality of the water source to be developed. If the test pumping provides satisfactory results for water quality and yield, an environmental impact statement will then be prepared for the production well. Should the pump test show poor results for either water quality or yield, the exploratory well will be sealed and abandoned.
D. Technical Characteristics

The proposed exploratory well will be approximately 400 feet deep with the upper 100 feet being a 12 inch diameter solid steel casing. The lower 300 feet will be a 12 inch diameter well screen surrounded by a three inch layer gravel envelope. (See Figure 4.) The existing ground elevation for the proposed well will be at 64 feet mean sea level.

The expected yield from the production well is one-half million gallons per day. After the exploratory well is drilled, a yield drawdown test will be performed at a rate from 200 to 700 gallons per minute. Then a long-term pump test for a period of 120 hours will be conducted at a rate determined from the yield-drawdown test. Water table drawdown rates will be measured and the quality of water will be tested.

Should the water quality and yield prove to be satisfactory, the exploratory well will be temporarily capped. An environmental impact statement will then be prepared for the production well. If the pump test results prove to be unsatisfactory, the exploratory well will be sealed and abandoned.

II. AFFECTED ENVIRONMENT

The proposed project is located at the lower end of Punaluu Valley, a narrow, deep valley on the northeast coast of Oahu. The site is about one-half mile mauka of Kamehameha Highway and approximately 1,000 feet west of Punaluu Stream. (See Figure 2.) The land is zoned agricultural and was conveyed to the Board of Water Supply by Executive Order No. 02711 from the State of Hawaii.
No historical or archeological sites within the proposed project location are evident because previous sugar cane cultivation and development of Punaluu Wells III has nullified the preservation of any such sites. The same is true for rare or endangered species of flora or fauna.

A geological study of Punaluu Valley shows that the southern or mauka half of the valley is cut in dike complex of the Koolau Volcanic series (Takasaki, et. al., 1969). The northern or seaward half consists of lava flows with few dikes. Basal groundwater is found at the seaward part of the valley in the lava flows. A caprock formed by alluvial deposits retards the seaward flow of the basal water. Well No. 1 of Punaluu Wells III draws basal water from the bedrock while Well No. 2 draws both basal water and water from the alluvium. (See Figure 5.)

The proposed Punaluu Exploratory Well IV will extract water from the alluvium. The alluvium consists of layers of water bearing aquifers sandwiched between layers of less pervious sediment. The primary source of water in the alluvium is from percolation from rainfall and surface water plus a small amount of basal water that leaks through the caprock. The location of the new well will be adjacent to the entry gate to the site and will be about 150 feet north of the Control and Chlorination Building. (See Figure 3.) The proposed exploratory well is closer to Punaluu Stream and occurs over thicker alluvium than the two production wells of the Punaluu Wells III system. Bedrock was encountered at a depth of 413 feet at the Punaluu Wells III. A test boring to a depth of 460 feet at the proposed exploratory well location did not encounter
IV. ENVIRONMENTAL IMPACTS AND MITIGATIVE MEASURES

Construction work involved in drilling of the new exploratory well will cause short-term impacts to the environment. Noise and air pollution will result from the drilling work. No site preparation work is required. Federal, State, and City and County rules and regulations concerning noise and air pollution will be adhered to during the construction period to minimize or eliminate pollution.

Water from the test pumping will be discharged into the existing drainage system of Punaluu Wells III. No adverse effects from the discharge are anticipated. Mufflers will be used to dampen noise during drilling. The existing access road from Kamehameha Highway will be used to transport the drilling equipment to the site.

Besides Punaluu Wells III, two other Board of Water Supply wells are located in the vicinity of the proposed project. These are the Punalu'u Wells II, located in bedrock between Kaluanui and Punalu'u Valleys, and Punalu'u Well I, located in the plains below Punalu'u Wells II. (See Figure 2.) Two private wells, Hano Hano, adjacent to the shoreline, and Ohta, in the plains below Punalu'u Valley, are also found in this region. All four of these wells draw basal water from the bedrock. The proposed exploratory Punalu'u Well IV should not affect any of these basal wells since the new well will be an alluvial well drawing water from alluvial aquifers rather than the bedrock.

Well No. 1 of Punalu'u Wells III is also a bedrock well and should not be affected by the proposed exploratory well. The exploratory well may have some effect on Well No. 2 of Punalu'u Wells III since Well No. 2
called Punaluu Wells V. Other potential well sites on the Windward side of Oahu are also being considered and exploratory wells are being proposed for these sites.

VI. RECOMMENDATIONS

The proposed exploratory well is anticipated to have no significant impacts on the environment. The well site was disturbed previously by sugar cane cultivation and is currently the site of the Punaluu Wells No. III. There will be no impacts on endangered flora or fauna or on any archaeological or historical sites. The proposed exploratory well is expected to have only negligible impact on groundwater and stream flow.

Because no significant impacts are anticipated in drilling the exploratory well, it is recommended that the assessment be filed as a negative declaration with the Environmental Quality Commission.
WAIALUA - KAHUKU DISTRICT

WAHIWA DISTRICT

EWA-WAIANAE DISTRICT

PEARL HARBOR DISTRICT

HONOLULU DISTRICT

KAENA PT

KAHUKU PT.

PACIFIC

LAIE

NORTH

WINDWARD DISTRICT

KANEHOE

MOKAPU PT

OCean

KAILUA

DIAMOND HEAD

KOKO HEAD

BOARD OF WATER SUPPLY
WATER USE DISTRICTS

AUSTIN, TSUTSUMI, & ASSOC., INC.
ENGINEERS SURVEYORS - HAWAII, GUAM
PUNALUU EXPLORATORY
WELL IV

FIGURE 1
WELL NO. 1

- ELEV. 66 FT
- WATER LEVEL ELEV. 17 FT.
- 410 LF SOLID CASING
- 135 LF OPEN HOLE
- 15½" BEDROCK

WELL NO. 2

- ELEV. 62 FT
- WATER LEVEL ELEV. 17 FT.
- 510 LF Casing
- 230 LF SOLID CASING
- 270 LF WELL SCREEN
- 10 LF SOLID CASING
- GRAVEL PACK

EXISTING PUNALUU WELLS III
CROSS - SECTION

PUNALUU EXPLORATORY WELLS IV

AUSTIN, TSUTSUMI, & ASSOC., INC.
ENGINEERS SURVEYORS - HAWAII DIV.

FIGURI 5
Facsimile Transmission Cover Sheet

DATE: July 25, 1994 TIME: 9:15 AM

TO: MR. KEITH AHUE
CHAIR, COWRM

YOUR FAX #: 587-0219 TEL. #: 587-0214

FROM: DR. JIM ANTHONY, EXECUTIVE DIRECTOR

OUR FAX #: 237-8962 TEL. #: 237-7339

THIS TRANSMISSION IS COMPRISED OF 12 PAGES INCLUDING THIS COVER SHEET.

TYPE OF DOCUMENT TRANSMITTED: ENVIRONMENTAL ASSESSMENT (EA)
FOR PUNALU'U EXPLORATORY WELL IV (BD. OF WATER
SUPPLY, HONOLULU), 1980

COMMENTS/ADDITIONAL MESSAGE: Please provide us with an explanation
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This is an additional question that we seek to have
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ORIGINAL TO BE MAILED: YES: ✓ NO: 

The Hawai'i — Lā'ieikawai Association, Inc. is a non-profit corporation whose activities include research
and education related to Hawaiian cultural issues and the environment.
ENVIRONMENTAL ASSESSMENT
FOR
PUNALUU EXPLORATORY WELL IV
PUNALUU, Koolaualoa, Oahu, Hawaii
BOARD OF WATER SUPPLY / CITY AND COUNTY OF HONOLULU

PREPARED BY

AUSTIN, TSUTSUMI & ASSOCIATES, INC.
ENGINEERS, SURVEYORS
HAWAII, GUAM
CITY AND COUNTY OF HONOLULU
BOARD OF WATER SUPPLY

ENVIRONMENTAL IMPACT ASSESSMENT
FOR
PUNALUU EXPLORATORY WELL IV
PUNALUU, Koolaauoa, Oahu, Hawaii

Tax Map Key: 5-3-07: Portion 14

This environmental document is prepared
pursuant to Chapter 343, HRS

Contact: Lawrence Whang
Board of Water Supply
630 South Beretania Street
Honolulu, Hawaii 96843

Board Members:
Yoshie H. Fujinaka, Chairman
Dat Quon Pang, Vice Chairman
Ryokichi Higashionna
Donna Howard
Wallace S. Miyahira
Robert A. Souza
Claude T. Yamamoto

KAZU HAYASHIDA
Manager and Chief Engineer

NOVEMBER 1980
ENVIRONMENTAL IMPACT ASSESSMENT
FOR
PUNALUU EXPLORATORY WELL IV

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The drilling and testing of an exploratory well is the first phase of a two-phase program that the Board of Water Supply utilizes for development of new water wells. The second phase of the program is the converting of the exploratory well to a production well.

A well pump test is performed to determine the quantity and quality of the water source to be developed. If the test pumping provides satisfactory results for water quality and yield, an environmental impact statement will then be prepared for the production well. Should the pump test show poor results for either water quality or yield, the exploratory well will be sealed and abandoned.
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Well No. 1 of Punaluu Wells III is also a bedrock well and should not be affected by the proposed exploratory well. The exploratory well may have some effect on Well No. 2 of Punaluu Wells III since Well No. 2
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PUNALUU EXPLORATORY WELL IV
CROSS-SECTION

WATER LEVEL ELEV. 17 FT.

12" CAP

ELEV. 64 FT.

100 LF SOLID CASING

300 LF WELL SCREEN

310 LF GRAVEL PACK

18"
July 23, 1994

By Fax (587-0219) & Certified U.S. Mail

Mr. Keith Ahue, Chair
Commission on Water Resource Management
Department of Land and Natural Resources
Kalanimoku Building
1151 Punchbowl Street
Honolulu, Hawai‘i 96813

Dear Mr. Ahue

Supplementary submission for Contested Case Hearing

Ko‘olau Agricultural Company’s application to drill three exploratory wells in Punalu‘u

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We formally request that these supplementary points be included in the formal petition submitted on July 22 to the Commission and hand delivered to it on that day. We give notice that at a contested case hearing we will invite the USGS, since the Commission itself has not done so yet, to testify on the record on the foregoing issues and matters related to them.

Sincerely yours

Creighton U. Mattoon, President
Punalu'u Community Association

xc: Keolanui
Trevenen
Herron
Mattoon
Kong
Welling

Jim Anthony, Executive Director
The Hawai'i--Maieikawai Association, Inc.

clayton alphach.2
Facsimile Transmission Cover Sheet

DATE: July 23, 1994  TIME: 5:46 PM.

TO: 

YOUR FAX #: 587-0219  TEL. #: 587-0214

FROM: DR. JIM ANTHONY, EXECUTIVE DIRECTOR

OUR FAX #: 237-8962  TEL. #: 237-7339

THIS TRANSMISSION IS COMPRISED OF THREE PAGES INCLUDING THIS COVER SHEET.

TYPE OF DOCUMENT TRANSMITTED: TWO (2) PAGE SUPPLEMENTARY MEMORANDUM DATED JULY 23, 1994. A CONTESTED CASE HEARING PETITION DATED JULY 22, 1994 AND HAND DELIVERED TO THE COMMISSION ON THAT DAY.

COMMENTS/ADDITIONAL MESSAGE: }

ORIGINAL TO BE MAILED: Yes: [ ] No: [ ]

The Hawai'i — Lā'ieikawai Association, Inc. is a non-profit corporation whose activities include research and education related to Hawaiian cultural issues and the environment.
July 23, 1994

By Fax (587-0219) & Certified U.S. Mail

Mr. Keith Ahue, Chair
Commission on Water Resource Management
Department of Land and Natural Resources
Kalanimoku Building
1151 Punchbowl Street
Honolulu, Hawai‘i 96813

Dear Mr. Ahue

Supplementary submission* for Contested Case Hearing

Ko‘olau Agricultural Company’s application to drill three exploratory wells in Punalu‘u

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We formally request that these supplementary points be included in the formal petition submitted on July 22 to the Commission and hand delivered to it on that day. We give notice that at a contested case hearing we will invite the USGS, since the Commission itself has not done so yet, to testify on the record on the foregoing issues and matters related to them.

Sincerely yours,

Craigston U. Mattoon
President
Punalu'u Community Association

Jim Anthony, Executive Director
The Hawai'i--Kai Ikiwai Association, Inc.

xc: Koolau
Trevenen
Harron
Mattoon
Kong
Welling
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To:

Your Fax #: 587-0219 Tel. #: 587-0214

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Our Fax #: 237-8962 Tel. #: 237-7339

This transmission is comprised of THREE pages including this cover sheet.

Type of document transmitted: TWO (2) PAGE SUPPLEMENTARY MEMORANDUM DATED JULY 23, 1994, A CONTESTED CASE HEARING PETITION DATED JULY 22, 1994 AND HAND DELIVERED TO THE COMMISSION ON THAT DAY.

Comments/Additional Message:


Original to be mailed: Yes: [ ] No: [X]
July 23, 1994

By Fax (587-0213) & Certified U.S. Mail

Mr. Keith Ahue, Chair
Commission on Water Resource Management
Department of Land and Natural Resources
Kalanikoku Building
1151 Punchbowl Street
Honolulu, Hawai‘i 96813

Dear Mr. Ahue,

Supplementary submission* for Contested Case Hearing

Ko‘olau Agricultural Company’s application to drill three exploratory wells in Punalu‘u

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We formally request that these supplementary points be included in the formal petition submitted on July 27 to the Commission and hand delivered to it on that day. We give notice that at a contested case hearing we will invite the USGS since the Commission itself has not done so yet, to testify on the record on the foregoing issues and matters related to them.

Sincerely yours,

Craighton D. Mattoon, President
Punalu‘u Community Association

Jim Anthony, Executive Director
The Hawai‘i-Palikai Association, Inc.

cc: Keolaniui
Trevenen
Harron
Mattoon
Kong
Welling
July 22, 1994

Mr. Keith Ahue, Chair
Commission on Water Resource Management
Department of Land and Natural Resources
Kalaninoku Building
1151 Punchbowl Street
Honolulu, Hawai‘i 96813

Dear Mr. Ahue

Koolau (sic) Agricultural Co., Ltd., Application for Well Construction Permits, Makalii (sic) Exploratory Wells I, II, and III, (Well Nos. 3452-02, 3453-12 & 13), Punalu‘u (sic), Oahu (sic)

We hereby confirm in writing our intention to seek a contested case hearing notice of which we gave you verbally at the commencement of the Commission’s meeting on Wednesday, July 13, 1994 when it met to discuss the aforementioned matter. This notice in writing is being provided to you consistent with the requirements of Chapter 13-167, Hawai‘i Administrative Rules, entitled "Rules of Practice and Procedure for the Commission on Water Resource Management". This application is based specifically on HAR 13-167-51 & 52 which gives the Commission the specific authority/jurisdiction to deal with the contested case hearing requested herein.

The bases for this request for a contested case hearing are as follows:

(1) The application is incomplete and does not meet the requirements of Chapter 174C, specifically, Section 174C-84 (a). The well construction application permit must be made by the well driller who will construct the well. We can find no evidence in the record that the application currently before the Commission was in fact made by the well driller. Furthermore, Section 174C-84 (c) calls for a review of the well construction and pump installation permit by the Dept. of Health for "compliance with their rules and standards concerning, among other things, the appropriateness of the well location." We can find no record of this having been done.

Further, this application is not based on empirical findings derived from ground water modelling studies. What 'soft' data are provided lurk in the files of the Commission. These files have apparently not been recently examined by the Commission’s staff. The Mink and Yuen unpublished paper, Kahana Aquifer System Water Balance and Sustainable Yield (March 26, 1992) is a text book example of sloppy science which gives this entire application, to quote John Mink’s prose back to him, a "vaporous" quality, "drifting with the breeze of ambition"--and, if I may add, Mink and...
Yuen's fortunes. The material from Mink and Yuen attached to Matsubara, Lee and Kotake's letter of February 26, 1993, and marked as Attachments "A" and "B", are "vaporous" in as much as they are unsupported by any empirical evidence whatsoever thus rendering this application incomplete.

(2) The petitioners' interests that may be affected:

Petitioners and/or their members and affiliates live either in the ahupua'a of Punalu'u or within the larger Ko'olauloa area which is a designated water management area. Specifically, the following members/affiliates of the petitioners have property interests within the ahupua'a of Punalu'u in very close proximity to where it is proposed that these three wells will be drilled:

1. Eli Keolanui (TMK 5-3-007:016);
2. Glennon Trevenen (TMK 5-3-007:013);
3. Didi Herron representative for Elsa and Charles Wai (TMK 5-3-005:003);
4. Cathleen Mattoon (TMK 5-3-005:035);
5. Catalpa Kong (TMK 5-3-007:001);
6. Delores A. Welling and Balfour Financial (TMK 5-3-005:007). This 50 acre property includes the following kuleana parcels:
   LC AW 6955 Apana 1 to Kaumoana
   LC AW 4350 Apana 1 to Kauoiani
   LC AW 3752 Apana 6 to Ukele
   LC AW 10771 Apana 1 to Pulani
   LC AW 6954 Apana 1 to Kakaa
   LC AW 4437 Apana 2 to Kaiwi
   LC AW 6954 Apana 3 to Kakaa

The petitioners are prepared to argue on behalf of these property owners, who will themselves testify in their own behalf, that they have already been adversely impacted by the illegal taking of water (the property interests/rights at issue here) by the subject applicants. Taking into account the very substantial sum (approximately $240,000) which the applicants say they are likely to spend on the drilling of three so called exploratory wells the property owners and we, their petitioner representatives, have very little doubt that applicants will argue that by the expenditure of this very substantial amount of money their rights to transfer

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'The property interests to which reference is made here and which the petitioners and property owners seek to protect are "property" within the meaning of the due process clauses of the Federal and State Constitutions—see Aguiar, 55 Haw. at 495, 522 P.2d at 1266; Sandy Beach Defense Fund v. City Council, 70 Haw. 361, 377, 773 P. 2d 250, 260 (1989) (quoting Board of Regents v. Roth, 408 U.S. 564, 577, 92 S.Ct. 2701, 2709, 33 L.Ed.2d 548, 561 (1972).
water outside of the aquifer of origin (which attorney for the applicants has already admitted on the record is for the sole purpose of out of watershed transfer) will have been vested. The granting of any so called exploratory well drilling permit thus plays into the hands of the applicants and immediately further imperils the property interests of the property owners listed above.

So, in sum, what is at issue here? In substance, the transfer of millions of gallons of water which the applicants already know is in this so called "self contained" aquifer (see "A" attached hereto). The granting of any well drilling permit adds thrust to the illegal taking of property rights along an already established trajectory (the metaphor, 'seamless web', better describes reality). This process exacerbates the illegal taking of property interests and rights² of the aforementioned property owners who have riparian, appurtenant and correlative water rights ("property rights" as herein defined--see footnote 1 hereof). Some of them also have hunting and gathering rights which are intimately and systemically connected with the well being of the entire watershed ecosystem and the nearshore marine ecosystem all of which have been damaged by the transference of millions of gallons of water into the public integrated water supply system as well as by illegal actions taken by the applicants--for example, the 18" pipe diversion of water from around Tunnel No. 10 in the Punalu'u flume system. This is a matter that has been brought to the attention of the Commission on several occasions to no effect.

As argued here we make explicit that the taking of more water will continue in a seamless web with the granting of any exploratory well permit. We further submit to you that in the circumstances of this particular application that as soon as any well construction permit is granted the unconstitutional and illegal taking of property rights of property owners listed herein, and others in a similar situation, will proceed along the seamless web of taking that is already in place. We seek deliberately to disabuse you of the view that seemed to be implicit in the tenor and substance of some of your questions at the public hearing on July 13 when you may have been trying to intimate that the granting of exploratory well permits may only open up the possibility of property rights being infringed. We strongly reject such a notion as being paltry and quite without foundation. Any exploratory well permit in these circumstances is in fact a water use within the meaning of the State of Hawai`i Water Code, Chapter 174-C.

(3) With respect to "the disagreement, denial, or grievance which is being contested by the petitioner(s)" we hereby point out, in

² These rights include, but are not limited, to those that derive from the Kuleana Act of 1850 also known as Haw. Rev. Stat. Section 7-1.
In addition to what has already been set out above and has become part of the fabric of this petition, that the Commission in its wisdom chose not to make any decision on this matter. It is our belief that we are entitled as a matter of law to have this matter decided in another "domain"—that of the contested case hearing. The disagreement or grievance which we have with the Commission, in part, is that since the application is incomplete in several respects, it should not even have been heard.

(4) The basic facts and issues are those set out in testimony presented to the Commission by the petitioners and their hydrologist/geologist consultant, Mr. Freeman. All of that testimony has already been presented in writing and verbally to the Commission on the record and it is all incorporated herein and made a part hereof.

(5) Some basic facts:

(i) Exploratory well drilling has already been accomplished in this so called "stand alone" aquifer. See Attachment "A" appended hereto. The application for exploratory wells now being made is redundant.

(ii) No less an authority than John Mink says: "The Makalii (sic) basal aquifer has not been utilized for three decades even though it is easily accessible and is a proven water resource" (emphasis added).3 If it is indeed a proven water resource exploratory wells are unnecessary. Apparently, the applicants should be filing a water use permit application since they assert that it is a proven water source.

(6) The relief to which the party or petitioner seeks or deems itself entitled:

Petitioner/s on behalf of property owners listed herein, as well as others, seek full protection of their statutory and other rights specifically delineated herein. They seek the resolution of existing disputes of which notice has been given to the Commission. They seek restoration of their water rights. They seek, especially, to prevent further illegal taking of their property interests which the granting of exploratory well permits (a water use within the meaning of the State Water Code) will trigger. They seek protection for Punalu‘u stream already damaged, illegally realigned and deepened. They seek protection of estuaries and

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3Mink and Yuen, Inc., March 26, 1992 unpublished paper, "Kahana Aquifer System Water Balance and Sustainable Yield," p. 6. This paper as well as another by John Mink, "Windward Designation Commentary," December 1992 are both attached hereto and marked "B" and "C" respectively.
estuarine water quality from further adverse impacts which may now, or in the future, diminish or lessen stream life or marine life. The only way for these issues to be fully and fairly addressed is to permit the petitioners and the impacted property owners listed herein (as well as others who may wish to join them) to present their respective cases at a contested case hearing where they can exercise all of the rights that they have to adduce evidence and to conduct relevant discovery, that is, the exercise of their due process rights.

The foregoing constitute all of the areas that call for concise statements required by Section 13-167-51 to 54. We wish further to emphasize that the Commission's jurisdiction to hear this petition is based upon the State Water Code, Chapter 174C of the Hawaii Revised Statutes. It provides for contested case hearings under HRS, Section 174C-60 and Haw. Admin. Rules Section 13-167-51 to 54. Further, by what we see as necessary repetition, HRS, Section 174C-82 sets forth the Commission's authority to regulate well construction in the State of Hawai‘i.

Sincerely yours

Creighton Mattoon, President
for Punalu‘u Community Association

Jim Anthony, Executive Director
The Hawai‘i-La‘ieikawai Association, Inc.

Attachments: A, B, & C

xc: Keolanui
    Trevenen
    Herron
    Mattoon
    Kong
    Welling
A successful 48-hour continuous pumping test was performed on Well 404-1 (State No. 3452-01) between 10:00 am on October 24, 1990, and 10:00 am on October 26, 1990. For the first 100 minutes a step drawdown test was conducted at rates of 120 gpm, 215 gpm, 315 gpm, 410 gpm, 500 gpm and 600 gpm. A continuous rate of approximately 700 gpm was sustained for the remainder of the 48 hours.

The pumping rate was metered, the drawdown was measured by airline, and salinity was computed from specific conductivity measurements. The behavior of the well exceeded expectations with respect to the sustained rate of pumpage and salinity. Drawdown stabilized quickly at 11.6 feet at 700 gpm, and salinity of the water was invariant at 400 micromhos (about 75 mg/l chloride) in the latter portion of the test. When the pump was turned off, recovery was virtually instantaneous.

Most of the drawdown was caused by well turbulence, not aquifer behavior. Although a reliable, accurate elevation at the well has not yet been made, head was estimated from previous records to be about 7 to 8 feet.
The test proved that the basal aquifer between Punaluu and Kahana streams is capable of accommodating wells fitted with pump capacity of 1.0 mgd (700 gpm). The main basaltic aquifer is covered by caprock which forces a substantial head build-up. Evidently it is not located in the dike zone but is, instead, in layered lavas similar to the situation in Honolulu.

The aquifer is not now exploited, but at one time the Honolulu Board of Water Supply used the well to serve local demand. It is one of the few unused important aquifers remaining in Oahu. We suggest that it be called the "Makalii Aquifer" to differentiate it from the Punaluu Aquifer on the north of Punaluu Stream and the Kahana Aquifer in Kahana Valley. Makalii is the name of a point at the coast, makai of the well.

Groundwater pumped from the aquifer will reduce seepage into the caprock but will not measurably influence flow in Punaluu Stream. Natural discharge from the aquifer is into the caprock, from which the water eventually passes into the sea.
The aquifer can be developed to safely yield at least 1.0 to 3.0 mgd. A more specific estimate will be determined later. Based on past records, laboratory tests indicated that the water was of very good quality. Analyses are being updated and will be submitted as soon as they become available. The likelihood is that the quality will continue to be high.

A summary of the test results follows.
PUMP TEST WELL 3452-01 (OLD 404-1)  
OCTOBER 24-25, 1990  
ROSCOE MOSS, CONTRACTOR  
JOHN F. MINK AND JOHN Y.C. CHANG, MINK & YUEN, INC  
DAN JENKINS, KOOLOU AGRICULTURAL COMPANY

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<td>1005</td>
<td>12.2</td>
<td></td>
<td></td>
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<td></td>
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</tbody>
</table>
III. GROUNDWATER OCCURRENCE AND DEVELOPMENT

Groundwater in the Makalii aquifer originates as leakage from high-level aquifers in the marginal dike zone and also from direct rainfall infiltration. Total flux in the basal aquifer is estimated to be between 4.0 and 4.5 mgd, of which an average of 2.0 to 2.5 mgd can be developed safely. In the marginal dike zone inland of the basal aquifer the flow of groundwater is much greater.

The existing well (3452-01) which will be rehabilitated in Phase I was examined with a TV camera and found to be structurally competent. It was tested at 700 gpm for 48 hours, yielding water with less than 100 mg/l chloride at a drawdown of 11.6 feet. The results of the TV scan and the pump test were presented in earlier reports submitted to Koolau Agricultural Company.

Head at well 3452-01 averages about 8 to 9 feet. Quality of the pumped water is excellent and meets all State Department of Health requirements for a potable source. The well can be converted into a production well in a relatively short time because a major effort is not needed to reclaim it.
Note: Pages 6 & 7 of this document were not provided to us.

Our source at CWRM said that these pages were not in his file!
Numerous water balances have been calculated for the Punaluu-Kahana region. The most optimistic is given in the U.S. Geological Survey study, "Water Resources of Windward Oahu, Hawaii: Water Supply paper 1894" (K.J. Takasaki, G.T. Hirashima, E.R. Lubke, 1969). In that report the groundwater underflow leaving Punaluu Valley in the marginal dike zone on a vector toward Kahana was given as 16.0 mgd, and groundwater escaping to the north and south from the whole area of the valley was stated as 32.0 mgd, which includes a component of 9.0 mgd from Kaluanui. These are values for groundwater not included in stream flow.

A more conservative water balance indicates that recharge to the Makalii basal aquifer is 4.0 to 4.5 mgd. The expected average withdrawal will be 2.2 mgd, about half of the groundwater flux in this conservative model. Setting the sustainable yield at 2.2 mgd requires that the equilibrium head will stabilize at about 70 percent of the original head.
along the coast from Kahana into Kaaawa Valley.

The Kahana Aquifer System comprises four units. The largest is Kahana Valley, all of which is in the System. The Makalii unit lies between the north drainage divide of Kahana and a straight line extension of lower Punaluu Stream to the Koolau crest. The whole of the Makalii unit includes, as a result, the major portion of the headwaters of Punaluu. To the south of Kahana all of Kaaawa is a single unit, and the most southerly segment of the System, Hakipuu, is also a single unit. High level and basal groundwaters occur in each unit with the exception of Hakipuu, where all groundwater is high level.

**Water Balance of the Kahana Aquifer System**

An attached flow chart illustrates the water balance of the whole of the Kahana Aquifer System. The balance is restricted to fluxes that are generated within the boundaries of the System and do not include groundwater underflows that may enter the System from the rift zone north of Punaluu. In his comprehensive investigation of the water resources of windward Oahu (USGS Water Supply Paper 1894), K.J. Takasaki estimated that groundwater flows on the order of 20 mgd move into the Kahana sector from Punaluu and Kaluanui. This estimate is not included in the balance discussed below.
Of the total average rainfall of 109 mgd, an estimated 31 mgd is consumed in evapotranspiration and another 6 mgd leaves the System by way of Waiahole Tunnel. The remaining 72 mgd is distributed among direct runoff, groundwater that seeps into streams, and groundwater that drains from high level aquifers into basal aquifers before discharging in caprock sediments along the coast.

Direct runoff refers to flow which accumulates in streams without first becoming groundwater. The groundwater component of stream flow initially infiltrates into a subsurface zone of saturation, then seeps into a stream channel to constitute perennial base flow. The portion of high level water that does not discharge into streams drains into basal aquifers. Equilibrium requires that basal groundwater leaks into caprock sediments from where it finally passes into the sea.

The flow diagram illustrates the apportionment of water in the hydrologic cycle. Ultimately an average total of about 44 mgd reaches the sea as stream flow from the valleys while about 29 mgd becomes basal groundwater. The Makalii basal aquifer accounts for a minimum of approximately 4 to 5 mgd of this total. Much of the remainder passes through the basal aquifer of lower Kahana Valley. Lesser proportions sustain the narrow basal aquifers along the coast between Kahana and
Kaaawa as well as the aquifer in the lower half of Kaaawa.

**Makalii Basal Aquifer**

The Makalii basal aquifer is unused at present. A single well was drilled into it in 1937 by Kahuku Plantation, and later the Suburban Water System (subsequently incorporated in the Board of Water Supply) pumped a small amount for local consumption until the major BWS well field north of Punalu'u went on stream.

The well was abandoned for about 30 years before Koolau Agricultural Co. reclaimed it last year and verified the existence of a developable aquifer by extensive pump tests. No one had shown any interest in this small aquifer, and never was it included in plans relating to future water developments.

The estimate of 4 to 5 mgd groundwater flux passing through the Makalii basal aquifer is very conservative. The origin of the flux is rainfall infiltration over the aquifer and drainage from high level aquifers in the rift zone.

Because the basal head is at least 8 feet and may be as high as 12 feet, the sustainable yield of the aquifer is 2 to 2.5 mgd, or about 2.2 mgd. The proposed amount of pumpage will average about 1.5 mgd distributed among three wells. The estimated sustainable yield of the entire Kahana Aquifer
System is 13 mgd. It must be stressed that these estimates are derived from a scanty data base and deliberately are skewed toward underestimates rather than given the advantage of liberal data interpretation.

No groundwater is currently extracted from the Makalii basal aquifer. In the entire Kahana Aquifer System groundwater exploitation takes place only in lower Kahana valley where BWS wells pump an average of 0.74 mgd, and a small quantity (less than 0.1 mgd) may still flow from an artesian well in Kaahawa. Thus less than 1 mgd of the estimated 13 mgd sustainable yield in the System is being used.

The BWS has suggested that it may develop as much as 10 mgd in the System in the far future, but this is an abstract notion that has not been pursued. The BWS did not target the Makalii basal aquifer for any of its proposed well sites. In any event, the groundwater taken from Makalii will be part of the BWS plan should it ever be carried through.

**Hydrological Effects Induced by Development of Makalii**

The Makalii basal aquifer lies considerably seaward of the portion of Punaluu Valley where groundwater seepage from high level aquifers gives rise to base flow. Removal of groundwater from the basal aquifer can have no effect on
stream flow in either Punaluu Valley or Kahana Valley.

Groundwater in the basal aquifer dissipates into the sedimentary sequence that forms a caprock which reaches inland to an elevation of about 20 feet and extends for a considerable distance offshore. In the strict water balance, leakage will be reduced by the amount of pumpage. Compared to the wetting effect of Punaluu Stream flow, however, this reduction will be quite small relative to the total water in the wetlands of the lower valley. The impact is not likely to be measureable.

Comments

The Makalii basal aquifer has not been utilized for three decades even though it is easily accessible and is a proven water resource. No one - planners, engineers, hydrologists, environmentalists - paid any attention to it until a year or so ago when Koolau Agricultural Co. decided to test the abandoned Suburban Water Supply well.

The proposal by Koolau Ag to drill additional wells is really a proposal to do exploratory drilling to prove the reliability of the aquifer to continuously provide potable water at a rate that could justify investment.
Windward Oahu Aquifer Systems
KAHANA AQUIFER SYSTEM

HAKIPUU, KAAAWA, KAHANA, MAKALII

Total Area 16.24 Square Miles
(Flow values in MGD)

RAINFALL 109

ET 31

DIRECT RUNOFF 33

WAIANOLE TUNNEL 3

STREMS 30

WAIANOLE TUNNEL 6

TOTAL RUNOFF 44

GROUNDWATER 46

GROUNDWATER 43

DEEP GndWtr 29

BASAL GndWtr 29

OCEAN
dike compartments, but the Kahana Aquifer System is more complex because it includes both high level and basal groundwater. The Makalii Aquifer Unit is basal and does not overflow or underflow into streams. It is fed by rainfall infiltration and movement of water from the high level dike compartments. It discharges into the caprock.

In the Aquifer Classification system, the divisions start with Aquifer Sector, a broad designation; then Aquifer System, which is more specific, within which Aquifer types denote the type of groundwater (e.g., high level, basal); and the final division is the Aquifer Unit, which is being identified on a case by case basis. Makalii is an Aquifer Unit, which means it is an aquifer identifiable by reasonably closed boundaries, whether non-leaky or partially leaky. One should not be misled by infinitely expanding "cones of depression," a fantastic extrapolation from text book illustrations. There are powerful constraints to the concept of the universality of "cones of depression;" to promote this concept beyond its real-world significance is to engage in poetic hyperbole equivalent to saying that a grain of sand dropped in the ocean at Waikiki has an hydraulic effect in San Francisco Bay. It is emphasized that "case by case" is the proper way to evaluate groundwater relationships.

Page 11 Lines 15 and following: The term "developable yield" is employed but is not defined. It presumably refers to the limits of groundwater pumpage where all variables, such as potentially depletable stream flow, are factored in. It is, however, a very
loose term and means whatever the user wants it to mean. A strict definition should be required. Sustainable yield, on the other hand, is precisely defined: "the pumpage that can be sustained indefinitely without affecting the quality or quantity of the water pumped." It refers to potential groundwater development by artificial means using optimal methods of extraction. When sustainable yield is constrained by other considerations, such as depth of existing wells and potential loss of stream flow, it should be modified to "allowable sustainable yield," which is explained in our Pearl Harbor report. The introduction of "developable yield" unnecessarily clutters the nomenclature.

The sustainable yield of the Makalii Aquifer is not constrained by potential stream depletion.

Page 13 Line 6: "Developable yield" is not defined. It is imprecise and has relative meaning only.

Page 14 Line 1: The Kahana Aquifer System is more complex than the Koolaupoko and Waimanalo Aquifer Systems. It includes Aquifer Units, such as Makalii, that will not impact stream flow. If the notion of "cones of depression" is raised, note that the head in Makalii lies far below the stream channel and has no hydraulic connection to the channel.
Page 14 Line 5 - 8: The "may have a detrimental" is an unsupported opinion in the case of the Makalii Aquifer Unit.

Page 14 Line 21 - 25: This argument is based on the vaguest of applications about the relationship between surface water and groundwater. It should not be allowed to stand unsupported in the case of the Makalii Aquifer Unit.

Final Comments:

I hope the above helps in framing questions and arguments. It is very important that all the statements of the Commission Staff arguments be supported by written evaluation so that they are subject to critical review. Verbal opinions from the USGS, in particular, are vaporous, drifting with the breeze of ambition. Get it in writing!

John Maker
12/7/92

12 Winda 73
July 13, 1994

Summary of Testimony on Ko‘olau Agricultural Company’s Application for 3 Well Construction Permits

By Dr. Jim Anthony

for the meeting of the Commission on Water Resource Management

11:00 a.m., Kalanimoku Building, Board Room

1. The background of this issue is littered with many contradictions despite the fact that on the surface both the applications and the staff submittal attempt to create the impression that its origins are quite ordinary and orderly.

2. I fail to understand, for example, and there is no explanation offered in the material before you - as to why, in March 1992, COWRM denied without prejudice the well applications from the same applicant on the grounds that they should be held over until the Windward water management designation matter was resolved. The logic of this ought properly to be extended to the fact that there is now pending before you the very important matter of surface water designation for Punalu‘u. Consistent with past practice, no well permits ought to be approved - not even exploratory well permits.

3. And, I think it is consistent to argue, that no well permits of any kind ought to be approved until ground water modelling studies are done by the applicant in relationship to the impact of ground water on surface water. Until this is done no permit of any kind should be considered.

4. Lest perhaps my remarks about ground water modelling studies are misinterpreted let me also say this: Part of any application for groundwater withdrawal, particularly in a ground water/surface water sensitive area like Punalu‘u, should have as its first requirement, the completion of a ground water modelling study. Upon its completion, the study’s availability for review ought to be announced, so that interested parties may have their consultants review what the applicants’ consultants have done. Adequate time ought to be provided for this peer review. That is not being done is this case. We are entitled to ask why.

5. Here we have quite an extraordinary case. Despite what’s in the record, the consistent public opposition to these well applications, this stubborn applicant wants to pursue this issue even though it will cost in the vicinity of $100,000.00. Now why in the face of the special conditions that the staff submittal tamely sets out would this applicant - or any other applicant - take the chance of spending $100,000.00? If the
wells are "successful" is it possible that, having spent $100,000.00, the applicant might then argue that it has a vested right to the water? With respect to the Special Conditions I am deeply troubled by the fact that all too often COWRM does not have the staff - or claims not to have the staff - to monitor and enforce its own special conditions. If the Special Conditions for Ko'olau Agriculture are implicitly intended to be monitored and enforced by Valerie Mendez and her hirelings then I suggest that that ought not to be acceptable on the grounds that this might be like letting Mr. Fasi and Representative Bierne be in charge, respectively, of non-bid contracts and prison labor. Something bad is almost certainly bound to happen.

6. In the Reppun case we know that there was a demonstrated relationship between ground and surface water. There is a wide body of professional literature on this subject. There is little doubt that there is a relationship between ground and surface water. The ground water/surface water relationship has already been acknowledged by the BWS with respect to Punalu'u. Why does the staff of COWRM keep revisiting this issue as if it is seeking to ask the Commission to rediscover the wheel? It is a foolish argument and serves no purpose except to contribute to confusion.

7. Once again the matter of the applicant's motive: Ko'olau Agriculture has said it will relinquish the newly developed wells to the BWS. For its part BWS has indicated that it does not need additional wells. So what's going on here?

This crude attempt at water banking - vigorously denied by the applicant - ought to be denied. First of all this is an incomplete application in that, particularly, no ground water modelling study has been done. The preponderance of evidence in this case is such that the only honorable course to follow is to deny the application.

I regret to have to say that the staff submittal is foolish and seriously flawed. Staff tries to be "fair" but in being foolishly fair it cuts off the feet of its own arguments and fails, utterly, to protect the resource which is both Staff's and the Commission's prime responsibility. Deny this application: it is dead, let's let it lay down and let's give it a decent burial.

8. Finally, the Commission's attention is drawn to a very recent US Supreme Court Decision (Jefferson County, PUD v. Ecology Department of Washington, No. 92-1911). A copy of that decision is submitted herewith for your information. We think that it is time that the Commission familiarizes itself with Section 303 of the Federal Clean Water Act. The recent history of the Punalu'u stream and Ko'olau Agriculture's
nefarious water extraction plans both have a particular relevance to Section 303 and the Jefferson County case. We urge you most strongly to examine this application with this last point in mind.
I am a hydrologist and have recently completed a computer model to assess the interaction between stream water and groundwater. I have been applying this model to several streams on O‘ahu and there can be no doubt that there are significant transfers of water from groundwater to surface water and vise-versa. It is clear that the water resource should be considered as a single resource with interactive components and that the management of that resource should reflect that understanding and should presume that such interactions exist unless ample scientific evidence can show otherwise.

This understanding leads me to the conclusion that the application for these exploratory wells is quite incomplete and would not reveal stream water / groundwater interactions unless they were of the most serious nature. In short, the application does not contain the components necessary to reasonably assess the potential for these interactions and shows a general lack of diligence and responsibility on the part of Koolau Agriculture to do so.

These major points or components are missing in the application or conditions:

1. In order to ensure an impartial determination and analysis of the pump tests, we must have a prior consensus on what constitutes "interaction." The application has no minimum standards or criteria on which to base a determination that there is surface water / groundwater interaction. Without such preset criteria, it is all too easy to consciously or unconsciously rationalize after the fact that there isn't "measurable" interaction regardless of the results of the pump tests. Further, these guidelines must also specify the rates of withdrawal at each step of the step-drawdown test and the long-term test.

2. The commission should require stream gauge monitoring as specified in HAR, §171-20(d) for a period of one year before a determination is made. In order to see measurable effects of pumping on stream flow there must be sufficient stream
gauge monitoring above and below the points of potential interaction during the pump tests. The application stipulates no guidelines, locations, durations or frequency of monitoring, equipment or other pertinent information to indicate that the research team has the capability to observe groundwater / surface water interactions when they occur.

Further, one can not possibly assume to understand the stream system or its interactions in order to assess groundwater /surface water interactions without a significant amount of baseline daily stream flow data above and below the points of potential interaction. This streamflow data are vital to understanding the natural existing interactions in order to ascertain the effects of pumping. There must be at least one year (and preferably several years) of daily stream flow data preferably above and below the area of potential interactions to insure that there is both an adequate understanding of the existing interactions. These data are necessary to calibrate a model for existing groundwater / surface water interactions that can be used for comparison when the pump test occur.

3. During the time that these stream flow data are being gathered, it is necessary that a ground water model is run to approximate head declines and individual cones of depression and a combined cone of depression for all pumps running simultaneously. Such modeling may save Koolau Agriculture considerable money if the modeling shows that interactions would occur.

4. A third test must be specified in which that all pumps be run simultaneously at least at maximum sustained desired flow. The results if this test will serve two purposes. First, it will show the true potential of the wells pumpage to affect stream flow. Secondly, the results should be used to compare with the initial groundwater model discussed in number 3. above to insure that Koolau Agriculture adequately understands the groundwater flow regimes they may be affecting.

5. There are no stipulations or prohibitions on the amount of rainfall prior to the pump tests. If there is significant rainfall within 3-4 days of the pump test, it will be virtually impossible to observe any response in the stream flow regardless of the rate of pumping. This is because the increases streamflow will mask any observable deviations due to the pump test. There must be requirement that there is minimal rainfall for at least a week before the pump test to insure that interactions will be observed.

As they are presently outlined, the components of the application and the special conditions set the commission do not provide adequate controls or insurance that groundwater / surface water interactions would be seen even if they have occurred. Until such controls are and conditions are specified and until Koolau Agriculture shows proper initiative and due diligence to assess the impacts of its proposed withdrawal of water, the applications should be denied and resubmitted only after the above conditions have been met.
Chairperson and Members
Commission on Water Resource Management

July 13, 1994

would then be drilled to its full diameter, cased and completed. If the results are not favorable, the well would be sealed. By not drilling to its full diameter, and if test results are unfavorable, about one-half the cost of drilling would be saved. The applicant's consultants are of the opinion that favorable test results from one well does not guarantee similar success for the other two wells.

Well Location/Tax Map Key: The proposed well sites are at Punaluu, Oahu, at Tax Map Keys: 5-3-01:41 and 5-3-03:1 (see attached map).

Well Description:

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<th></th>
<th>Well 1</th>
<th>Well 2</th>
<th>Well 3</th>
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<tbody>
<tr>
<td>Ground elevation:</td>
<td>44 ft.</td>
<td>45 ft.</td>
<td>28 ft.</td>
</tr>
<tr>
<td>Casing diameter:</td>
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<td>12 in.</td>
<td>12 in.</td>
</tr>
<tr>
<td>Solid casing depth:</td>
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<td>100 ft.</td>
<td>100 ft.</td>
</tr>
<tr>
<td>Open hole:</td>
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<td>100 ft.</td>
<td>100 ft.</td>
</tr>
<tr>
<td>Total depth:</td>
<td>200 ft.</td>
<td>200 ft.</td>
<td>200 ft.</td>
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</tbody>
</table>

Agency Review: The applications were sent to the Honolulu Board of Water Supply, the State Historic Preservation Division, the Office of Hawaiian Affairs, and the State Departments of Health and Hawaiian Home Lands for review. There were no objections though the State Historic Preservation Division listed some concerns which need to be addressed by the applicant.

The Koolauloa Neighborhood Board No. 28 requested that the Commission deny the applications. They had previously gone on record supporting the designation of Windward Oahu and felt that "well permits should not be granted until such time as the commission deals with this designation".

Analysis: The wells are expected to develop water from a fresh basal aquifer. The effect of pumping the wells on streams or existing wells in the area has not been determined.

The Commission issued a declaratory ruling (Declaratory Ruling G-2) on March 16, 1994, effective in designated water management areas, that where there is insufficient information, an applicant may be allowed to drill and test an exploratory well prior to applying for a water use permit. The applicant shall be informed that the issuance of the drilling permit shall in no way prejudice any future consideration by the Commission on the issuance or non-issuance of a water use permit. If the well is successful, the applicant will apply for a water use permit. If the well is not successful, the applicant will apply for a permit to seal/abandon the well, or properly secure it in a manner approved by the Commission.

Water Availability: The wells are located in the Windward Sector, Kahana System of Oahu. Sustainable yield is estimated at 13 mgd in the system. Present use in the system is about one mgd. Total present and proposed developments amount to about 11 mgd.

RECOMMENDATIONS:

That the Commission approve the issuance of well construction permits, subject to the following conditions:

STANDARD WELL CONSTRUCTION PERMIT CONDITIONS

1. The Commission shall be notified before work commences.

2. The well construction permit shall be for construction and testing of the well only. The applicant shall coordinate with the Commission and conduct a pumping test in accordance with the attached protocol. A one-inch diameter (minimum) galvanized pipe shall be permanently installed, in a manner acceptable to the Commission, to accurately record water levels. No permanent pump may be installed and no water used from the well without first obtaining a water use permit and a pump installation permit from the Commission.

3. The proposed well construction shall not adversely affect existing or future legal uses of water in the area, including any surface water or established instream flow standards. This permit or the authorization to construct the well shall not constitute a determination of correlative water rights.
Chairperson and Members
Commission on Water Resource Management
July 13, 1994

4. The following shall be submitted to the Commission within thirty (30) days after completion of work:
   a. Well completion report.
   b. Elevation (referenced to mean sea level, msl) survey by a Hawaii-licensed surveyor.
   c. As-built sectional drawing of the well.
   d. Plot plan and map showing the exact location of the well.
   e. Complete pumping test records, including time, pumping rate, drawdown, chloride content, and other water quality data.

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

6. The well construction permit application and staff submittal approved by the Commission at its July 13, 1994 meeting are incorporated into the permit by reference.

7. The well construction permit may be revoked if work is not started within six (6) months after the date of issuance or if work is suspended or abandoned for six months. The work proposed in the well construction permit application shall be completed within two years from the date of permit approval.

SPECIAL CONDITIONS

1. The applicant is hereby informed, and agrees as a condition of this permit, that the issuance of the drilling permit shall in no way prejudice any future consideration by the Commission on the issuance or non-issuance of a water use permit. If the well is successful, and the applicant wants to use the water, the applicant will apply for a water use permit. If the well is not successful, the applicant will apply for a permit to seal/abandon the well, or properly secure it in a manner approved by the Commission.

2. The applicant shall notify the Commission at least two weeks prior to conducting the pumping test, and shall coordinate with and notify the Commission of any stream gaging conducted during the testing of the well.

3. If the testing demonstrates any measurable reduction of streamflow due to pumpage, and if the applicant wants to use the well, an amendment to the interim instream flow standard will be required.

4. Depending on the results of the pumping test, conversion to an operational status in the absence of a short-term definable effect on the stream may still require long-term monitoring of flows with possible shut-down during drought periods to assure maintenance of stream flows.

5. The applicant shall contact the State Historic Preservation Division at 587-0014 before starting any work on the project. The applicant shall obtain a written statement from the State Historic Preservation Division indicating that their concerns have been addressed, and a copy of that statement shall be sent to the Commission before work is started on the project.

Respectfully submitted,

RAE M. LOUI
Deputy Director

APPROVED FOR SUBMITTAL:

KEITH W. AHUE, Chairperson

Attach.
Bob, Attorney – agree to standard, special conditions
Amendments
Agree that no reliance placed upon Condition 1.
$240,000 cost to drill all three wells.
May also have other incidental costs arrown w/project.
Confirmd mdells will be turned over to BWS.

Bob J. – what is motive?

Latham – BWS plans include wells on their property. Don’t want property endangered further draw the life or future interruptions that may interfere w/BWS’s master plan.
No other interest other than again, for developments on the property.

Tim Anthony –
C. Wooten – Why deadline met (7/15/93)?
  – Design by Panzuk for SW still pending?
    (Wanted for Windowed design, action)
  – Experts agree that s/s/jw 1 to 1.
  – Any GW modeling test – no applications should be granted until tests performed.

Tim Anthony – request receipt by Hawai’i Water & Panzuk, K&B

William –
  Where does water come from? How is it used for?
  Alleged illegal diversion @ Tread 10 will also wastage.
  Alleged water banking will we helped record to support future and existing w. claims.

Everyone downstream of Tread 10, incl. kilolane, no longer have any water from channel.
  – Repeal designation, then to have issue, pending SW design.
AQUIFER (PUMP) TEST PROCEDURES

The pump test procedure for new wells shall consist of a step-drawdown test followed by a long-term continuous aquifer test. Testing the well and aquifer in the prescribed manner should result in the hydrologic information needed to determine: 1) the well's performance with regard to yield and water quality (chloride concentration), and 2) the nearby hydraulic properties of the aquifer.

General Recording Requirements

The records required for analysis and the tolerance in measurement acceptable for the step-drawdown and long-term continuous aquifer test are as follows:

1. Discharge from the well shall not fluctuate beyond ± 10 percent.
2. Depth to water measurements in the pumped well shall be accurate to 0.01 feet.
3. Time shall be accurate within ± 1 percent.
4. Water discharged from the well during the step-drawdown and long-term test shall be carried away from the well to a distance sufficient to preclude circulation of the discharge water downward to the ground-water table.
5. Recording of data should be on a form similar to Table 1. All information shown in Table 1 shall be provided. In addition, data shall be plotted on Graph 1 and provided.

Step-Drawdown Test

The purpose of the step-drawdown test is to establish the efficiency of the well and to provide preliminary information on the yield of the well, both from a quantity and quality standpoint.

1. Measurement of water level in the pumped well shall be made every 12 hours for a period of no less than two days prior to the initiation of the step-drawdown test in order to obtain the pretest trend in water levels.
2. The step-drawdown test will consist of continuously pumping the well for four hours at four different rates.
   a. The change from one pumping rate to the next must be sufficient to induce an observable change in water level in the well from the previous pumpage rate.
   b. If desired, the four different rates should represent the full range of pump capacity (if the yield can sustain this), but this is not necessary.
3. Each pumping rate should be continued for one hour, after which the new rate should be instituted as rapidly as possible.
4. Pumping should begin at the lowest rate and conclude with the highest rate.
5. Pumping should be continuous through the entire step-drawdown test.
6. Measurement of chloride concentration and temperature of the discharge water shall be measured at least five times:
   a. at the end of each pumping rate during the step-drawdown test, and
   b. at the very beginning of the test.
7. A sufficient number of water level measurements shall be made in the pumped well following the termination of the step-drawdown test to establish that the water level fully recovers from each test to pretest levels.

Long-Term Continuous Test

The purpose of the long-term continuous test is to determine the hydraulic properties of the aquifer to explore for and identify nearby aquifer boundaries such as streams or dikes, and to observe the trend in chloride concentration of the discharge water.
Should data also be consistent. Consistency has responsibility to protect resource, requesting not only water be protected, but also requesting that entire ecosystem be protected.

1. SW/GW known relationships (will impact biota, etc)

Should be doing GW modelling studies per Jefferson County decision.

Need more info before can make decision.

Fred Trowbridge behind scheme, power - gab.

Will Freeman - incomplete conditions
- has developed model to address GW/SW interaction.
- at least 1 year’s worth of monitoring needed to access stream impacts (preliminary data not done)
- need baseline data
- while stream data being collected, should model GW spread vs cone (cumulative)
- third pump test; pump test at full capacity (planned) for all 3 wells.
- need to specify how much rainfall allowed prior to/during tests (i.e. antecedent conditions)
- what constitutes “interaction”, needs to be defined.
Aquifer (Pump) Test Procedures

1. The long-term test should not commence until the water level in the pumped well has fully recovered from the step-drawdown test. Generally, the time required for this recovery will be slightly greater than four hours. The water level in the pumped well should be measured immediately before initiation of the long-term test.

2. The pump rate for the long-term test should be sufficient to create an observable drawdown.

3. The test should be run 24 hours per day for at least seven days. The decision to extend the test beyond four days shall be determined by agreement between the applicant's consultant and the staff of the Commission. If during the test, the water level remains the same for a period of 24 hours, the test can be terminated.

4. Measurement of chloride concentration and temperature of the discharge water during the long-term test shall be made at the beginning of the test and every six hours thereafter.

5. Depth to water in all wells shall be measured with sufficient frequency that each logarithmic cycle in time on the data plots (Graph 1) contains at least 10 data points spread through the cycle. Thus, depth to water should be made at t=0 (immediately prior to start of the test), and as close as possible at t=1, 1.5, 2, 2.5, 3, 4, 5, 6, 7, and 8 minutes for the first ten minutes and at all succeeding decimal multiples of these numbers to the end of the test (t=10, 15, 20, 25, 30, 40, 50, 60, 70, and 80 minutes for the log cycle 10 to 100 minutes, etc.)

6. A sufficient number of water level measurements shall be made in the pumped well following termination of the long-term continuous test to establish that the water level fully recovers from each test to pretest levels.
The letter quickly began:

"Start your new position. It seems your current one is a bit too demanding."

"Surely you'll make the best of it."

Your boss suggested.

"I hope you enjoy the change."

You were left with a blank sheet of paper.

You felt a mix of excitement and nervousness.

You decided to use your new position to its fullest.

A new challenge awaited you.
Table 1

AQUIFER TEST DATA

County: ____________________ Observation well no.: ____________________
Location: ____________________ Pumped well no.: ____________________

Average Q: ___________ gpm  Distance between Observation & Pumped Well __________ ft.

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<th>Hour</th>
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<th>Depth to water (ft)</th>
<th>2 (unadjusted) (ft)</th>
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Bob N: Post Bus Fresh

Turn: 10 days from call Negot.

Case: Approximately 2 months post call H?
Yes

Advisory: Keep patients on call Negot unfair, & not in best interest.

Please: Arr. shortly. Max will be here. (10:20 hrs)

Sign: A. Stimson, Jr.
June 13, 1994

Mr. Keith W. Ahue, Chairperson
Commission on Water Resource Management
Department of Land and Natural Resources
P.O. Box 621
Honolulu, Hawaii 96809

Re: Makalii Wells - Test Protocol and Request to Drill Three Wells

Dear Mr. Ahue:

Thank you for your letter of May 27, 1994 regarding our request to drill the three proposed wells as a single project, and your reference to the possibility of extending the pump test to seven days if warranted by field conditions.

Your request to allow for a seven-day test is acceptable to us. However, we recommend that the decision to extend the test be determined by agreement between our consultants and the staff of the Commission on Water Resource Management.

In regard to the question of considering the second and third wells as being exploratory in nature, we believe that all three of the Makalii wells should be regarded as exploratory wells in view of the fact that, historically, only one well has ever been drilled in the region between Kahana and Punaluu valleys. Our view is consistent with the position taken by the Water Commission staff that virtually nothing is known about the Makalii aquifer and, therefore, special conditions concerning drilling and testing are necessary. As a result of this position, we have not been able to proceed with our water development program for several years.

We plan to use an exploratory approach in the drilling of the three wells by first drilling to a minimum diameter which would permit analysis of the drill cores and test pumping. If the results are favorable, the wells would then be drilled to its full diameter, cased and completed. If the results are not favorable, the wells would then be sealed at our expense. By not drilling to their full diameters, and if test results are unfavorable, we would save about one-half the cost of drilling. Our consultants are of the opinion that favorable test results from the first well do not guarantee similar success for the other two wells.
The cost savings of drilling three wells under one contract would be substantial as compared with the cost of drilling the wells separately. Mobilization and demobilization costs of drilling one well is estimated at $25,000.00. For three wells, the cost is about $75,000.00, or a difference of $50,000.00. To gain access to the well sites for the drilling equipment it will be necessary to dismantle and restore fencing, paddocks, irrigation systems, electrical wiring, and to repair roadways after the equipment leaves. The total additional cost of this work, if the wells were drilled one at a time, is estimated at $60,000.00.

From the above, the total direct cost savings would be about $110,000.00. In addition, moving equipment into the area on three separate occasions would not only disrupt farm operations but may very likely result in time loss to the project due to the uncertainty of the contractor to return to the job promptly because of prior commitments of his equipment and manpower. These costs cannot be determined at the present time.

By extending the pump test from five to seven days, the estimated additional cost is $20,000.00. This is due to the added cost of manpower, supervision, and lab tests.

To summarize, the additional cost of drilling the three wells separately would be at least $110,000.00. If the pump test is extended to seven days, the additional cost would be about $20,000.00, making a grand total of $130,000.00 in additional costs.

In view of the above, may we again request approval to drill the three wells under a single contract. We wish to assure you of our full cooperation in seeing to it that all work will be performed satisfactorily and in compliance with all requirements.

Very truly yours,

Valerie L. Mendes
President

CC: Mink & Yuen Inc.