<table>
<thead>
<tr>
<th>Elapsed Time (min)</th>
<th>Drawdown (ft)</th>
<th>Pump Rates (gpm)</th>
<th>Elapsed Time at Specific Pumping Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>4.6</td>
<td>560</td>
<td></td>
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<td>7</td>
<td>4.6</td>
<td>560</td>
<td></td>
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<td>25</td>
<td>4.6</td>
<td>560</td>
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<td>110</td>
<td>4.6</td>
<td>560</td>
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<tr>
<td>170</td>
<td>4.6</td>
<td>560</td>
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<tr>
<td>420</td>
<td>3.4</td>
<td>560</td>
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<tr>
<td>690</td>
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<td>560</td>
<td></td>
</tr>
<tr>
<td>980</td>
<td>2.3</td>
<td>560</td>
<td>16hr @ 560</td>
</tr>
<tr>
<td>1040</td>
<td>2.9</td>
<td>700</td>
<td></td>
</tr>
<tr>
<td>1070</td>
<td>2.9</td>
<td>700</td>
<td></td>
</tr>
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<td>1130</td>
<td>5.75</td>
<td>700</td>
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</tr>
<tr>
<td>1250</td>
<td>5.75</td>
<td>700</td>
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</tr>
<tr>
<td>1370</td>
<td>5.75</td>
<td>700</td>
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<tr>
<td>1610</td>
<td>6.35</td>
<td>700</td>
<td></td>
</tr>
<tr>
<td>1730</td>
<td>6.35</td>
<td>700</td>
<td></td>
</tr>
<tr>
<td>1970</td>
<td>6.35</td>
<td>700</td>
<td>16.5hr @ 700</td>
</tr>
<tr>
<td>2150</td>
<td>8.08</td>
<td>900</td>
<td>3hr @ 900</td>
</tr>
</tbody>
</table>
Pump Test Analysis – Comments

Well ID: 6549-01
Date: 9/5/07
Geologist: Diane England

Pumping Test

1. Test was conducted 6-25-79.
2. Test was run for almost 36hr. 17hr at 560gpm, 15.5hr at 700gpm, 3hr at 900 and
3. Water levels taken at irregular intervals.
4. Chlorides constant at 56ppm.
5. Test shows decreasing drawdown with time at 560gpm, slowly increasing
drawdown with time at 700gpm, and a 2ft change in drawdown when the pump
rate was increased to 900gpm.

Well Interference & Stream Impacts

<table>
<thead>
<tr>
<th></th>
<th>Long Term Drawdown</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(700gpm rate only)</td>
</tr>
<tr>
<td>S</td>
<td>0.001</td>
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<tr>
<td>50yr</td>
<td>5.52</td>
</tr>
<tr>
<td>100yr</td>
<td>5.89</td>
</tr>
<tr>
<td>500yr</td>
<td>6.75</td>
</tr>
</tbody>
</table>

1. Numerous gulches are located within one mile, to the north and south, of the well.
2. Four wells are located within one mile of 6549-01. These wells are 6649-02,
   6649-01, 6549-02, and 6549-03. With the exception of 6549-02, the wells are
   significantly deeper than 6549-01 and are not likely to be impacted by drawdown
   from 6649-01. 6549-02 (Kohala Ranch 2) is located just across a road from 6549-
   01 (Kohala Ranch 1) and is of similar depth. Because of its significantly higher
   pump rate, 6549-02 is more likely to influence 6549-01 than vice versa.
   However, given their close proximity to one another, in terms of regional
   hydrologic impact, drawdowns from the two wells will probably be similar to
drawdown from a single well pumping at a rate equal to or less than the combined
pumping rate for both wells.
3. No stream or well impacts are anticipated solely from 6549-01.

Other

1. **The total well depth (1550 ft) extends past the ¼-thickness depth of the aquifer.** At the current depth to water (5.9ft msl), the ¼-thickness depth is
   1514.5ft msl. At the 1979 depth to water (6.9ft msl), the ¼-thickness depth is
   1524ft msl.
MEMO and ROUTE SLIP

WCR 2 Check for Well No. 6549-01 (survey to regulation memo)

1. **Pump Tests Check** (special condition of PIP? Yes/No) Glenn Bauer [_initial] (initial if yes)
   
   Step-Drawdown Test:
   
   - followed WCPI Stds
   - analysis attached
   - proposed pump cap o.k.

   Aquifer Pump Test:
   
   - followed WCPI Stds
   - T & S analysis attached

   Well Interference:
   
   - estimated Steady-State drawdown at 1-mile radius is ______ ft.
   - analysis attached

   Stream Surface Water Impacted:
   
   - [ ] [ ] [ ] [ ] [ ] If yes, identify most probable stream

   Geology Code for Well Index: __________

2. **Pump Installation Check** Mitch Ohye [initial] (initial)
   
   - data complete
   - followed Special Cond & Elev.
   - well database updated

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

4. Roy [ ] (initial) check

5. Subia [ ] (initial) finalize

6. Dean [ ] (initial) signature

7. Charley/Lenore/Ryan File

04/23/03
State of Hawaii  
COMMISSION ON WATER RESOURCE MANAGEMENT  
Department of Land and Natural Resources  
WELL COMPLETION REPORT - PART II

Pump Installation

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

1. State Well No.: 6549-01  
Well Name: Kohala Ranch #1  
Island: Hawaii

2. Address: Kohala Rd. Kamuela, HI  
Tax Map Key: 5-9-10:57

3. Pump Installation Company: Wai'eli Drilling & Development

4. Date Pump Installed: 4/18/03

5. PERMANENT PUMP INFORMATION (Attach pump specifications and rating curve)

<table>
<thead>
<tr>
<th>Pump Type, Make, Serial No.</th>
<th>Sub., Reda S/N 2TB2L79725</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated Capacity, gpm at head of</td>
<td>550 ft.</td>
</tr>
<tr>
<td>Motor Type, H.P., Voltage, rpm</td>
<td>Sub. 300, 2480V, 3500 RPM</td>
</tr>
<tr>
<td>Type of flow meter</td>
<td>Turbine</td>
</tr>
<tr>
<td>Model Number</td>
<td>Sparling</td>
</tr>
<tr>
<td>Serial Number</td>
<td>S/N 126142-1</td>
</tr>
</tbody>
</table>

Pump type (check one):
- [ ] Deep Well Turbine
- [ ] Submersible
- [x] Centrifugal

6. Method of flow measurement:

- [x] Flowmeter  
  Manufacturer: Sparling  
  Make: 126142-1  
  Size: 6"

- [ ] Weir
- [ ] Open Pipe
- [ ] Office*
- [ ] Other*, explain below

*attach schematic

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

8. Attach photograph of well and concrete pad clearly showing benchmark on concrete pad.

9. Other remarks/comments:

[ ]

[ ]

[ ]

[ ]

Pump Installation Contractor (print) Wai'eli Drilling  
C-57/C-57a/A Lic. No. C-16543

Signature  
Date 4/21/03

Permittee (print)  
Daniel K. Bowes

Signature  
Date 4/18/03
Bench mark elevation surveyed to nearest 0.01 ft. = 1459.90 ft. mean sea level

Elevation of top of chase tube = 459.90 ft. mean sea level

@ 1492.93
Pump intake depth = _______ ft.
(referenced to bench mark)
-33.03

@ 1491.83
Chase tube depth = _______ ft.
(referenced to bench mark)
-31.93

@ 1453.10'
= +6.80'

If airline installed, bottom of airline elevation = -31.93 ft. mean sea level
May 26, 1983

Belt, Collins & Associates
606 Coral Street
Honolulu, Hawaii 96813

ATTENTION: Mr. Bob Cunningham

Gentlemen:

SUBJECT: KOHALA ESTATES

We are attaching herewith:

1 print  Showing Well #1 and #2 coordinates and elevations for the subject project.

This is transmitted for your use.

Very truly yours,

ENGINEERS SURVEYORS HAWAII, INC.

Jerry S. Nakagawa

cc: John White w/prints
DIVISION OF WATER AND LAND DEVELOPMENT

CONTINUOUS TEMPERATURE LOG 6549-01

KAWAIHAE 6147-01 & KOHALA ESTATES

DEPTH (FT)

TEMPERATURE IN DEGREES F°
October 18, 1982

Mr. Douglas B. Wilde
P.O. Box 4351
Kailua-Kona, Hawaii 96740

Dear Mr. Wilde:

As requested, enclosed you will find a list of wells and maps from Kawaihae to Upolu Point and the available data. I hope this data will be of help to you.

Very truly yours,

ROBERT T. CHUCK
Manager-Chief Engineer

MO:ko

Enc.
<table>
<thead>
<tr>
<th>Well Numbers</th>
<th>Elevation (ft.)</th>
<th>Static Head (ft.)</th>
<th>Chlorides (PPM)</th>
<th>Capacity (MGD)</th>
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<tbody>
<tr>
<td>1. 6049-01</td>
<td>188</td>
<td>2.0</td>
<td>700</td>
<td>.8</td>
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<tr>
<td>2. 6049-02</td>
<td>40</td>
<td>—</td>
<td>2800</td>
<td>.7</td>
</tr>
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<td>3. 6049-03</td>
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<td>—</td>
<td>5250</td>
<td>—</td>
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<td>4. 6049-04</td>
<td>82</td>
<td>—</td>
<td>6700</td>
<td>.7</td>
</tr>
<tr>
<td>5. 6249-01</td>
<td>25</td>
<td>3</td>
<td>BRACKISH</td>
<td>.01</td>
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<td>6. 6250-01</td>
<td>78</td>
<td>—</td>
<td>—</td>
<td>—</td>
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<tr>
<td>7. 6250-02</td>
<td>49</td>
<td>—</td>
<td>—</td>
<td>—</td>
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<td>8. 6250-03-05</td>
<td>NO DATA</td>
<td></td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>9. 6451-01</td>
<td>60</td>
<td>—</td>
<td>—</td>
<td>—</td>
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<tr>
<td>10. 6549-01</td>
<td>1462</td>
<td>7.5</td>
<td>56</td>
<td>1.0</td>
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<tr>
<td>11. 6549-02</td>
<td>—</td>
<td>32</td>
<td>.86</td>
<td>—</td>
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<tr>
<td>12. 7154-01</td>
<td>25</td>
<td>.5</td>
<td>SALT</td>
<td>—</td>
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<td>13. 7652-01</td>
<td>33</td>
<td>.5</td>
<td>SALT</td>
<td>—</td>
</tr>
<tr>
<td>14. 7650-01</td>
<td>52</td>
<td>2.0</td>
<td>875</td>
<td>—</td>
</tr>
<tr>
<td>To</td>
<td>Initial</td>
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<td>-------------</td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>Robert T. Chuck</td>
<td></td>
<td></td>
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<tr>
<td>Takeo Fujii</td>
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<td>James Yoshimoto</td>
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<td>Manabu Tagomori</td>
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<td>Leslie Asari</td>
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<td>George Matsumoto</td>
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<tr>
<td>Daniel Lum</td>
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<td>Paul Matsuo.</td>
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<tr>
<td>Noboru Kaneshiro</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Edwin Sakoda</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

**See Me**
- Take action by
- Route to your branch
- Review & comment
- Draft reply by
  - For information
  - Xerox distributed
  - Acknowledge receipt
- File
  - Jane Sakai
  - Doris Hamada
  - Lorraine Nanbu
  - Jean Slarot
  - Elsie Yonamine

---

Note: Two wells at 1400 gal/min each.
Robert T. Chuck  
Division of Water and Land  
P.O. Box 373  
Honolulu, HI  96809

Dear Mr. Chuck:

I hope you can provide us with more information on water wells in Kohala on the Big Island. In February of this year you forwarded a list of wells, and their pertinent parameters, from Keahole Pt. to Kawaihæ. That information was just what we wanted. However, a closer examination of the land raised doubts as to their suitability for brackish water aquaculture. Because of this, we have shifted our sights somewhat north.

Would you send us a list of the wells from Kawaihæ north to around Upolu Pt., generally makai the highway? As in our last request for well information, we are interested in location, elevation, static head, salinity, and capacity. Where possible, please enclose maps of each well; those provided previously were very helpful.

If you have any comments or suggestions regarding the water found in these areas, please send them along. Mahalo for your time and consideration.

Sincerely,

Douglas B. Wilde

Douglas B. Wilde, Ph.D.
Pumping Test Data

<table>
<thead>
<tr>
<th>Date</th>
<th>Length Elapsed Time</th>
<th>Rate (gpm)</th>
<th>Drawdown (ft)</th>
<th>Concentration (ppm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6/26/79</td>
<td>16 hrs.</td>
<td>560</td>
<td>~ 2.3</td>
<td>5.6</td>
</tr>
<tr>
<td>6/29/79</td>
<td>18.5 hrs.</td>
<td>700</td>
<td>8.1</td>
<td>54.0</td>
</tr>
<tr>
<td>8/10/82</td>
<td>72 hrs.</td>
<td>600</td>
<td>3</td>
<td>82.0</td>
</tr>
<tr>
<td>10/17/82</td>
<td>72 hrs.</td>
<td>5-0</td>
<td>33'</td>
<td>38.0</td>
</tr>
</tbody>
</table>
June 3, 1981

The Hilton Head Co.
225 Queen Street
Honolulu, Hawaii 96813

Attention: Mr. John Michael White

Gentlemen:

Kohala Estates Well

On March 19, 1981, we logged the Kohala Estates Well (No. 6549-01) and obtained the following information:

Depth to water (from top of casing) 1,454.75 ft.
Depth of well (from top of casing) 1,556 ft.
Temperature of water 69.4°F
Chloride content of water 56 ppm

Based on our measurement of the depth to water and an elevation of 1,462 ft. for the top of the casing (we assume that the "1462" written on the top of casing is correct), the static water level or head of the ground water aquifer is 7.25 ft.

We appreciate your permission to check your well and hope the above information is of some value to you. The cover plate on the well casing was re-welded as originally found. Mahalo.

Very truly yours,

ROBERT T. CHUCK
Manager-Chief Engineer

DL:ko

cc: Hawaii DWS
May 19, 1981

Mr. Dan Lum
DEPARTMENT OF LAND AND NATURAL
RESOURCES
P. O. Box 373
Honolulu, HI  96809

RE:  Kohala Estates Water Wells Report

Dear Dan:

This will confirm our telephone discussion last week with respect to the above. As I understand it, your on-site inspection of the well found it to be 1,556 feet deep, at an elevation of 1,462 feet, with a head measurement of 7.25 feet above sea level, a water temperature of 69.4 degrees, and a chloride count of 56 ppm.

I would appreciate it greatly if you could provide us with a written confirmation of the above, along with a copy of your report outlining any additional information which may have resulted from your inspection.

Thank you for your assistance.

Sincerely,

[Signature]

John Michael White for
THE HILTON HEAD COMPANY, INC.

JMW:dor
cc:  Ed Craddick
Joseph Vierra, Belt, Collins & Assoc.

THE HILTON HEAD COMPANY, INC.
225 Queen Street  •  Honolulu, Hawaii 96813
Area Code 808/Telephone 531-0505/Telex 7430482
February 24, 1981

Robert T. Chuck
Manager-Chief Engineer
DEPARTMENT OF LAND AND NATURAL RESOURCES
Division of Water and Land Development
P. O. Box 373
Honolulu, HI 96809


Dear Bob:

Thank you for your letter confirming my discussion with Dan Lum with respect to the above.

This letter will authorize you and members of your staff to inspect and log our exploratory well during your two week survey of water wells on Hawaii. Please coordinate your inspection and research work with Messrs. Ed and Bill Craddick.

We will, of course, appreciate receiving a report on the results of your study when completed.

Kind regards,

John Michael White for
THE HILTON HEAD COMPANY, INC.

JMW: dor
cc: Ed Craddick
August 6, 1980

Mr. E. C. Craddick  
Water Resources International, Inc.  
Exploration and Development Specialists  
2828 Paa Street, Suite 2085  
Honolulu, Hawaii 96819

Dear Mr. Craddick:

Thank you for sending us the data for the Kohala Estate  
Well No. 6549-01, drilled for the Hilton Head Company in  
West Kohala, Hawaii.

We appreciate your continued cooperation.

Very truly yours,

ROBERT T. CHUCK  
Manager-Chief Engineer

ES:ai
Mr. Robert Chuck  
Manager-Chief Engineer  
Department of Land and Natural Resources  
Division of Water and Land Development  
P. O. Box 373  
Honolulu, Hawaii 96809

Dear Bob:

Re - Hilton Head Company  
Kohala Head Development

Pursuant to a request made by Mr. John Michael White of Hilton Head Company, we are enclosing the data for the well we drilled and tested for them.

Your kind assistance in confirming the adequacy of this source would be appreciated.

Best regards,

WATER RESOURCES INTERNATIONAL, INC.

[Signature]

E. C. Craddick  
President

ECC/sm  
Encl.  1 set - Well Test Data dated June 25, 1979  
1 set - Final Report letter dated October 15, 1979  
1 copy - Location Map

cc: Mr. John Michael White - Hilton Head Co., Honolulu
November 6, 1979

MEMORANDUM

TO: Honorable John Farias, Jr.

FROM: Susumu Ono

SUBJECT: Kohala Ditch System, North Kohala, Island of Hawaii

Reference is made to your memorandum of August 24, 1979 inquiring into the status of DLNR's plan to acquire the Kohala Ditch System. As you may recall several years back, when the Governor's Kohala Task Force was deeply involved in restraining the collapse of agriculture in North Kohala following the demise of Kohala Sugar Company, the Department of Land and Natural Resources was seriously considering the purchase of the Kohala Ditch System. The intent of DLNR's move was to guarantee the provision of irrigation water supplies for agricultural projects that were then being initiated under government sponsorship and to accommodate other projects that were expected to follow.

Toward this end, we delegated to the Department of Agriculture funds appropriated to our department to contract for and to engage the services of a consortium of consultants...Stephen P. Bowles and John F. Mink, geologists; Akinaka and Associates, engineers; and Charles S. May, financial analyst...to explore for water and to conduct a water study. A sum of $236,500 was expended by the Department of Agriculture to drill and test for high level groundwater in the Honokane Valley and to prepare a water resources and management and development plan for North Kohala.

The increased demand for irrigation water, as you know, did not materialize and there was no indication that the demand for irrigation water would expand much beyond what was then being furnished the few Kohala Ditch Company customers. This lack of interest for new agriculture in the area was, to an extent, reflected in the Department of Agriculture's decision to stop further work on its proposed Kahei Agricultural Park. Under the
Memorandum to
Hon. John Farias, Jr.

November 6, 1979

circumstances, DLNR felt at that time that it was not in the public interest to pursue the ditch acquisition matter, particularly in appreciation of Kohala Ditch Company's capability to provide the service to the existing users and the probable high cost to government to buy the ditch system and subsequently operate and maintain that system.

Unless the future agricultural outlook for North Kohala changes from what it is today, DLNR does not plan to actively pursue the acquisition of the Kohala Ditch System under today's climate of tight fiscal policies and expenditure ceilings. We are, though, willing to re-assess our priorities should there be plans for new agricultural enterprises requiring agricultural water.

What is DOA's agricultural plan for North Kohala? What types of agricultural enterprises are planned, where, how many acres, and most importantly, what is their estimated requirements for water? These information are necessary in order to develop a water plan and assure adequate water for agriculture.

I would be happy to meet with you to further pursue this matter should you so desire.

SUSUMU ONO
Chairman of the Board

RTC:JYY:jes
November 6, 1979

Honorable Jean King
Lieutenant Governor
State of Hawaii
State Capitol
Honolulu, Hawaii 96813

Dear Lt. Governor King:

Status of DLNR's Plan to Acquire Kohala Ditch System, North Kohala, Island of Hawaii

Several years back, when the Governor's Kohala Task Force was deeply involved in restraining the collapse of agriculture in North Kohala following the demise of Kohala Sugar Company, the Department of Land and Natural Resources was seriously considering the purchase of the Kohala Ditch System. The intent of DLNR's move was to guarantee the provision of irrigation water supplies for agricultural projects that were then being initiated under government sponsorship and to accommodate other projects that were expected to follow.

Toward this end, the Department of Agriculture with funds delegated to them from our department engaged the services of a consortium of consultants...Stephen P. Bowles and John P. Mink, geologists; Akinaka and Associates, engineers; and Charles S. May, financial analyst...to prepare a water resource management and development plan for North Kohala. A copy of this report is enclosed for your information.

The increased demand for irrigation water, as you know, did not materialize and there was no indication that the demand for irrigation water would expand much beyond what was then being furnished the few Kohala Ditch Company customers. This lack of interest for new agriculture in the area was, to an extent, reflected in the Department of Agriculture's decision to stop further work on its proposed Kahei Agricultural Park. Under the circumstances, DLNR felt that it was not in the public interest
Honorable Jean King

November 6, 1979

to pursue the ditch acquisition matter, particularly in appreciation of Kohala Ditch Company's capability to provide the service to the existing users and the probable high cost to government to buy the ditch system and subsequently operate and maintain that system.

We are now reviewing the situation to see if government intervention is necessary to control the water and to preserve the Kohala Ditch System and the surrounding areas.

With regard to your inquiry on the Kehena Ditch project, work on the project has proceeded on an increment-by-increment basis, as funds were appropriated and allotted. When the project is completed, it would serve the Mahukona-Kawaihae lands quite distant from those North Kohala lands serviced by the Kohala Ditch system. The availability of this source of water for the Mahukona-Kawaihae area would help deter pressures to export the Kohala Ditch water to other lands to the south. Under today's climate of tight fiscal policies and expenditure ceilings, the Kehena Ditch project has a very low priority in our department's capital improvements program.

We appreciate your interest in this matter.

Very truly yours,

#SUSUMUONO

SUSUMU ONO
Chairman of the Board

RTC:GSM:ak
Enc.
The Hilton Head Company  
225 Queen Street  
Honolulu, Hawaii 96813

Attention: Mr. John Michael White

Gentlemen:

FINAL REPORT ON GROUND WATER DEVELOPMENT
KOHALA ESTATES, HAWAII # 6544-01

This report will confirm our preliminary findings that a high grade source of ground water is available for continued development of the Kohala Estates subdivision.

Your effort to develop a fresh ground water source in the Kohala Estates area is an excellent example of successfully planned pioneering in an unproven area. Our decision on site selection was based upon our general understanding of the geology and ground water origin and movement in the Kohala area, and our on-site, in depth analysis of your project location.

The final site selection was made at the 1,462 foot elevation, as this was the best compromise between hydrology, accessibility, economics and future development. Our procedure on this project followed our established concept of "water development phase progress" to minimize your risk and maximize the information available at each phase of the water development before your commitment was necessary to proceed with a subsequent phase.

Time was of the essence, and, therefore, a heavy duty rotary rig was used. We worked around the clock in an effort to meet your timetable. A brief outline of the procedural steps taken by us to accomplish your objective follows:

Water Source Exploration:

A. Drill 9-7/8" pilot hole to -50' for a total depth of 1,515'.

B. Bail through drill stem and obtain a static water level and water sample. This was considered as being sufficiently accurate to base a decision for proceeding to the water source development phase, as results showed a head of water of +9 feet and a very low chloride
reading of approximately 50 PPM. This was a positive indication of an excellent potential water source. To provide further assurance for capacity, it was decided to deepen the well to 1,550' (-88' elevation) during the water source development program which followed.

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A. The 9-7/8" was reamed to 17-1/2".

B. A 12-3/4" O.D. casing x 5/16" wall was set to the bottom, the lower 120' being louvered.

C. The top 120' of annular was grouted with a total of 18 yds. of 1:1 slurry.

D. We set the deep well vertical turbine Johnston 25 stage pump (test pump), driven by a 16v. GMC diesel. The total depth of setting was 1,505' to suction, with air line at 1,455.5'.

E. We ran the pump test, the results of which are shown on the separate data sheet included as an exhibit to this report.

Conclusions:

The pump test confirmed that there is an excellent high grade source of ground water in the area explored. Based upon our information available, a well field at this location should yield 2 to 3 million gallons per day to serve your proposed development. As the Hilton Head lands in this area cover a vast acreage, it is felt that other well fields could be developed within the total acreage to meet any additional water demands for future development.

Suggestions for Future Water Development of this Source:

Given the foregoing conclusions, we recommend the following program:

1. Install a 1 mgd pump in the existing well, with necessary power, equipment, storage and transmission lines. This should accommodate the anticipated water needs of your Phases I and II. For additional development or increased future water demand, this same well field could be expanded in the following manner.

2. Drill a similar "step-out" production well approximately 300' laterally from the present well, and equip as above.
3. The location of both wells, as outlined above, in the same well field, would permit certain economics through the common use of power lines and control systems. It is also possible that long term observation during the operation of these two wells may indicate that a third well could, in the future, be added to this well field to meet possible future increased demand in the area.

4. Estimated costs for constructing an additional well would be based on the same cost of the first well, except that a percentage factor would be added to the overall cost for inflationary increases in labor and materials.

Our final report concludes that your effort to find a suitable water source for the Kohala Estates project, and future development, has been outstandingly successful. This is particularly gratifying in view of the high degree of risk involved due to the fact that this water source has been developed in an area heretofore unexplored.

Your development of this exploratory water well project has certainly added tremendously to the geological knowledge of ground water in this region. Additionally, it is notable that your well project will be the deepest fresh water production well operating in the State of Hawaii, with the deepest set pump of its type in the State.

We appreciate having had the opportunity to work with you on this project and we are proud to be a part of your pioneering effort to develop a water source for this area.

Very truly yours,

WATER RESOURCES INTERNATIONAL, INC.

E. C. Craddick, President

ECC/sm

Enclosures: Pump test reports dated June 25, 1979  
Area Map
WATER RESOURCES INTERNATIONAL INC.
2828 PAA STREET  Suite 2085  HONOLULU, HAWAII  96819
Phone 808/839-7727  TLX 723972 - WR11 HR

WELL TEST

JOB NO. J-211

DATE June 25, 1979

Il No. One Location Hilton Depth 1550 Dia. 12

Casing 1450 Screen 120 ft. Open Hole 17-1/2"

+ 1462 mls. Reference Point

Pump Setting 1505 ft. to Suction Air Line 1485.5 ft.

IC Water Elev. + 9 ft. from Top of concrete base

Equipment:

Water Resources International, Inc. Mgr' Johnston, 25 Stage 10 LMG

Driver 16 V GMC

Mgr' GMC

Present for Test D. O. Craddock

Water Resources International, Inc.

Start 6:00 p.m.

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<tr>
<th>TIME</th>
<th>Q/SEC.</th>
<th>GPM</th>
<th>AIR PSI</th>
<th>DRAWDOWN</th>
<th>TEMP</th>
<th>AG NO.</th>
<th>CI's</th>
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<td>AG NO.</td>
<td>CI's</td>
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The Hilton Head Company  
October 15, 1979  
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E. C. Craddick, President

ECC/sm

Enclosures: Pump test reports dated June 25, 1979
Area Map
FIGURE 1
LOCATION MAP
THE HILTON HEAD COMPANY
MEMORANDUM

FROM      John Michael White

DATE      July 23, 1980

SUBJECT   Kohala Estates deepwater well / Bowles report

TO        Mr. Bob Chuck
DEPARTMENT OF LAND AND NATURAL RESOURCES
1151 Punchbowl Street, Suite 227
P.O. Box 373
Honolulu, Hawaii  96809

Dear Bob:

Pursuant to our discussion today with regard to the above, I have enclosed an extra copy of the Bowles water report. Additionally, I have asked Ed Craddick to supply you with a duplicate of all information on the water well which has been previously submitted to you over the past year.

I would greatly appreciate it if, after reviewing the enclosed, you could write a brief letter to Mr. Quirino Antonio of the Department of Water Supply in Hilo, advising him that this water well is an adequate source for domestic purposes for our Kohala Estates development.

I also spoke with Bill Wong at Tom Arizumi's office at the Department of Health today, per your suggestion, and have provided him with a duplicate of the information which we are sending to you.

Thank you very much for your assistance. Please call me if you have any questions.

Kind regards,

John Michael White
Encls.

cc: Mr. Quirino Antonio

JMW:cjr

THE HILTON HEAD COMPANY, INC.
225 Queen Street  •  Honolulu, Hawaii 96813
Area Code 808/Telephone 531-0566/Telex 7430482
A WATER RESOURCE REVIEW
OF KOHALA ESTATES AND VICINITY

Groundwater resources between Kawaihae and Mahukona have largely been ignored and undeveloped until 1979. The primary water supply activities to date, have focused on the diversion and storage of stream flow in the upper elevations of the Kohala Mountain. Successful groundwater developments at Waikoloa (elevation 1200 feet), Lalamilo (elevation 1200 feet) and, now, Kohala Estates (elevation 1460 feet), have clearly demonstrated the viability of developing fresh groundwater along the leeward areas of North and South Kohala. These groundwater resources, while energy intensive to operate, are reliable and require virtually no treatment for domestic service.

The geology and hydrology of the Kohala Mountain has been extensively described by Stearns and Macdonald (1946) and more recently reviewed by Bowles, et al (1973). A manuscript report by Bowles (1973) dealt specifically with irrigation water development for Kohala Estates Phase I. The hydrogeologic studies to date have generally concluded the following:

1. that substantial quantities of groundwater occur on the leeward coast of the Kohala Mountain in the form of a basal lens

2. that within a mile or so of the shore line, the groundwater in the lens is brackish containing from 500 to 2000 mg/l of chlorides

3. that the primary area of recharge is in the summit of the Kohala Mountain above elevation 3000 feet

4. that secondary (seasonal) recharge occurs on the leeward slopes during winter storms and by stream losses
**LABORATORY ANALYSIS REPORT**

**TO:** Mr. Steve Bowles  
**ATTN:**

**ADDRESS:** 4988 Maunalani Circle  
**PHONE:** 737-2961

**SAMPLES OF:** Well water - KOHALA ESTATES EXPLORATION WELL  
**SAMPLE COLLECTED BY MEANS OF "THIEF" SAMPLER @ ELEVATION - 40'**

**SAMPLED BY:** Client  
**SAMPLING DATE:** 11/15/79  
**TIME:** 1:30

**RECEIPT DATE:** 11/16/79  
**TIME:** 2:55 pm

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<tr>
<td>Alkalinity</td>
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<td>Chlorides</td>
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<td>Sulfates</td>
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<td>Magnesium</td>
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<tr>
<td>Potassium</td>
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<td>4.47</td>
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**LABORATORY REMARKS:** * µg/l is the same as parts per billion. Alkalinity is expressed in mg/l as CaCO₃.

**cc:** J. Michael White, THE HILTON HEAD CORP.  
**Signature:** Erwin M. Kanahana

**APPENDIX 2**
FOR YOUR INFORMATION
FROM
JOHN MICHAEL WHITE

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Area Map
**WELL TEST**

**JOB NO.** J-211  
**DATE** June 25, 1979

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<th>No.</th>
<th>Location</th>
<th>Hilton</th>
<th>Depth</th>
<th>Dia.</th>
<th>Casing</th>
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<th>Screen</th>
<th>120 ft.</th>
<th>Open Hole</th>
<th>17-1/2&quot;</th>
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**Ref. Point**

**Pump Setting** 1505 ft. to Suction  
**Air Line** 1485.5 ft.  
**Water Elevation** + 9 ft. from Top of concrete base

**Water Resources International, Inc.**  
**Mfg'r.** Johnston, 25 Stage 10 LMG  
**Driver** 16 V GMC  
**Mfg'r.** GMC

**Present for Test**  
D. O. Craddock

**Water Resources International, Inc.**

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**Start Time:** 6:00 p.m.

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Stop Test

6:05 Recovery

14.
FIGURE 1
LOCATION MAP
5. That much of the groundwater flow beneath the summit area is diverted to the North and South by dike and fault systems located within the mountains.

The pumping test results of the Kohala Estates test well (Appendix 1) clearly demonstrates that there is a significant amount of recharge within, and/or dike leakage towards, the leeward coast to sustain a rather thick fresh water lens. A water level measurement (via air line) of +9 feet was reported during the pumping test. A series of wire line measurements made in late November 1979, with a corrected elevation datum, show that the water level stands at +6.5' ± .25'. Recalculation of the original air line measurement using the new datum shows a water level of +7'. Both measurements clearly substantiate the existence of a rather thick fresh water lens.

The salinity of the well during the pumping test of 6/25-27/79 and from "thief" samples taken in November of 1979, show that the well will produce water of domestic quality with chlorides of 60 mg/l. Complete inorganic chemical analysis (Appendix 2) show that the water meets the quality standards as set forth by the State Department of Health Rules and Regulations, Chapter 49.

The total quantity of fresh groundwater which might ultimately be developed by judiciously spaced wells at about the 1500 foot elevation in Kohala Estates cannot be accurately determined at this time. The pumping test conducted on the K.E. well has demonstrated that a pumping rate of 700 gpm (1 mgd) is practical for a single well unit. There is adequate hydrologic evidence that a well field capable of pumping 3 mgd can be constructed.

A second well is presently under construction on Phase I by an individual lot owner. This well, located at an elevation of about 400 feet, will provide valuable data on the extent of the fresh basal lens and additional data on water table gradient. While this well is expected to be slightly brackish, the data it provides will be important to future hydrologic interpretation.

Total domestic water demand for the Kohala Estates Phases I and II has not been established, however, there are to be a total
of 207 lots. A 1 mgd source can supply about 4800 gpd per lot. Normal domestic consumption (household) will probably not exceed 1000 gpd/lot, thus a substantial surplus will be available.

In summary, the recently completed Kohala Estates test well has clearly demonstrated the existence of a substantial and reliable fresh groundwater resource. The total amount of water which can ultimately be developed by properly spaced wells is unknown, but a development of up to 3 mgd can be expected. Water quality of this resource is excellent and well within any quality standards set forth for domestic supply.
SELECTED REFERENCES


The Hilton Head Company  
225 Queen Street  
Honolulu, Hawaii 96813  

Attention: Mr. John Michael White  

Gentlemen:

FINAL REPORT ON GROUND WATER DEVELOPMENT  
KOHALA ESTATES, HAWAII

This report will confirm our preliminary findings that a high grade source of ground water is available for continued development of the Kohala Estates subdivision.

Your effort to develop a fresh ground water source in the Kohala Estates area is an excellent example of successfully planned pioneering in an unproven area. Our decision on site selection was based upon our general understanding of the geology and ground water origin and movement in the Kohala area, and our on-site, in depth analysis of your project location.

The final site selection was made at the 1,462 foot elevation, as this was the best compromise between hydrology, accessibility, economics and future development. Our procedure on this project followed our established concept of "water development phase progress" to minimize your risk and maximize the information available at each phase of the water development before your commitment was necessary to proceed with a subsequent phase.

Time was of the essence, and, therefore, a heavy duty rotary rig was used. We worked around the clock in an effort to meet your timetable. A brief outline of the procedural steps taken by us to accomplish your objective follows:

Water Source Exploration:

A. Drill 9-7/8" pilot hole to -50' for a total depth of 1,515'.

B. Bail through drill stem and obtain a static water level and water sample. This was considered as being sufficiently accurate to base a decision for proceeding to the water source development phase, as results showed a head of water of +9 feet and a very low chloride.
reading of approximately 50 PPM. This was a positive indication of an excellent potential water source. To provide further assurance for capacity, it was decided to deepen the well to 1,550' (-88' elevation) during the water source development program which followed.

Water Source Development:

A. The 9-7/8" was reamed to 17-1/2".

B. A 12-3/4" O.D. casing x 5/16" wall was set to the bottom, the lower 120' being louvered.

C. The top 120' of annular was grouted with a total of 18 yds. of 1:1 slurry.

D. We set the deep well vertical turbine Johnston 25 stage pump (test pump), driven by a 16v. GMC diesel. The total depth of setting was 1,505' to suction, with a line at 1,455.5'.

E. We ran the pump test, the results of which are shown on the separate data sheet included as an exhibit to this report.

Conclusions:

The pump test confirmed that there is an excellent high grade source of ground water in the area explored. Based upon our information available, a well field at this location should yield 2 to 3 million gallons per day to serve your proposed development. As the Hilton Head lands in this area cover a vast acreage, it is felt that other well fields could be developed within the total acreage to meet any additional water demands for future development.

Suggestions for Future Water Development of this Source:

Given the foregoing conclusions, we recommend the following program:

1. Install a 1 mgd pump in the existing well, with necessary power, equipment, storage and transmission lines. This should accommodate the anticipated water needs of your Phases I and II. For additional development or increased future water demand, this same well field could be expanded in the following manner.

2. Drill a similar "step-out" production well approximately 300' laterally from the present well, and equip as above.
The Hilton Head Company  
October 15, 1979  
Page Three

3. The location of both wells, as outlined above, in the same well field, would permit certain economics through the common use of power lines and control systems. It is also possible that long term observation during the operation of these two wells may indicate that a third well could, in the future, be added to this well field to meet possible future increased demand in the area.

4. Estimated costs for constructing an additional well would be based on the same cost of the first well, except that a percentage factor would be added to the overall cost for inflationary increases in labor and materials.

Our final report concludes that your effort to find a suitable water source for the Kohala Estates project, and future development, has been outstandingly successful. This is particularly gratifying in view of the high degree of risk involved due to the fact that this water source has been developed in an area heretofore unexplored.

Your development of this exploratory water well project has certainly added tremendously to the geological knowledge of ground water in this region. Additionally, it is notable that your well project will be the deepest fresh water production well operating in the State of Hawaii, with the deepest set pump of its type in the State.

We appreciate having had the opportunity to work with you on this project and we are proud to be a part of your pioneering effort to develop a water source for this area.

Very truly yours,

WATER RESOURCES INTERNATIONAL, INC.

E. C. Craddick, President

ECC/sm

Enclosures: Pump test reports dated June 25, 1979  
Area Map
### WELL TEST

**Job No.:** J-211  
**Date:** June 25, 1979

- **Well No.:** One  
- **Location:** Hilton  
- **Depth:** 1550 ft.  
- **Dia.:** 12 in.

- **Zid Casing:** 1450 ft.  
- **Screen:** 120 ft.  
- **Open Hole:** 17-1/2" I.D.

- **Sub:** +1462 mls.  
- Reference Point:  

- **Test Pump Setting:** 1505 ft. to Suction  
- **Air Line:** 1485.5 ft.

- **Static Water Elev.:** +9 ft.  
- **from:** Top of concrete base

- **Pump:** Water Resources International, Inc.  
- **Mfg.'s:** Johnston, 25 Stage 10 LMC

- **Rated Q:** 700 GPM  
- **Driver:** 16 V GMC

- **Operating Speed:** 1800 RPM  
- **Mfg.'s:** GMC

- **Present for Test:** D. O. Craddick  
- **Water Resources International, Inc.**

---

**Static Air Line PSI:** 14 PSI  
**Static Water Level:** +9 ft. MSL

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**Start Time:** 6:00 p.m.

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## WELL TEST

**Well No.** One  
**Location** Hilton  
**Depth** 1550 ft.  
**Dia.** 12

**Date** June 25, 1979

**Casing** 1450 ft.  
**Screen** 100 ft.  
**Open Hole**

**Datum** + 1462 mls.  
**Reference Point**

**Pump Setting** 1505 ft. to Saulton  
**Air Line** 1485.5 ft.  
**Top of concrete base**

**Water Level** + 9 ft.  
**Water Level** + 9 ft. MSL

**Company** Water Resources International, Inc.  
**Mfg'r.** Johnston, 25 Stage 10 LMC  
**Driver** 16 V LMC  
**Mfg'r.** LMC

**Present for Test** D. O. Craddick  
**Water Resources International, Inc.**

**Start** 6:00 p.m.

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</table>

Stop Test

Recovery 14.
### WELL TEST

**JOB NO.** J-211  
**DATE** June 25, 1979

**Drill Location:** Hilton  
**Depth:** 1550  
**Dia.:** 12

- **Total Drilling:** 1450 ft.  
- **Screen:** 120 ft.  
- **Open Hole:** 17-1/2"  
- **Reference Point:** + 1462 mls.

- **Setting:** 1505 ft. to Suction  
- **Air Line:** 1485.5 ft.  
- **Water Level:** + 9 ft.  
- **Mfr.:** Johnston, 25 Stage 10 LMC  
- **Driver:** 16 V GMC  
- **Mfr.:** GMC

**Water Resources International, Inc.**  
**Present for Test:** D. O. Craddick  
**Water Resources International, Inc.**

**Start Time:** 6:00 p.m.

<table>
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<tr>
<th>TIME</th>
<th>G/SEC.</th>
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<th>DRAWDOWN</th>
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<th>CI's</th>
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</table>
**WELL TEST**

**JOB NO. J-211**

**DATE** June 25, 1979

**II No.** One  
**Location** Hilton  
**Depth** 1550  
**Dia.** 12

**Casing** 1450  
**Screen** 100 ft.  
**Open Hole** Reference Point

**Pump Setting** 1505 ft. to Sultion  
**Air Line** 1485.5 ft.

**Actual Water Elev.** + 9 ft.  
**from** Top of concrete base

**pump: Water Resources International, Inc.**  
**Mfg'r.** Johnston, 25 Stage 10 LMC

**Q** 700 GPM  
**Driver** 16 V LMC

**rating Speed** 1800  
**Mfg'r.** LMC

**Present for Test** D. O. Craddick  
**Water Resources International, Inc.**

**Air Line PSI** 14 PSI  
**Water Level** + 9 ft. MSL

---

**Start 6:00 p.m.**

<table>
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<tr>
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<td>4.8 ml</td>
<td>54 ppm</td>
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Stop Test
Recovery 14.
Route Slip
WATER RESOURCES & FLOOD CONTROL BRANCH

From: [Signature] Date: 4-1-81 File In: [Signature]

To: Initial
- [Signature] Manabu Tagomori
- [Signature] Albert Ching
- [Signature] Daniel Lum
- [Signature] George Matsumoto
- [Signature] Nobu Kaneshiro
- [Signature] Tom Nakama
- [Signature] Paul Matsuo
- [Signature] Edwin Sakoda
- [Signature] Mitchel Ohye
- [Signature] Milton Yamasaki
- [Signature] Joe
- [Signature] Doris Iimada

Please
- [Signature] See me
- [Signature] Call
- [Signature] Take action by
- [Signature] Review & comment
- [Signature] Draft reply by
- [Signature] Type draft
- [Signature] Type final
- [Signature] Xerox ___ copies
- [Signature] Mail

For Approval
- [Signature] Information

Robert Chuck
- [Signature] Jane Sakai
- [Signature] Elsie Yonamine
- [Signature] Bill Koyanagi
- [Signature] Richard Jinnal
- [Signature] Yoshi Shibuya

CHLORIDES
First bail sample taken 3/31/81
WAILUPE WELL 51 PPM
SWL = 3.71' (by steel tape)

KOHALA ESTATES WELL

56 ppm was obtained 56 ppm??
ay their pump test
Date of report: 
Person filing report: 

A. OWNER: Hilton Head Co. 
NAME: Hilton Head Kohala 12 
ISLAND: Hawaii

B. GENERAL LOCATION: North Kohala

C. DRILLING COMPANY: Water Resources International

D. TYPE OF RIG: Rosser 
DRILLING COMPLETED: Jan 5, 1979 
DRILLER: W. B. Craddick

E. ELEVATION, msl: Top of drilling platform 1462 ft. Bench mark and method used to determine height of drilling platform above ground surface ft. elevation:

F. HOLE SIZE: 17.7 inch dia. to 1800 ft. below drilling platform.

G. CASING INSTALLED: 1.5 in. I.D. x 376 in. wall solid section to 1450 ft. below drilling platform.

H. ANNULUS: Grouted ft. to ft. below drilling platform.

I. PERMANENT PUMP INSTALLATION:

- Pump type, make, serial no. Capacity g.p.m.
- Motor type, H.P., voltage, r.p.m.
- Depth of pump intake setting ft. below which elevation is ft.
- Depth of bottom of airline ft. below which elevation is ft.

HYDROLOGY

J. INITIAL WATER LEVEL: 453 ft. below drilling platform. Date of measurement:

K. INITIAL CHLORIDE: ppm, total depth of well 453 ft. below drilling platform:

L. PUMPING TESTS:

- Reference point (R.P.) used: which elevation is ft.
- Start water level ft. below R. P. End water level ft. below R. P.
- Depth of well ft. below R. P. Elapsed Time (hours) Rate (g.p.m.) Draw-down (ft.) Temp. 

M. DRILLER'S LOG:

- Depth, ft. Rock Description Remarks Water Level ft. Depth, ft. Rock Description Remarks Water Level ft.

N. REMARKS:

FOR OFFICIAL USE

- Latitude: 20° 05' 24"
- Longitude: 155° 40' 23"
- Well No.: 6549-01

FOR DRILLER'S USE

- Job Name: 
- Job No.: 

INSTRUCTIONS: Send three copies to Manager-Chief Engineer, Division of Water and Land Development, P. O. Box 373, Honolulu, Hawaii 96809.

NOTICE OF INTENT TO DRILL

WELL OR PROJECT NAME: Hilton Head Kohala Island Hawaii

OWNER OF WELL
Mailing Address: P.O. John H. Whi 225 Queen St Hono 96813

DRILLING COMPANY
Mailing Address: 2828 Paa St Hono 96819

Proposed Construction Date: Jan
Proposed Completion Date: Apr 19
Proposed Depth: 50' gl

PROPOSED USE OF WELL:
(a) Domestic ✓
(b) Irrigation ✓
(c) Industrial (type)
(d) Cooling (type)
(e) Waste Disposal (type)
(f) Soils Invest.
(g) Foundation Invest.
(h) Others (specify)

LOCATION OF WELL: (Attach copy of tax map, USGS topographic map, plantation field map, road map, or prepared drawing showing exact location. If not available, prepare a hand-drawn sketch map (not necessarily to scale) in the space below showing sufficient landmarks, distances, and directions for location in the field)

COORDINATES
155° 50' E
20° 05' N

TAX MAP KEY: 1 2 3

Date Submitted
Signature of Owner
Title (If Applicable)

FOR DRILLER'S USE
Job Name
Job No.

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


FOR OFFICIAL USE
Latitude 20° 05' 29"
Longitude 155° 49' 23"
Well No. 6549-91
Mr. John Michael White  
The Hilton Head Company  
225 Queen Street  
Honolulu, Hawaii 96813  

Dear Mr. White:  

Kohala Deepwell Project  

Attached please find well test data obtained during testing of your well at North Kohala.  

Our analysis of the well test data reflects that the well will safely yield one (1) MGD of potable domestic water.  

We recommend that you install a pump meeting the following requirements:  

The pump suction should be set at 1505 ft. below ground level.  

Pump construction specs:  
(a) Bowls  
   1. Maximum O.D. 10 inches  
   2. Class 50 cast iron  
   3. Bolted construction fitted with "O" rings  
   4. Maximum thrust factor 3.6  
   5. Bowl shaft 17-4 PH  
   6. Minimum lateral of 1 inch after assembly.  

(b) Column - 1200 ft. minimum schedule 40, 8 inch I.D.  
    - 300 ft. minimum schedule 60, 8 inch I.D.  

(c) Shaft and tubing - 1-15/16" shaft, enclosed in schedule 80,  
    oil lube tubing.  

(d) Discharge head - heavy duty steel fabricated head fitted  
    with WRII tube tension assembly.  

(e) Motor - 400 HP, 1800 RPM, 3 phase, 60 hz, 1.15 sf. with  
    polyseal insulation, minimum thrust capacity 32,000  
    lbs. based on 10,000 hr. bearing life.
Mr. John Michael White  
The Hilton Head Company.  

Electrical controls to match the motor selected.

Special attention should be given in designing the discharge piping to protect against water hammer when pump is shutdown.

We are pleased with the well test and look forward to contracting with you for the design and installation of balance of your requirement to put the well into operation.

Yours truly,

WATER RESOURCES INTERNATIONAL, INC.

Douglas O. Craddick  
Vice President

DOC/sm  
Encl.

cc: Mr. Bill Craddick, Hilo - W/encl.
FOR YOUR INFORMATION

FROM

JOHN MICHAEL WHITE

JOHN

FROM

WATER RESOURCES INTERNATIONAL, INC.

Dear John:

Please note the following:

- Preliminary tests through the 14-ft. and later, quality appraisals, and casing characteristics of the well (Phase II) for an additional six weeks will be subject to delivery of materials and any other required authorization to proceed with Phase II immediately. Upon delivery by the well, we will forward the requested materials and any other required authorization to proceed with Phase II immediately. Upon delivery by the well, we will forward the requested materials and any other required authorization to proceed with Phase II immediately.

- Prior to reaming, the present pilot hole will be deepened by 60 ft. to beyond our control. We request authorization to proceed with Phase II immediately, upon delivery by the well, we will forward the requested materials and any other required authorization to proceed with Phase II immediately. Upon delivery by the well, we will forward the requested materials and any other required authorization to proceed with Phase II immediately.

- Very truly yours,

WATER RESOURCES INTERNATIONAL, INC.

F. C. Crockett
President
John White 524-6000, Kohala Estates, said they're having a dedication and blessing of water well that they're drilling at Kohala Estates on Monday, Feb. 26 at 10:00 am. (starting up the well and blessing by Rev. Akaka). You and your staff are welcome to attend the dedication (sorry for the last minute invitation but it was only finalized yesterday). If you can't attend but would like to send your project engineer, please do so. Also, anytime that DOWALD is interested in looking at the progress of the well drilling (for the next three weeks) please feel free to do so.

The site of the dedication is: go mauka to the top of the paved road in Kohala Estates and continue one mile on the dirt road extension of the paved road.
WATER RESOURCES INTERNATIONAL, INC.

PACIFIC OPERATIONS

79 JAN 4  10:36

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF WATER AND LAND DEVELOPMENT
P. O. BOX 373
HONOLULU, HAWAII  96809

Gentlemen:

Re: Kohala Estates Deepwell Project
Hilton Head Company

With reference to the attached Notice of Intent to Drill the Kohala Deepwell, we wish to advise that our timetable calls for mobilizing in January 1979 and completing the 9-5/8" pilot hole to approximately -50 ft. by the end of February 1979.

The pilot hole will then be checked for static water level and quality, and if suitable will be opened to 16" for installation of a 12-3/4" O.D. casing on March/April 1979 depending upon time of delivery of the casing from the mainland. Following this, the well will be pump tested for a minimum of 72 hours for determination of pump design.

You will be advised of exact elevation and site selection as soon as determined.

Very truly yours,

WATER RESOURCES INTERNATIONAL, INC.

E. C. Craddock
President

ECC/sm
Enclosure: Notice of Intent to Drill

cc: Mr. John Michael White - W/copy of enc.
The Hilton Head Company
225 Queen St., Hon., Hi 96813
EXPLORATION AND DEVELOPMENT SPECIALISTS  6549-01

2828 PAA STREET, SUITE 2085 / HONOLULU, HAWAII 96819 / TELEPHONE 839-7727 / RCA TELEX 723672