CHECKLIST

WELL CONSTRUCTION PERMIT

WELL NAME or LOCATION: Kauai

PERMIT

WELL NUMBER: 11-90-48

税 Map Key: 1-2-04:03

OWNER/OPERATOR:

Firm Name

Contact Person

Address

Phone

LANDOWNER:

Firm Name

Contact Person

Address

Phone

Date application received: 5-20-70

Date acknowledged receipt/request more info: 5-22-70

Date application accepted: 5-23-70

Date submittal due: 10-2-70

Date application approved or disapproved: 10-2-70

DATE SUBMITTAL SENT TO APPLICANT: 10-2-70

APPLICATION SENT TO FOLLOWING:

Dept. of Health

Dept. of Hawn Home Lands

Dept/Bd of Water Supply

Historic Preserv. Prog.

Koolau Waiakea HEBO (Oahu)

Dept. of Pub. Work (Hawaii)

Office of Hawaiian Affairs

REMARKS:

Send all correspond to Ed Henry - OCEA (10-31-90)

Menu to Application Card (Appl. Card # 44)

Sent: 11-18-12 to FAX: (11-20) 4-11-2 to Hawn Oval 9-25-12

Date Agenda Due: 10-2-70

Date Submittal Due: 10-2-70

Date Application Approved or Disapproved: 10-2-70

Date Applicant Notified of Decision: 10-2-70
Kuhiwa—Nahiku Well
(Well No. 4806–48)
Mr. William W. Paty, Chair
Commission on Water Resource Management
Department of Land and Natural Resources
PO Box 373
Honolulu, HI 96809

Re: Maui Pineapple Company, Ltd.
Pump Installation Permit
Kuhiwa Well #4806-48
Isaac Hall’s letter dated 11/13/90

Dear Mr. Paty,

Mr. Hall’s letter of 11/13/90 uses many untrue statements to try to support his contention that Maui Pineapple Company, Ltd., should not be granted the necessary permits to pump the Kuhiwa well:

Page 1, paragraph 3, Kuhiwa Well was drilled in 1947 at it’s chosen location in order to provide water from a huge aquifer that presently is wasted underground into the ocean. The very knowledgeable hydrologists and geologists that worked on drilling the over 100 test bores to explore this aquifer knew very well that the chances of affecting the springs in Hanawi Stream were extremely unlikely, given the huge amount of water draining into the ocean from this aquifer, and the rather remote connection between the Kuhiwa Well and the springs. EMI withdrew it’s SMA application referred to by Mr. Hall for other reasons, not because of any lack of proof that the well would not cause adverse impact.

Page 2, paragraph 2, Mr. Hall tries to make a point that pumping a well violates the instream flow standards for Hanawi, Makapipi, Kuhiwa or other streams. He is wrong. These standards can only be considered as guidelines, and pumping effects would have to be studied for a long period of time, and significant historical background data would have to be available before any determination of effect and possible violation could be determined.

Page 2, paragraph 3, Mr. Hall misuses hydrologist Doak C. Cox’s statements from a letter of June 11, 1990, to try to indicate that a 10% reduction in flow at Big Spring is likely. He ignores further statements in that same letter by Doak Cox stating that while pumping Kuhiwa Well "a 10-percent decrease in the Big Spring discharge is therefore the maximum possible that can be expected to result from draft on the Kuhiwa Well, and the actual effect is likely to be significantly less. The actual effect of the well draft on the Spring is unlikely to be observable without very careful measurements....".
In an attempt to clear up misunderstandings of this June 11, 1990 letter by certain factions in Hana who have been trying to use that letter to prove a definite and observable negative effect on the Spring by pumping Kuhiwa Well, Mr. Cox wrote two more letters, dated October 16, 1990, and October 22, 1990, both of which are in DLNR files on this project. In his letter of October 16, 1990, he states, "That the diminution in spring flow will not be detectable with certainty considering the natural variability of the spring flow and the difficulty of its measurement."

Page 3 top paragraph, there is no proof that the well pumping will have any affect whatsoever on the streamflows of any of the streams in the area. The most knowledgeable people on this subject feel that there will be no observable effect, but the only way we can know for sure is by measurement of the streamflow.

Page 3, paragraph 3, Mr. Hall takes a hypothetical consideration and tries to report it as a statement of fact. In my letter of October 24, 1990, to Mr. Cox, I made reference to the fact that the springs in Hanawi dropped 1 to 2 mgd below the average springflow of 10 mgd three times, in 1931, 1935, and 1936, long before there was any well or any pumping of the aquifer. My hypothetical question to Mr. Cox was that if it could happen three times without any pumping, it could happen again, whether or not any pumping was taking place. My question to Mr. Cox was, how could anyone know whether such a drop in flow was caused by pumping Kuhiwa well, if the Well was in operation at the time? Mr. Hall grabbed that hypothetical consideration and tried to twist it around to represent a statement of fact.

Page 3, paragraph 5, Mr. Hall makes a statement about the waters of the State being held for the benefit of the citizens of the State under HRS Chapter 174C-1. Maui Pineapple Company, Ltd. is also a citizen of the State, and is entitled to the protection of the State in having the waters of Kuhiwa Well protected for their agricultural use.

Page 4, paragraphs 1 and 2, Maui Pineapple Company, Ltd., is a farmer in East Maui, and is as entitled to use the waters of East Maui as are the members of the Hana Community Association. The Water Commission exists to make just those determinations, that is, what is the most beneficial use to the community of the waters of this area. Custom in Hawaii has long dictated that waters be moved from regions of oversupply to regions of shortfall for purposes of domestic, irrigation and agricultural use. This is just exactly that sort of situation. A small part of a huge body of water, presently being wasted into the ocean, is proposed to be moved to a dry area for agricultural purposes by citizens of Hawaii.

Page 4, paragraph 3, the expected annual average draft at Kuhiwa Well is 200 gpm. The maximum expected possible effect at Big Spring is 10% of that or 20 gpm. Mr. Cox made the point that a biologist familiar with the biota of Hanawi stream should be able to determine if the expected flow reduction of 20 gpm out of a total flow of 7,000 gpm from the springs in the Hanawi Stream would have any effect on the stream biota. A change in flow of this magnitude certainly should not
have any effect, and a qualified biologist should be able to substantiate that opinion easily, but this has not been done as yet. Ed Sakoda, of your staff, agreed with Mr. Cox that this information should be fairly easy to obtain.

Page 4, paragraphs 5 and 6, and page 5, paragraphs 1 and 2, the well is a 43 year old private property, the land is private property, and the water under the private property is also private property. The only applicable State statute has to do with receiving a permit to operate the pump to remove the water from the ground for irrigation purposes. No State lands or funds are involved in this application. As such, no Environmental Assessment is required. An Environmental Assessment was prepared for the Land Use Permit. This EA makes reference to the aquifer’s ability to sustain the requested yield, and has been reviewed by your staff. Certainly this is an entirely different situation than the Molokai case Mr. Hall makes reference to, and an EIS is not required, as the main concerns have been addressed by Maui Pineapple Company’s willingness to cooperate with testing and streamflow measurement to confirm the opinions of the experts. Actually, the fact of this well’s age and the fact that it has been pumped in the past could make a good case for "grandfathering" the well’s pumping permit as has been done for other existing wells in the State.

Page 5, paragraphs 3, 4, 5, the testing program was recommended for the existing gaging station in Hanawi Stream below Big Spring (presently unused) because it has the best background of historical data to compare it to, is the only stream recommended for "Kapu" protection, is felt to be the main stream that would respond to pumping from Kuhili because of it’s high elevation, and an indication of no effect here would pretty well mean no effect in other areas lower in elevation. If a significant effect were to be found here, then other areas should be looked at. The expert opinion is that there will not be any observable effect here or elsewhere. Running gaging stations in other streams would be meaningless because of the lack of background data to compare it to, and the high degree of likelihood that the effect, if any, will be confined to Hanawi Stream.

Mr. Hall seems to be unaware that Maui Pineapple Company, Ltd. has agreed to work with the State for the monitoring of the gaging station, and the State has agreed to contact the USGS to conduct the monitoring. These arrangements were agreed to in mid-October at a meeting with your staff at DWRM. Mr. Hall also seems to be unaware that as a Registered Professional Engineer in this State, I am bound to conduct any engineering work and report any data developed from this work in an unbiased and unprejudiced manner. As such it would not matter whether the USGS or myself, acting in my capacity as a Professional Engineer, conducted the monitoring work, as the data would be accurately reported either way.

Page 6, paragraph 1, the DLNR staff at both OCEA and DWRM are aware that this water will be metered at the well discharge, and that the metered amount will be reported to DLNR and EMI. The information will be a matter of public record and will be available to anyone,
including the HCA, for their independent evaluation. East Maui
Irrigation Co. has made it very clear that they are not willing to
provide water from their ditch system any longer for the growing of
pineapple by Maui Pineapple Company, Ltd. The idea that this well will
provide water for some other development project is ridiculous. This
water will provide badly needed irrigation water for the drip
irrigation systems in Maui Pineapple Company's East Maui pineapple
fields.

Page 6, paragraphs 4 and 5, Maui Pineapple Company, Ltd., has as
much right to apply for the use of this water as any other private land
owner or leasee in the area. Our rights are as protected by State Law
as any other person or organization. The idea that we are somehow
violating someone else's rights by pumping water from a private well on
private land using private funds is not very well thought out. We are
willing to meet with anyone who wishes to discuss this with us, and in
fact have tried to do so with the Hana Community Association on July 3
and July 31 in Hana, and again on August 9 at a public hearing on this
project in Kahului. The concerns that were brought up at these
meetings about keeping the water for pineapple irrigation only, and
measuring the Hanawi stream to check for draft effects, have been
addressed. We feel there is no need to delay this application
further, as it has already been delayed at least six months by the
requirement that the project also go from the Land Board to the Water
Commission for their additional review.

At these meetings in Hana and in Kahului attempts were made to
explain that the possibilities of developing long term storage or of
drilling a completely new well elsewhere were indeed looked at. The
cost of each of these alternatives, estimated to be between $5 million
and $10 million, is prohibitive for a company as small as Maui pineapple
Company, and is not considered to be viable under today's economic
conditions. The only possible alternative that we have for irrigation
water at this time is to revive this old well, which appears to be
located in one of the best aquifers on the island, and get on with our
business of growing pineapple. We really don't understand where all the
objection to this project is coming from. We certainly haven't seen it
from people in the community we have talked to. We are certainly
willing to set up a meeting here on Maui as was discussed at your last
Commission meeting in Kona on November 14, 1990. As we agreed at that
time, with Mr. John Blumer-Buell representing the HCA, the members of
your Commission would meet with ourselves, representatives of the HCA,
and other interested members from the community, to discuss this
further, sometime before the next regularly scheduled meeting in
Honolulu in December.
Please distribute these comments on Mr. Hall's letter to the Commissioners and the staff as soon as possible so that they can consider them before we meet on Maui.

I am available to answer any questions you may have on this project.

Sincerely,

William L. Pyle, PE
Project Manager

cc: Hana Community Association
    Isaac Hall
    Ed Sakoda, DLNR
    Ed Henry, DLNR
    Maui Pineapple Company, Ltd.
East Mauians fear permit to ML&P will harm streams

Continued from Page A1

are being adversely affected by the pumping. Such a determination could take from two to 10 years, he said.

Under questioning by Maui Pineapple attorney Dennis Niles, Meyer testified the annual cost of maintaining four gauging stations would be around $26,000. He said the building the stations in an area without roads probably would require an intensive effort and involve the use of a helicopter. The cost of building each station probably would be in the tens of thousands of dollars, he said.

Maui Pineapple President Joe Hartley testified that re-establishing pumping of the Kuhiwa Well is necessary for his company to irrigate approximately 1,700 acres of pineapple fields.

By BRIAN PERRY
Staff Writer

WAILUKU — A contested case hearing yesterday set Maui Pineapple Co.'s need to remain competitive in international markets against the desires of Nahiku and Hana residents to protect freshwater streams in East Maui.

The case arises from the company's application to the state Commission on Water Resource Management for a permit to install a pump at the Kuhiwa Well in Nahiku. The pump would draw 1 million gallons of water a day from an artesian aquifer and put it into a ditch owned and operated by East Maui Irrigation.

Maui Pineapple has an agreement to use the ditch system to transport water to about 1,700 acres of pineapple fields. The company has around 80,000 acres in pineapple cultivation.

The Hana Community Association intervened in the permit process because of concern that pumping the well would harm wildlife by decreasing the flow of Hanawi Stream below Big Spring, Makapipi Stream and an unnamed stream between the two.

The association asked the commission to require Maui Pineapple to prepare an environmental assessment and to establish a comprehensive stream monitoring program to determine whether the streams are adversely affected by the pumping.

Testimony was heard by commission members in a daylong session yesterday in a conference room at the David Trask Building in Wailuku.

Closing arguments were heard at the commission's next regularly scheduled meeting June 19 in Honolulu.

A key issue in the debate was the question of the degree to which stream flows would be affected by pumping from the underground water source.

Maui Pineapple's executive witness, Doak Cox, who has done studies of water resources in the Nahiku area, testified the company would be taking a very small fraction of the water source's total output. He said the amount of water pumped by the company probably would not be detectable. If reduced stream flows were detectable, it would be during periods of prolonged drought only, Cox said.

The Hana Community Association's expert, William Meyer, chief of the U.S. Geological Survey in Hawaii, testified that he believes there is a connection between the Nahiku's streams and springs and the underground water source. He said testing would be necessary to determine how the streams and springs would be affected by the pumping of the aquifer.

Meyer recommended establishing two water gauging stations on both the Hanawi and Makapipi streams. One station would be on a tributary of the Kuhiwa Well and one erected downstream, he said. Then, data could be collected before and after the stream is affected by man, he said.

He said baseline information should be collected for as much as a year before pumping to enable a determination of whether the streams

Some fear permit will harm streams

Continued from Page A1

Now, the company draws 500,000 gallons of water a day from Hanawi Stream itself, and it gets 1 million gallons per day from an EMI ditch, he said.

At the end of this year, EMI, a subsidiary of Alexander & Baldwin, will no longer allow Maui Pineapple to draw water from its ditch without replacing it, Hartley said.

He said that situation was what compelled Maui Pineapple to request permission to re-install a pump at the Kuhiwa Well.

Hartley said it is difficult for Maui Pineapple to remain competitive against 50 other canneries worldwide without adequate irrigation of its fields.

The company grows, processes and markets pineapple to supermarket chains, he said. Without an adequate and reliable supply of quality fruits, supermarkets will turn to other suppliers, Hartley said.

Last year, gross company revenues announced $70 million, but the businesses posted a record loss of $6.5 million, the third loss in as many years, he said. The company employs 900 people, he said.

Bill Pyle, an agricultural engineering consultant to Maui Pineapple, said the Kuhiwa Well was last pumped in 1977. The well was never used for irrigation, he said. It was pumped experimentally only, and it was abandoned when EMI found it economically feasible to operate a diesel pump and impossible to get permits for an electric power line for the pump, he said.

Russell Kahokele, a Nahiku resident, said streams in the area provide vitally needed food, such as freshwater shrimp, for his family's survival.

He said water already being taken from the source of Makapipi Stream is forcing people to go farther and farther upstream to search for food.

Kahokele said he also is concerned that committing water to Maui Pineapple now might limit future development in Nahiku.

Parley Kanakaole, a member of the Hana Community Association board of directors, read a letter from Moses Bergau, a resident of lower Nahiku. In his letter, Bergau said his family gathers food in the Makapipi Stream. He recommended that Maui Pineapple invest in a reservoir to store water.

In his own testimony, Kahоеle stressed the importance of the land to Native Hawaiians in the area.

"This is the essence (of) all I have," he said. "This is what I am."
East Mauians fear permit to ML&P will harm streams

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See SOME FEAR on Page A7
Happy Birthday, Bob.

Bob Hope observed his 88th birthday with a game of golf and a small party with family members, a spokesman said in Los Angeles. In contrast to past birthdays, Wednesday's celebration was a quiet one for the globe-trotting comedian.

Two years ago, Hope celebrated by directing traffic on a freeway off-ramp near a suburban Burbank street that was named in his honor. Hope spent most of Wednesday at his home near Toluca Lake about 10 miles north of downtown Los Angeles, said publicist Ward Grant. But while Hope turned homebody "in person," he was on the move "in spirit," Grant said. He said parties celebrating the birthday were scheduled by two charitable organizations that Hope supports financially. They are the Bob Hope Village, U.S. Air Force Enlisted Men's Widow's Home in Fort Walton Beach, Fla., and the Hughes Center for the Severely Handicapped Children in Port Arthur, Texas.

The muppet mob has a reunion

Miss Piggy, Kermit the Frog and the muppet entourage starred at the opening of Jim Henson's MuppetVision 3D spectacular at Disney-MGM Studios Theme Park. They joined Disney characters including Mickey Mouse, Minny Mouse, Goofy and Roger Rabbit, who rode convertibles in a procession down New York Street yesterday. Miss Piggy and Kermit set off fireworks to open the show, which uses advanced three-dimension technology and special effects that simulate wind and rain. "One of the things that makes this a particularly exciting occasion is that this is Jim Henson's last major work," said Michael Firth, an executive of Henson Productions. Henson, who created the muppets featured on the longtime PBS children's show "Sesame Street," died in May 1990.

Fairbanks takes a bride

Douglas Fairbanks Jr., an 81-year-old actor who began his career in silent films, married home shopping network merchant Vera Shelton. It was his third marriage. The couple exchanged vows yesterday in a service at St. Thomas Episcopal Church attended by several dozen guests, including numerous socialites. A reception was held at the Knickerbocker Club.

The Offbeat: No. 48 finally finishes the job

COMPTON, Calif. (AP) — It's not the kind of legal practice law students dream about, but Maxcy Dean Filer failed the State Bar exam 47 times, flunking the arduous test twice a year since 1967.

This year, the 1966 graduate of Los Angeles' now-defunct Van Norman University took two preparatory classes and prayed. And the scales of justice finally tipped in his favor. On Tuesday, he found out he'd passed.

"I cried happily and hugged all my children and my wife," Filer said. He has vowed to keep working in his son Kelvin's law office. To prepare
Continued from Page A1

are being adversely affected by the pumping. Such a determination could take from two to 10 years, he said.

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NEW JUHA 1-5mm CENTER OPENING COMMERCIAL
Mr. William Pyle  
AG Systems Hawaii  
P. O. Box 90  
Puunene, Maui, Hawaii 96784  

Dear Mr. Pyle:  

Subject: Conservation District Use Application for Improvements to Kuhiwa Well, Water Transmission Line and Electricity Transmission Corridor and Poles, Nahiku, Maui  

We wish to inform you that Maui Pineapple Company's Conservation District Use Application for the subject project was approved on September 28, 1990 subject to the following:  

A. Violation  

That the Board deferred action regarding a possible violation until a site visit is conducted by the Maui Board member.  

B. Application  

1. That the Board authorized a temporary land use for a period up to one (1) year to test the Kuhiwa Well and to establish the pumpage rate, given the short and potential long term impacts of the proposed facility;  

2. The applicant shall comply with all applicable statutes, ordinances, rules and regulations of the Federal, State and County governments, and applicable parts of Section 13-2-21, Administrative Rules, as amended;
3. The applicant, its successors and assigns, shall indemnify and hold the State of Hawaii harmless from and against any loss, liability, claim or demand for property damage, personal injury and death arising out of any act of omission of the applicant, its successors, assigns, officers, employees, contractors and agents under this permit or relating to or connected with the granting of this permit;

4. The applicant shall comply with all applicable Department of Health Administrative Rules;

5. Before proceeding with any work authorized by the Board, the applicant shall submit four (4) copies of the construction plans and specifications to the Chairperson or his authorized representative for approval for consistency with the conditions of the permit and the declarations set forth in the permit application. Three (3) of the copies will be returned to the applicant. Plan approval by the Chairperson does not infer approval required of other agencies. Compliance with Condition 2 remains the responsibility of the applicant;

6. That the testing of the Kuhiwa Well be initiated within one (1) year of Board approval, under a Temporary Variance for the use of a generator at the site, a well pump and other non-permanent land usage;

7. Any work or construction to be done on the land shall be initiated within two (2) years of the approval of such use, and all work and construction must be completed within three (3) years of the approval of such use;

8. That the applicant affirm that appropriate measures shall be exercised to prevent construction materials, debris, petroleum derivatives, etc., from entering or polluting surrounding areas and nearby water sources;

9. That the applicant shall comply with permit requirements of the State Water Code, Chapter 174C, Hawaii Revised Statutes, and its implementing Administrative Rule; Specifically, that the applicant shall prepare and submit to the Commission on Water Resource Management, a technical report regarding the well testing phase and any identified short and long term impacts;

10. That the applicant coordinate the project with the Maui Office of the Division of Forestry and Wildlife to inspect the proposed transmission and power corridor to determine if any threatened and endangered species are present;
11. That the applicant affirm that all cutting and removal of vegetation be kept to a strict minimum and confined to the transmission and power corridor;

12. That the applicant affirm that all litter and unused materials resulting from the testing and construction phases of the project be removed at the project's completion;

13. That the applicant will be held responsible for all fires, including suppression costs, started in the area as a result of the construction activities;

14. That failure to comply with any of these conditions shall render this Temporary Variance and Conservation District Land Use application null and void; and

15. Other terms and conditions as prescribed by the Chairperson.

Please acknowledge receipt of this permit, with the above noted conditions, in the space provided below. Please have the applicant sign two copies. Retain one and return the other within thirty (30) days.

Should you have any questions on any of these conditions, please feel free to contact our Office of Conservation and Environmental Affairs staff at 548-7837.

Very truly yours,

William W. Paty

Receipt acknowledged

Applicant's Signature

Date:

cc: Maui Board Member
Maui Land Agent
Maui County Planning Department
DOH/OHA/OSP
Mr. William Pyle  
AC Systems Hawaii  
P. O. Box 90  
Puunene, Maui, Hawaii 96784 

Dear Mr. Pyle:

Subject: Conservation District Use Application for  
Improvements to Kualiwa Well, Water Transmission Line  
and Electricity Transmission Corridor and Poles,  
Naiku, Maui

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6. That the testing of the Hukina Well be initiated within one (1) year of Board approval, under a Temporary Variance for the use of a generator at the site, a well pump and other non-permanent land usage;

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12. That the applicant affirm that all litter and unused materials resulting from the testing and construction phases of the project be removed at the project's completion;

13. That the applicant will be held responsible for all fires, including suppression costs, started in the area as a result of the construction activities;

14. That failure to comply with any of these conditions shall render this Temporary Variance and Conservation District Land Use application null and void; and

15. Other terms and conditions as prescribed by the Chairperson.

Please acknowledge receipt of this permit, with the above noted conditions, in the space provided below. Please have the applicant sign two copies. Retain one and return the other within thirty (30) days.

Should you have any questions on any of these conditions, please feel free to contact our Office of Conservation and Environmental Affairs staff at 548-7827.

Very truly yours,

/S/ WILLIAM W. PATY

William W. Paty

Receipt acknowledged

Applicant's Signature

Date:

CC: Maui Board Member
    Maui Land Agent
    Maui County Planning Department
    DOH/CHA/OSP
I am writing in response to two letters on this subject written by W. L. Pyle of AS Systems Hawaii and dated 18 October 1990, one to you and the other to the University of Hawaii Environmental Center.

As Mr. Pyle stated in the letter to the Environmental Center, I met with him and Edwin Sakoda of the Dept. of Land and Natural Resources to discuss the effect of the draft on the well that is proposed by Maui Pineapple Co. on the flow of the Hanawi Big Spring; and I concur in most respects with the estimates of that effect as described in Mr. Pyle’s letter to you. I consider, for example, that, even if there is an effect:

1) The diminution of Big Spring flow that attributable to the draft on the well will be related much more closely to the well draft averaged over a considerable period of time such as year than to the instantaneous rate of pumping (because of the considerable lag and damping associated with the storage volumes of both the 1100-ft-head part of the perched artesian aquifer that is tapped by the well and the 800-ft-head part that is believed to supply the Big Spring flow and with the hydraulic resistance between the two parts); and

2) The effect will probably be only a minor fraction of the average draft to which it is most closely related (because there must be discharges from the 1100-ft-head part of the aquifer other than that to the 800-ft-head part, and there must be discharges from the 800-ft. part other than that to the Big Spring; and the draft from the well must be compensated for by reductions in all discharges, not merely that to the Big Spring).

There is, however, one poorly considered statement in Mr. Pyle’s letter to you with which I cannot agree. This is in the first paragraph on page 3, which reads:

The lowest measured flow [of Hanawi Stream below the Big Spring] was in February of 1936, a measurement of 8.2 MGD. It is suggested that as long as the new measurements from this gaging station [after the initiation of the Maui Pine draft] do not go below 8.2 MGD at any time, it can safely be assumed that the
pumping at Kuhiwa well has caused no effect at the springs in Hanawi Stream.

Let me assume, for the moment, a total absence of lag and damping and a compensation of the instantaneous 1 mgd. well draft entirely by reduction of the Big Spring flow. From the tabulation of the annual minimum flows of Hanawi Stream at the bottom of p. 2 of Mr. Pyle's letter, it is clear that even with a 1 mgd. reduction, the flow of the stream would not have been reduced to as little as 8.2 mgd. in any of the 9 years before 1936 or the 11 years after that year. Hence it cannot be assumed that the Kuhiwa well draft has had no effect on the Big Spring or Hanawi Stream flow merely on the basis that the flow of the Stream has not dropped below 8.2 MGD.

I am reminded by reviewing an earlier report on Hanawi Stream flow (Cox, D.C., 1980. Stream-flow effects of proposed diversion from Hanawi Stream, Nahiku, East Maui; Univ. Hawaii Environ. Ctr. SR:0026, 39 pp.) that Hanawi stream at the site of USGS gage 5090, where Mr. Pyle suggests renewal of gaging, includes not only the flow of the Big Spring but also that of Hanawi Spring 1 (and, according to some sources of information, that of Hanawi Spring 2 as well). That earlier report includes the results of a correlations by Arnold Hori, Univ. Hawaii Dept. of Meteorology, of the monthly mean flow of each of the springs with rainfalls recorded at the Paakea rain gage, taking advantage of records of the flows of the individual springs for the periods: 1933-37 for the Big Spring, 1931-39 for Spring No. 1, and 1933-39 for Spring 2. The rainfalls correlated with the flow of one of the springs for a particular month were the totals for various groupings of antecedent months.

I believe that the only way in which there could be a hope of detecting and estimating the interference of the Kuhiwa well on the flow of Hanawi Stream at the site of USGS gage 5090 would involve comparing the stream flow there with an estimate of the flow without interference based on the springflow-rainfall correlations referred to above:

\[ I = Q_{\text{stream}} - Q'_{\text{Big Spring}} - Q'_{\text{Spring No. 1}} \]

where:  
\[ I = \text{interference} \]
\[ Q_{\text{stream}} = \text{flow of stream} \]
\[ Q'_{\text{Big Spring}} = \text{estimated flow of Big Spring without interference} \]
\[ Q'_{\text{Spring No. 1}} = \text{estimated flow of Spring No. 1 without interference} \]

I must bring to your attention, however, that the standard error of estimate of the monthly mean flow of the springs were 0.53 mgd in the case of the Big Spring and 0.47 mgd in the case of Spring No. 1 was 0.47 mgd, so that the standard estimate of the total of the mean flows of the two springs for a particular month may be expected to be 0.71 mgd, much greater than the maximum expectable interference. It would be quite impossible to detect an interference as small as that estimated in the last paragraph of Mr. Pyle's letter to you.

It is possible that a sophisticated statistical program might be developed whereby the interference over a period of several months could be estimated. It is my opinion, otherwise, that the interference of the draft of the Kuhiwa well on the flow of Hanawi Stream can be detected by the proposed
gaging program only if the interference greatly exceeds the maximum expectable.

I would remind you that, to obtain reliable estimates of the flow of the stream will require not only that: i) a staff gage be reinstalled at the former gaging site; and ii) a water-stage recorder be reinstalled and operated at the former gaging site, with the water stage calibrated to that indicated by the staff gage; but also that: iii) at intervals (probably coinciding with those at which the charts of the recorder are changed), the discharge of the stream be determined by a current-meter traverse; and that the water stages at the times of the traverse and the discharges determined by the traverses be combined in the form of a rating curve for use in converting water stage to discharge.

Although a reduction in the flow of the Big Spring will result in a reduction in the flow over a Hanawi waterfall downstream, the visual effect on the waterfall would be undetectable, and the waterfall is in any case very difficult to see. I believe that the most significant of the possible impacts of a reduction in the flow of the Spring would be those on the stream biota. Let me repeat a suggestion that I have made previously, that competent experts be asked to estimate the impact on the stream biota of the expectable reduction in the low-water flow of Hanawi Stream at the USGS gaging station, using a deliberate overestimate of that expectable reduction—say 0.5 mgd. If the impact on the biota of a flow reduction of that magnitude would be insignificant, I can imagine no grounds for denying to Maui Pineapple Co. a permit to install a pump on the Kuhiwa Well and operate it to the extent outlined on p. 3 of Mr. Pyle’s letter to you.

In my opinion, the only possible justification for requiring that Maui Pineapple Co. undertake the proposed program for gaging the flow of Hanawi Stream prior granting a long-term permit for the draft on the Kuhiwa well is to detect an interference effect whose onset is far more rapid and whose magnitude is many times greater than I consider possible.

Sincerely,

[Signature]

Doak C. Cox

cc: William L. Pyle, A6 Systems Hawaii
    Maui Pineapple Co., c/o W. L. Pyle
    Univ. Hawaii Environ. Ctr.
    E. E. Henry, DLNR
    E. E. Sakoda, DLNR
August 18, 1992

USGS
Bill Meyer
Honolulu, Hawaii

Re: Pump and Meter calibration at Kukiwa Well

Dear Mr. Meyer,

On 6/22/92 a previously calibrated propeller type saddle meter (meter B) was installed downstream of the present meter (meter A) and the pump was run to compare the two meters. The meter A was found to be reading low by a factor of 19.62% compared to meter B. A 500 gpm reading on meter A was actually putting out 598 gpm on meter B. Meter A has been adjusted such that both meters now read the same. The flow readings taken during your drawdown test need to be adjusted upward by this amount. This also indicates that the maximum pumpage from this well should be right in at the 700 gpm (1 mgd) level.

Sincerely,

William L. Pyle

cc: Maui Pineapple Co.
    East Maui Irrigation Co.
    Bill Rozeboom
August 12, 1992

Mrs. Rae M. Loui  
Deputy Director  
State of Hawaii  
Department of Land and Natural Resources  
Commission on Water Resource Management  
P.O. Box 621  
Honolulu, Hawaii 96809

Dear Mrs. Loui:

At your request, I have reviewed Mr. William L. Pyle’s letter to the Commission on Water Resource Management (CWRM) dated July 13, 1992, concerning biological surveys in the area of the Kuhiwa well. Mr. Pyle’s interpretation of my testimony as presented in his letter is accurate up to a point.

The results of the testing at Kuhiwa well clearly indicated that water level decline in the well induced by the pumpage stabilized after 4-1/2 days; indicating the well’s discharge was balanced by water diverted from areas of previous natural discharge. Results also indicated that pumpage from the well caused a reduction in discharge from the Makipipi tunnel by an amount less than the well’s discharge. The remaining well discharge, therefore, would have had to come from a reduction in either ground-water inflow to nearby streams and/or the EMI development tunnel. We do not have sufficient data to determine if, and by how much, these areas are affected. If Makipipi is perennial above the EMI tunnel, some, and perhaps all, of the remaining well discharge could be supplied by this stream. The same is true of the EMI tunnel. It seems likely that Makipipi and the EMI tunnel together supply most, if not all, of the remaining well discharge, but we do not have sufficient data to prove this. It is not known if the discharge from Hanawi Stream was affected.

Finally, as you recall, there is some question concerning the interpretation of the discharge record that was made in the Makipipi tunnel during the pumping test. We are in the process of trying to determine the reliability of this data at this time.

I hope these comments are helpful. Please feel free to call me if you have questions.

Sincerely,

William Meyer  
District Chief
Mr. William L. Pyle  
AG Systems Hawaii  
P.O. Box 90  
Puunene, Maui, HI 96784  

Dear Mr. Pyle:  

Kuhiwa Well Biological Surveys  

Thank you for your letter of July 13 requesting that the Commission discontinue the requirement for biological surveys from the Kuhiwa Well Decision and Order, MA-CC-91-1.  

Approval to lessen the monitoring requirements of the Decision and Order would require a decision by the Commission. We would prefer that Maui Land & Pineapple Company, Inc., as the applicant, submit a formal request to the Commission for a reconsideration of the Decision and Order.  

This request would be referred to the review panel for a recommendation, since it was established to assess the data collected under the monitoring program.  

So that no time is lost in the interim, your letter has been forwarded to the members of the review panel. Please call me if you have any questions.  

Sincerely,  

RAE M. LOUI  
Deputy Director  

BR:ky  

cc:  W. Devick  
W. Rozeboom  
J. Rozeboom-Buell  
W. Meyer
July 13, 1992

William W. Paty
Chairperson
Commission on Water Resource Management
PO Box 621
Honolulu, Hawaii 96809

RE: Kukiwa Well, MA-jCC-91-1
Maui Pineapple Company

Dear Mr. Paty,

On June 19, 1992 Mr. Bill Meyer of the USGS testified to the Commission in Executive Session regarding the response of the Kukiwa Well during certain testing. Mr. Meyer said that the well equalizes it's discharge after 4 1/2 days of pumping, that the effects will be seen after 4 1/2 days and will not continue to spread out further and further from the well, that the effects are limited to the Makapipi Stream and the EMI development Tunnel, both effects limited to the immediate area around the well.

We are conducting freshwater biological surveys in locations of concern to the Hana Community Association. These locations are far removed from these immediate effects described by Mr. Meyer. The biological surveys are being performed every four months as required by the Commission. The cost to do these surveys is presently about $40,000 per year, and the Findings of Fact, Conclusions of Law, and Decision and Order require us to continue these Biological Surveys for 10 years or until the Commission deems them no longer necessary.

It appears, based on Mr. Meyer's testimony to the Commission on June 17, that these surveys are no longer necessary. The effects of the well being pumped are very localized and not far reaching as had been previously feared by the Hana Community Association. The surveys, while providing interesting biological data to the DLNR staff and others, no longer are needed to determine impact of the well pumping on the pools, streams, and springs in the areas where the surveys are being conducted. The cost to Maui Pineapple Company is in the order of $400,000 if the surveys are to continue for 10 years as mandated.
AG SYSTEMS HAWAII  
PO Box 90  
Puunene, Maui, Hawaii 96784  
(808) 572-5910  
FAX (808) 572-4954  

July 13, 1992

RE: Kuhiwa Well, MA-jCC-91-1  
Maui Pineapple Company

We respectfully request that the biological survey requirement be dropped, or that others pay the cost of continuing the surveys, as they are no longer necessary to determine the impact of pumping the well.

Sincerely,

William L. Pyle, PE  
Project Manager
Mr. William L. Pyle  
AG Systems Hawaii  
P.O. Box 90  
Puunene, Maui, HI 96784  

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This request would be referred to the review panel for a recommendation, since it was established to assess the data collected under the monitoring program.

So that no time is lost in the interim, your letter has been forwarded to the members of the review panel. Please call me if you have any questions.

Sincerely,

RAE M. LOUI  
Deputy Director

BR:ky

cc: W. Devick  
W. Rozeboom  
John Blumer-Buell  
W. Meyer
July 17, 1992

Mr. William Meyer, District Chief
U.S. Geological Survey
677 Ala Moana Boulevard, Suite 415
Honolulu, Hawaii 96813

Dear Mr. Meyer:

Attached is a request from Bill Pyle of AG Systems Hawaii to discontinue biological surveys near Kahiwa Well. Please comment on the request and the assessment of your presentation regarding pumping effects.

Thank you for your timely response to this request.

Sincerely,

[Signature]

RAE M. LOUI
Deputy Director

RML:ssk

Attachment
July 13, 1992

William W. Paty
Chairperson
Commission on Water Resource Management
PO Box 621
Honolulu, Hawaii 96809

RE: Kukiwa Well, MA-jCC-91-1
Maui Pineapple Company

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July 13, 1992

RE: Kuhiwa Well, MA-jCC-91-1
Maui Pineapple Company

We respectfully request that the biological survey requirement be dropped, or that others pay the cost of continuing the surveys, as they are no longer necessary to determine the impact of pumping the well.

Sincerely,

[Signature]

William L. Pyle, PE
Project Manager
Maui Pineapple Co. Ltd
870 Hallimaile Road
Makawao, HI 96787
Attn: William Pyle

Hana Community Association
P.O. Box 202
Hana, HI 96713
Attn: John Blumer-Buell

Gentlemen:

Kuhiwa Well Baseline Data Collection

Enclosed please find the Commission staff inspection reports for pools along Makapipi Stream, as requested at the May 21 meeting of the Kuhiwa Well Review Panel. These reports document field inspections conducted on November 26, 1991, and February 24, 1992.

Sincerely,

RAE M. LOUI
Deputy Director

WR:cd
Enc.
May 4, 1992

State of Hawaii
Department of Health
Safe Drinking Water Branch
Environmental Management Division

Attn: Mr. Stewart Yamada

Re: Maui Pineapple Company, Ltd.
Kuhiwa Well Project
Potable Water Testing

Dear Mr. Yamada,

Power was supplied for this well by Maui Electric on a temporary basis for testing on Friday, April 17, 1992. The pump was started up and run for about 48 hours, and samples were drawn using containers provided by Brewer Environmental Laboratories in Papaikou, Hawaii. These samples were taken on April 19, 1992 at 1 pm, by William Pyle, PE, the samples were iced down, and taken to Hilo on April 20, 1992 by William Pyle, where they were delivered to Brewer Environmental Laboratories in Papaikou for analysis.

Attached is a copy of the Engineering Report on this well, and a copy of the water analysis from Brewer Environmental Laboratories.

If you have any questions on this project please call me.

Sincerely,

William L. Pyle, PE
Manager

cc:Dennis Niles
L. D. MacCluer
East Maui Irrigation Co.
Bill Rozeboom, DLNR
State of Hawaii
Department of Health
Safe Drinking Water Branch
Environmental Management Division

Attn: Mr. Stewart Yamada

Re: Maui Pineapple Company, Ltd.
Kuhiwa Well Project

DESCRIPTION OF WELL

This well was developed in 1948 by East Maui
Irrigation Company (EMI) on their own land at Nahiku, Maui,
on TMK 1-2-4: 03, for the purpose of irrigating sugar cane.
The well head is at 1,400 feet elevation, the bore is 1,250
feet deep, with a bottom elevation of 150 feet above sea
level. The casing is 15 inch solid steel and is 1,000 feet
deep and is entirely grouted. The aquifer is a perched
artesian body contained between two impervious rock layers
at elevations 150' on the bottom and 400' on the top,
containing water with a static pressure head of about 1,120
feet above sea level. The static water level in the well
sits at a constant level about 280 feet from the surface.
The water temperature in this aquifer is about 15 degrees C,
which indicates that the rainfall recharge zone for this
aquifer is at about the 4,000 to 5,000 foot elevation on the
slopes of Haleakala, where the rainfall averages about 300
inches annually.

PUMP CAPACITY & WATER REQUIREMENTS

Previous pump testing done in 1977 had shown that about
650 gallons per minute could be drawn from this well for
several days with the water level holding at about 700
feet below the surface. Based on this information a 200 hp
electric submersible pump was installed in this well at a
depth of 800 feet in November of 1991 by Maui Land and
Pineapple Company (MP) for the purpose of irrigating
pineapple. The maximum pumping rate is 700 gallons per
minute. The expected pumping frequency is around 50 days
annually, with a maximum of up to 200 days during extremely
dry periods. During wet years this pump will not be needed.
PERMITS AND ELECTRIC POWER

Two miles of 23 KVA powerline was installed to provide power to this well from Maui Electric's Hana Powerline in October, 1991. This project is in a Protected Subzone of a Conservation District, and a Conservation District Use Permit was obtained from the Board of Land and Natural Resources on September 28, 1990. A Pump Installation Permit was obtained from the State Water Commission on October 2, 1991. Water rights and other possible uses of this water were thoroughly discussed during this permitting process, as there was a contested case hearing before the State Water Commission on the Pump Permit. The permits as issued require that this water use be restricted to the irrigation of pineapple only.

WATER CONVEYANCE

This pump discharges through 300 feet of 8 inch polyethylene pipe into the Koolau Ditch, owned by EMI. An agreement has been reached between MP and EMI to carry this water in the ditch system to the pineapple growing areas in Central Maui. As this ditch system also supplies drinking water to the County of Maui at the Kamaole Wier, the DOH required that appropriate drinking water standards be adhered to.

SITE PLAN

A copy of the site plan provided to the State DLNR for the CDUA is provided for your review.

MISC. CONSTRUCTION

The original existing 24' X 24' concrete slab is about 12 inches thick and in excellent condition. The original existing 15" well casing was examined by underwater television and found to be in excellent condition. The 250 feet of 18" bare rock bore at the bottom of the well was also found to be clean, with no debris, and in excellent condition.

LOCATION

The location of this pump station is on a rock ridge, is well drained, not near any streams that pose flooding problems, and is accessible via a 2 mile dirt jeep road.

CONSTRUCTION SPECS

The powerline, transformer station and motor control center were built to meet all specifications as required by Maui Electric Company, the County and the State and have been approved for operation.
WATER TREATMENT

No water treatment is provided for this project.

ADJOINING WELLS

There are no other wells in this area.

SOURCES OF CONTAMINATION

The entire area is native forest in a Conservation District, Protected Subzone, with no development. The State Highway is approximately one mile below the project at elevation 1000 feet. There are no known sources of contamination in the area.

WATER ANALYSIS

For the water sampling phase of this testing procedure the well discharge was diverted into Makapipi Stream below the EMI ditch so that no possible contaminants would enter the EMI ditch system.

Water Analysis performed by Brewer Environmental Labs on samples taken 4/19/92 show total coliform at less than 1 per 100 and no detectable pesticides/herbicides, no detectable regulated volatiles, no detectable trihalomethanes, the only detectable metals were chromium at 0.01 mg/L and lead at 0.03 mg/L, and Nitrate was detected at 0.12 mg/L. Nothing else was detected within the limits of the tests. A copy of the test results is attached.

YIELD TESTING

After the Department of Health gives their approval to divert this well into the EMI ditch, the USGS will conduct seven days of pump tests to determine the yield of this aquifer within the limits of this 700 gpm pump. This testing is scheduled to begin on May 11, 1992, pending DOH approval.

William L. Pyle, PE
Civil/Agricultural Engineer
May 4, 1992
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THIS QUOTATION IS VALID FOR ____ DAYS. THEREAFTER IT IS SUBJECT TO CHANGE WITHOUT NOTICE.

BY ____________________ AT ____________________ DATE ________________

QUOTE PRICES DO NOT APPLY TO POSTAGE.  

PAGE 1 OF 1
## Chain of Custody & Analysis Request

### Name and address where results and invoice are to be sent:
**Firm:** MAUI PINEAPPLE CO.  
**Address:** HALIIMAILE ROAD  
**City:** MAKAWA, MAUI  
**State:** HI  
**Zip:** 96788  
**Phone:** 572-7211  
**FAX:**  
**Contact Person:** MIKE ASHMAN

### Firm:
**Firm:** AG SYSTEMS HI  
**Address:** PO BOX 90  
**City:** Huenene, MAUI  
**State:** HI  
**Zip:** 96784  
**Phone:** 572-5950  
**FAX:** 572-4954  
**Contact Person:** WM Pyle

### Comments:
Po# 386013

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### Analysis Requested:
- UST, Pkg.
- TRPH, 418.1
- Heavy Metals 
- Total Coliform
- Used Oil, Pkg.
- ORR
- RFF
- X: Wastes, THM
- X: Wastes, HR
- X: Wastes, TR
- X: Wastes, FR
- X: Wastes, NR

---

### Analysis Requested:
- 24 hr
- 48 hr
- 3-5 d

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**Sampled By:** WM Pyle  
**Witnessed By:**  
**Samples received chilled?** Yes  
**Samples in good condition?** Yes  
**Total # of Containers:** 6  
**Samples received at lab with custody seals intact?** Yes  

---

**Requisitioned By:** WM Pyle  
**Received By:**  
**Printed Name:**  
**Date:** 4/20/92  
**Time:** 9:43 A

---

**Requisitioned By:** WM Pyle  
**Received By:**  
**Printed Name:**  
**Date:** 4/20/92  
**Time:** 9:43
Following is report you requested for Kukiwa well. Any questions - please call me @ 528-4247.

THANKS
CLIENT: MAUI PINEAPPLE CO.  
Haliimaile Road  
Makawao, Hawaii 96788

SAMPLE LOCATION: Nahiku, Maui

Date/Time Sampled: 04/19/92 @1300  
Date/Time Received: 04/20/92 @0943  
Analysis Date/Time: 04/20-21/92 @1000

Matrix: WATER  
Sample #: Kuhiwa Well  
Analyst: M. Kise

<table>
<thead>
<tr>
<th>ANALYSIS</th>
<th>RESULTS</th>
<th>METHOD</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL COLIFORM</td>
<td>&lt;1</td>
<td>MF</td>
</tr>
</tbody>
</table>

Page 1 of 4
CLIENT: MAUI PINEAPPLE  
Halimaile Road  
Makawao, Hawaii 96788

SAMPLE LOCATION: Nahiku, Maui  
PO #38613

Date/Time Sampled: 04/19/92 @1300  
Date/Time Received: 04/20/92 @0943

RESULT

<table>
<thead>
<tr>
<th>ANALYSIS</th>
<th>RESULT mg/L</th>
<th>Detection Limits mg/L</th>
<th>Analysis Date</th>
<th>METHOD NUMBER</th>
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<tr>
<td>Total Metals:</td>
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<tr>
<td>Arsenic</td>
<td>ND</td>
<td>0.002</td>
<td>04/28/92</td>
<td>7060/7061</td>
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<tr>
<td>Barium</td>
<td>ND</td>
<td>0.1</td>
<td>04/29/92</td>
<td>7080</td>
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<td>Cadmium</td>
<td>ND</td>
<td>0.005</td>
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<td>7130</td>
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<td>Chromium</td>
<td>0.01</td>
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<td>04/27/92</td>
<td>7190</td>
</tr>
<tr>
<td>Lead</td>
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<td>0.01</td>
<td>04/27/92</td>
<td>7420/7421</td>
</tr>
<tr>
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<td>ND</td>
<td>0.0002</td>
<td>04/27/92</td>
<td>7471</td>
</tr>
<tr>
<td>Selenium</td>
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<td>04/28/92</td>
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<td>Silver</td>
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<td>04/25/92</td>
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<td>Nitrate</td>
<td>0.12</td>
<td>0.01</td>
<td>04/20/92</td>
<td>353.3</td>
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</table>

ND - Not Detected

Page 2 of 4
CLIENT: MAUI PINEAPPLE  
Haliimaile Road  
Makawao, Hawaii 96768

SAMPLE LOCATION: Nahiku, Maui

Date/Time Sampled: 04/19/92 @1300
Date/Time Received: 04/20/92 @0943

Matrix: WATER
Sample #: Kukiwa Well

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<thead>
<tr>
<th>Analysis</th>
<th>Results</th>
<th>Detection Limits mg/L</th>
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</thead>
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<tr>
<td>Endrin</td>
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<td>0.000002</td>
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<td>Lindane</td>
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<td>0.00005</td>
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<td>2,4-D</td>
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<td>0.0005</td>
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<td>2,4,5-TP (Silvex)</td>
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</table>

<table>
<thead>
<tr>
<th>Analysis</th>
<th>Results</th>
<th>Detection Limits mg/L</th>
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</thead>
<tbody>
<tr>
<td>Vinyl Chloride</td>
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</tr>
<tr>
<td>1,1-Dichloroethylene</td>
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<tr>
<td>1,1,1-Trichloroethane</td>
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<td>0.001</td>
</tr>
<tr>
<td>Carbon Tetrachloride</td>
<td>ND</td>
<td>0.001</td>
</tr>
<tr>
<td>Benzene</td>
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</tr>
<tr>
<td>1,2-Dichloroethane</td>
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</tr>
<tr>
<td>Trichloroethylene</td>
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<tr>
<td>p-Dichlorobenzene</td>
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<td>0.001</td>
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</table>

ND - Not Detected

Page 3 of 4

Approved by: [Signature]
CLIENT: MAUI PINEAPPLE  
Halimaiel Road  
Makawao, Hawaii 96768

SAMPLE LOCATION: Nahiku, Maui

Date/Time Sampled: 04/19/92 @1300  
Date/Time Received: 04/20/92 @0943

ATTN: Mike Ashman  
JOB NUMBER: 7004-3  
DATE: May 01, 1992

Matrix: WATER  
Sample #: Kuhiwa Well

Method - 501.1  
Analysis Date: 04/21/92

<table>
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<tr>
<th>TRIHALOMETHANES</th>
<th>Results mg/L</th>
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</thead>
<tbody>
<tr>
<td>Chloroform</td>
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<td>0.001</td>
</tr>
<tr>
<td>Bromodichloromethane</td>
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<td>0.001</td>
</tr>
<tr>
<td>Dibromochloromethane</td>
<td>ND</td>
<td>0.001</td>
</tr>
<tr>
<td>Bromoform</td>
<td>ND</td>
<td>0.001</td>
</tr>
</tbody>
</table>

ND - Not Detected

Page 4 of 4
1. STATE WELL NO. 4806-4B  
2. LOCATION: Address Nahiku, Maui, Hawaii  
3. DRILLING OR PUMP INSTALLATION CONTRACTOR: Maui Pineapple Co., Ltd.  
4. CONTRACTOR'S C-57 LICENSE NUMBER: N/A  
5. NAME OF DRILLER WHO PERFORMED WORK: N/A  
6. TYPE OF RIG/CONSTRUCTION: N/A  
7. DATE OF WELL DRILLING COMPLETION: N/A  

8. GROUND ELEVATION (msl) 1,400 ft.  
   - Top of Drilling Platform (msl): N/A ft.  
   - Height of Drilling Platform above Ground surface: N/A ft.  
   - Bench Mark and Method Used to Determine Ground Elevation: N/A ft.  

9. DRILLER'S LOG:  
<table>
<thead>
<tr>
<th>Water Level</th>
<th>Depth (ft.)</th>
<th>Rock Description, Remarks, Dates</th>
<th>Water Level</th>
<th>Depth (ft.)</th>
<th>Rock Description, Remarks, Dates</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>

   (If more space is needed, continue on back.)

10. TOTAL DEPTH OF WELL BELOW GROUND: 1,250 ft. Existing
11. HOLE SIZE: Approx 16 inch dia. from 0 ft. to 1,250 ft. below ground
    | inch dia. from 0 ft. to 1,250 ft. below ground |
    | inch dia. from 0 ft. to 1,250 ft. below ground |
    | inch dia. from 0 ft. to 1,250 ft. below ground |
12. CASING INSTALLED:  
    - Existing: 15 in. I.D. x 1 in. wall solid section to 1,000 ft. below ground
    - None
13. ANNULUS: Grouted from 0 ft. below ground to 1,000 ft. below ground
    | Gravel packed from None ft. below ground to N/A ft. below ground |
14. INITIAL WATER LEVEL: 283 ft. below ground. Date and time of measurement: 5/12/92 @ 0830
15. INITIAL CHLORIDE: 0 ppm Date and time of sampling: 5/19/92 @ 0817
16. INITIAL TEMPERATURE: 50°F Date and time of sampling: 5/12/92 @ 0830
17. DATE OF PUMP INSTALLATION: 12/3/91
18. PUMP INSTALLATION:  
   - Pump Type, Make, Serial No.: TRICO Submersible SHC-6A
   - Capacity: 700 gpm
   - Motor type, H.P., Voltage, rpm: Submersible, 200 HP, 460 V, 3 Phase, 1770 RPM
   - Depth of Pump Intake Setting: 800 ft. below R.P., which elevation is 1400 ft.
   - Depth of bottom of airline: 800 ft. below R.P., which elevation is 1400 ft.
   - Pumping Head: 750 ft.
19. PUMPING TESTS:  
   - Reference Point (R.P.): Top of casing which elevation is 1400 ft.
   - Date: 5/12/92
   - Start water level: 273 gpm Start water level: 800 ft. below R.P.
   - End water level: 800 ft. below R.P.
   - Depth of well: 800 ft. below R.P.

<table>
<thead>
<tr>
<th>Elapsed Time (hours)</th>
<th>Drawdown (ft.)</th>
<th>Clop (ppm)</th>
<th>Temp (°F)</th>
<th>Elapsed Time (hours)</th>
<th>Drawdown (ft.)</th>
<th>Clop (ppm)</th>
<th>Temp (°F)</th>
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</thead>
<tbody>
<tr>
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<td>1</td>
<td>610</td>
<td>292</td>
<td>0</td>
<td>100</td>
<td>375</td>
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<tr>
<td>2</td>
<td>5</td>
<td>605</td>
<td>372</td>
<td>0</td>
<td>150</td>
<td>590</td>
<td>30</td>
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<tr>
<td>5</td>
<td>10</td>
<td>600</td>
<td>322</td>
<td>0</td>
<td>200</td>
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<td>60</td>
<td>585</td>
<td>360</td>
<td>0</td>
<td>300</td>
<td>590</td>
<td>60</td>
</tr>
</tbody>
</table>

   (If more space is needed, continue on back.)

Remarks: (If more space is needed, continue on back.)

Contractor (print): William L. Pyle, PE  
Title: Project Engineer  
Signature: [Signature]  
Date: 6-30-92
June 19, 1992

MEMORANDUM

FROM: Bill Rozeboom

SUBJECT: Kuhiwa Well Review Panel Meeting #3

Location and Date

The third meeting of the Kuhiwa Well Review Panel was held at the Kalanimoku Building, Honolulu, on June 19, 1992, from 11:20 am to 12:00 pm. This meeting followed a presentation on the Kuhiwa Well pump test by Bill Meyer of the USGS at an executive session of the Commission on Water Resource Management. All review panel members (listed below) were present for Bill Meyer's presentation at the executive session.

Attendance

All parties to the review panel were represented:

Maui Pineapple representative: Bill Pyle
Hana Community Assoc: John Blumer-Buell
CWRM staff: Bill Rozeboom
USGS staff: Bill Meyer
DWRM Aquatics staff: Bill Devick

In addition, Meridith Ching (representing Alexander & Baldwin, landowner at well site) and Garret Hew (representing East Maui Irrigation) attended both the executive session and the review panel meeting.

Discussion

Bill Meyer asserted the findings presented previously at the June 12 panel meeting, but indicated that the data were being revised to reflect concerns regarding the rating curve for the control at the tunnel. Less water than previously reported was now believed to be coming from the tunnel. The data had not been fully worked out and he did not have any handouts of the revised results.

John Blumer-Buell stated that he had not heard any reports from area residents of streams or springs going dry or being noticeably depleted during the pump test. However, there had been no coordinated effort to watch for such impacts during the pump test period.

Bill Pyle indicated that he was not convinced that well pumping was causing a depletion of tunnel flow and expressed the opinion that additional data should be collected. He also stated that Maui Pine might need to pump the well again within the next month due to dry weather conditions.

Bill Meyer was going to be out of town until August, and Bill Rozeboom was going to be out of town until mid-July. The panel supported a proposal that data continue to be collected for further analysis.
June 12, 1992

MEMORANDUM

FROM:  Bill Rozeboom

SUBJECT:  Kuhiwa Well Review Panel Meeting #2

Location and Date

The second meeting of the Kuhiwa Well Review Panel was held at the Kalanimoku Building, Honolulu, on June 12, 1992, from 11:00 am to 2:00 pm.

Attendance

Only three of the five parties were in attendance. John Blumer-Buell representing the Hana Community Association was absent because of heavy rain which cancelled his flight out of Hana. William Devick representing the Division of Aquatic Resources was not present due to a prior commitment. Persons present were:

Maui Pineapple representative: Bill Pyle
CWRM staff: Rae Loui, Ed Sakoda, and Bill Rozeboom
USGS staff: Bill Meyer and Iwao Matsuoka.

Presentation of Flow Data Corresponding to Pump Test

Bill Meyer presented the preliminary analysis of streamflow and tunnel flow data. His key conclusions were:

1) Well pumping appears to cause an impact on the water levels and flow from the tunnel near the well. This confirms the saturated aquifer theory.

2) The loss of discharge from the tunnel appears to account for approximately 70% to 80% of the well pumpage.

3) The remaining 20% to 30% of water pumped from the well is expected to come from nearby streams: Makapiipi Stream is the nearest and is most likely to supply much of the remaining flow. However, there were no measurements to confirm impacts on Makapiipi Stream.

4) The stream data for Hanawi stream were inadequate to determine any impact from well pumping due to rain events during the test period.

Bill Pyle reported that the well was not now being pumped because the well water was not presently needed in light of recent ongoing rains on Maui.

Rae Loui indicated that Bill Meyer would be making a presentation to the Commission on June 19 regarding the pump test findings. It was decided to invite the absent panel members, John Blumer-Buell and Bill Devick, to this briefing to bring them up to speed on the subject. A follow-up meeting of the panel would then be scheduled for a later date, allowing for a response from the Hana Community Association.
May 21, 1992

MEMORANDUM

FROM: Bill Rozeboom

SUBJECT: Kuhiwa Well Review Panel Meeting #1

Background

The Kuhiwa Well Review Panel was established by the Commission on Water Resource Management in October 1991, to assess Maui Pineapple Company Ltd.'s compliance with the conditions of a permit to install a pump in the "Kuhiwa" well located near Nahiku, on Maui.

The permit conditions and the review panel's duties are specified by the Commission's Decision and Order for Contested Case Hearing MA-CC-91-1. Primarily, the purpose of the panel is to assess any evidence that pumping the well may be causing a reduction of stream flows, and to report its findings to the Commission.

The first meeting of the review panel was held on May 21, 1992, at the Honolulu office of the U.S. Geological Survey.

Attendance

Hana Community Association (John Blumer-Buell)
Maui Pineapple Company, Ltd. (William Pyle)
Commission on Water Resource Management
   (Ed Sakoda & William Rozeboom)
State Division of Aquatic Resources (William Devick)
U.S. Geological Survey (William Meyer)

Compliance With Pre-Pumping Conditions

The panel reviewed the pre-pumping conditions of the Decision and Order and found that Maui Pineapple Company fully complied with all of the five pre-pumping conditions (D&O items 8a through 8e). These conditions are as follows:

- undertaking baseline biological surveys and selecting permanent monitoring sites in a manner satisfactory to the State Division of Aquatic Resources;

- re-establishing the USGS gaging station on Hanawi Stream below Big Spring;

- establishing a single manual gaging station along an unnamed stream flowing through TMK 1-2-01:14;

- locating and documenting perennial pools along Makapipi Stream;

- adequately notifying the Commission and the Hana Community Association of the scheduled commencement of pumping date.
Compliance with Pump Test Requirement

The review panel reviewed the commencement-of-pumping condition (D&O item 8f) and found that the commencement of pumping had been properly controlled as a pump test following a protocol determined by the CWRM and the USGS. The week-long pump test began on May 11, 1992, and was supervised by the U.S. Geological Survey.

In addition to the monitoring sites required by the Decision and Order, one additional site was established by the U.S. Geological Survey to monitor flows from a ground-water development tunnel located less than 500 feet from the well site. This site was established prior to the commencement of pumping, and was monitored throughout the pump test.

Pump Test Results

Preliminary results from the pump test were presented by William Meyer. The significant findings were:

1) The water level in the well stabilizes within four days. This means that the full impact of pumping on streams and springs in the region will be experienced within four days, and that the maximum possible impact would correspond to the maximum four-day average pump rate rather than a longer-term (annual) average pump rate.

2) Mr. Meyer concluded from the pump test results that there is definitely an impact on springs and/or streams in the vicinity of the well, and that this impact begins almost immediately after the pump is turned on.

3) As presently installed, the pump appears incapable of developing the design discharge of 700 gallons per minute. Because of this, the long-term (seven-day) pump test was run with a pump discharge of 480 gallons per minute.

Future Activities

William Pyle indicated that Maui Pineapple Company needed the capacity to pump 700 gpm from the well as initially proposed, and suggested that this might be accomplished by lowering the elevation of the pump within the well.

With knowledge that the well stabilizes within approximately four days, it is possible to develop a program of repeatable testing to monitor for impacts on specific springs and perennial pools. This possibility will be pursued.

The review panel tentatively scheduled its next meeting for November 1992, with the option to meet sooner if data or evidence are found which indicate a detectable impact of well pumping on springs and/or streams.
State of Hawaii
Department of Land and Natural Resources
Commission on Water Resource Management

Attn: Mr. Manabu Tagomori
Deputy Director

Re: Maui Pineapple Company, Ltd.
Kuhiwa Well Project
Pump Testing

Maui Electric Company expects to have power to the Kuhiwa Well on Thursday, April 16. Maui Pineapple expects to commence pumping on that day in order to satisfy the State Department of Health requirements. Pumping would be completed on Friday, April 17, and the required water samples collected. As you stated in your letter of March 6, 1992, this does not constitute commencement of pumping in the context of the Decision and Order.

The analysis of the samples will require 10 days by Brewer Environmental, from April 20 to May 1, 1992. The results of the analysis will require another week by the State Department of Health, from May 4 to May 8, 1992, to give us the clearance to begin pumping the water into the EMI ditch.

Commencement of test pumping of the well with the USGS is scheduled to begin on Monday, May 11, 1992, and will proceed for seven consecutive days. If you or any of your staff, or any of the review panel members would like to observe either pumping procedure, please let me know so we can make the necessary arrangements.

Sincerely,

William L. Pyle, PE
Project Manager

cc:L. D. MacCluer, Maui Pineapple Co.
    East Maui Irrigation Co.
    Review Panel Members
    Dennis Niles
Mr. Doug MacCluer  
Maui Pineapple Company, Ltd.  
870 Haliimaile Road  
Makawao, HI 96787

Dear Mr. MacCluer:

Kuhiwa Well Pre-Pumping Permit Conditions

This is to confirm Maui Pineapple Company, Ltd.'s compliance with pre-pumping conditions of the Commission on Water Resource Management's October 2, 1991 Decision and Order for the Kuhiwa Well pump installation permit. In summary,

1) baseline biological surveys of streams in the area have been conducted and have been approved by the State Division of Water Resource Management;

2) the USGS gaging station on Hanawi Stream below Big Spring has been re-established in a manner which meets the approval of the USGS;

3) a "V-notch" weir and staff gage has been established along the unnamed stream at TMK 1-2-01:14; and,

4) six pools along Makapipi Stream, plus one pool at the outlet of the unnamed stream have been located and documented in cooperation with local residents during field inspections on November 26, 1991, and February 24, 1992.

We understand that you need to flush the well and obtain a water sample for approval by the Department of Health before the pump test would be possible. As the pump operation for this purpose would be of limited duration and the water would be discharged into Makapipi Stream, we would not consider this to be the commencement of pumping in the context of the Decision and Order.
The only condition remaining prior to the commencement of the pump test is your notification of the Commission and the Hana Community Association of the scheduled commencement of pumping date (i.e., the pump test) not less than seven days prior to that date. Thank you for your continued cooperation.

Sincerely,

MANABU TAGOMORI
Deputy Director

cc: Review panel members
CWRM chairperson and members
March 4, 1992

Mr. Garret Hiu
East Maui Irrigation Company, Ltd.
P.O. Box H
Paia, Hawaii 96799

Dear Mr. Hiu:

This letter is a follow-up of the preliminary conversation you had with James Kanno of our Maui office regarding permission to install a water-stage recording station in the East Maui Irrigation system.

The site which we are interested in is located in the water development tunnel before the water gets piped into the headwater of the EMI ditch at Kuhiwa near Makapipli Stream (see attached map). We foresee almost no disturbances to the existing infrastructure. Please feel free to contact James Kanno for more details if you wish at 877-6135.

We expect to start our work soon after receipt of the approval notice from you. We plan to operate and maintain the station for at least a month thereafter. This data collection effort is part of the Kuhiwa Well pump test to be conducted by Maui Land and Pineapple Company. We are coordinating this portion of the data collection effort with the Department of Land and Natural Resources, State Water Commission.

This work in the tunnel will be done without any cost to either the EMI Company or Maui Land and Pineapple Company. Furthermore, your company will not be held liable for any damage or injury resulting from this permit.

Your approval of this request will be greatly appreciated.

Sincerely,

William Meyer
District Chief

Attachments

cc: Bill Rozenboom, State Water Commission,
Dept. of Land and Natural Resources

William Pyle, Maui Land and Pineapple Company
February 26, 1992

MEMORANDUM FOR THE RECORD

FROM: Bill Rozeboom

SUBJECT: Kukiwa Well Baseline Data Collection: Makapipi Stream Pools

On February 24, 1992, field inspections were made at several sites in the Nahiku region of Maui as a continuation of baseline data collection work first undertaken on November 26, 1991, for the Kukiwa Well Pump Installation Permit. The primary objective for this day was to locate and document perennial pools known by Mr. Kahookele to exist along Makapipi Stream. Participants for the day's inspections were:

- John Blumer-Buell (Hana Community Association (HCA) representative)
- Russell Kahookele (guide for HCA to locate perennial pools)
- Louise Kahookele (with video camera)
- John Romain (HCA member with video camera)
- Bill Pyle (representing Maui Pineapple Co., also with video camera)
- Skippy Hau (State Division of Aquatic Resources)
- Ed Sakoda & Bill Rozeboom (State CWRM staff)

The group met at 9:00 at the Nahiku road intersection at the Hana Highway. The weather for the full day was sunny, warm and quiet, with no wind. Antecedent conditions had been dry, and stream water levels were very low. Readings from our global positioning equipment (when readings were possible) were under selective availability (degraded) signal conditions with a readout accuracy of ± 300 feet.

The first perennial pool viewed was located immediately below the Hana Highway Bridge. Upstream of the bridge, Makapipi Stream was completely dry. The pool was large in size with no perceptible source of inflow as viewed from the bridge. The water appeared to be still with little or no flow. A small amount of trickling water was heard, but whether this was inflow to or outflow from the pool could not be determined from our vantage point. Photos taken.

A second perennial pool below the bridge reported to exist by Mr. Kahookele was not inspected due to difficult access. However, the third, fourth, and fifth pools below the bridge were inspected. The access to these is by a trail beginning off of the Nahiku Road approximately 1/4 mile mauka of the water tank.

The third pool is located at approximately 20°48'43.2"N and 155°05'52.2"W. It is a large pool located after a high vertical drop along the stream channel. There was no waterfall or observable flow into the pool from the stream above the pool. The pool did support aquatic life: Skippy Hau surveyed the pool and took specimens. Photos taken.

The fourth pool is located at approximately 20°48'46.0"N and 155°05'54.7"W. It is a very small pool, supplied with outflow from the third pool: there was flow in the stream between the third and fourth pools. However, there was no outflow from the fourth pool nor any water in the stream below. Mr. Kahookele said that this (fourth) pool it was at the
lowest level he had ever seen it. My impression was that it would be highly prone to going dry if the dry weather conditions persisted much longer. Photos taken.

The fifth pool was located a short distance, perhaps 150 yards, below the fourth pool at an elevation of around 750 feet. It was somewhat larger than the fourth pool, but much smaller than the first pool and another pool we would see later on the stream. There was no observable surface inflow to or outflow from the pool. Mr. Kahookele said that this (fifth) pool was also at the lowest level he had ever seen it. As with the fourth pool, my impression was that the fifth pool would be prone to going dry if the dry weather conditions persisted much longer.

The pool documented during the earlier inspection on November 26, 1991 at around elevation 400 feet (approximately) was not inspected this time.

The final pool inspected on Makapipi Stream below the bridge was accessed from a trail which begins just below the Makapipi Stream bridge crossing on the road to Nahiku Landing. Mr. Kahookele said that this pool was known as "Haita" pool (spelling not certain). It is located at elevation 200 feet (approximately) at the base of a high steep drop. The waterfall was dry; there was no surface water flow into the pool from the stream above the drop. Observable inflow to the pool consisted of groundwater seepage emerging approximately 10 to 20 feet above the water surface of the pool. There was surface outflow from this pool, and flowing water in the channel below the pool. Skippy Hau took aquatic specimens, including lentipes. We observed the markings for one of the biological survey sites a short distance below the pool and believe this is Site M6 referred to by Anne Brashner's report. Photos taken.

Makapipi Stream at the bridge crossing at the road to Nahiku Landing contained some standing water but no observable flow.

The pool near Nahiku Landing at the end of the unnamed stream was viewed. The pool level and inflow seemed about the same as had been previously documented on November 26.

The last area inspected was the Kuhiwa Well site plus East and West Makapipi Streams at the level of the Koolau Ditch. There was no flow or standing water in East Makapipi Stream either above or below the ditch intake. West Makapipi Stream was flowing above the Koolau Ditch Intake. Standing water and small pools could be observed in West Makapipi Stream below the intake.

We returned to Kahului at approximately 5:30.
The following photos were taken along the road to Nahiku. Photos taken from the bridge crossing at TMK 1-1-7:05, owned by Janet Redo. This was incidental to the Kuhiwa Well work. Registration and declaration of use forms had been mailed to Ms. Redo earlier in the month for her to declare their water use.

The stream was completely dry above the bridge crossing. A major spring emerges immediately below the highway. Ms. Redo said that it has been measured by EMI as having a flow of approximately 3 MGD. They use the water for watercress; her father, who has a lower property, uses the water for some taro.

Photo 1
Viewing downstream from bridge; water is emerging from ground.

Photo 2
Viewing downstream from bridge; same location as Photo 1; Redo house is in background.
February 24, 1992 Field Inspections
Kuhiwa Well Pump Installation Permit Conditions: Baseline Data

Photo 1: view from Wailua lookout

Photo 2: view from Wailua lookout
February 24, 1992 Field Inspections
Kuhiwa Well Pump Installation Permit Conditions: Baseline Data

Photo 3: Makapihi Stream at Hana Highway Bridge.
Viewing upstream to completely dry channel.

Photo 4: Makapihi Stream at Hana Highway Bridge.
Viewing downstream to first pool below bridge.
February 24, 1992 Field Inspections
Kuhiwa Well Pump Installation Permit Conditions: Baseline Data

Photo 5: Makapipi Stream below highway.
Third pool below bridge (second pool not inspected)

Photo 6: same as photo 5.
February 24, 1992 Field Inspections
Kuhiwa Well Pump Installation Permit Conditions: Baseline Data

Photo 7: Makapipi Stream below highway
Fourth pool below bridge, viewing upstream

Photo 8: same pool as photo 7; Skippy Hau in photo.
February 24, 1992 Field Inspections
Kuhiwa Well Pump Installation Permit Conditions: Baseline Data

Photo 9: Makapipi Stream below highway
From below fourth pool (below bridge), viewing upstream

Photo 10: Makapipi Stream below highway
Fifth pool below bridge, viewing downstream
February 24, 1992 Field Inspections
Kuhiwa Well Pump Installation Permit Conditions: Baseline Data

Photo 11
Makapipi Stream: "Haita" pool at approximately 200 feet elevation.

Photo 12
Lentipes concolor specimens collected from "Haita" pool by Skippy Hau.
February 24, 1992 Field Inspections
Kuhiwa Well Pump Installation Permit Conditions: Baseline Data

Photo 13: Makapipi Stream, "Haita" pool.

Photo 14: Same pool as above. Note algae growth around pool edges.
February 24, 1992 Field Inspections
Kuhiwa Well Pump Installation Permit Conditions: Baseline Data

Photo 15: Makapipi Stream, "Haita" pool.
Viewing downstream to outlet channel from edge of pool. Skippy Hau in photo.

Photo 16: Makapipi Stream approx. 50 yards below "Haita" pool.
Swimming hole below natural rock "slide".
Photo 17: Makapipi Stream approx. 50 yards below "Haita" pool. Natural rock control point above swimming hole shown by Photo 16.

Photo 18: Pool at end of unnamed stream at Nahiku Landing. Russell Kahookele in photo.
February 24, 1992 Field Inspections
Kuhiwa Well Pump Installation Permit Conditions: Baseline Data

Photos 19 & 20
Kuhiwa Well

Bill Rozeboom on left;
Bill Pyle on right.
February 24, 1992 Field Inspections
Kuhiwa Well Pump Installation Permit Conditions: Baseline Data

Photo 21: East Makapipi Stream immediately above Koolau Ditch; viewing upstream.

Photo 22: Tunnel at beginning of Koolau Ditch along East Makapipi Stream.
Mr. Doug MacCluer  
Maui Pineapple Company, Ltd.  
870 Haliimaile Road  
Makawao, Hawaii 96787  

Dear Mr. MacCluer:

Kuhiwa Well Pump Test Protocol

Enclosed herewith is the protocol for pump testing of the Kuhiwa Well. In accordance with the Commission on Water Resource Management’s Decision and Order for the Kuhiwa Well Contested Case, the protocol was determined by the State Division of Water Resource Management in cooperation with the USGS.

Sincerely,

[Signature]

MANABU TAGOMORI  
Deputy Director

BR:ko  
Enc.

cc:  Bill Pyle  
John Blumer-Buell  
Bill Devick  
William Meyer
PROTOCOL FOR KUHIWA WELL PUMP TEST

Design of Pump Test

The pump test for the Kuhiwa Well is to determine yield drawdown characteristics of the well. This should be accomplished by performing a step-drawdown test to determine the specific capacity of the well, followed by a long-term test. The water level in the well should be measured several days before the test.

The step-drawdown test should consist of running the pump at four different rates representing the full range of pump capacity (if the well yield can sustain this), starting with a low rate and concluding with a high rate. Each pump rate should be run for one hour before advancing to the next higher rate. Each new rate should be induced as rapidly as possible. If the drawdown does not stabilize for any particular pump rate, adjustment of the number of rates (not less than three) can be made in the field.

Following the step-drawdown test, the well should be allowed to recover overnight before initiating the long-term test. Water levels in the well should be recorded during this recovery period.

The flow rate for the long-term test should be the maximum the pump is capable of producing, subject to the results of the step-drawdown test. The test should be run 24-hours per day for at least seven days, perhaps longer if the water level in the well has not stabilized.

Water from the well must be carried off-site via the East Maui Irrigation ditch during the pump test. Water levels in the well and the pump flow rates must be measured as accurately as possible.

Method of Measurement

The flow rate from the pump should be measured with a recently tested and calibrated irrigation meter or similar device. The meter should have a spinning dial for accurate time/rate measurements and a totalizer for the total amount of water pumped. The discharge pipe should be valved to keep the pipe and meter filled with water, and to make adjustments in flow.

Water level measurements can be done with either an airline using a manometer or an air pressure gauge. A recording pressure gauge should be added to preserve the record of drawdown and to pick up any hydrologic barriers that may be encountered. In addition, water levels should be very accurately measured with an electric line which the U.S. Geological Survey will make available for the test.
January 13, 1992

Mr. Manabu Tagomori
Deputy Director
Commission on Water Resource Management
P. O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Tagomori:

Baseline Biological Surveys for Kukiwa Well

Under the Decision and Order for the Kukiwa Well Contested Case, MA-CC-91-1, the Commission on Water Resource Management designated the State Division of Aquatic Resources as being responsible for approving (or disapproving) biological surveys conducted prior to pumping of the Kukiwa Well.

We have reviewed Anne Brasher's report dated October 17, 1991, entitled "Baseline Aquatic Survey of Kukiwa Stream, Makapipi Stream and Hanawi Stream; Maui, Hawaii." We approve of the protocol employed for the baseline surveys and the selection of permanent monitoring sites.

Sincerely,

WILLIAM DEVICK
Program Manager

cc: Review Panel Members
Mr. Manabu Tagomori
Deputy Director
State of Hawaii
Department of Land and Natural Resources
Commission on Water Resource Management
P.O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Tagomori:

Enclosed is my response to your letter of December 18, 1991 on the proposed protocol for the Kuhiwa Well pump test. As requested in your letter, I have discussed these comments with Glen Bauer of your office.

Thank you for the opportunity to review the recommendation.

Sincerely,

William Meyer
District Chief

Enclosure
**Design of the Pump Test**

I agree that the step drawdown test should be run at four different rates representing the full range of pump capacity (if the well yield can sustain this) as suggested. Also, each rate should be run for one hour as indicated in your letter. However, once set, I'd suggest that the rate should not be changed. A given pump rate should be continued for the entire hour's period and then a new rate induced as rapidly as possible. Adjusting the rate at anytime during the step drawdown test would preclude one's ability to determine any hydraulic properties from the long-term test or from the step drawdown test.

I'd also suggest that the well should be allowed to recover overnight from the step drawdown before initiating the long-term seven day pump test. The flow rate should not necessarily be the maximum the pump is capable of producing, but should be determined from the results of the step drawdown test.

**Method of Measurement**

The method described for measuring flow is fine. However, water levels need to be measured by a technique more accurate than an airline. The USGS will make an electric line available for the test. This line should be used throughout the test.

Finally, water levels should be measured several days before the test and between the step drawdown and long-term test.
Mr. William Meyer  
District Chief 
U.S. Geological Survey 
677 Ala Moana Blvd., Suite 415 
Honolulu, Hawaii 96813 

Dear Mr. Meyer: 

Kuhiwa Well Pump Test Protocol 

Under the Commission’s Decision and Order for the Kuhiwa Well Contested Case, MA-CC-91-1, the protocol for pump testing of the Kuhiwa Well by Maui Pineapple Company is to be determined by the State Division of Water Resource Management in cooperation with the USGS. 

Enclosed for your review and comment is our proposed protocol for the Kuhiwa Well pump test. Your early review of the proposed protocol would be appreciated so that Maui Pineapple Company can be advised of the requirement at the earliest possible date. 

Please contact Glenn Bauer at 587-0263 should you have any concerns which need to be discussed. 

Sincerely, 

MANABU TAGOMORI 
Deputy Director 

BR:fc 
encls.
PROPOSED PROTOCOL FOR KUHIWA WELL PUMP TEST

1) **Design of Pump Test**

The pump test for the Kuhiwa Well is to determine yield drawdown characteristics of the well. This should be accomplished by performing a step-drawdown test to determine the specific capacity of the well, followed by a long-term test.

The step-drawdown test should consist of running the pump at four different rates representing the full range of pump capacity, starting with a low rate and concluding with a high rate. Each pump rate should be run for one hour before advancing to the next higher rate. If the drawdown does not stabilize for any particular pump rate, adjustment of time for each rate and the number of rates (not less than three) can be made in the field.

The long-term test can start immediately after completion of the step-drawdown test. The flow rate should be the maximum the pump is capable of producing. The test should be run 24-hours per day for at least seven days, perhaps longer if the water level in the well has not stabilized.

Water from the well must be carried off-site via the East Maui Irrigation ditch during the pump test. Water levels in the well and the pump flow rates must be measured as accurately as possible.

2) **Method of Measurement**

The flow rate from the pump should be measured with a recently tested and calibrated irrigation meter or similar device. The meter should have a spinning dial for accurate time/rate measurements and a totalizer for total amount of water pumped. The discharge pipe should be valved to keep the pipe and meter filled with water, and to make adjustments in flow.

Water level measurements can be done with either an airline using a manometer or an air pressure gauge. A recording pressure gauge can be added to preserve the record of drawdown and to pick up any hydrologic barriers that may be encountered. Direct measurement using an accurate tape should be made to validate the recording pressure gauge record.
November 27, 1991

MEMORANDUM FOR THE RECORD

FROM: Bill Rozeboom

SUBJECT: Kuhiwa Well Baseline Data Collection

On November 26, 1991, field inspections were made at several sites in the Nahiku region of Maui as part of baseline data collection work for the Kuhiwa Well Pump Installation Permit. Participants for these inspections were: Bill Meyer, Iwao Matsuoku and James Kanno all from the USGS, Bill Pyle representing Maui Pineapple, John Blumer-Buell representing the Hana Community Association, and myself. The full group met at 10:30 at the Nahiku Pump at Hanawi Stream. The weather was sunny and pleasant for the full period of inspections, although showers had reportedly occurred earlier in the morning.

From the highway, we observed a large pool on Makapipi Stream immediately below the bridge. John Blumer-Buell stated that this pool always had water in it to the best of his knowledge. There was some low flow in Makapipi Stream at the highway. At Hanawi Stream, it appeared that most or all of the flow at the highway was being diverted by the pump station.

The first site inspected was a perennial pool on Makapipi Stream at around 400 feet elevation (very approximate), shown to us by Ms. Huelo Stoner who lives nearby. The access trail to the pool begins on the mauka side of the road at an abandoned and heavily vegetated truck located between power poles labelled 19 and 20 with large numbers (also labelled 22 and 23 with small numbers).

The pool is located beneath a waterfall which was flowing during the inspection. Ms. Stoner, who has approximately 20 years' knowledge of the pool said that the waterfall would dry up during dry periods but that the pool itself always had water and seemed to be spring-fed. During such dry periods, the pool level would drop to where there would be no surface outflow and the pool would collect floating debris, but it would seem to have fresh water possibly from a spring discharging directly into the pool. Photos taken. A second pool above the waterfall (not inspected) would reportedly become stagnant without any inflow during such dry periods.

The second site inspected was a pool near Nahiku Landing, at the end of the unnamed stream. There was very little inflow to the pool, perhaps 0.01 cfs. Photos taken.

The third site inspected was the unnamed stream where it flows through the property owned by Michael Behrens. The access trail to this property is located immediately makai of the Nahiku Landing road bridge crossing of Makapipi Stream. The trail to Behrens's property is the makai trail of two trails which start at about the same point. The flow of the stream at the property was significantly greater than at the downstream pool observed previously. Efforts to contact Dr. Behrens the previous week to arrange for the inspection had been unsuccessful, and he was not present. Without him as a guide, we were unable to locate the intake for his domestic supply, or establish a suitable site for installing a gage to monitor the flow. Photos taken.

The fourth and final site inspected was the Kuhiwa Well, where work was underway to lower casing into the well shaft. Photo taken. A reading of the location using GPS equipment under "SA" degraded signal conditions indicated approximately 20°48'12.5" North Latitude; 156°06'20.5" West Longitude.

We returned to Kahului at approximately 6:30.
Field Inspection of November 26, 1991
Nahiku, Maui related to Kuhiwa Well

Photo 1: Perennial Pool on Makapipi Stream
Located at end of trail beginning near Stoner residence

Photo 2: Same pool as Photo 1.
Field Inspection of November 26, 1991
Nahiku, Maui related to Kuhiwa Well

Photo 3: Same pool as Photos 1 and 2.

Photo 4: Pool at end of unnamed stream below Behrens' property.
Field Inspection of November 26, 1991
Nahiku, Maui related to Kuhiwa Well

Photo 5: Same Pool as Photo 4 (unnamed stream)
John Blummer-Buell in photo.

Photo 6: Viewing downstream (no channel) from unnamed stream pool
Taken from same spot, different direction, as Photos 4 and 5.
Field Inspection of November 26, 1991
Nahiku, Maui related to Kuhiwa Well

Photo 7: at Nahiku Landing near location of unnamed stream pool.
L to R: James Kanno, Iwao Matsuoku, Bill Meyer, John Blumberg-Buell, Bill Pyle

Photo 8: Property of Michael Behrens, TMK 1-2-01:14 with unnamed stream.
Behrens not present, we were unable to locate his water intake.
Field Inspection of November 26, 1991
Nahiku, Maui related to Kuhiwa Well

Photo 9: view upstream from bridge over unnamed stream at Behrens' property

Photo 10: view downstream from same bridge as Photo 9.
Field Inspection of November 26, 1991
Nahiku, Maui related to Kuhiwa Well

Photo 11: West Makapipi Stream at EMI Koolau Ditch

Photo 12: Kuhiwa Well casing being lowered.
Mr. Doug MacCluer  
Maui Pineapple Company, Ltd.  
870 Haliimaile Road  
Makawao, HI 96787  

Dear Mr. MacCluer:

Kuhiwa Well Review Panel

This is to identify initial contact persons for the five-member review panel established as a condition for your pump installation permit for the Kuhiwa Well.

<table>
<thead>
<tr>
<th>Party</th>
<th>Contact Person</th>
</tr>
</thead>
</table>
| Maui Pineapple Co., Ltd.  
870 Haliimaile Road  
Makawao, Maui, HI 96787  
(Ph. 572-7211) | William (Bill) Pyle  
AG Systems Hawaii  
Ph. 572-5910 |
| Hana Community Association  
P.O. Box 202  
Hana, Maui, HI 96713  
(Ph. 248-8345) | John Blumer-Buell  
Ph. 248-8972 |
| State of Hawaii  
Commission on Water Resource Management  
P.O. Box 621  
Honolulu, Oahu, HI 96809 | William (Bill) Rozeboom  
Division of Water Resource Management  
Ph. 587-0262 |
| State of Hawaii  
Division of Aquatic Resources  
1151 Punchbowl St., Room 330  
Honolulu, Oahu, HI 96813 | William (Bill) Devik  
Ph. 587-0110 |
| U.S. Geological Survey  
Water Resources Division  
677 Ala Moana Blvd., Suite 415  
Honolulu, Oahu, HI 96813 | William (Bill) Meyer  
Ph. 541-2653 |
We understand that the respective parties are constructively working together to satisfy the pre-pumping baseline data collection requirements. No formal meeting of the full review panel has been scheduled at this time, although at least one such meeting may be required before the commencement of pumping.

Please contact Bill Rozeboom at 587-0262 if you have any questions.

Sincerely,

[Signature]

MANABU TAGOMORI
Deputy Director

BR:fc

cc: CWRM Members
Review Panel Parties
A model example of decision-making

EDITORIAL

Much attention has been focused on the dwindling water supply for Central Maui and the tussle between state and county officials over who will control the tap. We have supported home rule in this case and continue to do so. But having said that, the state deserves applause for its action on a water situation in East Maui that has not attracted the same high level of interest.

These are trying times for the U.S. pineapple industry. Castle & Cooke is rapidly nearing the end of pineapple operations on Lanai, and earlier this month announced massive layoffs at its Dole Cannery on Oahu. That cannery is destined for closure, leaving Maui Land & Pineapple Company’s facility in Kahului as the only cannery in the state.

Cheap labor abroad has tightened the screws on the pineapple industry here at home, but Maui Pine has vowed to stick it out as long as possible, while at the same time building protective flanks by diversifying into land management with the purchase of Kaahumanu Center and development at Kapalua. The largest corporation in the state to be headquartered on Maui, ML&P employs 900 people.

The company recently said it needs another water source to maintain adequate irrigation during the dry years and enable it to remain competitive, sought to install a pump in Nahiku that would draw from an artesian aquifer.

Important concerns were raised by the Hana Community Association over the effects such pumping would have on several streams in East Maui. The state Commission on Water Resource Management, however, noted a lack of evidence as to what degree the pumping would affect the streams, while at the same time concluding that there would indeed be some effect.

A detrimental effect? The commission simply could not say.

The commission then struck a deal sympathetic both to the plight of industry and ecology. Maui Pine can start pumping, but must maintain vigilant monitoring procedures to record the levels of all water sources that may be affected and report them to the state.

In order to deflect any charge that Maui Pine is being allowed to police itself with no other eyes watching, the commission ordered that the monitoring process be reviewed by a panel consisting of representatives of the Hana Community Association, the company and the state.

And finally and most importantly, the commission ordered that at the first sign of evidence that the pumping is reducing the flow of any streams, the pumping must stop pending further study.

The commission’s action is an example of decision-making at its best. It accommodates the efforts of an industry important to the economic life of this community to remain viable, but not at the expense of sacrificing our fragile ecology. That’s how government is supposed to work.
October 10, 1991

Mr. William W. Paty  
Dept. of Land & Natural Resources  
P. O. Box 621  
Honolulu, Hawaii 96809

Dear Bill:

We have received a Decision and Installation Permit for Kahiwa Well.

All of us at Maui Pine would like to thank you and your staff for your assistance. Without your help we would no longer be able to remain in the pineapple business.

Sincerely,

L. D. MacCluer  
Plantation Manager
October 10, 1991

Mr. Manabu Tagamori
Dept. of Land and Natural Resources
P. O. Box 621
Honolulu, Hawaii 96809

Dear Manabu:

All of us at Maui Pine would like to thank you for your assistance in helping us get the Decision and Pump Installation Permit for Kuhiwa Well.

Without this, Maui Pine would cease to exist in the Pineapple business in the Up-country area.

Sincerely,

L. D. MacCluer
Plantation Managr

LDM/sj
Editor
The Maui News
P.O. Box 550
Wailuku, HI 96793-0550

Dear Sir:

Commission on Water Resource Management's
First Contested Case Decision and Order

Enclosed for your information is a copy of the Findings of Fact, Conclusions of Law, and Decision and Order signed by the Commission on Water Resource Management on October 2 to conclude its first contested case proceeding.

The contested case involved an application by Maui Pineapple Company, Ltd. for a permit to install a pump on an existing well near Nahiku, Maui. The Hana Community Association requested the contested case over concerns that the proposed pumping might affect the flows of streams in the vicinity of the well.

This first Decision and Order is a milestone in the Commission's implementation of the State Water Code, and a precedent-setting standard for future Commission actions. We expect that it may be of interest to your readers.

Very truly yours,

[Signature]

Enc.
Mr. Ned Iliahi Goodness  
P.O. Box 924  
Puunene, Hawaii 96784

MA-CC-91-1 Decision and Order

This will confirm that the Findings of Fact, Conclusions of Law, and Decision and Order, signed by the Commission on Water Resource Management on October 2, 1991, was mailed to you on October 3, 1991. This is the outcome of the Kuhiwa Well Contested Case, MA-CC-91-1, to which you were a party.

The Commission staff was unable to contact you by phone on October 3 to notify you of the availability of the document and ask whether you would like to arrange for it to be picked up from our office. It was mailed to you that day without a cover letter so that you would receive it at the earliest possible date.

Very truly yours,

[Signature]

WILLIAM W. PATY
Mr. Arnold Lum, Esq.
Sierra Club Legal Defense Fund
212 Merchant Street, Suite 202
Honolulu, Hawaii 96813

Dear Mr. Lum:

MA-CC-91-1 Decision and Order

This will confirm that you have received the Findings of Fact, Conclusions of Law, and Decision and Order, signed by the Commission on Water Resource Management on October 2, 1991, for the Kuhiwa Well Contested Case, MA-CC-91-1. You personally picked up that document from our Honolulu office on October 3 after being verbally notified of its availability.

Very truly yours,

[Signature]
WILLIAM W. PATY
CHAIRPERSON
Mr. Dennis Niles, Esq.
Paul, Johnson, Alston & Hunt
P.O. Box 870
Wailuku, Hawaii 96793-0870

Dear Mr. Niles:

MA-CC-91-1 Decision and Order

This will confirm that you have received the Findings of Fact, Conclusions of Law, and Decision and Order, signed by the Commission on Water Resource Management on October 2, 1991, for the Kuhiwa Well Contested Case, MA-CC-91-1. You had that document messenger-delivered to you from our Honolulu office on October 3 after being verbally notified of its availability.

Very truly yours,

WILLIAM W. PATY
October 3, 1991

MEMORANDUM

TO: W. Paty, J. Lewin, R. Nakata, G. Fujimura, W. Tam
AND: W. Devik, W. Meyer
FROM: Manabu Tagomori

SUBJECT: MA-CC-91-1; Maui Pine Kukiwa Well Decision and Order.

Enclosed for your records is the Commission's Findings of Fact, Conclusions of Law, and Decision and Order for the Kukiwa Well Contested Case, signed on October 2, 1991.

Attorneys for the Applicant, Maui Pineapple, and for the Petitioner, Hana Community Association, were notified by phone of the signed Decision and Order, which they subsequently picked up at the Division of Water Resource Management office in Honolulu on the morning of October 3. Intervenor Ned Goodness could not be contacted by telephone, and his copy of the Decision and Order was mailed to him on October 3.

By this memorandum, copies of the Decision and Order are also being sent to the State Division of Aquatic Resources (W. Devik) and also to the U.S. Geological Survey (W. Meyer), which are identified by the Decision and Order as participants in a review panel established under the Decision and Order.
By application dated August 17, 1990, Maui Pineapple Company, Ltd. (hereinafter "Applicant" or "Maui Pine") requested approval of a permit to install a well pump with the capacity to withdraw up to 1.0 million gallons of water per day (MGD) from the Kuhiwa Well at Nahiku, Maui, Hawaii.

At the December 19, 1990 meeting of the Commission on Water Resource Management (hereinafter "Commission") to consider Applicant's request, the Hana Community Association (hereinafter "HCA" or "Petitioner"), through counsel, requested a contested case hearing on the application.

On March 25, 1991, the Commission published notice of the contested case hearing in The Maui News and the Honolulu Star Bulletin. The notice informed interested parties that the Commission intended to conduct a contested case hearing on the application, and that applications for intervention were to be filed by April 15, 1991.
Subsequently the Commission granted intervention to the HCA and Ned Iliahi Goodness.


Dennis Niles, Esq., and Arnold Lum, Esq., appeared at both hearings as counsel for Applicant and HCA respectively. Mr. Goodness appeared at the first hearing but waived his right to appear and participate at the second hearing.

The Commission, having fully heard and examined the testimony, evidence and argument of counsel presented during the hearing, the proposed findings of fact, conclusions of law, and decision and order submitted by the Applicant and Petitioner, after deliberation hereby makes the following findings of fact and conclusions of law, and issues its decision and order:

I. FINDINGS OF FACT

A. Applicant

1. Maui Pine is engaged in the business of the cultivation, processing, marketing, and distribution of canned
pineapple. Hartley, p. 3. The company employs approximately 900 year round employees, and a number of seasonal laborers. Tr. I, p. 64.

2. The pineapple business is cyclical and very competitive. Over the past 10 years, the company was profitable in the first seven years, but lost money in the last three years. In 1990, the company had a record loss of approximately 6.5 million dollars on gross sales of approximately 70 million dollars. Tr. I, pp. 43-44.

3. The company cultivates approximately 8,000 acres of pineapple on the island of Maui, of which approximately 1,700 acres is under cultivation in Central Maui. Tr. I, pp. 34-35. The 1,700 acres of pineapple crop in Central Maui is supplied with irrigation water drawn from the Koolau Ditch of the East Maui Irrigation (EMI) distribution system. Hartley, p. 3; Tr. I, pp. 18 and 31.

4. Maui Pine use of water from the EMI system is made under an agreement with East Maui Irrigation, Inc, which requires Maui Pine to supply the ditch with a quantity of water equivalent

\footnote{Citations to the written direct testimony submitted in this proceeding will be to the name of the author, e.g., "Hartley", "Behrens", etc.}

\footnote{Citations to the transcript of the contested case hearing held on May 30, 1991 will be referenced as "Tr. I, p. _". Citations to the transcript of the reconvened contested case hearing held on June 19, 1991 will be referenced as "Tr. II, p. _".}
to the amount which it withdraws, plus a factor for transmission losses. From 1956 through 1989, the agreement allowed Maui Pine to accumulate water credits by pumping water into the ditch during rainy periods when withdrawals for irrigation were not required and to use those credits by withdrawing irrigation water during dry periods. Hartley, pp. 3-4.

5. Maui Pine's maximum withdrawal from the EMI system for pineapple irrigation under the pre-1989 agreement was 1.5 MGD. This daily quantity of water was sufficient for periods when irrigation was required. Tr. I, p. 31.

6. Maui Pine's existing source for supplying the Koolau Ditch is the Hanawi Pump Station, located on Hanawi Stream immediately below the Hana Highway. This source withdraws surface water from Hanawi Stream through a pipe which is installed behind a dam on the stream. Tr. I, p. 181.

7. The maximum pumping capacity of the Hanawi Pump is approximately 0.5 MGD. Tr. I, pp. 31 and 74. On an annual basis, this pumping capacity has been sufficient to meet Maui Pine's annual irrigation requirements in Central Maui. From 1983 through 1987, Maui Pine diverted between 110 and 148 million gallons annually from Hanawi Stream through the operation of the Hanawi Pump. Applicant's Exhibit E (Registration and Declaration of Water Use Form).
8. In 1989, Maui Pine and EMI concluded a new agreement, under which Maui Pine will no longer be able to accumulate water credits, and will instead be limited each day to withdrawing the quantity of water it actually puts into the ditch on that same day, less transmission losses. Hartley, pp. 4-5. Maui Pine is, however, presently able to continue accumulating water credits under a two-year extension of its pre-1989 agreement with EMI. This extension will expire on December 31, 1991. Tr. I, pp. 61-62.

9. In conjunction with the new agreement, EMI granted Maui Pine permission to utilize and operate the Kuhiwa Well, located on land owned by EMI. By application dated August 17, 1990, Maui Pine applied to the Commission for a permit to install a 700 gpm (1.0 MGD) capacity pump on the Kuhiwa Well.

10. Maui Pine desires to operate the Kuhiwa Well (1.0 MGD capacity) in addition to the Hanawi Pump Station (approximately 0.5 MGD capacity) such that Maui Pine's total capacity for putting water into the EMI ditch system on a daily basis is approximately 1.5 MGD.

11. Maui Pine claims it needs to operate the Kuhiwa Well. "Pumping from Kuhiwa Well is absolutely essential during dry years to drip irrigate the company's East Maui fields to the extent necessary to keep them healthy and productive." Pyle, p. 6. "We can't reduce our volume and continue to be a reliable
source of supply to the private pineapple trade." Tr. I, p. 35 (Hartley). "It's the kind of thing that can destroy a business. I'm seriously concerned that it would destroy ours." Tr. I, p. 36 (Hartley).

B. Intervenors

12. The Hana Community Association (HCA) is comprised of individual residents of the Hana District of Maui. The HCA does not oppose the issuance of a pump installation permit. Tr. II, p. 84. Rather, HCA's concerns center on the terms and conditions pursuant to which Maui Pine will be allowed to draw water from the Kuhiwa Well. Id.

13. The central issue raised by the HCA relates to the possible effect of well pumpage on the flow of streams and springs in the area, including the Hanawi and Makapipi streams and on the Behren's spring and Big Spring, and the kind of monitoring needed to judge the effects, if any. Minute Order No. 1.

13. Ned Iliahi Goodness claims an interest in a Royal Patent (Grant) 4448, (Parcel 26, Nahiku), located in TMK 1-2-04:03. Kuhiwa Well is also located in TMK 1-2-04:03. Mr. Goodness also appears concerned with appropriate conditions for the issuance of a permit. He urges monitoring of the impact of pumping, the adoption of an allocation system that favors taro
farming, and the cessation of pumping "for cause." Tr. I, p. 188.

C. Nature of Surface Waters in the Vicinity of Kuhiwa Well

14. The Kuhiwa Well is located in the vicinity of three streams which exhibit reaches of perennial flow and which provide aquatic habitat and other instream values. These streams are: 1) Hanawi Stream; 2) Makapipi Stream; and 3) an unnamed stream (hereinafter "unnamed stream") which flows through a property owned by Dr. Michael Behrens.\(^3\) All of these streams discharge into the ocean approximately 10,000 feet makai of the Kuhiwa Well.

Hanawi Stream

15. Hanawi Stream is located approximately 4,000 feet to the west of the Kuhiwa Well at its nearest point. Big Spring, a major spring providing much of the base flow of Hanawi Stream, is located on Hanawi Stream approximately 5,500 feet makai of the well.

16. Hanawi Stream is presently diverted by EMI's Koolau Ditch and by Maui Pine's Hanawi Pump, located about 1,500 feet below the ditch. Hanawi Stream has perennial flow above the ditch. Tr. I, pp. 115, 116.

\(^3\)Dr. Behrens is a member of the Hana Community Association.
17. Hanawi Stream has perennial flow from Big Spring to the ocean. Nearly 21 years of historical streamflow records are available on Hanawi Stream below Big Spring. These include 15 years at USGS gage station 16509000, Hanawi Stream Below Government Road, near Nahiku, operated from July 1932 through July 1947, and 5-1/2 years of record collected at the same site by East Maui Irrigation from January 1927 through June 1932. The average 15-year discharge recorded by the USGS was 27.1 MGD. The minimum flow recorded during the 21 years of record was 8.2 MGD, occurring in 1936. The second lowest recorded discharge was 9.5 MGD, occurring in both 1931 and 1935. Commission Submittal Item 10, December 19, 1990.

18. Hanawi Stream is generally regarded as one of the most biologically productive East Maui streams for three species of native o'opu, and also provides habitat for the native hihiwai snail and the 'opae shrimp. Yuen, p. 1. It is rated by the United States Fish and Wildlife Service (USFWS) as one of the highest quality streams in the state and by the Hawaii Department of Land and Natural Resources as one of the high quality streams in the State. Tr. II, pp. 38 and 58.

19. Hanawi Stream is used by Hawaiian families for gathering hihiwai, o'opu, and 'opae. Kahookele, p. 1; Bergau, p. 1.
Makapipi Stream

20. At its nearest point, West Makapipi Stream is located less than 1,000 feet west of the Kuhiwa Well. East Makapipi Stream is located less than 1,500 feet east of the Kuhiwa Well. The confluence of these two main tributaries of Makapipi stream is located approximately 2,500 feet makai of the Kuhiwa Well.

21. West Makapipi Stream is presently diverted by EMI's Koolau Ditch. There are no other known existing diversions of Makapipi Stream.

22. Makapipi Stream flows are intermittent, but there are perennial spring-fed pools within the stream below the ditch. Kahookele, p. 1; Bergau, p. 1.

23. Makapipi Stream is described in the Hawaii Stream Assessment as an "outstanding" stream, and supports a diverse assemblage of native species. Tr. II, p. 58. Native fishes and invertebrates are present in the stream. Yuen, p. 1. 'Opae and two species of o'opu have been found in the stream. Kahookele, p. 1; Petitioner's Exhibit "E".

24. Makapipi Stream is used by Hawaiian families for gathering o'opu, prawns, and 'opae. Bergau, p. 1.
**Unnamed Stream**

25. The unnamed stream is located between Hanawi and Makapipi Streams. It flows through the property at TMK 1-2-01:14 owned by Dr. Michael Behrens, and flows into a pond near the ocean in Lower Nahiku. Behrens, p. 1; Bergau, p. 1.

26. Two springs provide water to the unnamed stream. An upper spring at the head of the stream is located just makai of the highway, and is approximately 4,000 feet makai of the Kuhiwa Well. A second spring is located at a waterfall about halfway between the upper spring and the ocean, and is approximately 7,500 feet makai of the Kuhiwa Well. The property owned by Dr. Behrens is located downstream of both springs. Map by Commission staff; map from Stearns and Macdonald, Bulletin 7, 1942; Behrens Statement of Fact, p. 1.

27. The unnamed stream has perennial flow through the property owned by Dr. Behrens and also where it flows into a pond near the ocean in Lower Nahiku. Behrens, p. 1; Kahoekele, p. 1; Bergau, p. 1.

28. On May 24, 1991, Dr. Behrens estimated the flow of the unnamed stream on his property as three (3) gallons per second by placing a five gallon bucket in the stream. This flow rate corresponds to 0.26 MGD. Conditions in the Nahiku area were
quite dry on the date of measurement and streams in the area were at a low level. Behrens Statement of Fact, p. 1.

29. Of the estimated 3 gallons per second flow in the unnamed stream on May 24, 1991, Dr. Behrens further estimated that approximately one half of the flow originated at the (lower) spring at the waterfall and that the remainder of the flow originated from above the waterfall. Tr. I, pp. 155-156.

30. The unnamed stream is the sole source of water for Dr. Behren's property, where it is used for drinking, bathing, and for irrigation of plants, and aesthetics. Behrens, p. 1. The pool at the end of the stream at Nahiku landing is used for recreational purposes by the Nahiku community and has been traditionally used as a source of water in drought periods for residents of lower Nahiku whose homes do not have access to the county water line. Behren's Statement of Fact, p. 1.


D. Effects on Surface Water by Pumping Ground Water at Kuhiwa Well

32. When water is pumped from a well, the water taken from the ground has to be balanced by a loss of water from somewhere else. Tr. I, p. 111.
33. If the groundwater body tapped by the well is connected to springs and/or streams, then pumping the well will cause the flow of the springs and/or streams to be reduced. Id.

34. If the groundwater body is not connected to springs and/or streams, then pumping the well would not have any effect on these. Id.

35. Hanawi Stream is generally connected to a groundwater body, as evidenced by perennial flow at a USGS gage above the Koolau Ditch, and by gaining flows and perennial flow below the ditch. Tr. I, pp. 115-116.

36. There is insufficient information to conclude that Makapipi Stream is generally connected to a groundwater body. Tr. I, p. 113. However, reports of perennial pools and springs shown on a map by Stearns and Macdonald indicate that some groundwater connections may exist. Bergau, p. 1; Stearns and Macdonald, Bulletin 7, 1942.

37. There is insufficient information to conclude that the unnamed stream is generally connected to a groundwater body. However, the perennial nature of the stream through the property owned by Dr. Behrens and springs shown on a map by Stearns and Macdonald indicate that some groundwater connections may exist. Behrens, p. 1; Stearns and Macdonald, Bulletin 7, 1942.
38. Two opposing models of groundwater behavior in the Nahiku region were described to the Commission by expert witnesses Doak Cox and William Meyer respectively.

39. Doak Cox has served as director of the University of Hawaii's Water Resources Research Center (1964-70) and Environmental Center (1970-85). Dr. Cox was involved in the original geohydrology studies which led to the development of the Kuhiwa Well in the 1940s. In 1980, he assessed possible downstream effects of diverting water from Hanawi Stream in the area of the Big Spring. Cox, pp. 2, 3 (Exhibit DT-3).

40. William Meyer is the District Chief of the Water Resources Division, United States Geological Survey, Pacific Region.

41. The data and analyses available at this time are insufficient to determine which of the two opposing models of groundwater behavior best describes conditions in the Nahiku region for purposes of predicting effects of well pumpage. However, the two models concur in several significant ways.

42. Due to highly complex geological conditions, neither groundwater model is able to specifically predict the full impact of well pumping in terms of where all impacts would occur, or the expected magnitude of impact at any point along the streams in the region. Tr. II, p. 13.
43. Both groundwater models suggest that well pumping will have some impact on the flow of Big Spring into Hanawi Stream. Commission Staff Exhibit 2. However, neither model can conclude at this time that the impact would be of sufficiently large magnitude in relation to the normal flow of the stream at that point to be detectable.

44. In terms of predicting impacts on streams from well pumping, the only significant difference between the groundwater models is in whether any impact is possible above the elevation of the standing water level in the existing open well hole. This elevation, approximately 1,100 feet, corresponds approximately to the elevation of the Hana Highway in this area. The model presented by Doak Cox suggests that impacts can only occur on streams and springs at elevations lower than this elevation. The model presented by William Meyer suggests that impacts might occur on springs and streams both above and below this elevation. Commission Staff Exhibit 2.

45. Approximately 50 files with information on exploratory wells in the Nahiku area have been located which, if analyzed, might provide more evidence on which of the two opposing models of groundwater occurrence is most applicable in the Nahiku area. Tr. II, pp. 7, 12-13. However, a determination of the more applicable model would likely only answer the question of whether impacts might occur above the Hana Highway in addition to below the highway.
46. After pumping begins, the response time before there is any impact on flows of streams and springs might be anywhere from a few days to as long as ten years. Tr. II, p. 20. The uncertainty of how long it would take for impacts to result is due to uncertainty over the properties of rocks that exist between the well and the streams. Tr. II, p. 19.

47. Because pumping will be intermittent, the maximum possible impact on flows of streams and springs is related to the response time before any impact occurs. Tr. II, pp. 20-23.

48. Maui Pine's historical water usage over the last 15 years suggests that pumping of the Kuhiwa well would occur on approximately 43 days per year on average. In any single year, pumping of the well would occur for anywhere from 0 (zero) days to 100 days during the year. The historical usage data also suggest that continuous pumping (running the pump 24 hours per day) would not occur for more than 50 days consecutively. The greatest use would occur during dry years with low rainfall. Pyle, Exhibit T-2-D.

49. If the response time for an impact to occur is longer than the consecutive days of pumping, then the maximum possible impact on flows of streams and springs should be less than 1.0 MGD, the maximum pumping rate. If the response time is longer than several years, then the maximum possible impact should
approach \((1.0 \times 43/365) = 0.12\) MGD, the average pumping rate.
Tr. II, pp. 20-23.

50. The significance (and detectability) of a surface water flow reduction is related to the amount of flow which would otherwise occur. For example, a flow reduction of 0.25 MGD at the springs feeding the unnamed stream or perennial pools along Makapipi stream might cause that stream or the pools to go completely dry and be readily detectable. However, the same 0.25 MGD level of flow reduction at Big Spring would be extremely difficult to detect.

51. Given present information, it is not possible to predict the total impact on surface waters in the Nahiku region which would result from pumping of the Kuhiwa well. Tr. II, p. 13. At one extreme, the impact might be an undetectable loss of flow totalling less than 0.12 MGD. At the other extreme, it might be a highly detectable drying up of normally perennial small springs and streams, and have a total magnitude equal to the pump capacity, 1.0 MGD.

E. Determining Impacts on Instream Flows

52. The only method available to fully predict in advance actual streamflow depletion from pumping of the Kuhiwa well is through construction of a ground water model. Sufficient data
are not available to do this. The time and cost to obtain the data would be prohibitive. Meyer, May 2, 1991, p. 3.

53. Close monitoring of water levels in the well during pumping might answer the question of whether the impact would occur in the short-term or in the long-term, and hence whether the total magnitude of possible streamflow depletion would be closer to the short-term pumping rate, 1.0 MGD, or to the long-term average pumping rate, 0.12 MGD. Tr. II, pp. 23-24.

54. The most direct manner to determine the impact of pumping the Kuhiwa Well on nearby springs and streams is to pump the well and monitor for actual impacts. Id.

55. Any monitoring program requires baseline data on conditions prior to the onset of pumping.

56. It is probably not possible to design a monitoring program which would detect the total impact of well pumping on stream flows. Tr. II, p. 16.

57. Three approaches to monitoring for impacts on stream flows have been proposed to the Commission: a single-gage or observation point flow measurement approach; a paired-gage flow measurement approach; and a biological monitoring approach.
F. Single-Gage or Observation Point Monitoring Approach

58. A single-gage or observation point approach involves monitoring flow characteristics of streams and springs at specific points of interest, such as at Hanawi Stream below Big Spring and at perennial pools along Makapipi Stream and the unnamed stream.

59. Presently available baseline data for a single-gage or observation point approach include:

- 21 years of gaged streamflow records at (discontinued) USGS gage station 16509000, Hanawi Stream Below Government Road;

- more than 70 years of gaged streamflow records at (active) USGS gage station 16508000, Hanawi Stream near Nahiku, located 200 feet upstream from the Koolau ditch intake;

- testimony that the flow of Hanawi Stream at the pump station at Hana Highway rarely drops below 0.5 MGD, which occurs only once every several years and for a period of three or four days (Tr. I, pp. 30, 41, 78);
- testimony that certain pools never go dry along intermittent Makapipi Stream (Kahookiele, p. 1, Bergau, p. 1);

- testimony that a pool in Lower Nahiku fed by the unnamed stream never goes dry, although the flow to the pool was lower than usual during a drought (Kahookiele, p. 1, Bergau, p. 1, Behrens Statement of Fact, p. 1); and

- testimony that the unnamed stream never goes dry where it flows through the property owned by Dr. Behrens, and that the flow in the stream at that property during a low-flow period on May 24, 1991 was estimated to be approximately 3 gallons per second or 0.26 MGD (Tr. I, p. 156, Behrens Statement of Fact, p. 1).

60. Under a single-gage or observation point monitoring approach, streamflow records at gaged sites would be assessed in terms of low-flow frequency characteristics and/or by correlations with climatic data such as shown by Cox (April, 1980). Other locations with known flow characteristics as described above would be monitored by visual observation and/or spot flow measurements.

61. A single-gage or observation point approach would detect impacts which are of large magnitude relative to the base
flow of the stream or spring at the points being observed. For example, an impact of 1 MGD should be readily detectable at sites with a base flow of 2 MGD or less in the absence of pumping. Tr. I, pp. 143-145.

62. Except for Hanawi Stream below Big Spring, all the sites with gaged or visually determined baseline data described above are believed to have base flows of 2 MGD or less during low flow periods.

G. Paired-Gage Monitoring

63. A paired-gage monitoring approach would directly monitor the groundwater inflow to a reach of stream by constructing a gage at the upstream and downstream end of the reach. Under conditions of steady low flow, the groundwater inflow to the reach is the difference in streamflows between the two gages.

64. Baseline data are not presently available for the paired-gage approach. Collection of these baseline data would require operating each pair of stations for one year prior to pumping. Tr. I, pp. 151-152. Analysis of these data would involve determining the correlation between the flow in the stream and the groundwater inflow to the reach being assessed.
65. The paired-gage approach would not be appropriate for determining whether there is an impact on specific springs, such as on Big Spring, because individual springs represent a single point discharge of water. Tr. I, p. 134.

66. The paired gage approach would be required to identify impacts which are small relative to the base flow in the stream, and hence which require very accurate measurements. Tr. I, pp. 143-145.

67. Installing a new gaging station in the Nahiku area would likely involve an intensive effort due to difficult access. The installation cost for each new gaging station could be in the tens of thousands of dollars. Tr. I, pp. 137-138. Once established, the average cost for the USGS to collect and analyze the data from each gage would be approximately $6,500 per year per station. Tr. I, p. 133.

H. Biological Monitoring

68. A biological monitoring approach would directly monitor the habitat values and indigenous species in the streams potentially affected by pumping of the Kuhiwa well.

69. The biological monitoring approach would require baseline data collection prior to pumping. The U.S. Fish and Wildlife Service has suggested that two to seven months would be
required for baseline data collection, including site selection and replicates of pre-project conditions to develop a statistically valid baseline. Tr. II, pp. 43, 46.

70. The State Division of Aquatic Resources is presently engaged in setting up a statewide stream monitoring program which would provide long-term controls to determine whether aquatic variations observed by a consultant for the applicant on Hanawi or Makapipi Streams are consistent with variations elsewhere. Tr. II, p. 59.

I. Alternatives to Well Pumping

71. Maui Pine considered the alternative of constructing a water storage facility in central Maui as an alternative to withdrawing groundwater from the Kualiwa Well. However, this alternative was rejected because expected costs in the order of $0.50 to $1.00 per gallon of reservoir capacity was not economically feasible for the company. Tr. I, pp. 28, 86-87.

72. Cost estimates developed by the County of Maui and State of Hawaii for water storage reservoirs in Kula, Maui vary between 7.6 and 20 cents per gallon of reservoir capacity. Petitioner's Motion to Supplement the Administrative Record, Exhibits "A" and "B".
II. CONCLUSIONS OF LAW

After fully reviewing the record, pleadings, and arguments of counsel in this case and based upon the foregoing Findings of Fact, the Commission makes the following Conclusions of Law.

1. The Commission has jurisdiction to consider and authorize pump installation permits to extract ground water pursuant to Hawaii Revised Statutes, chapter 174C and, more particularly, HRS §§ 174C-5, 174C-82, 174C-84, and 174C-86.

2. The Commission has jurisdiction to establish, revise, and require amendments to interim instream flow standards pursuant to Hawaii Revised Statutes, Chapter 174C and, more particularly, HRS §§ 174C-5 and 174C-71.

3. The proposed use of ground water for agricultural irrigation purposes is a recognized beneficial use under the Water Code. HRS § 174C-2(c).

4. While promoting maximum beneficial use of Hawaii's water resources, the Code also requires the Commission to make adequate provision for the protection of traditional and customary Hawaiian rights, the protection and procreation of fish and wildlife, the maintenance of proper ecological balance and scenic beauty, and the preservation and enhancement of the waters of the State for municipal uses, public recreation, public water
supply, agricultural, and navigation all of which are in the public interest. HRS § 174C-2(c).

5. Maui Pine's proposed use of this water for continued agricultural irrigation will serve the broad public interest in several ways.

First, it will help to sustain a long established pineapple operation and enterprise by insuring a critically needed water source. This is in keeping with the State's declared goal of supporting a diversified agricultural economy (HRS § 226-7(a)(1) and (b)(6)) as well as the maintenance of open green spaces. HRS § 226-11, -12, and -13.

Second, a pump installation permit with appropriate conditions will allow the maximum beneficial use of the water while respecting and not compromising the protection of the resource, both ground and surface, or the other objectives of the Water Code.

Third, a biological and hydrological monitoring system as a condition to a permit could provide information which will guide future decisions and actions of the Commission in managing water resources in the Nahiku region, including the establishment of permanent instream flow standards.
Fourth, faced with inconclusive factual information, the Commission recognizes the need to establish a process to both proceed with a needed use while retaining jurisdiction to monitor and modify the use should subsequent data indicate any injury or harm. This balance may be modified over time as data becomes more accurate, the environment changes, or legal obligations impose different standards.

6. The Commission concludes that the proposed pumping could have some impact on stream flows in the vicinity of the well. However, the magnitude of such an impact remains uncertain. The record does not provide sufficient evidence to conclude that the proposed pumping would or would not harm the stream flows in question, or whether the impact would be greater than an insubstantial modification of the stream flow allowable under Hawaii Administrative Rules, § 13-169-36. However, if the actual impact of the proposed pumping is a de minimis loss of stream flow, the benefits that inure to the public from the proposed pumping outweigh such a minimal reduction.

7. The Commission concludes that approval of this pump installation permit is not inconsistent with the interim instream flow standards established by this Commission on June 15, 1988. Hawaii Administrative Rules, § 13-169-44. However, any detectable and not "insubstantial" reduction of instream flows would require Maui Pine to apply for and obtain an amendment to the interim instream flow standards under HRS § 174C-71 and
Hawaii Administrative Rules, Title 13, Chapter 169. That process would then weigh Maui Pine's proposed use on the basis of more conclusive data showing the magnitude of the reduction and the impact upon the biological environment and other protected interests.

8. The Commission is well satisfied that the concerns raised by the Intervenors may be resolved through the program of biological and hydrological monitoring and by the other conditions established in this Decision and Order. Moreover, the conditions imposed by this Order and by law will reasonably protect the interests asserted by the Intervenors both now and in the future.

9. The Commission concludes that by both proceeding with the pumping of the well and the collection of biological and hydrological data, the development of a permanent instream flow standard will be premised upon more complete data.

10. By retaining the involvement of the Intervenors in the process, their concerns will continue to be heard and analyzed.

11. By granting the permit, the hardship on Maui Pine that would ensue from denying the use of water for irrigation both in the short and longer terms is avoided.
12. Based upon the foregoing, the Commission concludes that the record of evidence and the applicable law warrant and justify the granting of the pump installation permit upon the terms and conditions stated in the accompanying Decision and Order.

13. Any Finding of Fact or Conclusion of Law by either Maui Pine or the Intervenors not specifically adopted by the Commission is hereby denied and rejected.

14. Any Conclusion of Law improperly deemed, construed, or designated as a Find of Fact shall be treated as a Conclusion of Law. Likewise, any Finding of Fact improperly deemed, construed, or designated a Conclusion of Law shall be treated as a Finding of Fact.
III. DECISION AND ORDER

Based on the foregoing Findings of Fact and Conclusions of Law, it is the Decision and Order of the Commission that the application of Maui Pineapple Company, Ltd., for a pump be and the same hereby is granted, subject to the following terms and conditions:

1. The applicant shall provide and maintain appropriate measurement devices in the Kuhiwa well to measure and record the water level in the well. The applicant shall also provide and maintain approved meters or other appropriate devices or means for measuring and reporting well pumpage on a continuous basis and total water usage on a monthly basis. In total, one meter shall record the pumpage from the well, a second meter shall record the pumpage from the Hanawi Pumping Station and a third meter shall record the amount of water taken from the irrigation ditch for pineapple irrigation.

2. The applicant shall submit a Well Completion Report to the Division of Water Resource Management within 30 days after the completion of the work.

3. The proposed use shall not adversely affect existing legal uses in the area, including instream uses and existing off-stream uses.
4. Use of water from the well shall be for pineapple irrigation only.

5. The maximum quantity of water to be pumped on an annual basis from the well and the existing Hanawi Stream Pumping Station combined shall not exceed the annual capacity for withdrawing water from the Hanawi Stream Pumping Station alone under past operating practice. This maximum annual quantity is approximately 180 million gallons per year, based on the 0.5 MGD capacity of the pumping station.

6. In order for the Commission to be able to determine whether the pumping of the Kuhiwa Well is causing a reduction in stream flows, a monitoring program shall be implemented by the Applicant.

7. To ensure that the monitoring program is effective and fair, a review panel shall be established which consists of five members: one person representing each of the involved parties, the Hana Community Association and Maui Pineapple Company, Ltd.; one person representing the Commission; a biologist from the State Division of Aquatic Resources; and, a hydrologist or hydrogeologist from the US Geological Survey. However, it would not be considered a violation of these permit conditions should either the Hana Community Association or US Geological Survey
decline to participate in the review panel. The review panel would meet on a regular basis as it considers appropriate to:

a. Assess the Applicant's compliance with the conditions of this permit.

b. Assess the data collected under the monitoring program, with particular attention to determining whether there is any evidence that pumping may be causing a reduction of stream flows.

c. Assess any additional data or analysis not specifically required by this permit which might be brought forward by any party to provide greater insight into predicting or determining the specific impacts of pumping the well.

d. Report its findings to the Commission.

8. The monitoring program to be implemented by the Applicant, and assessed by the review panel, shall include the following elements:

a. Before the commencement of well pumping, baseline biological surveys of the stream biota of Hanawi and Makapipi Streams shall be conducted, and one or more permanent monitoring sites shall be selected following
the findings of the baseline surveys. The protocol for said baseline biological surveys and selection of permanent monitoring sites shall meet the approval of the State Division of Aquatic Resources.

b. Before the commencement of well pumping, the USGS gaging station on Hanawi Stream below Big Spring shall be re-established with a continuous recording gage in a manner which meets the approval of the USGS. Low-flow stream discharge and water level measurements for the gage shall be made by the USGS.

c. Before the commencement of well pumping, a single gaging station consisting of an appropriate measuring device such as a standard "V-notch" weir and staff gage shall be established along the unnamed stream at TMK 1-2-01:14, by Maui Pine and the USGS in cooperation with the landowner, Michael Behrens. Should the landowner decline to cooperate, this condition would not apply.

d. Before the commencement of well pumping, the locations of perennial pools along Makapipi Stream and the unnamed stream shall be located in cooperation with the persons who testified to their perennial nature, and their characteristics documented to the extent possible. Should the persons who testified as to the
existence of perennial pools along these streams
decline to cooperate, this condition would not apply.

e. Maui Pine shall notify or cause notice of the scheduled
commencement of pumping date to be given to the
Commission and to the Hana Community Association not
less than seven days prior to the commencement of
pumping.

f. The commencement of pumping shall be controlled as a
pump test to determine well yield and drawdown
characteristics. The protocol for the pump test shall
be determined by the State Division of Water Resource
Management in cooperation with the USGS.

g. After pumping has commenced, biological data shall be
regularly collected from permanent monitoring sites
established under element "a" above. The protocol for
the biological monitoring shall meet the approval of
the State Division of Aquatic Resources.

h. After pumping has commenced, data from the re-
established USGS gaging station on Hanawi Stream below
Big Spring shall be continuously collected and analyzed
by the USGS.
i. After pumping has commenced, data from the unnamed stream shall be continuously collected and analyzed by the landowner at TMK 1-2-01:14, who shall allow for field verification of low-flow events by Maui Pine and other members of the review panel.

j. After pumping has commenced, perennial pools (if any) along Makapipi Stream and the unnamed stream shall be regularly inspected during low flow periods and their characteristics documented to the extent possible.

k. All biological, streamflow, and other data described above shall be collected at Maui Pine's expense for a period not to exceed 10 years. The duration of the monitoring program may be shortened by the Commission if data collected under conditions of extreme low flow and prolonged continuous pumping do not show any detectable impact on stream flows and biological habitat, if other evidence is brought forward which yields the same conclusion, or if Maui Pine terminates its use of water from the well.

l. All biological, streamflow, and other data described above, including total monthly water usage data, shall be provided to the Commission and to each member of the review panel on a timely basis after being collected.
9. Evidence to be considered by the review panel and the Commission that pumping may be causing a reduction in stream flows includes, but is not limited to:

a. The drying up of historically perennial pools and/or springs along Makapipi Stream or the unnamed stream.

b. The drying up or discernable depletion of the unnamed stream where it flows through TMK 1-2-01:14.

c. Record low flows at either of the two USGS gaging stations on Hanawi stream which are less than the record low flows recorded previously at those stations, and not attributable to extreme climatic conditions.

d. More frequent occurrence of low flows (a shift in the low-flow frequency characteristics) at either of the two USGS gaging stations on Hanawi Stream, and not attributable to climatic conditions.

e. A loss or reduction in aquatic habitat and/or native species as determined by the biological monitoring program.

10. If either the review panel or the Commission finds evidence that pumping of the Kuhiwa Well may be reducing the flow of either Makapipi Stream, Hanawi Stream, or the unnamed stream,
the Commission shall instruct the Applicant to cease pumping, pending a hearing, at which time the Commission shall consider whether said reduction in stream flow is: 1) due to pumping; and, 2) whether an amendment of the Interim Instream Flow Standards would be required before the Applicant could resume pumping.

11. Pumping shall cease immediately if evidence of possible pumping-related impacts is found and if this or other evidence suggests that the response time between start of pumping and impact on streams is six months or less. In particular, pumping shall cease immediately if any evidence of pumping-related impacts is found during the first year of pump operation.

12. If evidence of possible pumping-related impacts is found after the first year of operation and the response time between start of pumping and impact on streams is believed to be more than six months (in which case an immediate stop of pumping would not correspond to an immediate restoration of stream flows), pumping shall cease within six months of this evidence being found.

13. If the unnamed stream at TMK 1-2-01:14 were to go dry or be discernably depleted, the Applicant shall cease pumping in accordance with conditions 11 and 12 above, and, for the period it takes for normal stream flows to be restored, shall furthermore be responsible for providing sufficient water to the property to satisfy domestic needs, and reimburse the landowner
for crop damages and any other financial losses directly caused by the loss of water supply.

14. Total monthly water usage data shall be reported to the Commission on a regular basis.

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

16. This permit shall not be deemed to diminish or waive the rights granted under Hawaii Revised Statutes section 174C-63 to any person to apply for and receive a water use permit to exercise appurtenant water rights whether or not those appurtenant rights are currently being exercised.

17. The permittee's right to this permit or to withdraw water is subject to diminution and modification by the Commission on Water Resource Management or the courts of the State of Hawaii in order to protect the natural resource, to maintain instream flow standards, and to assure appurtenant rights, riparian and correlative rights and uses under Article XII, section 7 of the Hawaii State Constitution, HRS Chapter 174C, and the common law, and to assure to the Department of Hawaiian Home Lands those rights provided by section 221 of the Hawaiian Homes Commission
Act, whether such rights are or will require the actual withdrawal of water or not.

IT IS SO ORDERED.

DATED: Honolulu, Hawaii, October 2, 1991

COMMISSION ON WATER RESOURCE MANAGEMENT
STATE OF HAWAII

By: WILLIAM W. PATY, Jr., Chairperson

GUY K. FUJIMURA, Commissioner

ROBERT S. NAKATA, Commissioner

JOHN C. LEWIN, M.D.,
Ex-officio member

Approved as to form:

William M. Tam,
Deputy Attorney General
A model example of decision-making

EDITORIAL

Much attention has been focused on the dwindling water supply for Central Maui and the tussle between state and county officials over who will control the tap. We have supported home rule in this case and continue to do so. But having said that, the state deserves applause for its action on a water situation in East Maui that has not attracted the same high level of interest.

These are trying times for the U.S. pineapple industry. Castle & Cooke is rapidly nearing the end of pineapple operations on Lanai, and earlier this month announced massive layoffs at its Dole Cannery on Oahu. That cannery is destined for closure, leaving Maui Land & Pineapple Company's facility in Kahului as the only cannery in the state.

Cheap labor abroad has tightened the screws on the pineapple industry here at home, but Maui Pine has vowed to stick it out as long as possible, while at the same time building protective flanks by diversifying into land management with the purchase of Kaahumanu Center and development at Kapalua. The largest corporation in the state to be headquartered on Maui, ML&P employs 900 people.

The company, saying it needs another water source to maintain adequate irrigation during the dry years and enable it to remain competitive, sought to install a pump in Nahiku that would draw from an artesian aquifer.

Important concerns were raised by the Hana Community Association over the effects such pumping would have on several streams in East Maui. The state Commission on Water Resource Management, however, noted a lack of evidence as to what degree the pumping would affect the streams, while at the same time concluding that there would indeed be some effect.

A detrimental effect? The commission simply could not say.

The commission then struck a deal sympathetic both to the plight of industry and ecology. Maui Pine can start pumping, but must maintain vigilant monitoring procedures to record the levels of all water sources that may be affected and report them to the state.

In order to deflect any charge that Maui Pine is being allowed to police itself with no other eyes watching, the commission ordered that the monitoring process be reviewed by a panel consisting of representatives of the Hana Community Association, the company and the state.

And finally and most importantly, the commission ordered that at the first sign of evidence that the pumping is reducing the flow of any streams, the pumping must stop pending further study.

The commission's action is an example of decision-making at its best. It accommodates the efforts of an industry important to the economic lifeline of this community to remain viable, but not at the expense of sacrificing our fragile ecology. That's how government is supposed to work.
Mr. William Pyle  
A.G. Systems Hawaii  
P.O. Box 90  
Puunene, Maui, Hawaii 96784  

Dear Mr. Pyle:  

SUBJECT: Reconsideration of Conservation District Use Permit for Improvement to Kukiwa Well, Water Transmission Line and Electricity Transmission Corridor, Nahiku, Maui  

We wish to inform you that Maui Pineapple Company's Conservation District Use Permit for the subject facilities was amended on August 23, 1991 subject to the following conditions:  

1) deletion of Condition B.1 as a Temporary Variance is now not necessary;  

2) modification of Condition B.6 to read: "The applicant shall comply with permit requirements of the State Water Code, Chapter 174C, Hawaii Revised Statutes, and shall obtain a pump installation permit and any other permits as required by the Commission on Water Resource Management for water-related aspects of the work."  

3) deletion of Condition B.9 in its entirety as it is no longer pertinent; and  

4) modification of Condition B.14 removing the Temporary Variance reference so as to read: "That failure to comply with any of these conditions shall render this Conservation District Land Use Application null and void."  

5) All other conditions originally approved by the Board remain applicable.
Please acknowledge receipt of this permit modifications, with the above noted conditions, in the space provided below. Please have the applicant sign two copies. Retain one and return the other to the Department within thirty (30) days.

Should you have any questions on any of these conditions, please feel free to contact our Office of Conservation and Environmental Affairs staff at 548-7837.

Very truly yours,

WILLIAM W. PATY

Receipt acknowledged

Applicant's Signature

Date

cc: Maui Board Member
    Maui Land agent
    Maui Planning Department
Board of Land and Natural Resources
State of Hawaii
Honolulu, Hawaii

RECONSIDERATION OF CONSERVATION DISTRICT USE PERMIT
FOR IMPROVEMENT TO KUHIWA WELL, WATER TRANSMISSION LINE AND ELECTRICITY TRANSMISSION CORRIDOR,
NAHIKU, MAUl

APPLICANT: Maui Pineapple Company
870 Hallimaile Road
Makawao, Maui, Hawaii

AGENT: William Pyle
A.G. Systems Hawaii
P. O. Box 90
Puunene, Maui, Hawaii

LANDOWNER: East Maui Irrigation Co.

LOCATION: Nahiku, Maui
TMK: 1-2-04: 03

LOT SIZE/USE: 1,359.18 acres
Less than 1 acre in addition to transmission corridor

SUBZONES: Protective/Resource

BACKGROUND:
The Board approved this project on September 28, 1990, subject to fifteen conditions (Exhibit A).

As identified, the applicant proposed to: 1) reactivate the existing Kushiwa Well (built around 1947) by installing a deep well pump capable of pumping up to 700 gallons per minute, 2) construct a small building to house pump equipment, 3) install a water transmission line to the Koolau Ditch for transport to Haiku, Makawao and Kula for the irrigation of pineapple, and 4) construct an overhead power line of approximately 7,100 ft. in length (30 fifty-foot poles) (Exhibits B,C,D and E).

ITEM H-1
Due to the uncertainty at the time of the proposed pumpage rate of the well and potential impacts to groundwater resources and nearby streams, the Board authorized a temporary land use for a period of up to one year to test the Kuhiwa Well and to establish a pumpage rate given the potential short and long term impacts (Conditions 1 and 6).

The Department signed and approved on February 12, 1991, the submitted construction plans for the project.

Current Request:

On July 23, 1991, the Office of Conservation and Environmental Affairs (OCEA) received a memorandum from the Division of Water Resource Management (DWRM) identifying that the newly established State Water Code and Commission on Water Resource Management necessitated a revisiting of the Board actions on this matter (Exhibit F).

Specifically, several conditions established by the Board, though appropriate at the time, need to be deleted and/or modified to conform to new administrative responsibilities (see Conditions B.1, B.6, B.7, B.9 and B.14 and DWRM's proposed rewording - modification of these conditions).

Analysis:

OCEA staff has reviewed the proposed modifications, as submitted by DWRM and concurs in principle with each proposed action, to include:

1) deletion of the one-year temporary land use to test the Kuhiwa Well (Exhibit F; Condition B1);

2) modification of the original time frame to initiate testing, such that initiation period is established effective on the date the Commission of Water Resource Management approves the issuance of all permits under its jurisdiction (Condition B.6);

3) modification of the original initiate - complete construction time frame, referenced to the effective date of Water Commission action (Condition B.7);

4) deletion of a condition related to the Water Commission (Condition B.9); and

5) modification of a condition referencing the temporary variance land use (Condition B.14).

Staff finds that most of these suggestions are appropriate for Board action.

However, after further consultation between OCEA and DWRM staff, it has been identified that the effective date of the CDUA Permit should be retained as the date of the original Board action, rather than be triggered by a future Water Commission action, as proposed by Exhibit F.
Further, OCEA staff notes that the Department has already approved the submitted construction plans for the project and that preliminary activity has commenced. Condition B.7 allowed for a two year period to initiate construction and that time frame will remain appropriate.

As such, Staff recommends;

Recommendation:

That the Board amend its action of September 28, 1990 by:

1) deletion of Condition B.1 as a Temporary Variance is now not necessary;

2) modification of Condition B.6 to read: "The applicant shall comply with permit requirements of the State Water Code, Chapter 174C, Hawaii Revised Statutes, and shall obtain a pump installation permit and any other permits as required by the Commission on Water Resource Management for water-related aspects of the work."

3) deletion of Condition B.9 in its entirety as it is no longer pertinent; and

4) modification of Condition B.14 removing the Temporary Variance reference so as to read: "That failure to comply with any of these conditions shall render this Conservation District Land Use Application null and void."

5) All other conditions originally approved by the Board remain applicable.

Respectfully submitted,

EDWARD E. HENRY
Staff Planner

Attachment(s)

Approved for Submittal:

WILLIAM W. PATY
Mr. William Pyle  
AG Systems Hawaii  
P. O. Box 90  
Puunene, Maui, Hawaii 96784

Dear Mr. Pyle:

Subject: Conservation District Use Application for Improvements to Kuhiwa Well, Water Transmission Line and Electricity Transmission Corridor and Poles, Nahiku, Maui

We wish to inform you that Maui Pineapple Company's Conservation District Use Application for the subject project was approved on September 28, 1990 subject to the following:

A. Violation

That the Board deferred action regarding a possible violation until a site visit is conducted by the Maui Board member.

B. Application

1. That the Board authorized a temporary land use for a period up to one (1) year to test the Kuhiwa Well and to establish the pumpage rate, given the short and potential long term impacts of the proposed facility;

2. The applicant shall comply with all applicable statutes, ordinances, rules and regulations of the Federal, State and County governments, and applicable parts of Sections 13-2-21, Administrative Rules, as amended;
3. The applicant, its successors and assigns, shall indemnify and hold the State of Hawaii harmless from and against any loss, liability, claim or demand for property damage, personal injury and death arising out of any act of omission of the applicant, its successors, assigns, officers, employees, contractors and agents under this permit or relating to or connected with the granting of this permit;

4. The applicant shall comply with all applicable Department of Health Administrative Rules;

5. Before proceeding with any work authorized by the Board, the applicant shall submit four (4) copies of the construction plans and specifications to the Chairperson or his authorized representative for approval for consistency with the conditions of the permit and the declarations set forth in the permit application. Three (3) of the copies will be returned to the applicant. Plan approval by the Chairperson does not infer approval required of other agencies. Compliance with Condition 2 remains the responsibility of the applicant;

6. That the testing of the Kuhiwa Well be initiated within one (1) year of Board approval, under a Temporary Variance for the use of a generator at the site, a well pump and other non-permanent land usage;

7. Any work or construction to be done on the land shall be initiated within two (2) years of the approval of such use, and all work and construction must be completed within three (3) years of the approval of such use;

8. That the applicant affirm that appropriate measures shall be exercised to prevent construction materials, debris, petroleum derivatives, etc., from entering or polluting surrounding areas and nearby water sources;

9. That the applicant shall comply with permit requirements of the State Water Code, Chapter 174C, Hawaii Revised Statutes, and its implementing Administrative Rule; Specifically, that the applicant shall prepare and submit to the Commission on Water Resource Management, a technical report regarding the well testing phase and any identified short and long term impacts;

10. That the applicant coordinate the project with the Maui Office of the Division of Forestry and Wildlife to inspect the proposed transmission and power corridor to determine if any threatened and endangered species are present;
11. That the applicant affirm that all cutting and removal of vegetation be kept to a strict minimum and confined to the transmission and power corridor;

12. That the applicant affirm that all litter and unused materials resulting from the testing and construction phases of the project be removed at the project's completion;

13. That the applicant will be held responsible for all fires, including suppression costs, started in the area as a result of the construction activities;

14. That failure to comply with any of these conditions shall render this Temporary Variance and Conservation District Land Use application null and void; and

15. Other terms and conditions as prescribed by the Chairperson.

Please acknowledge receipt of this permit, with the above noted conditions, in the space provided below. Please have the applicant sign two copies. Retain one and return the other within thirty (30) days.

Should you have any questions on any of these conditions, please feel free to contact our Office of Conservation and Environmental Affairs staff at 548-7837.

Very truly yours,

William W. Paty

Receipt acknowledged

Applicant's Signature

Date: 10/18/90

cc: Maui Board Member
    Maui Land Agent
    Maui County Planning Department
    DOH/OHA/OSP
MEMORANDUM

TO: Roger Evans, Conservation and Environmental Affairs
FROM: Manabu Tagomori, Division of Water Resource Management

This is in regard to CDUA Permit MA-4/9/90-2376, which was approved by the Board of Land and Natural Resources on September 28, 1990, and to the transfer of authority on water-related matters from the Board to the Commission on Water Resource Management. Specifically, this is to request that the Board discontinue the past practice of including water-related conditions in CDUA permits, and to remove such conditions from CDUA Permit MA-4/9/90-2376.

The practice of including water-related conditions in CDUA permits was established prior to the passage of the State Water Code and the establishment of the Commission on Water Resource Management. The practice was appropriate for the time. However, under the present administrative structure, authority for water-related matters should be transferred from the Board to the Commission to avoid jurisdictional conflicts.

CDUA Permit MA-4/9/90-2376 illustrates the need for separation of authority between the Board and the Commission. Three of the conditions in that permit, which had been developed by the OCEA staff in consultation with the Commission staff and which seemed reasonable to us at the time, now seem inappropriate. Our change in opinion is the result of experience gained in our ongoing implementation of the Water Code, and a recent contested case proceeding before the Commission. That contested case involved the water-related matters for the same project as was covered by CDUA Permit MA-4/9/90-2376.

We request that the three conditions identified below be either substantially modified or eliminated from CDUA Permit MA-4/9/90-2376 and, in the future, that the Board defer to the Commission as the responsible body for water-related concerns.

CDUA NO. MA-2376
APPLICANT: Maui Pineapple Company, Ltd.
AGENT: AG Systems Hawaii
TMK 1-2-04: 03

EXHIBIT E OF 3
- CDUA Permit Condition B.1 provides for a one-year period to test a well, establish a pumpage rate, and determine impacts. This condition is inappropriate for the CDUA permit in light of Water Code requirements that any person proposing to drill a well, or install a pump must first obtain well construction and pump installation permits from the Commission on Water Resource Management, and thereafter report the pump test results and monthly pumping records to the Commission. Furthermore, as a result of testimony presented at the contested case hearing, the Commission staff is now of the opinion that one year is not a sufficiently long testing period to assure that any impacts would be detected.

- CDUA Permit Condition B.6 requires that testing of the well be initiated within one year of Board approval. This condition is in conflict with the Commission’s jurisdiction, since it is illegal for any CDUA permit holder to pump or test a well without first obtaining the necessary permits from the Commission. For the CDUA permit in question, the conflict is illustrated by the fact the Commission’s action on a pump installation permit application has been delayed by the contested case proceeding, and that the Board’s one-year time period for testing the well has come close to expiring without any testing being possible.

- CDUA Permit Condition B.9 requires compliance with the State Water Code and that the applicant shall submit to the Commission a technical report regarding the well testing phase and any identified short and long term impacts. It is appropriate that the CDUA permit require compliance with the Water Code. However, the specification of water-related technical report(s) and water-related impact monitoring program(s) to be required by the Commission should be specified by the Commission, not by the Board.

The jurisdictional conflict illustrated by these conditions reflects our Department’s "growing pains" in transferring authority from the Board to the Commission. The fact that there are problem conditions in one CDUA permit should not in any way be construed as a criticism of our respective staffs, which are doing an exceptional job in working through this transition period.

We recommend the following changes to CDUA Permit MA-4/9/90-2376:

1. Delete Condition B.1 in its entirety regarding a temporary land use for a period up to one-year period to test a well.

2. Delete Condition B.6 regarding initiating well testing within one year under a Temporary Variance, and replace with, "The applicant shall comply with permit requirements of the State Water Code, Chapter 174C, Hawaii Revised Statutes and shall obtain a pump installation permit and any other permits as required by the Commission on Water Resource Management within 18 months of Board approval. The effective date for this CDUA permit shall be the date on which the Commission on Water Resource Management approves the issuance of all necessary permits under its jurisdiction for water-related aspects of the work."
3. Modify Condition B.7 regarding the initiation and completion of work to read, "Any work or construction to be done on the land shall be initiated not sooner than the effective date of this permit. Any work or construction to be done on the land shall be initiated within one (1) year of the effective date of this permit, and all work and construction must be completed within three (3) years of the effective date of this permit;"

4. Delete Condition B.9 in its entirety regarding compliance with the State Water Code. This requirement would be covered under the replacement condition B.6 recommended above.

5. Modify Condition B.14 by removing the reference to a Temporary Variance, thus making the Board action on a CDUA application only.

Please call me at 548-7533 if you feel additional discussion is required before bringing this matter to the Board's attention.
AGENDA
FOR THE MEETING OF THE
BOARD OF LAND AND NATURAL RESOURCES
DATE: FRIDAY, AUGUST 23, 1991
TIME: 9:00 A.M.
PLACE: BOARD ROOM
KALANIMOKU BUILDING, ROOM 132
1151 PUNCHBOWL STREET
HONOLULU, HAWAII

MINUTES
APRIL 12, 1991
JULY 19, 1991

B. DIVISION OF AQUATIC RESOURCES
1. REQUEST FOR APPROVAL TO AMEND THE AGREEMENT WITH THE RESEARCH CORPORATION OF THE UNIVERSITY OF HAWAII (RCUH) FOR HAWAIIAN FISHERIES DEVELOPMENT

F. DIVISION OF LAND MANAGEMENT
1. TRANSMITTAL OF DOCUMENTS FOR BOARD CONSIDERATION:
   (a) ASSIGNMENT OF GENERAL LEASE NO. S-5071, LOT 35, PUU KA PELE PARK LOTS, WAIMEA (KONA), KAUAI, TAX MAP KEY 1-4-02:15
   (b) ISSUANCE OF LAND LICENSE TO REGO'S TRUCKING, LTD., GOVERNMENT LAND AT KAWAIELE, MANA, KAUAI, TAX MAP KEY 1-2-02:1
   (c) LAND PATENT IN CONFIRMATION OF LAND COMMISSION AWARD NO. 3237, APANA 3 AT WAILUKU, MAUI, TAX MAP KEY 3-3-04:24

2. CANCELLATION OF HOMESTEAD LEASE NO. 68 AND ISSUANCE OF HOMESTEAD LEASES COVERING LOTS 29-C AND 29-D, NAHIKU HOMESTEADS, NAHIKU, KOOLAU, MAUI, TAX MAP KEY 1-2-02:18

3. ONE (1) YEAR HOLDOVER OF GENERAL LEASE NO. S-4349 TO JOSEPH J. DAY, LOT 33-A, WAILUA HOMESTEADS, WAILUA, HANA, MAUI, TAX MAP KEY 1-1-06:38

4. WITHDRAWAL OF LAND FROM GENERAL LEASE NO. S-4229 TO PIONEER MILL COMPANY, LTD. AND CONVEYANCE IN FEE SIMPLE TO HOUSING FINANCE AND DEVELOPMENT CORPORATION FOR LAHAINA MASTER PLANNING PROJECT AT LAHAINA, MAUI, TAX MAP KEY 4-5-21:3(POR.)

5. REQUEST TO RESEND PRIOR BOARD ACTION OF FEBRUARY 9, 1990 (AGENDA ITEM F-1-e), EXTENSION OF LEASE TERM, CONSENT TO ASSIGNMENT OF LEASE, MORTGAGE AND SUBLEASE COVERING GENERAL LEASE NO. S-3775, LOT 36, WAIMANALO AGRICULTURAL SUBDIVISION, WAIMANALO, Koolaupoko, OAHU, TAX MAP KEY 4-1-27:9

6. REQUEST FOR AUTHORIZATION TO ACQUIRE LANDS HAVING NATURAL, ENVIRONMENTAL, RECREATIONAL AND SCENIC VALUES, TAX MAP KEY 4-2-05:2 AND 3, KAWAILOA, KAILUA, OAHU

7. REQUEST FOR AUTHORIZATION TO ACQUIRE LANDS HAVING NATURAL, ENVIRONMENTAL, RECREATIONAL AND SCENIC VALUES AND FOR INCORPORATION INTO THE NA ALA HELE TRAIL SYSTEM, TAX MAP KEY 4-2-02:17, KAIWA RIDGE, LANIKAI, KAILUA, OAHU

8. AUTHORIZATION FOR SALE OF A PASTURE LEASE AT PUBLIC AUCTION AT WAILUA, LIHUE, KAUAI, TAX MAP KEY 3-9-05:19 AND 20
9. AUTHORIZATION FOR SALE OF A PASTURE LEASE AT PUBLIC AUCTION AT WAILUA, KAWAIHUAU, KAUI, TAX MAP KEY 4-1-09:17
10. BEACH TRANSITING AND LAND USE REGARDING CDUA KA-2434, PASSENGER BOARDING AND DISBOARDING AT A PUBLIC BEACH AT HANALEI, KAUI

H. ADMINISTRATION

1. RECONSIDERATION OF CONSERVATION DISTRICT USE PERMIT (CDUP) FOR IMPROVEMENT TO KUHIAW WELL, WATER TRANSMISSION LINE AND ELECTRICITY TRANSMISSION CORRIDOR, NAHIKU, MAUI, TMK: 1-2-04:03; APPLICANT: MAUI PINEAPPLE COMPANY; AGENT: WILLIAM PYLE, A.G. SYSTEMS HAWAII
2. CONSERVATION DISTRICT USE APPLICATION (CDUA) FOR THE CONSTRUCTION OF PIER 3 AND THE SUBDIVISION OF THESE STATE LANDS IN ORDER TO BE SET ASIDE TO THE DEPARTMENT OF TRANSPORTATION FOR HARBOR PURPOSES AT NAWILIWILI HARBOUR, NIUMALU, KAUI, TAX MAP KEY 3-2-3:OFFSHORE 43; APPLICANT: DEPARTMENT OF TRANSPORTATION
3. AFTER-THE-FACT CDUA FOR TWO SECTIONS OF A SEAWALL ENCROACHING ON STATE LAND AT LAKIKAI, KOLOAUPOKO, OAHU, TAX MAP KEYS FRONTING 4-3-3:75, 4-3-4:83 AND 87; APPLICANT: CYRIL THOMSON MITCHELL TRUST; AGENT: MR. STANLEY D. SUYAT, CARLSMITH, WICHMAN, CASE, MUKAI & ICHIKI
4. AMENDMENT TO CDUP FOR THE WAILUKU HYDROELECTRIC POWER PROJECT, WAILUKU RIVER AND KALOHETAWAHU STREAM, HILO FOREST RESERVE, HAWAII, TAX MAP KEYS 2-5-9:2, 3, 4 AND 2-6-18:4; APPLICANT: WAILUKU RIVER HYDROELECTRIC POWER CO., INC.

J. OTHER DEPARTMENTS

1. CONTINUANCE OF REVOCABLE PERMITS H-82-994, ETC., HARBORS DIVISION
2. AMENDMENT NO. 4 TO LEASE NO. DOT-A-84-12, KAHULUI AIRPORT, MAUI (AVIS RENT A CAR SYSTEM, INC.)
3. APPLICATION FOR ISSUANCE OF REVOCABLE PERMIT NOS. 4796, 4797 AND 4798, AIRPORTS DIVISION
4. ISSUANCE OF REVOCABLE PERMIT, HARBORS DIVISION, PIER 52 GATE, SAND ISLAND, OAHU (BAUTISTA'S FILIPINO KITCHEN)
5. CONSTRUCTION RIGHT-OF-ENTRY AND DIRECT SALE OF LEASE, SAND ISLAND CONTAINER FACILITY, OAHU (SEA-LAND SERVICES, INC.)
6. AMENDMENT TO DIRECT SALE OF LEASE OF PIPELINE EASEMENT AT BARBERS POINT HARBOR, OAHU (HAWAIIAN ELECTRIC COMPANY, INC.)
7. ISSUANCE OF REVOCABLE PERMIT, HARBORS DIVISION, KAWAIHAE HARBOR, HAWAII (HAWAII PLANNING MILL, LTD. DBA HPM BUILDING SUPPLY)
8. ISSUANCE OF REVOCABLE PERMIT, HARBORS DIVISION, KAWAIHAE HARBOR, HAWAII (KEITH C. MINTYRE, DBA PACIFIC CINDER TRANSFER)
9. ISSUANCE OF REVOCABLE PERMIT, HARBORS DIVISION, KAWAIHAE HARBOR, HAWAII (KONA TRANSPORTATION COMPANY, INC.)
10. CONTINUANCE OF REVOCABLE PERMITS H-90-1634, ETC., HARBORS DIVISION
11. CONTINUANCE OF REVOCABLE PERMITS H-88-1464, ETC., HARBORS DIVISION
August 23, 1991

Board of Land and Natural Resources
State of Hawaii
Honolulu, Hawaii

RECONSIDERATION OF CONSERVATION DISTRICT USE PERMIT FOR IMPROVEMENT TO KUHIWA WELL, WATER TRANSMISSION LINE AND ELECTRICITY TRANSMISSION CORRIDOR, NAHIKU, MAUI

APPLICANT: Maui Pineapple Company
870 Haliimaile Road
Makawao, Maui, Hawaii

AGENT: William Pyle
A.G. Systems Hawaii
P.O. Box 90
Puunene, Maui, Hawaii

LANDOWNER: East Maui Irrigation Co.

LOCATION: Nahiku, Maui
TMK: 1-2-04: 03
LOT SIZE/USE: 1,359.18 acres
Less than 1 acre in addition to transmission corridor
SUBZONES: Protective/Resource

BACKGROUND:
The Board approved this project on September 28, 1990, subject to fifteen conditions (Exhibit A).

As identified, the applicant proposed to: 1) reactivate the existing Kuhiwa Well (built around 1947) by installing a deep well pump capable of pumping up to 700 gallons per minute, 2) construct a small building to house pump equipment, 3) install a water transmission line to the Koolau Ditch for transport to Haiku, Makawao and Kula for the irrigation of pineapple, and 4) construct an overhead power line of approximately 7,100 ft. in length (30 fifty-foot poles) (Exhibits B,C,D and E).

ITEM H-1
Due to the uncertainty at the time of the proposed pumpage rate of the well and potential impacts to groundwater resources and nearby streams, the Board authorized a temporary land use for a period of up to one year to test the Kuhiwa Well and to establish a pumpage rate given the potential short and long term impacts (Conditions 1 and 6).

The Department signed and approved on February 12, 1991, the submitted construction plans for the project.

Current Request:

On July 23, 1991, the Office of Conservation and Environmental Affairs (OCEA) received a memorandum from the Division of Water Resource Management (DWRM) identifying that the newly established State Water Code and Commission on Water Resource Management necessitated a revisiting of the Board actions on this matter (Exhibit F).

Specifically, several conditions established by the Board, though appropriate at the time, need to be deleted and/or modified to conform to new administrative responsibilities (see Conditions B.1, B.6, B.7, B.9 and B.14 and DWRM's proposed rewording - modification of these conditions).

Analysis:

OCEA staff has reviewed the proposed modifications, as submitted by DWRM and concurs in principle with each proposed action, to include:

1) deletion of the one-year temporary land use to test the Kuhiwa Well (Exhibit F; Condition B1);
2) modification of the original time frame to initiate testing, such that initiation period is established effective on the date the Commission of Water Resource Management approves the issuance of all permits under its jurisdiction (Condition B.6);
3) modification of the original initiate - complete construction time frame, referenced to the effective date of Water Commission action (Condition B.7);
4) deletion of a condition related to the Water Commission (Condition B.9); and
5) modification of a condition referencing the temporary variance land use (Condition B.14).

Staff finds that most of these suggestions are appropriate for Board action.

However, after further consultation between OCEA and DWRM staff, it has been identified that the effective date of the CDUA Permit should be retained as the date of the original Board action, rather than be triggered by a future Water Commission action, as proposed by Exhibit F.
Further, OCEA staff notes that the Department has already approved the submitted construction plans for the project and that preliminary activity has commenced. Condition B.7 allowed for a two year period to initiate construction and that time frame will remain appropriate.

As such, Staff recommends;

Recommendation:

That the Board amend its action of September 28, 1990 by:

1) deletion of Condition B.1 as a Temporary Variance is now not necessary;

2) modification of Condition B.6 to read: "The applicant shall comply with permit requirements of the State Water Code, Chapter 174C, Hawaii Revised Statutes, and shall obtain a pump installation permit and any other permits as required by the Commission on Water Resource Management for water-related aspects of the work."

3) deletion of Condition B.9 in its entirety as it is no longer pertinent; and

4) modification of Condition B.14 removing the Temporary Variance reference so as to read: "That failure to comply with any of these conditions shall render this Conservation District Land Use Application null and void."

5) All other conditions originally approved by the Board remain applicable.

Respectfully submitted,

EDWARD E. HENRY
Staff Planner

Attachment(s)

Approved for Submittal:

WILLIAM W. PATY
Mr. William Pyle  
AG Systems Hawaii  
P. O. Box 90  
Puunene, Maui, Hawaii 96784

Dear Mr. Pyle:

Subject: Conservation District Use Application for Improvements to Kahiwa Well, Water Transmission Line and Electricity Transmission Corridor and Poles, Nahiku, Maui

We wish to inform you that Maui Pineapple Company's Conservation District Use Application for the subject project was approved on September 28, 1990 subject to the following:

A. Violation

That the Board deferred action regarding a possible violation until a site visit is conducted by the Maui Board member.

B. Application

1. That the Board authorized a temporary land use for a period up to one (1) year to test the Kahiwa Well and to establish the pumpage rate, given the short and potential long term impacts of the proposed facility;

2. The applicant shall comply with all applicable statutes, ordinances, rules and regulations of the Federal, State and County governments, and applicable parts of Section 13-2-21, Administrative Rules, as amended;
3. The applicant, its successors and assigns, shall indemnify and hold the State of Hawaii harmless from and against any loss, liability, claim or demand for property damage, personal injury and death arising out of any act of omission of the applicant, its successors, assigns, officers, employees, contractors and agents under this permit or relating to or connected with the granting of this permit.

4. The applicant shall comply with all applicable Department of Health Administrative Rules;

5. Before proceeding with any work authorized by the Board, the applicant shall submit four (4) copies of the construction plans and specifications to the Chairperson or his authorized representative for approval for consistency with the conditions of the permit and the declarations set forth in the permit application. Three (3) of the copies will be returned to the applicant. Plan approval by the Chairperson does not infer approval required of other agencies. Compliance with Condition 2 remains the responsibility of the applicant;

6. That the testing of the Kahiwa Well be initiated within one (1) year of Board approval, under a Temporary Variance for the use of a generator at the site, a well pump and other non-permanent land usage;

7. Any work or construction to be done on the land shall be initiated within two (2) years of the approval of such use, and all work and construction must be completed within three (3) years of the approval of such use;

8. That the applicant affirm that appropriate measures shall be exercised to prevent construction materials, debris, petroleum derivatives, etc., from entering or polluting surrounding areas and nearby water sources;

9. That the applicant shall comply with permit requirements of the State Water Code, Chapter 174C, Hawaii Revised Statutes, and its implementing Administrative Rule; Specifically, that the applicant shall prepare and submit to the Commission on Water Resource Management, a technical report regarding the well testing phase and any identified short and long term impacts;

10. That the applicant coordinate the project with the Maui Office of the Division of Forestry and Wildlife to inspect the proposed transmission and power corridor to determine if any threatened and endangered species are present;

CDUA NO. MA-2376
APPLICANT Maui Pineapple Company, Ltd.
AGENT AG Systems Hawaii
TMK 1-2-04; 03
11. That the applicant affirm that all cutting and removal of vegetation be kept to a strict minimum and confined to the transmission and power corridor;

12. That the applicant affirm that all litter and unused materials resulting from the testing and construction phases of the project be removed at the project's completion;

13. That the applicant will be held responsible for all fires, including suppression costs, started in the area as a result of the construction activities;

14. That failure to comply with any of these conditions shall render this Temporary Variance and Conservation District Land Use application null and void; and

15. Other terms and conditions as prescribed by the Chairperson.

Please acknowledge receipt of this permit, with the above noted conditions, in the space provided below. Please have the applicant sign two copies. Retain one and return the other within thirty (30) days.

Should you have any questions on any of these conditions, please feel free to contact our Office of Conservation and Environmental Affairs staff at 548-7837.

Very truly yours,

[Signature]

William W. Paty

Receipt acknowledged

[Signature]
Applicant's Signature

10/18/90
Date:

cc: Maui Board Member
Maui Land Agent
Maui County Planning Department
DOH/OHA/OSP

EXHIBIT A 3 OF 3

CODA NO. MA-2376
APPLICANT: Maui Pineapple Company, Ltd.
AGENT: AG Systems Hawaii
TMK: 1-2-04: 03
This map is a portion of the Hali'i Quadrangle of the U.S. Geological Survey map enlarged to an approximate scale of 1 inch = 1,000 ft. Contour interval is 40 feet.
MEMORANDUM

TO: Roger Evans, Conservation and Environmental Affairs

FROM: Manabu Tagomori, Division of Water Resource Management


This is in regard to CDUA Permit MA-4/9/90-2376, which was approved by the Board of Land and Natural Resources on September 28, 1990, and to the transfer of authority on water-related matters from the Board to the Commission on Water Resource Management. Specifically, this is to request that the Board discontinue the past practice of including water-related conditions in CDUA permits, and to remove such conditions from CDUA Permit MA-4/9/90-2376.

The practice of including water-related conditions in CDUA permits was established prior to the passage of the State Water Code and the establishment of the Commission on Water Resource Management. The practice was appropriate for the time. However, under the present administrative structure, authority for water-related matters should be transferred from the Board to the Commission to avoid jurisdictional conflicts.

CDUA Permit MA-4/9/90-2376 illustrates the need for separation of authority between the Board and the Commission. Three of the conditions in that permit, which had been developed by the OCEA staff in consultation with the Commission staff and which seemed reasonable to us at the time, now seem inappropriate. Our change in opinion is the result of experience gained in our ongoing implementation of the Water Code, and a recent contested case proceeding before the Commission. That contested case involved the water-related matters for the same project as was covered by CDUA Permit MA-4/9/90-2376.

We request that the three conditions identified below be either substantially modified or eliminated from CDUA Permit MA-4/9/90-2376 and, in the future, that the Board defer to the Commission as the responsible body for water-related concerns.
CDUA Permit Condition B.1 provides for a one-year period to test a well, establish a pumpage rate, and determine impacts. This condition is inappropriate for the CDUA permit in light of Water Code requirements that any person proposing to drill a well, or install a pump must first obtain well construction and pump installation permits from the Commission on Water Resource Management, and thereafter report the pump test results and monthly pumping records to the Commission. Furthermore, as a result of testimony presented at the contested case hearing, the Commission staff is now of the opinion that one year is not a sufficiently long testing period to assure that any impacts would be detected.

CDUA Permit Condition B.6 requires that testing of the well be initiated within one year of Board approval. This condition is in conflict with the Commission's jurisdiction, since it is illegal for any CDUA permit holder to pump or test a well without first obtaining the necessary permits from the Commission. For the CDUA permit in question, the conflict is illustrated by the fact the Commission's action on a pump installation permit application has been delayed by the contested case proceeding, and that the Board's one-year time period for testing the well has come close to expiring without any testing being possible.

CDUA Permit Condition B.9 requires compliance with the State Water Code and that the applicant shall submit to the Commission a technical report regarding the well testing phase and any identified short and long term impacts. It is appropriate that the CDUA permit require compliance with the Water Code. However, the specification of water-related technical report(s) and water-related impact monitoring program(s) to be required by the Commission should be specified by the Commission, not by the Board.

The jurisdictional conflict illustrated by these conditions reflects our Department's "growing pains" in transferring authority from the Board to the Commission. The fact that there are problem conditions in one CDUA permit should not in any way be construed as a criticism of our respective staffs, which are doing an exceptional job in working through this transition period.

We recommend the following changes to CDUA Permit MA-4/9/90-2376:

1. Delete Condition B.1 in its entirety regarding a temporary land use for a period up to one-year period to test a well.

2. Delete Condition B.6 regarding initiating well testing within one year under a Temporary Variance, and replace with, "The applicant shall comply with permit requirements of the State Water Code, Chapter 174C, Hawaii Revised Statutes, and shall obtain a pump installation permit and any other permits as required by the Commission on Water Resource Management within 18 months of Board approval. The effective date for this CDUA permit shall be the date on which the Commission on Water Resource Management approves the issuance of all necessary permits under its jurisdiction for water-related aspects of the work."

EXHIBIT E 2 OF 3
3. Modify Condition B.7 regarding the initiation and completion of work to read, "Any work or construction to be done on the land shall be initiated not sooner than the effective date of this permit. Any work or construction to be done on the land shall be initiated within one (1) year of the effective date of this permit, and all work and construction must be completed within three (3) years of the effective date of this permit;"

4. Delete Condition B.9 in its entirety regarding compliance with the State Water Code. This requirement would be covered under the replacement condition B.6 recommended above.

5. Modify Condition B.14 by removing the reference to a Temporary Variance, thus making the Board action on a CDUA application only.

Please call me at 548-7533 if you feel additional discussion is required before bringing this matter to the Board's attention.

BR: bm
SURVEY BRANCH
Division of Water Resource Management

FROM:      DATE: 8/20/91  FILE IN:

TO:       INITIAL:

   41] E. SAKODA
   F. Ching
   W. Rozeboom
   P. Haraguchi
   G. Bauer
   N. Fujii
   A. Okamura
   M. Holt
   B. Micua
   G. AKITA
   L. Nanbu
   G. MATSUMOTO
   E. LAI
   L. CHANG
   Y. SHIROMA
   M. TAGOMORI
   S. Kokabun

PLEASE:

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

REMARKS:

   Re: Kohiwa Well, Nahiku

   Biological surveys on streams in the area were conducted during 8/14/91 through 8/20/91.

   Persons doing survey were recommended to Bill Pyle / Maui Pint by Andy Iuen of USFWS. The principal surveyor is Anne Brasher, a Ph.D. candidate at a mainland university, doing her thesis on Hawaiian aquatic life. She is being assisted by Gordon Smith (from Hilo?).
Molokai golf course’s aquifer effect weighed

By Edwin Tanji
Advertiser Maui County Bureau

WAILUKU, Maui – Questions about the effect of the proposed Molokai Highlands golf course on the Kualapuu aquifer will be aired by the State Water Commission.

The commission has granted two requests for a contested case hearing, and will accept additional requests to participate in the hearing, commission Chairman William Paty has announced.

Molokai Highlands, Inc. is proposing to develop a golf course on 450 acres at Kipu in an area that overlies the Kualapuu aquifer. The aquifer is now tapped to provide drinking water for Kaunakakai and West Molokai.

The developer is requesting two well permits to provide irrigation water for the golf course, creating two concerns.

An organization of taro farmers and a residents’ group called Hui Hoopakele Aina fear that there will not be sufficient water for irrigating the golf course and for agriculture at Hooloahua.

The Hooloahua area includes a large number of Hawaiian homestead agricultural lots, which depend on the Kualapuu aquifer as a water source.

Hui Hoopakele Aina also is fearful that irrigation water percolating into the earth could contaminate the Kualapuu aquifer.

Arnold Lum, a lawyer representing Hui Hoopakele Aina, noted that state water manager Manabu Tagomori has taken a position against use of non-potable water over aquifers, because of the potential for contaminating drinking water supplies.

Hana case: In an unrelated case, Water Commission staffers said final written arguments have been filed in a contested case between Hana residents and Maui Land & Pineapple Co., which is seeking to pump a well near Nahiku.

Maui Land & Pine is asking the Water Commission for approval to take up to one million gallons a day from the Kuhiwa well to supplement water flow in the East Maui Irrigation Ditch during dry periods.

But the Hana residents fear that pumping from the Kuhiwa well will cause the nearby Hanawi and Makapipi streams to dry up. During a hearing in May, a hydrologist hired by Maui Land & Pine said there should be no impact on streams from pumping groundwater in the Kuhiwa well.

But a specialist with the U.S. Geological Survey said there is not enough data to determine whether there will, or will not, be an impact on the streams.

The commission is expected to take up the case for action this month.
Mr. L. D. MacCluer  
Plantation Manager  
870 Hallimaile Highway  
Haliimaile, Maui, HI 96768  

Dear Mr. MacCluer:  

Installation of Power Lines to the Kuhiwa Well Site  

We have no objection to your decision to proceed with the pole and line installation as approved by the CDUA permit of October 15, 1990, recognizing that there is that element of risk until the findings of fact and conclusions are reached in the contested case hearing.

Call Manabu Tagomori, Deputy Director, at 548-7533 if you have any questions.

Very truly yours,

WILLIAM W. PATY

C: A. Lum, D. Niles, W. Pyle
June 21, 1991

Mr. William W. Paty
Dept. of Land & Natural Resources
P. O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Paty:

After my discussion with Mr. Manabu Tagamori on the importance of installing the power lines to the proposed Kahiwa pump site during the summer, I have tentatively decided to proceed with the pole and line installation as approved by the CDUA Permit dated October 15, 1990.

I do understand, however, that we may be taking the risk of not receiving the Water Commission's approval for our Pump Installation Permit. We are taking this risk in view of the following facts:

1. The attorney for the Hana Community Association, in his closing arguments, stated that they have no objection to the pump's installation.

2. This work can only be done during good weather.

3. Not having water to irrigate new plantings next Spring will cause grave hardship for our Company.

If you feel we should not proceed, I would appreciate your input as we will have to recalculate our plans.

Sincerely,

L. D. MacCluer
Plantation Manager

LDM/sj
xc: M. Tagamori, D. Niles, B. Pyle, J. Hartley, JWH
The OEQC Bulletin is a semi-monthly publication. The publication dates of the bulletin are the eighth and twenty-third of each month. Applicants should deliver an appropriate number of Draft and Final EISs to the accepting authority before submitting copies to OEQC for distribution and publication. Environmental Assessments should be submitted to the accepting authority directly. Based on the assessment, the accepting authority will submit to OEQC a determination of a Negative Declaration or a Preparation Notice for publication in the bulletin. Draft and Final Environmental Impact Statements must be received by the fifth and twentieth days of the month for publication in the respective issue. Negative Declarations and Preparation Notices must be received at least five working days prior to the publication date. All documents submitted for publication in the OEQC Bulletin should be delivered to the Office of Environmental Quality Control, 220 South King Street, 4th Floor, Honolulu, Hawaii 96813. To ensure proper processing of documents, please attach OEQC Bulletin Publication Form with all submittals. These forms can be obtained by calling OEQC at 586-4185.

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NEOQ BULLETIN
July 23, 1991

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PUBLIC NOTICE
Shoreline Certification Applications

NEGATIVE DECLARATIONS

The following actions have been determined to have little or no impact upon the environment by the Approving Agency (which could be the Accepting Authority, Proposing Agency or Permitting Agency). Environmental Impact Statements are not required of these projects. Those who wish to contest this determination have a 60-day period, from this publication date, in which to initiate litigation. Any questions regarding the following project(s) should be directed to the listed contacts.

KAUAI

GOODALE - SINGLE FAMILY RESIDENCE
District: Hanalei, Kauai
TMK: 5-8-12:12

Applicant: Holbrook and Nancy Goodale

The applicant proposes to construct a single family dwelling. The structure is proposed to be two stories with the parking, utility room, and entry on the lower level and the three bedroom, living, dining, kitchen and decks on the upper level.

The residence and new driveway will encompass approximately 3,848 square feet. The ground area to be disturbed by construction will be approximately 4,000 square feet. The sewage system will be a private 1,000 gallon septic tank with a leach field. Domestic water will be from a private system. Electrical, telephone and cable will be provided from a power pole/line across the street.

KARLEEN - SINGLE FAMILY RESIDENCE
District: Hana, Maui
TMK: 1-2-04:03

Applicant: Don and Peggy Karleen c/o Walton D.Y. Hong

The applicant proposes to construct a 3-bedroom, 3-bath single family residence on a beachfront lot at Haena. The subject property is approximately 6,606 square feet and is designated within the State Land Use Conservation District. The property is a beach lot located makai of Kuhio Highway. It is the first lot located around the bend from Wainiha Bay going in the Haena direction.

MAUI

MAUI COMMUNITY COLLEGE IMPROVEMENTS
District: Wailuku, Maui
TMK: 3-8-07:01, 40

Proposing Agency: Department of Accounting and General Services

Contact: Emily Chun (548-5742)

The Department of Accounting and General Services proposes to construct an approximately 4,000 square feet, one-story reinforced concrete and masonry classroom and agricultural facility. The agricultural facility includes a 3,600 square feet saran greenhouse and a 700 square feet reinforced concrete head house. The project will provide the community college with a much-needed facility to implement its program in accordance with Educational Specifications. Since the project will be constructed within the existing community college campus, no land will be removed from the tax base. The estimated cost of the project is $2,003,000.

KUHIWA WELL PUMPING STATION

District: Hana, Maui
TMK: 1-2-04:03

Proposing Agency: Department of Land and Natural Resources

Applicant: Maui Pineapple Company

The applicant is proposing the installation of a new pump and electric motor in the existing Kuhiwa Well to pump water into the Koolau Ditch. The water will be withdrawn from the ditch for the irrigation of pineapple in Haiku, Makawao, and Kula. The ditch presently carries water from other sources. The water is used for the irrigation of sugar cane and pineapple, and also for drinking water.

The Kuhiwa Well is located about 3,500 feet above the Hana Highway, on the east side of Makapipi Stream, at elevation 1,400 feet.
about 125 feet from the Koolau Ditch. The land at the well site is privately owned and is classified as conservation district. There is an existing concrete platform, derrick footings, and a 14-inch well casing stubbed out above the ground. The well is presently unused.

It is proposed to install a deep well pump of 700 gallons per minute capacity, driven by an electric motor of 250 horse power. Pumping will be intermittent, depending on the rainfall and irrigation needs of the pineapple fields. The well is proposed as an alternate source to water presently pumped from Hanawai Stream at Hana Highway. On an annual basis, the quantity of water pumped from the well will correspond approximately to the quantity of water which would otherwise have been pumped from Hanawai Stream under the existing operating practice.

Although some impact on streams is expected, there was no evidence from which to conclude that the impact may be detectable or significant. There will be a requirement of a monitoring program to assess whether there is any detectable impact. If an impact is detected, it will be required that pumping cease in compliance with interim instream flow standards.

### OAHU

**ACQUISITION OF THE CAPITOL CENTER BUILDING**

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<th>District:</th>
<th>Honolulu, Oahu</th>
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<td>TMK:</td>
<td>2-1-17, Parcel 5</td>
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**Approving Authority:** Accounting and General Services

| Contact: | Brian Isa (548-3922) |

The Department of Accounting and General Services proposes to acquire the leasehold interest of The Capitol Center building located at 1177 Alakea Street, Honolulu, Oahu. The property is a six-story commercial office building and will provide the State with 51,450 net square feet of office space. The office spaces will be renovated to meet the State’s requirements. The additional office space gained will provide the State with long term permanent office space in the Capital District. The estimated cost to acquire the leasehold is $10,500,000.

### WAIMANALO JOB CORPS CENTER

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<tr>
<th>District:</th>
<th>Koolaupoko, Oahu</th>
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<td>TMK:</td>
<td>4-1-09:01</td>
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**Applicant:** U.S. Department of Labor/ETA

The Hawaii Job Corps is planning to relocate from its present Koko Head location to a 12.4-acre site located between the Waimanalo District Park and the Waimanalo Teen Project. The proposed center will consist of eleven one-story buildings. The project will accommodate 220 resident corps members and employ approximately 100 people. The Center will provide housing, basic education, vocational training, indoor and outdoor recreation, dental/medical clinic, food service, and a child development center.

### EIS PREPARATION NOTICES

The following actions have been determined to have significant impacts upon the environment by the Approving Agency (which may be the Approving Authority or Accepting Authority). Environmental Impact Statements will be prepared for these projects. A 30-day consultation period commences with the initial publication of these projects in the bulletin (see deadline dates). The purpose of soliciting comments during the consultation period is to establish the scope and the depth of coverage that the Draft EIS should have.

### WAIKI BEACH IMPROVEMENT PROJECT

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<th>District:</th>
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<td>TMK:</td>
<td>2-604:12 to 3-1-31:3</td>
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Please send your comments to the following:

**Accepting Authority:** Office of Environmental Quality Control

<table>
<thead>
<tr>
<th>Address:</th>
<th>220 South King Street 4th Floor Honolulu, Hawaii 96813</th>
</tr>
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**Consultant:** Edward K. Noda & Associates

<table>
<thead>
<tr>
<th>Address:</th>
<th>615 Piikoi Street Suite 1000 Honolulu, Hawaii 96814</th>
</tr>
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**Deadline:** August 22, 1991

In order to design appropriate beach improvement plans, a detailed program of oceanographic, coastal engineering, and sand source studies was initiated by the Department of Transportation, Harbors Division. The following summarizes some of the major tasks that were included in the program:

- Wave studies, including continuous wave measurements over a 15-month period offshore Waikiki;
- Current studies, including nearshore drogue studies and continuous current measurements over a 3-month period offshore Waikiki;
- Marine biota and water quality surveys;
Natural coarse beach sand is presently not locally available in suitable large quantities for major beach nourishment projects. Submarine sand deposits offshore Waikiki and the Reef Runway at Honolulu International Airport have been investigated as possible borrow sites for fill material. Along certain shoreline reaches, offshore structures may be necessary to stabilize the beaches and minimize future loss of beach sands to offshore areas due to erosional processes. The full range of possible structural stabilization measures are being evaluated to determine the most effective and preferred method. Conceptual plans for offshore structures will be developed with the goal of enhancing recreational use as well as for functional adequacy, such as possible artificial shoals for enhancement of surf sites. Beach improvement plans will also consider infrastructure improvements such as shoreline promenades, comfort stations, showers, and improved public access to the beaches.

Approximately 6,800 linear feet of beachfront shoreline is involved. The estimated cost of the project is $10 - $15 million. The project site is located at Waikiki Beach. The project reach extends along approximately 1.3 miles of shoreline from the Diamond Head end of Fort DeRussy to the Waikiki Aquarium.

**DRAFT ENVIRONMENTAL IMPACT STATEMENTS**

A 45-day review period commences with the initial publication of these projects in the bulletin (see deadline dates). EIS's listed in this section are available for review at the following repositories:

- Office of Environmental Quality Control
- Legislative Reference Bureau
- Municipal Reference and Records Center (Oahu EIS's)
- University of Hawaii Hamilton Library
- State Main Library
- Kaimuki Regional Library
- Kaneohe Regional Library
- Pearl City Regional Library
- Hilo Regional Library
- Wailuku Regional Library
- Lihue Regional Library
- Branch library in closest proximity to the project

Please send your comments to the accepting authority with a copy to the applicant or proposing agency (see listed contacts). OEOC would also appreciate a copy of your comments.

**WEST HAWAII SANITARY LANDFILL**

District: North Kona, Hawaii  
TMK: 7-1-08:01

Accepting Authority: Mayor, County of Hawaii

Consultant: R.M. Towill Corporation  
Attn: Colette Sakoda  
420 Waikamilo Road, #411  
Honolulu, Hawaii 96817  
Ph. No.:842-1133

and a copy to OEOC.

Deadline: September 6, 1991

The County of Hawaii proposes to utilize an undeveloped parcel of State-owned land in Puuanahulu, North Kona, to construct a sanitary landfill to service the solid waste disposal needs of the growing West Hawaii region. The proposed site is located on an 1859 lava flow several miles from any large populated areas.

The proposed project will be part of a long-range plan for a County integrated solid waste management system. This system, while yet to be developed, may include resource recovery processes such as recycling and composting. The overall objective of the project is to provide the region with a new sanitary landfill for solid waste disposal while simultaneously minimizing any adverse environmental impacts on existing and future municipal, residential, and other land uses within the vicinity of the site.

General access to the landfill site will be from Queen Kaahumanu Highway. Exact new roadway alignment and limits of excavation will be defined during the engineering design phase of the project, utilizing more detailed topographic information.

While the entire land area being set aside is 300 acres, the first increment of the landfill will comprise about 170 acres. The remainder will be developed in smaller increments after the first five years of operation.
NORTH SHORE EXCURSION TOUR BOAT OPERATIONS - EXTENSION OF COMMENT PERIOD

Location: Hanalei, Kauai
TMK: 5-5-01:02, 33

Please send your comments to the following:

Approving Authority: County of Kauai

Deadline: August 13, 1991

The North Shore Charter Boat Association proposes to conduct excursion boat staging operations along the southern bank of the Hanalei River on the north shore of Kauai. These include the launching and recovery of commercial excursion boats and the loading and unloading of passengers. Specifically, the activity is proposed to originate and terminate from the riverbank fronting the privately owned and operated Hanalei Excursion Boat Base Yard at Weke Road.

The assessment for this project was prepared in conjunction with a Special Management Area (SMA) permit application seeking to establish commercial boating as a "development" activity originating from the Hanalei River County Boat Ramp and the Hanalei Excursion Boat Baseyard. These proposed activities were integral to the purpose for which the boat yard was designed and approved through the SMA permit. However, the County has determined that launching and landing of boats was no longer permitted when the Department of Transportation's SMA permit for managing boating activities in the SMA expired. Other activities conducted at the boat yard, including parking for clientele, operation of passenger support facilities, boat storage and routine maintenance will continue to be managed in compliance with conditions of the existing SMA permit.

The proposed restoration of previously permitted excursion boat staging operations include launching and recovery of boats by trailer from the river bank on a daily basis and passenger loading and unloading while the boats are in the water. As specified by the SMA permit for the boat yard, only tour boat operations authorized to conduct such activities by the Department of Transportation will be allowed to use the boat yard and to conduct the proposed staging operations.

The tower would be open up to 25 feet, allowing landscaping over a large area both around and under the building. In addition to gardens, an approximately 10,000 square foot lagoon and 25 foot high waterfall would be constructed.

KALI TOWER - HILTON HAWAIIAN VILLAGE

District: Honolulu, Oahu
TMK: 2-6-09:13

Please send your comments to the following:

Accepting Authority: City and County of Honolulu Department of Land Utilization
505 South King Street
Honolulu, Hawaii 96813
Attn: Art Challacombe

Deadline: September 6, 1991

The proposed project is located on the northeast corner of the Hilton Hawaiian Village property. It involves the removal of the existing Hawaiian Village Dome and ancillary facilities and the construction of a new, larger building in the same area, along with construction of 12 tennis courts atop of the parking garage and formation of extensive water features and landscaping on the Kalia Road/Ala Moana Boulevard corner.

The new building would be a 26 story structure containing approximately 400 guest units and health club/spa. Approximately 5,000 square feet of retail space would be located in a smaller, free-standing structure.

The following EISs have been submitted for acceptance. All comments received by the applicant or proposing agency, and corresponding responses, should be contained within the Final EIS. Those who wish to contest the acceptance of an EIS have a 60-day period in which to initiate litigation. The 60-day litigation period starts from the date of acceptance of an EIS.

OAHU

UPPER MAKALEHA SPRINGS WATER RESOURCE DEVELOPMENT

District: Kauai
TMK: 4-6-01:01

Accepting Authority: Governor, State of Hawaii
Proposing Agency: Department of Land and Natural Resources
Status: Currently being reviewed by the Office of Environmental Quality Control.

The Final EIS for the Upper Makaleha Springs Water Resource Development, originally dated December 1987, was withdrawn by the Department of Land and Natural Resources, Division of Water Resource Management in February 1991. No acceptance/non-acceptance determination was made for this document. The Final EIS for the Upper Makaleha Springs Water Resource Development has been resubmitted and the description is as follows:

The Hawaii Division of Water and Land Development proposes to tap natural springs on State Land in the Makaleha Mountains of East Kauai, and to pipe the water to Kapaa for domestic uses. The project involves the construction of a...
The proposed project will help alleviate existing water shortages in the Kapaa-Wailua area by increasing the overall supply approximately 16%. Adverse environmental impacts include a slight degradation of aquatic habitats and surface water quality, especially during construction. In addition, the project will also include the diversion of water now being used by Lihue Plantation Company to irrigate 1000 acres of sugar cane. These impacts will be mitigated by 1) the use of cement rubble masonry for the intake and pipeline pedestal construction; 2) replanting of exposed riparian areas with indigenous vegetation; 3) the restriction of land vehicles past the mauka end of Kahuna Road; 4) the use of silt fences and fabric material to reduce potential sedimentation; and 5) the scheduling of excavation work during the drier months of May through September. The project is consistent with the Kauai County General Plan and the Hawaii State Plan.

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**MAUI**

**KIHEI PUBLIC LIBRARY - SITE SELECTION**

District: Makawao, Maui

TMK: 2-2-02:42, 54, 3-9-06:11, 3-9-11:18, 3-9-12:13

Accepting Authority: Governor, State of Hawaii

Proposing Agency: Department of Accounting and General Services

Consultant: Royce S. Fukunaga

Status: Currently being processed by the Office of Environmental Quality Control.

The Department of Accounting and General Services with the Department of Education, Hawaii State Public Library System proposes to construct a new public library in Kihei to serve the Maalea, Kihei, Wailea, and Makena areas on the Island of Maui. This new 15,550 square foot facility would provide a permanent library to replace the Kihei Library Station. The existing facility, which is less than 2,000 square feet, is located in a classroom building in the old school complex on South Kihei Road, now known as the Kihei Community Complex. The nearest full service libraries are located in Wailuku and Kahului.

Based on criteria established by the Hawaii State Public Library System, five sites were identified and evaluated in a Site Selection Report. Site A, Kihei Community Complex, is located between South Kihei Road and Kekalilo Road, near Uwapo Road. Site B, Future County Civic Center, is located with frontage along Pilani Highway, north of the Silverwood Golf Course. Site C, Waiohuli Beach Homestead, is located between South Kihei Road and Halama Street, south of West Welakahao Road. Site D, adjacent to Kalama Park, is located near the Kihei Fire Station on Waimahainai Street. Site F, adjacent to Kihei School, is the site of the future community park which will be developed as part of the Pilani Village project.

The proposed public library facility will contain the following features:

1. Driveway or access road from existing road to parking area.
2. Paved parking area.
3. Utilities to provide water, electricity, sewer, and telephone service.
4. Drainage improvements to take care of on-site drainage.
5. Landscaping.

The Hawaii State Public Library System has tentatively selected Site D, adjacent to Kalama Park, for the future site of the public library, and Site C, Waiohuli Beach Homesteads, as an alternative site.

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**OAHU**

**KEKAULIKE REVITALIZATION PROJECT**

District: Honolulu, Oahu

TMK: 1-7-03:17, 20, 22, 23, 24, 25, 31, 32, 33, 34, 35, 36; Por 9, 91

Accepting Authority: Department of General Planning

Proposing Agency: Department of Housing and Community Development

Status: Currently being processed by the Department of General Planning

The City and County of Honolulu through its Department of Housing and Community Development proposes a mixed-use residential and commercial development to revitalize the Chinatown District. The redevelopment area encompasses two blocks bounded by King, Maunakea, Hotel, and Piilani Streets, and bisected by Kekaulike Street.

Major elements of the redevelopment include:

1. Acquisition and redevelopment of adjacent private parcels with the existing City-owned Kekaulike Parking Lot to develop a mixed-use complex consisting of approximately 76 residential units, including 6 studios and 72 one-bedroom market priced/temporary relocation units in 3 buildings; approximately 8,322 square feet of leasable commercial space, and approximately 174 parking stalls;
2. Acquisition and redevelopment of interior parcels on the ewa side of Kekaulike Street to support 76 studio rental units for low and moderate income housing, and approximately 6,514 square feet of commercial space;
3. Closure and conversion of Kekaulike Street, mauka of King Street, into a landscaped pedestrian mall; and
4. Rehabilitation of adjacent and surrounding properties.

The entire project will be developed within the 40-foot height limit established for the Chinatown District and will have building designs consistent with the Chinatown area. The existing 83 metered public parking stalls will be replaced within the mixed-use structure and an additional 91 public parking stalls will be provided.
SMITH-BERETANIA PARKING LOT REDEVELOPMENT

Location: Honolulu, Oahu
TMK: 1-7-04-01, 04

Accepting Authority: Department of General Planning
Proposing Agency: Department of Housing and Community Development
Consultant: Mr. Patrick A. Ribella
Status: Accepted by the Department of General Planning, City and County of Honolulu on July 16, 1991.

The Smith-Beretania Parking Lot Redevelopment project involves the use of City land and the expenditure of approximately $10 million in City general obligation bond funds. An additional $6.2 million paid as a development premium for the Honolulu Park Place (Honolulu Tower I) project of Beretania Street and Nuuanu Avenue will also be used for development costs. Parking revenues will repay the general obligation bonds over the long term. The proposed project is located on the block bounded by Beretania, Smith and Pauahi Streets on the fringe of Honolulu’s Chinatown Special District.

The components of the proposed project are as follows:

1. Parking - approximately 325 stalls of public parking within an underground parking facility containing two levels of parking with a single entrance/exit driveway onto South Beretania Street.

2. Child Care - approximately 10,000 square feet of ground-level indoor facilities and outdoor (courtyard) space to include a tot lot, landscaping, benches and other passive play equipment.

3. Public Park - a passive public park containing 36,420 square feet of land will be provided atop the parking structure possibly including a tot lot, landscaping, benches and other passive play apparatus.

4. Commercial Space/City Offices - ground floor, small-scale commercial uses (i.e. convenience shops and minor business services) along Pauahi Street and a small portion of Smith Street with City offices within the second and third floors of a three-story structure facing on Pauahi Street. The retail uses will primarily be pedestrian-oriented. Proposed City offices will permit relocation of City offices presently scattered within the downtown area.

5. Community Recreation Center - Approximately 10,000 square feet of floor space located within the second floor of the proposed three story structure which will be used as a multi-use floor space for recreational, educational and social programs and activities for residents, civic groups and organizations within the immediate community.

WAIANAE KAI GOLF COURSE

District: Waianae, Oahu
TMK: 8-5-03-09, 10, 29, 31, 32, 43
8-5-04-28
8-5-19-33, 35, 36, 37

Approving Authority: Department of General Planning
Applicant: Herbert K. Horita Realty
Consultant: David Hulse
C/o PBR HAWAII

Status: Accepted by the Department of General Planning, City and County of Honolulu on July 11, 1991.

The proposed project involves the development of a 27-hole golf course, encompassing approximately 245 acres of a 252 acre site situated about one mile northeast of Waianae town between Puu Paheehee and Puu Kamaileunu. Planned accessory uses include a clubhouse, 20 tee stall driving range, parking and a maintenance facility.

The proposed layout consists of three nine-hole courses each averaging par 36 and 3,456 yards. Extensive landscaping will provide buffering between the golf course and adjacent properties. Access to the golf course will be accommodated by a private right-of-way extending approximately 2,350 feet from the Waianae Valley Road and terminating at the clubhouse. This right-of-way will establish the only ingress-egress for the project.

The clubhouse is situated centrally to the site and is expected to range in size from 20,000 to 30,000 square feet. Features within the clubhouse include men’s and women’s locker rooms, a pro shop, club storage, a kitchen, snack bar and dining/lounge area. Parking adjacent to the clubhouse is expected to accommodate 266 to 294 cars, based upon a daily service of 400 to 600 people.

In addition to the proposed golf course, a small parcel will be established for productive agricultural uses to be utilized for foliage production.
ENVIRONMENTAL ASSESSMENT CONTENTS AND NOTICES OF DETERMINATION

This information is intended to provide guidance to the public regarding the environmental review process; specifically for the preparation of environmental assessments. The reader is referred to Chapters 341 and 343 of the Hawaii Revised Statutes and Chapter 200 of Title 11, Department of Health Administrative Rules, prior to any document preparation. (References in brackets refer to either Hawaii Revised Statutes, Chapter 343, or Title 11, Chapter 200, Department of Health Administrative Rules.)

The purpose of preparing an environmental assessment is to determine if the impacts of a proposed action are significant enough to warrant the preparation of an Environmental Impact Statement [§11-200-2].

An Environmental Assessment is a document which is prepared for a proposed action which triggers the Environmental Impact Statement Process. Briefly summarized, the eight triggers that require the preparation of an environmental assessment [§343-5] are:

1. Use of State or County lands or funds
2. Use within Conservation District Lands
3. Use within the Shoreline Setback Area
4. Use within any Historic Site or District
5. Use within the Waikiki Special District
6. Amendments to a County General Plan (except for those initiated by the County)
7. Reclassification of Conservation Lands
8. Construction or modification of helicopter facilities

During the preparation of an environmental assessment, the procedures listed in §11-200-9, Early Assessment, must be followed. Historically, one of the steps frequently overlooked has been §11-200-9 (4). This section requires consultation with agencies having jurisdiction or expertise as well as consultation with citizen groups and individuals.

The proposed action must be described in its entirety; therefore, projects should not be done on an incremental basis to avoid the preparation of an environmental impact statement [§343-6(a)(2), §11-200-7].

Environmental assessments must include (but are not limited to) the following [§11-200-10]:

1. Identification of applicant or proposing agency;
2. Identification of approving agency, if applicable;
3. Identification of agencies consulted in making assessment;
4. General description of the action's technical, economic, social, and environmental characteristics;
5. Description of the purpose of the project and in general terms how the project will be accomplished. If applicable, the dimensions of the project should be included.
6. Socio-Economic
7. Proposed mitigation measures, if any:
8. Determination;

ENVIRONMENTAL CHARACTERISTICS

Describe, as applicable, aesthetics, the generation of air pollution, traffic congestion, noise levels, effects on water quality or any other aspect of the environment which may be affected by the proposed action.

5. Summary description of the affected environment, including suitable and adequate location and site maps;

Include flora, fauna, significant habitats, historical/archeological and cultural sites. Describe adjacent natural resources. Sensitive habitats (such as a refuge) or bodies of water (stream, river, ocean, estuary, anchialine pond) adjacent to a proposed project must be addressed.

6. Identification and summary of major impacts and alternatives considered, if any;

Identify positive as well as negative major impacts. The impacts of concern are of the proposed action on the surrounding environment and community, not the impact of the environment on the action. The alternatives considered should be included when applicable.

7. Proposed mitigation measures, if any:

It is not sufficient to write one sentence stating that appropriate mitigation measures shall be instituted wherever necessary. The potential problems must be identified and appropriate mitigation described in general terms. Best Management Practices should be cited whenever possible. For mitigation at Historic Sites, the environmental assessment must include: 1) copies of the Mitigation and/or Preservation Plans prepared for the Department of Land and Natural Resources' State Historic Preservation Program; and 2) a copy of the approval letter for the plans from the State Historic Preservation Program.

8. Determination;

The agency shall consider every phase of a proposed action, the expected consequences, both primary and secondary, and the cumulative as well as the short and long-term effects of the action in making a determination. A determination letter from the Approving Agency must be submitted with the environmental assessment.

PAGE 8
identifying it as either a Negative Declaration or Environmental Impact Statement Preparation Notice. This letter is a formal declaration stating that the document has been reviewed and the action will or will not have significant impacts on the environment. This must be the Approving Agency's determination, not the consultant's determination.

(9) Findings and reasons supporting determination;

Evidence justifying the statement that the proposed action will or will not result in any significant environmental impact, must be included,

(10) Agencies to be consulted in the preparation of the environmental impact statement, if applicable. This is necessary only for assessments which are determined to require environmental impact statements.

An environmental assessment is submitted to an Approving Agency which determines if the proposed action will have a significant impact [§11-200-11(a), §11-200-12]. If the agency's review determines that the proposed action will not have a significant impact, a Negative Declaration is issued. If the agency determines the action will have a significant impact, an Environmental Impact Statement Preparation Notice is issued.

The Notice of Determination (Negative Declaration or EIS Preparation Notice) which is issued by the Approving Agency must include [§11-200-11(c)]:

(1) Identification of applicant or proposing agency
(2) Identification of accepting authority
(3) Brief description of proposed action
(4) Determination
(5) Reasons supporting the determination
(6) Name, address and phone number of contact person for further information

Both Negative Declarations and EIS Preparation Notices must be submitted by the Approving Agency to OEOC for publication in the OEOC Bulletin [§11-200-11(b)]. OEOC has a "Document for Publication Form" which should be filled out and submitted to OEOC with the Negative Declaration or Environmental Impact Statement Preparation Notice.

NEGATIVE DECLARATIONS ARE NOT "ACCEPTED." Once a determination has been made, the document stands as a Negative Declaration unless it is legally challenged. There is a 60 day "Statute of Limitations" [§343-7(d)] during which the public or other agencies may challenge the determination of "negative declaration." A Negative Declaration is not considered "accepted" as with Final EIS's, therefore, it is not republished in the OEOC Bulletin.

If you have any questions or need further information on the Environmental Review Process, please call the Office of Environmental Quality Control at 586-4185.
**PUBLIC NOTICE**

Pursuant to Section 13-222-12, Hawaii Administrative Rules entitled "Shoreline Certification"  

NOTICE OF APPLICATION: Application available for inspection at District Land Offices on the Islands of Kauai, Hawaii and Maui and at Room 220, Kalanikou Building, 1151 Punchbowl Street, Honolulu, Oahu.

<table>
<thead>
<tr>
<th>LOCATION</th>
<th>APPLICANT</th>
<th>TAX MAP KEY</th>
<th>DATE RECEIVED</th>
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</thead>
<tbody>
<tr>
<td>Lot 10 of the Kaua Tract being a part of Section 3 of the first partition of the Hamakuaokalo Hu (Pala, Makawao, Maui)</td>
<td>George F. Newcomer, Land Surveyors, Inc. for Damron D. Cecil</td>
<td>2-6-9:12</td>
<td>6/21/91</td>
</tr>
<tr>
<td>Por of Ninole, Waialua and Punaluu (Ninole, Waialua, Punaluu, Kauai, Hawaii)</td>
<td>ControlPoint Surveying and Engineering, Inc. for Punaluu Dev., Inc.</td>
<td>9-5-19:11 &amp; 9-6-1:2.3</td>
<td>6/28/91</td>
</tr>
<tr>
<td>Lot 7, Waianae Hui Lands (Waianae, Kauai, Hawaii)</td>
<td>Wagner Engineering Services for Kaahon Point Partners</td>
<td>5-8-9:25</td>
<td>6/19/91</td>
</tr>
</tbody>
</table>

**PUBLIC NOTICE**

Pursuant to Section 13-222-12, Hawaii Administrative Rules entitled "Shoreline Certification"

NOTICE OF APPLICATION: Application available for inspection at District Land Offices on the Islands of Kauai, Hawaii and Maui and at Room 220, Kalanikou Building, 1151 Punchbowl Street, Honolulu, Oahu.

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<tr>
<td>Lot 13, L.D. Ct. Consol. 171 (Koolau, Oahu)</td>
<td>Walter F. Thompson, Inc.</td>
<td>4-6-7:107</td>
<td>7/3/91</td>
</tr>
<tr>
<td>48-355 Crozier Dr. (Koolau, Oahu)</td>
<td>ControlPoint Surveying and Engineering, Inc. for Donald &amp; Pamela Lichty</td>
<td>6-0-5:10</td>
<td>6/20/91</td>
</tr>
</tbody>
</table>

Comments on application may be made in writing to the State Land Surveyor at Room 210, Kalanikou Building, 1151 Punchbowl Street, Honolulu, Oahu within fourteen (14) days of this notice.

Department of Land and Natural Resources  
1151 Punchbowl Street, Room 220  
Honolulu, Hawaii 96813  
Tel. 548-6460
**PUBLIC NOTICE**

Pursuant to Section 13-222-12, Hawaii Administrative Rules entitled "Shoreline Certification"

Date: July 23, 1991 Number: 91-014

NOTICE OF APPLICATION: Application available for inspection at District Land Offices on the Islands of Kauai, Hawaii and Maui and at Room 220, Kalanikau Building, 1151 Punchbowl Street, Honolulu, Oahu

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<th>LOCATION</th>
<th>APPLICANT</th>
<th>TAX MAP KEY</th>
<th>DATE CERTIFIED (C) OR REJECTED (R)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Por. of Lualualei Beach Park Lualualei, Waianae, Dept. of Parks &amp; Recreation</td>
<td>C&amp;C of Honolulu for</td>
<td>8-6-1:7</td>
<td>7/8/91 (C)</td>
</tr>
<tr>
<td>2) Lot 10, Kiluaea Gardens Subd., File Plan No. 1554 at Kiluaea Being a Por. of R.P. Grant 2896 to Charles Titcomb (Kilauea, Hanalei, Kauai)</td>
<td>Peter N. Taylor, Inc. 5-2-4:71 for J.O. Developers, Inc.</td>
<td></td>
<td>7/8/91 (C)</td>
</tr>
<tr>
<td>3) Lot 30, Haena Hui Land (Hanalei, Kauai)</td>
<td>Portugal &amp; Associates 5-9-02:48 for Joe M. Paskal</td>
<td></td>
<td>7/8/91 (C)</td>
</tr>
<tr>
<td>4) Lot 18, Haena Hui Land (Haena, Halelea, Kauai)</td>
<td>Portugal &amp; Associates 5-9-02:35 for Kjell Rasten</td>
<td></td>
<td>7/18/91 (C)</td>
</tr>
</tbody>
</table>

APPEAL may be made to the Department of Land and Natural Resources in writing within twenty (20) days of the date of this notice:

Department of Land and Natural Resources
1151 Punchbowl Street, Room 220
Honolulu, Hawaii 96813
Tel. 548-6460
MEMORANDUM

TO: Roger Evans, Conservation and Environmental Affairs

FROM: Manabu Tagomori, Division of Water Resource Management


This is in regard to CDUA Permit MA-4/9/90-2376, which was approved by the Board of Land and Natural Resources on September 28, 1990, and to the transfer of authority on water-related matters from the Board to the Commission on Water Resource Management. Specifically, this is to request that the Board discontinue the past practice of including water-related conditions in CDUA permits, and to remove such conditions from CDUA Permit MA-4/9/90-2376.

The practice of including water-related conditions in CDUA permits was established prior to the passage of the State Water Code and the establishment of the Commission on Water Resource Management. The practice was appropriate for the time. However, under the present administrative structure, authority for water-related matters should be transferred from the Board to the Commission to avoid jurisdictional conflicts.

CDUA Permit MA-4/9/90-2376 illustrates the need for separation of authority between the Board and the Commission. Three of the conditions in that permit, which had been developed by the OCEA staff in consultation with the Commission staff and which seemed reasonable to us at the time, now seem inappropriate. Our change in opinion is the result of experience gained in our ongoing implementation of the Water Code, and a recent contested case proceeding before the Commission. That contested case involved the water-related matters for the same project as was covered by CDUA Permit MA-4/9/90-2376.

We request that the three conditions identified below be either substantially modified or eliminated from CDUA Permit MA-4/9/90-2376 and, in the future, that the Board defer to the Commission as the responsible body for water-related concerns.
CDUA Permit Condition B.1 provides for a one-year period to test a well, establish a pumpage rate, and determine impacts. This condition is inappropriate for the CDUA permit in light of Water Code requirements that any person proposing to drill a well, or install a pump must first obtain well construction and pump installation permits from the Commission on Water Resource Management, and thereafter report the pump test results and monthly pumping records to the Commission. Furthermore, as a result of testimony presented at the contested case hearing, the Commission staff is now of the opinion that one year is not a sufficiently long testing period to assure that any impacts would be detected.

CDUA Permit Condition B.6 requires that testing of the well be initiated within one year of Board approval. This condition is in conflict with the Commission's jurisdiction, since it is illegal for any CDUA permit holder to pump or test a well without first obtaining the necessary permits from the Commission. For the CDUA permit in question, the conflict is illustrated by the fact the Commission's action on a pump installation permit application has been delayed by the contested case proceeding, and that the Board's one-year time period for testing the well has come close to expiring without any testing being possible.

CDUA Permit Condition B.9 requires compliance with the State Water Code and that the applicant shall submit to the Commission a technical report regarding the well testing phase and any identified short and long term impacts. It is appropriate that the CDUA permit require compliance with the Water Code. However, the specification of water-related technical report(s) and water-related impact monitoring program(s) to be required by the Commission should be specified by the Commission, not by the Board.

The jurisdictional conflict illustrated by these conditions reflects our Department's "growing pains" in transferring authority from the Board to the Commission. The fact that there are problem conditions in one CDUA permit should not in any way be construed as a criticism of our respective staffs, which are doing an exceptional job in working through this transition period.

We recommend the following changes to CDUA Permit MA-4/9/90-2376:

1. Delete Condition B.1 in its entirety regarding a temporary land use for a period up to one-year period to test a well.

2. Delete Condition B.6 regarding initiating well testing within one year under a Temporary Variance, and replace with, "The applicant shall comply with permit requirements of the State Water Code, Chapter 174C, Hawaii Revised Statutes, and shall obtain a pump installation permit and any other permits as required by the Commission on Water Resource Management within 18 months of Board approval. The effective date for this CDUA permit shall be the date on which the Commission on Water Resource Management approves the issuance of all necessary permits Under its jurisdiction for water-related aspects of the work."
3. Modify Condition B.7 regarding the initiation and completion of work to read, "Any work or construction to be done on the land shall be initiated not sooner than the effective date of this permit. Any work or construction to be done on the land shall be initiated within one (1) year of the effective date of this permit, and all work and construction must be completed within three (3) years of the effective date of this permit;"

4. Delete Condition B.9 in its entirety regarding compliance with the State Water Code. This requirement would be covered under the replacement condition B.6 recommended above.

5. Modify Condition B.14 by removing the reference to a Temporary Variance, thus making the Board action on a CDUA application only.

Please call me at 548-7533 if you feel additional discussion is required before bringing this matter to the Board's attention.

BR: bm
July 17, 1991

TO: Files
FROM: Environmental Health Specialist

Mr. Rozeboom called me to correct the subject transmittal as follows:


2. In the Summary section of Form 91-1, last paragraph, change the year from 1990 to read 1991.

3. On each copy of the last page of the submitted environmental assessment (Supplemental Information), change the year 1990 to read 1991.

The above corrections were made and a copy of this memorandum has been sent to the Commission through Mr. Rozeboom.

cc: Mr. William Rozeboom, Hydrologist
The Department has reviewed the environmental assessment for a pump installation permit at Kuhiwa Well, Well No. 6-4806-48, in conservation district, at TMK 1-2-04:03 in Nahiku, Maui. This is the same environmental assessment as was submitted previously to the Board of Land and Natural Resources for the same project, and considered by OEQC, for Conservation District Use Application MA-4/9/90-2376. A negative declaration for all non-water aspects of the project was published in OEQC Bulletin Volume VII, No. 10, dated May 23, 1990.

We have determined that a negative declaration is appropriate for water-related matters based upon the environmental assessment, the application for a pump installation permit filed with the Commission on Water Resource Management, and the evidence and testimony presented at contested case hearing MA-CC-91-1 before the Commission on May 30 and June 19, 1991. The application for a pump installation permit and the evidence and transcripts of testimony from the contested case hearing are available for review at the Division of Water Resource Management, 1151 Punchbowl St., Room 227.

On the basis of competing expert witnesses' testimony, it is not possible at this time to conclude that the proposed well pumping may have a significant impact on streams in the vicinity of the well. This could only be determined by allowing the project to proceed and by monitoring for impacts. This approach is supported by the Commission staff and all parties to the contested case.
A negative declaration is warranted for three reasons:

1) There is no evidence to conclude at this time that the project may have a detectable or significant impact on streams in the area.

2) An Environmental Impact Statement prepared at this time would be unable to conclude whether the project may have a significant impact on streams in the area.

3) If a pump installation permit is issued by the Commission, it would contain conditions which require a program to monitor for impacts on streams in the area, and require pumping to cease if impacts are detected. These conditions are necessary to comply with the interim instream flow standards of the State Water Code. In the event that impacts are detected, they would be short-lived and not significant because the pumping would be stopped at that time.

Please call me or Manabu Tagomori of our Division of Water Resource Management, at 548-7533, if you have any questions.

Enclosure
DOC U N T FOR PUBLICATION IN THE OE Q BULLETIN

TITLE OF PROJECT: KUHIWA WELL PUMPING STATION

LOCATION: ISLAND MAUI DISTRICT NAHiku

TAX MAP KEY: 1-2-04:03

TO BE FILLED OUT BY THE AGENCY ONLY:

TYPE OF ACTION: AGENCY Applicant

PLEASE CHECK ALL THAT APPLY IN BOTH CATEGORIES:

CATEGORY 1: Applicable State or Federal Statute

✓ Chapter 343, HRS

Chapter 205A, HRS

NEPA (Federal Actions Only)

CATEGORY 2: Type of Document

✓ Negative Declaration or FONSI

EIS Preparation Notice or NOP

Draft EIS

Final EIS

Revized Draft EIS

Revized Final EIS

Supplemental Draft EIS

Supplemental Final EIS

Prior to general distribution, please submit to OEQC: 4 copies of the Negative Declarations or EIS Preparation Notices, 4 copies of the Draft EIS’s or Final EIS (For Draft and Final EIS’s an additional copy is mailed to OEQC.)

PROPOSING AGENCY OR APPLICANT SHOULD SUBMIT COPIES OF THE DOCUMENTS TO THE ACCEPTING AUTHORITY PRIOR TO SUBMITTING COPIES TO OEQC.

ACCEPTING AUTHORITY: DEPARTMENT OF LAND • NATURAL RESOURCES

ADDRESS: P.O. Box 373

Hana, Maui, Hawaii 96785

(1151 Punchbowl Street)

CONTACT: Manabu Tagomori PHONE: 548-7533

PROPOSING AGENCY OR APPLICANT: MAUI PINEAPPLE COMPANY

ADDRESS: 870 HALIMAILE RD.

MAKAWAO, MAUI, HAWAII 96787

CONTACT: L.D. (Doug) MacCluer PHONE: 572-7211

CONSULTANT: AG SYSTEMS HAWAII

ADDRESS: P.O. Box 90

Puunene, Maui, Hawaii 96784

CONTACT: William L. Pyle PHONE: 572-5910

COMMENT LETTERS ADDRESSED TO: AGENCY OR APPLICANT CONSULTANT

Form # 91-1 (Page 1)
The applicant is proposing the installation of a new pump and electric motor in the existing Kuhiwa Well to pump water into the Koolau Ditch. The water will be withdrawn from the ditch by the applicant for the irrigation of pineapple in Haiku, Makawao, and Kula. The ditch presently carries water from other sources which is used for the irrigation of sugar cane and pineapple, and also for drinking water for the County of Maui.

The Kuhiwa Well was constructed in 1947 and is located about 3,500 feet above the Hana Highway, on the east side of Makapipi Stream, at elevation 1,400 feet, about 125 feet from the Koolau Ditch. The land at the well site is privately owned and is classified as conservation district. There is an existing concrete platform, derrick footings, and a 14-inch well casing stubbed out above the ground. The well is presently unused and overgrown with grass.

It is proposed to install a deep well pump of 700 gallons per minute capacity, driven by an electric motor of 250 horse power. Pumping will be intermittent, depending on the rainfall and irrigation needs of the pineapple fields. The well is proposed as an alternate source to water presently pumped by the applicant from Hanawi Stream at Hana Highway. On an annual basis, the quantity of water pumped from the well will correspond approximately to the quantity of water which would otherwise have been pumped from Hanawi Stream under the existing operating practice.

An environmental assessment and negative declaration for all non-water aspects of the proposed project was previously accepted under the authority of the Board of Land and Natural Resources and was published in OEQC Bulletin Volume VII, No. 10, dated May 23, 1990. The analysis for that acceptance did not account for possible water-related impacts, which were instead deferred to the authority of the Commission on Water Resource Management. This negative declaration is for water-related aspects of the proposed project only.

On May 30 and June 19, 1991 a contested case proceeding was held before the Commission on Water Resource Management regarding a pump installation permit for the Kuhiwa well, and possible water-related impacts. Although some impact on streams is expected, there was no evidence from which to conclude that the impact may be detectable or significant. If the Commission should approve the pump installation permit, there will be a requirement of a monitoring program to assess whether there is any detectable impact. If an impact is detected, it will be required that pumping cease in compliance with interim instream flow standards. A public hearing process is required to amend the interim instream flow standards.
V. ENVIRONMENTAL ASSESSMENT

1. APPLICANT:

Maui Pineapple Company, Limited
870 Haliimaile Road
Makawao, Maui, Hawaii 96787

2. APPROVING AGENCY:

State of Hawaii
Department of Land and Natural Resources
Post Office Box 621
Honolulu, Hawaii 96809

3. CONSULTING AGENCIES:

None

4. GENERAL DESCRIPTION OF THE TECHNICAL, ECONOMIC, SOCIAL AND ENVIRONMENTAL CHARACTERISTICS OF THIS PROJECT:

A. EXISTING WELL

The existing well was drilled and cased in 1947 and is located approximately 3,500 feet uphill of the Hana Highway near Nahiku, Maui, within Tax Key 1-2-04-03. The location is shown in Exhibit A attached.

This well is located at an elevation of 1,400 feet. It was drilled to a depth of 1,255 feet. The well casing is 14 inches outside diameter and is installed to a depth of 917 feet.

A test pumping of this well in 1977 with rates as high as 750 gpm indicated that water can be withdrawn from this high level ground water body without affecting the nearest major stream, Hanawi. There was a drawdown of 358 feet when pumping at 650 gpm. It is economical to pump this water into the ditch system, which is at the 1400 foot elevation level, for irrigation use elsewhere. Pumping at one million gallons per day is insignificant compared to the estimated recharge of over 25 million gallons per day per mile of shoreline.

B. PROPOSED INSTALLATION:

(1) PUMP:

It is proposed to install a pump of up to 700 gallons per minute capacity (one million gallons per day) with an electric motor of up to 250 hp in the existing well (see photos 1 & 2). A small building will be constructed over the pump and well for shelter from the weather.
(2) PIPELINE:

An eight inch plastic pipeline will be installed from the pump to the existing Koolau Ditch tunnel, a distance of about 125 feet. This pipeline will be installed on top of the ground, as the area is nearly solid rock, and digging a trench to bury the pipeline would be very difficult and disruptive to the area. The ground is fairly level and thickly covered with ferns and grasses (see photo 3). A minimal amount of grass clearing needs to be done in order to install the pipeline. If allowed to do so, the grass will quickly regrow and completely cover the pipeline in a very short period of time. The water from the pipeline will empty into the Koolau Ditch tunnel, which carries the water under Makapipi gulch (see photos 4 & 5). A small support is needed to carry the pipe over the small gulch known as East Makapipi and into the tunnel under the stream (see Exhibit I and photo 4).

(3) POWER LINE:

A power line will be installed from an existing pump station located on the downhill side of the Hana Highway at Hanawi Stream (see photo 6), extending uphill along the existing Hanawi Pipeline (see photos 7 & 8) to the Koolau Ditch (see photo 9), then along the Koolau Ditch and road (see photos 10 & 11) to the well, a distance of approximately 7,100 feet. This would be a 23,000 volt power line with a transformer at the well location. Approximately 30 poles are estimated to be required along the existing pipeline and ditch (see Exhibits G & H). Pole tower structures may be required on either side of the span across Hanawi Stream and again on either side of the span across Makapipi Stream near the well (see photos 12 & 13). About 800 feet of this powerline, near the pump end, is along a footpath (see photo 14), which will probably require a helicopter to install the poles (3). Trees and other vegetation in this area are short and will require minimal trimming in order to clear the power line. These trees are mostly ohia and eucalyptus. The powerline will not be visible from the Hana Highway, except for the first span at the existing Hanawi Pump.

(4) DRAINAGE:

The present drainage pattern of the natural area remains unchanged as only existing roads will be used for access for construction purposes.

(5) LANDSCAPING:

The natural forest cover, primarily guava, ohia, ginger, fern, eucalyptus and grasses, will remain throughout the area. An area of less than one acre at the well site will be cleared. Trees along the power line will be selectively removed or trimmed. No introduced landscaping will be used.
(6) **ACCESS:**

Access to the well site is by an existing unused jeep road from the Hana Highway, a distance of about 1 1/2 miles. This road is presently overgrown with grass (see photo 15), and some clearing of the grass and minor repair work will be required in order to make the access safer.

Access to the powerline route is by existing road from the Hana Highway, a distance of about 1/4 mile, and along the existing Koolau Ditch. This road is in good condition and will require minimal repair work, if any (see photos 10 & 11).

(7) **CONSTRUCTION SCHEDULE:**

Ordering of the pump and motor, and installation of the pumping equipment, discharge pipe and power line will follow approval of the Conservation Use Application by the Department of Land and Natural Resources. It is estimated that the project can be completed in 6 to 9 months following approval.

C. **GROUND WATER**

(1) **RAINFALL:**

At the site, rainfall averages approximately 200 inches per year. In the watershed, as you go to higher elevations, the rainfall increases, up to a maximum of approximately 300 inches per year at elevation 2,000.

(2) **GEOLOGY:**

East Maui is a shield shaped dome of olivine basalts. The area at Kukiwa is composed of Hana volcanic series rock, which is generally highly permeable.

(3) **HYDROLOGY:**

A detailed study of the Nahiku ground water situation is reported in *Geology and Ground Water Resources of the Island of Maui, Hawaii*, by H. T. Stearns and G. A. MacDonald, 1942. The situation is extremely complex.

The Hawaii Water Resources Regional Study Preliminary Surface and Ground Water Resources study report of April, 1975, reports "there is an abundant supply of ground water available for development." The average supply in Area IV, which includes the Nahiku area, is 925 mgd from an average of 144" rainfall per year. The ground water recharge is estimated at 470 mgd or over 25 mgd per mile of shoreline.

D. **PUMPING PROGRAM AND UTILIZATION OF WATER**

(1) **PROGRAM:** Pumping will be intermittent depending on rainfall and irrigation requirements for the pineapple fields in the Haiku, Makawao and Kula areas. The pump will operate to replace water
withdrawn from East Maui Irrigation Company (EMI) ditches in the Haiku area and from Hawaiian Commercial and Sugar Company (HC&S) ditches in the Makawao and Kula areas. It is anticipated that the pump could operate as much as 300 days a year in a dry year, but probably averaging 200 days a year in more normal years.

(2) WATER UTILIZATION: The water will be placed in the Koolau Ditch to replace water withdrawn elsewhere from the ditch system owned by EMI and HC&S. The water will be withdrawn for the irrigation of pineapple by Maui Pineapple Company, Limited in Haiku, Makawao and Kula.

E. SOCIAL AND ECONOMIC EFFECTS:

The long term water agreement between the Hawaiian Commercial and Sugar Company and Maui Pineapple Company, Limited has expired this year. Negotiations for a new agreement include development of new irrigation water to replace irrigation water used by Maui Pine from the HC&S ditch system. Maui Pine needs this water in order to keep the Kula fields economically productive and to meet the production commitments to their customers.

5. DESCRIPTION OF AFFECTED ENVIRONMENT:

A. GROUND WATER:

Pumping at rates of up to 700 gallons per minute or one million gallons per day will have little effect on the ground water conditions at Nahiku, where it is estimated that the recharge is more than 25 million gallons per day per mile of coastline. No other pumps are taking water from this aquifer at Kuhiwa.

During test pumping of this well in 1977 at rates up to 750 gpm, there was no effect on the springs at Hanawi Stream, the deep gulch approximately a mile to the east. Drawdown at the pump will be substantial as the well is in fairly impermeable lavas. During the test pumping, at a rate of 650 gpm, the drawdown was measured to be 358 feet. The water table at that time was 740 feet above sea level.

B. FOREST COVER:

There will be no change in the typical East Maui watershed forest cover except for the few Ohia and Eucalyptus trees removed or trimmed to install the electric power line.

C. WILDLIFE:

There will be no change in wildlife, including birds, as the ground cover remains the same.

D. DRAINAGE:

There will be no changes in the drainage patterns in the watershed area.
E. ARCHAEOLOGICAL:

There are no significant archaeological remains in the area as surveyed by Xamanek Researches, Walter M. Fredericksen, Jr. and Demaris L. Fredericksen, reported in a memorandum dated July 17, 1978, and updated on April 4, 1990 (attached).

F. CONSTRUCTION IMPACT:

Short term effects of construction noise and dust will be minor as controlled by existing laws and ordinances. There are no homes within 1 1/2 miles of the site. The ground is usually damp from the high rainfall and dust is not a problem. What areas are cleared at the pump site and for the electric power line will grow over rapidly when the job is completed. Some repair and maintenance will be required of the existing jeep roads in order to make the access safer.

6. IDENTIFICATION AND SUMMARY OF MAJOR IMPACTS:

The production of one million gallons of water for the irrigation of pineapple in Haiku, Makawao and Kula is vital and necessary for the continued economic health of Maui Pineapple Company, Limited. There is capacity available in the ditch systems of EMI and HC&S to carry this water from Kuhiwa to the pineapple growing areas without any impact on the environment.

Only a minor amount of clearing is required, around the pump site and along the pipeline route, and some tree trimming will be required along the powerline route (see photos). The trees affected by this trimming are mostly ohia and eucalyptus. The resulting effect on the ground cover, animal and bird population will be insignificant. The only long range effect will be the withdrawal of up to one million gallons per day from the presently unused major ground water body in the Kuhiwa area, where the recharge rate is estimated to be over 25 million gallons per day per mile of shoreline.

All alternatives considered require the drilling of a new well. The impact on the environment from this drilling operation would be more severe than the use of this existing well. During the 1930's and again in the 1940's, extensive testing in this area was conducted to determine the location and extent of high level ground water bodies. This existing well was drilled as a result of these tests and monitored by EMI, the HSPA Experiment Station, and the United States Geologic Survey. Use of the existing well is preferred over the drilling of a new well.

7. PROPOSED MITIGATION MEASURES:

Any tree trimmings and removed ground vegetation will be composted in areas discretely selected so as not to become eyesores or interfere with the natural drainage of the area. The small amount of soil removed from the holes for the power poles will be discretely spread in the surrounding grasses and ferns. The building over the well will be kept small and unobtrusive, and will not be visible from the Hana Highway. No other mitigation measures are required.
8. DETERMINATION:

The expiration of the old water agreement between HC&S and Maui Pine, the present economy, and the increased needs for irrigation water for pineapple make this project feasible and necessary at this time. The environmental effects will be negligible, and the project will utilize a small portion of the sustainable yield of the high level ground water body at Kuhiwa. There are no known locations along the ditch system which will provide additional supplies with lower pumping costs. There will be minimal clearing or trimming of forest cover, and there will be no effect on other surface or ground water diversions. This project should be allowed to proceed during the summer of 1990.

VI. SUMMARY OF PROPOSED USE:

The use consists of the installation of a new pump and electric motor in the existing Kuhiwa well, and an 8" plastic pipe from the well to the Koolau Ditch tunnel, to provide up to one mgd for the irrigation of pineapple in Haiku, Makawao and Kula. Also included is the installation of an electric power line along the existing Hanawi pipeline and Koolau Ditch to the well site.
INFORMATION REQUIRED FOR ALL USES

I. DESCRIPTION OF PARCEL:

A. EXISTING STRUCTURES:

The Kuhiwa Well is on an existing site about 3,500 feet above the Hana Highway, on the east side of Makapiipi Stream, at elevation 1,400 feet, about 125 feet from the Koolau ditch, and on Tax Key parcel 1-2-04-03. There is an existing concrete platform, derrick footings, and a 14 inch well casing stubbed out above the ground. This well is presently unused and overgrown with grass.

The Koolau Ditch tunnel goes under this site and continues on under Makapiipi Stream heading west. The tunnel then opens up into an open ditch until it gets to Hanawi Stream, which it crosses as a tunnel, then it goes on to the central valley area of Maui as a combination of open ditch and tunnel. This ditch carries water for the irrigation of sugar cane and pineapple, and it also carries drinking water for the County of Maui.

At the Hana Highway, along the west side of Hanawi Stream, there is an electric power line and pump known as the Hanawi Pump. From this pump there is a pipeline up to the Koolau Ditch. This pump and pipeline lift about 1/2 mgd of water from Hanawi Stream up to the Koolau Ditch for the irrigation of pineapple, when the water is available.

The location of these structures is shown on Exhibit A attached.

B. EXISTING UTILITIES:

Electric power, 23,000 volts, is available at the Hanawi Pump, as shown on Exhibit A.

C. EXISTING ACCESS:

There are two existing jeep roads about 10 feet wide into the site as shown on Exhibits A and B.

D. VEGETATION:

The vegetation is typical of windward East Maui, which is subject to high rainfall. Some of the vegetation found in the area are: guava, ohia, ginger, various types of fern, grass, eucalyptus, etc. No rare native plants have been identified in the area.

E. TOPOGRAPHY:

Exhibit A, which is an enlarged portion of a U.S. Geological Survey Topographic Map, is enclosed. The area is moderately steep, rolling terrain with deep gulches, slopes 15 to 25%.
F. IF SHORELINE AREA, DESCRIBE SHORELINE:

Does not apply to this application.

G. EXISTING COVENANTS, EASEMENTS, RESTRICTIONS:

There are no existing covenants, easements, or restrictions regarding the use of this area.

H. HISTORIC SITES AFFECTED:

Memorandum from Xamanek Researches, by Walter M. Fredericksen, Jr. and Demaris L. Fredericksen, dated July 17, 1978, and updated April 4, 1990, attached, indicate no evidence of significant archeological remains.

II. DESCRIPTION OF PROPOSED USE:

It is proposed to install a deep well pump of up to 700 gallons per minute (gpm), electric driven by a motor of up to 250 hp, as indicated on Exhibits A through I. Access to the pump will be by existing unpaved service road. Access for construction of the electric power line will be by existing unpaved jeep road, except for the about 800 feet along the footpath, which will be accessed by foot and helicopter. Exhibit G shows the approximate power pole locations. This pump will be used to pump up to 700 gpm of water from an existing deep well to East Maui Irrigation Company's Koolau Ditch for transport to Haiku, Makawao and Kula for the irrigation of Pineapple by Maui Pineapple Company, Limited. Pumping will be intermittent, depending upon the rainfall and irrigation needs of the pineapple fields.

III. COMMENCEMENT AND COMPLETION DATES:

The project will commence as soon as approved, and should be complete 6 to 9 months afterward. It is hoped to begin this project the summer of 1990.

IV. TYPE OF USE REQUESTED: Conditional Use; Subzone P & R.

Area of Proposed Use: Less than 1 acre will be used for the pump building and pipeline route to the ditch. This is all in P subzone. About 7,100 feet of overhead powerline will be installed along the existing Hanawi pipeline and Koolau ditch, requiring about 30 poles. The powerline will start out in R subzone, go along the boundary between the P and R subzone, then finish up with about 2,000 feet in the P subzone at the pump end. See Exhibit F.

Nearest Town: The area known as Nahiku is about 1 1/2 miles away.

Conservation District Subzone: M-14, Nahiku.
INFORMATION REQUIRED FOR CONDITIONAL USE ONLY

I. PLANS:

A. Area Plan:

Exhibit B, a portion of Tax Map Number 1-2-04 and Exhibit D, an Area Plan, identify existing ditch facilities, roadways, pipelines, and the Kuhiwa Well. Less than 1 acre of this 1,359.18 acre parcel is involved in this application. The two abutting properties which lie nearest to the proposed conditional use application are owned by the State of Hawaii (TK:1-2-04-2 and 7).

B. Site Plan:

Exhibit E represents the site plan identifying existing features in relation to the proposed conditional use application. Dimensions and shape of lot, metes and bounds description of the property are not shown because of the large size of the property. There are no existing easements and utilities in this area. There is vegetation along the proposed electric transmission line but the area surrounding the Kuhiwa Well is reasonably clear due to the clearing which took place in 1947 before the drilling of the well.

C. Construction Plan:

Construction plans include the electric transmission line and a small building to house the pumping equipment. The building will be placed on the existing concrete platform. The route for the power line will require some trimming and possibly removal of some ohia and eucalyptus trees in order to clear the lines. The pipeline route from the well to the ditch facilities will require very little clearing or grading. A support across the gulch into the tunnel will be required (see Exhibit I).

D. Maintenance Plans:

Maui Electric Co. maintenance plan for power transmission line consists of an annual inspection for tree trimming requirements. Routine periodic maintenance inspections of the pump and associated electrical gear by Maui Pine will also be made.

E. Management Plans:

The pump will be used to pump up to one million gallons per day into the Koolau Ditch for transfer to Haiku, Makawao and Kula where it will be removed by Maui Pineapple Company, Limited for the irrigation of Pineapple. The pump will be operated only during periods when it is dry in these pineapple growing areas. It is estimated that this requirement could be as high as 300 days in a dry year, but normally around 200 days per year.
F. Historic or Archaeological Site Plan:

Memorandum from Xamanek Researches, dated July 17, 1978, and updated April 4, 1990, attached, indicate no evidence of significant archeological remains.

II. SUBZONE OBJECTIVES:

The P and R subzone objectives as stated in DLNR Title 13, Chapter 2, designate the area for protection of the watershed. This project will remove a small amount of the available groundwater for the irrigation of pineapple without any contamination of the groundwater supply. There will be no significant disruption to the rainforest or surface runoff waters. There is no effect on any archeological or historic sites, known or unknown, as all construction work is kept within the proximity of existing disturbed areas such as pipelines, ditches, roads and wellheads.

The project will have no effect on the natural ecosystem of plants, fish and wildlife. There will be no effect on the future development of any parklands, growing and harvesting of timber, or any outdoor recreation such as hunting, fishing, hiking, camping and picnicking.

The powerlines and electric power used to pump this water are a clean, environmentally acceptable way of achieving the desired result of providing the needed irrigation water for the pineapple fields in Haiku, Makawao and Kula. The building used to shelter the pumping equipment and associated electrical gear will be small and unobtrusive. This project will utilize an unused, existing well, built many years ago, to provide clean irrigation water urgently needed by Maui Pine for their fields in order to maintain their productivity and profitability.

The installation of the pump, powerlines, and the pumping of this water for irrigation purposes is consistent with the objective of these Conservation District Subzones.

DESCRIPTION: The survey was undertaken at the request of Mr. P. Scott, East Maui Irrigation Co. The Kuhiwa Well Site, Nahiku, Maui, is to be put into service, requiring the installation of electrical power lines for pump operation.

The survey was undertaken on Friday, July 14, 1978. The map used for our survey was the Maui Electric Plan for the Kuhiwa Well site (drawn May 8, 1978). This map keys into existing topographic maps of Maui and the site area in particular, and also includes the locations of all sites for power poles and their guy systems. These power pole sites were the areas subject to our survey, since these are the sites that will be disturbed by the construction.

The site location extends mauka of the Hana Highway in the Nahiku area. The pole sites follow an existing EMI access road into the area. Along this road there are six (6) pole sites, consecutively numbered from the access road turnoff, E4 through E9 (refer to map cited above). The method of survey was to walk the area, testing the pole sites for possible archaeological material. Following our survey of this area, we proceeded by EMI jeep trail to the site of the existing Kuhiwa Well. The well site lies across the small valley (gulch) which serves as the run for Kuhiwa and Makapipi streams. This valley will be spanned by the power lines a distance of about 1300 feet.

Proceeding from the well site there are three (3) pole sites, consecutively numbered (from the well to the edge of the cliff which drops from there to the valley floor), E12 to E10. We were unable to locate the site of Ell. The survey method was the same as before.

In all cases we were unable to find evidence of significant archaeological remains. This probably results from the following reasons: 1) the area is considerable disturbed from the existing road and other work which has been done there; 2) rain forest undergrowth and water saturated soil make recognition of archaeological features extremely difficult; 3) the rain forest environment would contribute to the rapid deterioration of
artifacts other than stone, etc. 4) geographically, the area is not a typical area used by prehistoric Hawaiians, certainly not for habitation purposes requiring architecture.

On the makai valley slopes of the site area there are evidences of former taro patches and these evidences increase as one approaches the ocean. The sites lie well below the survey area.

The valley itself was not surveyed and assuming that no disturbance of the valley is necessary in the construction, no survey would be necessary. If, however, the valley will be disturbed during the construction, we would recommend an additional survey.

Finally, if any suspected artifacts or features should appear during the construction, we recommend that we be immediately notified so we may undertake on-site inspection.

Our sincere thanks to Phil Scott, for asking us to undertake the project, and to Steven Cabral, who served as guide par excellence!

Respectfully submitted,

Walter M. Fredericksen, Jr.

Demaris L. Fredericksen

Mr. William Pyle, on behalf of Maui Land and Pineapple Company, asked us about the validity of our 1978 survey at the present date.

The original survey included land nearby the present area addressed by the Maui Land and Pineapple Company. It was concerned with the potential disturbances of the land resulting from the placement of a number of power poles and the spanning of a gorge with power lines necessary for a proposed project for diversion of water from the area. An archaeological survey was required for the proposed pole sites.

As indicated in the original survey report, findings were negative. The project itself was never undertaken, and the area has remained undisturbed from what it was in 1978 (personal communication, William Pyle, April, 1990).

We have discussed the project with Historic Sites Section, DLNR, State of Hawaii, and they concur with our recommendations outlined below (telephone communication, Ms. A. Griffin, April 3, 1990).

1. Given that no disturbance has occurred in the area since the 1978 survey, the conclusions and recommendations as stated remain valid, regarding the findings of the archaeological survey.

2. Although the original survey was not specifically undertaken of the presently proposed site area, it is in the immediate vicinity and is probably representative of the general archaeology of the area.

3. The proposed site area is already disturbed by access road clearing and the construction of the existing well. The proposal calls for a surface water pipe from the Kuhwa well to the Koolau Ditch (see map). They will also clear the existing access road and place a power line from the Hanawi outlet to the Kuhwa well.

4. Our recommendation is that if any earth moving or excavating and/or major land clearing activities of undisturbed land are required during the course of the new proposed project, that we be
notified and undertake an additional survey.

5. During land activities on the proposed project, should any artifacts or indications of historic or archaeological architecture or features be discovered, that we be immediately notified for an evaluation of such finds.

Demaris L. Fredericksen  Walter M. Fredericksen

April 4, 1990
NOTE!
This map is portion of the Nahiku Quadrangle of the U. S. Geological Survey map enlarged to the scale of 1 inch = 1,000 feet. Contour interval is 40 feet.
EXHIBIT E

Proposed extension of 23 kVA power line to Kuhlwa well site

To existing Hanawi pump and 23 kVA power line

Scale: 1 in = 20 ft
PROPOSED POWERLINE LOCATION IN YELLOW

PROPOSED PIPE LOCATION IN GREEN

PROPOSED PUMP LOCATION IN RED

PORTION OF DLNR MAP SHOWING CONSERVATION DISTRICT SUBZONES IN THE NAHIKU AREA
APPROXIMATE SCALE 1' = 2,000'

EXHIBIT F
PIPE DETAIL
STREAM CROSSING

FROM PUMP
8" PLASTIC PIPE

STEEL OR WOOD SUPPORT

LAVA TUBE TO KOOLAU DITCH TUNNEL

EAST MAKAPIPI STREAM

NO SCALE

EXHIBIT I
SUPPLEMENTAL INFORMATION
FOR
ENVIRONMENTAL ASSESSMENT

Additional information pertaining to the assessment of water-related impacts on streams in the Nahiku area from the proposed pumping of the Kuhiwa well is available from the evidence and transcript of contested case hearing MA-CC-91-1, held before the Commission on Water Resource Management on May 30, 1991 and June 19, 1991. The central issue of the contested case was the kind of monitoring needed to judge the effect of the well on the flow of streams in the region.

Parties to the contested case were:

1) Maui Pineapple Company (Applicant for pump installation permit at Kuhiwa well);

2) Hana Community Association (Petitioner); represented by Sierra Club Legal Defence Fund;

3) Ned Iliahi Goodness (Intervenor).

Expert witnesses included William Meyer (U.S. Geological Survey), Andrew Yuen (U.S. Fish and Wildlife Service), and Doak Cox (retired, former Director of Water Resource Research Center and Director of Environmental Center, University of Hawaii).

The duration of the hearing was approximately ten hours. The transcript of the hearing is approximately 290 pages in length, exclusive of exhibits and written direct testimony of witnesses.

The evidence, direct testimony, and transcript of the hearing are available for review in Honolulu at the Division of Water Resource Management, 1151 Punchbowl Street, Room 227.
DIVISION OF WATER RESOURCE MANAGEMENT

FROM: 

TO: INITIAL: 

PLEASE: 

REMARKS: 

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Take Action By 
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FOR YOUR: 

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Information 

Received after close of contested case hearing 
NOT to be considered as evidence or distributed 
to Commission 

FILE IN: 

Rev. 11/90
William Meyer, District Chief
Water Resources Division
U.S. Geological Survey
677 Ala Moana Blvd., Suite 415
Honolulu, HI 96813

22 June 1991

Dear Bill:

KUHIWA WELL: FURTHER THOUGHTS

It is my understanding that, with the 19 June termination of the State Water Commission's contested case hearing regarding Maui Pineapple Co.'s petition for permission to pump the Kahiwa Well, Nahiku, Maui, there will be no further opportunity for the presentation of either factual data or expert opinion to be considered by the Commission in determining the outcome of the case. There remain, however, some open technical issues pertinent to the case that were not fully addressed in the hearing or even in the combination of the hearing and our related informal discussions.

I am writing this letter to further the discussion. All of the topics to be addressed in it are pertinent to questions that we have already discussed, but the pertinence of some is indirect.

Terminology of geohydrologic models

Much of our discussion has related to two alternative geohydrologic models and their applicability to the Nahiku area. Because my conclusions as to the probable effects of pumping the Kahiwa well are based on one of the models and yours are based on the other, I have referred to the first as the Cox model and to the second as the Meyer model.

I now regret this. I believe that W. O. Clark was originally responsible for the Hawaiian development of the perched-water component of the first model; a number of people including H. S. Palmer were originally responsible for the Hawaiian development of the basal-water component of that model; Clark was primarily responsible for the application of that model to the Nahiku area; and, at most, I can claim responsibility just for some refinement of that model. The term "traditional model" would have been applied more appropriately to the first model; and I will refer to it as the traditional model hereafter.

Status of acceptance of geohydrologic models

From the presentations at the 19 June continuation of the hearing and from the questions raised by the Commission members, I got the impression that the Commission may have decided that the probability of applicability of the
traditional model to the Nahiku area is so high that neither monitoring to
detect well interferences inconsistent with that model nor tests to determine
which of the two models more nearly represents the actual geohydrologic
situation may be justified.

Although I consider that the traditional model much more closely
represents the actual situation, I believe that the possible applicability of
the Meyer model should be dismissed so lightly. My belief is, indeed, a major
reason for continuing the discussion of the two models and evidences for and
against their applicability at Nahiku.

Test-hole evidences of geohydrologic conditions

In-hole water levels as indicators of aquifer heads

It should be recognized that, although successive water levels such as
those reported by Macdonald for five of the EMI diamond-drill test holes in
the Nahiku area (Stearns & Macdonald, fig 35) were intended to represent the
heads in the aquifer at the bottoms of the holes as they were deepened, they
cannot be expected to be a good representation of those heads.

I believe all water levels were measured in the morning before drilling
was begun, when, it was expected, the effects of the injection of drilling
water the previous day would have dissipated.

I am not certain what the practice was in the case of the holes drilled
earliest at Nahiku. It is possible that water levels reported for those holes
represented measurements in the open holes (no rods or casing). For the later
holes, certainly, the practice was as I have described it. Each measurement
was made of the water level inside the rods in the morning after the rods and
core-barrel with bit had been lowered to the bottom of the hole but before the
pump was started to permit the beginning of drilling. The measurement was
made with a sounder consisting of: i) a brass rod so small in diameter that,
even with insulation wrapped around it, it would pass through the orifices in
the rod couplings, suspended by a depth-calibrated single-conductor cable; ii)
the rods themselves which constituted the return conductor; iii) a battery (45
v?), and iv) an ammeter (milliammeter?), connected in series.

The intent was that the core barrel (10 feet long) and bit would
constitute a seal against the walls of the hole sufficient to isolate
hydraulically the bottom of the hole from the upper part. The water level
inside the rods would, then, it was hoped, indicate the head in the aquifer at
the bottom of the hole even though the water level outside the rods would in
some way integrate the effects of the heads in aquifers and parts of aquifers
penetrated by upper parts of the hole.

In actuality, the water level in the rods could indicate directly only
the head within the hole at its bottom. Some leakage around the core barrel
or bit could not be avoided. Hence the head in the hole at its bottom would
expectably reflect, not exactly the head in the aquifer at the level of the
bottom of the hole but something intermediate between that aquifer head and
the head in the annulus between the rods (above the core barrel) and the wall
of the hole. The relationship between the aquifer head at the bottom of the hole and the annulus head would depend on the distribution of groundwater, head, permeability, and porosity in the section already penetrated by the hole and on the distribution of cuttings in the hole.

I don't remember or have easy access to the exact dimensions of the old E-size diamond-drill equipment, but they were approximately as follows:

<table>
<thead>
<tr>
<th>Item</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bit OD</td>
<td>1-1/2 in.</td>
</tr>
<tr>
<td>Rod OD</td>
<td>1 in</td>
</tr>
<tr>
<td>Core barrel OD</td>
<td>1-1/4 in.</td>
</tr>
<tr>
<td>Couplings ID</td>
<td>7/16 in.</td>
</tr>
<tr>
<td>Core diam.</td>
<td>7/8 in.</td>
</tr>
</tbody>
</table>

Assuming the validity of these dimensions, even with perfect core recovery, only about a third of the rock penetrated by the drill would be preserved as core, and about two thirds would be converted to cuttings. While the bit was penetrating exceptionally porous rock, a significant part of the cuttings might be washed into voids ahead of and alongside the bit. Generally, however, most of them must have been washed up the hole.

I am fairly certain that recovery of the drilling water at the surface was rare at Nahiku once the holes had reached depths of a few tens of feet. Hence the cuttings must have been carried by the drilling water into voids in the walls of the holes such as joints, the spaces between clinkers of aa's, and the blisters, tubes, and inter-flow-unit spaces of pahoehoes.

In a hole penetrating only a vadose zone, there would be little tendency for the cuttings to be washed back out of these voids. Hence reduction of the infiltration capacity of the wall of the hole that the cuttings would have caused would not have been diminished when drilling stopped and the supply of drilling water ceased. The absence of drilling-water return indicates, however, that the hole walls retained significant infiltration capacity, and when the drilling water was shut off the water in the hole would either have drained away entirely or to a very low level, very likely one below the top of the core barrel and hence undetectable in the rods.

After a hole entered a phreatic zone, there might perhaps be tendency for the cuttings within that zone to be washed back into the hole if the withdrawal of the rods were very rapid, causing a temporary hydraulic gradient from the saturated rock into the hole. At all other times when drilling water was not supplied, assuming there were no vertical hydraulic gradient in the aquifer, the water in the hole would have stood at the level of the watertable outside. Under this condition, there would have been no difference between the head in the annulus and the head at the bit, and the water level in the rods, if measurable above the core barrel, would have reflected the head in the aquifer.

If, however, the phreatic zone were that of a perched aquifer, once the hole passed through the perching member into a vadose zone below or even a phreatic zone in which the head were lower than that in the perched aquifer, there would be a tendency for water to move, via the hole, from the perched aquifer into the zone beneath the perching member, washing cuttings out of the wall of the hole where it passed through the perching member, but adding to the filling of the voids below the perching member and even, during
no-drilling periods, leading to an accumulation of cuttings in the bottom of the hole.

As I remember, it was fairly common for the drillers at Nahiku to find on lowering the tools into the hole in the morning that the hole was not quite as deep as it had been and the end of the previous day’s drilling owing to an accumulation of cuttings at the bottom of the hole. I do not remember for certain but assume that in that case, the drillers would, after measuring the water level, start the pump so as to wash the cuttings up the hole again and gradually lower the string until the bit was at its previous greatest depth before beginning drilling again. I know that, in several cases, cuttings were picked up in the core barrel on top of the new day’s core.

When there was no string of tools in hole, then, the water level in the hole might continue to reflect the head in a perched aquifer even after the hole had penetrated beyond the perching member. The water level in the annulus would continue to reflect this head when the string was run back into the hole but before the supply of drilling water was begun, and even the head at the bottom of the hole and the water level in the rods might well continue to reflect the perched-water head if the voids in the vicinity of the bit and core barrel were well plugged with cuttings.

Even if there were no perching member but only a gradual decrease in head with decreasing elevation in the aquifer, there would be some tendency for water to enter the hole from the upper part of the aquifer, move downward through the hole and exit into the lower part of the aquifer; thus to wash cuttings out of the walls of the hole in the upper part of the aquifer but increase the plugging of the walls of the hole in the lower part; and therefore a tendency for water levels measured in the rods to reflect the head in the upper part of the aquifer rather than that in the lower part.

In contrast, if a hole after penetrating one aquifer reached an aquifer with a higher head, the greater plugging by cuttings would occur in the part of the hole in the lower aquifer, the lesser plugging would occur in the part of the hole in the upper aquifer. In this case, the water level in the open hole might reflect a head anywhere between that in the upper aquifer and that in the lower one; and, although a water level measured in the rods with the bit on the bottom might be expected to indicate a head closer to that in the lower aquifer, even such a water level might be significantly reduced.

To summarize, once a water table was encountered by a hole: 1) if as the hole was drilled deeper it passed through a vadose zone or a phreatic zone in which the head was lower than that first encountered, the head in the rock at the bottom of the hole could not be greater than that indicated by the water level measured in the rods with the bit at the bottom of the hole; but 2) if as the hole was drilled deeper it passed through a phreatic zone with a head higher than that encountered above, the head in the rock at the bottom of the hole could not be less than that indicated by the water level measured in the rods with the bit at the bottom of the hole.
Implications of reported in-hole water levels with respect to geohydrologic models

It should be recognized that the head distributions implied directly by the in-hole water levels for the five holes reported by Macdonald do not conform to that expectable with either the traditional model or the Meyer model.

The water-level record for hole 83, for example, would suggest, by the traditional model, that the hole encountered a perched aquifer with a head of about 960 feet at an elevation of something over 870 feet, another aquifer with a head of only about 710 feet at an elevation of something over 590 feet, and the perched artesian aquifer with a head of about 820 or 830 feet at an elevation of about 490 feet. However, the traditional model could not account for the persistence of the 960-foot water level as the hole was deepened to a bottom at about 760-foot elevation unless either the perched aquifer or the perching member were extraordinarily thick. By the Meyer model, there should have been a continuous loss in head as the hole was deepened from the bottom elevation at 870 feet to that at about 500 feet, but the reported water levels do not correspond to that pattern either. It requires recognition of the limitations of the correspondence between in-hole water levels and aquifer heads that are discussed above to make the reported water levels for hole 83 fit either the traditional or the Meyer model. If allowance is made for the limitations, I don't think the reported water level record for the hole can be held to fit one model much better than the other with one exception. I suggest that the fact that no water levels were reported for hole-bottom elevations between 760 feet and 590 feet resulted from the fact that there were no measurable water levels in the rods above the core barrel with the bit on the bottom in that range of bottom elevations. That would, of course, suggest unsaturated conditions in that range of positions, consistent with the traditional model.

The in-hole water-level records for the other four holes similarly cannot be accounted for by either model unless the actual relationship between such water levels and aquifer heads is taken into account, and then, I believe they can be made to fit either model.

Leaks

At our last meeting, Dan brought to our attention the "leaks" reported in the logs kept by Heizer, the driller. These were, I am certain, sudden losses of water from a hole as it was drilled. If there had been drilling water return, such a loss might have been manifest by a sudden decrease in the rate of return. I believe the manifestations reported by Heizer were, however, usually sudden drops in the pressure indicated by the pressure gage that was placed in the drilling water line ahead of the swivel at the top of the rods. I know that the drillers kept a careful watch on that gage.

The head at the pressure gage would have been composed as follows:

\[ h_g = \Delta h_r + \Delta h_a + \Delta h_b + h_{wb} \]
where: $\Delta h_r = \text{head loss in rods, especially at couplings}$  
$\Delta h_c = \text{head loss in annulus between inner and outer walls of core barrel}$  
$\Delta h_b = \text{head loss at bit}$  
$h_{mb} = \text{head in hole bottom}$

The head at the hole bottom would depend on how high the water stood in the hole outside the rods and on head losses in the hole alongside the core barrel and rods. The height of the water outside the rods would depend, of course on whether the hole had penetrated an aquifer, on the head in the aquifer, and on the extent to which voids in the walls of the hole were plugged by cuttings.

The sudden encounter of a fissure might conceivably have reduced $h_{mb}$ to zero, but only if the fissure were unsaturated, or to the head in the aquifer at the bottom of the hole if it were saturated. Whatever the nature of the leak, the reduction in $h_{mb}$ would have had to be significant relative to the sum of the other terms for the drop in pressure to be noticeable.

A leak was of not only of hydrologic interest, but, I suppose of concern to the drillers because it might result in considerable loss in the capability of the drilling water to remove cuttings. At any rate, the drillers took pains to stop some of the leaks. I remember hearing about one that required a liberal dose of manure from the plantation horse or mule stables for its stoppage.

**Variants to the Meyer model and objections to thee**

You will recall that I claimed that the average hydraulic gradient between the vicinity of the Kukiwa well and the coast called for by the Meyer model was enormously greater than that in any other Hawaiian basal water aquifer. I understand that the first session of the hearing (that held on Maui) you indicated that there were comparable average gradients elsewhere, for example in the Iao vicinity of West Maui. I understand that you also recognized at that hearing that there were dikes involved in that vicinity. Hence I am characterizing the proposal that the situation at Nahiku might resemble that in the Iao vicinity as a variant of the Meyer model--one that involves dikes.

There may be a few dikes in the Nahiku area. One has indeed been mapped in the sea cliff about 2000 feet west of the mouth of Hanawi Gulch, and dikes may possibly form the hydrologic barriers between the 1100-foot-head artesian zone, the 900-foot-head artesian zone, and the non-artesian zone in the same stratigraphic horizon.

The actual situation in the vicinity of Iao is quite different from that at Nahiku. I don't remember the exact values, but at a test hole on the north side of Iao stream and some distance inland of the Wailuku sugar mill there is a basal-groundwater head of something like 15 to 20 feet, and at the Wailuku shaft on the south side of Iao stream there is a head of something between 25 and 30 feet or a little more. The heads are this low this far from the coast in spite of the fact that there is considerable interference with the
discharge of the basal groundwater to the coast. There is no reason to suppose that the heads are much greater farther inland except in the dike complex of the West Maui volcano. The head in the dike complex in the vicinity of the Iao tunnel is now at or not much greater than tunnel level, 780 or 790 feet elevation, but prior to the construction of the tunnel the heads in the dike compartments were very much higher.

The combination of a low hydraulic gradient in the basal water and abrupt increases in heads at dikes in the dike compartment seems to me quite unlike the situation at Nahiku. Furthermore, no decrease in head with increase in depth, such as is called for at Nahiku by the Meyer model should be expected in a dike compartment unless, as you pointed out in our most recent meeting, the dikes are quite leaky in depth. What evidence exists suggests that in general in Hawaii, dikes are not particularly leaky in depth; and there is convincing evidence, in the relationships among the length and yield of the Iao tunnel and the flows of springs and streams in the vicinity as the tunnel was extended, that leakage through the dikes in the vicinity was negligible.

To make the model fit better the situation at Nahiku, you suggested at our most recent meeting that the much-greater-than-normal steepness of the average hydraulic gradient at Nahiku, the absence of an observable abrupt head discontinuity such as would be expected with the dike-complex variant of your model, and the presence of a decrease in head with depth such as should not be expected with that variant, might result from the effects of development of "mega-landslides" such as those that are now thought to have produced the Hilina Pali on the southeast flank of Kilauea volcano and whose development on the flanks of other Hawaiian volcanoes have been postulated by USGS geologists.

For various reasons, I was very skeptical of the original proposal that the Hilina Pali faults were the slip surfaces of slumps that were so large that their toes were at the ocean floor but were otherwise of ordinary form. For instance, the epicenters of quakes accompanying the movements of 1975 seemed to lie along a fault with a continuing steep dip instead of a slip surface such as originally postulated. As the slide model has since been modified, however, so that slip surface at the base of the enormous slides is at the original sea floor, now depressed far below the sea floor at the edge of the volcanic pile, it fits the facts much better. Although I agree that there has been similar mega-sliding elsewhere, I do not necessarily agree that it has occurred everywhere where now postulated, and I think there is quite clear evidence that it has not occurred on the northeast flank of Haleakala in the vicinity of Nahiku.

I would agree that gouge on the slip surfaces and the partial invasion of the slip surfaces by dikes might interfere with the seaward discharge of groundwater in a volcanic flank on which mega-landsliding has developed. However, I think there is good evidence that mega-landsliding has not developed on the northeast Haleakala flank in the vicinity of Nahiku.

The evidence first suggesting the existence of mega-sliding at Hilina consisted of the surface expression of multiple step faulting on a volcanic flank with downthrows on the makai sides of the faults. No similar
displacements have been recognized in the upland surface in the Nahiku vicinity, even in that part of the surface west of Hanawi Gulch that is underlain by Kula lava flows, in the Kula-Hana boundary, mapped in the walls of the gulch from the coast nearly to the highway, or in the Honomanu-Kula boundary mapped for about a quarter of mile up the gulch from the sea cliffs. So far as I know, all of these surfaces are essentially parallel except for the effects of considerable post-Kula mauka-makai valley cutting.

Mega-landsliding at some time before the end of Honomanu time might, of course, have provided the same kind of interference with horizontal ground-water flow as mega-landsliding later, and the surface displacements associated with the earlier landsliding might well have escaped detection in the geologic mapping. If, however, there had been displacements affecting the Honomanu flows that constitute the artesian aquifer, it would seem that those displacements should have been evident from the diamond drilling; and in any case, displacements of the surface during later Honomanu time should have produced an oversteepening that would have been reflected not only in the Honomanu-Kula boundary, but the top of the Kula series.

I find difficulty, then, with every variant of the Meyer model so far proposed.

**Low-water streamflow monitoring by paired stream gages**

To detect the influence of draft from the Kukiwa well that would be expectable by the Meyer model on the flow of Hanawi Stream and possibly that of Makapipi Stream, you have proposed the installation of a pair of stream gages on each stream to be tested, one of the pair to be installed upstream from the point nearest the well, the other to be installed downstream. I will restrict my discussion here to the part of Hanawi Stream above the ditch that I understand from our discussions is perennial, its hydrograph near the ditch indicating both intermittent contributions from overland flow and a perennial base flow derived from groundwater. The discussion here would pertain also, however, to perennial reaches of Makapipi stream.

Draft from the well could not possibly interfere with the overland flow contribution to the discharge of Hanawi Stream. The evidence of interference you would look for would be a decrease in the excess of the base flow at the downstream gage over the base flow at the upstream gage, in other words a decrease in the gain of the stream attributable to groundwater inflow in the reach of the stream between the two gages. In the 19 June continuation hearing you recognized that the interference so detected would be limited to that reach of the stream and would not constitute the total interference with stream flow. This is obviously correct. You also stated, however, that climatic variation could affect only the overland flow contribution to the stream and not its base flow. This is clearly false.

You made the point that the rate of groundwater discharge to a stream depends on the groundwater head, and you seem to have assumed that the head is influenced only by draft and not by recharge. I was a bit uncomfortable with what seemed a simplistic relationship of discharge rate to head. In actuality the discharge to any part of the stream bed or bank is controlled by Darcy's
law in which both hydraulic gradient and cross-sectional area are variables, but because both of these may be considered functions of the head at some set point in the groundwater body near the stream, the oversimplification is of no great significance. Your assumption that groundwater head is not a function of recharge rate is, however, erroneous.

Let me point out that springflow, observable influent seepage to a stream, and gain in streamflow detectable only by measuring differences between the rates of flow at two points all represent groundwater discharge, that the rates of discharge in all three cases are governed by Darcy's law, and hence that changes in the rate of discharge in each case indicate changes in head in the groundwater body being discharged. There is ample evidence of significant changes in the rates of discharge of the Big Spring and Hanawi Springs Nos. 1 and 2. The discharges of these springs were, of course, measured on the surface—in other words it was surface streams that were directly gaged. There were no overland-flow contributions to those surface streams, or at least no significant overland-flow contributions. Hence the measured discharges represented base flows alone, in other words just groundwater. Although it is possible that some of the groundwater bodies responsible may have been tapped by tunnels mauka, there were no changes in groundwater development during the period of gaging. Hence all changes in the springflow rates must be attributed to changes in recharge rates.

The relationships between the times and amounts of rainfall in the drainage area of a stream and variation in the rate of overland flow in the stream are, of course, very different from the relationships between the times and amounts of rainfall in the recharge area of a groundwater body and the rate of discharge of that body. Much greater resistance to flow and much greater storage capacity is involved in the case of groundwater than in the case of surface water. Hence much greater lags and damping of variations are involved in the case of groundwater than in the case of surface water. One simply cannot assume constancy in the base flow of a stream, however, simply because no temporal variations in base flow are evident that are even remotely comparable to the temporal variations in total flow.

Because the discharge of a groundwater body to a stream may be affected by past rainfall as well as by well interference, the difference between the base flow at an upstream gage in the stream and the larger base flow at a downstream gage in the stream can indicate only a change in the rate of groundwater discharge to the stream in the reach between the two gages. It cannot differentiate between the effects of changes in recharge and the effects of well interference. Such differentiation can be made only by multiple correlation. Multiple correlations between the flows of the Big Spring and Hanawi Spring No 2 over periods on the order of 4 years and rainfall rates averaged over various prior periods resulted in what I consider astonishingly small standard errors of estimate of spring flow. (The results were not so good in the case of Hanawi Spring 1). However, relationships in those cases were not complicated either by overland flow or by well interference. Comparable results in the case of Hanawi Stream, if attainable at all, could be attained only by the use of much longer periods of record, even without the added complication of possible well interference.
Further tests to determine the applicability of the traditional model or the Meyer model to the Nahiku situation.

As indicated earlier in this letter, although I consider that the Nahiku conditions are much more likely to fit the traditional model than the Meyer model, I do not think that the latter can be discarded lightly. I hope, indeed, that some test to determine which model is more nearly applicable will be made. Because of the limitations of the stream gaging program you have propose, I do not think that it would provide for such a test. I propose that in any case a more direct test could be made by drilling a well into what by the traditional model should be a vadose zone but by the Meyer model would be a phreatic zone; casing it through any zone in which by the traditional model there might be perched water; and if water still stood in the well, pumping it. If the pumping produced only a temporary drawdown consistent, one would conclude that the zone below the casing was saturated, consistent with the Meyer model; otherwise one would conclude that the zone was unsaturated, consistent with the traditional model.

It would be advantageous to drill the well near the EMI ditch and to direct its discharge to the ditch. Its drilling and testing might then seem attractive to EMI and HC&S on the chance that the Meyer model were demonstrated valid and the well could continue to supplement the flow of the ditch whenever desired except, however, that the same objections could be raised to EMI’s or HC&S’s draft on this proposed well that have been raised to Maui Pineapple Co.’s proposed draft of the Kukiwa Well.

Toward maximizing the effectiveness of the test and maximizing the chance of continuing economic utility of the test well, I will certainly try to make myself available to any future consideration of possible tests of the two models. I think it especially important that you make yourself available also.

Final comments

The situation at Nahiku is so complicated that you may well object to some of the assumptions have made or to the reasoning I have applied, and hence to some of my conclusions. If you let me know your objections I will try to respond to them. At some point, of course, we will decide that further correspondence would not contribute significantly to further mutual understanding, and you may decide that that point has already been reached. If so there will be no need for further correspondence between us concerning the Nahiku situation unless the possibility of testing to determine the relative applicability of the two models arises.

Sincerely,

Doak C. Cox

cc: William Pyle, AG Systems Hawaii
Dennis Niles, Paul Johnson Alston & Hunt
William Rozeboom, DLNR
Arnold Lum, Sierra Club Legal Defense Fund
Mr. John Murakami, Maui Representative  
Hawaii Government Employees' Association  
2145 Kaohu Street, Room 207  
Wailuku, HI 96793

Dear Mr. Murakami:

Thank you for allowing us to use the HGEA conference room, at such short notice, for our contested case hearing on May 30, 1991. The facilities were excellent and contributed greatly to the smooth-running of the hearing.

I especially thank you and your staff for the aloha spirit you showed in helping us throughout the day. The pots of coffee you so graciously supplied were not only appreciated but were quite necessary to the success of the proceedings.

Again, mahalo for your cooperation!

Sincerely,

MANABU TAGOMORI  
Deputy Director

ES:bm  
c: Russell Okata
June 3, 1991

MEMORANDUM

TO: William W. Paty

FROM: Manabu Tagomori

SUBJECT: Kukiwa Well Contested Case; MA-CC-91.1

Supplemental Questions for Expert Witness

Since the first session of the Kukiwa Well Contested Case on May 30, the Commission staff has identified questions which it feels need to be asked of expert witness William Meyer to help the participating Commission members reach a decision.

The purpose of this memorandum is to identify these questions and to suggest a process to have them answered.

Mr. Meyer will be in Honolulu during the week of the hearing and his secretary has indicated that his schedule should allow him to attend.

Proposed Questions for William Meyer:

1. Does Meyer believe that the general model of ground water behavior presented by Doak Cox is valid in any region of Hawaii? If yes, how widespread is the applicability of "Cox's" model in Hawaii?

2. Meyer's testimony suggested a belief that high level saturated groundwater conditions such as he believes exists at the Kukiwa Well site and also at the Wailuku Aquifer are associated with dike or fault structures. Is this his belief? If so, could the saturated conditions at the 800 and 1100 foot levels reflect "containment" by low permeability geologic features and could unsaturated groundwater conditions, following "Cox's model", exist makai of the 800 foot terrain?

3. It is still unclear to the Commission staff how many gages are being asked for, where they would be placed, or what results they might yield. On a map or sketch showing the well site, the Koolau Ditch, and the streams and springs of concern, please mark the approximate locations of the stream gages which are being proposed.

4. Do you expect that some streamflow reduction (due to pumpage of the Kukiwa well) will occur upstream of the Koolau Ditch?

5. For Hanawi Stream, will the proposed gage program determine how much flow reduction occurs upstream of existing Hanawi Stream diversions, i.e., upstream of the Koolau Ditch and Nahiku Pump at Hana Highway?
6. For Hanawi Stream, will the proposed gage program determine how much flow reduction occurs downstream of existing diversions, i.e., downstream of Hana Highway at Big Spring and on Hanawi Stream below Big Spring?

7. For Makapipi Stream, will the proposed gage program determine how much flow reduction occurs upstream of the Koolau Ditch? Downstream of the ditch and/or on tributaries not intercepted by the ditch?

8. Makapipi Stream is an intermittent stream. Since pumping is expected to occur primarily during dry periods when the stream is most likely to be dry, please describe how the proposed gage program would detect any impact on stream flows, and how the results would be quantified.

9. Will the proposed gage program determine how much flow reduction due to pumpage occurs at the perennial stream segment at Mr. Behrens’ property?

10. You have stated that one year should be sufficient to obtain the necessary pre-pumping baseline correlations. Should one year of post-pumping measurement be sufficient to quantify the impact?

Suggested Process for Asking Questions

If the Commission would like to ask these or other questions, it is suggested that the Commission formally re-open the hearing and call Mr. Meyer as its witness on June 19 before closing arguments are presented. The other parties would then be given the opportunity to cross examine the witness.
COMMISSION ON WATER RESOURCE MANAGEMENT
STATE OF HAWAII

In Re Application of ) MAUl PINEAPPLE CO., LTD. ) MA-91-l- WATER &
Pump Installation Permit ) Contested Case No. ) Minute Order No. 1

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MINUTE ORDER NO. 1

1. On August 20, 1990, Maui Pineapple Co., Ltd. filed an application for a permit to install a pump in a preexisting well at Kushiwa, Nahiku, Maui, Hawaii, on land owned by East Maui Irrigation Co.

2. On November 13, 1990, and again on December 18, 1990, the Hana Community Association, through its counsel, requested a contested case hearing. Mr. Michael Behrens, Mr. Russell Kahookele, and Mr. Moses Bergau are all members of the Hana Community Association who live in or near lower Nahiku, Maui. Subsequently, on April 15, 1991, Mr. Nahea Goodness requested to intervene as a party. On May 3, 1991, Mr. Goodness advised the Commission through his attorney Mr. Williamson Chang that he was withdrawing his petition to intervene.

3. On April 19, 1991, a prehearing conference was held in the Attorney General's conference room. Present were Mr. William Tam (Commission's counsel), Mr. William Rozeboom and Mr. Ed Sakoda (CWRM staff), Mr. Arnold Lum (Sierra Club Legal Defense) representing the Hana Community Association, and Mr. Williamson Chang for Mr. Goodness. Also appearing by
telephone conference call with Maui were Mr. Dennis Niles (counsel for the Applicant), Mr. Bill Pyle (Maui Pineapple), and Mr. Doug McCluer (Maui Pineapple). The following provisions were established:

   a. The hearing date was set for May 15, 1991, on Maui. Prehearing Statements were to be submitted by April 30.

   b. Parties shall submit a statement of proposed permit conditions with their prehearing statement.

   c. All parties agreed that the central question was the kind of monitoring needed to judge the effect of the well on the flow of the Hanawi, Makapipi, and Kukiwa streams, if any, and on the Behren's spring and Big Springs, if any.

   d. After considerable discussion, it was agreed that the Commission staff representatives should ask USGS about their opinion on a monitoring program.

4. On April 30, 1991 at 2 p.m., a second prehearing conference took place in the Attorney General's office, again by conference call with Maui. Attending were Mr. Tam, Mr. Lum, Mr. Rozeboom, Mr. Chang, and Mr. Mark Shaeffer (a geologist with Native Hawaiian Advisory Council). Mr. Niles participated by telephone conference call from Maui. The following provisions were established:

   a. The hearing shall commence in the Wailuku Community Center beginning at 3:00 p.m., Wednesday, May 15, 1991.
b. All direct testimony of lay witnesses is to be submitted in advance in writing, actual service in hand, and filed with the Commission not later than the close of business Friday, May 10, 1991.

c. All direct testimony of expert witnesses is to be submitted in advance in writing, actual service in hand, and filed with the Commission not later than 9:00 a.m., Tuesday, May 14, 1991.

d. All exhibits are to be disclosed, copies submitted with direct testimony, and exchanged prior to the hearing.

e. Any prehearing motions are to be served by facsimile or hand delivered to the Commission not later than the close of business Monday, May 13, 1991.

f. An original and eight (8) copies of all pleadings, documents, and exhibits are to be filed with the Commission unless the exhibit or document is unique, large, or otherwise difficult to duplicate. In that case, the proponent of such a document shall still disclose and make the document available for inspection.

g. All parties reserve the right to call rebuttal witnesses.

h. The Applicant shall label their exhibits as A-1, A-2, etc. The Hana Community Association shall label their exhibits as H-1, H-2, etc.
i. "Filed with the Commission" means filed at the office of the Department of Water Resource Management, Room 227, 1151 Punchbowl Street, Honolulu, Hawaii 96813.

Mr. Rozeboom and Mr. Ed Sakoda met with USGS officials on April 23 and Mr. Rozeboom met again with USGS on April 30 to determine if the USGS had an opinion whether the well pumping could or would affect the stream flow of the three relevant streams or the nearby springs. USGS could not make a definitive statement as to the expected magnitude or location of effects on stream flows.

Mr. Lum and Mr. Niles agreed to make their expert witnesses available to the other party for informal discussion in lieu of formal depositions. If any problems arise in this regard, either side may ask the Commission's counsel to resolve the dispute.

The aforedescribed procedures and provisions are hereby adopted by the Commission for purposes of this contested case hearing.

IT IS FOUND AND SO ORDERED.

DATED: Honolulu, Hawaii, May 13, 1991

William W. Paty
Chairperson, Commission on Water Resource Management

5706E

In Re Application of Maui Pineapple Co., Ltd. - Pump Installation Permit, No. MA-91-1, Minute Order No. 1
William Pyle  
AG Systems Hawaii  
PO Box 90  
Puunene, Maui, HI 96784

Dear Bill:

Re: Groundwater temperatures in the Nahiku Area, Maui

In the letter of 10 May in which I commented on the Meyers letter of 2 May, I distinguished between two types of high level groundwater occurring in the Nahiku area and associated the springs in the area to those types of groundwater primarily on the basis of groundwater heads and spring elevations. There is additional pertinent evidence of which I was reminded subsequently by rereading the Macdonald report on the area (Part 2 in Stearns and Macdonald, 1942). This is the evidence of groundwater temperatures.

Temperatures of spring and tunnel discharges reported by Macdonald (pp. 263 & 267-269) in degrees Celsius, and their Fahrenheit equivalents, are as follows:

<table>
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<tr>
<th>Spring</th>
<th>Temperature</th>
<th>Recharge altitude, feet</th>
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</thead>
<tbody>
<tr>
<td></td>
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<td>Deg F</td>
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<td>Big Spring</td>
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</tr>
<tr>
<td>Paakea tunnels</td>
<td>17.2-17.3</td>
<td>63.0-63.1</td>
</tr>
<tr>
<td>Waiaka tunnel</td>
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<td>63.1</td>
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<td>17.4-17.5</td>
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<tr>
<td>Hanawi tunnels</td>
<td>16.8-18.1</td>
<td>62.2-64.6</td>
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<tr>
<td>Makapipi tunnels</td>
<td>15.8-17.3</td>
<td>60.4-63.1</td>
</tr>
</tbody>
</table>

Unless affected by a heat source, the ground through which groundwater flows, and hence the temperature of the groundwater discharged, must be assumed brought to the temperature of the groundwater in the recharge area. The temperature of the water infiltrating generally approximates the mean annual surface temperature in that area. The approximation is probably particularly close in the perched and perched artesian groundwater of the Nahiku area in which infiltration is frequent and distributed fairly uniformly throughout the year, and in which any possible geothermal heat is probably effectively advected seaward by the basal groundwater.

The mean annual surface temperature is a function of surface altitude, decreasing with increasing altitude. Macdonald considered that the altitude of recharge area of the Big Spring indicated by the temperature was about 4800 feet. The recharge area altitudes indicated in the table above are based on the average temperatures and altitudes of stations plotted in the Atlas of Hawaii (p. 58). It of interest that, in the Makapipi Stream drainage area, at
altitudes between 4000 and 5000 feet, including the altitude estimated for the recharge area of the Big Spring, there is a depression considerably deeper than the erosional valleys in the vicinity that may possibly have something to do with the recharge of the perched aquifer that is artesian down slope and is believed to be the source of the Big Spring. It should be recognized, however, that in the vicinity of that depression, the perching member is probably more than 900 feet below the surface because the thickness of the Kula lavas is probably greater up the slope than in the vicinity of the Big Spring.

The altitude estimated for the recharge area of the West Makapipi Spring, 4200 feet, is almost as great as that estimated for the recharge area of the Big Spring. However, the base of the valley-filling "Big Fall" lava that Macdonald considers the aquifer supplying the West Makapipi Spring and that is one of the members of the Kula lava series, cannot be more than 100 or 200 feet below the surface in that area.

I do not remember whether the temperature of the groundwater encountered in any of the diamond drill holes in the area was measured. (No means for telemetering temperature were readily available when those holes were drilled, and it may be that an adequate jacket could not be provided around a thermometer lowered into one of the holes (Size E, about 1-1/2 in. diam) to prevent the thermometer from being affected by temperatures above the water as the thermometer was raised again).

We did determine the temperature in the perched artesian aquifer where penetrated by the Kuhiwa well by lowering an ordinary lab. thermometer in a water jacket to the artesian horizon, leaving it there for a substantial time, and raising it rapidly for reading. I do not recall the value or values determined. However, because I do not recall any surprise, I assume that the temperature was about the same as that of the Big Spring that was assumed to be fed from the perched artesian water.

Sincerely,

Doak C. Cox

cc: Dennis Niles, Paul Johnson Alston & Hunt, Honolulu
Provided to:

NAME: ____________________________
ADDRESS: ____________________________

Tel: ( ) __________ ( ) __________
I.D. Type: ____________________________ No. ____________________________

Representing:

NAME: Arnold Lum, Sierra Club
ADDRESS: ____________________________

Tel. ( ) 599-2436 ( ) __________

Items Copied: Copy fee of .50/page will be charged for each page.

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Signature of person providing copies

Date: May 13, 1991
May 10, 1991

To       William Paty, Chair, CWRM
From     William Tam, Deputy Attorney General
Re       Nahiku Well Contested Case
         Minute Order No. 1

Attached please find for your signature Minute Order No. 1 in the Nahiku Well Contested Case which memorializes for the record the procedures and time schedule for the hearing.

After you have signed the Order, please have Bill Rozeboom or Ed Sakoda (DWRM) pick it up, time stamp it, and advise me so that it can be mailed to the parties immediately.

Thank you.

5756E
April 29, 1991

Department of Land and Natural Resources
Division of Water Resource Management
Honolulu, Hawaii

Attn: Bill Roseboom, Staff Hydrologist

Re: Maui Pineapple Company, Ltd., Kukiwa Well Pumping Permit

KUHIWA WELL AND HANAWI PUMP

Sixteen pineapple fields (1) totaling 1,689 acres are presently dependent on the Hanawi Pump for drip irrigation water. It is possible for all of these sixteen fields to require irrigation water at the same time.

The requirements for a 1 acre-inch irrigation area:

1,689 acre-inches = 45.6 MG

on a 30 day basis:

45.6 MG/30 days = 1.5 MGD

RECORDED USE

Fifteen years of record from EMI show the following water usage in million gallons from 1976 through 1990:

<table>
<thead>
<tr>
<th>YEAR</th>
<th>TOTAL MG</th>
<th>AVG MGD</th>
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<th>HIGH MGD</th>
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15 YEAR AVERAGE: 115 0.31 28 0.90 13 43 0.11
The record shows that there has been enough water available from the Hanawi Pump to keep up with the irrigation requirements for these pineapple fields only once during the 15 years of record, in 1987. During the other fourteen years of record, when the demand during the highest month is more than Hanawi Pump can supply, Kuhlwa Well would have been needed at least part of the time during the month in order to keep up with the irrigation requirements. The last two columns, labeled "MG Req. Kuhlwa Well High Month" & "Year", show how many days during the highest use month that Kuhlwa Well would have been needed in order to supply enough irrigation water for that month, based on a 1 acre-inch irrigation requirement; and how many days during the entire year that Kuhlwa Well would have been needed in order to supply enough irrigation water during the peak use periods throughout the year, again at the 1 acre-inch level.

The total average annual requirement during the fifteen years of record is 115 MG, or 0.31 MGD average daily flow. The highest total annual average is 156 MG or 0.43 MGD in 1985. The Hanawi Pump could keep up with this requirement if the water could be stored and repumped when needed. However, the cost of storage and repumping is prohibitive at somewhere around ten million dollars.

The best possible storage reservoir for this irrigation water is the natural perched artesian aquifer known as the "1100 feet head" aquifer that Kuhlwa Well taps into. It is in a 300 inch per year rainfall zone. During the 15 years of record shown above, the Kuhlwa Well would have been required for an average of 43 MG per year (43 days at 1 MGD), or an average annual draft of 0.12 MGD, which certainly should not have any measurable effect on this aquifer. During 1989, the highest use year, the Kuhlwa Well would have been used for 94 days, a total of 94 MG, and an average annual draft of 0.26 MGD, which should not have any measurable effect on this aquifer. During the worst possible drought let’s say the pumping gets up to an inconceivable 150 days, producing an average annual draft of 0.41 MGD. Since this would happen very rarely, if ever, it still should not be enough draft to harm this aquifer in any way.

CONCLUSION

1/2 MGD from the Hanawi Pump and 1 MGD from the Kuhlwa Well will provide enough water to keep the drip irrigated pineapple fields in East Maui healthy and productive during periods of inadequate rainfall. This is the only readily available water source for these fields, and close management of this resource will be required to carefully and efficiently use it for the best pineapple production. During periods of unusually hot and dry weather the
production will be affected, but with careful management the problems can be kept to a minimum.

Sincerely,

William L. Pyle, PE
Agricultural Engineer


Attachments: Actual record, years 1976 through 1990.

cc: Doug MacCluer
    Dennis Niles
### KUHIWA WELL WATER DEMAND

#### 4/29/91

**AG SYSTEMS HAWAII**

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**TOTAL**

149 MG

### PUMPED

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**TOTAL**

147 MG

**PUMPED**

63 MG
**KUHIWA WELL WATER DEMAND**

4/29/91

**AG SYSTEMS HAWAII**

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**TOTAL**

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**TOTAL**

124 47
# KUHIWA WELL WATER DEMAND

4/29/91

AG SYSTEMS HAWAI I

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4/29/91

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# KUHIWA WELL WATER DEMAND

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4/29/91

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**TOTAL** 93 59
### EAST NI'I IRRIGATION COMPANY, LIMITED

EMI-UC&SF M&L&P WATER AGREEMENT / MONTHLY REPORT IN GALLONS

**Year 1978**

<table>
<thead>
<tr>
<th>Month</th>
<th>Pumpage</th>
<th>Pumpage less 3% Seepage</th>
<th>Irrigation</th>
<th>Spray</th>
<th>TOTAL</th>
<th>Water Purchased fr. HC&amp;SCo</th>
<th>Accumulated Reservoir Credit</th>
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**Total:**

134,954,900  130,906,200  47,681,000  4,455,500  52,136,500  -0-

*Date: JAN 8 - 1979  Approved:*

[X.C. T. Muka'i]


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<th>Month</th>
<th>Pumpage</th>
<th>Seepage</th>
<th>Irrigation</th>
<th>Spray</th>
<th>TOTAL</th>
<th>Water Purchased</th>
<th>Accumulated Reservoir Credit</th>
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89,071,100

Approved: ____________________________

Date: ___________________
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<th>Irrigation</th>
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135,942,600  131,864,000  147,400,200  3,726,500  151,126,700  0-0-

# Error correction

NOTE: H&C&S months end on the last Sunday of each month.

Date: JAN 21, 1986

Approved: Wragel
Department of Land and Natural Resources
Division of Water Resource Management
Honolulu, Hawaii

Attn: Bill Roseboom, Staff Hydrologist

Re: Maui Pineapple Company, Ltd., Kukiwa Well Pumping Permit

Following up on your question of April 23, regarding obtaining historical records on the pumping at Kukiwa Well, EMI does not have any records available on the pumping other than for several days in 1977.

Sincerely,

William L. Pyle, PE
Agricultural Engineer

cc: Doug MacCluer
Dennis Niles
I overlooked one procedural matter, excuse me.

With respect to the Hana Community Association’s motion for environmental assessment, the ruling will be as follows: The information submitted by the applicant will be considered by the staff, and the Commission will separately process the environmental assessment and submit it to termination for publication to the OETC. I think you’re all aware of that.

With that, I believe now we can ask Mr. Manabu Tagomori to introduce the staff presentation.

MR. TAGOMORI: Mr. Chairman, the staff’s presentation of the application will be made by Bill Rozeboom, hydrologist, assigned to this case. Bill Rozeboom.

BILL ROZEBOOM, called as a witness, having been first duly sworn to tell the truth, the whole truth and nothing but the truth, was examined and testified as follows:

MR. ROZEBOOM: Mr. Chairperson, members of the Commission, I’ll just very briefly review the application which the contested case involves.

The applicant of this case is Maui Pineapple Company, and in August 1990, they submitted an application for a permit to install a pump with the capacity of one million gallons per day on an existing well. The well in
In Re Application of
MAUI PINEAPPLE COMPANY, LTD. ) MA-CC-91-1
Pump Installation Permit )
Kuhiwa, Nahiku, Maui, Hawaii )

Taken at the HGEA Building, Room 207, Wailuku, Maui, Hawaii, commencing at 10:00 a.m., on May 30, 1991.

QUALITY COMPUTERIZED TRANSCRIPTION

IWADO COURT REPORTERS, INC.
2233 Vineyard Street, Suite A
Wailuku, Maui, Hawaii 96793
(808) 244-9300

REPORTED BY: BARBARA BATT, RPR/CSR #260
Dear Bill

Some how Maui Pine still does not have a contested case hearing date for the Kukuiwaa well. Since growing pineapple is dependent on irrigation water and since our EMI water agreement has expired, this summer we may be in a world of hurt.

We need your kokua or we won't be able to irrigate this summer—Thanks.

Sincerely

Doug Maclean
NOTICE OF A CONTESTED CASE HEARING
BEFORE THE COMMISSION ON WATER RESOURCE MANAGEMENT
ON THE APPLICATION FOR A PUMP INSTALLATION PERMIT
FOR THE KUHIWA WELL AT NAHIKU, MAUI

Pursuant to Chapter 91, HRS, and Chapter 174C, HRS, and Chapters 13-167-51 through 13-167-54 inclusive, Administrative Rules, as amended, the Commission on Water Resource Management, State of Hawaii, will conduct a contested case hearing on the application by Maui Pineapple Company Ltd. for a pump installation permit to operate and withdraw water from the Kuhiwa Well at Nahiku, Maui (TMK 1-2-04:03). The contested case hearing will be held in Hana at a date, time, and place to be announced.

Any person wishing to participate in the hearing as an intervening party must file a written application in conformance with Department of Land and Natural Resources Rule 13-167-54-(e) explaining briefly how he or she has a specific legal interest different from the public generally and how their interest could be affected by the proposed action. The Commission will then grant or deny the application to intervene. At the hearing, only persons admitted as parties to the proceedings may actually participate.

Any party may retain counsel if desired. An individual may appear on his or her own behalf, or a member of a partnership may represent the partnership, or an officer or authorized employee of a corporation or trust or association may represent the corporation, trust, or association. All parties shall be afforded the opportunity to present and cross-examine evidence and witnesses and to make arguments on issues before the Commission.

A copy of the application for the pump installation permit (dated 8/17/90), the Commission staff's recommendation for acting on the application (dated 12/19/90), and the petition requesting the contested case hearing (dated 12/29/90) is available at the Department of Land and Natural Resources offices in Wailuku and Honolulu.

Written applications to intervene must be actually received no later than 4:30 p.m., April 15, 1991, at the Chairperson's Office of the Commission on Water Resource Management, P. O. Box 621, Honolulu, Hawaii 96809, for consideration.

COMMISSION ON WATER RESOURCE MANAGEMENT

WILLIAM W. PATY
Chairperson

Dated: MAR 19 1991

Published in: Honolulu Star Bulletin, issue of March 25, 1991
Maui News, issue of March 25, 1991
TO: Honorable Warren Price III
   Attorney General

ATTN: Mr. Johnson Wong, Supervisor
     Land/Transportation Division

FROM: William W. Paty

SUBJECT: Request for a Contested Case Hearing - Kukiwa-Nahiku Well, Maui

Attached, for your information and action, is a request from Maui Pineapple Company, Ltd. that the contested case hearing requested by Isaac Davis Hall and Arnold L. Lum on behalf of the Hana Community Association be held on Maui as soon as possible.

Contact Manabu Tagomori at 548-7533 if you have any questions.

Enc.

c: Isaac Davis Hall
   Hana Community Association
   Arnold L. Lum, Sierra Club Legal Defense Fund
   Maui Pineapple Company, Ltd.
January 22, 1991

Mr. William W. Paty
Dept. of Land and Natural Resources
P.O. Box 621
Honolulu, HI 96809

Dear Mr. Paty:

As you know, Maui Pineapple Company's Water Agreement with the East Maui Irrigation Company has expired. Our Company was allowed to withdraw up to 1.5 million gallons from the East Maui Ditch System for pineapple irrigation; however, in the future, we are limited to only what we pump into the ditch on a daily basis. Due to this restriction, we have been trying for months to get the State's approval for the pumping of the existing Kuhiwa Well.

We request that the contested case hearing be held on Maui as soon as possible. Available information indicates that the pumping of this existing well will have no adverse effect on our neighbors or the environment. We believe that if the hearing is held soon on Maui, we can satisfy and legitimate fears, the issue can be resolved and we will be able to irrigate our plantings this summer as needed.

Sincerely,

L. D. MacCluer
Plantation Manager

xc:  J. Hartley, Hana Community Association
    Isaac Hall, Bill Boyle, Bob Warzecha
    DLNR (M. Tagamori, E. Sakoda), Sierra Club (Mary Everson)
Mr. William W. Paty  
Dept. of Land and Natural Resources  
P.O. Box 621  
Honolulu, HI 96809  

Dear Mr. Paty:  

As you know, Maui Pineapple Company's Water Agreement with the East Maui Irrigation Company has expired. Our Company was allowed to withdraw up to 1.5 million gallons from the East Maui Ditch System for pineapple irrigation; however, in the future, we are limited to only what we pump into the ditch on a daily basis. Due to this restriction, we have been trying for months to get the State's approval for the pumping of the existing Kuhiwa Well.  

We request that the contested case hearing be held on Maui as soon as possible. Available information indicates that the pumping of this existing well will have no adverse effect on our neighbors or the environment. We believe that if the hearing is held soon on Maui, we can satisfy and legitimate fears, the issue can be resolved and we will be able to irrigate our plantings this summer as needed.  

Sincerely,  

Doug MacCluer  
L. D. MacCluer  
Plantation Manager  

xc:  J. Hartley, Hana Community Association  
Isaac Hall, Bill Pyle, Bob Warzecha  
DLNR (M. Tagamori, E. Sakoda), Sierra Club (Mary Everson)  

870 Haliimaile Highway • Haliimaile, Maui, Hawaii 96763 • Telephone (808) 572-7211 • FAX (808) 572-8229
Mr. William Meyer
District Chief
U.S. Geological Survey
677 Ala Moana Blvd., #415
Honolulu, Hawaii 96813

Dear Mr. Meyer:

Re-Activation of USGS Station 16509000
Hanawi Stream Below Government Road, Maui

This is to request a cost estimate for reactivating your station number 16509000, Hanawi Stream Below Government Road, which was discontinued in 1947. The present condition of the station was assessed on December 6, 1990, by Mr. James Kanno of the USGS.

Station reactivation is proposed in conjunction with a pump installation permit application by Maui Pineapple Company. The purpose of reactivation would be to identify if pumping from the Kualiwi-Nahiku Well (Well No. 4806-48) has any impact on the flow of Hanawi Stream below Big Spring. In keeping with this purpose, Maui Pineapple would share or assume the cost of station reactivation, and accurate discharge records would be required only for low flow conditions.

We would appreciate receiving your cost estimates for the following:

1) Reconstruction of gage facility. Option 1: all work, equipment, and supplies provided by USGS.

2) Reconstruction of gage facility. Option 2: USGS supervision of work, equipment, and supplies provided by others (Maui Pineapple Co.), to ensure that USGS standards for low flow measurements are attained.

3) Low-flow discharge measurements, to establish a low-flow rating curve of an accuracy comparable to when the station was last in operation.
4) Periodic low-flow discharge measurements, to confirm the stability of low-flow rating curve.

5) Annual charges for data collection, data reduction, and reporting of minimum recorded flows.

Please contact Manabu Tagomori, Deputy Director, at 548-7533 if you have any questions.

Very truly yours,

WILLIAM W. PATY

cc: Bill Pyle
Maui Pineapple Co., Ltd.
MEMORANDUM

TO:       Mr. Johnson Wong, Supervisor
Land/Transportation Division

FROM:     William W. Paty

SUBJECT:  Request for a Contested Case Hearing - Kuhiwa-Nahiku Well, Maui

Attached, for your review and action, is the request for a contested case hearing submitted by Isaac Davis Hall and Arnold L. Lum on behalf of the Hana Community Association.

Contact Manabu Tagomori at 548-7533 if you have any questions.

Very truly yours,

[Signature]

WILLIAM W. PATY

Attach.
Mr. Isaac Davis Hall  
Attorney at Law  
2087 Wells Street  
Wailuku, Maui, Hawaii 96793

Dear Mr. Hall:

Kuhiwa-Nahiku Well, Nahiku, Maui  
Request for Contested Case Hearing on  
Behalf of Hana Community Association

Thank you for your letter of December 18, 1990 requesting a contested case hearing on the pending Maui Pineapple Company, Ltd. application for a pump installation permit for the Kuhiwa-Nahiku Well (Well No. 4806-48) at Nahiku, Maui. In response to your request, the Commission on Water Resource Management at its December 19, 1990 meeting deferred action on this matter.

We look forward to receiving your full application for the contested case with a list of individuals and entities who want to be named as parties. Upon receipt of this information, we will determine the standing of the individuals and entities named and whether a contested case is warranted.

If you have any questions regarding the procedure or information required to proceed, please call Manabu Tagomori, Deputy Director at 548-7533.

Very truly yours,

WILLIAM W. PATY

cc: Hana Community Association  
Arnold L. Lum  
William Pyle  
Deputy Attorney General William Tam
VIA FACSIMILE AND MAIL

Chairperson Paty and Members of
the Commission on Water Resource Management
c/o Department of Land & Natural Resources
Division of Water Resource Management
PO Box 373
Honolulu, HI 96809

Re: Request on behalf of Hana Community Association and
others for a contested case hearing

Dear Chairperson Paty and Members of the Commission on
Water Resource Management:

Thank you for mailing a copy to me of the resubmittal to
the Commission of the application by Maui Pineapple Co., Ltd.
for a pump installation permit. This matter appears as Item
10 on the Commission's Agenda for December 19, 1990.

Please be advised that the recommendations contained in
the resubmittal are wholly inadequate to protect the water
rights of Hana District residents and would, if adopted,
inevitably lead to the violation of the interim stream flow
standards for the area. As such, the Hana Community
Association and others adversely affected by this project
request that they be admitted as parties to this proceeding
and that a contested case be scheduled. A timely application
filed on behalf of individuals and entities with standing to
participate in these proceedings will be filed. As such, this
permit should not be granted until contested case proceedings
have been held.

If you have any questions about any of the above, please
do not hesitate to contact me. Thank you for your concern
over this issue.

Sincerely yours,

Isaac Hall

IH/jp

cc: Hana Community Association
Arnold L. Lum
William Pyle
Chairperson and Members
Commission on Water Resource Management
State of Hawaii
Honolulu, Hawaii

Gentlemen:

Resubmittal:
Maui Pineapple Company, Ltd.
Application for a Pump Installation Permit
Kuhiwa-Nahiku Well, Nahiku, Maui

Applicant:
Maui Pineapple Company, Ltd.
870 Halimaile Road
Makawao, Maui, HI 96787

Landowner:
East Maui Irrigation Co., Ltd.
P.O. Box H
Paia, Maui, HI 96779

Action Requested: Permission to install a 700 gallons per minute (gpm) pump into the existing Kuhiwa-Nahiku Well (Well No. 4806-48) for pineapple irrigation use.

Proposed Amount of Withdrawal: 1,000,000 gallons per day

Well Description:

Ground elevation: 1,399 ± ft.
Casing diameter: 14-inch
Solid casing depth: 1,018 ft.
Open hole: 237 ft.
Total depth: 1,255 ft.
Pump Capacity: 700 gpm

Analysis: The well will develop water from the 1100-foot-head part of a perched artesian aquifer. Concerns have been raised by the Hana Community Association that pumping the well may cause a decrease in the flows of streams in the region, especially:

1. Hanawi Stream below (perennial) Big Spring;
2. A reportedly perennial segment of an otherwise intermittent unnamed stream at TMK 1-2-01:14;
3. Reportedly perennial pools along (intermittent) Makapi Stream.

The well site is located approximately 1.0 miles from Big Spring and 1.7 miles from TMK 1-2-01:14. The well site is located within the drainage basin of Makapi Stream.

Forms filed to register water sources and declare water uses show that there is only one existing consumptive use of water from these streams below the existing East Maui Irrigation and Maui Pineapple Company diversions. This existing use was declared by the landowner at TMK 1-2-01:14, Michael Behrens. At a meeting of the Hana Community Association and Commission staff on 12/6/90, Mr. Behrens stated that the stream segment
on his land, which was essential to his livelihood, had never gone dry during his 17 years on the property.

Declarations of instream uses were filed for Hanawi Stream by the Sierra Club and the Conservation Council for Hawaii. Declarations of instream uses were filed for Makapipi Stream by the Conservation Council for Hawaii and Mr. Bruce Stoner.

A review of the existing data and discussions with Doak Cox, who has done hydrologic studies for the area, indicate the following:

1. It is considered unlikely that the proposed pumping would cause any detectable reduction in flows from any of the streams in the region. However, this is impossible to prove unless pumping is allowed to test the hypothesis.

2. If there should be any reduction in stream flows due to pumping, this would likely be detectable only during conditions of prolonged drought, when recharge is low and pumping is high.

3. Nearly 21 years of historical streamflow records are available on Hanawi Stream below Big Spring. These include 15 years at USGS gage station 16509000, Hanawi Stream Below Government Road, near Nahiku, operated from July 1932 through July 1947, and 5-1/2 years of record collected at the same site by East Maui Irrigation from January 1927 through June 1932. The average 15-year discharge recorded by U.S.G.S. was 27.1 MGD. The minimum flow recorded during the 21 years of record was 8.2 MGD, occurring in 1936. The second lowest recorded discharge was 9.5 MGD, occurring in both 1931 and 1935.

4. It would be considered a sign that pumping was possibly reducing streamflows in the area if:
   a) The flow of Hanawi Stream at the USGS gage below Government Road ever fell below the minimum recorded discharge, 8.2 MGD;
   b) The minimum flow of Hanawi Stream at the USGS gage below Government Road fell below 9.5 MGD more frequently than once in seven years, on average;
   c) The perennial stream segment at TMK 1-2-01:14 were ever to go dry;
   d) Perennial pools (if any are determined to exist) along Makapipi Stream were ever to go dry.

Water Availability: The well is located in the Koolau Sector, Keanae System of Maui, according to the latest work in conjunction with the Hawaii Water Plan. Sustainable yield is estimated at 96 mgd.
RECOMMENDATION:

That the Commission approve the issuance of a pump installation permit for Kukiwa-Nahiku Well, subject to the following conditions:

(1) The applicant shall submit a Well Completion Report to the Division of Water Resource Management within 30 days after the completion of the work.

(2) The proposed use shall not adversely affect existing legal uses in the area, including instream uses and existing off-stream uses.

(3) The applicant shall comply with all applicable laws, rules, and ordinances.

(4) Use of water from the well shall be for pineapple irrigation only. Any proposed change in use shall be brought before the Commission for consideration and action.

(5) The applicant shall reactivate the gaging station known as "Hanawi Stream below Government Road" under the supervision of the U.S. Geological Survey. A plan shall be prepared by the applicant and shall be submitted to the Commission, for approval by the Chairperson, to carry out monitoring activities. Results of the monitoring activities shall be submitted to the Commission.

(6) If pumping of the well reduces the flow of Hanawi Stream below Big Spring, pumping shall cease. It will be considered a sign of streamflow reduction if the flow at the reactivated gaging station ever falls below 8.2 MGD or if a minimum flow of less than 9.5 MGD occurs more frequently that once every seven years, on average. Should the applicant (or applicant's successor) wish to continue pumping, the applicant (or applicant's successor) shall submit to the Commission a Petition to Amend the Interim Instream Flow Standard or any other flow standard then in effect for Hanawi Stream.

(7) The applicant shall arrange for spot discharge measurements to be made at the point of withdrawal of the perennial segment of the unnamed stream at TMK 1-2-01:14. These data, together with the testimony of the current landowner, Mr. Behrens, shall be used to establish an estimate of the minimum historical flow at that point, which shall be submitted to the Commission for approval.

(8) If the perennial stream segment at TMK 1-2-01:14 were ever to go dry within six months of the last time the well was pumped, the applicant (or applicant's successor) shall be responsible for providing an immediate or timely alternative water supply for the property in an amount or rate not less than that minimum historical flow estimated above. If a timely alternative water supply is not provided, the applicant (or applicant's successor) would be responsible for reimbursing the water user at TMK 1-2-01:14 for crop damages and any other financial losses caused by the loss of water supply. Otherwise, pumping shall cease.
The applicant shall explore, in cooperation with the State Division of Aquatic Resources and any knowledgeable local residents, whether there are any perennial pools along intermittent Makapipi Stream, and submit a report of findings to the Commission. If perennial pools are determined to exist, a plan shall be prepared by the applicant and submitted to the Commission, for approval by the Chairperson, to monitor at least one such pool. Results of the monitoring activities shall be submitted to the Commission.

If pumping of the well reduces the flow of Makapipi Stream, pumping shall cease. It will be considered a sign of streamflow reduction if any perennial pool along the stream were to go dry. Should the applicant (or applicant’s successor) wish to continue pumping, the applicant (or applicant’s successor) shall submit to the Commission a Petition to Amend the Interim Instream Flow Standard or any other flow standard then in effect for Makapipi Stream.

The applicant shall provide and maintain approved meters or other appropriate devices or means for measuring and reporting total water usage on a monthly basis. One meter shall record the pumpage from the well and another shall record the amount of water taken from the irrigation ditch for pineapple irrigation.

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

Respectfully submitted,

KAZUO G. AKITA
Manager-Chief Engineer

WILLIAM W. PATY, Chairperson
To: Bill Devick, Program Manager
Through: Paul Kawamoto, Program Manager
From: Skippy Hau, Aquatic Biologist
Subject: Makapipi Stream Diversions

December 13, 1990

This morning, at 0956, I contacted Garrett Hew of East Maui Irrigation Company. He said that an East "tributary" is also diverted but only contributes to their system during high flows. It appears that the West tributary flows continuously.

ADDITIONAL INFORMATION

On my first inspection of this stream, I accidentally found post-larvae shrimp migrating upstream on Friday, 27 June 1986.

I took Dr. Jackie LaPerriere to this lower part of the stream to conduct her stream study this past year.

On 9 March 1990, I sampled the stream and found Lentipes concolor, Awaous stamineus, and Macrobrachium lar. prasin.

On 12 May 1990, I accompanied Mike Lee while he sampled various Maui streams. We sampled Makapipi stream just above the bridge and Hana Highway. We found Atya bisulcata and tadpoles. No fishes were found in this part of the stream.

I've estimated the elevation at the bridge to be around 910 feet.

Attached are photocopies of maps of the area.

I've just gotten my truck back from the service station. I'll try to survey some new streams within the month.
MEMORANDUM FOR THE RECORD

FROM: Bill Rozeboom

SUBJECT: Field Trip re Kuhiwa-Nahiku Well Pump Application Permit

On December 6, 1990, DWRM's Manabu Tagomori, Ed Sakoda, and Bill Rozeboom made a full-day field trip to Maui to inspect Big Spring on Hanawi Stream, the existing Kuhiwa-Nahiku Well (#6-4806-48), and to meet with the Hana Community Association. The trip was undertaken as part of the review of a permit application from Maui Pineapple Co. Ltd. to install a pump on the well. Mr. Bill Pyle, a consultant representing Maui Pineapple, provided transportation and was with us for the day.

For the climb into Hanawi Gulch, we met and were led by Garret Hew and Steven Cabral of East Maui Irrigation, and James Kanoe of the U.S. Geological Survey. The climb began at approximately 8:30 and took approximately 1.5 hours to reach the bottom at the discontinued USGS gaging station on Hanawi Stream. The "trail" is steep and hazardous; ropes were required to pass over many steep and slippery sections. The trail had not been used in a long time, judging from its overgrown condition. The EMI personnel reported that the only times other people come down into the gulch are after EMI or USGS cleared the trail as was done during our climb.

The control at the old USGS gage was still in place and seemed to be in good condition. However, the stilling well was no longer functional, and the instrument housing was partially rotted and in generally poor condition. After viewing the gage site, we proceeded upstream to see Big Spring.

Big Spring emerges from the side of a cliff near the base of a waterfall on Hanawi Stream. The waterfall itself is in the order of 100 feet high (a rough guess) falling into a roughly circular formation. At and below the waterfall, Hanawi Stream is a gaining stream due to Big Spring and other springs between the waterfall and the ocean. The EMI personnel reported that spot measurements years ago suggested a minimum flow from Big Spring (and other springs above the gage site) of around 10 MGD and a flow downstream near the stream mouth of around 14 MGD.

It was 12:00 when we finished the climb back out of the gulch and returned to the vehicles. Bill Pyle then took us up to the Kuhiwa-Nahiku well, which is set in a large concrete pad required by the rig used to drill the well.

At 3:30, we and Bill Pyle met with six representatives of the Hana Community Association - John Blumer Buell, Michael Behrens & Helga Fiedener (sp?), William Chang, Parley Kanakaole, and Elaine Wender - to discuss their concerns over the well. Their specific concerns were about flow disruption during critical low periods, especially to Hanawi Stream and a small perennial stream segment which is the sole water source for Behrens & Fiedener (sp?). The only other area specifically mentioned was intermittent Makapipi Stream, which reportedly has some perennial pools along its length. We left Hana to return to Honolulu at 6:00 pm.
John Blumer-Buell
Michael Behrens
William Chang
Ed Sakoda  DLNR
Bill Pyle  Mani Pice
Bill Rozzboom  DLNR
Makoto Toyomori  DLNR
Helga Friederich
Farley Kanekoa
Flaine S. Wender
Mr. William W. Paty, Chair  
Commission on Water Resource Management  
Department of Land and Natural Resources  
PO Box 373  
Honolulu, HI 96809  

Re: Maui Pineapple Company, Ltd.  
Pump Installation Permit  
Kuhiwa Well #4806-48  
Isaac Hall’s letter dated 11/13/90

Dear Mr. Paty,

Mr. Hall’s letter of 11/13/90 uses many untrue statements to try to support his contention that Maui Pineapple Company, Ltd., should not be granted the necessary permits to pump the Kuhiwa Well:

Page 1, paragraph 3, Kuhiwa Well was drilled in 1947 at it’s chosen location in order to provide water from a huge aquifer that presently is wasted underground into the ocean. The very knowledgeable hydrologists and geologists that worked on drilling the over 100 test bores to explore this aquifer knew very well that the chances of affecting the springs in Hanawi Stream were extremely unlikely, given the huge amount of water draining into the ocean from this aquifer, and the rather remote connection between the Kuhiwa Well and the springs. EMI withdrew its SMA application referred to by Mr. Hall for other reasons, not because of any lack of proof that the well would not cause adverse impact.

Page 2, paragraph 2, Mr. Hall tries to make a point that pumping a well violates the instream flow standards for Hanawi, Makapipi, Kuhiwa or other streams. He is wrong. These standards can only be considered as guidelines, and pumping effects would have to be studied for a long period of time, and significant historical background data would have to be available before any determination of effect and possible violation could be determined.

Page 2, paragraph 3, Mr. Hall misuses hydrologist Doak C. Cox’s statements from a letter of June 11, 1990, to try to indicate that a 10% reduction in flow at Big Spring is likely. He ignores further statements in that same letter by Doak Cox stating that while pumping Kuhiwa Well "a 10-percent decrease in the Big Spring discharge is therefore the maximum possible that can be expected to result from draft on the Kuhiwa Well, and the actual effect is likely to be significantly less. The actual effect of the well draft on the Spring is unlikely to be observable without very careful measurements....".
In an attempt to clear up misunderstandings of this June 11, 1990 letter by certain factions in Hana who have been trying to use that letter to prove a definite and observable negative effect on the Spring by pumping Kuhiwa Well, Mr. Cox wrote two more letters, dated October 16, 1990, and October 22, 1990, both of which are in DLNR files on this project. In his letter of October 16, 1990, he states, "That the diminution in spring flow will not be detectable with certainty considering the natural variability of the spring flow and the difficulty of its measurement."

Page 3 top paragraph, there is no proof that the well pumping will have any affect whatsoever on the streamflows of any of the streams in the area. The most knowledgeable people on this subject feel that there will be no observable effect, but the only way we can know for sure is by measurement of the streamflow.

Page 3, paragraph 3, Mr. Hall takes a hypothetical consideration and tries to report it as a statement of fact. In my letter of October 24, 1990, to Mr. Cox, I made reference to the fact that the springs in Hanawi dropped 1 to 2 mgd below the average springflow of 10 mgd three times, in 1931, 1935, and 1936, long before there was any well or any pumping of the aquifer. My hypothetical question to Mr. Cox was that if it could happen three times without any pumping, it could happen again, whether or not any pumping was taking place. My question to Mr. Cox was, how could anyone know whether such a drop in flow was caused by pumping Kuhiwa well, if the Well was in operation at the time? Mr. Hall grabbed that hypothetical consideration and tried to twist it around to represent a statement of fact.

Page 3, paragraph 5, Mr. Hall makes a statement about the waters of the State being held for the benefit of the citizens of the State under HRS Chapter 174C-1. Maui Pineapple Company, Ltd. is also a citizen of the State, and is entitled to the protection of the State in having the waters of Kuhiwa Well protected for their agricultural use.

Page 4, paragraphs 1 and 2, Maui Pineapple Company, Ltd., is a farmer in East Maui, and is as entitled to use the waters of East Maui as are the members of the Hana Community Association. The Water Commission exists to make just those determinations, that is, what is the most beneficial use to the community of the waters of this area. Custom in Hawaii has long dictated that waters be moved from regions of oversupply to regions of shortfall for purposes of domestic, irrigation and agricultural use. This is just exactly that sort of situation. A small part of a huge body of water, presently being wasted into the ocean, is proposed to be moved to a dry area for agricultural purposes by citizens of Hawaii.

Page 4, paragraph 3, the expected annual average draft at Kuhiwa Well is 200 gpm. The maximum expected possible effect at Big Spring is 10% of that or 20 gpm. Mr. Cox made the point that a biologist familiar with the biota of Hanawi stream should be able to determine if the expected flow reduction of 20 gpm out of a total flow of 7,000 gpm from the springs in the Hanawi Stream would have any effect on the stream biota. A change in flow of this magnitude certainly should not
have any effect, and a qualified biologist should be able to substantiate that opinion easily, but this has not been done as yet. Ed Sakoda, of your staff, agreed with Mr. Cox that this information should be fairly easy to obtain.

Page 4, paragraphs 5 and 6, and page 5, paragraphs 1 and 2, the well is a 43 year old private property, the land is private property, and the water under the private property is also private property. The only applicable State statute has to do with receiving a permit to operate the pump to remove the water from the ground for irrigation purposes. No State lands or funds are involved in this application. As such, no Environmental Assessment is required. An Environmental Assessment was prepared for the Land Use Permit. This EA makes reference to the aquifer's ability to sustain the requested yield, and has been reviewed by your staff. Certainly this is an entirely different situation than the Molokai case Mr. Hall makes reference to, and an EIS is not required, as the main concerns have been addressed by Maui Pineapple Company's willingness to cooperate with testing and streamflow measurement to confirm the opinions of the experts. Actually, the fact of this well's age and the fact that it has been pumped in the past could make a good case for "grandfathering" the well's pumping permit as has been done for other existing wells in the State.

Page 5, paragraphs 3, 4, 5, the testing program was recommended for the existing gaging station in Hanawi Stream below Big Spring (presently unused) because it has the best background of historical data to compare it to, is the only stream recommended for "Kapu" protection, is felt to be the main stream that would respond to pumping from Kuhiva because of its high elevation, and an indication of no effect here would pretty well mean no effect in other areas lower in elevation. If a significant effect were to be found here, then other areas should be looked at. The expert opinion is that there will not be any observable effect here or elsewhere. Running gaging stations in other streams would be meaningless because of the lack of background data to compare it to, and the high degree of likelihood that the effect, if any, will be confined to Hanawi Stream.

Mr. Hall seems to be unaware that Maui Pineapple Company, Ltd. has agreed to work with the State for the monitoring of the gaging station, and the State has agreed to contact the USGS to conduct the monitoring. These arrangements were agreed to in mid-October at a meeting with your staff at DWRM. Mr. Hall also seems to be unaware that as a Registered Professional Engineer in this state, I am bound to conduct any engineering work and report any data developed from this work in an unbiased and unprejudiced manner. As such it would not matter whether the USGS or myself, acting in my capacity as a Professional Engineer, conducted the monitoring work, as the data would be accurately reported either way.

Page 6, paragraph 1, the DLNR staff at both OCEA and DWRM are aware that this water will be metered at the well discharge, and that the metered amount will be reported to DLNR and EMI. The information will be a matter of public record and will be available to anyone,
including the HCA, for their independent evaluation. East Maui Irrigation Co. has made it very clear that they are not willing to provide water from their ditch system any longer for the growing of pineapple by Maui Pineapple Company, Ltd. The idea that this well will provide water for some other development project is ridiculous. This water will provide badly needed irrigation water for the drip irrigation systems in Maui Pineapple Company’s East Maui pineapple fields.

Page 6, paragraphs 4 and 5, Maui Pineapple Company, Ltd., has as much right to apply for the use of this water as any other private land owner or leasee in the area. Our rights are as protected by State Law as any other person or organization. The idea that we are somehow violating someone else’s rights by pumping water from a private well on private land using private funds is not very well thought out. We are willing to meet with anyone who wishes to discuss this with us, and in fact have tried to do so with the Hana Community Association on July 3 and July 31 in Hana, and again on August 9 at a public hearing on this project in Kahului. The concerns that were brought up at these meetings about keeping the water for pineapple irrigation only, and measuring the Hanawi stream to check for draft effects, have been addressed. We feel there is no need to delay this application further, as it has already been delayed at least six months by the requirement that the project also go from the Land Board to the Water Commission for their additional review.

At these meetings in Hana and in Kahului attempts were made to explain that the possibilities of developing long term storage or of drilling a completely new well elsewhere were indeed looked at. The cost of each of these alternatives, estimated to be between $5 million and $10 million, is prohibitive for a company as small as Maui pineapple Company, and is not considered to be viable under today’s economic conditions. The only possible alternative that we have for irrigation water at this time is to revive this old well, which appears to be located in one of the best aquifers on the island, and get on with our business of growing pineapple. We really don’t understand where all the objection to this project is coming from. We certainly haven’t seen it from people in the community we have talked to. We are certainly willing to set up a meeting here on Maui as was discussed at your last Commission meeting in Kona on November 14, 1990. As we agreed at that time, with Mr. John Blumer-Buell representing the HCA, the members of your Commission would meet with ourselves, representatives of the HCA, and other interested members from the community, to discuss this further, sometime before the next regularly scheduled meeting in Honolulu in December.
Please distribute these comments on Mr. Hall's letter to the Commissioners and the staff as soon as possible so that they can consider them before we meet on Maui.

I am available to answer any questions you may have on this project.

Sincerely

William L. Pyle, PE
Project Manager

cc: Hana Community Association
    Isaac Hall
    Ed Sakoda, DLNR
    Ed Henry, DLNR
    Maui Pineapple Company, Ltd.
AGENDA
FOR THE MEETING OF THE
COMMISSION ON WATER RESOURCE MANAGEMENT

DATE: November 14, 1990
TIME: 2:00 p.m.
PLACE: King Kamehameha Hotel Conference Room
       75-5660 Palani Road
       Kailua-Kona, Hawaii

1. Minutes of the October 17, 1990 Meeting
2. Maui County Water Use and Development Plan
4. Hawaii Stream Assessment: Acceptance of Final Report and Data Base
5. Further Action on Declarations of Water Use
7. HASEKO (Hawaii), Inc. Application for Well Construction Permits, Keopu Mauka/Puuhonua Well, Kailua-Kona, Hawaii
8. Nansay Hawaii, Inc. Application for Well Construction Permits, Puako Wells 1 to 3, Puako, South Kohala, Hawaii
10. Honolulu Board of Water Supply Application for a Water Use Permit, Kulilouw Well, Kuliouwou, Oahu
11. Honolulu Board of Water Supply Application for a Water Use Permit, Wailupe Well, Aina Haina, Oahu
14. Other Business
Chairperson and Members
Commission on Water Resource Management
State of Hawaii
Honolulu, Hawaii

Gentlemen:

Maui Pineapple Company, Ltd.
Application for a Pump Installation Permit
Kahiwa-Nahiku Well, Nahiku, Maui

Applicant: Maui Pineapple Company, Ltd.
870 Hallimaile Road
Makawao, Maui, HI 96787

Landowner: East Maui Irrigation Co., Ltd.
P.O. Box H
Paia, Maui, HI 96779

Action Requested: Permission to install a 700 gallons per minute (gpm) pump into Kahiwa-Nahiku Well (Well No. 4806-48) for pineapple irrigation use.

Proposed Amount of Withdrawal: 1,000,000 gallons per day.

Well Description:

- Ground elevation: 1,399 ± ft.
- Casing diameter: 14-inch
- Solid casing depth: 1,018 ft.
- Open hole: 237 ft.
- Total depth: 1,255 ft.
- Pump Capacity: 700 gpm

Analysis: The well will develop water from the 1100-foot-head part of a perched artesian aquifer. There has been some concern raised by the Hana Community Association that pumping the well may cause an immediate decrease in the flow of Big Spring or will represent a major part of its flow. A review of the existing data and discussions with Doak Cox, who has done hydrologic studies for the area, indicate the following:

1. Pumping the well will not cause an immediate decrease in the flow of Big Spring. Big Spring is supplied by the 800-foot-head part of a perched artesian aquifer. The 800-foot aquifer is supplied by the 1100-foot-head aquifer, from which the well develops water. The hydrologic separation (two separate aquifers) and the storage volumes associated with each aquifer will cause considerable lag and damping between the start of pumping the well and the effect, if any, on the flow of Big Spring.

2. Any long-term effect due to pumping from the well will probably be only a minor fraction of the average draft. Doak Cox states that a 10-percent decrease in the Big Spring discharge is therefore the maximum possible that can be expected to result from draft on the Kahiwa Well, and the actual effect is likely to be significantly less.
Water Availability: The well is located in the Koolau Sector, Keanae System of Maui, according to the latest work in conjunction with the Hawaii Water Plan. Sustainable yield is estimated at 96 mgd.

RECOMMENDATION:

That the Commission approve the issuance of a pump installation permit for Kahiwa-Nahiku Well, subject to the following conditions:

1. The applicant shall submit a Well Completion Report to the Division of Water Resource Management within 30 days after the completion of the work.

2. The proposed use shall not adversely affect existing legal uses in the area.

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

4. Use of water from the well shall be for to pineapple irrigation only. Any proposed change in use shall be brought before the Commission for consideration and action.

5. The applicant shall reactivate the gaging station known as "Hanawi Stream below Government Road" under the supervision of the U.S. Geological Survey. A monitoring schedule shall be submitted to the Commission, for approval by the Chairperson, to carry out the monitoring plan proposed by the applicant. Results of the monitoring activities shall be submitted to the Commission. If pumping of the well reduces the flow of Big Spring, pumping shall cease. Should the applicant wish to continue pumping, the applicant shall submit to the Commission a Petition to Amend the Interim Instream Flow Standard.

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

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

Respectfully submitted,

MANABU TAGOMORI
Deputy Director

APPROVED FOR SUBMITTAL:

/s/ WILLIAM W. PATY

WILLIAM W. PATY, Chairperson
Kuhiwa—Nahiku Well
(Well No. 4806—48)
Chairperson and Members
Commission on Water Resource Management
State of Hawaii
Honolulu, Hawaii

November 14, 1990

Gentlemen:

Maui Pineapple Company, Ltd.
Application for a Pump Installation Permit
Kuhiwa-Nahiku Well, Nahiku, Maui

Applicant: Maui Pineapple Company, Ltd.
870 Hallimale Road
Makawao, Maui, HI 96787

Landowner: East Maui Irrigation Co., Ltd.
P.O. Box H
Paia, Maui, HI 96779

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Well Description:

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Pump Capacity: 700 gpm

Analysis: The well will develop water from the 1100-foot-head part of a perched artesian aquifer. There has been some concern raised by the Hana Community Association that pumping the well may cause an immediate decrease in the flow of Big Spring or will represent a major part of its flow. A review of the existing data and discussions with Doak Cox, who has done hydrologic studies for the area, indicate the following:

1. Pumping the well will not cause an immediate decrease in the flow of Big Spring. Big Spring is supplied by the 800-foot-head part of a perched artesian aquifer. The 800-foot aquifer is supplied by the 1100-foot-head aquifer, from which the well develops water. The hydrologic separation (two separate aquifers) and the storage volumes associated with each aquifer will cause considerable lag and damping between the start of pumping the well and the effect, if any, on the flow of Big Spring.

2. Any long-term effect due to pumping from the well will probably be only a minor fraction of the average draft. Doak Cox states that "a 10-percent decrease in the Big Spring discharge is therefore the maximum possible that can be expected to result from draft on the Kuhiwa Well, and the actual effect is likely to be significantly less."

ITEM 9
Water Availability: The well is located in the Koolau Sector, Keanae System of Maui, according to the latest work in conjunction with the Hawaii Water Plan. Sustainable yield is estimated at 96 mgd.

RECOMMENDATION:

That the Commission approve the issuance of a pump installation permit for Kuliwia-Nahiku Well, subject to the following conditions:

1. The applicant shall submit a Well Completion Report to the Division of Water Resource Management within 30 days after the completion of the work.

2. The proposed use shall not adversely affect existing legal uses in the area.

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

4. Use of water from the well shall be for pineapple irrigation only. Any proposed change in use shall be brought before the Commission for consideration and action.

5. The applicant shall reactivate the gaging station known as "Hanawi Stream below Government Road" under the supervision of the U.S. Geological Survey. A monitoring schedule shall be submitted to the Commission, for approval by the Chairperson, to carry out the monitoring plan proposed by the applicant. Results of the monitoring activities shall be submitted to the Commission. If pumping of the well reduces the flow of Big Spring, pumping shall cease. Should the applicant wish to continue pumping, the applicant shall submit to the Commission a Petition to Amend the Interim Instream Flow Standard.

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

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

Respectfully Submitted,

MANABU TAGOMORI
Deputy Director

APPROVED FOR SUBMITTAL:

/s/ WILLIAM W. PATY

WILLIAM W. PATY, Chairperson
Kuhiwa—Nahiku Well
(Well No. 4806-48)
VIA FACSIMILE AND MAIL

Mr. William W. Paty, Chairperson
Commission on Water Resource Management
Department of Land & Natural Resources
Division of Water Resource Management
PO Box 373
Honolulu, HI 96809

Re: Application of Maui Land and Pineapple Co. Ltd. for pump installation permit from Commission on Water Resource Management

Dear Chairperson Paty:

Please be advised that I represent the Hana Community Association ("HCA") with respect to the application described above. On Friday, November 9, 1990, I reviewed the file of the Board of Land and Natural Resources ("BLNR") with regard to the Conservation District Use ("CDUA") permit approved by BLNR on September 28, 1990 issuing a temporary land use permit "to use a generator at the site, a well pump and other non-permanent uses" and nothing else. That file as well as the representations of Ed Henry to the HCA make it clear that BLNR only has jurisdiction to consider uses of land and not the short or long-term impacts of the proposed pumping on water resources in the area.

I also reviewed the pump installation permit application file in the Division of Water Resource Management. This file contains a staff recommendation and notes that action is to be taken on this matter by the Commission on Water Resource Management ("Commission") on November 14, 1990 at 2:00 p.m. in Kailua-Kona on the island of Hawaii.

Over ten years ago, I represented certain East Maui residents in special management area ("SMA") proceedings with respect to the application of the East Maui Irrigation Company ("EMI") to divert water below Big Springs in Hanawi Stream. During these proceedings, it was disclosed that the sole purpose of drilling Ruhia Well was to tap the water emerging at Big Springs. Hearing Officer Masato Doi recommended denial of the SMA permit because EMI could not
prove that its diversion would not cause adverse impacts. Thereafter, EMI withdrew its SMA application.

The HCA represents residents in the Hana District from Keanae all the way to Kaupo. Some of its members rely upon surface water in Makapipi Stream and other potentially affected East Maui streams for domestic and agricultural purposes. These members have both riparian and appurtenant water rights to the full flow of the waters in Makapipi Stream and other potentially affected East Maui streams.

Some members of the HCA exercise Native Hawaiian gathering rights for subsistence and other purposes in Hanawi, Makapipi Streams and other potentially affected streams. Other members of the HCA have worked long and hard to protect East Maui's water sources and their connected ecosystems. DLNR recommended in its own "Hawaii Stream Assessment Final Report" that Hanawi Stream be "kapu" or protected from any diminishment of its full flow. In addition, the interim instream flow standard for East Maui establishes that the "amount of water flowing in each stream on the effective date of this standard" is to be maintained. No additional waters can be taken from Hanawi, Makapipi, Kahiwa or other potentially affected East Maui streams through direct diversion or through the pumping of a well in the vicinity without violating this standard.

The Commission already has evidence before it that this standard will be violated if a pump is activated in Kahiwa Well. Hanawi Stream, below Big Springs, has an average flow of 10 million gallons per day ("mgd"). In a letter dated June 11, 1990, hydrologist Doak C. Cox states:

All that can be said is that pumping the Kahiwa Well is likely to result in some decrease in the flow of the Big Spring and associated springs, and that the decrease cannot be more than 10% of the natural flow of the springs in dry years except possibly as a result of lag. (Emphasis added.)

He also states that the artesian aquifer system tapped by Kahiwa Well does not discharge at Hanawi Springs alone. There has been no assessment, survey or disclosure of where else, besides Hanawi, these waters may emerge. It seems to have escaped reviewers to date that the Kahiwa Well lies immediately next to East Makapipi Stream, that West Makapipi Stream and Kahiwa Streams are only slightly farther away and that both of these streams are significantly closer to Kahiwa Well than Hanawi Stream. In addition, an unnamed stream arises mauka of the Hana Highway, between Hanawi and Makapipi Streams, which flows to the ocean discharging its waters on the west side of Nahiku Landing. While Hanawi, Makapipi and
this unnamed stream have significant flows during most of the year, HCA acknowledges that Kukiwa Stream is dry for long periods of time and that more needs to be known about this stream. There is absolutely no proof, however, that the flows in these streams will not be diminished through the pumping of Kukiwa Well.

I am aware of the two more recent letters sent by Mr. Cox to the Commission. In these letters, he does not retreat from his original opinion; he simply states that there will probably be a lag between the pumping of Kukiwa Well and the diminishment of flow below Big Spring and that there will be difficulties in quantifying perfectly the extent of the reduction in the flow of Big Spring.

It is interesting to note that a letter in your files dated October 24, 1990 from Mr. Pyle to Mr. Cox points out that the flow records for Big Spring when correlated with the earlier test pumping of Kukiwa Well show a reduction of between one and two mgd from Hanawi Stream. This amounts to more than 20% of the average flow below Hanawi Springs. Mr. Pyle states that he is concerned someone might "grasp" the meaning of these figures.

The staff report and staff recommendation submitted by Mr. Manabu Tagomori and approved by yourself misstate the concerns of the HCA. In that report, staff limits the concerns of the HCA to the "immediate decrease" of water in the Hanawi Stream and any decrease that would "represent a major part of its flow." So stated, it makes it easier to dispel the concerns of the HCA.

The Commission should be aware that HCA's concerns are much broader. The HCA is not concerned simply with immediate decreases; it is concerned with the lag phenomenon and decreases that would be caused over time. Similarly, the HCA is not only concerned with major decreases in Hanawi's flow; it is concerned with any decreases in the flows of Hanawi Stream as well as Makapipi, Kukiwa, the unnamed and other potentially affected streams.

HRS Chapter 174C-1 declares that "the waters of the state are held for the benefit of the citizens of the state" and that "the people of the state are beneficiaries and have a right to have the waters protected for their use." The HCA, its members and other residents of the District are such beneficiaries and they have the right to the beneficial use of the waters of the state for domestic, irrigation and agricultural uses.
No effort has been made to categorize the kinds of interests that could be adversely affected by the pumping or to notify the possessors of these interests of this application.

The rights of downstream users are superior to the rights of Maui Land and Pineapple, Ltd. ("MLP") to divert the water outside of East Maui. This Commission must protect traditional and customary Hawaiian rights, fish and wildlife and scenic beauty. It would be a violation of the instream stream flow standards for these streams to allow their flow to be diminished at all through the pumping of Kahiwa Well. Many of these streams have pools which are regularly used for recreational purposes. Waterfalls in these streams have been noted for their scenic beauty. To allow any diminution in the flow of Hanawi Stream would violate the "kapu" status recommended in the Commission's own Hawaii Stream Assessment.

Mr. Cox admits in a letter dated October 10, 1990 to Mr. Pyle that only an expert in Hawaiian stream biology could discern if the pumping could adversely affect stream biota. No such person has presented evidence of these effects with relation to the streams referred to above.

The RAC urges the Commission not to adopt the recommendation of staff and not to grant the permit for pump installation for the following reasons:

1. Violation of HRS 343.

An applicant, MLP, is applying to an agency (the Commission) for a permit or approval for a proposed action which involves the use of state lands and funds (the water is state property; the water supplying the aquifer arises partly on state lands; some of the lands affected by the pumping belong to the state and the state should or will derive funds from the use of its water) and the use of conservation lands. See HRS 343-5(a)(1) and (2) and HRS 343-5(c). Under these circumstances, an adequate Environmental Assessment ("EA") must be prepared prior to the approval of the proposed action.

No EA exists in the Commission's files. An EA does exist in the files of BLNR but the negative declaration issued by the Board was limited to land issues and explicitly excluded water issues. In addition, the negative declaration issued by BLNR cannot be considered a negative declaration issued by an entirely different agency, the Commission on Water Resources Management.
Our state regulations permit a separate agency to adopt the findings of another agency only "after considerable pre-examination and comparison." See §11-200-13 of Hawaii's "Environmental Impact Statement Rules." This Commission, however, has never reviewed any EA, has never reviewed the EA presented to BLNR, has never decided to adopt the negative declaration issued by BLNR and has never published any negative declaration regarding the water resource impacts of this project.

The HCA demands that no action be taken by the Commission until an EA is presented to the Commission. The concerns expressed in this letter and through letters submitted earlier by the HCA and the University of Hawaii Environmental Center make it clear that this project "may" have significant adverse impacts on Hanawi, Makapipī, Kūhiwā, the unnamed and other East Maui streams and, therefore, an adequate Environmental Impact Statement ("EIS") must be prepared before jeopardizing protected water resources through the granting of this application. See HRS 343·5(C). If state approval of a lease to "rent space" in the Molokai Water System is sufficient to trigger the requirement of an EIS, so is this proposed action. See Molokai Homesteaders Cooperative v. Cobb, 63 Haw. 453 (1981).

2. Inadequate testing and monitoring program.

Kūhiwā Well was drilled at an elevation of 1,400 feet above sea level. It was drilled to a depth of 1,255 feet or 145 feet above sea level. It is totally inadequate to rely on a testing program which only includes monitoring flow impacts at one location below Hanawi Springs. Water flow impacts can be caused anywhere from the elevation of the well to sea level. There need to be many monitoring stations located between the 1400 foot elevation and sea level.

It is totally inadequate to monitor Hanawi Stream alone. Monitoring stations need to be established as well in several locations on Makapipī, Kūhiwā, the unnamed and other potentially affected East Maui streams between the elevation of 1400 feet and sea level.

It is important that the monitoring be conducted by the United States Geological Survey ("USGS"). It is my understanding that the applicant does not want to pay the costs necessary to have USGS conduct this monitoring program and, to reduce costs, wants to conduct this program itself under the supervision of the USGS. Given the significance of the water resources involved, the applicant must be required to pay for all costs necessary to have the USGS conduct the monitoring program. The applicant has a severe conflict of interest in this respect. It simply wants the water too much
to be relied upon to accurately monitor the impacts of the pumping.

No adequate system for monitoring the withdrawals of MLP from the Koolau Ditch has been proposed. The applicant should be required to present data to the Commission showing amounts of water placed in the Koolau Ditch from each respective source, in the past and in the future, and the amounts of water withdrawn from the Koolau Ditch and how each amount was or is applied, in the past and in the future. It is still unclear whether the delivery of this water to MLP will not simply have the indirect impact of freeing up other water to be used for something other than pineapple growth.

A condition should be imposed requiring that a copy of all of the data assembled by the USGS and submitted by MLP be sent to the HCA for its own independent analysis. The HCA would like to participate in the monitoring and testing program.

The technical report and the monitoring should be prepared as part of an EIS. Any approval given by this Commission for pump installation and operation should only be for the purposes of preparing an adequate EIS.

3. Request for contested case.

Unless the Commission requires that the applicant prepare an EIS and unless the Commission limits its approval to conducting a testing and monitoring program and developing a technical report for the purpose of preparing an adequate EIS, including all of the provisions discussed above, the substantial rights, including the riparian and appurtenant water rights and Native Hawaiian gathering rights, of certain members of the HCA, residents of the Hana District and of the HCA itself, will be violated and, as such, the HCA, on behalf of its members and residents of the Hana District, requests that the Commission schedule a contested case on this matter, admit the HCA, its members and certain residents of the Hana District as parties to this contested case and continue any further action on this permit pending the outcome of the contested case. A timely written Petition to Intervene will be filed if necessary.

It must be noted for the record that the applicant has refused to agree to continue the Commission's consideration of this matter on November 14, 1990 to allow further discussion with the HCA. MLP has never discussed the alternatives to this project suggested by the HCA of constructing adequate water storage reservoirs in Central Maui or drilling a well in some other location.
Please distribute this letter to the Commissioners and the staff prior to the consideration of this matter by the Commission.

Thank you for your consideration of this matter.

Sincerely yours,

Isaac Hall

IH/jp
cc: Hana Community Association
    Ed Sakoda
    Ed Henry
    William Pyle
    William Tam
November 8, 1990

Mr. Manabu Tagomori  
Deputy Director  
Commission on Water Resource Mgmt.  
P. O. Box 621  
Honolulu, Hawaii 96809

Dear Manabu:

All of us at Maui Pine sincerely appreciate your help on the issuance of a pump installation permit for our Kahiwa Well in Nahiku.

Sincerely,  

[Signature]

L. D. MacCluer  
Plantation Manager

LDM/sj
William W. Paty, Chair
Commission on Water Resources Management
Department of Land and Natural Resources
PO Box 621
Honolulu, Hawaii 96809

Re: Pump Installation Permit
Kuhiwa Well, # 4806-48

Dear Mr. Paty,

Regarding the letter from Dr. John Lewin at the Dept. of Health dated 10/16/90, I have been working with Bill Wong of the Safe Drinking Water Branch at the State Department of Health regarding meeting requirements at the Kuhiwa Well site. We have to get the pump installed and operating before we can draw samples for testing. After the pump has been installed, and the well has been thoroughly flushed, we will be able to pull samples that are acceptable to the Department of Health and have them tested by Brewer’s testing lab in Hilo. Any water pumped from this well will be diverted away from the Koolau Ditch until the analysis has been completed and the water is deemed safe to put into the ditch.

The well, which was built in 1947, has a concrete well pad and, to the best of my knowledge, was fully grouted. Records on this well are not complete, but the old-timers that were around when the well was put in tell me that the casing was grouted after it was installed. If needed, steps will be taken to prevent any surface runoff waters from flooding the concrete pad around the well.

We need approval to begin testing this well in order to properly flush the well in order to get the samples and do the required analysis in order to meet the Department of Health’s Administrative Rules, Title 11, Chapter 20, "Potable Water Systems". Please contact Bill Wong at the Safe Drinking Water Branch at 543-8258 if you have any questions.

Sincerely,

William L. Pyle, PE
Project Manager

cc: Ed Sakoda, DLNR
    Maui Pineapple Co., Ltd.
    John C. Lewin, Dept. of Health
    Bill Wong, Dept. of Health
November 7, 1990

Maui Pineapple Company, Ltd.
870 Haliimaile Road
Makawao, Maui, HI 96787

Dear Applicant:

The Commission on Water Resource Management will be acting on your permit application. Please refer to the enclosed agenda for more details.

You or your representative are invited to attend the meeting.

If there are any questions, please call Ed Sakoda at 548-7543.

Sincerely,

[Signature]

MANABU TAGOMORI
Deputy Director

ES:ko

Encl.
November 5, 1990

Commission on Water Resources Management
Department of Land and Natural Resources
PO Box 621
Honolulu, Hawaii 96809

Re: Pump Installation Permit
Kuhiwa Well, # 4806-48

Dear Mr. Paty,

Regarding the letter from Dr. John Lewin at the Dept. of Health dated 10/16/90, I have been working with Bill Wong of the Safe Drinking Water Branch at the State Department of Health regarding meeting requirements at the Kuhiwa Well site. We have to get the pump installed and operating before we can draw samples for testing. After the pump has been installed, and the well has been thoroughly flushed, we will be able to pull samples that are acceptable to the Department of Health and have them tested by Brewer's testing lab in Hilo. Any water pumped from this well will be diverted away from the Koolau Ditch until the analysis has been completed and the water is deemed safe to put into the ditch.

The well, which was built in 1947, has a concrete well pad and, to the best of my knowledge, was fully grouted. Records on this well are not complete, but the old-timers that were around when the well was put in tell me that the casing was grouted after it was installed. If needed, steps will be taken to prevent any surface runoff waters from flooding the concrete pad around the well.

We need approval to begin testing this well in order to properly flush the well in order to get the samples and do the required analysis in order to meet the Department of Health's Administrative Rules, Title 11, Chapter 20, "Potable Water Systems". Please contact Bill Wong at the Safe Drinking Water Branch at 543-8258 if you have any questions.

Sincerely,

William L. Pyle, PE
Project Manager

cc: Ed Sakoda, DLNR
Maui Pineapple Co., Ltd.
John C. Lewin, Dept. of Health
Bill Wong, Dept. of Health
October 16, 1990

The Honorable William W. Paty, Chairperson
Commission on Water Resource Management
Department of Land and Natural Resources
State of Hawaii
P.O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Paty:

SUBJECT: PUMP INSTALLATION PERMIT APPLICATION
KUHIWA-NAHIKU WELL
STATE WELL NO. 4806-48
NAHIKU, MAUI

Thank you for the opportunity to review and comment on the subject
document. We have examined the application and have the following comments to offer:

1. The application indicates that the subject well will be used for
pineapple irrigation. However, a Conservation District Use
Application (previously reviewed by the Department) for the
subject well indicated this well will be connected to the Koolau
Ditch system. The Koolau Ditch is a source of drinking water for
the County of Maui, Department of Water Supply.

2. If the well is to serve 25 or more individuals at least 60 days
per year or will have a minimum of 15 service connections, the
applicant will be required to comply with the Department's
Administrative Rules, Title 11, Chapter 20, "Potable Water
Systems."

3. Section 11-20-29 of Chapter 20 requires that a new source of
potable water serving a public water system be approved by the
Director of Health prior to its use. Such an approval is based
primarily upon the submission of a satisfactory engineering report
which addresses the requirements set in Section 11-20-29.
The Honorable William W. Paty  
Page 2  
October 16, 1990

4. The proposed well is situated above the Underground Injection Control (UIC) line. Land areas above the UIC line are considered to contain underground sources of drinking water. Thus, it is essential that the well be designed and constructed to prevent the possibility of groundwater contamination. For example, the well should have a concrete well pad and full grouting to prevent seepage or floodwaters from migrating down the well shaft.

5. Since this new source may affect the quality of drinking water obtained from the ditch and/or affect the development of future potable water wells in the area, we would encourage the applicant to work closely with the Department of Water Supply.

If you should have any questions, please contact the Safe Drinking Water Branch at 543-8258.

Very truly yours,

[Signature]

JOHN C. LEWIN, M.D.  
Director of Health

cc: L. D. MacCluer  
Maui Pineapple Company, Limited  
870 Hallimaile Road  
Makawao, Maui, HI 96787
MEMORANDUM

TO: Manabu Tagomori, Deputy Director
Commission on Water Resource Management

FROM: Don Hibbard, Director, Historic Preservation Program

SUBJECT: Maui County, Chapter 6E Compliance -- Kukiwa-Nahiku
Well (Well No. 4806-48)
Nahiku, Hana, Maui
TMK 1-2-4

HISTORIC PRESERVATION PROGRAM CONCERNS:

The proposed project will have "no effect" on significant historic sites since the pump will be installed in an existing well.
October 26, 1990

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

Dear Mr. Paty,

Well Construction and Pump Installation Application
Kuhiwa-Nahiku, Kapolei City Irrigation, Keopu/Puuhonua

Thank you for the opportunity to comment on the following permit applications:

Kuhiwa-Nahiku Well (Well 4806-48)
Kapolei City Irrigation Well (Well 1904-03)
Keopu Mauka/Puuhonua Well #1 (Well 3957-01)

The Kuhiwa and Keopu wells do not impact Hawaiian Home Lands; we have no comments on them.

The Kapolei City Irrigation Well proposes to remove about 1.0 Mgd from a regulated area that serves Hawaiian Home Lands on the Waianae Coast. The Department's lands have previously been faced with a moratorium on development due to inadequate water supplies. We foresee major new growth on these lands, requiring sources to supplement what might be available on site in deep wells. Because the proposed well will serve irrigation purposes rather than households, we must raise the issue of priority use of this limited resource.

The application does not indicate whether this well is expected to yield brackish water, which would be more appropriate for irrigation purposes. Also, we would like to see reference to the long-term planning for the second city's irrigation needs, specifically with respect to recycling effluent from the Honouliuli Wastewater Treatment Facility.

Warmest aloha,

Hoaliku L. Drake, Chairman
Hawaiian Homes Commission
Mr. Doak C. Cox  
1929 Kakela Drive  
Honolulu, Hi 96822

Re: Maui Pineapple Co., Ltd.  
Kuhiwa Well, Number 4806-48  
Pump Installation Permit

Thank you for your letter dated October 22, 1990, to Mr. Bill Paty of the DLNR, clarifying some of the issues regarding the Kuhiwa Well and possible effects on the springs in Hanawi Stream.

My concern with the 8.2 MGD measured in 1936 at the Hanawi gaging station below Big Spring is that it comes unexpectedly and unexplainably in the middle of historic record showing fairly reasonable long term flows of around 10 MGD as a minimum annual flow. If it happened once it could happen again, whether any pumping at Kuhiwa Well should ever take place or not. If a future flow measurement of 8.2 MGD should show up, I'm concerned that someone would unreasonably try to grasp that as an unacceptable reduction in flow and try to use it as a reason to shut down pumping at Kuhiwa Well.

Putting it another way, there is no reason to know whether a reduction of 1 to 2 MGD from a base figure of 10 MGD measured at the gaging station in Hanawi below Big Spring, measured while pumping is taking place, was in fact caused by pumping, because variations of this magnitude have been noted in the past when no pumping has taken place. How do we guard against someone jumping to the wrong conclusion should these variations show up again in the future, particularly when pumping is taking place?

Your comments were well written and I appreciate your efforts to put the situation in the proper perspective.

Sincerely,

William L. Pyle, PE

cc: L. D. MacCluer, Maui Pineapple Co., Ltd.  
Ed Sakoda, DLNR
October 22, 1990

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

Dear Mr. Paty,

Well Construction and Pump Installation Application
Kuhiwa-Nahiku, Kapolei City Irrigation, Keopu/Puuhonua

Thank you for the opportunity to comment on the following permit applications:

Kuhiwa-Nahiku Well (Well 4806-48)
Kapolei City Irrigation Well (Well 1904-03)
Keopu Mauka/Puuhonua Well #1 (Well 3957-01)

The Kuhiwa and Keopa wells do not impact Hawaiian Home Lands; we have no comments on them.

The Kapolei City Irrigation Well proposes to remove about 1.0 Mgd from a regulated area that serves Hawaiian Home Lands on the Waianae Coast. The Department's lands have previously been faced with a moratorium on development due to inadequate water supplies. We foresee major new growth on these lands, requiring sources to supplement what might be available on site in deep wells. Because the proposed well will serve irrigation purposes rather than households, we must raise the issue of priority use of this limited resource.

The application does not indicate whether this well is expected to yield brackish water, which would be more appropriate for irrigation purposes. Also, we would like to see reference to the long-term planning for the second city's irrigation needs, specifically with respect to recycling effluent from the Honouliuli Wastewater Treatment Facility.

Warmest aloha,

Hoaliku L. Drake, Chairman
Hawaiian Homes Commission
I am writing in response to two letters on this subject written by W. L. Pyle of AS Systems Hawaii and dated 18 October 1990, one to you and the other to the University of Hawaii Environmental Center.

As Mr. Pyle stated in the letter to the Environmental Center, I met with him and Edwin Sakoda of the Dept. of Land and Natural Resources to discuss the effect of the draft on the well that is proposed by Maui Pineapple Co. on the flow of the Hanawi Big Spring; and I concur in most respects with the estimates of that effect as described in Mr. Pyle's letter to you. I consider, for example, that, even if there is an effect:

1) The diminution of Big Spring flow that attributable to the draft on the well will be related much more closely to the well draft averaged over a considerable period of time such as year than to the instantaneous rate of pumping (because of the considerable lag and damping associated with the storage volumes of both the 1100-ft-head part of the perched artesian aquifer that is tapped by the well and the 800-ft-head part that is believed to supply the Big Spring flow and with the hydraulic resistance between the two parts); and

2) The effect will probably be only a minor fraction of the average draft to which it is most closely related (because there must be discharges from the 1100-ft-head part of the aquifer other than that to the 800-ft-head part, and there must be discharges from the 800-ft. part other than that to the Big Spring; and the draft from the well must be compensated for by reductions in all discharges, not merely that to the Big Spring).

There is, however, one poorly considered statement in Mr. Pyle's letter to you with which I cannot agree. This is in the first paragraph on page 3, which reads:

The lowest measured flow [of Hanawi Stream below the Big Spring] was in February of 1936, a measurement of 8.2 MGD. It is suggested that as long as the new measurements from this gaging station [after the initiation of the Maui Pine draft] do not go below 8.2 MGD at any time, it can safely be assumed that the
pumping at Kuhiwa well has caused no effect at the springs in Hanawi Stream.

Let me assume, for the moment, a total absence of lag and damping and a compensation of the instantaneous 1 mgd. well draft entirely by reduction of the Big Spring flow. From the tabulation of the annual minimum flows of Hanawi Stream at the bottom of p. 2 of Mr. Pyle's letter, it is clear that even with a 1 mgd. reduction, the flow of the stream would not have been reduced to as little as 8.2 mgd. in any of the 9 years before 1936 or the 11 years after that year. Hence it cannot be assumed that the Kuhiwa well draft has had no effect on the Big Spring or Hanawi Stream flow merely on the basis that the flow of the Stream has not dropped below 8.2 MGD.

I am reminded by reviewing an earlier report on Hanawi Stream flow (Cox, D.C., 1980. Stream-flow effects of proposed diversion from Hanawi Stream, Nahiku, East Maui; Univ. Hawaii Environ.Ctr. SR:0026, 39 pp.) that Hanawi stream at the site of USGS gage 5090, where Mr. Pyle suggests renewal of gaging, includes not only the flow of the Big Spring but also that of Hanawi Spring 1 (and, according to some sources of information, that of Hanawi Spring 2 as well). That earlier report includes the results of a correlations by Arnold Hori, Univ. Hawaii Dept. of Meteorology, of the monthly mean flow of each of the springs with rainfalls recorded at the Paakea rain gage, taking advantage of records of the flows of the individual springs for the periods: 1933-37 for the Big Spring, 1931-39 for Spring No. 1, and 1933-39 for Spring 2. The rainfalls correlated with the flow of one of the springs for a particular month were the totals for various groupings of antecedent months.

I believe that the only way in which there could be a hope of detecting and estimating the interference of the Kuhiwa well on the flow of Hanawi Stream at the site of USGS gage 5090 would involve comparing the stream flow there with an estimate of the flow without interference based on the springflow-rainfall correlations referred to above:

\[ I = Q_{stream} - Q'_{Big Spring} - Q'_{Spring No. 1} \]

where:

- \( I \) = interference
- \( Q_{stream} \) = flow of stream
- \( Q'_{Big Spring} \) = estimated flow of Big Spring without interference
- \( Q'_{Spring No. 1} \) = estimated flow of Spring No. 1 without interference

I must bring to your attention, however, that the standard error of estimate of the monthly mean flow of the springs were 0.53 mgd in the case of the Big Spring and 0.47 mgd in the case of Spring No. 1 was 0.47 mgd, so that the standard estimate of the total of the mean flows of the two springs for a particular month may be expected to be 0.71 mgd, much greater than the maximum expectable interference. It would be quite impossible to detect an interference as small as that estimated in the last paragraph of Mr. Pyle's letter to you.

It is possible that a sophisticated statistical program might be developed whereby the interference over a period of several months could be estimated. It is my opinion, otherwise, that the interference of the draft of the Kuhiwa well on the flow of Hanawi Stream can be detected by the proposed
gaging program only if the interference greatly exceeds the maximum expectable.

I would remind you that, to obtain reliable estimates of the flow of the stream will require not only that: i) a staff gage be reinstalled at the former gaging site; and ii) a water-stage recorder be reinstalled and operated at the former gaging site, with the water stage calibrated to that indicated by the staff gage; but also that: iii) at intervals (probably coinciding with those at which the charts of the recorder are changed), the discharge of the stream be determined by a current-meter traverse; and that the water stages at the times of the traverse and the discharges determined by the traverses be combined in the form of a rating curve for use in converting water stage to discharge.

Although a reduction in the flow of the Big Spring will result in a reduction in the flow over a Hanawi waterfall downstream, the visual effect on the waterfall would be undetectable, and the waterfall is in any case very difficult to see. I believe that the most significant of the possible impacts of a reduction in the flow of the Spring would be those on the stream biota. Let me repeat a suggestion that I have made previously, that competent experts be asked to estimate the impact on the stream biota of the expectable reduction in the low-water flow of Hanawi Stream at the USGS gaging station, using a deliberate overestimate of that expectable reduction—say 0.5 mgd. If the impact on the biota of a flow reduction of that magnitude would be insignificant, I can imagine no grounds for denying to Maui Pineapple Co. a permit to install a pump on the Kuhiwa Well and operate it to the extent outlined on p. 3 of Mr. Pyle's letter to you.

In my opinion, the only possible justification for requiring that Maui Pineapple Co. undertake the proposed program for gaging the flow of Hanawi Stream prior granting a long-term permit for the draft on the Kuhiwa well is to detect an interference effect whose onset is far more rapid and whose magnitude is many times greater than I consider possible.

Sincerely,

Doak C. Cox

cc: William L. Pyle, AG Systems Hawaii
Maui Pineapple Co., c/o W. L. Pyle
Univ. Hawaii Environ. Ctr.
E. E. Henry, DLNR
E. E. Sakoda, DLNR
KUHIWA WELL

Kuhiwa Well is situated at about 1400 feet above sea level. There is a 14 inch solid steel well casing in this well down to an elevation of about 400 feet (1000 feet deep), and the bottom of the well itself is at an elevation of about 150 feet (1250 feet deep). The aquifer that is being tapped is a perched artesian groundwater strata that presently pushes water up the well to an elevation of 1125 feet.

PAST PUMPING

A 24 hour pumping test done on September 22, 1977 held the flow to an average of 650 gpm, with the water level holding steady throughout the test at an elevation of 750 feet, a total drawdown of 375 feet. Four minutes after this test was shut down, the water level had recovered 300 feet to an elevation of 1050 feet, a drawdown of 75 feet.

PROPOSED PUMPING

The pump that is proposed for this well is a 200 horsepower submersible rated at 700 gpm and 800 feet of head. It will be used with a 6 inch steel pump column and 8 inch HDPE pipe above ground. The pump will be set at an elevation of 600 feet (800 feet deep). The water surface while pumping is expected to be at an elevation of 700 to 725 feet (400 to 425 feet drawdown).

CONCERNS ABOUT EFFECTS ON BIG SPRINGS

There have been concerns expressed about the possible effect of the Kuhiwa Well pumping on springs in the surrounding area, in particular Big Springs in Hanawai Gulch. Maui Pineapple Company is prepared to work with the State and the USGS to monitor the flow rate of Big Springs to determine if there is any detectable influence because of the pumping of Kuhiwa well. The first concern is that there will be a
short term effect that will be seen each time the pump is started up. The second concern is that there will be a long term loss of flow from the spring as pumping continues for periods of several months or more.

HANAWI STREAM MONITORING

The gaging station is still intact and useable at the location known as "Hanawi Stream below Government Road". It is proposed that a Stevens Water Level Recorder compatible with USGS methods be installed at this gaging station and records kept on the water flows past this point during pumping. The short term concern can be satisfied fairly quickly after pumping commences. A week or two of monitoring should show whether there is any detectable change and answer that concern. The second concern can be answered by taking measurements during the long term pumping periods, and comparing them to the short term measurements and the historic data to determine if there is any detectable loss of flow.

It is not possible to measure the spring directly when water is flowing in the streambed. The measurements have to be taken when the streambed is dry, when the spring can be measured directly at the gaging station. Since the time of most concern is when weather conditions are dry, this is the best time to measure the spring to see if there is any effect on the spring from the pumping of Kuhiwa Well.

It is proposed that monitoring the gaging station below Big Spring during dry periods will provide the best information available to determine if there is any effect on Big Spring from the pumping of Kuhiwa Well.

HISTORIC DATA

Attached are copies of data reproduced from USGS records that show streamflow at "Hanawi Stream below Government Road" from July, 1932 through June, 1947. July, 1933 through June, 1934 and July, 1935 through June, 1936 is missing. Also shown is data from July, 1936 through June, 1947 for "Hanawi near Nahiku", which is above the Koolau Ditch intake. When the upper gage is 25 mgd or less, all the water is taken into the Koolau Ditch, and the water at the lower gage represents only springflow into Hanawi Stream between the two gages.

The low streamflow reading each year is a very important reading. Records dating back to 1927 are shown below for the minimum annual flows and the month/year they occurred at "Hanawi Stream below Government Road":

<table>
<thead>
<tr>
<th>Month</th>
<th>Flow</th>
<th>Month</th>
<th>Flow</th>
<th>Month</th>
<th>Flow</th>
<th>Month</th>
<th>Flow</th>
</tr>
</thead>
<tbody>
<tr>
<td>7/27</td>
<td>10.2</td>
<td>12/33</td>
<td>11.4</td>
<td>263/38</td>
<td>14.1</td>
<td>11/43#</td>
<td>11.2</td>
</tr>
<tr>
<td>9/29</td>
<td>15.2</td>
<td>12/35</td>
<td>9.5</td>
<td>6&amp;7/40</td>
<td>10.2</td>
<td>2&amp;6/45</td>
<td>10.0</td>
</tr>
<tr>
<td>10/30</td>
<td>14.0</td>
<td>2/36*</td>
<td>8.2</td>
<td>2&amp;3/41</td>
<td>10.5</td>
<td>1/46</td>
<td>10.6</td>
</tr>
<tr>
<td>11/31</td>
<td>9.5</td>
<td>1/37**</td>
<td>12.6</td>
<td>5/42</td>
<td>10.0</td>
<td>1/47</td>
<td>11.2</td>
</tr>
</tbody>
</table>

*Lowest flow on record
**Also in March and April

#Also in Dec.
The lowest measured flow was in February of 1936, a measurement of 8.2 MGD. It is suggested that as long as the new measurements from this gaging station do not go below 8.2 MGD at any time, it can safely be assumed that the pumping at Kuhiwa Well has caused no effect at the springs in Hanawi Stream.

**ACTUAL DRAFT RATES**

The following data shows the number of days that one MGD was purchased from East Maui Irrigation Company during the ten year period 1980 through 1989:

<table>
<thead>
<tr>
<th>Year</th>
<th>Days</th>
<th>Year</th>
<th>Days</th>
<th>Year</th>
<th>Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980</td>
<td>78</td>
<td>1984</td>
<td>132</td>
<td>1987</td>
<td>36</td>
</tr>
<tr>
<td>1981</td>
<td>111</td>
<td>1985</td>
<td>151</td>
<td>1988</td>
<td>64</td>
</tr>
<tr>
<td>1982</td>
<td>89</td>
<td>1986</td>
<td>111</td>
<td>1989</td>
<td>136</td>
</tr>
<tr>
<td>1983</td>
<td>103</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If this well had been in operation in 1987, it would have been operated only 36 days, a total of 36 million gallons, an average annual draft on this aquifer of 0.1 mgd. The highest rate of usage was in 1985, a total of 151 million gallons, an annual average draft of 0.4 mgd. The average for this 10 year period is 101 million gallons, an annual average draft of 0.28 mgd.

In a worst case scenario, if all the draft from this well were to show up at the springs, the effect would range from 0.1 mgd to 0.4 mgd (70 gpm to 280 gpm), with the average being 0.28 mgd (196 gpm). In February of 1936 a reduction of 0.4 mgd would have reduced the low recorded springflow to 7.8 mgd. This is the absolute worst case scenario. Since the effect, if there is any effect, is more likely to be 10% or less, at the 10% level the effect would range from 0.01 mgd to 0.04 mgd (7 gpm to 28 gpm), an effect so small that it is almost impossible to measure. Using the 0.04 mgd effect, in February of 1936 the spring flow on the lowest day would still have been 8.2 mgd, because a decrease of 0.04 mgd is very difficult to detect at this level. The actual effect will most likely be smaller than this and will not be detectable.

Sincerely,

William L. Pyle, PE
Project Manager

cc: L. D. MacCluer, Maui Pineapple Co., Ltd.
    Doak C. Cox
    John Harrison, Environmental Coordinator, U of H
**BELAU**

<table>
<thead>
<tr>
<th>Month</th>
<th>Maximum</th>
<th>Minimum</th>
<th>Mean</th>
<th>Total</th>
<th>Maximum</th>
<th>Minimum</th>
<th>Mean</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>July</td>
<td>1,160</td>
<td>1,100</td>
<td>1,120</td>
<td>2,320</td>
<td>1,200</td>
<td>1,100</td>
<td>1,150</td>
<td>2,300</td>
</tr>
</tbody>
</table>

**HANAU BEAU GROVE**

<table>
<thead>
<tr>
<th>Month</th>
<th>Maximum</th>
<th>Minimum</th>
<th>Mean</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>July</td>
<td>1,200</td>
<td>1,100</td>
<td>1,150</td>
<td>2,300</td>
</tr>
</tbody>
</table>

**Note:** Above records supersede those published in Water-Supply Yearbook 79.
### Above

#### 1936-37

<table>
<thead>
<tr>
<th>Day</th>
<th>Jul</th>
<th>Aug</th>
<th>Sept</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>June</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum</td>
<td>2.5</td>
<td>5.5</td>
<td>10.2</td>
<td>14.1</td>
<td>16.2</td>
<td>18.6</td>
<td>0.7</td>
<td>0.4</td>
<td>3.0</td>
<td>4.6</td>
<td>5.3</td>
<td>6.2</td>
</tr>
<tr>
<td>Maximum</td>
<td>7.5</td>
<td>13.5</td>
<td>23.0</td>
<td>28.5</td>
<td>33.6</td>
<td>38.5</td>
<td>5.1</td>
<td>8.8</td>
<td>11.5</td>
<td>14.0</td>
<td>17.0</td>
<td>21.0</td>
</tr>
<tr>
<td>Mean</td>
<td>4.5</td>
<td>9.9</td>
<td>16.5</td>
<td>21.5</td>
<td>25.9</td>
<td>30.1</td>
<td>3.7</td>
<td>5.9</td>
<td>8.9</td>
<td>11.3</td>
<td>14.7</td>
<td>18.6</td>
</tr>
<tr>
<td>Total run-off</td>
<td>120</td>
<td>240</td>
<td>390</td>
<td>560</td>
<td>700</td>
<td>860</td>
<td>102</td>
<td>153</td>
<td>203</td>
<td>253</td>
<td>303</td>
<td>370</td>
</tr>
</tbody>
</table>

#### Rating table, fiscal year 1936-37 (gage height, in feet, and discharge, in million gallons a day)

<table>
<thead>
<tr>
<th>Gage height</th>
<th>Discharge</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.3</td>
<td>1.9</td>
</tr>
<tr>
<td>0.4</td>
<td>2.5</td>
</tr>
<tr>
<td>0.5</td>
<td>3.4</td>
</tr>
<tr>
<td>1.0</td>
<td>4.4</td>
</tr>
<tr>
<td>1.5</td>
<td>4.6</td>
</tr>
<tr>
<td>2.0</td>
<td>5.0</td>
</tr>
<tr>
<td>2.5</td>
<td>5.4</td>
</tr>
<tr>
<td>3.0</td>
<td>5.8</td>
</tr>
<tr>
<td>4.0</td>
<td>6.3</td>
</tr>
<tr>
<td>5.0</td>
<td>7.0</td>
</tr>
</tbody>
</table>

### Below

#### 1936-37

<table>
<thead>
<tr>
<th>Day</th>
<th>Jul</th>
<th>Aug</th>
<th>Sept</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>June</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum</td>
<td>2.5</td>
<td>5.5</td>
<td>10.2</td>
<td>14.1</td>
<td>16.2</td>
<td>18.6</td>
<td>0.7</td>
<td>0.4</td>
<td>3.0</td>
<td>4.6</td>
<td>5.3</td>
<td>6.2</td>
</tr>
<tr>
<td>Maximum</td>
<td>7.5</td>
<td>13.5</td>
<td>23.0</td>
<td>28.5</td>
<td>33.6</td>
<td>38.5</td>
<td>5.1</td>
<td>8.8</td>
<td>11.5</td>
<td>14.0</td>
<td>17.0</td>
<td>21.0</td>
</tr>
<tr>
<td>Mean</td>
<td>4.5</td>
<td>9.9</td>
<td>16.5</td>
<td>21.5</td>
<td>25.9</td>
<td>30.1</td>
<td>3.7</td>
<td>5.9</td>
<td>8.9</td>
<td>11.3</td>
<td>14.7</td>
<td>18.6</td>
</tr>
<tr>
<td>Total run-off</td>
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<td>240</td>
<td>390</td>
<td>560</td>
<td>700</td>
<td>860</td>
<td>102</td>
<td>153</td>
<td>203</td>
<td>253</td>
<td>303</td>
<td>370</td>
</tr>
</tbody>
</table>

#### Rating table, fiscal year 1936-37 (gage height, in feet, and discharge, in million gallons a day)

<table>
<thead>
<tr>
<th>Gage height</th>
<th>Discharge</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.3</td>
<td>1.9</td>
</tr>
<tr>
<td>0.4</td>
<td>2.5</td>
</tr>
<tr>
<td>0.5</td>
<td>3.4</td>
</tr>
<tr>
<td>1.0</td>
<td>4.4</td>
</tr>
<tr>
<td>1.5</td>
<td>4.6</td>
</tr>
<tr>
<td>2.0</td>
<td>5.0</td>
</tr>
<tr>
<td>2.5</td>
<td>5.4</td>
</tr>
<tr>
<td>3.0</td>
<td>5.8</td>
</tr>
<tr>
<td>4.0</td>
<td>6.3</td>
</tr>
<tr>
<td>5.0</td>
<td>7.0</td>
</tr>
</tbody>
</table>

### Notes

- The above table provides discharge data in million gallons a day for the fiscal year 1936-37.
- The below table provides similar data for the same fiscal year.
- The minimum, maximum, and mean gage heights are listed for each month.
- The total run-off values are calculated based on these gage heights.
- The rating tables help in converting gage heights to discharge values.
### Above

**1937-38**

**January -** Minimum discharge during year, and minimum 10-foot height of 5.97 feet from rating curve extended above 10 million gallons a day; minimum, 0.8 million gallons a day (10.0 seconds-foot).

**February -** Maximum discharge about 20 feet during flood of Jan. 10, 1936.

**March -** Minimum discharge, 1.2 million gallons a day (10.0 seconds-foot).

**April -** Minimum discharge, 1.2 million gallons a day (1.2 seconds-foot).

**May -** Minimum discharge, 1.2 million gallons a day (1.1 seconds-foot).

**June -** Minimum discharge, 1.2 million gallons a day (1.1 seconds-foot).

**July -** Minimum discharge reduced during year. 1.2 million gallons a day (1.4 seconds-foot).

**August -** Minimum discharge, 1.2 million gallons a day (1.1 seconds-foot).

**September -** Minimum discharge, 1.2 million gallons a day (1.1 seconds-foot).

**October -** Minimum discharge, 1.2 million gallons a day (1.1 seconds-foot).

**November -** Minimum discharge, 1.2 million gallons a day (1.1 seconds-foot)

**December -** Minimum discharge, 1.2 million gallons a day (1.1 seconds-foot).

**Total run-off for periods above:** 236.5 million gallons.

**Total discharge above:** 3,250 million gallons.

**Below**

**1937-38**

**January -** Minimum discharge, 3,100 million gallons a day (1.2 seconds-foot).

**February -** Minimum discharge, 3,100 million gallons a day (1.2 seconds-foot).

**March -** Minimum discharge, 3,100 million gallons a day (1.2 seconds-foot).

**April -** Minimum discharge, 3,100 million gallons a day (1.2 seconds-foot).

**May -** Minimum discharge, 3,100 million gallons a day (1.2 seconds-foot).

**June -** Minimum discharge, 3,100 million gallons a day (1.2 seconds-foot).

**Total discharge below:** 5,080 million gallons.

**Total discharge below:** 5,080 million gallons.

**Total discharge below:** 5,080 million gallons.

**Total discharge below:** 5,080 million gallons.

**Total discharge below:** 5,080 million gallons.

**Total discharge below:** 5,080 million gallons.
null
### Maximum Discharge During Year, 503 Million Gallons a Day (19.3 Second-Foots)

- Maximum discharge during year, 503 million gallons a day (770 second-feet), from rating curve extended above 253 million gallons a day, minimum, 1.8 million gallons a day (2.9 second-feet). During the month of June, 1939, maximum discharge was about 20 feet above flood stage.

### sho
gs good except those above 2.9, due to diversions. Water used for irrigation in central Maui.

#### Above 1939-40

<table>
<thead>
<tr>
<th>Month</th>
<th>Million Gallons a Day</th>
<th>Second-feet (mean)</th>
<th>Total Run-off</th>
</tr>
</thead>
<tbody>
<tr>
<td>July</td>
<td>6.9</td>
<td>0.8</td>
<td>10.8</td>
</tr>
<tr>
<td>August</td>
<td>6.0</td>
<td>0.8</td>
<td>10.8</td>
</tr>
<tr>
<td>September</td>
<td>6.0</td>
<td>0.8</td>
<td>10.8</td>
</tr>
<tr>
<td>October</td>
<td>6.0</td>
<td>0.8</td>
<td>10.8</td>
</tr>
<tr>
<td>November</td>
<td>6.0</td>
<td>0.8</td>
<td>10.8</td>
</tr>
<tr>
<td>December</td>
<td>6.0</td>
<td>0.8</td>
<td>10.8</td>
</tr>
</tbody>
</table>

#### Below 1939-40

<table>
<thead>
<tr>
<th>Month</th>
<th>Million Gallons a Day</th>
<th>Second-feet (mean)</th>
<th>Total Run-off</th>
</tr>
</thead>
<tbody>
<tr>
<td>July</td>
<td>6.9</td>
<td>0.8</td>
<td>10.8</td>
</tr>
<tr>
<td>August</td>
<td>6.0</td>
<td>0.8</td>
<td>10.8</td>
</tr>
<tr>
<td>September</td>
<td>6.0</td>
<td>0.8</td>
<td>10.8</td>
</tr>
<tr>
<td>October</td>
<td>6.0</td>
<td>0.8</td>
<td>10.8</td>
</tr>
<tr>
<td>November</td>
<td>6.0</td>
<td>0.8</td>
<td>10.8</td>
</tr>
<tr>
<td>December</td>
<td>6.0</td>
<td>0.8</td>
<td>10.8</td>
</tr>
</tbody>
</table>

### Remarks
- Records good except those above 2.9, due to diversions. Water used for irrigation in central Maui.

### Rating Table, Fiscal Year 1929-30 (gage height, in feet, and discharge, in million gallons a day)

<table>
<thead>
<tr>
<th>Day</th>
<th>July</th>
<th>August</th>
<th>September</th>
<th>October</th>
<th>November</th>
<th>December</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6.9</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
</tr>
<tr>
<td>2</td>
<td>6.5</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
</tr>
<tr>
<td>3</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
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<td>6.0</td>
</tr>
<tr>
<td>4</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
</tr>
<tr>
<td>5</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
</tr>
</tbody>
</table>

### Notation
- Records good except those above 2.9, due to diversions. Water used for irrigation in central Maui.

### Example
- Maximum discharge during year, 2,730 million gallons a day (19.3 second-feet), from rating curve extended above 253 million gallons a day, minimum, 1.8 million gallons a day (2.9 second-feet). During the month of June, 1939, maximum discharge was about 20 feet above flood stage.

### Notes
- Date: 20th May to July 31, 1939; discharge computed on basis of records for stations on nearby streams.
### Above

#### Discharge, in million gallons a day, August 1940 to June 1941

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Max.</td>
<td>16.0</td>
<td>15.0</td>
<td>20.0</td>
<td>16.3</td>
<td>12.0</td>
<td>11.5</td>
<td>10.6</td>
<td>11.5</td>
<td>12.3</td>
<td>15.6</td>
<td>14.5</td>
<td>15.5</td>
</tr>
<tr>
<td>Min.</td>
<td>8.0</td>
<td>8.0</td>
<td>8.0</td>
<td>8.5</td>
<td>7.95</td>
<td>7.65</td>
<td>7.35</td>
<td>7.65</td>
<td>8.0</td>
<td>8.5</td>
<td>7.75</td>
<td>7.95</td>
</tr>
<tr>
<td>Mean</td>
<td>11.5</td>
<td>11.5</td>
<td>11.5</td>
<td>11.5</td>
<td>11.5</td>
<td>11.5</td>
<td>11.5</td>
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<td>11.5</td>
<td>11.5</td>
<td>11.5</td>
<td>11.5</td>
</tr>
<tr>
<td>Discharge (in million gallons a day)</td>
<td>6.63</td>
<td>7.00</td>
<td>7.25</td>
<td>8.00</td>
<td>9.25</td>
<td>10.50</td>
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<td>11.50</td>
<td>12.50</td>
<td>14.50</td>
<td>13.50</td>
<td>15.00</td>
</tr>
</tbody>
</table>

#### Rating table, fiscal year 1940-41 (gage height, in feet, and discharge, in million gallons a day)

<table>
<thead>
<tr>
<th>Gage Height</th>
<th>Discharge</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.3</td>
<td>1.5</td>
</tr>
<tr>
<td>0.4</td>
<td>2.4</td>
</tr>
<tr>
<td>0.5</td>
<td>4.0</td>
</tr>
<tr>
<td>0.6</td>
<td>5.6</td>
</tr>
<tr>
<td>0.7</td>
<td>7.8</td>
</tr>
</tbody>
</table>

#### Below

#### Discharge, in million gallons a day, fiscal year 1940-41

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Max.</td>
<td>16.0</td>
<td>15.0</td>
<td>20.0</td>
<td>16.3</td>
<td>12.0</td>
<td>11.5</td>
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<td>12.3</td>
<td>15.6</td>
<td>14.5</td>
<td>15.5</td>
</tr>
<tr>
<td>Min.</td>
<td>8.0</td>
<td>8.0</td>
<td>8.0</td>
<td>8.5</td>
<td>7.95</td>
<td>7.65</td>
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<td>7.65</td>
<td>8.0</td>
<td>8.5</td>
<td>7.75</td>
<td>7.95</td>
</tr>
<tr>
<td>Mean</td>
<td>11.5</td>
<td>11.5</td>
<td>11.5</td>
<td>11.5</td>
<td>11.5</td>
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<td>11.5</td>
<td>11.5</td>
</tr>
</tbody>
</table>

#### Rating table, fiscal year 1940-41 (gage height, in feet, and discharge, in million gallons a day)

<table>
<thead>
<tr>
<th>Gage Height</th>
<th>Discharge</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.3</td>
<td>1.0</td>
</tr>
<tr>
<td>0.4</td>
<td>2.3</td>
</tr>
<tr>
<td>0.5</td>
<td>3.8</td>
</tr>
<tr>
<td>0.6</td>
<td>5.6</td>
</tr>
<tr>
<td>0.7</td>
<td>7.8</td>
</tr>
</tbody>
</table>

---

1. No gage height record Nov. 8 to Jan. 20. Discharge computed on basis of records for nearby streams.
2. Computed on basis of partly estimated gage-height record.
### Above

**1941-42**

<table>
<thead>
<tr>
<th>Month</th>
<th>Maximum</th>
<th>Minimum</th>
<th>Mean</th>
<th>Total run-off</th>
</tr>
</thead>
<tbody>
<tr>
<td>July</td>
<td>26.8</td>
<td>4.0</td>
<td>13.8</td>
<td>277</td>
</tr>
<tr>
<td>August</td>
<td>6.5</td>
<td>11.1</td>
<td>8.6</td>
<td>255</td>
</tr>
<tr>
<td>September</td>
<td>12.6</td>
<td>6.7</td>
<td>8.7</td>
<td>365</td>
</tr>
<tr>
<td>October</td>
<td>22.9</td>
<td>7.7</td>
<td>14.6</td>
<td>966</td>
</tr>
<tr>
<td>November</td>
<td>16.8</td>
<td>8.0</td>
<td>12.5</td>
<td>746</td>
</tr>
<tr>
<td>December</td>
<td>102.1</td>
<td>51.1</td>
<td>76.7</td>
<td>605</td>
</tr>
</tbody>
</table>

**Calendar year 1941**

<table>
<thead>
<tr>
<th>Month</th>
<th>Maximum</th>
<th>Minimum</th>
<th>Mean</th>
<th>Total run-off</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>2.0</td>
<td>9.0</td>
<td>5.59</td>
<td>114</td>
</tr>
<tr>
<td>February</td>
<td>180.4</td>
<td>1.6</td>
<td>91.3</td>
<td>820</td>
</tr>
<tr>
<td>March</td>
<td>370.0</td>
<td>8.0</td>
<td>77.2</td>
<td>5,270</td>
</tr>
<tr>
<td>April</td>
<td>140.1</td>
<td>8.7</td>
<td>62.4</td>
<td>102</td>
</tr>
<tr>
<td>May</td>
<td>140.1</td>
<td>3.0</td>
<td>41.4</td>
<td>287</td>
</tr>
<tr>
<td>June</td>
<td>2.0</td>
<td>14.9</td>
<td>5.5</td>
<td>114</td>
</tr>
</tbody>
</table>

**Calendar year 1941-42**

<table>
<thead>
<tr>
<th>Month</th>
<th>Maximum</th>
<th>Minimum</th>
<th>Mean</th>
<th>Total run-off</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>37.6</td>
<td>16.1</td>
<td>26.1</td>
<td>360</td>
</tr>
<tr>
<td>February</td>
<td>26.6</td>
<td>4.0</td>
<td>13.8</td>
<td>277</td>
</tr>
<tr>
<td>March</td>
<td>12.6</td>
<td>6.7</td>
<td>8.7</td>
<td>365</td>
</tr>
<tr>
<td>April</td>
<td>16.8</td>
<td>8.0</td>
<td>12.5</td>
<td>746</td>
</tr>
<tr>
<td>May</td>
<td>102.1</td>
<td>51.1</td>
<td>76.7</td>
<td>605</td>
</tr>
</tbody>
</table>

**Discharge, in million gallons, fiscal year July 1941 to June 1942**

- July: 25.5
- August: 14.4
- September: 2.0
- October: 1.9
- November: 1.9
- December: 1.9

**Rating table, fiscal year 1941-42 (gage-height, in feet, and discharge, in million gallons a day)**

<table>
<thead>
<tr>
<th>Discharge</th>
<th>Gage-height</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0</td>
<td>14.0</td>
</tr>
<tr>
<td>1.0</td>
<td>13.7</td>
</tr>
<tr>
<td>2.0</td>
<td>13.4</td>
</tr>
<tr>
<td>3.0</td>
<td>13.1</td>
</tr>
<tr>
<td>4.0</td>
<td>12.8</td>
</tr>
<tr>
<td>5.0</td>
<td>12.5</td>
</tr>
<tr>
<td>6.0</td>
<td>12.2</td>
</tr>
<tr>
<td>7.0</td>
<td>11.9</td>
</tr>
<tr>
<td>8.0</td>
<td>11.6</td>
</tr>
<tr>
<td>9.0</td>
<td>11.3</td>
</tr>
<tr>
<td>10.0</td>
<td>11.0</td>
</tr>
</tbody>
</table>

### Below

**Gallons of water:** Minimum: 2,100 million; Maximum: 8,200 million; Average: 7,400 million.

**Rating table, fiscal year 1941-42 (gage-height, in feet, and discharge, in million gallons a day)**

<table>
<thead>
<tr>
<th>Discharge</th>
<th>Gage-height</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0</td>
<td>14.0</td>
</tr>
<tr>
<td>1.0</td>
<td>13.7</td>
</tr>
<tr>
<td>2.0</td>
<td>13.4</td>
</tr>
<tr>
<td>3.0</td>
<td>13.1</td>
</tr>
<tr>
<td>4.0</td>
<td>12.8</td>
</tr>
<tr>
<td>5.0</td>
<td>12.5</td>
</tr>
<tr>
<td>6.0</td>
<td>12.2</td>
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<tr>
<td>7.0</td>
<td>11.9</td>
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<tr>
<td>8.0</td>
<td>11.6</td>
</tr>
<tr>
<td>9.0</td>
<td>11.3</td>
</tr>
<tr>
<td>10.0</td>
<td>11.0</td>
</tr>
</tbody>
</table>

**Discharge, in million gallons, fiscal year July 1941 to June 1942**

- July: 72.0
- August: 11.6
- September: 15.0
- October: 15.4
- November: 15.7
- December: 15.5
- January: 13.5
- February: 13.5
- March: 13.4
- April: 13.1
- May: 13.5
- June: 13.5

**Calendar year 1941**

<table>
<thead>
<tr>
<th>Month</th>
<th>Maximum</th>
<th>Minimum</th>
<th>Mean</th>
<th>Total run-off</th>
</tr>
</thead>
<tbody>
<tr>
<td>July</td>
<td>25.8</td>
<td>4.0</td>
<td>13.8</td>
<td>277</td>
</tr>
<tr>
<td>August</td>
<td>6.5</td>
<td>11.1</td>
<td>8.6</td>
<td>255</td>
</tr>
<tr>
<td>September</td>
<td>12.6</td>
<td>6.7</td>
<td>8.7</td>
<td>365</td>
</tr>
<tr>
<td>October</td>
<td>22.9</td>
<td>7.7</td>
<td>14.6</td>
<td>966</td>
</tr>
<tr>
<td>November</td>
<td>16.8</td>
<td>8.0</td>
<td>12.5</td>
<td>746</td>
</tr>
<tr>
<td>December</td>
<td>102.1</td>
<td>51.1</td>
<td>76.7</td>
<td>605</td>
</tr>
</tbody>
</table>

**Calendar year 1941-42**

<table>
<thead>
<tr>
<th>Month</th>
<th>Maximum</th>
<th>Minimum</th>
<th>Mean</th>
<th>Total run-off</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>37.6</td>
<td>16.1</td>
<td>26.1</td>
<td>360</td>
</tr>
<tr>
<td>February</td>
<td>26.6</td>
<td>4.0</td>
<td>13.8</td>
<td>277</td>
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<tr>
<td>March</td>
<td>12.6</td>
<td>6.7</td>
<td>8.7</td>
<td>365</td>
</tr>
<tr>
<td>April</td>
<td>16.8</td>
<td>8.0</td>
<td>12.5</td>
<td>746</td>
</tr>
<tr>
<td>May</td>
<td>102.1</td>
<td>51.1</td>
<td>76.7</td>
<td>605</td>
</tr>
</tbody>
</table>

**Total run-off**

- July: 25.8
- August: 6.5
- September: 12.6
- October: 22.9
- November: 16.8
- December: 102.1

**Rating table, fiscal year 1941-42 (gage-height, in feet, and discharge, in million gallons a day)**

<table>
<thead>
<tr>
<th>Discharge</th>
<th>Gage-height</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0</td>
<td>14.0</td>
</tr>
<tr>
<td>1.0</td>
<td>13.7</td>
</tr>
<tr>
<td>2.0</td>
<td>13.4</td>
</tr>
<tr>
<td>3.0</td>
<td>13.1</td>
</tr>
<tr>
<td>4.0</td>
<td>12.8</td>
</tr>
<tr>
<td>5.0</td>
<td>12.5</td>
</tr>
<tr>
<td>6.0</td>
<td>12.2</td>
</tr>
<tr>
<td>7.0</td>
<td>11.9</td>
</tr>
<tr>
<td>8.0</td>
<td>11.6</td>
</tr>
<tr>
<td>9.0</td>
<td>11.3</td>
</tr>
<tr>
<td>10.0</td>
<td>11.0</td>
</tr>
</tbody>
</table>

**Note:** To convert feet to inches, multiply by 12. To convert inches to feet, divide by 12.
### Average discharge
- **21 years (1920-41)**: 13.9 million gallons a day (20.6 second-feet).

### Extremes
- **Maximum discharge during year, 509 million gallons a day (1,440 second-feet)**
- **February 14 (gage height 6.06 feet), from rating curve extended above 300 million gallons a day by logarithmic plotting; maximum, 1.4 million gallons a day (2.2 second-feet)**
- **December 7.**
- **1941-42**: Maximum gage height, about 20 feet during flood of Jan. 10, 1916, from floodmarks; minimum discharge, 1.2 million gallons a day (1.9 second-feet)
- **February 19, 1905**

### Remarks
- Records good except those above 500 million gallons a day, which are fair, and those for period of no gage-height record, which are poor. No diversions above station. Water used for irrigation in central Maui.

<table>
<thead>
<tr>
<th>Date</th>
<th>Jul</th>
<th>Aug</th>
<th>Sept</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>June</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>1</td>
<td>3.3</td>
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<td>0.2</td>
</tr>
<tr>
<td>2</td>
<td>2.7</td>
<td>7.8</td>
<td>15.8</td>
<td>15.8</td>
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<td>17.0</td>
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<td>14.4</td>
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<td>7.1</td>
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<td>9.0</td>
<td>9.0</td>
<td>9.0</td>
<td>9.0</td>
<td>9.0</td>
</tr>
</tbody>
</table>

### Floods
- Discharge, July 1942 to June 1943

<table>
<thead>
<tr>
<th>Day</th>
<th>Jul</th>
<th>Aug</th>
<th>Sept</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>June</th>
</tr>
</thead>
<tbody>
<tr>
<td>Million gallons a day</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Maximum</td>
<td>156</td>
<td>156</td>
<td>156</td>
<td>156</td>
<td>156</td>
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<td>156</td>
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<td>156</td>
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<tr>
<td>Minimum</td>
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<td>156</td>
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<td>156</td>
<td>156</td>
<td>156</td>
<td>156</td>
<td>156</td>
</tr>
</tbody>
</table>

### Total Levee
- Million gallons a day: 1,500,000
- Million gallons per day: 1,500

<table>
<thead>
<tr>
<th>Month</th>
<th>July</th>
<th>August</th>
<th>September</th>
<th>October</th>
<th>November</th>
<th>December</th>
</tr>
</thead>
<tbody>
<tr>
<td>Million gallons a day</td>
<td>156</td>
<td>156</td>
<td>156</td>
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<tr>
<td>Maximum</td>
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<td>156</td>
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<td>156</td>
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<tr>
<td>Minimum</td>
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<tr>
<td>Mean</td>
<td>156</td>
<td>156</td>
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<td>156</td>
</tr>
</tbody>
</table>

### Notes
- No gage-height record Sept. 27-31; discharge computed on basis of records for stations on nearby streams.
- Time basis: Hawaiian solar time. To convert war time to standard time, subtract 3 hours.
Average discharge—1943-44, 12.5 million gallons a day (8.8 GPM).

Discharge for January...[rest of the text is not legible].

The table below shows the maximum, minimum, and mean discharges for each month from 1943 to 1944 along with the total runoff for each month. The table also includes the maximum, minimum, and mean discharges for the calendar year of 1943. The total runoff for 1943 is 10,400 million gallons.

The figure on the right shows the discharge for each month from 1943 to 1944. The discharge is shown in millions of gallons per day.

Calendar year 1943:

- Maximum daily discharge: 15.0 million gallons.
- Minimum daily discharge: 5.6 million gallons.
- Mean daily discharge: 10.7 million gallons.
- Total runoff: 10,400 million gallons.

The figure on the right shows the discharge for each month from 1943 to 1944. The discharge is shown in millions of gallons per day.
### Table 1: Discharge in million gallons a day

<table>
<thead>
<tr>
<th>Month</th>
<th>Maximum</th>
<th>Minimum</th>
<th>Mean</th>
<th>Total runoff</th>
<th>Acres-foot</th>
</tr>
</thead>
<tbody>
<tr>
<td>July</td>
<td>99</td>
<td>51.5</td>
<td>62.4</td>
<td>2,456</td>
<td>594</td>
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<tr>
<td>August</td>
<td>17.7</td>
<td>4.9</td>
<td>10.7</td>
<td>2.12</td>
<td>56</td>
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<tr>
<td>September</td>
<td>21.6</td>
<td>0.8</td>
<td>11.4</td>
<td>2.13</td>
<td>56</td>
</tr>
<tr>
<td>October</td>
<td>105.4</td>
<td>0.4</td>
<td>53.2</td>
<td>2.13</td>
<td>56</td>
</tr>
<tr>
<td>November</td>
<td>52.1</td>
<td>0.4</td>
<td>26.1</td>
<td>2.13</td>
<td>56</td>
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<tr>
<td>December</td>
<td>36.0</td>
<td>0.4</td>
<td>18.0</td>
<td>2.13</td>
<td>56</td>
</tr>
<tr>
<td>Calendar year 1944</td>
<td>105</td>
<td>0.1</td>
<td>52.1</td>
<td>2,740</td>
<td>5,420</td>
</tr>
</tbody>
</table>

#### Fiscal year 1944-45

|          | 240     | 1.5     | 0.00 | 2,980        | 10,000     |

**Note:** Hawaiian war time. To convert war time to standard time, subtract 1 hour.

### Table 2: Discharge in million gallons a day, by season

<table>
<thead>
<tr>
<th>Season</th>
<th>Maximum</th>
<th>Minimum</th>
<th>Mean</th>
<th>Acres-foot</th>
</tr>
</thead>
<tbody>
<tr>
<td>July</td>
<td>13.3</td>
<td>12.2</td>
<td>12.8</td>
<td>13.2</td>
</tr>
<tr>
<td>August</td>
<td>13.3</td>
<td>12.2</td>
<td>12.8</td>
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<tr>
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<td>12.2</td>
<td>12.8</td>
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<tr>
<td>October</td>
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<tr>
<td>December</td>
<td>13.3</td>
<td>12.2</td>
<td>12.8</td>
<td>13.2</td>
</tr>
</tbody>
</table>

**Note:** Hawaiian war time. To convert war time to standard time, subtract 1 hour.
Volunteer area - 0.8 square mile.

Records available - January 1914 to January 1916, November 1921 to June 1946.

Average discharge - 24 years (1922-46). 13.9 million gallons a day (20.0 second-feet).

Extremes - Maximum discharge during year, 1,440 million gallons a day (2,070 second-feet) July 17, 1944 (gage height, 7.20 feet), from rating curve extended above 280 million gallons a day by test on model of station site; minimum, 1.1 million gallons a day (1.7 second-feet) July 28, 1946.

Maximum discharge, about 3,600 million gallons a day (5,750 second-feet) Jan. 18, 1916, by observation on model of station site. The conditions which would produce 280 million gallons a day; minimum, 1.1 million gallons a day (1.7 second-feet) Feb. 19, 20, 1944.

Remarks - Records good. No diversions above station. Water used for irrigation in Central Maui.

RATING TABLE, FISCAL YEAR 1945-46 (gage height, in feet, and discharge, in million gallons a day)

<table>
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<tbody>
<tr>
<td>Discharge in million gallons, fiscal year July 1945 to June 1946</td>
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</tr>
</tbody>
</table>

The text contains a table listing discharge data for the years 1945-46. The discharge is measured in million gallons per day, with a maximum of 12.6 million gallons per day and a minimum of 10.6 million gallons per day. The text also notes that the station is used for irrigation in Central Maui.
### Average Discharge

20 years (1922-47), 13.8 million gallons a day (9.24 feet).

### Extreme Discharge
- Maximum discharge during year: 1.440 million gallons a day (2.320 feet).
- Minimum discharge during year: 1.440 million gallons a day (0.29 feet).

### Rating Table

<table>
<thead>
<tr>
<th>Month</th>
<th>Minimum</th>
<th>Mean</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>11.8</td>
<td>18.9</td>
<td>21.0</td>
</tr>
<tr>
<td>February</td>
<td>13.2</td>
<td>13.3</td>
<td>13.4</td>
</tr>
<tr>
<td>March</td>
<td>12.8</td>
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<tr>
<td>December</td>
<td>14.1</td>
<td>14.3</td>
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</tr>
</tbody>
</table>

### Extremes
- Maximum discharge during year: 1.770 million gallons a day (2.870 feet).
- Minimum discharge during year: 1.110 million gallons a day (1.367 feet).

### Remarks
- Records for above 100 million gallons a day are complete, and discharge is computed on basis of records for station above Southwest Road.

---

### Discharge in Million Gallons, Fiscal Year July 1946 to June 1947

<table>
<thead>
<tr>
<th>Month</th>
<th>July</th>
<th>Aug</th>
<th>Sept</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>June</th>
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<td>14.4</td>
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</tbody>
</table>

### Extremes
- Maximum discharge during year: 1.770 million gallons a day (3.760 feet).
- Minimum discharge during year: 1.110 million gallons a day (1.367 feet).

### Remarks
- Records for above 100 million gallons a day are complete, and discharge is computed on basis of records for station above Southwest Road.

---

### Rating Table, Fiscal Year 1946-47 (gage height, in feet, and discharge, in million gallons a day)

<table>
<thead>
<tr>
<th>Day</th>
<th>July</th>
<th>Aug</th>
<th>Sept</th>
<th>Oct</th>
<th>Nov</th>
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<th>May</th>
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<tbody>
<tr>
<td>Discharge</td>
<td>12.2</td>
<td>12.5</td>
<td>12.8</td>
<td>13.0</td>
<td>13.3</td>
<td>13.6</td>
<td>13.9</td>
<td>14.2</td>
<td>14.5</td>
<td>14.8</td>
<td>15.1</td>
<td>15.4</td>
</tr>
</tbody>
</table>

### Extremes
- Maximum discharge during year: 1.770 million gallons a day (3.760 feet).
- Minimum discharge during year: 1.110 million gallons a day (1.367 feet).

### Remarks
- Records for above 100 million gallons a day are complete, and discharge is computed on basis of records for station above Southwest Road.

---

### Discharge, in Million Gallons, Fiscal Year July 1946 to June 1947

<table>
<thead>
<tr>
<th>Month</th>
<th>July</th>
<th>Aug</th>
<th>Sept</th>
<th>Oct</th>
<th>Nov</th>
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- Maximum discharge during year: 1.770 million gallons a day (3.760 feet).
- Minimum discharge during year: 1.110 million gallons a day (1.367 feet).

### Remarks
- Records for above 100 million gallons a day are complete, and discharge is computed on basis of records for station above Southwest Road.
October 17, 1990

Mr. Manabu Tagomori  
Deputy Director  
Commission on Water Resource Management  
P. O. Box 621  
Honolulu, Hi 96809

Dear Mr. Tagomori:

Subject: Pump Installation Permit Application  
Kuhiwa-Nahiku Well (No. 4806-48)

The Department of Water Supply has reviewed the well application and has no objection to your granting the pump installation permit.

Thank you for the opportunity to comment on the application.

Sincerely,

[Signature]

Rae M. Shikuma, Director

NGP/ao

cc: Engr.
October 18, 1990

UH Environmental Center
Crawford 317, 2550 Campus Road
Honolulu, Hi 96822

Attn: John T. Harrison
   Environmental Coordinator

Re: Maui Pineapple Co., Ltd.
   Kuhiwa Well CDUA

Dear Mr. Harrison,

Maui Pine has been given a permit to test pump the Kuhiwa Well and measure the effects on the springs at Hanawi. We are concerned that your organization has taken such a strong view against this project and wish to discuss the project with you at the earliest convenience.

We have met with the staff at the State's Water Resources Management Division, and with Mr. Doak Cox. The numbers that Mr. Ed Sakoda, the staff geologist, and Mr. Cox have reviewed with me are attached.

The conclusion reached by Mr. Cox, Mr. Sakoda and myself is that it appears very likely that the average effect on the springs in Hanawi from pumping Kuhiwa Well will be in the order of magnitude of 0.2% or lower, something that cannot be measured.

Due to the sensitivity of the situation Maui Pine has agreed to work with the State Water Resources Management staff and the USGS to take these measurements and prove that there is no effect on the springs from pumping Kuhiwa Well.

I look forward to hearing from you at your earliest convenience.

Sincerely,

William L. Pyle, PE
Project Manager

cc: Doak C. Cox
L. D. MacCluer, Maui Pineapple Co., Ltd.
Edward E. Henry, DLNR
Edwin E. Sakoda, DLNR
16 October 1990

MAUI PINEAPPLE COMPANY

c/o William L. Pyle
P. O. Box 90
Puunene, Maui, HI 96784

Gentlemen:

Effects of proposed pumping of Kukiwa Well on Hawawi Big Spring

I understand that there has been some confusion concerning comments that I supplied to the University of Hawaii Environmental Center regarding the proposal to pump the Kukiwa Well in the Nahiku area of East Maui. My comments were intended to indicate that, in my opinion, the aquifer penetrated by the well has a hydraulic connection with that which supplies the water discharged by the Hawawi Big Spring, and draft from the well may be expected to have some influence on the flow of the spring.

My remarks were not intended, and should not be interpreted, to indicate opinions that any diminution of the flow of the Big Spring attributable draft will either occur promptly when the draft is begun or will represent a major part of the flow of the Spring. I believe, on the contrary, that:

1. There will be a considerable lag between the initiation of pumping and any resulting diminution of the flow of the spring;

2. That, the diminution in spring flow attributable to the draft cannot be as great as the annual average draft--in other words that it cannot be more than a small fraction of the minimum spring flow of record; and, in fact

3. That the diminution in spring flow will not be detectable with certainty considering the natural variability of the spring flow and the difficulty of its measurement.

I understand that resumption of gaging of Hanawi Stream at the former USGS gage site below the Big Spring has been proposed to permit measurement of the influence of the well draft on the spring discharge. I am by no means opposed to this proposal, because it would be highly desirable to have a better record of the flow of this ecologically important stream. In my opinion, however, an expert in Hawaiian stream biology should be able to determine whether a significant effect on the biota of Hanawi Stream could possibly result from the maximum possible diminution of spring flow attributable to the proposed draft on the Kukiwa well. If even the maximum possible diminution would not have a significant effect, no significant effect could result from the actual diminution, whether detectable or not.

Sincerely,

[Signature]

Doak C. Cox

cc. John Harrison, Environmental Coordinator, Univ. Hawaii
Edward E. Henry, Dept. Land & Natural Resources.

bcc: Edwin E. Sakoda, DLNR —
Mr. William Pyle  
AC Systems Hawaii  
P. O. Box 90  
Puunene, Maui, Hawaii 96784  

Dear Mr. Pyle: 

Subject: Conservation District Use Application for Improvements to Kukiwa Well, Water Transmission Line and Electricity Transmission Corridor and Poles, Nahiku, Maui  

We wish to inform you that Maui Pineapple Company's Conservation District Use Application for the subject project was approved on September 28, 1990 subject to the following: 

A. Violation 

That the Board deferred action regarding a possible violation until a site visit is conducted by the Maui Board member. 

B. Application 

That the Board authorized a temporary land use for a period up to one (1) year to test the Kukiwa Well and to establish the purpose date, given the short and potential long term impacts of the proposed facility: 

2. The applicant shall comply with all applicable statutes, ordinances, rules and regulations of the Federal, State and County governments, and applicable parts of Section 13-2-21, Administrative Rules, as amended;
3. The applicant, its successors and assigns, shall indemnify and hold the State of Hawaii harmless from and against any loss, liability, claim or demand for property damage, personal injury and death arising out of any act of omission of the applicant, its successors, assigns, officers, employees, contractors and agents under this permit or relating to or connected with the granting of this permit:

4. The applicant shall comply with all applicable Department of Health Administrative Rules:

5. Before proceeding with any work authorized by the Board, the applicant shall submit four (4) copies of the construction plans and specifications to the Chairperson or his authorized representative for approval for consistency with the conditions of the permit and the declarations set forth in the permit application. Three (3) of the copies will be returned to the applicant. Plan approval by the Chairperson does not infer approval required of other agencies. Compliance with Condition 2 remains the responsibility of the applicant;

That the testing of the Kaliwa Well be initiated within one (1) year of Board approval, under a Temporary Variance for the use of a generator at the site, a well pump and other non-permanent land usage;

7. Any work or construction to be done on the land shall be initiated within two (2) years of the approval of such use, and all work and construction must be completed within three (3) years of the approval of such use;

8. That the applicant affirm that appropriate measures shall be exercised to prevent construction materials, debris, petroleum derivatives, etc., from entering or polluting surrounding areas and nearby water sources:

That the applicant shall comply with permit requirements of the State Water Code, Chapter 174C, Hawaii Revised Statutes, and its implementing Administrative Rule; Specifically, that the applicant shall prepare and submit to the Commission on Water Resource Management, a technical report regarding the well testing phase and any identified short and long term impacts:

10. That the applicant coordinate the project with the Maui Office of the Division of Forestry and Wildlife to inspect the proposed transmission and power corridor to determine if any threatened and endangered species are present:
11. That the applicant affirm that all cutting and removal of vegetation be kept to a strict minimum and confined to the transmission and power corridor;

12. That the applicant affirm that all litter and unused materials resulting from the testing and construction phases of the project be removed at the project's completion;

13. That the applicant will be held responsible for all fires, including suppression costs, started in the area as a result of the construction activities;

14. That failure to comply with any of these conditions shall render this Temporary Variance and Conservation District Land Use application null and void:

15. Other terms and conditions as prescribed by the Chairperson.

Please acknowledge receipt of this permit, with the above noted conditions, in the space provided below. Please have the applicant sign two copies. Retain one and return the other within thirty (30) days.

Should you have any questions on any of these conditions, please feel free to contact our Office of Conservation and Environmental Affairs staff at 548-7837.

Very truly yours,

/S/ WILLIAM W. PATY

William W. Paty

Receipt acknowledged

______________________________________
Applicant's Signature

______________________________________
Date:

cc: Maui Board Member
    Maui Land Agent
    Maui County Planning Department
    DOH/CHA/OSP

BCC: DA, DOFAH, DOH, ELP, DPL, DOLE, HWP, DARS

EH: R
WHILE YOU WERE OUT

Doak Cox

M

of

Phone

Area Code Number Extension

TELEPHONED
CALLED TO SEE YOU
WANTS TO SEE YOU

RETURNED YOUR CALL

MESSAGE

Streamflow Effect of Reservoir Diversions from Hanau Stream Nahiku E. Maui. 4/80

by Env. Ctr. at 4:44

Operator

ampad 02020... intent

John Harrison Jr.

Charlotte Rose

copy 956-7361

10/10
10/10
4:05
To: Manabu Tagomori  
From: Ed Sakoda  
Subject: Kuhiwa-Nahiku Well (Well No. 4806-48) - Monitor Plan

The following met in the DWRM conference room on Wednesday, October 10, 1990, at 9:00 am:

Doak Cox, UH Environmental Center
Bill Pyle, Maui Land and Pine
Bill Rozeboom & Ed Sakoda, DWRM

We discussed the pending pump installation permit applied for by Maui Land and Pine as well as the two major concerns expressed by the public about the possible effect pumping Kuhiwa Well could have on nearby spring and stream flow. We discussed Doak Cox's past work in the area as well as Bill Pyle's discussions with George Gohara, formerly with the USGS on Maui. We reviewed a draft (attached) by Bill Pyle concerning a proposed monitor plan to be submitted with the pump installation permit application.

The following actions will be taken:

1. Bill Pyle will revise the draft per our discussions and will send it to us for review.

2. Ed will contact USGS concerning the possibility of reactivating the "Hanawi Stream below Government Road" stream gage as part of the monitor plan. Maui Land and Pine is willing to participate in funding the reactivation.

The consensus of the group was that pumping the well would cause no short-term effect on spring and stream flow. There would probably be some long-term effect but detecting the effect would be difficult if not impossible.
AG SYSTEMS HAWAII
PO Box 90
Puunene, Maui, Hawaii 96784
(808) 572-5910
FAX (808) 572-4954

October 10, 1990

Department of Land and Natural Resources
Commission on Water Resource Management
PO Box 621
Honolulu, Hi 96809

Attn: William W. Paty
Chairperson
Re: Maui Pineapple Co., Ltd.
Kuhiwa Well, Number 4806-48
Pump Installation Permit

KUHIWA WELL

Kuhiwa Well is situated at about 1400 feet above sea level. There is a 14 inch solid steel well casing in this well down to an elevation of about 400 feet (1000 feet deep), and the bottom of the well itself is at an elevation of about 150 feet (1250 feet deep). The aquifer that is being tapped is a perched artesian groundwater strata that pushes water up the well to an elevation of 1125 feet.

PAST PUMPING

A 24 hour pumping test done on September 22, 1977 held the flow to an average of 650 gpm, with the water level holding steady throughout the test at an elevation of 750 feet, a total drawdown of 375 feet. Four minutes after this test was shut down, the water level had recovered 300 feet to an elevation of 1050 feet, a drawdown of 75 feet.

PROPOSED PUMPING

The pump that is proposed for this well is a 200 horsepower submersible rated at 700 gpm and 800 feet of head. It will be used with an 8 inch steel pump column and 8 inch HDPE pipe above ground. The pump will be set at an elevation of 600 feet (800 feet deep). The water surface while pumping is expected to be at an elevation of 650 to 700 feet (425 to 475 feet drawdown).

CONCERNS ABOUT EFFECTS ON BIG SPRINGS

There have been concerns expressed about the possible effect of the Kuhiwa Well pumping on springs in the surrounding area, in particular Big Springs in Hanawi Gulch. Maui Pineapple Company is prepared to monitor the flow rate of Big Springs to determine if there is any detectable influence because of the pumping of Kuhiwa well. The first concern is that there will be a short term effect that will be seen each time the pump is started up. The second concern is that
there will be a long term loss of flow from the spring as pumping continues for periods several months or more.

**HANAWI STREAM MONITORING**

The old stilling well is still intact at the gaging station known as "Hanawi Stream below Government Road". It is proposed that a [Stevens Water Level Recorder] be installed in this stilling well and records kept on the water flows past this point during pumping. The short term concern can be satisfied fairly quickly after pumping commences. A week or two of monitoring should show no detectable change and answer that concern. The second concern can be answered by taking measurements periodically, such as once a week during long pumping periods, and comparing them to the short term measurements and the historic data to determine that there is in fact no detectable loss of flow.

It is not possible to measure the spring directly when water is flowing in the streambed. The measurements have to be taken above the spring and below the spring, and the two measurements have to be compared to determine the spring flow. When the streambed is dry, then the spring can be measured directly at the gaging station. The time of most concern is when there are dry conditions. Hence the best time to measure the spring is when the stream is dry to see if there is any effect on the spring from the pumping of Kuhiwa Well.

It is proposed that monitoring the gaging station below Big Spring during dry periods will give us the information needed to determine that there is no effect on Big Spring by pumping Kuhiwa Well.

Sincerely,

William L. Pyle, PE
Project Manager

cc: L. D. MacCluer, Maui Pineapple Co., Ltd.
SURVEY BRANCH
Division of Water Resource Management

FROM: Ed
DATE: 10-5-90
FILE IN: Kukiwa-Nakiku Well

TO: INITIAL:

PLEASE:

__ See Me
__ Call
__ Review & Comment
__ Take Action
__ Investigate & Report
__ Draft Reply
__ Acknowledge Receipt
__ Type Draft
__ Type Final cc: Bill Pyle (Mani Lop), Donk
__ Xerox copies
__ File
__ Mail

FOR YOUR

__ Approval
__ Signature
__ Information

REV. 1/90

REMARKS:
A meeting has been scheduled for Wed., Oct. 10, at 9:00am in our conf. room with Cox and our staff.

Subject = Kukiwa-Nakiku Well application for a pump installation permit. Pumping from well may affect Big Spring and other nearby streams. DEE

You are invited to sit in if time permits.
October 3, 1990

Department of Land and Natural Resources
Division of Water Resources Management
PO Box 373
Honolulu, Hi 96809

Attn: Edwin T. Sakoda
Re: Maui Pineapple Co., Ltd.
   Kuhiwa Well CDUA file: MA-2376
   Pump Installation Permit

On September 19, 1990 a probe was lowered to the bottom of the Kuhiwa Well, and the depth was verified to be 1255' as shown on our application for a pump installation permit.

On September 25, 1990, an underwater tv camera was lowered to inspect the well casing. The casing was found to be solid casing, and it ended at 1,018 feet from the surface. The casing was found to be in excellent condition all the way down.

The data on the application needs to be corrected to show 1,018 feet of solid casing and 237 feet of open hole, for a total depth of 1,255 feet.

Sincerely,

William L. Pyle, PE
Project Manager

cc: L. D. MacCluer, Maui Pineapple Co., Ltd.
Bill Pyle - Maui Land & Pine - got Board approval for a temporary CDU permit (2 years). He will be working on a monitoring plan and will be contacting George Cohen (his neighbor) for some input and Don Cox for a possible meeting. He may set up a meeting here in Honolulu with Don Cox, myself, & himself, to discuss the monitor plan. The well may possibly affect Big Spring, etc., so I tied to surface water. Don Cox has done work in the area.
To: Ed
Date: 8/2
Time: 10:35

WHILE YOU WERE OUT
Bill Pyle
Kuhnig Well Permit
(312) 572-5910

Message:

Operator

Area Code | Number | Extension
---|---|---
TELEPHONED | PLEASE CALL
CALLED TO SEE YOU | WILL CALL AGAIN
WANTS TO SEE YOU | URGENT
RETURNED YOUR CALL

AMPAD EFFICIENCY®

23-020
To: Ed Salcoda
From: Bill Pyle (808) 572-5910
Manu Fand & Pric
Re: Kuliua Well CDUA File # MA-2376

9-28-90

We are meeting with the Board this morning, hopefully to get the CDU permit for our well. We have agreed to test pump to collect data for determination of any possible effects on springs in the area.

Originally we had considered the testing to be done with a diesel powered generator. However, the environmental threat of running a 250 hp diesel generator and hauling approx. 200 gallons of diesel fuel a day during the testing phase have caused us to reconsider. We are going to propose to the Board that we take the risk of installing the power lines (which can be removed if necessary) in order to test without the problems of dealing with possible diesel contamination. Please call me so we can discuss this further.

Aloha -

Bill Pyle
MEMORANDUM

TO: William W. Paty, Chairman, BLNR
FROM: John T. Harrison, Environmental Coordinator, UH
SUBJECT: Environmental Assessment (EA)/Negative Declaration
Rahiwa Well Pumping Station, Nahiku, Maui

As stated in the Environmental Center’s review of the referenced document, numerous inadequacies are evident in the EA, particularly with regard to discussion of the hydrogeology of the region. In response to issues raised in our review, the Division of Water Resources Management has stated that, “the question of potential impact of well withdrawal ... will be addressed by the Commission [on Water Resources Management (CWRM)] in its investigation and decision on the [well pump installation permit] application.”

At a public hearing held on August 9, 1990, in Kahului, Maui, the staff of DLNR’s Office of Conservation and Environmental Affairs (CCEA) asserted that the CDUA for the referenced proposed action “is only for land use components, and that water issues are now under the administrative review and decision of the State Water Commission.”

Item 3., page 8, of the CCEA Staff Report to the Board of Land and Natural Resources (BLNR) on the subject action states that the applicant was notified May 11, 1990, that “[i]n conformance with Title 11, Chapter 200, of the [DOH] Administrative Rules, a negative declaration is determined for the proposed action.”

After consideration of the facts noted above, the Environmental Center has concluded that the procedures followed in this instance pose a substantive issue of concern with regard to application of the EIS Rules. Section 11-200-7 of the DOH Administrative Rules states,

"A group of actions proposed by an agency or an applicant shall be treated as a single action when:

(1) The component actions are phases or increments of a larger total undertaking;
(2) An individual project is a necessary precedent for a larger project;
(3) An individual project represents a commitment to a larger project; or"
(4) The actions in question are essentially identical and a single statement will adequately address the impacts of each individual action and those of the group of actions as a whole."

While the apportionment of jurisdiction between the BLNR and the CWRM is completely appropriate, the procedural deference of consideration of potential well withdrawal impacts to a separate agency subsequent to the issuance of a negative determination on the EA for the proposed action clearly constitutes a segmentation of the action which is expressly proscribed by the cited excerpt from the EIS Rules. Furthermore, the conditional permit recommended by the OCEA staff wherein a Temporary Variance will be granted for the purpose of testing the well is a de facto individual project which is a necessary precedent for a larger project.

In the light of these considerations, the Environmental Center suggests that, contrary to BLNR policy established under Title 13, Chapter 2 DLNR Administrative Rules, the State Regulations as to satisfactory fulfilment of environmental assessment requirements have not been fully met. Therefore, under the present circumstances, Board approval of the proposed action is, in our opinion, premature.

cc: OEQC
    Environmental Council
    CWRM ✓
Ms. Rae Shikuma, Director  
Department of Water Supply  
County of Maui  
200 S. High Street  
Wailuku, Maui, Hawaii 96793

Dear Ms. Shikuma:

Pump Installation Permit Application

We are sending you a copy of the following permit application for your review:

Kuhiwa-Nahiku Well (Well No. 4806-48)

Please submit your comments to us, orally or in writing, by October 24, 1990.

If you have any questions, please contact Ed Sakoda at 548-7543.

Sincerely,

MANABU TAGOMORI  
Deputy Director

ES:bm  
Enc.
Dear Mrs. Drake:

Well Construction and Pump Installation Permit Applications

We are sending you a copy of the following permit applications and ask that your staff review them to determine if Hawaiian Home Lands may be affected:

- Kukiwa-Nahiku Well (Well No. 4806-48)
- Kapolei City Irrigation Well (Well No. 1904-03)
- Keopu Mauka/Puuhonua Well No. 1 (Well No. 3957-01)

Please submit your comments to us, orally or in writing, by October 24, 1990.

Please call Manabu Tagomori at 548-7533 if you have any questions.

Very truly yours,

[Signature]

WILLIAM W. PATY

Encl.
Mr. Thomas K. Kaulukukui Sr.
Chairman & Trustee-At-Large
Office of Hawaiian Affairs
1600 Kapiolani Blvd., Suite 1500
Honolulu, Hawaii 96814

Attn: Ms. Linda Delaney, Land & Natural Resources Division

Dear Mr. Kaulukukui:

We are sending you a copy of the following permit applications and ask that your staff review them to determine if Ceded Lands may be affected:

- Kukiwa-Nahiku Well (Well No. 4806-48)
- Kapolei City Irrigation Well (Well No. 1904-03)
- Keopu Mauka/Puuhonua Well No. 1 (Well No. 3957-01)

Please submit your comments to us, orally or in writing, by October 24, 1990.

Please call Manabu Tagomori at 548-7533 if you have any questions.

Very truly yours,

WILLIAM W. PATY

Encl.
Honorable John C. Lewin, M.D.
Director
Department of Health
State of Hawaii
1250 Punchbowl Street
Honolulu, Hawaii 96813

Attn. Mr. Thomas Arizumi, Drinking Water Branch

Dear Dr. Lewin:

Well Construction and Pump Installation Permit Applications

In accordance with the Department of Land and Natural Resources Administrative Rules, Section 13-168-12(c), we are sending you a copy of the following permit applications for your review:

Kuhiwa-Nahiku Well (Well No. 4806-48)
Kapolei City Irrigation Well (Well No. 1904-03)
Keopu Mauka/Puuohonua Well No. 1 (Well No. 3957-01)

Please submit your comments to us, orally or in writing, by October 24, 1990.

Please contact Manabu Tagomori at 548-7533 if you have any questions.

Very truly yours,

[Signature]

WILLIAM W. PATY

Encl.
MEMORANDUM

To: Don Hibbard, Director
   Historic Preservation Program

From: Manabu Tagomori, Deputy Director
      Commission on Water Resource Management

Subject: Well Construction/Pump Installation Permit Applications

We are sending you a copy of the following permit applications and ask that your staff review them to determine if the proposed work could adversely affect significant historic sites:

- Kukiwa-Nahiku Well (Well No. 4806-48)
- Kapolei City Irrigation Well (Well No. 1904-03)
- Keopu Mauka/Puuhonua Well No. 1 (Well No. 3957-01)

Please submit your comments to us, orally or in writing, by October 24, 1990.

Please contact Ed Sakoda at 548-7543 if you have any questions.

ES:bm
Enc.
From: Ed Henry

TO: Mr. William Paty and Mr. Ed Henry

COMPANY: Board of Land and Natural Resources

NAME: John Blumer-Buell

COMPANY: c/o Hina-malailena

PHONE NO: 248-7485 248-8972

PLEASE CALL UPON RECEIPT IF YOU NEED A RESEND OF ANY PAGES AT THE PHONE NUMBER LISTED ABOVE. IF YOU DO NOT CALL, WE WILL ASSUME THAT YOU HAVE RECEIVED THE SAID NUMBER OF PAGES IN SATISFACTORY CONDITION.

MAHALO.

PLEASE DELIVER AS SOON AS POSSIBLE FOR TOMORROW'S MEETING!
September 12, 1990

Mr. William Paty, Chairperson
Board of Land and Natural Resources
State of Hawaii Department of Land and Natural Resources
1151 Punchbowl Street
Honolulu, Hawaii 96813
FAX #5486461 Attention: Mr. William Paty, Mr. Ed Henry

RE: Application by Maui Land and Pineapple Company, Ltd. for a State Permit to install a new pump and electric motor in the existing Kukiwa well in Nahiku, Maui.

Dear Mr. Paty and Board Members

Our Board of Directors met last evening to review all information we have to date on the Kukiwa Well Pumping Station application. After discussion, we voted to recommend the following to your Board:

*THAT THE DEPARTMENT OF LAND AND NATURAL RESOURCES RECONSIDER ITS NEGATIVE DECLARATION ON THE PROPOSED PROJECT AND REQUIRE AN ENVIRONMENTAL IMPACT STATEMENT. Our Board still supports the concept of a conditional use permit as stated in our August 8, 1990, letter to your Board. However, at the time of our community meeting with Maui Land and Pineapple representative Bill Pyle and our letter of August 8, we were not aware of the report/recommendation made by the University of Hawaii Environmental Center that "We recommend that an Environmental Impact Statement be prepared for this project...". This report and recommendation had not been brought to our attention by either Maui Land and Pineapple Company or the Department of Land and Natural Resources when we had contacted them to get the facts on the application. The Environmental Assessment we received on the proposed project clearly did not present all relevant information.

In light of the many concerns expressed by residents from Hana to Keanae recently and over many years and the report/recommendation by the University of Hawaii Environmental Center, we feel it would be irresponsible of our Board to make any other recommendation at this time.

Our Board also voted to form an ad hoc committee to try and address the concerns raised by this application.
September 12, 1990

Page 2

In closing, we would like to restate a portion of our August 8, 1990, letter to your Board:

"We are hopeful that this permit application will be handled in a way that addresses concerns from the community. Certainly, residents raised some very serious questions that need to be resolved before we can support the application. If all concerns are addressed, we believe it would be possible to support a conditional use permit. However, we do not want the process to become "rushed". We may need additional time to develop the facts and find agreeable solutions with all concerned parties. We suggest concerns can be addressed in a non-adversarial fashion.

We hope the Board can support this concept and recommend clarification of the facts and an additional meeting in Hana of concerned parties. Hopefully, at that time, we would be able to approach your Board in agreement and with community support."

Thank you for your consideration.

Sincerely yours

Bob Vogele
Chairperson
for and on behalf of the BCA Board of Directors
and Committee on Development

Board:
John Blumer-Buell, Co-Secretary
William E. Chang
Bill Fuhrmann, Vice Chair
John Kahalehoe
Parley Kanakaole
Kathleen Morton
Annie Rahl, Treasurer
Laureen Tanaka-Sanders, Co-Secretary

Committee:
Stanley Akoi
Bill Church
Evy Dana, Co-Chair
Neil Hasegawa
Sam Kalalau, III
Frank Kennedy
Mike Minn, Co-Chair

cc/FAX Bill Pyle
Dear Maui Pineapple Co., Ltd.:

We have received your application and $25.00 filing fee to install a pump in Kūhiwā Well (Well No. 4806-48) at Tax Map Key: 1-2-04:03, Kūhiwā, Nahiku, Maui.

We are reviewing your application for completeness and will contact you if we need more information.

Please call Ed Sakoda at 548-7543 if you have any questions.

Sincerely,

[Signature]

MANABU TAGOMORI
Deputy Director

ES:bm
AUG 24 1990

MEMORANDUM

TO: Roger Evans
Office of Conservation and Environmental Affairs

FROM: Manabu Tagomori, Deputy Director
Commission on Water Resource Management


Mr. Ed Henry of your office has requested that the Commission on Water Resource Management staff provide additional comments on the Conservation District Use Application for the proposed Kuhiwa Well improvements in light of comments made by the University of Hawaii Environmental Center and the Hana Community Association in their testimony at the public hearing on this matter and in their letter of August 8, 1990. Both the Hana Community Association and the University have raised a number of questions and concerns which the Commission is expected to address in processing required State Water Code permits for this project, including the potential impact of well withdrawals on springs and streams within the Nahiku area. Mr. Henry also requested a clarification of Board and Commission areas of interest and jurisdiction.

Comments on Kuhiwa Well Project

As noted in our earlier review of this proposal, a well pump installation permit will be required. The question of potential impact of well withdrawal on the nearby streams and springs will be addressed by the Commission in its investigation and decision on the application.
Where pumping may affect surface water flow, it is the Commission's policy to require stream and spring flow monitoring during well pumping tests. If monitoring indicates that well withdrawal will affect stream or spring flow, the Commission will require the applicant to submit a petition to amend the interim instream flow standard for the stream or spring affected. The applicant will be required during the petition process to assess the impact to instream uses, such as fish and wildlife habitat and the conveyance of water to existing offstream users and others with appurtenant water rights.

In cases where stream resources are considered significant, long-term monitoring may be required even when short-term monitoring shows no effect due to well pumping. Should streams or springs be reduced or depleted at any time in the future, the applicant would then be required to submit a petition to amend the interim instream flow standard for the stream or spring.

It should be noted that State Water Code permit requirements must be satisfied prior to the applicant implementing his proposed action. Such compliance can be covered under the standard CDUA condition requiring compliance with all other federal, state, and county statutes. Specific conditions addressing compliance with State Water Code permit requirements may, however, be added to the standard CDUA conditions for the subject project, if desired, as follows:

1. The applicant shall comply with permit requirements of the State Water Code, Chapter 174C, Hawaii Revised Statutes, and its implementing Administrative Rule.

2. In complying with State Water Code permit requirements, the applicant shall address the concerns and issues raised at the public hearing on the CDUA application and in the testimony of the Hana Community Association and the University of Hawaii Environmental Center, including the potential impact to instream uses and East Maui community water sources.

Commission on Water Resource Management Jurisdiction

We believe it is appropriate for the Commission to specifically address projects dealing with the development and management of water resources, as required by the State Water Code. When the project requires both Board and Commission approval,
the Commission should address the development and management of surface and
ground water resources and the protection of instream uses. The Board or the
Commission may approve the project subject to the other's approval and may specify
conditions to this effect. Special conditions may also be added to address specific
issues raised by interested parties.

Thank you for the opportunity to provide additional comments and clarification.
August 13, 1990

Mr. William W. Paty
Dept. of Land & Natural Resources
P. O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Paty:

Maui Pineapple Company, Ltd. has applied for permission to pump the now existing Kuhiwa Well in Nahiku, Maui for the continued irrigation of our Haliimaile Plantation. At the end of this year our Agreement with East Maui Irrigation Company terminates and we will no longer be allowed to purchase water for irrigation from the EMI ditch system; consequently, we have applied for a permit to take water from the old Kuhiwa Well. This water will be pumped into the Wailoa Ditch, and EMI will transport it to our Haliimaile Plantation for irrigation purposes.

It is imperative that our pineapple crop has irrigation water, and since we have used ditch water for the past thirty years, we are faced with a major dilemma should the well permit proposal be denied.

As with any crop in Hawaii, pineapple cannot be a viable operation without water; and unless our limited remaining water resource is increased, our Haliimaile Plantation cannot be sustained. At present we have 446 employees on our Haliimaile farm and an additional number at the cannery. Their jobs would be in jeopardy if we cannot get adequate water to irrigate our crops.

We ask for a favorable declaration, for without water, pineapple in East Maui could well become an endangered species. Your help is appreciated.

Sincerely,

L. D. MacEluer
Plantation Manager

xc: JWH, J. Arisumi, Bill Pyle, File
State of Hawaii
COMMISSION ON WATER RESOURCE MANAGEMENT
Department of Land and Natural Resources
Division of Water Resource Management

APPLICATION FOR

WELL CONSTRUCTION PERMIT
\[ \checkmark \] PUMP INSTALLATION PERMIT

INSTRUCTIONS: Please print or type and send completed application with attachments to the Division of Water and Land Development, P.O. Box 373, Honolulu, Hawaii 96806. Application must be accompanied by a non-refundable filing fee of $25.00 payable to the Department of Land and Natural Resources. (Filing fee waived for government agencies.) If necessary, phone 548-7545, Hydrology/Geology Section for assistance.

1. WELL LOCATION

Island: Maui Tax Map Key: 1-2-04-03
Address: KUHIWA, MAUI
(Attach a USGS map (scale 1"=2000') and property tax map showing well location referenced to established property boundaries.)

2. WELL OWNER - LEASEE

Firm Name: MAUI PINEAPPLE CO. LTD
Contact Person: L.R. MACQUARR
Address: 870 HALIIMAILE RD.
WAMANAO, MAUI, HI 96787
Phone: (808) 512-7211

3. PROPOSED CONTRACTOR FOR:

Name: ROYCE MOSS COMPANY
Address: 830 ARUA
HONOLULU, HI 96819

4. PROPOSED WORK

- [ ] Drill New Well
- [ ] Alter
- [ ] Install New Pump
- [ ] Redrill
- [ ] Deepen
- [ ] Seal
- [ ] Replace Pump
- [ ] Abandon
- [ ] Modify Pump

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

5. PROPOSED USE

- [ ] Municipal (including hotels, stores, etc.)
- [ ] Domestic (individual, noncommercial water systems)
- [ ] Irrigation (specify) PINEAPPLE
- [ ] Industrial
- [ ] Military
- [ ] Other (specify)

6. PROPOSED AMOUNT OF WITHDRAWAL

1,000,000 gallons per day

7. PROPOSED PUMP INFORMATION

Pump Type: [ ] Vertical Turbine [ ] Submersible [ ] Centrifugal
Motor: [ ] Diesel [ ] Gas [ ] Electric: 250 Rated Horsepower
Rated Pump Capacity: 700 gallons per minute (gpm)

Well Owner (print): J. HARTLEY, JR.
Signature: __________________________ Date: 8/1/79

Landowner (print): R.L. WARZECHE
Signature: _________________________ Date: 8/1/79

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

INSTALL 700 GPM 250 HP VERTICAL TURBINE ELECTRIC POWERED PUMP IN EXISTING WELL

---

PROPOSED SECTION OF WELL

<table>
<thead>
<tr>
<th>Elevation at top of casing</th>
<th>1400 ft., msl.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ground Elev.</td>
<td>1399 ft., msl*</td>
</tr>
<tr>
<td>Cement Grout</td>
<td>___ ft.</td>
</tr>
<tr>
<td>Hole Dia.</td>
<td>___ in.</td>
</tr>
<tr>
<td>Total Depth</td>
<td>1255 ft.</td>
</tr>
<tr>
<td>Rock Packing</td>
<td>___ ft.</td>
</tr>
</tbody>
</table>

**Solid Casing:**
- Material: STEEL
- Length: 917 ft.
- Diameter: 14 in.
- Wall thickness: 1/2 in.

**Casing:**
- Length: 1255 ft.
- Diameter: 14 in.
- Wall thickness: 1/2 in.
- Openings: ___ sq. in./L.F.

**Open Hole:**
- Length: 338 ft.
- Diameter: UNKNOWN in.

*Records on this well from 1947 are incomplete. It is unknown how much of the 917' of casing is solid or perforated. Due to the artesian nature of this well, with water mostly coming up the shaft from below, this casing could be all solid.*

*Approximate elevation at time of filing application. Final elevation (msl) by a surveyor licensed by the State must be submitted at start of construction.*
August 8, 1990

Mr. William Paty, Chairperson
Board of Land and Natural Resources
State of Hawaii Department of Land and Natural Resources
1151 Punchbowl Street
Honolulu, Hawaii 96813
FAX #548-6461 Attention Mr. Ed Henry

Dear Mr. Paty,

Please have the following entered into the record at your Maui meeting August 9, 1990.

The Hana Community Association held a general community meeting July 31, 1990. Maui Land and Pineapple representative/engineer Bill Pyle was present to explain their application for a State Permit to install a new pump and electric motor in the existing Kukiwa well in Mahiku. Prior to the meeting there had been concern expressed to the HCA that the "negative declaration" made on the project would leave environmental concerns unanswered.

Those attending the meeting appreciated Maui Land and Pineapple sending Mr. Pyle to the meeting. He gave an overview of the project, but could not answer some of the questions that were raised. The HCA has received additional concerns and questions since our meeting. We would request that the Board of Land and Natural Resources forward the answers to the following questions to the Hana Community Association. The answers are needed by our community to make a fair assessment and recommendation on the requested permit.

QUESTIONS/INFORMATION/SUGGESTIONS

* Maui Land and Pineapple is asking to pump as much as one million gallons a day to "replace existing use". The "replace existing use" statement is questionable and has caused some doubts regarding this application. According to the Technical Report/Water Use and Development for the County of Maui (attached) Maui Land and Pineapple was using 39.616 million gallons of water per year in 1987 from ZMI with a 40% possible variable in a dry year. There is an approximate difference of 335 million gallons per year between the actual use in 1987 and the requested use in the application. These figures need to be clarified beyond any question or reasonable doubt. Otherwise, we will have a shadow of doubt over the application.

We sent a copy of this report to Mr. Pyle. He, in turn, talked to a Mr. McClure of Maui Land and Pineapple. Apparently, Mr. McClure doesn't know where these figures came from and told Mr. Pyle that the figures are not correct. However, at the bottom...
of page F-16 it states "This section was prepared by Maui Pineapple Co., Ltd." Again, this raises serious questions about the application.

* At our meeting, Mr. Pyle stated the water was for pineapple irrigation only. From our follow up conversation with Mr. Henry at the Department of Land and Natural Resources, it is our understanding that the application does not limit water use to pineapple only. Again, we have contradicting information. What are the facts? Residents expressed an interest in preserving existing jobs and allowing water use for pineapple only limited to specifically designated Tax Key Parcels. Residents did not want the water to be used for residential use, other agricultural crops, agricultural lot subdivisions, golf courses or any other use. Mr. Pyle stated that pineapple irrigation only would be an acceptable condition of use for the permit and stated a letter to that affect would be forthcoming. To date, we have not received that letter. We have let Mr. Pyle know that we have not received the letter—he will FAX it over.

* Mr. Pyle agreed that any water pumped from the well could be monitored for volume at the pump and at the point of removal as conditions of use. This raises the following questions: Who actually and legally controls the water once it is put in the ditch? Will or can the water end up being used by the County of Maui, EMI or other parties for residential or other agricultural use?

* Please understand that the concern over the amount of water taken and where it will end up being used comes from the belief of many residents that leaving water in the streams (live streams) and existing watershed have a greater value than fueling development on the other side of the island. Both Hanaw and Makapipi Streams have significant everyday use by nearby residents and cultural and recreational value. Is there a formula to measure these values in your guidelines for permitting?

* Residents stated that there is no adequate guarantee that major springs in and around Hanaw and Makapipi Streams will not be negatively affected by the proposed pumping. Also, there does not appear to be adequate information on current springs and spring levels. These concerns should be met. It was suggested to the ECA that an independent agency agreeable to all concerned could catalog springs and spring levels in the area before allowing pumping. And, that specifically named springs should be monitored on an ongoing basis as part of a conditional use permit. If a question of water loss at springs arises there must be an agreed upon formula to reduce pumping in an effort to determine if, in fact, the pumping is responsible.

* Residents stated that Maui Land and Pineapple, the County of Maui and EMI should be required to develop water storage capacity so that water could stay in the streams/watershed during dry periods.
* A resident suggested that removal of water from streams/watershed should take place at lower elevations, perhaps at the mouths of streams. The intent would be to allow the streams to flow and still have use of the water for additional purposes. This suggestion is probably not practical with this application, but certainly reflects residents' desire to look for ways to maintain living streams and watersheds as well as accommodate other uses.

* Residents requested clarification of the timing limitations for use if this permit application is granted.

We are hopeful that this permit application will be handled in a way that addresses concerns from the community. Certainly, residents raised some very serious questions that need to be resolved before we can support the application. If all concerns are addressed, we believe it would be possible to support a conditional use permit. However, we do not want the process to become "rushed". We may need additional time to develop the facts and find agreeable solutions with all concerned parties. We suggest concerns can be addressed in a non-adversarial fashion.

We hope the Board can support this concept and recommend clarification of the facts and an additional meeting in Hana of concerned parties. Hopefully, at that time, we would be able to approach your Board in agreement and with community support.

Thank you for your consideration.

Sincerely yours,

Bob Vogele, Chairman
for and on behalf of the HCA Board of Directors and Committee on Development
MAUI PINEAPPLE CO., LTD.*
HALIIMAILE DIVISION

The Maui Pineapple Co., Ltd. (MPCo), Haliimaile Division, owns or leases over 9,800 acres around the slope of Haleakala and cultivates pineapple on over 5,900 acres.

The water needs for 1987 for the Haliimaile Division were from the following sources:

<table>
<thead>
<tr>
<th>Source</th>
<th>Quantity - MG/Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>County</td>
<td>29.205</td>
</tr>
<tr>
<td>Kailiili (private)</td>
<td>21.279</td>
</tr>
<tr>
<td>Wailoa (EMI)</td>
<td>30.616</td>
</tr>
<tr>
<td>Total</td>
<td>81.100</td>
</tr>
</tbody>
</table>

Water needs may increase an additional 40% during dry years. The EMI source could be up to 40 MG per year. Kailiili source has historic beginnings with Maui Agricultural Company, now part of HC&S Co., and is jointly used by ML&P Co., Ltd., Kaonoulu Ranch, and the County of Maui. Exhibit H is the location map of the Kailiili source.

*This section was prepared by Maui Pineapple Co., Ltd.
TECHNICAL REPORT

WATER USE AND DEVELOPMENT PLAN

COUNTY OF MAUI
The following is a Summary Table of water withdrawal for agricultural water-use irrigation systems.

### TOTAL WATER WITHDRAWAL FOR AGRICULTURE - PRIVATE IRRIGATION SYSTEMS

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CROP</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pioneer Mill</td>
<td>65.4</td>
<td>23.6-66.3</td>
<td>49.2</td>
</tr>
<tr>
<td>Maui Pineapple Co., Ltd.</td>
<td>4.5</td>
<td>5.5</td>
<td></td>
</tr>
<tr>
<td>Honolua</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Haliimaile</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HC&amp;S Co.</td>
<td>356.0</td>
<td>EMI 10.77-405.12</td>
<td>356.2</td>
</tr>
<tr>
<td>Wailuku Agribusiness</td>
<td>26.7</td>
<td>West 5.51-124.04</td>
<td>45.0</td>
</tr>
<tr>
<td>Others**</td>
<td>55.6</td>
<td>Tot. 34.56-104.76</td>
<td>37.3</td>
</tr>
<tr>
<td>Total Crop</td>
<td>508.4</td>
<td></td>
<td>493.2</td>
</tr>
<tr>
<td>NON-CROP</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Landscaping and Grazing</td>
<td>9.1</td>
<td></td>
<td>13.8</td>
</tr>
<tr>
<td>TOTAL AGRICULTURE</td>
<td>517.5</td>
<td></td>
<td>507.0</td>
</tr>
</tbody>
</table>

*Low & high - date of low & high daily: surface withdrawals.

a. HC&S-EMI Low: 10/30/84; High: 10/17/83.
   West (West Maui Ditch) Low: 11/1/84; High: 6/19/86.

b. WAB - Low: October, 1984 total divided by 30 days;
   High: October, 1983 total divided by 30 days.

c. Pioneer Low: January, 1985 divided by 31 days.
   High: November, 1987 divided by 30 days.

**Others - the remainder of stream diversion registrations filed by Wailuku Agribusiness (WAB) minus the water used by WAB.
State of Hawaii
Department of Land and Natural Resources

Attn: Ed Henry

Re: Maui Pineapple Co. Ltd.
CDUA for Kuhlwa Well Improvements
File: MA-4/9/90-2376

FAX 548-6461

THE ATTACHED FAX, 4 PAGES, SHOWS CONFLICTING NUMBERS REFERRING TO IRRIGATION REQUIREMENTS FOR MAUI PINEAPPLE CO, LTD, AS COMPARED TO THE CDUA. ATTACHED IS MY LETTER TO THE HANA COMMUNITY ASSOC EXPLAINING THOSE NUMBERS.

Sincerely,

[Signature]

William L. Pyle
Project Manager
AG SYSTEMS HAWAII
PO Box 90
Puunene, Maui, Hawaii 96784
(808) 572-910
FAX (808) 572-0632

August 8, 1990

Hana Community Association
PO Box 202
Hana, Maui, Hawaii 96713

Re: Maui Pineapple Company, Ltd.
Kuhiwa Well Pump
State Report "Technical Report, Water Use and
Development Plan, County of Maui"

Mr. Doug Macluer, Manager of the field operations at
Maui Pineapple Company, Ltd., has reviewed the numbers in
this report, and does not know where they came from, nor
did his company have a chance to review this report and
comment on it at the time it was published by the State.

The year 1987 was a fairly wet one, and the pumping
requirements for Halimaile were fairly low that year. The
numbers on page R-16 are fairly representative of a wet
year with few days of pumping. The number on page 86 of
0.2 MGD per day average for the year appears to be the
number 81 MGD from page R-16 divided by 365 days to get 0.2
MGD per day, when the correct figure should have been the
actual pumpage per day for the actual days pumped.

It would be interesting to talk to the person who
compiled this report and find out where these numbers came
from.

Sincerely,

William L. Pyle, PE
Agricultural Engineer

cc: Doug Macluer, Maui Pineapple Co. Ltd.
    Ed Henry, Department of Land and Natural Resources
Hana Community Association  
PO Box 202  
Hana, Maui, Hawaii 96713

Re: Maui Pineapple Company, Ltd.  
Kuhiwa Well Pump

Mr. Joe Hartley, President of Maui Pineapple Company, Ltd., has assured me today that the water to be pumped from this well is dedicated to the growing of pineapple and will not be used for the development of golf courses or other non-agricultural development.

Sincerely,

William L. Pyle, PE  
Agricultural Engineer

cc: Joe Hartley, Maui Pineapple Co. Ltd.
    Doug MacCluer, Maui Pineapple Co. Ltd.
    Ed Henry, Department of Land and Natural Resources
State of Hawaii
Department of Land and Natural Resources
Forestry and Wildlife Division
54 S. High Street
Wailuku, Maui, Hawaii 96793

Attn: Wes Wong

Re: Maui Pineapple Co. Ltd.
CDUA for Kuhiwa Well Improvements
File: MA-4/9/90-2376

Fire Contingency Plan:

No flammables will be kept on the job site. Any flammables will be stored in a building in a base yard site below the Hana Hwy on private property in a location yet to be determined. No vegetative trimmings will be stockpiled in any central location, but will be composted discreetly away from streams or equipment. Equipment will have suitable fire extinguishers attached or nearby. A small portable pump will be on the site during the project to provide wash water, and will be available to put out any small local fires. This area is so wet that it is not expected to ever get dry enough that anything would burn during the period of the project construction, and by keeping all liquid fuels and other flammables down at the baseyard, fire potential should be effectively reduced to near zero.

Sincerely,

[Signature]

William L. Kyle
Project Manager

cc: Doug MacCluer, Maui Pineapple Co. Ltd.
Ed Henry, DLNR
August 1, 1990

Department of Water Supply
County of Maui
PO Box 1109
Wailuku, Maui, Hi 96783

Re: Maui Pineapple Company, Ltd.
CDUA for Kuhiwa Well Improvements
File: MA-4/9/90-2376

Attn: Nolan G. Perreira
Deputy Director

Ref: Your letter 5/15/90 to DLNR re Nahiku water line:

There is no indication that the pumping of Kuhiwa Well by Maui Pineapple Co. Ltd. will affect the water supply for the Nahiku water line that comes from the Koolau Tunnel. The project will not affect the pipeline nor any of the valves and tanks between the water source and the Hana Highway.

Sincerely,

William L. Pyle, PE
Civil Engineer

cc: Doug MacCluer, Maui Pineapple Co. Ltd.
    Ed Henry, Department of Land and Natural Resources
Mr. William W. Paty
Department of Land and Natural Resources
P.O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Paty:

Environmental Assessment (EA)/Negative Declaration
Kuhiwa Well Pumping Station
Nahiku, Maui

The above referenced document considers installation and operation of a 700 gpm (1 mgd) pump in the Kuhiwa Well in the Nahiku area of East Maui. The water is to be used by Maui Pineapple Company to irrigate pineapple.

The Environmental Center has reviewed this document with the assistance of Yu-Si Fok, Water Resources Research Center; Gordon Bigelow, General Science; Doak Cox, Geologist; and William Grannis, Environmental Center.

General Comments

Our reviewers have identified several areas of inadequacy in the EA for Kuhiwa Well Pumping Station. In particular, the geology/hydrology of the Nahiku area and the possible effects of drawdown on Hanawi Stream and its resident biota were insufficiently described. In addition, the scale of the project map was such that the project's general location on Maui was not readily apparent.

Stream Habitat Reduction

Data collected for the Hawaii Stream Assessment project have led to a preliminary rating of Hanawi Stream as "outstanding," due to its known habitat for native species such as Lentipes concolor ("O"opu "alamo"o), Awaous stamineus ("O"opu nakea), Sicyopterus stimpsoni ("O"opu nopili), and Neritina granosa (Hiihiwai). If drawdown at the Kuhiwa Well does reduce stream flow at Hanawi, then existing stream habitat is likely to be affected. The test pumping of the Kuhiwa Well indicated on page 1 of the EA was not performed for a sufficient period of time to account for lag...
and thus to determine the effects on streamflow, particularly at Hanawi Big Springs. Potential effects on stream habitat should be discussed in the EA.

**Hydrology**

Our reviewers called attention to numerous deficiencies in the content of the EA with respect to the discussion on hydrology of the Nahiku area. A comprehensive review of the hydrogeology of the Nahiku-Hanawi-Big Springs area was prepared by Doak Cox. Because of his extensive personal knowledge of the region and his comprehensive review of the problem we have appended his comments in their entirety for your information.

**Conclusions**

Our reviewers suggest that, in its present form the EA for the Kukiwa Well Pumping station provides insufficient information for determination of the significance of potential environmental impacts of the proposed action. Since the hydrogeology of the area strongly suggests that the proposed draft on the well may have a significant effect on the flow from the Hanawi Big Spring and stream, a negative declaration implying no significant impacts appears inappropriate.

We recommend that an Environmental Impact Statement be prepared for this project with special emphasis on describing impacts of well draft on the Hanawi Big Springs and stream. The documentation on the hydrogeology of the area that we have appended to this review should provide the needed basis for the hydrological evaluation.

Thank you for the opportunity to review the Kukiwa Well Pumping Station environmental assessment. We hope you find our comments helpful.

Yours truly,

John T. Harrison, Ph.D.
Environmental Coordinator

cc: OEQC
    DLNR
    Maui Pineapple Company
    L. Stephen Lau
    Yu-Si Pok
    Gordon Bigelow
    Doak Cox
    William Grannis
FACSIMILE TRANSMITTAL PAGE

Please deliver the following pages to:

Name: John Akeuki
Company: I姑
From: Manabu Tagomori
Date: 8/6 Time: 

Message: for your info

Total number of pages (including Transmittal Page): 3

* * * * * * *

If you do not receive all of the pages legibly, please call back: (808) 548-7439

Sending Facsimile Number: (808) 548-6052
Receiving Facsimile Number: (244) 7870


- Old Age Project
- 7/1/20

- Objectives
- 1. Define and challenge the problem
- 2. Gather and analyze data
- 3. Develop a solution

- Problems
- 1. Elderly mobility issues
- 2. Healthcare costs
- 3. Social isolation

- Solutions
- 1. Implement community programs
- 2. Increase access to healthcare
- 3. Enhance transportation options

- Conclusion
- Need for continued efforts
**TRANSMISSION REPORT**

THIS DOCUMENT (REDUCED SAMPLE ABOVE) WAS SENT

** COUNT **

# 3

*** SEND ***

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TOTAL 0:01'54" 3**
XEROX TELECOPIER 7020**
Mr. William W. Paty  
Department of Land and Natural Resources  
P.O. Box 621  
Honolulu, Hawaii 96809

Dear Mr. Paty:

Environmental Assessment (EA)/Negative Declaration  
Kuhiwa Well Pumping Station  
Nahiku, Maui

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and thus to determine the effects on streamflow, particularly at Hanawi Big Springs. Potential effects on stream habitat should be discussed in the EA.

Hydrology

Our reviewers called attention to numerous deficiencies in the content of the EA with respect to the discussion on hydrology of the Nahiku area. A comprehensive review of the hydrogeology of the Nahiku-Hanawi-Big Springs area was prepared by Doak Cox. Because of his extensive personal knowledge of the region and his comprehensive review of the problem we have appended his comments in their entirety for your information.

Conclusions

Our reviewers suggest that, in its present form the EA for the Kukiwa Well Pumping station provides insufficient information for determination of the significance of potential environmental impacts of the proposed action. Since the hydrogeology of the area strongly suggests that the proposed draft on the well may have a significant effect on the flow from the Hanawi Big Spring and stream, a negative declaration implying no significant impacts appears inappropriate.

We recommend that an Environmental Impact Statement be prepared for this project with special emphasis on describing impacts of well draft on the Hanawi Big Springs and stream. The documentation on the hydrogeology of the area that we have appended to this review should provide the needed basis for the hydrological evaluation.

Thank you for the opportunity to review the Kukiwa Well Pumping Station environmental assessment. We hope you find our comments helpful.

Yours truly,

John T. Harrison, Ph.D.
Environmental Coordinator

cc: OEQC
DINR
Maui Pineapple Company
L. Stephen Lau
Yu-Si Fok
Gordon Bigelow
Doak Cox
William Grannis
June 28, 1990
RN:0258

Mr. William W. Paty
Department of Land and Natural Resources
P.O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Paty:

Environmental Assessment (EA)/Negative Declaration
Kahiwa Well Pumping Station
Nahiku, Maui

The above referenced document considers installation and operation of a 700 gpm (1 mgd) pump in the Kahiwa Well in the Nahiku area of East Maui. The water is to be used by Maui Pineapple Company to irrigate pineapple.

The Environmental Center has reviewed this document with the assistance of Yu-Si Fok, Water Resources Research Center; Gordon Bigelow, General Science; Doak Cox, Geologist; and William Grannis, Environmental Center.

General Comments

Our reviewers have identified several areas of inadequacy in the EA for Kahiwa Well Pumping Station. In particular, the geology/hydrology of the Nahiku area and the possible effects of drawdown on Hanawi Stream and its resident biota were insufficiently described. In addition, the scale of the project map was such that the project's general location on Maui was not readily apparent.

Stream Habitat Reduction

Data collected for the Hawaii Stream Assessment project have led to a preliminary rating of Hanawi Stream as "outstanding," due to its known habitat for native species such as Lentipes concolor ('O'opu 'alamo'o), Awaous stamineus ('O'opu nakea), Sicyopterus stimpeoni ('O'opu nopili), and Neritina granosa (Hiihiwai). If drawdown at the Kahiwa Well does reduce stream flow at Hanawi, then existing stream habitat is likely to be affected. The test pumping of the Kahiwa Well indicated on page 1 of the EA was not performed for a sufficient period of time to account for lag.
Mr. William W. Paty

June 28, 1990

and thus to determine the effects on streamflow, particularly at Hanawi Big Springs. Potential effects on stream habitat should be discussed in the EA.

Hydrology

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Thank you for the opportunity to review the Kukiwa Well Pumping Station environmental assessment. We hope you find our comments helpful.

Yours truly,

John T. Harrison, Ph.D.
Environmental Coordinator

cc: OBEQ
DINR
Maui Pineapple Company
L. Stephen Lau
Yu-Si Fok
Gordon Bigelow
Doak Cox
William Grannis
DOAK C. COX  
1929 Kakela Drive  
Honolulu, Hawaii  96822  

June 11, 1990

Memo to John Harrison, Environmental Center  
From Doak Cox

Environmental Assessment  
KUHIWA WELL PUMPING STATION  
Nahiku area, Maui  

Hydrologic impacts

Information provided in assessment

This assessment relates to a proposal to install and operate a 700 gpm (1 mgd) pump in the Kahiwa Well in the Nahiku area of East Maui. The most important questions regarding the possible environmental impacts of a project such as the proposed must surely include those concerning the effects of the draft on the well on the water resource. The following comments are all that I have found in the assessment that relate directly to these effects:

On p. 1:

Pumping at one million gallons per day is insignificant compared to the estimated recharge of over 25 million gallons per day per mile of shoreline.

On p. 4:

Pumping at rates of up to 700 gallons per minute or one million gallons per day will have little effect on the ground water conditions at Nahiku, where it is estimated that the recharge is more than 25 million gallons per day per mile of coastline. No other pumps are taking water from this aquifer at Kahiwa.

To evaluate the effects of the draft on the water resource it is necessary to consider the proposed draft rate and the nature of the aquifer from which the draft will be made, the modes and rates of recharge to and discharge from this aquifer, the relationship between this aquifer and others with which it may be connected, and the modes and rates of recharge and discharge from these other aquifers. Some of this information may, of course be provided from the results of test pumping of the well.

According to the assessment (p. 4), the well may be pumped as much as 300 days in a year (ie 0.82 mgd ann. av.) but will more often be pumped at only 200 days per year (ie 0.55 mgd ann. av.)

The only information in the assessment that bears on the water resources in the Kahiwa vicinity may be paraphrased from p. 4 as follows:
East Maui is an olivine basalt shield volcano, and the Kukiwa area (on its north flank) is underlain by highly permeable Hana volcanic series rock. A USGS study by Stearns & Macdonald (1942) indicates that the (hydrogeologic) situation in the Nahiku area is "extremely complex," but the nature of the complexity is not discussed in the assessment. Rainfall is about 200 in./yr. in the vicinity of the well (elev. 1400 ft.) and about 300 in./yr. at elev. 2000 ft. A groundwater recharge rate of 470 mgd or 25 mgd per mile of shoreline has been estimated in a DOWAID Regional Water Resources study (1975) for the portion of the East Maui flank including the Nahiku area.

The assessment (p. 1) provides the following information on the Kukiwa well itself and the results of pump tests on it:

The well, located at 1400 feet elevation, is 1255 feet deep and is cased to a depth of 917 feet. It was test pumped in 1977 at rates as high as 750 gpm and with a drawdown of 358 feet at 650 gpm. So important a matter as the static water level in the well seems not to be mentioned in the assessment.

The comparison between the proposed draft from the well and the estimated total groundwater recharge in the Nahiku area is quite misleading, and the information on the geohydrology of the area and the well provided in the assessment are quite insufficient to serve as adequate background for estimation of the actual effects of the proposed draft on the water resources.

Sources of information

The information on the hydrogeology of the Nahiku area attributed in the assessment to Stearns and Macdonald is actually contained in a paper by Macdonald in that volume (Macdonald, G. A., 1942. Geology and ground-water resources of the Nahiku area, East Maui., Part 2 (pp. 223-274) of Geology and Ground-Water Resources of the Island of Maui, Hawaii. Hawaii Division of Hydrography Bull. 7, 344 pp.) Much of that information was derived from studies by H. A. Powers, USGS; W. D. Clark, geologist for the HSPA Experiment Station; and J. H. Foss, Manager, and other employees of the East Maui Irrigation Co. The supplementary information provided here is derived from post-1942 studies by Clark and the BCI staff, from studies made by Doak Cox in 1946, and from the construction and initial tests of the Kukiwa Well itself in 1947. (Some additional information on the Hanawi Big Spring may be found in Cox, D. C., 1980. Stream-flow effects of proposed diversion from Hanawi Stream, Nahiku, East Maui. Univ. Hawaii Environ. Ctr. SR:0026, 39 pp.)

Geohydrology

As reported by Macdonald, the sources of the groundwater feeding most of the spring and tapped by water development tunnels are groundwater bodies perched on ash and soil beds interbedded with the lava flows of the Hana series and at many points laid down on erosional unconformities between those flows. However, no simple perched groundwater body within the Hana lavas that seemed capable of supplying the Hanawi Big Spring could be identified from either surface exposures or a very extensive diamond drilling program; and as the drilling program was continued it
demonstrated the existence of a most unusual perched artesian groundwater body within an aquifer considered to lie within the uppermost part of the Honomanu basalts, the shield forming formation of the Haleakalā volcano, separated in the Nahiku area from the overlying Hana series by an intervening Kula series primarily of andesitic basalts.

This aquifer, consisting of a porphyritic pahoehoe flow or a few porphyritic pahoehoe flows separated by non-porphyritic aʻa flow, was encountered in various drill holes at elevations ranging from about 400 to over 800 feet. Although the water levels in the holes as they were drilled through the Hana lavas dropped as the holes were deepened, the water levels in the holes reaching the artesian aquifer rose when that aquifer was encountered, and in one or two holes that penetrated the non-porphyritic aʻa flow forming the perching member, the water levels dropped again when that flow had been penetrated. Confirmation of the perched artesian nature of the aquifer was obtained subsequent to 1942 by use of a current meter that indicated upward flow through the uppermost confining member and downward flow through the lowermost confining member.

No artesian water was found in at least one of the makai drill holes penetrating the artesian aquifer horizon; the artesian head in several of the holes in the vicinity of the Hanawi Big Spring was about 800 feet, and in one or two mauka holes drilled subsequent to 1942 an artesian head of about 1100 feet was found at the same horizon. The results of the drilling program suggested that the Hanawi Big Spring, at an elevation of 540 feet, and other springs in its vicinity in Hanawi Gulch represent upward leakage from the 800-ft.-head portion of the artesian aquifer; that there is some barrier to flow through the lava flows constituting that aquifer makai of the 800-foot-head portion so that there is no artesian water in those flows further seaward; and that there is some barrier separating the 800-foot-head portion from an 1100-foot-head portion further mauka. The recharge of the 800-foot-head water must, of course, occur in some mauka area where the uppermost confining member is at least 800 feet above sea level, and if the 800-foot-head portion is supplied by the 1100-foot-portion, as seemed probable, the recharge area must be mauka of a point where the uppermost confining member is at 1100 foot elevation.

Construction and initial testing of the Kukiwā Well

The Kukiwā Well was drilled in the hope that the flow to the Big Spring could be diverted from the 1100-foot-head aquifer. Constraints from the topography and the need to deliver the water to East Maui Irrigation Co.’s Koolau Ditch led to the location of the well outside of the area previously explored by diamond drill holes. The well was drilled by the rotary method using drilling mud. However, a pilot diamond drill hole was drilled in advance of the well itself in the critical depth range, that within which the artesian aquifer and its upper and lower confining members would be encountered.

So far as the nature of the rocks encountered and the head of the water in them, the conditions demonstrated by the pilot hole were those expected. A substantial increase in head and upward flow were encountered as the hole penetrated the upper confining member and a substantial loss in head and downward flow were encountered as the hole penetrated the lower confining member. The artesian head was either about the same as
that in the previously demonstrated 1100-foot-head or somewhat higher. The portion of the drill hole penetrating the lower confining member was sealed after the testing.

Although the geologic and head conditions were those anticipated, pump tests indicated that the well capacity was much lower than expected. The testing was done using an air lift pump whose efficiency was very low because of the high ratio between the depth to the static level and the maximum possible submersion of the bottom of the air lift. Continuous water delivery and a stable operating water level in the well could not be achieved; and the specific capacity of the well could only roughly be estimated. The capacity was not sufficient to encourage equipment of the well at that time with a permanent pump.

The results suggested that the transmissibility of the aquifer in the vicinity of the Kukiwa Well is insufficient to account for the flow to the Big Spring and that the main path of the flow to the Spring is probably in a part of the 1100-foot-head aquifer lying further to the west.

Further analysis and conclusions

A comparison between the proposed rate of draft from the well and the total groundwater recharge of the Nahiku area is meaningless because most of the groundwater discharge is from basal groundwater that is not now developed and that is not economically developable under present conditions. The effect of draft from the well on the flow of the Big Spring would be significant considering the hydrologic relationship that is considered to exist between the aquifer tapped by the well and that thought to feed the spring and considering the importance of the Big Spring flow both as undiverted and as divertable. It is most improbable, however, that such an effect could have become manifest from a pumping test of the well as short as that probably made in 1977.

If the relationships among the Kukiwa Well, the 1100-foot head-portion of the perched artesian aquifer, the 800-foot-head portion of that aquifer, and the Big Spring and other Hanawi springs are as described above, it follows that the proposed draft from the Kukiwa Well will probably result in a decrease in the flow of those springs. If those springs accounted for the entire discharge of the artesian-aquifer system, any draft from the well would have to be compensated for by an equal decrease in spring flow. Even in this case, however, the effect of storage in the artesian aquifer and along whatever path the water takes between that aquifer and the springs would be such that the spring flow would never be decreased by as much as the 1 mgd draft, and the decrease in spring flow might not be much greater than the average of the draft throughout the year. Assuming a positive correlation between years of maximum draft on the well and minimum flow of the spring, the 0.82 mgd maximum average draft of the well might result in a decrease of about 10 percent in the flow of the spring (historically about 8 mgd minimum). Definite attribution of such a decrease to the draft from the well would be possible only by comparison between the actual spring flow hydrograph indicated by continuous monitoring and a synthetic hydrograph computed for natural conditions through use of a correlation between spring flow and rainfall.
It is, however, very doubtful that the Hanawi springs represent the only significant discharge from the artesian aquifer system. Alternative possible routes of discharge are: i) through whatever barrier separates the 800-foot-head portion of the aquifer from the non-artesian portion lying seaward of it at the same horizon; ii) laterally from the aquifer portion into non-artesian portions lying to the east and to the west at the same horizon; downward to basal groundwater through the lower confining member; upward to normal perched water through the upper confining member elsewhere than where such upward flow is to the Hanawi springs. On one hand, the greater the total of the rates of discharge of the artesian system through these alternate routes, the smaller would be the ratio of the draft from the well to the recharge of the system. On the other hand, the rate of discharge from the system through the Big Spring may be more sensitive to changes in head in the system than the rates of discharge by the alternative routes.

All that can be said is that pumping the Kahiwa Well is likely to result in some decrease in the flow of the Big-Spring and associated springs, and that the decrease cannot be more than 10 percent of the natural flow of the springs in a dry year except possibly as a result of lag.

The 10-percent represents the ratio between the proposed draft on the well during a dry year, about 0.8 mgd, and the minimum flow of the Big Spring, about 8 mgd, and assumes that there is a correlation between years of maximum well draft and minimum spring flow and that the Big Spring represents the entire discharge of the perched artesian aquifer system that is tapped by the well and that is believed to supply the Big Spring flow. It is very doubtful that flow to the Big Spring represents the only discharge route for the perched artesian aquifer system. Any draft from the well will result in decreases in head in the perched aquifer system that will in turn result in decreases in flow by all discharge routes. Hence the average discharge through the Big Spring cannot be diminished by as much as the average well draft unless the total rate of discharge from the system by routes other than that through the Spring is insignificant.

A 10-percent decrease in the Big Spring discharge is therefore the maximum possible that can be expected to result from draft on the Kahiwa Well, and the actual effect is likely to be significantly less. The actual effect of the well draft on the Spring is unlikely to be observable without very careful measurements and a very good model of the flow of the Spring under natural conditions.

**Appropriateness of negative declaration**

Regarding the appropriateness of a negative declaration I have the following opinions:

1. Because of the inadequacy of the original assessment with respect to the hydrologic effects of the proposed well draft, that assessment would not be a proper basis for a negative declaration.

2. The significance of a diminution of the flow of the Hanawi Big Spring is such that the likelihood that diminution will result from the proposed draft on the well would make issuance of a negative declaration inappropriate even on the basis of a revised assessment.
recognizing the likelihood, even if the diminution may not be readily detectable.

(3) A document incorporating the comments on the hydrology of the Nahiku area and on the expectable effects of draft on the Kukiwa Well on the flow of the Big Spring that are provided in this memo would constitute, from a hydrologic standpoint, an adequate Environmental Impact Statement.
February 16, 1990

Mr. William Paty, Chairman
Board of Land and Natural Resources
Commission on Water Resource Management
State of Hawaii
P. O. Box 621
Honolulu, HI 96809

Dear Bill:

Maui Pineapple Co. has expressed an interest in installing a pump and developing water from East Maui Irrigation's Kuhiwa Well located approximately 1,450 feet elevation adjacent to Kuhiwa Stream. EMI drilled and cased this well in the late 1940's.

Maui Pineapple Co. has our approval to proceed with the application to the State for the necessary permits to complete the development of Kuhiwa well.

Sincerely,

Robert L. Warzecha
General Manager

cc: Maui Pineapple Co.