To: ROY HARDY - CWRM  
Original □ will □ will not be mailed to you.

From: Tom Nance

Subject: SOUTH KOREA WATER WERS GROUP

Facsimile Header

Fax No.: 6
Date: Jan. 31, 2000
No. of Pages: 9 (including header)

(1) Copy of the signed Memorandum of Understanding (pp. 2-5)
(2) Unsigned copy of Policies and Procedures (pp. 6-9)

680 Ala Moana Boulevard, Suite 405 • Honolulu, Hawaii 96813-5411 • Phone: (808) 537-1141 • Fax: (808) 538-7757

Ryan - Found this. Should put copies in relevant Big Island well folders
MISSION STATEMENT

To work jointly and cooperatively in developing and implementing a regional water plan which best serves the collective water needs of the parties and others within the region in a manner acceptable to relevant governmental authorities.

OBJECTIVES

The parties to this Memorandum of Understanding (collectively referred to as "South Kohala Water Study Group" or "Group") acknowledge and agree that it is in their long-term best interests to achieve the Mission set forth above in the following manner:

- Reach agreement on a regional plan for the development of sources and distribution systems for potable, non-potable water and effluent reuse;

- Form and establish, as equity participants, a private, regional water company or companies for the development, production, distribution and sale of potable, non-potable and effluent reuse resources serving the parties and others within the region;

- Reach bilateral and multilateral agreements achieving the staged implementation of the regional water plan;

- Publicly support and consider the commitment to the conditional, partial funding of the County of Hawaii Department of Water Supply's (DWS) development of its planned North Kohala Pipeline;

- Develop a Water Commitment Policy, which is incorporated herein by reference, containing guidelines and requirements for each Group Member securing a sufficient supply of water for actual use in accordance with a realistic timetable;
 Coordinate the activities of the Water Study Group with all relevant State of Hawaii authorities, including but not limited to its Water Commission, in a manner which promotes and preserves the Group's ability to deal with regional water issues on a collective basis;

- Communicate, where appropriate, with other interested parties within the region;

- Enter into subsequent joint agreements intended to implement the objectives adopted herein.

**Governance**

The activities of the Group shall be governed and coordinated through an Executive Committee comprised of a designated representative of each signatory to this Memorandum of Understanding.

The Group Executive Committee shall:

- Approve all policies, agreements and expenditures made on behalf of the Group; provided, that if the representative of any Group member specifically disapproves of any such expenditure, that Group member shall be excused from its pro rata share of such expenditure;

- Approve the inclusion of additional members to and approve, except member in question, for the exclusion of existing members from the Water Study Group;

- Approve public statements and testimony regarding Water Study Group activities;

- Develop and approve an annual operating budget, project budgets and the individual party's obligations to fund the operations and the development of these planned projects;

- Be kept informed of all agreements entered into between Water Study Group members affecting the Group's Mission and Objectives;

- Coordinate all contact regarding the activities of the Water Study Group with governmental agencies;
Direct and approve the activities of all consultants retained by the Water Study Group relating to its stated Mission and Objectives.

All decisions of the Group shall be by the majority of the members of the Executive Committee except for "key decisions" which require unanimous approval. Key decisions include approval of the annual operating budget and individual members obligation to fund operations or make contributions to the development of planned projects, expenditures which are outside of the approved budget in excess of $5,000 in any single case or $25,000 in the aggregate and the addition of any new member to the Executive Committee.

Dispute Resolution

It is acknowledged that from time to time, disputes and disagreements may arise between the parties to this Memorandum of Understanding regarding regional water issues and that it is in their long-term collective best interests that such disputes be resolved without resort to governmental or judicial involvement.

The parties agree that they shall use their individual and collective best efforts to resolve any and all outstanding issues covered by this Memorandum. The parties further agree that in the event negotiations fail to result in acceptable agreement or resolution, they may voluntarily submit outstanding issue(s) to binding or nonbinding arbitration pursuant to terms agreed to by the parties.

North Kohala Pipeline

The parties agree to support the concept of a North Kohala pipeline transporting potable water to South Kohala being pursued by the Department of Water Supply, County of Hawaii.

In the event that the parties are reasonably satisfied that the North Kohala pipeline will be built, but no later than the start of construction, individual signatories to this agreement shall commit, on a fair and equitable basis, to the partial funding of said pipeline under acceptable terms and conditions to be negotiated.
Termination/Withdrawal

A majority of the members of the Group may terminate the Group and joint obligations contained in this Memorandum of Understanding. Individual Group members may withdraw from the South Kohala Water Study Group upon written notice to other members; provided, that members shall remain liable for their or its pro-rata share of costs of operations per the approved budget or amendments thereto, incurred during their membership or prior to withdrawal, as the case may be.

This Memorandum of Understanding is entered into this 9th day of February, 1992.

MAUNA KEA PROPERTIES, INC.  NANSAY HAWAII, INC.

By Its  By Its

MAUNA LANI RESORT, INC.  WAIKOLOA LAND COMPANY

By Its  By Its

President
DRAFT
Water Commitment Policies and Procedures
of the
South Kohala Water Users' Group
Revised: [February 4, 1993]
March 9, 1993

The South Kohala Water Users Group ("Group") recognizes the need to develop a coherent set of policies and procedures for the development of groundwater to ensure maximum beneficial use of this limited resource, avoid conflicts among users, and facilitate the timely development of water tied to actual use. The parties to this document agree to abide by the policies and procedures it contains and encourage the State Commission on Water Resource Management ("Commission") to evaluate all drilling and pump installation permits received from other water users in the basin by the same criteria.

POLICIES

1. The group recognizes that all parties need assurance of the availability of water for their developments. The group further recognizes that such assurances can occur only if it is agreed to by all parties.

1. All drilling, well modification, and pump installation permits will be formulated to conform to the intent of the then current version of the Group's approved South Kohala Water [Master] Resource Plan.

2. All drilling, well modification, and pump installation permits will be submitted to the Group for its approval prior to submittal to the Commission. The Group's approval shall be based on the applicant's conformance with these policies, and the procedures listed below. The Group's approval shall not be unreasonably withheld if such conformance is demonstrated.

3. To minimize excessive use of groundwater, all effluent from sewage treatment plants shall be reused for irrigation unless it can be conclusively demonstrated to be physically and/or economically impractical for the developer of the irrigation supply or the ultimate user of the water.
4. All new landscaping, including golf course turfgrass, will be designed and implemented to minimize irrigation use. Efforts toward this end shall include choosing appropriate plant materials, use of proper soil types and thickness, and avoiding excessive turfgrass areas. Any new 18-hole golf course shall not use more than 0.75 MGD on year-round average nor more than 1.00 MGD over any seven-day period.

5. All new hotel, residential, commercial, and industrial development shall be designed to minimize water use and shall include appropriate water saving devices.

6. Drilling permits should be supported if consistent with the Water Resource Plan as they provide much needed information about this region's aquifer.

7. [Drilling and] Pump installation permits shall not be sought more than two years in advance of actual need [to avoid creating false shortages of supply and inappropriate positioning for the resource, potentially denying others their fair and equitable use].

8. Members of the Group agree to devise water use standards for consumption of potable and irrigation water use in order to implement these policies.

9. It is recognized that agreements between two or more parties may be necessary to facilitate respective water development. [Such agreements shall be consistent with these policies and procedures.]

PROCEDURES

1. All applications for drilling, well modification, and pump installation permits, including extensions of these permits, will be submitted for review and approval by the Group to ensure conformance with the intent of the Group's policies and [master] water resource plan prior to submission to the Commission.

2. To initiate the Group's review, application will be submitted with the following supporting information:

   a. Quantity [and timing] of potable and/or non-potable supply requirements, including the basis for these projections (unit counts, acreage, etc.).
b. Measures taken to avoid excessive potable and/or non-potable water use.

c. Exact location of the water uses, including land use plans, TMKs, etc.

d. Approved State land use designation; County General Plan designation; County zoning; use permit for district use; and the prospective land use approvals, including subdivision, needed to achieve the desired land use.

e. The project's site specific water master plan for potable and not potable water shall be submitted.

f. Exact location, dimensions, and pump capacity of the well (or wells) to be developed to meet these supply requirements.

[g. A development schedule indicating the date of actual water use.]

3. The Group's review and response to the application shall be completed within 45 days. The response shall judge the application's conformance with these policies and with the South Kohala Water [Master] Resource Plan, [the appropriateness of the timing of the application,] and the County General Plan. [Unless there are compelling reasons otherwise, the timing of an application shall be deemed inappropriate unless all land use approvals through and including County zoning have been received and the actual use of water, based on a firm schedule, is to begin within two years.]

Listed below are specific criteria of the Group's review of applications.

a. If conformance with these policies and procedures is demonstrated [and the timing of the application is appropriate,] the Group's approval shall not be unreasonably withheld.

b. If the application fails to meet the standards for acceptability set out herein, no submittal of the application to the Commission shall be made until revisions satisfactory to the Group are made.

c. The Group's approval for a pump installation permit shall be given only after tentative subdivision approval for the project to be served has been given.

d. If a proven water source is a condition of County zoning or use permit approvals, the Group's approval of a well construction permit shall be given only if evidence of the actual water use within two years is provided.
These Water Commitment Policies and Procedures are entered into this day of ________, 1993.

Mauna Kea Properties, Inc.
By: _________________________
   Its

Nansay Hawaii, Inc.
By: _________________________
   Its

Mauna Lani Resort, Inc.
By: _________________________
   Its

Waikoloa Land Company
By: _________________________
   Its
Byron Jackson #12 MRHS
21 Stage, 1500 GPM @ 1280'

AS-BUILT WELL + PUMP SECTION
Waikoloa Well No. 1 5745-03
N.T.S.
Table 1
As-Built Dimensions of the Waikoloa Water System Wells

<table>
<thead>
<tr>
<th>Identifying Well Number</th>
<th>5546-01</th>
<th>5745-03</th>
<th>5745-02</th>
<th>5745-01</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identifying Name</td>
<td>Waikoloa Water Well No. 2</td>
<td>Waikoloa Water Well No. 1</td>
<td>Parker 4</td>
<td>Parker 5</td>
</tr>
<tr>
<td>Ground Elevation (FT)</td>
<td>1193</td>
<td>1196</td>
<td>1203</td>
<td>1207</td>
</tr>
<tr>
<td>Nominal Casing Diameter (IN)</td>
<td>16</td>
<td>16</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Total Well Depth (FT)</td>
<td>1317</td>
<td>1330</td>
<td>1231</td>
<td>1242</td>
</tr>
<tr>
<td>Length of Solid Casing (FT)</td>
<td>1198</td>
<td>1195</td>
<td>1192</td>
<td>1189</td>
</tr>
<tr>
<td>Length of Perforated Casing (FT)</td>
<td>78</td>
<td>80</td>
<td>39</td>
<td>38</td>
</tr>
<tr>
<td>Length of Open Hole Below Casing (FT)</td>
<td>41</td>
<td>55</td>
<td>0</td>
<td>15</td>
</tr>
<tr>
<td>Elevation of Bottom of Hole (FT-MSL)</td>
<td>-124</td>
<td>-134</td>
<td>-28</td>
<td>-35</td>
</tr>
<tr>
<td>Still Water Level (FT-MSL)</td>
<td>8</td>
<td>17</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>Representative Chloride Content (MGL)</td>
<td>70</td>
<td>30</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Pump Test Flow Rate and Drawdown (FT @ GPM)</td>
<td>20.5 @ 1000</td>
<td>1.3 @ 1500</td>
<td>5.0 @ 660</td>
<td>8.5 @ 660</td>
</tr>
</tbody>
</table>
DATE: August 22, 1996

TO: Department of Land and Natural Resources
Commission on Water Resource Management
State of Hawaii
P.O. Box 621
Honolulu, Hawaii 96809

ATTENTION: Roy Hardy

SUBJECT: Waikoloa Wells - Misc Information

We herewith transmit the following:

1 copy Letter from West Hawaii Water Company (Waikoloa) regarding status on Waikoloa Test Well (State No. 5445-01)

1 copy As Built information for Waikoloa Wells 1 & 2, Parker Wells 4 & 5

1 copy As Built Well & Pump Section for Waikoloa Well No. 1

1 copy Memo with West Hawaii Water Company on Waikoloa Well No. 2 Outfitting

Remarks:

We herewith transmit the above documents for your use.

Please feel free to call the undersigned if there are any questions regarding this matter.

Sincerely,
Tom Nance Water Resource Engineering

Greg Fukumitsu

cc: Dennis Sturdevant - Waikoloa Water Company
**REGISTRATION OF WELL**

**DECLARATION OF WATER USE**

**INSTRUCTIONS:** Please type or print. If information is not available or not applicable, indicate as N/A. Fill out as completely as possible, sign, and file form with the Division of Water Resource Management, P.O. Box 373, Honolulu, Hawaii 96809. Phone 548-3948 or 548-7543 for assistance.

**BATTERY OF WELLS:** For a battery of wells, on the surface, in a tunnel, or in a shaft, submit a registration form for each well together with a single map or plot plan showing layout of wells.

---

**STATE WELL NO.:** 5745-03

**ISLAND:** Hawaii

**WELL NAME OR DESIGNATION:** Waikoloa Well Number One

---

### A. WELL OPERATOR

**Firm name:** Waikoloa Water Co.

**Contact person:** Stephen Green

**Address:** P.O. Box 3028

**WVS, Kamuela, HI**

**Zip:** 96743

**Phone:** 883-9661

---

### B. OWNER OF WELL SITE BY EASEMENT

**Firm name:** Waikoloa Water Co.

**Contact person:** Stephen Green

**Address:** P.O. Box 3028

**WVS, Kamuela, HI**

**Zip:** 96743

**Phone:** 883-9661

---

### C. WELL LOCATION

- **Tax Map Key:** 6-8-002-019
- **Town, Place, District:** Waikoloa, Dist. of South Kohala
- **Attach USGS "Quad" map (scale 1:24,000), tax map, or other map showing the well location.**

---

### D. WELL DATA

**For Drilled Wells:** Submit "as-built" drawing, driller's log, and pump test results, and complete items below.

**For Tunnels and Shals:** Submit construction drawings, plot plan, or sketch map.

- **Ground elevation (mean sea level):** 1196 ft.
- **Reference point (used to measure depth to water):** 1197 ft.
- **Elevation:**
  - **Description:** Top of casing

- **Depth to water (Below reference point):** 1181 ft.
- **Maximum recorded chloride:** 30 ppm
- **Minimum recorded chloride:** 30 ppm
- **Maximum chloride in 1987:** 30 ppm
- **Year drilled or constructed:** 1987-88
- **Well contractor:** Frandsen and Sons
- **Casing diameter:** 16 in.
- **Solid casing depth (Below ground):** 1183 ft.
- **Perforated casing depth (Below ground):** 1263 ft.
- **Total depth of well:** 1333 ft.
- **Minimum chloride in 1987:** 30 ppm

---

### E. INSTALLED PUMP DATA

- **Pump type:** Vertical shaft
- **Power:** Diesel 1500 gallons per minute
- **Pump installation contractor:** Roscoe Moss Company

---

**For Official Use Only:**

**Date received:**

**Date accepted:**

**Field checked by:**

**Comments:**

---

References: Hawaii Revised Statutes, Chapter 174C

Hawaii Administrative Rules, Chapters 13-167 to 13-171

---

(continued over)
Water use data are recorded:  □ Daily  □ Weekly  □ Monthly  □ Other (Describe):  

Method of measurement:  □ Flow Meter  □ Orifice  □ Other (Describe):  

Quantity of Use (Report metered or estimated monthly water use from the well described on the reverse side of this form for the calendar years 1983 through 1987. For a battery of wells which are not individually metered, but which are connected to a single meter or other measuring device, report total use from the battery): 

<table>
<thead>
<tr>
<th>WATER USE, IN GALLONS x 1000</th>
<th>1983</th>
<th>1984</th>
<th>1985</th>
<th>1986</th>
<th>1987</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
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<td>February</td>
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<td>November</td>
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<tr>
<td>December</td>
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</tr>
<tr>
<td>ANNUAL</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Minimum day's use:  0  gallons  Maximum day's use:  2,160,000  gallons  

Typical times of usage: every day - on demand  

Type of Use (Check all category boxes that apply and provide additional information as indicated):  

- □ Municipal (including resorts, hotels, businesses)  
- □ Domestic (systems serving 25 people or less)  
- □ Irrigation  
  - Acres Irrigated:  
    - □ Sugar  □ Pineapple  
    - □ Other (Specify):  
  - Crop(s):  
    - □ Sugar  □ Pineapple  
    - □ Other (Specify):  
  - Non-Crop:  
    - □ Landscape  □ Golf Course  
    - □ Other (Specify):  
  - Method:  
    - □ Drip  □ Furrow  □ Sprinkler  
    - □ Other (Specify):  
    - □ Cooling  □ Manufacturing  □ Mill  
    - □ Other (Specify):  
  - □ Industrial  
  - □ Military  
  - □ Other  
  - Specify (groundwater, aquifers, etc): 

I declare that the contents of the above Declaration of Water Use are, to the best of my knowledge and belief, true, correct, and complete.  

Water User's Signature:  Stephen C. Green  
Date: 4/15/89  
Printed Name:  Stephen C. Green  
Firm or Title (Well Operator, etc):  Project Engineer
TO: Waikoloa Water Co.
P.O. Box 3028
Waikoloa, Hawaii 96743

In accordance with Chapter 166 of Title 13, "Rules for the Control of Ground Water Use in the State of Hawaii", your application to drill State Well No. 5745-03 for municipal use at Tax Map Key 6-8-02:19 is approved subject to the following conditions:

1. 200 feet of cement grout shall be used instead of the 100 feet indicated on the proposed section of well submitted on your application.

2. A Driller's Well Completion Report (form enclosed) shall be submitted to the Division of Water and Land Development, P.O. Box 373, Honolulu, Hawaii 96809, within 60 days after completion of the well.

3. An "as-built" drawing of the well and a map showing the exact location of the well shall be submitted upon completion of the well.

4. Static water-level elevation, salinity, and pumping test data shall be submitted within 60 days after testing of the well.

5. A well modification permit shall be obtained from the Division of Water and Land Development for the installation of a production pump. Reports of pumpage shall be submitted monthly after the well is put into production.

6. The applicant shall comply with all applicable laws, rules, and ordinances.
7. This permit may be revoked if work is not started within six months of date of issuance or if work is suspended or abandoned for six months.

AUG 8 1987

Date of Issuance

Enc. (Driller's Report Form)

cc: USGS
Dept. of Health,
   Drinking Water Program
   Ground Water Protection Program
Hawaii Dept. of Water Supply

WILLIAM W. PATY
Chairperson of the Board
APPLICATION FOR (check one) [ ] WELL DRILLING PERMIT  [ ] WELL MODIFICATION PERMIT

Instructions: Send completed application and attachments to Department of Land and Natural Resources, P.O. Box 373, Honolulu, Hawaii 96809.

Reference: Regulation 9, Dept. of Land & Natural Resources.

Is the well located in a Designated Ground Water Control Area?  [ ] Yes  [X] No.

If "yes", application must be accompanied by a Water Use and/or Water Supply Permit and a non-refundable filing fee of $100 payable to the Department of Land & Natural Resources. However, if application is for minor modification of well, filing fee may be waived. If "no", no filing fee is required. Filing fee is waived for federal, state, and county government agencies.

1. WELL LOCATION: Island Hawaii  Tax Map Key 6-8-02-19. Attach a plot plan showing well location referenced to established property boundaries.

2. WATER USER  Waikoloa Water Co.  Telephone 883-9661  Address  P.O. Box 3028 Waikoloa, Hawaii  Zip Code 96743

3. PROPOSED DRILLING COMPANY: Pan Pacific Construction, Inc.

4. PROPOSED WORK: [X] Drill new well  [ ] Deepen  [ ] Re-drill  [ ] Alter  [ ] Seal  [ ] Abandon  [ ] Install new pump  [ ] Replace pump  [ ] Modify pump

Fill in the diagram and briefly describe the proposed work (use back of form if necessary):

Drilling, Casing and Pump testing of well known as Waikoloa Water Well #1 (aka Parker #6)

PROPOSED SECTION OF WELL

Elevation at top of casing 1210 ft., msl.

- Solid casing: Material ASTM-242 Cor-ten
  - Length 1200 ft.
  - Diameter 1600 in.
  - Wall thickness .375 in.

- Casing: [X] Perforated [ ] Screen
  - Material ASTM-242 Cor-ten
  - Length 80 ft.
  - Diameter 1600 in.
  - Wall thickness .375 in.
  - Openings 100 sq.in./L.F.

- Open Hole:
  - Length 40 ft.
  - Diameter 13 in.

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

5. PROPOSED USE: [X] Municipal  [ ] Military  [ ] Agriculture  [ ] Industrial  [ ] Domestic  [ ] Disposal  [ ] Other (specify)

6. PROPOSED AMOUNT OF WITHDRAWAL: Check most appropriate box and fill in amount.

- [X] Daily 2,160.00 gallons  [ ] Monthly _______ gallons  [ ] Yearly _______ gallons

7. PROPOSED PUMP OR FLOW CAPACITY: 1500 gallons per minute

Signature: ___________________________ Date: ___________________________

Water User

Signature: ___________________________ Date: ___________________________

Landowner of Well Site

For Official Use:

State Well No.  5745-03

DLNR Permit No. _______________________

DLNR Application No. _____________________
transcontinental dev. co.
p.o. box 3028
waikoloa village station
kohala coast, island of hawaii

letter of transmittal
received

date: july 6, 1987

TO: dept. of land and natural resources
P.O. Box 373
Honolulu, HI 96809

ATTN: ________________________________

GENTLEMEN:

WE ARE SENDING YOU ☒ ATTACHED ☐ UNDER SEPARATE COVER VIA __________

THE FOLLOWING ITEMS:

<table>
<thead>
<tr>
<th># COPIES</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Application for Well Drilling Permit</td>
</tr>
<tr>
<td>15</td>
<td>Exhibit B Plans &amp; Specifications</td>
</tr>
<tr>
<td>5</td>
<td>Exhibit C General Conditions of the Contract for Construction</td>
</tr>
<tr>
<td>6</td>
<td>Exhibit D Special Provisions</td>
</tr>
<tr>
<td>1</td>
<td>Tax Map 6 8 02</td>
</tr>
</tbody>
</table>

THESE ARE TRANSMITTED as checked below:

☒ For Approval
☐ Approved as submitted  ☐ Resubmit ____ copies for approval
☐ For your use  ☐ Approved as noted  ☐ Submit ____ copies for distribution
☐ As requested  ☐ Returned for corrections  ☐ Return ____ corrected prints
☐ For review & comment  ☐ ____________________________  ☐ ____________________________

REMARKS: ____________________________

CC: ____________________________

SIGNED: ____________________________

Herman Londegan
EXHIBIT B

RECEIVED
37 JUL 8 A0:11
DIV. OF WATER & LAND DEVELOPMENT

PLANS & SPECIFICATIONS

EXHIBIT B
### TABLE OF CONTENTS

#### SPECIFICATIONS

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0 Order of Work</td>
<td>S-1</td>
</tr>
<tr>
<td>2.0 Mobilization and Demobilization</td>
<td>S-1</td>
</tr>
<tr>
<td>3.0 Well Drilling</td>
<td>S-2</td>
</tr>
<tr>
<td>4.0 Furnishing and Installing the Well Casing</td>
<td>S-5</td>
</tr>
<tr>
<td>5.0 Filling the Annular Space</td>
<td>S-8</td>
</tr>
<tr>
<td>6.0 Plumbness and Alignment</td>
<td>S-9</td>
</tr>
<tr>
<td>7.0 Testing the Well</td>
<td>S-10</td>
</tr>
</tbody>
</table>
1.0 ORDER OF WORK:

Bid Item I. Parker 6 Well

1. Well drilling from ground elevation to 70 feet below sea level.
2. Installation of solid casing and well screen.
3. Filling the annular space with aggregate and grout.
4. Plumbness and alignment test.
5. Installation of the test pump.
6. Purging and cleansing the well in preparation for pump testing.
7. Pump testing.
8. Additional drilling, cleansing, and pump testing (if necessary).

Bid Item II. Exploratory Well

1. Drilling an 8-inch (minimum) diameter exploratory boring from ground elevation to 70 feet below sea level. The decision to proceed with work items 2 through 9 will depend on water level and quality data from the borehole.
2. Reaming the exploratory boring to the diameter required for installation of the well casing.
3. Installation of solid casing and well screen.
4. Filling the annular space with aggregate and grout.
5. Plumbness and alignment test.
6. Installation of the test pump.
7. Purging and cleansing the well in preparation for pump testing.
8. Pump testing.
9. Additional drilling, cleansing, and pump testing (if necessary).

2.0 MOBILIZATION AND DEMOBILIZATION:

2.01 Description:

Mobilization shall consist of the transporting, assembling, constructing, installing and making ready for use at the well site all equipment, machinery, structures, utilities and incidentals necessary to do the work covered by this contract. Demobilization shall consist of the dismantling and removal from the project site all of the above mentioned equipment, machinery, structures, utilities and incidentals not incorporated in or a necessary part for the completed well.

The Owner will clear and grade the site prior to the Contractor moving and setting up the drilling rig at the site.

The Contractor shall be completely mobilized at the well site and shall begin his drilling operations within 30 calendar days after he has been notified, in writing, to proceed under this contract.

If the Contractor utilizes private lands other than the well site and access road for mobilization purposes, the provisions of this section
shall still apply, and the mobilization and demobilization work on said private lands shall also be in accordance with the agreement between the Contractor and the landowners.

When the project is completed the Contractor shall clean up the well site and shall be responsible for all grading work required to leave the site in a neat and orderly condition to the satisfaction of the Owner. Payment for clean-up work will not be paid for separately but shall be included in the contract unit price for Item No. 1B, Demobilization subject, however, to all provisions specified hereinabove.

2.02 Measurement:

Measurement for payment of the work under this section of the specification will be made as follows:

A. The contract lump sum price for Item No. 1A, Mobilization, will be paid when 50 feet of the well has been acceptably drilled and in the opinion of the Owner the Contractor has fully mobilized.

B. The contract lump sum price for Item No. 1B, Demobilization, will be paid after the well has been completed, the project site cleaned, and the project has been accepted by the Owner.

Should the Owner terminate the contract before 50 feet of the first well has been acceptably drilled and in the opinion of the Owner the Contractor has fully mobilized at the well site, the full amount of the contract unit price for Item No. 1A shall become due and payable subject, however, to all the provisions specified hereinabove. The full amount of the contract unit price for Item No. 1B shall also become due and payable after the above mentioned termination of the contract, subject, however, to all the provisions specified hereinabove.

2.03 Payment:

Mobilization and demobilization will be paid for at the applicable contract unit prices for:

Item No. 1A, "Mobilization",

Item No. 1B, "Demobilization",

as the case may be, which prices shall be full compensation for all the work specified in Sections 2.01 and 2.02 above.

3.0 WELL DRILLING:

3.01 General:

Drilling shall be to a maximum depth of 1,320 feet. The exact location of the well shall be designated by the Owner.

The well shall be drilled plumb and straight as specified herein. Drilling or reaming the cased well shall be to a diameter large enough
to install the well casing with an annular space of at least one and one half inches all around the casing. No deviation from this allowance will be made. Drilling the exploratory borehole shall be to a minimum diameter of eight inches.

The exact depth of the hole to be drilled shall depend on the nature of the material penetrated by drilling and on hydrologic conditions and shall be determined by the Owner during the course of the drilling. To determine the exact dimensions of the well upon completion of drilling, the Contractor, in the presence of the Owner, shall lower the proper size bit to the bottom of the hole and take careful measurement to determine the depth of the hole. Casing shall not be installed until ordered by the Owner.

At his option, the Owner may order the drilling of an open hole below the installed casing. This open hole shall have a minimum diameter of 13 inches. The depth of the open hole shall be as ordered by the Owner. The Contractor shall protect the installed casing while drilling the open hole and any damages to the casing shall be repaired at no cost to the Owner.

3.02 Measurement, Driller's Logs, and Samples:

It is desirable to gather as much geological and hydrological data as possible and every opportunity shall be accorded the Owner to obtain additional samples, make observations, and to study the apparent conditions.

The Contractor shall keep a continuous log of the well, recording the general character, thickness, type and drilling characteristic of materials encountered including the depth and drilling time, the color and hardness of the formations, and all other data which may be helpful in the interpretation of the geology, hydrology, and drilling conditions in the area. The log shall indicate the depths where water is encountered and the pertinent facts connected with its occurrence. All other information such as the location of lava tubes and cave-ins shall also be noted in the log. All work done including but not limited to reaming, backfilling, and concreting shall be accurately recorded. An accurate and carefully recorded log shall be kept current and available at the well site for inspection by the Owner at any time during the work.

The Contractor shall assist the Owner in determining the elevation of the water level in the drilled hole with reference to the datum which will be established by the Owner at the well site. Water level measurements shall be taken immediately when water is encountered in the well during the drilling work and after the casing has been installed and well bailed clean. The water level data shall include the date and time at which the measurements are taken and the depth of the well at the time of measurement. The Owner shall be entitled to make additional water level measurements with his own equipment.
3.03 Drilling Method and Circulating Medium:

Use of bentonite or similar material in drilling operations shall not be allowed between elevation 25 feet above mean sea level and the bottom of the well. Water or a mixture of air and foam shall be the only acceptable circulating fluid used below elevation 25 feet (msl).

3.04 Protection:

During the progress of the work the Contractor shall provide an adequate cover over the top of the hole to prevent debris or other objects from entering the well when the crew is not at the well site. The Contractor shall preserve the well in good condition until the Owner has completed all the sampling, testing and measurement; has examined the records; and has accepted the work.

3.05 Abandoned Well or Exploratory Borehole:

A well or exploratory borehole shall be considered abandoned if the Contractor does not complete the well or borehole to the depth ordered by the Owner or if the Contractor should abandon the well or borehole due to loss of tools or for any other cause or if the Owner does not accept the well due to faulty plumbness and alignment. Such an abandoned well or borehole shall be sealed by the Contractor, at no cost to the Owner, by filling the hole with material approved by the Owner. If casing has been installed, the Contractor, at his own expense, may remove the casing prior to backfilling the abandoned well.

No payment will be made for any work done on an abandoned well or borehole. All partial payments received by the Contractor for work done on a well or borehole that has been abandoned shall be refunded to the Owner and the Contractor shall drill another well or borehole in the vicinity of the abandoned well or borehole as directed by the Owner. The cost of moving from the location of the abandoned well or borehole to the new site shall be at the Contractor's expense and shall not be paid for by the Owner.

Upon completion of the work, the Contractor shall leave the site of the abandoned well or borehole in a neat and presentable condition free of all debris and in a state comparable to its original condition.

3.06 Measurement:

The depth of drilling to be paid for shall be the actual depth in lineal feet measured vertically from the surface of the prepared ground to the bottom of the well or borehole.

The depth of open hole to be paid for shall be the actual depth in lineal feet measured vertically from the bottom of the well as measured above to the bottom of the open hole.
3.07 Payment:

The depth of well acceptably drilled and measured as provided above will be paid for at the applicable contract unit price per lineal foot.

In Bid Item I for:

Item No. 2A, "Drilling the cased well from the ground surface to the bottom of the well,"

Item No. 2B, "Drilling the 13-inch (minimum) diameter open hole below the bottom of the cased well,"

In Bid Item II for:

Item No. 2A, "Drilling the 8-inch (minimum) diameter exploratory borehole from the ground surface to the bottom of the hole,"

Item No. 2B, "Reaming the exploratory borehole from the ground surface to the bottom of the cased well,"

Item No. 2C, "Drilling the 13-inch (minimum) diameter open hole below the bottom of the cased well,"

as the case may be, which price shall be full compensation for drilling; preparing the driller's logs; measuring and recording water levels; obtaining samples of water; protecting and maintaining the well or borehole; measuring the depth of well as required; making all tests including the plumbness and alignment tests and necessary corrections of defects; all fishing operations; all costs of delays in work due to inclement weather to lack of equipment, and to equipment breakdowns; and for all equipment, tools, labor and incidentals necessary to complete the work. No payment will be made for abandoned wells.

4.0 FURNISHING AND INSTALLING THE WELL CASING:

4.01 General:

Both the solid and perforated steel casing to be installed in the well under this contract will be furnished at the well site by the Contractor.

The casing shall be installed in the well only when ordered by the Owner and as specified herein. The Owner will specify the total lengths of the perforated and solid casing to be installed. Installation shall be made only during normal daylight working hours.

4.02 Casing:

The solid casing to be furnished and installed in the well shall be of corrosion resistant steel having four to six times the atmospheric corrosion resistance of structural carbon steel, and conforming to ASTM Designation A-242 (USS Cor-ten, Kaiser Steel Kaisaloy or approved equal). The well casing shall be manufactured in accordance with applicable sections of ASTM 139. The solid casing shall have a minimum
inside diameter of 16 inches and a minimum wall thickness of 3/8 inch and shall be clean, straight and free from kinks. The individual lengths of solid casing shall be provided with beveled ends suitable for butt welding.

Perforated casing to be furnished and installed in the well shall be of the same material as specified for solid casing. The perforated casing shall have a minimum inside diameter of 16 inches and a minimum thickness of 3/8 inch. The openings in the casing shall be machine made perpendicular to the axis of the casing and of a louver form with the aperture facing downward. The openings shall be 1/4 inch and provide not less than 100 square inches of intake area per lineal foot of perforated casing.

For field assembly of perforated casing, the ends of sections to be joined shall be welded in accordance with the manufacturer's recommendations. Connection of perforated casing to the solid casing shall be made by welding or with collars or by any other method approved by the Owner. A steel casing shoe shall be welded to the bottom portion of the perforated casing as shown on the plans.

The top of the installed casing shall be capped with a 1/4 inch steel plate and six-inch diameter threaded coupling with a plug as shown on the Plans.

4.03 Casing Markers:

Each length of solid and perforated casing shall be marked by the casing manufacturer with the following information:

A. Manufacturer's identification
B. Nominal thickness of casing wall
C. ASTM Designation and trade name of the steel used for the manufacture of the casing

All markings shall be clear and legible and shall be within three (3) feet from one end of each casing.

4.04 Casing Certification:

Prior to the delivery of any casing to the project site, the Contractor shall submit for approval the casing manufacturer's certification to the Owner. The certificate shall clearly indicate the total footage and number of casing shipped; the name of the customer; and the physical and chemical properties of the casing material. (ASTM Designation and trade name of steel may be used to designate the physical and chemical properties, respectively.)

4.05 Casing Installation:

The casing shall be installed in the presence of and as directed by the Owner. The casing shall be properly aligned and welded by qualified
welders and shall also be continuous for its entire length. Every precaution shall be taken to prevent the casing from dropping into the hole. Driving of the casing which is likely to damage the pipe or cause a change in the circular cross section of the pipe will not be permitted.

The Contractor shall carefully lower the casing until the bottom of the casing is approximately three (3) feet from the bottom of the drilled hole. (At no time during the installation of the casing shall the total weight of the casing rest on the bottom of the drilled hole.) The casing shall then be temporarily secured and the well initially developed and cleaned by bailing. When the well has been cleaned of drilling muds, drill cuttings, cave-in materials, etc., to the satisfaction of the Owner, the casing shall then be lowered to its final position with the bottom of the casing resting on the bottom of the drilled hole with only partial weight of the total length of the casing such that the perforated section of the casing will not be damaged, distorted or misaligned, and shall then be held temporarily until grouted as called for in Section 5 - Filling the Annular Space.

4.06 Installation of Cement Basket:

During the installation of the well casing, the Contractor shall furnish and install a cement basket at the depth shown on the Plans or as ordered by the Owner for the purpose of filling the annular space as specified in Section 5 - "Filling the Annular Space." (The cement basket may be commercially made or fabricated as shown in the Contract Plans.)

4.07 Installation of Casing Guides:

During the installation of the well casing, the Contractor shall furnish and install casing guides at 40' o.c. in the unfilled annular spaces. The casing guides may be commercially made or fabricated as shown in the Contract Plans.

4.08 Measurement:

The length of casing to be paid for shall be the number of lineal feet of casing measured to the nearest foot acceptably installed in the well.

4.09 Payment:

The total footage, measured as provided above of casing furnished and installed by the Contractor will be paid for at the contract unit price per lineal foot for:

Item No. 3A, "Furnishing and installing 16-inch I.D., 0.375-inch thick solid well casing conforming to ASTM A-242,"

Item No. 3B, "Furnishing and installing 16-inch I.D., 0.375-inch thick, perforated well casing conforming to ASTM A-242,"

as the case may be, which price shall be full compensation for furnishing and hauling the casing to the well site; perforating the casing; for cleaning the well by bailing; for furnishing and installing cement
basket and casing guides; for unloading, handling, cutting, aligning, welding, and setting the casing; for furnishing and installing the casing shoe; for capping the top of the casing; and for all labor, equipment, tools, materials and incidentals necessary to complete the work.

5.0  **FILLING THE ANNULAR SPACE:**

5.01  **Description:**

This section covers the installation of aggregate and cement grout in the annular space between the wall of the drilled hole and the casing. All work required in this section shall be done during normal daylight working hours. The Contractor shall notify the Owner not less than 48 hours prior to performing any work under this section.

5.02  **Filling the Annular Space With Aggregate:**

The first procedure for filling the annular space shall be the placing of coarse aggregate as shown on the Plan. The aggregate used shall be No. 67 coarse aggregate (No. 4 sieve to 3/4-inch in size.) The aggregate shall be placed in the annular space so that no cavities exist between the borehole and casing. The aggregate will extend from the cement basket to 100 feet from the ground surface.

5.03  **Cement-Grouting the Annular Space:**

(The Contractor may make plumbness and alignment tests on the installed casing that he deems necessary prior to grouting. Satisfactory results of such tests shall not constitute approval by the Owner or compliance with testing called for in Section 6 - Plumbness and Alignment.)

The annular space between the outside of the casing and the wall of the drilled hole shall be cement-grouted from the top of the aggregate to the ground surface.

Cement grout shall consist of a mixture of one part Portland cement and not more than six (6) gallons of water per sack of cement to form a consistency such that the grout may be placed.

The grout shall be placed in one continuous operation starting from the bottom of the space to be grouted toward the ground surface in such a manner that the hydrostatic pressure of the grout will not distort or collapse the casing.

It is essential that the entire annular space around the grouted section of the casing specified above be completely filled with grout. Grout shall be placed in a manner that will avoid segregation of materials, inclusion of foreign material and bridging of grout materials. No drilling operation or other work in the well shall be permitted within 72 hours of grouting the annular space. If quick setting cement is used, this period may be reduced to 24 hours.
5.04 Measurement and Payment:

Acceptable filling of the annular space with coarse aggregate and grout shall be measured and paid for at the contract lump sum price for:

Item No. 4, "Filling the annular space with aggregate and grout,"

which price shall include full compensation for furnishing and installing the cement basket; for furnishing and installing the aggregate; for furnishing, mixing, placing and curing the cement grout in the annular space; and for furnishing all labor, materials, tools, equipment, and incidentals necessary to complete the work as specified herein and as shown on the Plans.

6.0 PLUMBNESS AND ALIGNMENT:

6.01 Description:

The well shall be drilled circular and the casing set plumb and true to line. In compliance with this requirement, the Contractor shall furnish all labor, tools, and equipment necessary and shall conduct the tests described herein to the satisfaction of the Owner. All testing shall be done after the casing has been installed and the grout has set and before acceptance of the well.

6.02 Requirements for Plumbness and Alignment:

Plumbness and alignment shall, except as hereinafter modified, be in accordance with the requirements of the latest revision of American Water Works Association Specification A100-66 "Standard Specifications for Deep Wells". The maximum deviation from the vertical shall not be more than two-thirds the inside diameter of the casing per any 100 feet of depth. A log of the drift at 20-foot intervals shall be kept for the well casing.

The alignment shall be tested by lowering a section of pipe 40 feet long or a dummy of the same length to the bottom of the well. The outer diameter of the plumb shall be 1/2 inch or less than the inside diameter of the well casing. If a dummy is used, it shall consist of a spindle of 8-inch minimum inside diameter and three rings. The band width of each ring shall be a minimum of 12 inches. The rings shall be truly cylindrical and shall be spaced one at each end of the spindle and one ring at the center thereof.

Errors of plumbness and alignment shall be corrected by the Contractor at his own expense and should he fail to make the necessary corrections, the Owner may refuse to accept the well.

6.03 Payment:

The Contractor shall receive no specific compensation for making tests for plumbness and alignment and the costs of all such tests shall be included in the various items in the Bid.
7.0 **TESTING THE WELL:**

7.01 **Description:**

Testing of the well shall consist of development and test pumping to determine sand content, yield, drawdown, recovery, and quality of water at various rates of pumping. The equipment and methods shall be as specified below and as directed by the Owner.

7.02 **Pumping Test Equipment and Materials:**

The Contractor shall furnish and install a test pump assembly capable of discharging at various sustained rates ranging between 400 to 2,000 gallons of water per minute (GPM) at the ground surface. A centrifugal sand sampler shall be installed on the pump discharge line during all testing. The test pump assembly shall be capable of pumping at any constant rate in the above specified range for a period of at least 100 continuous hours. The Contractor shall also furnish and install all other equipment and material, and shall supply the power required to perform the pumping test of the well as directed by the Owner. All Contractor-furnished equipment and appurtenances shall be in good operating condition. Depth of pump bowl and airline setting will be as directed by the Owner.

The rate of discharge from the well shall be controlled by an appropriate valve or by engine drive speed and measured with an appropriate water meter to be furnished by the Contractor. The Contractor shall furnish any and all other equipment and materials that may be required to measure the rate of discharge and it shall be the Contractor's responsibility to determine and provide the necessary and proper fittings to connect the water meter. The Contractor shall also provide the necessary facilities and make arrangements for the proper disposal of the well water as directed by the Owner. The Contractor shall provide adequate lighting for safe night operation of all the test equipment in the working area.

The airline for the test well shall be securely fastened to the discharge column of the test pump furnished by the Contractor and shall consist entirely of 1/4-inch nominal inside diameter ANSI Schedule 40 galvanized pipe. The airline assemblies shall be complete with a needle type control valve and all fittings and appurtenances necessary to connect the pressure gage or manometer furnished by the Contractor, including air tanks and pressure regulators, to measure water levels in a manner acceptable to the Owner. The airline assembly shall be tested for leakage in the presence of the Owner by subjecting it to a pressure equal to the submergence of the airline below static water level. At the required test pressure, the airline pressure shall not drop more than 0.1 foot of water during a period of five minutes.

7.03 **Installation of the Test Pump:**

When a pumping test is ordered by the Owner, the Contractor shall clean the well by bailing to the satisfaction of the Owner prior to the
installation of the test pump. The Contractor shall satisfy himself that the well is adequately prepared for the proper installation and operation of the test pump assembly.

7.04 Development and Test Pumping:

The complete pumping test equipment shall be acceptably installed and tested for proper operation in the presence of the Owner. Development and test pumping shall be scheduled to begin only during daylight hours. The Contractor shall notify the Owner of his readiness to begin at least three days prior to the scheduled pumping.

Initially, development pumping shall be undertaken by starting and stopping the pump intermittently. This development by surging shall be at a rate of 1500 GPM or greater as directed by the Owner. The Contractor will collect data from the contractor-provided sand sampler installed on the pump discharge pipeline and keep a log of the development pumping. Development pumping will be continued until, in the judgement of the Owner, water pumped from the well is substantially free from sand, stone, drill cuttings, and foreign material and development is complete and satisfactory.

The test pumping procedure shall be prescribed by the Owner during the course of the testing. The pumping shall be started, regulated and stopped as directed by the Owner. The testing shall include measuring the rate of discharge and drawdown at the various pumping rates, the rate of recovery at the end of pumping, and chloride content of the water pumped. If deemed necessary, the Owner may order a long-term continuous pumping test under his direction. Testing will be conducted during the night, and possibly on Saturdays, Sundays, and National and State holidays. Records will be kept throughout all tests showing the pumping rates, corresponding water levels in the well, and the chloride content of water being discharged.

During the entire testing period, the Contractor shall have at least one man available at the well site to operate and maintain the test pump and appurtenant equipment, to collect data, and to perform other incidental work required for the pumping test. The Contractor shall be responsible for efficient sustained operation of the pumping unit and appurtenances during the tests. The Owner will not pay for any damages to the pumping test equipment for any cause.

Any failure, inability to meet specification requirements, or inefficient operation of the pumping equipment, instruments, or measuring devices provided by the Contractor for the pumping test may necessitate repetition of part of the test or of the entire test as determined by the Owner.

7.05 Measurement:

The installation and removal of pumping test equipment and material to be paid for shall be considered complete when the complete unit has been satisfactorily tested and accepted by the Owner and when the removal has been completed to the satisfaction of the Owner.

S-11 Specifications
Development and test pumping time to be paid for will be the number of hours that the pump is operated under the direction and satisfaction of the Owner measured to the nearest half-hour. The measurement of time will begin after the Owner orders the pumping begun and shall end when the Owner orders the pumping test to be terminated. Time lost due to any failure, inability to meet specification requirements, or inefficient operation of the pumping equipment or measuring devices will not be measured for payment.

7.06 Payment:

Installing and removing equipment for testing the well will be paid for at the contract lump sum price bid for:

Item No. 5A, "Furnishing, installing and subsequent removal of pumping test equipment for initial well test,"

and at the contract unit price each per setup for:

Item No. 5B, "Furnishing, installing and subsequent removal of pumping test equipment after initial well test, if required,"

which price shall be full compensation for cleaning the well by bailing; furnishing, hauling and installing test pump, power unit, power supply, discharge column, airline assembly, measuring devices, pipeline and materials necessary for the proper disposal of the water, and all other equipment necessary to conduct the test; for all delays necessitated by the nature of the work or as specified above; for the subsequent removal and hauling of the units listed above; and for all labor, equipment, tools, materials, and incidentals necessary to test the well.

The hours measured as provided above, for the development and test pumping, will be paid for at the contract unit price per hour for:

Item No. 5C, "Development and test pumping,"

which price shall be full compensation for labor required for pumping the well; for furnishing the fuel and power; for keeping the records; for taking samples; for maintaining and operating all pumping equipment and measuring devices required for the test; and for providing all labor, tools, equipment, materials, and incidentals necessary to complete the testing of the well as directed by the Owner.
GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION

EXHIBIT C
GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION

ARTICLE 1. CONTRACTOR'S DUTIES AT THE WORK SITE

1.1 Contractor has had an opportunity to inspect the Work Site and to become fully aware of all existing conditions at the Work Site. Contractor agrees that it shall make no claim for an increase in the Contract Price or an extension of the Completion Date based on a plea of ignorance of conditions at the Work Site whether such conditions existed at the time of commencement of the Work, or thereafter, if said ignorance results from Contractor's failure to make all necessary examinations and investigations of the Work Site and/or if said conditions reasonably should have been anticipated or could have been discovered.

1.2 Contractor shall confine the performance of the Work to the areas at the Work Site described in the Contract Documents or as permitted by Owner.

ARTICLE 2. CONTRACTOR'S CARE OF ITS WORK AND THE WORK SITE

2.1 Contractor shall keep the Work Site reasonably free from accumulations of dirt, debris, cartons, crates, waste materials, tools, equipment and rubbish resulting from the Work and shall remove and properly dispose of the same but not by burning on the Work Site. Owner shall have the right to request the removal of the same and Contractor shall fulfill such request immediately. If Contractor fails to do so, Owner may remove the same and charge to Contractor the cost thereof.

2.2 Construction debris and wastes shall be deposited at an appropriate site approved by Owner and Government authorities. The Contractor shall inform the Owner of the location of disposal site. The disposal site must also fulfill the requirements of the grading ordinances.

2.3 Contractor, at his own expense, shall keep the project area and surrounding area free from dust nuisance. The work shall be in conformance with the air pollution control standards and regulations of the State Department of Health.

2.4 Contractor shall remove all silt and debris resulting from his work and deposited in drainage facilities, roadways and other areas. The costs incurred for any necessary remedial action by the Owner and/or the County of Hawaii shall be payable by the Contractor.

2.5 Premises shall be maintained free from unnecessary debris as work progresses. Upon completion of work, entire premises shall be cleaned free from trash, waste and other debris of any description.

2.6 All grading operations shall be performed in conformance with the applicable provisions of the Water Pollution Control and Water Quality Standards contained in the Public Health Regulations, State Department of Health, on Water Pollution Control and Water Quality Standards.
2.7 Existing improvements, including trees and other thriving plant life, on or adjacent to project Property and not otherwise required to be removed shall be preserved and protected against removal or damage unless absolutely necessary to accomplish construction required.

2.8 Prior to final acceptance, the Contractor shall do the following, unless Owner requests otherwise: (1) Clean completely all surfaces and spaces of the work so that they are ready for owner's use without further cleaning; (2) Remove from the Work Site all temporary buildings or facilities erected by Contractor and all equipment, materials, supplies, tools, etc., which are the property of Contractor or Materials over which Contractor has care, custody and control.

ARTICLE 3. CONTRACTOR'S DUTIES FOR THE SAFETY OF PERSONS AND PROPERTY

3.1 Contractor shall be responsible solely for the safety and protection of persons and property on or near the Work Site area in which the Work is performed. This responsibility includes taking all necessary precautions, including but not limited to, taking the following precautions:

(1) Erect and maintain properly all necessary safeguards, including but not limited to danger signs, warnings and barricades;

(2) Make sure that all derricks, hoists, staging, scaffolding and all other apparatus are safe, sound, secure and are maintained properly;

(3) Take care not to load or to permit any part of any structure to be loaded so as to endanger its safety or the safety of others;

(4) Obey and enforce the safety requirements of Owner;

(5) Provide all watchmen or other means of protection necessary to protect its Materials, Work, tools and other things; and

(6) Establish and enforce all other appropriate and adequate safety rules.

3.2 Prior to Final Acceptance or such earlier date as Owner may determine, all reasonable quantities of Materials at the Work site, whether incorporated into the Work or not, are, upon payment, the property of Owner; however, Contractor shall have the care, custody and control of said Materials and shall be responsible for their safety and protection. Contractor shall do all things reasonably necessary to protect the Work and Materials against damage due to the weather or injury due to the weather. If any Work or Materials are damaged or injured by reason of Contractor's failure to protect them adequately as determined by Owner, such Work or Materials shall be deemed Defective Work.

3.3 Whenever Contractor uses Materials, equipment, tools, or other things, furnished by Others, Contractor shall satisfy itself as to their suitability and safety prior to its use thereof and Contractor shall be responsible solely for the suitability and safety thereof, to the extent and just as if such things were owned by and in the sole control of Contractor. When Owner furnishes such things for Contractor's use, unless Owner requests otherwise,
Contractor shall protect and store such things. All losses, cost
ities caused by Contractor's failure properly to determine the s
afety and/or storage of Owner-supplied Materials, equipment, tool
things shall be borne by Contractor.

3.4 In the event Owner deems any part of the Work or any part of Contrac-
tor's Work Site unsafe, when requested to do so in writing by Owner, Contractor
shall stop performance of said Work and shall take corrective measures, satis-
factory to Owner, prior to commencing said Work again. Contractor agrees to
make no claim for damages, for an increase in the Contract Price, or for a
change in the completion date, due to Owner's request. In the event Contractor
does not adopt such corrective measures, Owner may perform them and deduct
their cost from payments due or to become due to the Contractor. Owner's
failure to notice or to stop unsafe practices shall not relieve Contractor of
its duties under this Article.

ARTICLE 4. INDEPENDENT CONTRACTOR RELATIONSHIP

4.1 Contractor represents that it is an independent contractor and that
in its performance of the Work it shall be and shall act as an independent
contractor and that all of its agents and employees, and all agents and employ-
ees of any one performing the Work, shall be subject solely to the control,
supervision and authority of Contractor, or its subcontractors, as the case may
be, and they shall be considered to be employees of Contractor and under no
circumstances or for any purpose, are they to be construed or considered to be
employees of Owner.

4.2 Neither Contractor nor any of its employees shall act on behalf of or
in the name of Owner unless Owner in writing requests otherwise.

ARTICLE 5. CONTRACTOR'S SUPERINTENDENT AND EMPLOYEES

5.1 Contractor shall provide a competent level of superintendency for
the Work, including but not limited to, a competent superintendent (or foreman)
who shall possess full authority to receive instructions from Owner and to act
thereon. The superintendent (or foreman) shall be deemed the Representative of
Contractor in the performance of the Work, and all directions, including Field
Change Orders, instructions or notices given to him by Owner shall be binding
upon Contractor, as if such were delivered in hand to Contractor.

5.2 Prior to commencement of the Work the Contractor shall notify Owner
in writing of the name of its proposed superintendent (or foreman) required by
this Article so that Owner may approve of him. In the event Owner refuses to
approve or withdraws its approval after once giving it, Contractor shall name a
different superintendent (or foreman) for Owner's approval. Any disapproved
superintendent (or foreman) shall not be permitted to perform in that capacity
thereafter in the performance of the Work.

5.3 Contractor shall permit only fit and skilled persons to perform the
Work. Contractor shall enforce strict discipline and good order among persons
performing the Work. In the event Owner determines that a particular person is
unfit or unskilled for the Work assigned to him, Contractor shall remove said
person from said Work immediately upon receipt of Owner's written notice to do
so.
5.4 Contractor shall use its best efforts in choosing its subcontractors, Materials and trades so that there are no jurisdictional disputes which delay the Work. No changes in the Contract Price will be given for delays caused by jurisdictional disputes.

ARTICLE 6. PERMITS AND COMPLIANCE WITH LAWS

6.1 Contractor shall give all notices to public authorities required by law, and shall obtain and pay for all necessary permits and licenses, and renewals thereof, pertaining to the Work covered by this construction documents. The entire cost of all notices, permits and licenses and renewals thereof is included in the Contract Price. Should a permit be refused for any reason, Contract is voidable at Owner's option, and claims for damages for anticipated profits or otherwise will not be considered.

6.2 Contractor agrees to comply with all Federal, State, municipal and public laws, ordinances including building codes, rules, regulations and orders in the performance of the Work, now existing or hereafter enacted or in force, whether or not required to do so by the Contract Documents.

6.3 The Contractor shall confine its employees, agents, equipment, machinery, tools and Materials in those areas in or near the Work Site required by any law, ordinance, regulation or permit or as required by Owner in writing, or by the Contract Documents.

6.4 Work on adjacent properties - either public or private and outside of Project property lines indicated - shall be included and provided as work under the Contract when and as particularly shown.
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SPECIAL PROVISIONS

1.01 DESCRIPTION OF WORK:

The work described in these Special Provisions consists of Bid Items I and II. The Bid Items may be awarded separately or together. Work in Bid Item I consists of furnishing and paying for all labor, tools, equipment, and materials necessary for the installation of Parker 6 Well in accordance with the plans, specifications, and all contract documents. Work in Bid Item II consists of furnishing and paying for all labor, tools, equipment, and materials necessary for the drilling of an exploratory borehole and, if results warrant, completing this borehole as a production well in accordance with the plans, specifications, and all contract documents.

1.02 BLASTING:

When the use of explosives is necessary for the prosecution of the work, the Contractor shall use the utmost care not to endanger life or property. The Contractor shall transport explosives to the site of work and store, distribute, and handle same in accordance with the safety provisions of the Manual of Accident Prevention in Construction published by the Associated General Contractors of America and also in accordance with local County and State Regulations.

The Contractor shall submit a written notification to the Owner 24 hours in advance of any blasting.

The Contractor, when blasting, shall use all necessary warning, mats, and other safeguards to properly and adequately protect the public, all workmen on the job, and all property from damage, injury or unnecessary annoyance and/or inconvenience.

The Contractor shall protect, hold harmless, indemnify and defend the indemnities (as defined in Section 8 of the Contract) against any liabilities (as defined in Section of the Contract) arising directly or indirectly out of the Contractor's use of explosives in prosecuting the work.

The storage and use of the explosives shall be in accordance with the provisions of the Hawaii Revised Statutes and these shall rule in the event of conflict with the above provisions.

1.03 ACCESS BY STATE AND COUNTY GOVERNMENT OFFICIALS:

Authorized representatives of the state and county government officials shall at all times have access to the work while in preparation or progress, and the Contractor shall provide proper facilities for such access and for inspection.
1.04 CONSTRUCTION YARD:

The Contractor will be allowed to erect and maintain a secured construction yard for storage of material and equipment in an area designated by the Owner for the duration of the project. The Contractor shall restore the site of the construction yard to its original condition at the completion of the contract.

1.05 TEMPORARY WATER, SANITARY FACILITIES, ELECTRIC SERVICE AND OTHER UTILITIES:

The Contractor shall make his own arrangements for water, sanitary facilities, electric, and other utilities required on the project including metering devices, incoming service lines, and appurtenances and shall pay for all such charges.

1.06 DUST:

The Owner's Representative shall reserve the right to stop earthwork whenever dust generation from the Contractor's operation is, in the opinion of the Owner's Representative, excessive. Contractor shall insure dust control complies with all State and County regulations.

1.07 MAINTENANCE OF SITE:

The Contractor shall maintain the site of the project in an orderly and clean condition and shall, at suitable intervals, remove accumulation of rubbish or refuse materials, surplus concrete, and excavated materials not required or suitable for back fill. The Contractor shall keep the site free of dirt and dust by periodic watering or other approved means.

1.08 CLEAN-UP:

Contractor will maintain and keep the job site in a clean and orderly manner at all times for the prevention of accidents, injuries, and fire hazards. Upon completion, Contractor shall remove all rubbish, clear debris from roadways. In addition, all existing graded areas which have been disturbed during the progress of the work shall be regraded to the pre-existing contours. This final site grading shall be inspected and approved by the Owner prior to granting Final Acceptance.

1.09 ENVIRONMENTAL PROTECTION:

The Contractor shall comply with all applicable federal, state, and local laws, regulations and ordinances and the following requirements for environmental pollution control and abatement in performing all construction activities:
Rubbish Disposal: No burning or burying of debris and/or waste shall be permitted on the project site. Clean-up shall include collection of all waste paper and wrapping materials and other hazardous materials, and removal as required and shall coincide with rubbish producing events.

Dust: Dust shall be kept within acceptable levels at all times, including non-working hours, weekends and holidays, in conformance with Chapter 31, Air Pollution, of the State Department of Health, Public Health Regulations, latest edition. The Contractor shall water the ground frequently or take other dust control means to minimize dust erosion. The method of dust control and all costs incurred therefor are the responsibility of the Contractor. The Contractor is responsible for all damage claims from its failure to comply with this paragraph.

Air Pollution: The Contractor shall not cause air pollution from mist, smoke, vapor, gas, odorous substances, particulate matter, or any combination thereof.

Noise: The Contractor shall muffle all internal combustion engine-powered equipment to minimize and properly maintain noise to acceptable levels. No blasting and use of explosives will be permitted without a 24-hour notification submittal to the Owner.

Water Pollution: The Contractor shall take all necessary precautions to prevent the pollution of water resources from fuels, oils, bitumens, calcium chloride, herbicides, pesticides, chemicals or other harmful materials.

1.10 EXISTING UTILITIES:

Location of utility lines and appurtenances shown on the plans are from the best information available. The Contractor shall not assume that where no existing utilities or irrigation lines are shown, that none exist. The Contractor shall verify the location and depth of the facilities and exercise proper care in excavating in the area. The Contractor shall be responsible and shall pay for all damages and for maintenance and protection of existing utilities and structures.

1.11 PERFORMANCE BOND AND LABOR AND MATERIAL BOND:

Within ten (10) days after the Owner's acceptance of the Contractor's bid, the Contractor shall provide the Owner, as a guaranty of his full and faithful performance of the Contract, a performance bond and a labor and material bond in the form and with a surety satisfactory to the Owner in an amount not less than 100% of the contract price. The bonds shall be in favor of Owner and any other parties Owner designates.
1.12 **STORAGE OF MATERIAL:**

No excavated materials of construction shall be placed upon private property by the Contractor unless by express permission of the Owner. All damages to any private property by reason of any act of the Contractor shall be remedied by the Contractor at his own cost and expense.

Should storage of excess excavation be allowed on-site, the Contractor shall coordinate with the Owner to insure it is disposed of in a location selected and graded to the Owner's requirements. The cost for this storage shall be included with the earthwork cost for the project. Should storage of excess excavation not be allowed on-site, the Contractor shall be responsible for disposal off-site and shall include the cost for disposal in the earthwork cost for this project.

1.13 **DEFINITIONS:**

**State:** The term State, whenever used herein, refers to and means the State of Hawaii.

**Government:** The term Government, whenever used herein, refers to and means the State or the County as appropriate in the context.

**Owner's Engineer:** Belt, Collins & Associates, responsible for engineering design services related to the work.

**Incidental To:** The term Incidental To, whenever used herein, refers to and means the work necessary, either directly or indirectly, either anticipated or unforeseen or unexpected, to complete that part or all of the project described under any item or items of the Proposal and in accordance with these specifications and the plans pertaining thereto at no extra cost to the Owner.

1.14 **FEES:**

The prices bid shall include all fees for all the necessary permits, licenses, inspection fees, and give all notice necessary and incidental to the due and lawful prosecution of the work. The fees for inspections to be done by governmental agencies shall be included in this provision.