<table>
<thead>
<tr>
<th>To: Initial</th>
<th>Please:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Robert T. Chuck</td>
<td>See me</td>
</tr>
<tr>
<td>Walter O. Watson</td>
<td>Take action</td>
</tr>
<tr>
<td>Takeo Fujii</td>
<td>Route to your branch</td>
</tr>
<tr>
<td>James Yoshimoto</td>
<td>Review &amp; comment</td>
</tr>
<tr>
<td>George Yokota</td>
<td>Investigate &amp; report</td>
</tr>
<tr>
<td>Albert Ching</td>
<td>Draft reply</td>
</tr>
<tr>
<td>Hong Fong Chang</td>
<td>Acknowledge Receipt</td>
</tr>
<tr>
<td>Dan Lum</td>
<td>Type final</td>
</tr>
<tr>
<td>Kazu Hayashida</td>
<td>For filing</td>
</tr>
<tr>
<td>Manabu Tagomori</td>
<td>Xerox ___ copies</td>
</tr>
<tr>
<td>Jane Sakai</td>
<td>FOR YOUR:</td>
</tr>
<tr>
<td>Doris Hamada</td>
<td>Approval</td>
</tr>
<tr>
<td>Lorraine Nanbu</td>
<td>Signature</td>
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<tr>
<td>Jean Siarot</td>
<td>Information</td>
</tr>
<tr>
<td>Elsie Yonamine</td>
<td>Initials</td>
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</tbody>
</table>

REMARKS:
Great job.

you might be interested in the well data.

Pump test and well records should be filed eventually in "Well Records" e.g. Keaan Well 9-4. Other well data obtained on survey should be also.
Mr. Robert T. Chuck  
Manager-Chief Engineer  
Division of Water and Land Development  
P. O. Box 373  
Honolulu, Hawaii  

Dear Mr. Chuck:

Enclosed is the data on our deep wells which was requested by Harold Sakai and Albert Ching.

From tests we have conducted, it appears that there is an unlimited fresh underground water supply at Keaau Orchard. As you see from the draw down test on the 12" well, draw down was only 0.33 foot at 640 gpm flow.

It is interesting that our well logs compare favorably with the log of the Olaa shaft well. Although we are closer to the sea and lower in elevation than Puna Sugar it appears that both areas have been built up from the same lava flows.

We encountered a salt problem with the 12" well and considerable data has been included on it. The 12" well was originally drilled to a depth of 147 feet which was about 53 feet below sea level. The 8" well was drilled to 137 feet or 10 feet higher. We did not encounter the salt problem with the 8" well. Our theory is that we tapped the fresh-salt water boundry layer at 147 feet and agitation from the pump mixed the salt water in the well. The problem was solved by capping the shaft with concrete at 129 feet or 35 feet below sea level.

Data has been taken for many years on rainfall, temperature, humidity, and wind velocity at Keaau Orchard. This data is available from the U. S. Weather Bureau.

Contamination analysis have been run since January, 1963. This data is available from the Division of Sanitation, Department of Health, State of Hawaii.

May 5, 1967
Our water usage is about 100 gpm average during our processing season which runs from September through February. This is supplied from the 12" well. The 8" well is used only for drinking and sanitation water in the office. During the "Off-season" our water usage is very small.

The pump type and data for the 8" well is:

Western Turbine Pump
1800 RPM
100 GPM at 210' Head
Size 8"R Depth 90'
Serial No. 4148 Runner 4RL833
Motor HP

If this data is not sufficient for the requirements of your survey please let us know what additional information is required.

We would greatly appreciate receiving a copy of the survey when it is completed.

Very truly yours,

ROYAL HAWAIIAN MACADAMIA NUT COMPANY

Alan Mefford
Production Engineer

encl.

AM:ls

cc: A. Mefford
Pumped 60 e.w. with b's drawdown, Dec. 10, 1945.

Water level in well 13 feet above, 8.2.

Clinton at well to 4.7 feet above.

\[
\begin{array}{c|c|c|c|c|c}
\text{Depth} & \text{Gravel} & \text{Sand} & \text{Cobble} & \text{Rock} \\
\hline
132.8 & 6 & 0 & 0 & 0 \\
127.6 & 6 & 0 & 0 & 0 \\
123.8 & 6 & 0 & 0 & 0 \\
121.9 & 6 & 0 & 0 & 0 \\
124.3 & 6 & 0 & 0 & 0 \\
123.8 & 6 & 0 & 0 & 0 \\
121.9 & 6 & 0 & 0 & 0 \\
124.3 & 6 & 0 & 0 & 0 \\
123.8 & 6 & 0 & 0 & 0 \\
121.9 & 6 & 0 & 0 & 0 \\
\end{array}
\]

I'd. 1 & 1949

Conditions:

Rebivn & Cooke

NAW WINCHESTER