STATE OF HAWAI'I | KA MOKU'ĀINA 'O HAWAI'I
DEPARTMENT OF LAND AND NATURAL RESOURCES | KA 'OIHANA KUMUWAIWAI 'ĀINA
COMMISSION ON WATER RESOURCE MANAGEMENT | KE KAHUWAI PONO
P.O. BOX 621
HONOLULU, HAWAII 96809

STAFF SUBMITTAL

COMMISSION ON WATER RESOURCE MANAGEMENT

December 19, 2023
Honolulu, Oahu

Modification of Existing Delegation to the Chairperson to
Approve Well Construction and Pump Installation Permits and
Other Groundwater Program Related Approvals by
Limiting the Delegation to Certain Circumstances

SUMMARY OF REQUEST

Staff requests that the Commission on Water Resource Management (Commission) modify the existing authorization to the Chairperson to approve Well Construction and Pump Installation Permits and to continue pending application review and program-related approvals, statewide during the interim until a decision is made on Ka Pa'akai analysis requirements.

BACKGROUND AND CURRENT DELEGATION

On February 15, 1989, the Commission authorized the Chairperson to approve well construction permits for monitor, sampling, and observation wells and test holes and for the sealing of unused and abandoned wells.

On March 16, 1994, the Commission authorized the Chairperson to approve permit applications for the replacement of pumps less than or equal to the existing pump capacity where there are no other disputes or complaints.

On January 23, 1997, with the adoption of the Hawai'i Well Construction and Pump Installation Standards (WCPIS) , the Commission delegated authority to the Chairperson to approve certain well construction and pump installation permits that were compliant with the newly approved Hawai'i Well Construction and Pump Installation Standards, the latest of which can be found here: https://dlnr.hawaii.gov/cwrm/groundwater/wellstandards/. See Staff Submittal Exhibit 1. This helped to ease the many permits that were presented to the Commission monthly, where impacts to the environment were deemed de minimis. The delegation of authority to the Chairperson was established subject to the following:

1. The Chairperson is authorized to approve well construction and well modification permit applications (under Hawaii Revised Statutes §174C-86) statewide, unless the Chairperson determines that the matter should be decided by the Commission.

2. In aquifer systems that are not designated water management areas and where estimated water usage as of the date of application is less than 70% of sustainable yield, the Chairperson is authorized to approve pump installation and pump modification permits unless the Chairperson determines that the matter should be decided by the Commission.

3. Unless deemed otherwise by the Chairperson, no new or additional permit application is required for the replacement of pumps less than or equal to the existing pump capacity. However, the applicant must inform the commission within 30 days of the replacement and complete and submit the Well Completion Report Part II.

In practice, since 1997, all CWRM Chairpersons have allowed Deputy Directors to sign well construction and pump installation permits, permit extensions, pump usage certificates, and application reviews/routing on their behalf.

Also in practice, there are certain instances when well construction and pump installation permits have been presented to the Commission for approval, including:

1. Wells that are located in Water Management Areas.
2. Wells in the Keauhou Aquifer System Area, where non-designation came with conditions applied to well/pump permits and part of conditions of non-designation.
3. High capacity pump replacements, where pumping may exceed sustainable yield, based on analysis by staff.
4. Wells that are not compliant with the Well Standards.
5. Wells that potentially impact surface water based on staff analysis.
6. Denial of permits.

On March 19, 1999, Commission staff attempted to bring a new version of the WCPIS to the Commission for adoption, but the submittal was deferred because of questions on the rule-making process. See Minutes and Staff Submittal Exhibit 2.

In April 2003, Commission staff received a verbal opinion from the Attorney General that HAR § 13-168-14 (c) provides for the revision of the Standards without rule-making.

On February 18, 2004, the Commission adopted the February 2004 edition of the WCPIS, which included in Section 1.5 “Exemption from Unusual Conditions“ the delegation of authority to the Chairperson to “waive compliance” with the requirements of the WCPIS and to prescribe alternative or additional requirements. See Staff Submittal Exhibit 3.

At the November 21, 2023 Commission meeting, staff briefed the Commission on the current approval process for Well Construction and Pump Installation Permits

Staff is considering amendments to the Hawaii Well Construction and Pump Installation Standards and will be presenting them to the Commission for approval at a later date.

KA PA‘AKAI ANALYSIS

Currently, wells located in ground-water management areas also require a water use permit, with the exception of wells for individual domestic use. The application for a water use permit includes a section for the applicant to provide answers to the Ka Pa‘akai questions outlined below. In non-management areas, where the proposed pump capacities are substantial and there are known cultural practices, staff requires a Ka Pa‘akai analysis.

> In *Ka Pa‘akai O Ka‘aina v. Land Use Commission*[1], the Hawai‘i Supreme Court recognized that the State has an obligation to protect Hawaiian traditional and customary practices to the extent feasible, and that the proponent of an action must show sufficient evidence that these types of practices are protected, if they exist in the location in question. This “Ka Pa‘akai framework” was created by the Court “to help ensure the enforcement of traditional and customary native Hawaiian rights while reasonably accommodating competing private development interests.” The Commission is obligated to conduct a “Ka Pa‘akai analysis” of a proposed action requiring CWRM approval independent of the entity proposing the action. This analysis should be used to inform any decision on the impact of the proposed action on traditional and customary practices.
>
> Consequently, the Court required an assessment of the following:
>
> (1) “the identity and scope of ‘valued cultural, historical, or natural resources’ in the petition area, including the extent to which traditional and customary native Hawaiian rights are exercised in the petition area;”
>
> (2) “the extent to which those resources -- including traditional and customary native Hawaiian rights -- will be affected or impaired by the proposed action;”
>
> (3) “the feasible action, if any, to be taken...to reasonably protect native Hawaiian rights if they are found to exist.”

Staff are continuing conversations with the Deputy Attorney Generals related to application of Ka Pa‘akai to Well Construction and Pump Installation Permits. Until a final decision is made, staff will continue to process those currently pending applications as before. However, staff notes that the permit application may be amended in the future.

LEGAL AUTHORITY

The authority for approvals is established in the State Water Code, Hawai‘i Revised Statutes (HRS), Part VII Wells and Hawai‘i Administrative Rules (HAR), Title 13 Chapter 168, Water Use, Wells, and Stream Diversion Works:

> **HRS § 174C-82 Powers and duties of the commission.** In addition to its other powers and duties, the commission shall:

[1] 94 Hawai‘i 31, 7 P.3d 1068 (2000)

(1) Require registration of all existing wells, as provided in section 174C-83;
(2) Require permits for well construction and for installation of pumps and pumping equipment as provided in section 174C-84;
(3) Require well completion reports, as provided in section 174C-85;
(4) Develop well construction and installation standards for pumps and pumping equipment, as provided in section 174C-86; and
(5) Adopt, modify, and enforce all rules and orders necessary to carry out this part.

HRS § 174C-84 Permits for well construction and pump installation. (a) No well construction and no installation of pumps and pumping equipment shall commence without appropriate permit from the commission. An application for a permit for well construction shall be required for all areas of the State including water management areas and shall be made by the well driller who will construct the well. An application for a permit for installation of a pump and pumping equipment shall be made by the pump installation contractor who will install the pump and pumping equipment.
[…]
(c) The commission may issue a permit only if the proposed construction complies with all applicable laws, rules, and standards.
(d) Every permit shall direct the well driller and pump installation contractor to file a well completion report, as provided in section 174C-85. The permit shall be prominently displayed at the site of the well at all times until the well construction or the pump and pumping equipment installation is completed
[…]

HRS § 174C-85 Well completion report. Within thirty days after the completion of the well, the well driller and pump installation contractor shall file with the commission a written report containing such information prescribed by the commission, including, as appropriate: the depth, thickness, and character of the different strata penetrated and the location of water-bearing strata; the date of completion of the well; the length, size, and weight of the casing and a description of the placement of the casing; the size of the drilled hole; where the well is sealed off; the type of seal; the number of cubic feet per second or gallons per minute of flow from the well; the pressure in pounds per square inch, if a flowing well, and the static water level and water temperature, if a nonflowing well; and a chemical analysis of a water sample drawn from the well.

HRS § 174C-86 Well construction and pump installation standards. (a) The commission shall adopt minimum standards for the construction of wells and the installation of pumps and pumping equipment. The standards shall be such as to ensure the safe and sanitary maintenance and operation of wells, the prevention of waste, and the prevention of contamination of the waters. The minimum standards for well construction shall include the criteria for well location and the procedures for grouting, sealing, capping, and plugging wells. They shall also provide for the installation of devices to measure the amount of ground water being withdrawn from the wells. The minimum standards for the installation of pumps and pumping equipment shall include the required equipment characteristics and construction.
[…]

HAR § 13-168-12. Well construction and pump installation permits. (a) No well shall be constructed, altered, or repaired and no pump or pumping equipment shall be installed, replaced, or repaired without an appropriate permit from the commission. Each application for a well construction or pump installation permit shall be accompanied by a non-refundable filing fee of $300.00, excepting government agencies, and shall be required for all areas of the state, including water management areas. The owner of a well shall make application or cause an application to be made by the well driller who will construct the well or by the pump installation contractor who will install the pump and pumping equipment, as the case may be.
[…]
(e) Every well construction and pump installation permit shall direct the well driller or pump installation contractor to file a well completion report, as provided in § 13-168-13. The permit shall be prominently displayed at the site of the well at all times until the well construction or the pump installation is completed.
[…]
(k) The commission may extend the completion dates of the activity prescribed in any permit upon a showing of good cause and good-faith performance. If the commencement or completion date is not complied with, the commission shall cause the permittee to be notified by certified mail that the permit shall be revoked within sixty days unless the permittee can show good cause that it should not be revoked.

HAR § 13-168-13. Well completion report. Within thirty days after the completion of any well, the well driller or pump installation contractor, as the case may be, shall file with the commission on forms provided by the commission a well completion report containing as appropriate:
(1) State well number;
(2) Date of completion;
(3) Tax map key;
(4) Well head, top of casing, and ground elevations;
(5) Method of construction;
(6) Depths, diameters, and other dimensions of drilled hole;
(7) Depths, diameters, dimensions, and types of casing and grouting;
(8) Driller's log of water levels, depths, thickness, and drilling characteristics of sub-surface formations;
(9) Pumping test record, including times, rates of pumping, drawdown of the water level, and chloride content of the pumped water;
(10) Elevation of static water level or artesian head;
(11) Water temperature;
(12) Chemical analyses of a water sample drawn from the well; and
(13) Other information as may be required by the commission.

MODIFICATION OF PERMIT APPROVAL DELEGATION

The proposed modification of the permit approval delegation to the Chairperson is to limit the current delegation of authority to approve permits based on certain circumstances. While the permit approval process is being reevaluated to determine the adequacy in addressing Ka Pa'akai analysis requirements, maintaining the delegation with certain conditions will allow staff to process permits where potential impacts are minimal.

A large percentage of well construction and pump installation permit applications are for proposed individual domestic wells located on the Island of Hawai'i in the area of Hawaiian Paradise Park (HPP). HPP has limited or no County Department of Water Supply system and is situated in the Pahoa Aquifer System which has a sustainable yield (SY) of 432 MGD. The average pump size is about 25 gpm (equivalent to 0.036 mgd). The total reported pumpage of the aquifer is at 0.748 mgd (less than 1 percent of sustainable yield). Below is a summary of the latest statistics of wells in HPP.

Percentage of well construction and pump installation permit applications for uses in HPP, yearly:
- 2019 (78 applications for HPP = 57% of all applications submitted)
- 2020 (60 applications for HPP = 56% of all applications submitted)
- 2021 (71 applications for HPP = 60% of all applications submitted)
- 2022 (42 applications for HPP = 36% of all applications submitted)
- 2023 as of November 2023 (65 applications for HPP = ~50% of all applications submitted)

In the past few years, several well applications for monitoring wells to assist site investigation and remediation efforts have been submitted for the Red Hill area by both the Navy and the Board of Water Supply. In 2022, the Navy submitted 16 well construction permit applications for Red Hill. These wells don't pump and are strictly used for monitoring. These applications accounted for about 14% of all well applications for that year. In 2023, the Navy has submitted five (5) more well construction permit applications.

Other Groundwater Program Approvals

The authority for other program approvals is established in the State Water Code, HRS, Part VII Wells, HAR, Title 13, Chapter 168, and Hawai'i Well Construction and Pump Installation Standards (February 2004) (HWCPIS 2004).

1. Well Depth Variance
   Variance approval for wells is an administrative approval in accordance with HWCPIS 2004, Section 2.2. The Chairperson is authorized to approve a variance prior to drilling past the ¼ depth limitation in a confined basal aquifer within a specified aquifer system area, The proposed well will not exceed the ½ depth limitation specified in Section 2.2, which would require full Commission approval.

> *Section 2.2 Basal Well Depth*
> *Except for salt-water wells, any well constructed in basal aquifers for the purpose of nonpotable or potable water withdrawal shall be initially designed and pump tested at a depth below sea level not exceeding one-fourth of the theoretical thickness (41 times the head) of the basal ground-water body, unless authorized by the Chairperson. Upon request by the permittee and submission of the supporting data and analysis, the Chairperson may allow deepening and subsequent testing of such wells to a depth below sea level not exceeding one-half of the theoretical thickness of the basal ground-water body.*

2. Permit Extension
   Permits may be extended by the Chairperson upon showing of good cause and good-faith performance. A request to extend the permit must be submitted to the Chairperson no later than the date the permit expires. See HAR § 13-168-12 (k)

3. Well Completion Report I & II and Certificate of Well Completion and Pump Installation
   For all wells, a well construction report (Well Completion Report Part I) and for all permanent pumps, a pump installation report (Well Completion Report Part II) must be submitted to and approved by the Commission. See HRS § 174C-85. If there are no outstanding issues, Certificate of Well Completion and Pump Installation is sent to the well owner. These items are all administrative implementation of the Commission or Chairperson's approval of the permit(s).

RECOMMENDATION

Staff recommends that the Commission modify the delegation to the Chairperson to only approve:

1. Individual domestic well construction and well modification permits for wells in aquifer systems that are not designated water management areas, where estimated water usage as of the date of application is less than 70% of sustainable yield, and where the applicant has no other source of domestic water from a public water system, unless the Chairperson determines that the matter should be decided by the Commission.

2. Individual domestic pump installation and pump modification permits in aquifer systems that are not designated water management areas, where estimated water usage as of the date of application is less than 70% of sustainable yield, and where the applicant has no other source of domestic water from a public water system, unless the Chairperson determines that the matter should be decided by the Commission.

3. Well construction permits for monitor, sampling, and observation wells and test holes and for the sealing of unused and abandoned wells, provided that they comply with the Hawaii Well Construction and Pump Installation Standards and have no other regulatory issues.

4. Other Groundwater Program Approvals that are limited to well depth variances less than ½ of the theoretical aquifer thickness (with the exception of salt water wells), well and pump permit extensions not exceeding three (3) extensions, well completion report part I/certificates of well construction, and well completion report part II/certificates of pump installation completion.

All other permits and program approvals not explicitly delegated to the Chairperson to approve in this action will be brought to the Commission for final decision making.

Ola i ka wai,

M. KALEO MANUEL
Deputy Director

Exhibits:
1 January 23, 1997, Staff Submittal: Amendments to HAR 13-168-14 Hawaii Well Construction and Pump Installation Standards
2 March 19, 1999, Minutes and Staff Submittal: Revisions to Hawaii Well Construction and Pump Installation Standards
3 February 18, 2004, Staff Submittal: Revisions to the Hawaii Well Construction and Pump Installation Standards

APPROVED FOR SUBMITTAL:

DAWN N. S. CHANG
Chairperson

MINUTES
FOR THE MEETING OF THE
COMMISSION ON WATER RESOURCE MANAGEMENT

DATE: January 23, 1997
TIME: 9:00 a.m.
PLACE: DLNR Board Room

Chairperson Michael Wilson called the meeting of the Commission on Water Resource Management to order at 11:00 a.m.

The following were in attendance:

MEMBERS: Mr. Michael Wilson
Mr. Richard Cox
Dr. Lawrence Miike
Mr. David Nobriga

EXCUSED: Mr. Robert Girald
Mr. Herbert Richards, Jr.

STAFF: Ms. Rae Loui
Mr. Roy Hardy
Mr. David Higa
Mr. Charley Ice
Ms. Lenore Nakama
Mr. Ryan Imata
Mr. Glenn Bauer
Ms. Janis Uwaine

COUNSEL: Mr. William Tam

OTHERS:

Dan Lum Miles Tagawa Edison Kwock
Jan Reichelderfer

All written testimonies submitted at the meeting are filed in the Commission office and are available for review by interested parties. The items were not taken in the order posted on the agenda.

AGENDA 1

1. Minutes of the December 9, 1996 and December 18, 1996 minutes.

Page 8 (Item 8) of the minutes of December 9, 1996 should be corrected as follows:

MOTIONS: (NOBRIGA/RICHARDS)

MOTION: (NOBRIGA/MIIKE)

To approve staff's the minutes as amended.

UNANIMOUSLY APPROVED AS AMENDED.

2. **Old Business/Announcements**

Deputy Director Rae Loui informed the Commission that the applicant requested to have Agenda 2, Item #1 deferred.

MOTION: (NOBRIGA/COX)

To defer Agenda 2, Item 1.

UNANIMOUSLY APPROVED TO DEFER.

3. **Amendments to HAR §13-168-14, Hawaii Well Construction and Pump Installation Standards**

PRESENTATION OF SUBMITTAL: Deputy Director Rae Loui

Staff requested to amend the proposed rule as follows:

> In §13-169-14(a) and §13-169-14(b), Hawaii Well and Pump Installation Standards should be corrected as Hawaii Well Construction and Pump Installation Standards.

Staff also requested to amend the Hawaii Well Construction and Pump Installation Standards as follows:

> On Page 2-1, Section 2.1, the first sentence should be amended as follows:
>
> > No well, except injection, geothermal, and temporary test boring type wells shall be constructed, modified, repaired, or abandoned and sealed without a well construction permit approved by the chairperson.

STAFF RECOMMENDATION:

The staff recommended the following:

1. The Commission adopt the amendments to HAR §13-168-14 entitled "Water Use, Wells, and Stream Diversion Works", Attachment 1;

2. The Commission adopt the **Hawaii Well Construction and Pump Installation Standards**, Attachment 2; and

3. The Commission delegate the following authority:

   a. The Chairperson is authorized to approve well construction and well modification permit applications (under Hawaii Revised Statutes §174C-86) statewide, unless the Chairperson determines that the matter should be decided by the Commission.

   b. In aquifer systems that are not designated water management areas and where estimated water usage as of the date of application is less than 70% of sustainable yield, the Chairperson is authorized to approve pump

installation and pump modification permits unless the Chairperson determines that the matter should be decided by the Commission.

c. Unless deemed otherwise by the Chairperson, no new or additional permit application is required for the replacement of pumps less than or equal to the existing pump capacity. However, the applicant must inform the commission within 30 days of the replacement and complete and submit the Well Completion Report - Part II.

MOTION: (NOBRIGA/COX)

To approve staff's recommendation as amended.

UNANIMOUSLY APPROVED.

4. **Steve Goldberg, APPLICATION FOR WELL PERMITS, Steve's Well (Well No. 112026), Well Construction: 4-inch Casing Diameter, 280-ft Deep Well Pump Installation: 12 GPM for Domestic use, TMK 4-9-011:009, Moloaa, Kauai**

This item was withdrawn by staff.

The Commission went into recess at 11:20 a.m. and was reconvened at 12:06 p.m.

5. **Department of Transportation, Application for a Stream Channel Alteration Permit, Excavation of Stream Banks and Construction of Bridge Abutments For Highway Widening, Lawai Stream, Lawai, Kauai (TMK 2-5-04:14)**

PRESENTATION OF SUBMITTAL: Mr. Roy Hardy

STAFF RECOMMENDATION:

That the Commission on Water Resource Management approve the excavation and fill of banks and construction of bridge abutments for Lawai Stream (TMK 2-5-04:14), Lawai, Kauai. The permit shall be valid for a period of two (2) years and subject to the standard conditions in Exhibit 6 and the following special condition:

SPECIAL CONDITION:

a. Prior to construction activities, the applicant shall furnish the Commission with written documentation from the County of Kauai, Department of Public Works indicating compliance with the requirement for a FEMA Certification of No Rise Determination (44 CFR Part 65).

MOTION: (NOBRIGA/COX)

To approve staff's recommendation.

UNANIMOUSLY APPROVED.

6. **Mr. Akira Ishida, Application for a Stream Channel Alteration Permit, Construction of a Vehicular Access Bridge, Waihee Stream, Kahaluu, Oahu (TMK 4-7-64:001)**

PRESENTATION OF SUBMITTAL: Mr. Roy Hardy

STAFF RECOMMENDATION:

The staff recommendation was amended as follows:

That the Commission on Water Resource Management approve the construction of a vehicular access bridge across Waihee Stream (TMK 4-7-64:001), Kahaluu, Oahu. The permit shall be valid for a period of two (2) years and subject to the standard conditions in Exhibit 5 and the following special conditions:

a. The applicant shall prepare and submit a Best Management Practice Plan (BMPP) to minimize water pollution from construction activities. The plan shall be reviewed by the Department of Land & Natural Resources, Division of Aquatic Resources and acceptable to the Department of Health and prior to construction activities. The applicant shall submit written documentation to the Department of Health indicating completion of the BMPP.

b. The applicant shall obtain written documentation from the City and County of Honolulu, Department of Land Utilization indicating compliance with the City and County of Honolulu's flood ordinance. This documentation shall be submitted to the Commission prior to construction work.

TESTIMONY BY APPLICANT:

Mr. Myles Tagawa, Consultant with Calvin Kim & Associates, was available for questions. He stated that this project was designed so as not to affect the stream.

MOTION: (NOBRIGA/MIIKE)

To approve staff's recommendation as amended.

UNANIMOUSLY APPROVED AS AMENDED.

7. **City and County of Honolulu, Department of Public Works, Request for Extension to a Stream Channel Alteration Permit, Reconstruction of a Channel Lining, Aiea Stream, Honolulu, Oahu (TMK: 9-9-42:44)**

PRESENTATION OF SUBMITTAL: Mr. Roy Hardy

STAFF RECOMMENDATION:

That the Commission approve a time extension for the stream channel alteration permit to the City and County of Honolulu, Department of Public Works for the reconstruction of the channel lining at Aiea Stream (TMK: 9-9-42:44). The permit shall be valid until December 31, 1997.

MOTION: (COX/NOBRIGA)

To approve staff's recommendation.

UNANIMOUSLY APPROVED.

AGENDA 2

1. Action on Petition to Designate the Ahupuaa of Laie as a Water Management Area for Surface Water

This item was deferred. (See Item 2, Agenda 1)

2. Other Business

None.

ADJOURNMENT: Chairperson Wilson adjourned the meeting at 12:25 p.m.

Respectfully submitted,

JANIS F. UWAINE
Secretary

APPROVED AS SUBMITTED:

RAE M. LOUI
Deputy Director

PLEASE SIGN YOUR NAME ON THIS SHEET
IF YOU DO NOT WISH TO TESTIFY

JAN 23 1997

(DATE)

PLEASE PRINT!!! NAME:	COMPANY/AFFILIATION & ADDRESS:
MILES TAGAWA	CALVIN KIM & ASSOC. 1050 QUEEN ST SUITE 200
Edison Knock	KNOCK ASSOC 1953 S BERETANIA ST PH-E
Jon Reichelderfer	Persons Brinckerhoff 1001 Bishop Suite 3000 96813

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P. O. BOX 621
HONOLULU, HAWAII 96809

AGENDA 1

FOR THE MEETING OF THE COMMISSION ON WATER RESOURCE MANAGEMENT

DATE: January 23, 1997
TIME: 9:00 a.m.
PLACE: DLNR Board Room

1. Minutes of the December 9, 1996 and December 18, 1996 minutes.

2. Old Business/Announcements

3. Amendments to HAR §13-168-14, Hawaii Well Construction and Pump Installation Standards

4. Steve Goldberg, APPLICATION FOR WELL PERMITS, Steve's Well (Well No. 112026), Well Construction: 4-inch Casing Diameter, 280-ft Deep Well Pump Installation: 12 GPM for Domestic use, TMK 4-9-011:009, Moloaa, Kauai

5. Department of Transportation, Application for a Stream Channel Alteration Permit, Excavation of Stream Banks and Construction of Bridge Abutments For Highway Widening, Lawai Stream, Lawai, Kauai (TMK 2-5-04:14)

6. Mr. Akira Ishida, Application for a Stream Channel Alteration Permit, Construction of a Vehicular Access Bridge, Waihee Stream, Kahaluu, Oahu (TMK 4-7-64:001)

7. City and County of Honolulu, Department of Public Works, Request for Extension to a Stream Channel Alteration Permit, Reconstruction of a Channel Lining, Aiea Stream, Honolulu, Oahu (TMK: 9-9-42:44)

Materials related to items on this agenda are available for review at our office at 1151 Punchbowl Street, Room 227, and also will be available at the meeting.

Any person may testify or present information on any meeting agenda item, unless the item involves a proceeding in an existing contested case. In addition, if you have a legal interest that may be adversely affected by the proposed action, you may have a right to an administrative contested case hearing. You must make the request for such a hearing either orally or in writing at the public hearing or meeting for which this notice is given. Hawaii Administrative Rules (H.A.R.) Section 13-167-52(a).

If you request a contested case hearing, you will have the opportunity to present to the Commission oral or written evidence or testimony or both to establish your standing. You may present your testimony or evidence on standing at the meeting or public hearing described above or, alternatively, at a hearing set by the Commission at a later date.

If you request a contested case hearing either orally or in writing, you must also complete and file (or mail and postmark) a written petition for a contested case with the Commission within ten days after the date of the public hearing or meeting noticed here. Petition forms are available from the Commission. H.A.R. Section 13-167-52(a).

If you do not make such a request or fail to file a timely written petition with the Commission, the consequence is that you will be precluded from later obtaining a contested case hearing and seeking judicial review of any adverse decision. H.A.R. Chapter 13-167.

Disabled individuals planning to attend the public hearing or meeting are asked to contact the Commission at the above address or phone (Kauai) 274-3141 ext. 70214, (Maui) 984-2400 ext. 70214, (Hawaii) 974-4000 ext. 70214, (Molokai or Lanai) 1-800-GOV-INHI ext. 70214 or 587-0214 to indicate if they have special needs which require accommodation.

STATE OF HAWAII
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AGENDA 2

FOR THE MEETING OF THE COMMISSION ON WATER RESOURCE MANAGEMENT

DATE: January 23, 1997
TIME: 11:30 a.m.
PLACE: DLNR Board Room

1. Action on Petition to Designate the Ahupuaa of Laie as a Water Management Area for Surface Water

2. Other Business

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TESTIMONIES / HANDOUTS

waimea water services inc

Chairperson Michael Wilson
Commission on Water Resource Management
P.O. Box 621
Honolulu, Hawaii 96809

January 25, 1997

Dear Chairperson Wilson

I received a set of well and pump standards (Agenda Item 1 for adoption on 1/23/97) in the afternoon mail of Friday, 1/24/97. In checking the postmark(see attached), I note that it was mailed on 1/23/97, the day of the hearing for adoption. In addition, I have attached the meeting notice showing a postmark of Saturday, 1/18/97. Monday 1/20/97 was a holiday for the US Mail and this notice was received in the afternoon mail of 1/21/ 97. I understand that the subject standards were adopted with amendments on 1/23/97.

To better express my concerns, I have attached my testimony at the public hearing of July 22, 1996. To the best of my knowledge, none of the requested workshops were held. In a brief overnight review of the standards, I still have some areas of serious concern which I believe should be heard by the Commission directly and more fully explored so that the rules can be adequately developed to, in fact ,be enforceable.

I believe in protecting our water resources and further that any standards we adopt must achieve that objective. I do not believe that the standards (in the form which I received) can adequately meet that objective.

Accordingly, I request that the subject matter be reopened , that the standards be submitted to industry and professional workshops and that there be a special meeting (with adequate notice) for adoption, at which time, the Commission be allowed to hear direct testimony from the same community.

It is my belief that these standards are so important to the future of our water resources that we should exhaust every avenue of knowledge so that we can effectively enforce such standards.

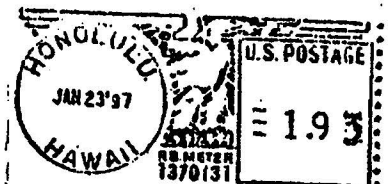
Sincerely,

Stephen P. Bowles
Copies to: DWS, BWS, DOW, Mink & Yuen

P.O. Box 326 • Kamuela, Hawaii 96743 • (808) 885-5941 • FAX (808) 885-7851

Postmarked the day of the hearing 1/23/97

Received in Friday mail in PM on 1/24/97



PACKET CONTAINING Amendments to Hawaii Well Construction and PumpStandards.

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P.O. BOX 621, HONOLULU, HAWAII 96809

Mr. Steve Bowles
Waimea Water Services
P. O. Box 326
Kamuela, Hawaii 96743

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P. O. BOX 621
HONOLULU, HAWAII 96809

AGENDA 1

FOR THE MEETING OF THE COMMISSION ON WATER RESOURCE MANAGEMENT

DATE: January 23, 1997
TIME: 9:00 a.m.
PLACE: DLNR Board Room

1. Minutes of the December 9, 1996 and December 18, 1996 minutes.

2. Old Business/Announcements

3. Amendments to HAR §13-168-14, Hawaii Well Construction and Pump Installation Standards

Goldberg, APPLICATION FOR WELL PERMITS, Steve's Well (Well No.
ell Construction: 4-inch Casing Diameter, 280-ft Deep Well Pump Installation:
ic use, TMK 4-9-011:009, Moloaa, Kauai

COMMISSION ON WATER RESOURCE MANAGEMENT
P. O. BOX 621
Honolulu, Hawaii 96809

lication for a Stream Channel Alteration Permit,
tion of Bridge Abutments For Highway
5-04:14)

Permit, Construction of a
4:001)

to a

HONOLULU HI 968
PM
18 JAN
1997

HONOLULU
JAN 17 '97
HAWAII

Date sent

Date received- 1/21/ 97 PM

com...
Commission.
If you do not ...
obtaining a corrected ...
Disabled individuals planning to ...
3141 ext. 70214, (Maui) 984-2400 ext. 70214, ...
they have special needs which require accommodation.

waimea water services inc.

Testimony of July 22, 1996
for the Commission on Water Resource Management

Subject: Proposed Hawaii Well and Pump Installation Standards

Dear Commissioners,
My name is Steve Bowles and I am a practicing Hydrogeologist residing In Waimea. I am submitting with my testimony a single copy of my review comments regarding the proposed specifications. I believe these comments are incomplete as we only received them for review on July 14.

I have been responsible for the design and construction of more than 200 wells in Hawaii over the past 36 years. These wells have been built to supply and discharge fresh, brackish and wastewater. They have been built for government and private parties. The wells serve the needs of agriculture, aquaculture, water companies, service industries and golf courses. These wells handle sanitary wastewater, drinking water, irrigation, cooling and storm runoff. They are used for exploration, monitoring ,supply and disposal.

During the process of my review I found that what were intended to be **minimum standards** were, in fact, very detailed specifications. I have concluded that they cannot be reviewed adequately in this hearing and should be reviewed by professionals, contractors , land owners and purveyors in a workshop before the Commission takes any further action. Because these public hearings are being conducted without such a review, my experience tells me that the public doesn't have a clue as to the impact such **"standards"** will have on them. I submit that we and you have a responsibility to ensure that such standards are fair, adequate and complete before they are adopted.

All too often, it seems, we find problems with our laws, rules and regulations after they have been adopted. Many such actions are well intended but not adequately thought out as to socio-economic impact.

I believe that the proposed standards need a thorough review and I hope the Commission agrees.

Mahalo

P.O. Box 304 • Kamuela, Hawaii 96743 • (808) 885-5941 • FAX (808) 885-7851

Dear Mr. :

Hawaii Well Construction and Pump Installation Standards

Thank you for your comments and participation in developing the **Hawaii Well Construction and Pump Installation Standards**. As you may know, these Standards were adopted by the Commission at their regular January 23, 1997 meeting. By adopting these Standards, the Commission has fulfilled the requirement of HRS § 174C-86 of the State Water Code. These Standards are now administered under the Administrative Rules HAR § 13-168-14, which incorporates them by reference. Therefore, any future changes or admendments to the Standards will be approved by the Commission after review by the staff.

The major improvements provided by the Standards are: 1) Optimization of aquifer development (primarily in new areas) by controlling well depth based upon initial water level information and/or other geohydrologic data; 2) Protection of aquifers and wells from contamination; 3) Adoption of minimum aquifer pump testing and reporting procedures; and 4) Procedures to properly seal abandoned wells and test borings.

If you have any questions, please contact Glenn Bauer at 587-0263.

Sincerely,

RAE M. LOUI
Deputy Director

f:\work\survey\temp\letstand.wpd

SUBMITTALS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P. O. BOX 621
HONOLULU, HAWAII 96809

STAFF SUBMITTAL

for the meeting of the
COMMISSION ON WATER RESOURCE MANAGEMENT

January 23, 1997
Honolulu, Oahu

Amendments to
HAR §13-168-14
Hawaii Well Construction and Pump Installation Standards

Background:

HRS §174C-86 requires the Commission on Water Resource Management (Commission) to adopt minimum standards for the construction of wells and the installation of pumps and pumping equipment. The administrative rule administering this section of the State Water Code is HAR §13-168-14 (Rule). The Rule incorporates by reference as minimum standards two documents: 1) Water System Standards, State of Hawaii, 1985 and 2) American Water Works Association Standards. The Rule also allows the Commission to review and modify these minimum standards as necessary.

On June 30, 1992 the Commission entered into a contractual agreement with Water Resource Associates to improve and update the minimum well construction and pump installation standards which are referenced in the Rule.

An area of particular concern has been our pump test protocol which has been required of most recent permittees through the issuance of well construction permits. As a result, our consultant sponsored a workshop on aquifer testing procedures for new wells drilled into basal and high-level aquifers on October 15, 1993. Results and comments gathered from this workshop were incorporated in a draft Hawaii Well Construction and Pump Installation Standards (Standards).

On May 17, 1995, the Commission approved the initiation of rulemaking procedures to amend HAR §13-168 entitled "Water Use, Wells, and Stream Diversion Works" to incorporate the Standards and accepted the draft Standards for public review through the rulemaking process.

AGENDA 1
Item 3

Public Hearings were held to gather comments on the proposed rule amendment (Attachment 1) and the draft Standards as follows:

Oahu	July 17, 1996 6:00 pm	Board Room, Kalanimoku Bldg. Honolulu
Maui	July 22, 1996 6:00 pm	Baldwin High School Cafeteria Kahului
Hawaii (Kona)	July 22, 1996 6:00 pm	Kahakai Elementary School Cafeteria Kailua-Kona
Kauai	July 23, 1996 6:00 pm	Wilcox Elementary School Cafeteria Lihue
Hawaii (Hilo)	July 29, 1996 6:00 pm	Hilo Intermediate School Cafeteria Hilo
Maui (Molokai)	Aug. 5, 1996 6:00 pm	Mitchell Pauole Center Kaunakakai

In addition, the draft Standards were distributed to consultants, well drillers, and others for review and comment. The testimonies and comments assisted staff in revising the draft Standards. Attachment 2 is the revised Standards.

The proposed rule and adoption of the Standards will facilitate the efficient processing of applications and facilitate further delegation of some permit approvals to the Chairperson of the Commission. Delegation of authority to the Chairperson is recommended by staff to reduce time requirements both for the applicants and the staff. The Commission has previously approved some delegation of well permits. On February 15, 1989, the Commission authorized the Chairperson to approve well construction permits for monitor, sampling, and observation wells and test holes and for the sealing of unused or abandoned wells. On March 16, 1994, the Commission authorized the Chairperson to approve permit applications for the replacement of pumps less than or equal to the existing pump capacity where there are no other disputes or complaints.

Analysis

HRS §176C-86, "Well Construction and Pump Installation Standards", states in pertinent part:

> "(a) The commission shall adopt minimum standards for the construction of wells and the installation of pumps and pumping equipment. The standards shall be such as to ensure the safe and sanitary maintenance and operation of wells, the prevention of waste, and the prevention of contamination of waters. The minimum standards for well construction shall include the criteria for well location and procedures for grouting, sealing, capping, and plugging of wells. They shall also provide for the installation of devices to measure the amount of ground water being withdrawn from the wells. The minimum standards for the installation of pumps and pumping equipment shall include the required equipment characteristics and construction."

Currently, our rules administering this portion of the Water Code (HAR §13-168-14) refer to two different documents as minimum guidelines for prospective well owners or operators to follow.

> §13-168-14 Well construction and pump installation standards.
>
> (a) The minimum standards referenced in this section, shall be such as to ensure the safe and sanitary maintenance and operation of wells, the prevention of waste, and the prevention of contamination of ground water aquifers. The standards for well construction specified in Volume I, Part III, section 5, of the publication entitled Water System Standards, State of Hawaii, 1985, adopted by the counties, and as may be amended, are hereby incorporated by reference.
>
> (b) The minimum standards for the installation of pumps and pumping equipment shall also provide for the installation of devices to measure the amount of ground water being withdrawn from the wells. Standards specified in the American Water Works Association Standards (ANSI/AWWA E101-77), and as may be amended, are hereby incorporated by reference.

The proposed change will incorporate by reference the Standards to replace the two documents now used as guidelines. The Standards will provide minimum standards for well construction, pump installation, and abandonment of wells throughout the state, as well as for the collection and measurement of ground-water and hydrologic data. The Standards will also aid the staff with consistent guidelines established specifically for Hawaii for the processing of well construction and pump installation permits, and for proper well abandonment.

Summary of Standards

The major improvements in the proposed Standards are:

1. Preliminary aquifer optimization via control of well depths based on initial water level and other data.

2. Aquifer and well protection through minimum construction and pump installation requirements, eg. minimum grouting, casing thicknesses, disinfection, monitoring devices, capping, elevation bench marks, etc. and the reporting of as-built information.

3. Adoption of minimum aquifer pump testing and reporting procedures.

4. Procedures to properly seal different types of abandoned wells, including test borings which are under the purview of the Department of Health.

Delegation of Authority

Adoption of the Standards will provide consistent and specific requirements for the construction, modification, and abandonment of wells, the installation of pumps, and the collection of hydrologic data. The Commission will be meeting the Water Code requirements to ensure the safe and sanitary maintenance and operation of wells, and the prevention of waste and contamination of waters. This will facilitate the efficient processing of applications and facilitate further delegation of some permit approvals to the Chairperson of the Commission.

The staff recommends the Commission delegate the following authority:

1. The Chairperson is authorized to approve well construction and well modification permit applications (under Hawaii Revised Statutes §174C-86) statewide, unless the Chairperson determines that the matter should be decided by the Commission.

2. In aquifer systems that are not designated water management areas and where estimated water usage as of the date of application is less than 70% of sustainable yield, the Chairperson is authorized to approve pump installation and pump modification permits unless the Chairperson determines that the matter should be decided by the Commission.

3. Unless determined otherwise by the Chairperson, no new or additional permit application is required for the replacement of pumps less than or equal to the existing pump capacity. However, the applicant must inform the commission within 30 days of the replacement and complete and submit the Well Completion Report - Part II.

Should this proposal be adopted, similar amendments will be proposed to the administrative rules. However, the policy of delegation could be implemented immediately.

Recommendations:

We recommend:

1. The Commission adopt the amendments to HAR §13-168-14 entitled "Water Use, Wells, and Stream Diversion Works", Attachment 1;

2. The Commission adopt the **Hawaii Well Construction and Pump Installation Standards**, Attachment 2; and

3. The Commission delegate the following authority:

   a. The Chairperson is authorized to approve well construction and well modification permit applications (under Hawaii Revised Statutes §174C-86) statewide, unless the Chairperson determines that the matter should be decided by the Commission.

   b. In aquifer systems that are not designated water management areas and where estimated water usage as of the date of application is less than 70% of sustainable yield, the Chairperson is authorized to approve pump installation and pump modification permits unless the Chairperson determines that the matter should be decided by the Commission.

c. Unless deemed otherwise by the Chairperson, no new or additional permit application is required for the replacement of pumps less than or equal to the existing pump capacity. However, the applicant must inform the commission within 30 days of the replacement and complete and submit the Well Completion Report - Part II.

Respectfully submitted,

RAE M. LOUI
Deputy Director

Attachments: 1 (Amendment to HAR §13-168)
2 (Hawaii Well Construction and Pump Installation Standards)

Amendment to Chapter **13**-168
Hawaii Administrative Rules

1. Section 13-168-14, Hawaii Administrative Rules, is amended by amending subsections (a) and (b) to read as follows:

"§13-168-14 Well construction and pump installation standards. (a) The minimum standards referenced in this [section,] section shall be such as to ensure the safe and sanitary maintenance and operation of wells, the prevention of waste, and the prevention of contamination of ground water aquifers. The standards for well construction specified in [Volume I, Part III, section 5, of the publication entitled Water System Standards, State of Hawaii, 1985,] Hawaii Well and Pump Installation Standards, adopted by the [counties,] Commission on Water Resource Management, and as may be amended, [are] is hereby incorporated by reference.

(b) The minimum standards for the installation of pumps and pumping equipment shall also provide for the installation of devices to measure the amount of ground water being withdrawn from the wells. [Standards specified in the American Water Works Association Standards (ANSI/AWWA E101-77), and] **The** Hawaii Well and Pump Installation Standards, as may be amended, [are] is hereby incorporated by reference.

(c) The well construction and pump installation standards referenced in this section shall serve as minimum guidelines and shall be subject to review and modification by the commission.

(d) If any well construction or pump installation standard is violated and as a consequence ground water is wasted or any well is contaminated, the commission, after giving notice of the defect to the owner of the land on which the well is located, and giving such owner a reasonable time to correct the defect, may itself correct the defect and charge the land owner for the cost of such correction. Such cost constitutes a lien on the land until paid. The lien may be foreclosed in any court of competent jurisdiction, and in such foreclosure suit, the court shall allow the commission reasonable attorney's fees." [Eff. 5/27/88 am,] (Auth: HRS §174C-8) (Imp: HRS §§174C-82, 174C-86, **174C-87**)

2.Material, except source notes, to be repealed is bracketed. New material is underscored.

3.Additions to update source notes to reflect these amendments are not underscored.

4.These amendments to chapter 13-168, Hawaii Administrative Rules, shall take effect ten days after filing with the Office of the Lieutenant Governor.

I certify that the foregoing are copies of the rules, drafted in the Ramseyer format pursuant to the requirements of section 91-4.1, Hawaii Revised Statutes, which were adopted on (date of adoption), and filed with the Office of the Lieutenant Governor.

_____

Chairperson of the Commission
on Water Resource Management

APPROVED AS TO FORM:

_____

Deputy Attorney General

MINUTES
FOR THE MEETING OF THE
COMMISSION ON WATER RESOURCE MANAGEMENT

DATE: March 19, 1999
TIME: 9:00 a.m.
PLACE: Board Room, Kalanimoku Bldg.

Chairperson Timothy E. Johns called the meeting of the Commission on Water Resource Management to order at 9:09 a. m.

The following were in attendance:

MEMBERS: Mr. Timothy Johns
Mr. Richard Cox
Mr. Herbert Richards, Jr.
Dr. Bruce Anderson
Mr. Robert Girald

EXECUSED: Mr. David Nobriga

STAFF: Mr. Edwin Sakoda
Mr. Roy Hardy
Mr. Eric Hirano
Ms. Lenore Nakama
Mr. Dean Nakano
Mr. Glenn Bauer
Mr. David Higa
Mr. Dean Uyeno
Mr. Ryan Imata
Ms. Faith Ching

COUNSEL: Ms. Linnel Nishioka

OTHERS:

Barry Hill
Ben Shimizu
Joe Livingood
Garrick Iwamuro
Manabu Tagomori
Wayne Nakamoto
Dan Lum
Felix Limtiaco

All written testimonies submitted at the meeting are filed in the Commission office and are available for review by interested parties. The items were not taken in the order posted on the agenda.

Approved by Commission on
Water Resource Management
at the meeting held on
APR 16 1999
(amended)

Item 1

EXHIBIT 2

AGENDA 1

1. **Minutes of the February 17, 1999 meeting**

Mr. Ed Sakoda made a correction to the minutes. On page 5 of the minutes, Item 6 A, add after Natural Resources Conservation Service "the Windward Oahu Soil and Water Conservation District". Commissioner Nobriga stated at that meeting that that should be the agency that they should work through.

MOTION: (Richards/Cox)
To approve the minutes as amended.
UNANIMOUSLY APPROVED AS AMENDED.

2. **Old Business/Announcements**

Mr. Ed Sakoda stated that a meeting with the Reuse Champions was held and we are asking the City and U.S. Filter to give a 15 to 30-minute briefing for the Commission. The Department of Health and the Board of Water Supply will also attend to answer any questions.

3. **The minutes for the October 22, 1998 Commission meeting, Item 12, (approved November 6, 1998) were corrected to establish action on the following interim water use permits:**

EXTENSION OF INTERIM WATER USE PERMITS, Puuloa and Kapolei Ground Water Management Areas, Oahu

(Well Nos. 1905-08, 10), The Estate of James Campbell
(Well Nos. 2003-04, 07), State of Hawaii, Housing Finance & Development Corp.
(Well Nos. 2003-01, 02, 05), Kapolei People's Inc.
(Well Nos. 1900-02, 17 to 20 & 1901-03), Hawaii Prince Golf Club
(Well No. 2001-03), City and County of Honolulu, Department of Parks and Recreation
(Well Nos. 2001-04, 09, 10), Gentry Development Co.
(Well No. 2001-05), Ewa by Gentry Community Association
(Well No. 2001-07), The Arbors Association
(Well No. 2001-08), Palm Villas II Association
(Well No. 2002-12), Palm Court Association
(Well Nos. 1902-05, 2001-13, 2002-15, 17, 18), Coral Creek Golf, Inc.
(Well No. 1902-01), Haseko (Ewa), Inc.
(Well No. 1900-23), U.S. DOC/NOAA/National Weather Service

PRESENTATION: Lenore Nakama

MOTION: (Cox/Richards)
To approve the minutes of the October 22, 1998 meeting as amended.
UNANIMOUSLY APPROVED AS AMENDED.

4. **Cooperative Agreement with U.S. Geological Survey for Statewide Hydrologic Data Collection and Water Resource Investigations for Fiscal Year (FY) 1999**

PRESENTATION OF SUBMITTAL: Mr. Eric Hirano

STAFF RECOMMENDATION:

That the Commission approve the subject cooperative agreement between the Commission and the U.S. Geological Survey, and authorize the Chairperson to execute the appropriate documents.

Final contract execution shall be contingent upon receiving the Governor's approval in accordance with Executive Memorandum No. 98-04.

Chairperson Johns asked about several reports that are still outstanding from U.S.G.S. He directed that all outstanding reports be delivered before we move on to additional agreements with U.S.G.S. He also asked that staff work with U.S.G.S. on the accessibility of the Kahe Point Monitor Well.

MOTION: (Cox/Richards)
To approve the submittal.
UNANIMOUSLY APPROVED.

5. **Puu Makakilo, Inc. REVOCATION OF WATER USE PERMIT, Makakilo GC Wells, Well Nos. 1904-02 & 03 (WUP Nos. 162 & 247), Kapolei Ground Water Management Area, Oahu**

PRESENTATION OF SUBMITTAL: Ms. Lenore Nakama

STAFF RECOMMENDATION:

That the Commission:

1. Revoke WUP Nos. 162 and 247.

Ms. Nakama made notes of typographical errors in the submittal. In the title of the submittal, the WUP No. should be "247" and not "347". The same number change is also required in the second paragraph under Background. The WUP No. should be "247" and not "347".

MOTION: (Cox/Girald)
To approve the submittal as amended.
UNANIMOUSLY APPROVED AS AMENDED.

6. **Housing & Community Development Corporation of Hawaii, APPLICATION FOR WATER USE PERMIT, East Kapolei Well (Well No. 2003-08), TMK 9-1-16:108, Future Irrigation and Dust Control Use for 0.500 mgd, Kapolei Ground Water Management Area, Oahu**

PRESENTATION OF SUBMITTAL: Ms. Lenore Nakama

STAFF RECOMMENDATION:

That the Commission:

1. Approve the issuance of an interim water use permit to the Housing & Community Development Corporation of Hawaii for the reasonable and beneficial use of 236,600 gallons per day of brackish water for North-South Roadway (TMK 9-1-16:109) landscape irrigation and dust control and nursery and park irrigation (TMK 9-1-16:108 (por)) from the East Kapolei Well (Well No. 2003-08), subject to the standard water use permit conditions listed in Attachment B and the following special conditions:

   a. Should an alternate permanent source of water be found for this use, then the Commission reserves the right to revoke this permit, after a hearing.

   b. In the event that the tax map key at the location of the water use is changed, the permittee shall notify the Commission in writing of the tax map key change within thirty (30) days after the permittee receives notice of the tax map key change.

   c. Pumping shall cease immediately if the chloride reports show that the brackish water developed in the well exceeds 1,000 mg/l of chloride.

   d. The duration of the interim permit shall be

      a) to July, 2001, or
      b) until treated wastewater is available and acceptable for use, or
      c) until such time that a significant change in permitted, actual, or projected uses or water supply occurs.

   e. This permit is approved under the assumption that wastewater will become available for reuse as an alternative supply source.

   f. Require adherence to the chloride sampling protocol (Exhibit 6) and the submittal of weekly chloride data.

   g. Require adherence to the Conservation Conditions (Exhibit 7).

2. Defer action on the proposed use of 262,000 gpd for the Sports Complex for six (6) months. If documentation from the Land Use Commission confirming the

reclassification of TMK 9-1-16:108(por) from the Agricultural to the Urban District is not submitted to the Commission within six (6) months from the date of this submittal, then this portion of the application shall be deemed denied without prejudice upon expiration of the six-month deferral period.

TESTIMONY BY APPLICANT:

Wayne Nakamoto, Assistant Project Coordinator for the HCDCH stated that when wastewater is available, they are planning to convert to the wastewater system. Prior to last year, they drew on a potable water system from the Board of Water Supply and converted it to nonpotable water from the Ewa Caprock System and have plans that when wastewater is available they plan to convert from the nonpotable water system to reuse water.

MOTION: (Richards/Cox)
To approve the submittal.
UNANIMOUSLY APPROVED.

7. **Revisions to Hawaii Well Construction and Pump Installation Standards**

PRESENTATION OF SUBMITTAL: Mr. Roy Hardy

STAFF RECOMMENDATION:

That the Commission adopt the proposed revisions to the Hawaii Well Construction and Pump Installation Standards as indicated in Attachment A.

Dr. Anderson stated that if the Commission is going through any substantive changes in the rules, we should be going through Chapter 91 process, public participation efforts.

Chairperson Johns stated that we would need an attorney general's opinion if the changes would comply with the current rules.

Deputy Attorney General Nishioka stated that she needed time to look at some documents and cases and do research.

MOTION: (Johns/Richards)
To defer.
UNANIMOUSLY APPROVED TO DEFER.

8. **Declaratory Ruling No. DEC-ADM99-S8, STREAM CLEARING ACTIVITIES FOR THE CITY & COUNTY OF HONOLULU**

PRESENTATION OF SUBMITTAL: Mr. Roy Hardy

STAFF RECOMMENDATION:

That the Commission adopt Declaratory Ruling No. DEC-ADM99-S8, STREAM CLEARING ACTIVITIES FOR THE CITY & COUNTY OF HONOLULU as amended to apply only to work done by the City and County of Honolulu as follows:

A. Stream channel alteration permits are not required for activities listed in Part A.

B. The Chairperson may approve stream channel alteration permits for stream clearing activities that may affect instream uses, but meet the flowing criteria:

1. The stream channel alteration permit application must contain the following:

a. A copy of the Clean Water Act, Section 404 permit from the U. S. Army Corps of Engineers, and the Clean Water Act, Section 401 Water Quality Certification and Best Management Practices Plan from the Department of Health. In the event that the project is not subject to these sections of the Clean Water Act the applicant shall submit written documentation from the Corps of Engineers citing the exemption.

b. Clean Water Act Section 402 (NPDES) permit if applicable.

c. Written description of the scope of work including:

1) A location map showing affected stream reach. Cross section(s) showing typical contours of the before and after removal of material. Photographs.

2) Amount of material to be removed.

3) Method of clearing including a description of the types of equipment to be used.

4) Location and practice of spoils disposal.

5) Frequency of clearing time required for each clearing.

6) Written concurrence from the State Historic Preservation Division and the Division of Aquatic Resources that the work may proceed.

2. Must not alter stream diversion works or interim instream flow standard.

3. The amount of material to be removed is less than 500 cubic yards and will take less than 2 weeks to complete the work.

4. Clearing activity does not include the placement or removal of any structures in the stream.

5. Clearing must not be after-the-fact.

6. Clearing must not be in violation of any other applicable Federal, State, or County permits.

7. Must not restrict access to property.

8. Must not be subject to a Special Management Area Permit (HRS, Chapter 205A).

9. Chairperson approved SCAPs are subject to the following conditions:

   a. Standard Chairperson Approved SCAP Conditions (Exhibit 3).

   b. Special conditions may be added by the Chairperson including but not limited to:

      1) Requiring the applicant to produce a Best Management Practice Plan acceptable to the Department of Health.;

      2) Requiring the applicant to notify the State Historic Preservation Division on start of clearing activities.

   c. The permit will be valid as long as the Commission does not revoke the permit or until the Commission amends this Declaratory Ruling.

MOTION: (Richards/Girald)
To approve the submittal as amended.
UNANIMOUSLY APPROVED AS AMENDED.

10. **Other Business**

Mr. Eric Hirano distributed and explained an update of proposed legislation for 1999 that involves CWRM.

Mr. Hirano informed the Commission that a nominating committee has been formed for the selection of new Commission members for Commissioners Richards and Cox's positions. Their terms are expiring June 30, 1999.

EXECUTIVE SESSION

Chairperson Johns asked that a motion be made to go into executive session to approve minutes and to discuss personnel matters.

MOTION: (Richards/Cox)
To go into executive session to approve minutes and to discuss personnel matters.
UNANIMOUSLY APPROVED.

Adjournment (Richards/Cox). Chairperson Johns adjourned the meeting at 2:52 pm after calling a recess at 2:51 pm from the Public Hearing for Water Use Permit Application for the Waiahole Ditch System, Pearl Harbor and Windward Sectors, Oahu.

Respectfully submitted,

FAITH F. CHING
Secretary

APPROVED AS SUBMITTED:

EDWIN T. SAKODA
Acting Deputy Director

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P.O. BOX 621
HONOLULU, HAWAII 96809

AGENDA 1

FOR THE MEETING OF THE COMMISSION ON WATER RESOURCE MANAGEMENT

DATE: March 19, 1999
TIME: 9:00 a.m.
PLACE: Board Room
Kalanimoku Building

1. Minutes of the February 17, 1999 meeting

2. Old Business/Announcements

3. The minutes for the October 22, 1998 Commission meeting, Item 12, (approved November 6, 1998) are corrected to establish action on the following interim water use permits:

   EXTENSION OF INTERIM WATER USE PERMITS, Puuloa and Kapolei Ground Water Management Areas, Oahu

   (Well Nos. 1905-08, 10), The Estate of James Campbell
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   (Well Nos. 1900-02, 17 to 20 & 1901-03), Hawaii Prince Golf Club
   (Well No. 2001-03), City and County of Honolulu, Department of Parks and Recreation
   (Well Nos. 2001-04, 09, 10), Gentry Development Co.
   (Well No. 2001-05), Ewa by Gentry Community Association
   (Well No. 2001-07), The Arbors Association
   (Well No. 2001-08), Palm Villas II Association
   (Well No. 2002-12), Palm Court Association
   (Well Nos. 1902-05, 2001-13, 2002-15, 17, 18), Coral Creek Golf, Inc.
   (Well No. 1902-01), Haseko (Ewa), Inc.
   (Well No. 1900-23), U.S. DOC/NOAA/National Weather Service

4. Cooperative Agreement with U.S. Geological Survey for Statewide Hydrologic Data Collection and Water Resource Investigations for Fiscal Year (FY) 1999

5. Puu Makakilo, Inc., REVOCATION OF WATER USE PERMIT, Makakilo GC Wells, Well Nos. 1904-02 & 03 (WUP Nos. 162 & 347), Kapolei Ground Water Management Area, Oahu

6. Housing & Community Development Corporation of Hawaii, APPLICATION FOR WATER USE PERMIT, East Kapolei Well (Well No. 2003-08), TMK 9-1-16:108, Future Irrigation and Dust Control Use for 0.500 mgd, Kapolei Ground Water Management Area, Oahu

7. Revisions to Hawaii Well Construction and Pump Installation Standards

8. Declaratory Ruling No. DEC-ADM99-S8 STREAM CLEARING ACTIVITIES

9. EXECUTIVE SESSION: Approve Executive Session Minutes of January 29, 1999, February 17, 1999, and February 25, 1999

10. Other Business

Materials related to items on this agenda are available for review at our office at 1151 Punchbowl Street, Room 227, and also will be available at the meeting.

Any person may testify or present information on any meeting agenda item, unless the item involves a proceeding in an existing contested case. In addition, if you have a legal interest that may be adversely affected by the proposed action, you may have a right to an administrative contested case hearing. You must make the request for such a hearing either orally or in writing at the public hearing or meeting for which this notice is given. Hawaii Administrative Rules (H.A.R.) Section 13-167-52(a).

If you request a contested case hearing, you will have the opportunity to present to the Commission oral or written evidence or testimony or both to establish your standing. You may present your testimony or evidence on standing at the meeting or public hearing described above or, alternatively, at a hearing set by the Commission at a later date.

If you request a contested case hearing either orally or in writing, you must also complete and file (or mail and postmark) a written petition for a contested case with the Commission within ten days after the date of the public hearing or meeting noticed here. Petition forms are available from the Commission. H.A.R. Section 13-167-52(a).

If you do not make such a request or fail to file a timely written petition with the Commission, the consequence is that you will be precluded from later obtaining a contested case hearing and seeking judicial review of any adverse decision. H.A.R. Chapter 13-167.

Disabled individuals planning to attend the public hearing or meeting are asked to contact the Commission at the above address or phone (Kauai) 274-3141 ext. 70214, (Maui) 984-2400 ext. 70214, (Hawaii) 974-4000 ext. 70214, (Molokai or Lanai) 1-800-GOV-INHI ext. 70214 or 587-0214 to indicate if they have special needs which require accommodation.

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P.O. BOX 621
HONOLULU, HAWAII 96809

AGENDA 2

DATE: March 19, 1999
TIME: 11:00 a.m.
PLACE: Board Room
Kalanimoku Building

99 MAR 11 P4:03

Pearl Harbor Sustainable Yield Briefing

Materials related to items on this agenda are available for review at our office at 1151 Punchbowl Street, Room 227, and also will be available at the meeting.

Any person may testify or present information on any meeting agenda item, unless the item involves a proceeding in an existing contested case. In addition, if you have a legal interest that may be adversely affected by the proposed action, you may have a right to an administrative contested case hearing. You must make the request for such a hearing either orally or in writing at the public hearing or meeting for which this notice is given. Hawaii Administrative Rules (H.A.R.) Section 13-167-52(a).

If you request a contested case hearing, you will have the opportunity to present to the Commission oral or written evidence or testimony or both to establish your standing. You may present your testimony or evidence on standing at the meeting or public hearing described above or, alternatively, at a hearing set by the Commission at a later date.

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SUMMARY OF AMENDMENTS

AGENDA 1

1. **Minutes of the February 17, 1999 meeting**

Mr. Ed Sakoda made a correction to the minutes. On page 5 of the minutes, Item 6 A, add after Natural Resources Conservation Service "the Windward Oahu Soil and Water Conservation District". Commissioner Nobriga stated at that meeting that that should be the agency that they should work through.

MOTION: (Richards/Cox)
To approve the minutes as amended.
UNANIMOUSLY APPROVED AS AMENDED.

2. **Old Business/Announcements**

Mr. Ed Sakoda stated that a meeting with the Reuse Champions was held and we are asking the City and U.S. Filter to give a 15 to 30-minute briefing for the Commission. The Department of Health and the Board of Water Supply will also attend to answer any questions.

3. **The minutes for the October 22, 1998 Commission meeting, Item 12, (approved November 6, 1998) were corrected to establish action on the following interim water use permits:**

EXTENSION OF INTERIM WATER USE PERMITS, Puuloa and Kapolei Ground Water Management Areas, Oahu

(Well Nos. 1905-08, 10), The Estate of James Campbell
(Well Nos. 2003-04, 07), State of Hawaii, Housing Finance & Development Corp.
(Well Nos. 2003-01, 02, 05), Kapolei People's Inc.
(Well Nos. 1900-02, 17 to 20 & 1901-03), Hawaii Prince Golf Club
(Well No. 2001-03), City and County of Honolulu, Department of Parks and Recreation
(Well Nos. 2001-04, 09, 10), Gentry Development Co.
(Well No. 2001-05), Ewa by Gentry Community Association
(Well No. 2001-07), The Arbors Association
(Well No. 2001-08), Palm Villas II Association
(Well No. 2002-12), Palm Court Association
(Well Nos. 1902-05, 2001-13, 2002-15, 17, 18), Coral Creek Golf, Inc.
(Well No. 1902-01), Haseko (Ewa), Inc.
(Well No. 1900-23), U.S. DOC/NOAA/National Weather Service

PRESENTATION: Lenore Nakama

MOTION: (Cox/Richards)
To approve the minutes of the October 22, 1998 meeting as amended.
UNANIMOUSLY APPROVED AS AMENDED.

4. **Cooperative Agreement with U.S. Geological Survey for Statewide Hydrologic Data Collection and Water Resource Investigations for Fiscal Year (FY) 1999**

PRESENTATION OF SUBMITTAL: Mr. Eric Hirano

STAFF RECOMMENDATION:

That the Commission approve the subject cooperative agreement between the Commission and the U.S. Geological Survey, and authorize the Chairperson to execute the appropriate documents.

Final contract execution shall be contingent upon receiving the Governor's approval in accordance with Executive Memorandum No. 98-04.

Chairperson Johns asked about several reports that are still outstanding from U.S.G.S. He directed that all outstanding reports be delivered before we move on to additional agreements with U.S.G.S. He also asked that staff work with U.S.G.S. on the accessibility of the Kahe Point Monitor Well.

MOTION: (Cox/Richards)
To approve the submittal.
UNANIMOUSLY APPROVED.

5. **Puu Makakilo, Inc. REVOCATION OF WATER USE PERMIT, Makakilo GC Wells, Well Nos. 1904-02 & 03 (WUP Nos. 162 & 247), Kapolei Ground Water Management Area, Oahu**

PRESENTATION OF SUBMITTAL: Ms. Lenore Nakama

STAFF RECOMMENDATION:

That the Commission:

1. Revoke WUP Nos. 162 and 247.

Ms. Nakama made notes of typographical errors in the submittal. In the title of the submittal, the WUP No. should be "247" and not "347". The same number change is also required in the second paragraph under Background. The WUP No. should be "247" and not "347".

MOTION: (Cox/Girald)
To approve the submittal as amended.
UNANIMOUSLY APPROVED AS AMENDED.

6. **Housing & Community Development Corporation of Hawaii, APPLICATION FOR WATER USE PERMIT, East Kapolei Well (Well No. 2003-08), TMK 9-1-16:108, Future Irrigation and Dust Control Use for 0.500 mgd, Kapolei Ground Water Management Area, Oahu**

PRESENTATION OF SUBMITTAL: Ms. Lenore Nakama

STAFF RECOMMENDATION:

That the Commission:

1. Approve the issuance of an interim water use permit to the Housing & Community Development Corporation of Hawaii for the reasonable and beneficial use of 236,600 gallons per day of brackish water for North-South Roadway (TMK 9-1-16:109) landscape irrigation and dust control and nursery and park irrigation (TMK 9-1-16:108 (por)) from the East Kapolei Well (Well No. 2003-08), subject to the standard water use permit conditions listed in Attachment B and the following special conditions:

   a. Should an alternate permanent source of water be found for this use, then the Commission reserves the right to revoke this permit, after a hearing.

   b. In the event that the tax map key at the location of the water use is changed, the permittee shall notify the Commission in writing of the tax map key change within thirty (30) days after the permittee receives notice of the tax map key change.

   c. Pumping shall cease immediately if the chloride reports show that the brackish water developed in the well exceeds 1,000 mg/l of chloride.

   d. The duration of the interim permit shall be

      a) to July, 2001, or
      b) until treated wastewater is available and acceptable for use, or
      c) until such time that a significant change in permitted, actual, or projected uses or water supply occurs.

   e. This permit is approved under the assumption that wastewater will become available for reuse as an alternative supply source.

   f. Require adherence to the chloride sampling protocol (Exhibit 6) and the submittal of weekly chloride data.

   g. Require adherence to the Conservation Conditions (Exhibit 7).

2. Defer action on the proposed use of 262,000 gpd for the Sports Complex for six (6) months. If documentation from the Land Use Commission confirming the

reclassification of TMK 9-1-16:108(por) from the Agricultural to the Urban District is not submitted to the Commission within six (6) months from the date of this submittal, then this portion of the application shall be deemed denied without prejudice upon expiration of the six-month deferral period.

TESTIMONY BY APPLICANT:

Wayne Nakamoto, Assistant Project Coordinator for the HCDCH stated that when wastewater is available, they are planning to convert to the wastewater system. Prior to last year, they drew on a potable water system from the Board of Water Supply and converted it to nonpotable water from the Ewa Caprock System and have plans that when wastewater is available they plan to convert from the nonpotable water system to reuse water.

MOTION: (Richards/Cox)
To approve the submittal.
UNANIMOUSLY APPROVED.

7. **Revisions to Hawaii Well Construction and Pump Installation Standards**

PRESENTATION OF SUBMITTAL: Mr. Roy Hardy

STAFF RECOMMENDATION:

That the Commission adopt the proposed revisions to the Hawaii Well Construction and Pump Installation Standards as indicated in Attachment A.

Dr. Anderson stated that if the Commission is going through any substantive changes in the rules, we should be going through Chapter 91 process, public participation efforts.

Chairperson Johns stated that we would need an attorney general's opinion if the changes would comply with the current rules.

Deputy Attorney General Nishioka stated that she needed time to look at some documents and cases and do research.

MOTION: (Johns/Richards)
To defer.
UNANIMOUSLY APPROVED TO DEFER.

8. **Declaratory Ruling No. DEC-ADM99-S8, STREAM CLEARING ACTIVITIES FOR THE CITY & COUNTY OF HONOLULU**

PRESENTATION OF SUBMITTAL: Mr. Roy Hardy

STAFF RECOMMENDATION:

That the Commission adopt Declaratory Ruling No. DEC-ADM99-S8, STREAM CLEARING ACTIVITIES FOR THE CITY & COUNTY OF HONOLULU as amended to apply only to work done by the City and County of Honolulu as follows:

A. Stream channel alteration permits are not required for activities listed in Part A.

B. The Chairperson may approve stream channel alteration permits for stream clearing activities that may affect instream uses, but meet the flowing criteria:

1. The stream channel alteration permit application must contain the following:

a. A copy of the Clean Water Act, Section 404 permit from the U. S. Army Corps of Engineers, and the Clean Water Act, Section 401 Water Quality Certification and Best Management Practices Plan from the Department of Health. In the event that the project is not subject to these sections of the Clean Water Act the applicant shall submit written documentation from the Corps of Engineers citing the exemption.

b. Clean Water Act Section 402 (NPDES) permit if applicable.

c. Written description of the scope of work including:

1) A location map showing affected stream reach. Cross section(s) showing typical contours of the before and after removal of material. Photographs.

2) Amount of material to be removed.

3) Method of clearing including a description of the types of equipment to be used.

4) Location and practice of spoils disposal.

5) Frequency of clearing time required for each clearing.

6) Written concurrence from the State Historic Preservation Division and the Division of Aquatic Resources that the work may proceed.

2. Must not alter stream diversion works or interim instream flow standard.

3. The amount of material to be removed is less than 500 cubic yards and will take less than 2 weeks to complete the work.

4. Clearing activity does not include the placement or removal of any structures in the stream.

5. Clearing must not be after-the-fact.

6. Clearing must not be in violation of any other applicable Federal, State, or County permits.

7. Must not restrict access to property.

8. Must not be subject to a Special Management Area Permit (HRS, Chapter 205A).

9. Chairperson approved SCAPs are subject to the following conditions:

   a. Standard Chairperson Approved SCAP Conditions (Exhibit 3).

   b. Special conditions may be added by the Chairperson including but not limited to:

      1) Requiring the applicant to produce a Best Management Practice Plan acceptable to the Department of Health.;

      2) Requiring the applicant to notify the State Historic Preservation Division on start of clearing activities.

   c. The permit will be valid as long as the Commission does not revoke the permit or until the Commission amends this Declaratory Ruling.

MOTION: (Richards/Girald)
To approve the submittal as amended.
UNANIMOUSLY APPROVED AS AMENDED.

10. **Other Business**

Mr. Eric Hirano distributed and explained an update of proposed legislation for 1999 that involves CWRM.

Mr. Hirano informed the Commission that a nominating committee has been formed for the selection of new Commission members for Commissioners Richards and Cox's positions. Their terms are expiring June 30, 1999.

TESTIMONIES / HANDOUTS

United States Department of the Interior

U.S. GEOLOGICAL SURVEY
WATER RESOURCES DIVISION
677 Ala Moana Boulevard, Suite 415
Honolulu, Hawaii 96813

March 18, 1999

Mr. Edwin T. Sakoda
Acting 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. Sakoda

Subject: Status of East Maui Ground-Water/Surface-Water Relationship Study; Status of Lahaina Ground-Water Study

Please be advised that in response to your inquiry on the status of reports relating to our cooperative studies on Maui, a report describing the ground-water resources of the Lahaina area of Maui, Hawaii has been completed. It is currently undergoing review and we expect it to be approved by June of this year. The report "Effects of Recharge and Pumpage on Ground-Water Conditions in the Lahaina District, Maui, Hawaii," describes the hydrogeology of the Lahaina District and the response to changes in recharge and pumpage. A ground-water flow model was developed and used to examine the hydrologic feasibility and consequences resulting from proposed changes in agricultural irrigation and a proposed increase in domestic pumpage.

A total of five reports have been written for the East Maui ground-water/surface-water relationship study. The title and status of each of these is as follows:

Approved Reports - In Preparation for Printing

Water Budget for East Maui, Hawaii, by Patricia Shade

Ground Water and Surface Water in the Haiku Area, East Maui, Hawaii, by Stephen Gingerich

Numerical Modeling of Vertically Extensive Ground-Water Bodies in Maui, Hawaii, An Alternative to Perched Aquifers: Paper awaiting publication in Proceedings of International Symposium on the Humid Tropical Environment, IAHS

The two remaining reports "Ground-Water/Surface-Water Interactions in Northeast Maui, Hawaii, by Stephen Gingerich" and "A Reevaluation of Ground-Water Occurrence in the Nahiku area, Maui, Hawaii, by William Meyer" are complete and in the final stages of the review process. Approval of these reports is expected within the next several months, or sooner.

Sincerely,

William Meyer

William Meyer
District Chief

State of Hawaii
Department of Land and Natural Resources
COMMISSION ON WATER RESOURCE MANAGEMENT
Honolulu, Hawaii

March 19, 1999

TO: Water Commissioners

THROUGH: Edwin T. Sakoda

FROM: Eric Hirano E.T.H.

SUBJECT: Update of 1999 Proposed Legislation Involving CWRM

H.B. No. 367, H.D. 1 (companion S.B. No. 218 **is dead**) - Proposes water conservation income tax credits.

In its original form, this Bill would have impacts to the CWRM by requiring water usage to be verified by the CWRM. After the initial hearing on the Bill, Ed and I worked with the Farm Bureau to address our concerns. The Farm Bureau provided the House Committee on Water and Land Use with revised language for the Bill which eliminated any CWRM involvement therefore, **we now have no problems with this measure.**

H.B. No. 368 - Proposes to allow DOA to allocate water from their irrigation systems similar to the county water supply agencies.

At first we thought this Bill could affect the CWRM's Waiahole decision but upon further research, we believe the legislation passed last session to purchase the Waiahole Ditch clearly stated the CWRM's authority relating to water allocation. Although the Waiahole Ditch would be purchased and operated by the Agribusiness Development Corporation (ADC) there was also legislation passed last year to transfer ADC to DOA and that is why we were first concerned about H.B. No. 368 affecting the CWRM's Waiahole decision. With our concerns relieved, **we now support this measure.**

This measure passed the House Committee's on Agriculture and Water and Land Use unamended and has been transmitted to the Senate for their consideration.

H.B. No. 438 (companion S.B. No. 990) - Proposes to establish a watershed management trust fund to be administered by the CWRM.

We did not support this measure in its original form but, our Division of Forestry and Wildlife (DOFAW) provided the House Committee on Water and Land Use with new language placing the watershed management trust fund under the jurisdiction of DOFAW therefore, **we now have no problems with this measure.**

H.B. No. 438 and S.B. No. 990 did not make the first crossover and therefore is essentially dead for this session.

H.B. No. 577 - Proposes to allow the Office of Environmental Quality Control (OEQC) to develop methodology and content protocol for well drilling and development to be addressed in environmental assessments and impacts.

Our Land Division took the lead in preparing our department's testimony and incorporated our comments. I believe our testimony speaks for itself and **we do not support this measure.** It should also be noted that the OEQC also did not support this measure.

This measure was heard before the House Committee's on Water and Land Use and Energy and Environmental Protection and was held in committee therefore, **this measure is dead.**

H.B. No. 710 (companion S.B. No. 451) - Proposes to replace one public member of the CWRM with a representative from the Office of Hawaiian Affairs (OHA). Also reduces the number of nominating committee members from four to three.

I believe our testimony speaks for itself and **we do not support this measure.** Hearings were held in the House and Senate committees. No decision has been made by the Senate Committee on Water, Land and Hawaiian Affairs but the House Committee on Water and Land Use did amend this measure as a House Draft (H.D.) 1.

H.B. No. 710, H.D. 1, now keeps the same number of public members on the CWRM but adds the OHA representative as an ex officio, non-voting member. This measure will move on to the House Committee on Judiciary and Hawaiian Affairs.

The Attorney General's office did provide an opinion to the Senate committee against this measure but unfortunately, it is viewed as sensitive and so far we have not been privy to this information.

H.B. No. 710, H.D. 1 and S.B. No. 451 did not make the first crossover and therefore is essentially dead for this session.

H.B. No. 1188 (companion S.B. No. 1098) - Proposes to correct unintentional erroneous references, provides consistency in referencing governmental agencies, and clarifies language throughout the State Water Code.

This is our Administration measure and is essentially a house-keeping Bill. **We fully support this measure** and it is proceeding along well in both houses.

Both measures remain unamended and made the first crossover. They were re-heard by both houses, passed unamended once more, and so we expect our house-keeping measure will become law and the Water Code shall be amended accordingly.

There are several other measures which we are tracking and providing input (other DLNR divisions are the lead testifier) that deals with "regulatory processes" and "environmental assessments and impacts" and may affect our operations. The Administration has already taken a specific position on

the "regulatory processes" measures and so there is not much that we can do about it.

Regarding the "environmental assessments and impacts" measure, the proposed revisions do not affect us directly but it will affect **all permit applicants by requiring** an environmental assessment to be made. If this measure passes, it will create a major burden particularly upon "minor" permit applicants such as a person applying for a small domestic well or a SCAP application proposing to do minor work within a stream.

If there are any questions, please call me or Ed.

G:\WORK\LEGIS\1999\UPDATE.MAR

SUBMITTALS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P.O. BOX 621
HONOLULU, HAWAII 96809

STAFF SUBMITTAL

for the meeting of the
COMMISSION ON WATER RESOURCE MANAGEMENT

March 19, 1999
Honolulu, Hawaii

Cooperative Agreement with U.S. Geological Survey for
Statewide Hydrologic Data Collection and
Water Resource Investigations for Fiscal Year (FY) 1999

The Commission on Water Resource Management (Commission) each year enters into a cooperative agreement with the U.S. Geological Survey (USGS) for the inventory and investigation of Hawaii's water resources.

Under this agreement, the USGS collects basic hydrologic data and conducts areal and spacial resource investigations. Costs are shared equally by the Commission and the USGS. The number of hydrologic data points in the state/federal funded cooperative program are summarized below. A detailed listing is included as Exhibit 1.

		FY 1999
1.	Continuous recording stream gage stations	41
2.	Crest-stage stream gages	47
3.	Ground water levels and chlorides; and	158
4.	Rain gage stations	32

Exhibit 2 is the agreement with the U.S. Geological Survey describing the cooperative program proposed for the period October 1, 1998 to September 30, 1999, coinciding with the Federal fiscal year. The Commission's share of the matching program will be $415,175.00 which is covered by the legislative appropriations made to the Department's LNR 404, Water Resources Program.

Approved by Commission on
Water Resource Management
at the meeting held on
MAR 19 1999

AGENDA 1
Item 4

Exhibit 3 is a table showing the changes to the cooperative program over the years.

RECOMMENDATION:

That the Commission approve the subject cooperative agreement between the Commission and the U.S. Geological Survey, and authorize the Chairperson to execute the appropriate documents.

Final contract execution shall be contingent upon receiving the Governor's approval in accordance with Executive Memorandum No. 98-04.

Respectfully submitted,

Edwin T. Sakoda

EDWIN T. SAKODA
Acting Deputy Director

Attachment

Exhibit 1 - Detailed Listing of Hydrologic Stations
Exhibit 2 - Joint Funding Agreement for Water Resources Investigations
Exhibit 3 - Summary of Changes to the Cooperative Program

Table 2.--Continuous-recording surface-water stations operated as part of the Commission on Water Resource Management-U.S. Geological Survey cooperative data-collection program for Federal fiscal year 1999.

Station number	Station Name	Island
16010000	Kawaikoi Stream near Waimea	Kauai
16036000	Makaweli River near Waimea	Kauai
16049000	Hanapepe River below Manuahi Stream near Eleele	Kauai
16060000	South Fork Wailua River near Lihue	Kauai
16068000	East Branch of North Fork Wailua River near Lihue	Kauai
16071500	Left Branch Opaekaa Stream near Kapaa	Kauai
16097500	Halaulani Stream at altitude 400 ft. near Kilauea	Kauai
16103000	Hanalei River near Hanalei (relocate upstream)	Kauai
16108000	Wainiha River near Hanalei	Kauai
16200000	North Fork Kaukonahua Stream above Right Branch near Wahiawa	Oahu
16208000	South Fork Kaukonahua Stream at East Pump Reservoir near Wahiawa	Oahu
16211600	Makaha Stream near Makaha	Oahu
16212800	Kipapa Stream near Wahiawa	Oahu
16216000	Waiawa Stream near Pearl City	Oahu
16226000	North Halawa Stream near Aiea	Oahu
16229000	Kalihi Stream near Honolulu	Oahu
16240500	Waiakeakua Stream at Honolulu	Oahu
16254000	Makawao Stream near Kailua	Oahu
16294900	Waikane Stream at altitude 75 ft at Waikane	Oahu
16296500	Kahana Stream at altitude 30 ft.near Kahana	Oahu
16302000	Punaluu Ditch near Punaluu	Oahu
16303000	Punaluu Stream near Punaluu	Oahu
16325000	Kamananui Stream at Pupukea Military Road near Maunawai	Oahu
16330000	Kamananui Stream at Maunawai	Oahu
16345000	Opaeula Stream near Wahiawa	Oahu
16400000	Halawa Stream near Halawa	Molokai
16405500	Waikolu Stream at altitude 900 ft. near Kalaupapa	Molokai
16419500	Papio Gulch at Halawa	Molokai
16508000	Hanawi Stream near Nahiku	Maui
16518000	West Wailuaiki Stream near Keanae	Maui
16587000	Honopou Stream near Huelo	Maui
16604500	Iao Stream at Kepaniwai Park near Wailuku	Maui
16614000	Waihee River at Dam near Waihee	Maui
16620000	Honokohau Stream near Honokohau	Maui
16704000	Wailuku River at Piihonua	Hawaii
16717000	Honolii Stream near Papaikou	Hawaii
16720000	Kawainui Stream near Kamuela	Hawaii
16720300	Kawaiki Stream near Kamuela	Hawaii
16725000	Alakahi Stream near Kamuela	Hawaii
16759000	Hauani Gulch near Kamuela	Hawaii
16770500	Pa'auau Gulch at Pahala	Hawaii

EXHIBIT 1

Table 3.--Crest-stage surface-water stations operated as part of the Commission on Water Resource Management-U.S. Geological Survey cooperative data-collection program for Federal fiscal year 1999.

Station number	Station name	Island
16052500	Lawai Stream near Koloa	Kauai
16055000	Huleia Stream near Lihue	Kauai
16071800	Wailua River near Kapaa	Kauai
16073500	Konohiki Stream near Kapaa	Kauai
16081200	Akulikuli Stream near Kapaa	Kauai
16084500	Kapaa Stream at old highway crossing near Kealia	Kauai
16097900	Puukumu Stream near Kilauea	Kauai
16104200	Hanalei River at highway 56 bridge near Hanalei	Kauai
16130000	Nahomalu Valley near Mana	Kauai
16411320	Kakaako Gulch above Kamakahi Gulch near Mauna Loa	Molokai
16411400	Kakaako Gulch near Mauna Loa	Molokai
16411600	Kaunala Gulch near Mauna Loa	Molokai
16411640	Halena Gulch near Mauna Loa	Molokai
16411800	Kaluapeelua Gulch at Hoolehua	Molokai
16413500	Manawainui Gulch near Kualapuu	Molokai
16415400	Wawaia Gulch at Kamalo	Molokai
16419000	Pohakupili Gulch near Halawa	Molokai
16500100	Kepuni Gulch near Kahikinui House	Maui
16500300	Hawelewele Gulch near Kaupo	Maui
16500800	Kukuiula Gulch near Kipahulu	Maui
16502400	Pukuilua Gulch near Hana	Maui
16502800	Moomoonui Gulch at Hana	Maui
16502900	Kawaipapa Gulch at Hana	Maui
16603300	Unnamed Gulch at Maliko Bay	Maui
16603700	Kalialinui Gulch Tributary near Pukalani	Maui
16603800	Kaluapulani Gulch Tributary near Pukalani	Maui
16603850	Kalialinui Gulch near Kahului	Maui
16616500	Unnamed Gulch at Maluhia Camp	Maui
16619700	Poelua Gulch near Kahakuloa	Maui
16630200	Honolowai Stream at Konokowai	Maui
16643300	Kauaula Stream near mouth near Lahaina	Maui
16646200	Olowalu Stream near Olowalu	Maui
16647500	Malalowaiaole Gulch near Maalaea	Maui
16658500	Waiakoa Gulch Tributary near Waialoa	Maui
16659000	Waiakoa Gulch at Kihei	Maui

Table 3.--Crest-stage surface-water stations operated as part of the Commission on Water Resource Management-U.S. Geological Survey cooperative data-collection program for Federal fiscal year 1999. -- Continued

Station number	Station name	Island
16701400	Palai Stream at Hilo	Hawaii
16717400	Kalaoa Mauka Stream near Hilo	Hawaii
16717600	Alia Steam near Hilo	Hawaii
16717650	Kapehu Stream near Pepeekeo	Hawaii
16717850	Keehia Gulch near Ookala	Hawaii
16717920	Ahualoa Gulch at Honokaa	Hawaii
16752600	Hapahapai Gulch at Kapaau	Hawaii
16755800	Luahine Gulch near Waimea	Hawaii
16756500	Keanuiomano Stream near Kamuela	Hawaii
16759040	Paiakuli Reservoir Tributary near Waimea	Hawaii
16759060	Kamakoa Gulch near Waimea	Hawaii
16759300	Waiaha Stream at Lauwai near Holualoa	Hawaii

Table 4.--Ground-water monitoring stations operated as part of the Commission on Water Resource Management-U.S. Geological Survey cooperative data-collection program for Federal fiscal year 1999.

[QW, temperature, specific conductance, and chloride data: WL-misc, miscellaneous water level readings: WL-cont, continuous water-level readings]

Local number	Station name	Data collected	Island
2-0021-01	State of Hawaii, Kalepa Ridge	WL-misc	Kauai
2-0044-14	Kekaha Sugar, Kaunalewa KS8	WL-cont	Kauai
2-0120-01	DOW, Kalepa Ridge	QW	Kauai
2-0120-02	State of Hawaii, Kalepa Ridge	WL-misc	Kauai
2-0320-01	DOW, Nonou A	QW	Kauai
2-0320-03	DOW, Nonou B	QW,WL-misc	Kauai
2-0545-01	State Parks, Kaulaula	QW	Kauai
2-0818-01	DOW, Anahola A	QW	Kauai
2-0818-02	DOW, Anahola B	QW	Kauai
2-0818-03	DOW, Anahola C	WL-misc	Kauai
2-1020-03	Lihue Plantation, Moloaa No. 2	QW,WL-misc	Kauai
2-1125-01	DOW, Kilauea No. 1	QW	Kauai
2-1125-02	DOW, Kilauea No. 2	QW	Kauai
2-1126-01	Princeville, ECDC No. 1	QW,WL-misc	Kauai
2-1126-02	Princeville, ECDC No. 2	QW	Kauai
2-1229-03	DOW, Maka Ridge near Hanalei	QW	Kauai
2-1232-01	DOW, Wainiha No. 1	QW,WL-misc	Kauai
2-1333-01	DOW, Haena deep well	QW,WL-misc	Kauai
2-5426-03	McBryde Sugar, Koloa	WL-misc	Kauai
2-5427-01	DOW, Koloa A	QW,WL-misc	Kauai
2-5427-02	DOW, Koloa B	QW	Kauai
2-5526-01	Grove Farm, Kaluahonu	WL-misc	Kauai
2-5530-02	McBryde Sugar, Lawai Cannery	WL-misc	Kauai
2-5530-03	DOW, Lawau deep well	QW	Kauai
2-5534-03	DOW, Hanapepe Valley	QW,WL-misc	Kauai
2-5634-01	State of Hawaii, Hanapepe Ridge 439	WL-cont	Kauai
2-5840-01	DOW, Waimea	QW,WL-mis	Kauai
2-5843-01	DOW, Kekaha shaft	QW,WL-misc	Kauai
2-5921-01	DOW, Kalepa Ridge	QW,WL-cont	Kauai
2-5923-01	DOW, Kilohana A	QW	Kauai
2-5923-07	DOW, Kilohana I	QW,WL-misc	Kauai
2-5939-01	DOW, Waimea shaft	QW,WL-misc	Kauai
3-1646-01	Bishop Estate, Waialae Golf Course	QW	Oahu
3-1646-02	Bishop Estate, Waialae Golf Course	QW	Oahu
3-1851-19 A,B	HECO, Halekauwila Street	QW,WL-misc	Oahu
3-1851-22	USGS, Ala Moana Blvd.	WL-misc	Oahu
3-1959-05	HIG, Fort Weaver Road	WL-cont	Oahu
3-2054-03	Young Laundry, Puuloa Road	WL-misc	Oahu
3-2101-03	DOWALD, Honouliuli	WL-misc	Oahu
3-2103-01	Navy, Puu Makakilo	WL-misc	Oahu

Table 4.--Ground-water monitoring stations operated as part of the Commission on Water Resource Management-U.S. Geological Survey cooperative data-collection program for Federal fiscal year 1999. --Continued

[QW, temperature, specific conductance, and chloride data: WL-misc, miscellaneous water level readings: WL-cont, continuous water-level readings]

Local number	Station name	Data collected	Island
3-2103-03	Navy, Barbers Point Shaft	QW,WL-misc	Oahu
3-2153-02	Damon Estate, Moanalua	QW,WL-misc	Oahu
3-2255-35	CA & HI Sugar Refinery, Aiea	QW	Oahu
3-2256-10	Navy, Aiea (187B)	WL-cont	Oahu
3-2256-12	Navy, Aiea	QW,WL-misc	Oahu
3-2300-06	BWS, Waipahu	QW,WL-misc	Oahu
3-2300-11	Watanabe, Waipahu	QW	Oahu
3-2300-18	DOWALD, Waipahu deep observation well	WL-misc	Oahu
3-2301-09,10	Oahu Sugar, Waikele	QW	Oahu
3-2358-02	Navy, Pearl City	QW	Oahu
3-2358-19	Navy, Pearl City Pen.	WL-misc	Oahu
3-2358-22	Taba Farm, Waiawa (204-4)	QW	Oahu
3-2358-29	Taba Farm, Waiawa (204-9)	QW	Oahu
3-2359-05	Oshita, Waipahu	QW	Oahu
3-2448-01	DOWALD, Kaneohe	QW	Oahu
3-2508-02	BWS, Lualualei	WL-misc	Oahu
3-2550-01	Valley of the Temples, Heeia	QW	Oahu
3-2558-10	Navy, Waiawa Shaft	QW	Oahu
3-2600-04	BWS, Mililani No. 8 (replace)	WL-misc	Oahu
3-2603-01	Hawaii Country Club, Waikele	QW	Oahu
3-2607-01	Navy, Lualualei	QW	Oahu
3-2659-01	DOWALD, Waipio deep observation well	WL-misc	Oahu
3-2800-01	BWS, Mililani No. 1	QW	Oahu
3-2808-01	Navy, Nanakuli	WL-misc	Oahu
3-2809-06	BWS, Waianae Tunnel	QW	Oahu
3-2812-01	BWS, Makaha Shaft	QW	Oahu
3-2901-09	BWS, Wahiawa wells	QW	Oahu
3-3213-06	Page Communication Engineering, Makua	QW,WL-misc	Oahu
3-3352-01	Foster Estate, Kahana Valley	QW,WL-misc	Oahu
3-3405-01	BWS, Waialua wells	QW	Oahu
3-3405-02	BWS, Waialua wells (323-2)	QW	Oahu
3-3407-25	BWS, Waialua well (320)	QW	Oahu
3-3407-30	Waialua Sugar, Waialua	QW	Oahu
3-3409-16	Mokuleia Association, Mokuleia	WL-misc	Oahu
3-3410-08	Waialua Sugar, Mokuleia	QW,WL-misc	Oahu
3-3506-03,04	Waialua Sugar, Haleiwa Battery	QW	Oahu
3-3605-03	Waialua Sugar, Kawailoa P4	QW	Oahu
3-3605-21	Waialua Sugar, Kawailoa P4	QW	Oahu
3-3655-01	BWS, Hauula well	QW	Oahu
3-3956-04	Kahawai, Laie	QW	Oahu

Table 4.--Ground-water monitoring stations operated as part of the Commission on Water Resource Management-U.S. Geological Survey cooperative data-collection program for Federal fiscal year 1999. --Continued

[QW, temperature, specific conductance, and chloride data: WL-misc, miscellaneous water level readings: WL-cont, continuous water-level readings]

Local number	Station name	Data collected	Island
3-4057-05	Tsukamoto, Kahuku	WL-misc	Oahu
3-4100-01 A	Palmer Golf, Kawela	QW	Oahu
3-4101-03	DOWALD, Waialee	WL-misc	Oahu
3-4101-08	BWS, Waialee II	QW	Oahu
3-4258-04	Radio Corporation of America, Kahuku	QW	Oahu
4-0448-02	Pearl Friel, Mapulehu	WL-misc	Molokai
4-0449-01	DWS, Ualapue	QW,WL-misc	Molokai
4-0457-01	DWS, Kawela	QW,WL-misc	Molokai
4-0601-01	Molokai Ranch, Kaunakakai	WL-misc	Molokai
4-0700-01	Kukui Inc., Kaunakakai	QW,WL-misc	Molokai
4-0801-01	DHHL, Kualapuu	QW	Molokai
4-0801-02	DHHL, Kualapuu	QW	Molokai
4-0901-01	Kukui Inc., Kualapuu	QW	Molokai
6-3925-01	CWRM, Makena 68	WL-misc	Maui
6-3926-03	Wailea Land Company, Wailea No. 8	QW	Maui
6-4627-14	Hashimoto, Waiakoa	QW	Maui
6-4824-01	CWRM, Kihei Exploratory	WL-misc	Maui
6-4825-01	HC&S, P-3	QW	Maui
6-4831-01	CWRM, Maalaea	WL-misc	Maui
6-4928-02	HC&S, Puuene Shaft	WL-misc	Maui
6-5021-01	Sport Shinko, Pukalani	QW	Maui
6-5128-02	HC&S, P-7	QW	Maui
6-5130-01	CWRM, Waikapu 1	WL-misc	Maui
6-5130-02	CWRM, Waikapu 2	WL-misc	Maui
6-5224-02	HC&S, P-9	QW	Maui
6-5330-09	DWS, Mokuhau 1	QW	Maui
6-5330-10	DWS, Mokuhau 2	QW	Maui
6-5330-11	DWS, Mokuhau 3	QW	Maui
6-5332-04	Kepuniwai Testhole, Iao Valley	WL-misc	Maui
6-5339-01	DWS, Lahaina 1	QW	Maui
6-5339-02	DWS, Lahaina 2	QW	Maui
6-5340-01	Pioneer Mill, P-M	QW	Maui
6-5424-01	HC&S, P-4	QW	Maui
6-5430-03	Wailuku Sugar, Waiehu TH-E	WL-misc	Maui
6-5430-05	CWRM, Waiehu monitor well	QW,WL-misc	Maui
6-5431-01	Wailuku Sugar, Waiehu TH-B	WL-cont	Maui
6-5522-01	HC&S, P-12	QW	Maui

Table 4.--Ground-water monitoring stations operated as part of the Commission on Water Resource Management-U.S. Geological Survey cooperative data-collection program for Federal fiscal year 1998. --Continued

[QW, temperature, specific conductance, and chloride data: WL-misc, miscellaneous water level readings: WL-cont, continuous water-levels]

Local number	Station name	Data collected	Island
6-5631-01	Wailuku Sugar, Waihee TH-A1	WL-misc	Maui
6-5640-01	Pioneer Mill P-R	QW	Maui
6-5838-01	DWS, Napili A	QW	Maui
6-5838-02	DWS, Napili B	QW	Maui
6-5838-04	DWS, Napili C	QW	Maui
6-5840-01	CWRM, Alaeloa 318	WL-cont	Maui
8-0335-01	DWS, Naalehu 1	QW	Hawaii
8-0437-01	Waiohinu Exploratory Well	WL	Hawaii
8-0632-01	Kau Agribusiness, Honuapo 2	WL-misc	Hawaii
8-0831-02	Punaluu Water and Sanitary, Ninole A	QW	Hawaii
8-1128-02	Kau Agribusiness, Palima	QW	Hawaii
8-1129-01	Kau Agribusiness, Pahala 2	QW	Hawaii
8-1229-01	DWS, Pahala	QW	Hawaii
8-2653-01	DWS, Keei C	QW	Hawaii
8-2753-01	DWS, Keei A	QW	Hawaii
8-2753-02	DWS, Keei B	QW	Hawaii
8-2986-01	DWS, Pahoa Battery 2A	QW	Hawaii
8-2986-02	DWS, Pahoa Battery 2B	QW	Hawaii
8-3080-02	DWS, Kapoho Crater	QW,WL-misc	Hawaii
8-3155-01	Hale Kii Observation Well	WL	Hawaii
8-3185-01	Miller/Lieb, Hawaiian Shores 1	QW	Hawaii
8-3207-04	Mountain View Exploratory Well	WL	Hawaii
8-3557-01	DWS, Kahaluu A	QW	Hawaii
8-3557-05	DWS, Kahaluu Shaft	QW	Hawaii
8-4003-01	DWS, Panaewa 1	QW	Hawaii
8-4010-01	Kaumana Estates Exploratory Well	WL	Hawaii
8-4708-02	Kaieie Exploratory Well	WL	Hawaii
8-4858-02	Kona Village, No. 2	QW	Hawaii
8-5546-01	Waikoloa Water Company, Waikoloa 2	QW	Hawaii
8-5548-01	Waikoloa Water Company, Parker 1	QW	Hawaii
8-5745-01	Waikoloa Water Company, Parker 5	QW	Hawaii
8-5814-01	DWS, Laupahoehoe	QW	Hawaii
8-5946-01	DWS, Lalamilo A	QW	Hawaii
8-5948-01	State Parks, Hapuna	QW,WL-misc	Hawaii
8-6141-01	Waiaka Tank Exploratory Well	WL	Hawaii
8-6147-01	State of Hawaii, Kawaihae 3	WL-misc	Hawaii
8-6148-01	DWS, Kawaihae 1	QW	Hawaii
8-6148-02	DWS, Kawaihae 4	QW	Hawaii
8-7345-03	Makalapa Tank Observation Well	WL	Hawaii
8-7448-06	Kapaau Observation Well	WL	Hawaii
8-7451-01	Upolu Road Obseration Well	WL	Hawaii

Table 5.--Rainfall stations operated as part of the Commission on Water Resource Management-U.S. Geological Survey cooperative data-collection program for Federal fiscal year 1999.

State key number	Station name	Type of gage	Island
1045.0	Waialeale trail near Lihue	recording	Kauai
1051.0	North Wailua Ditch near Lihue	non-recording	Kauai
1068.0	Left Branch Opaekaa near Kapaa	recording	Kauai
1080.0	Paukahana gage near Waimea	non-recording	Kauai
1082.0	Waiakoali gage near Waimea	non-recording	Kauai
1083.0	Mohihi crossing near Waimea	recording	Kauai
1084.0	Kilohana gage near Hanalei	recording	Kauai
1085.0	Mohihi-Koaie divide near Waimea	non-recording	Kauai
772.0	Moanalua gage near Honolulu	non-recording	Oahu
772.1	North Halawa Stream near Aiea	recording	Oahu
772.3	Moanalua gage no.1 at altitude 1,000 ft. near Honolulu	recording	Oahu
772.6	Moanalua gage near Kaneohe	recording	Oahu
794.3	Waimanalo gage at Waimanalo	recording	Oahu
832.2	Kipapa gage near Wahiawa	recording	Oahu
842.1	Makaha gage near Makaha	recording	Oahu
882.3	Poamoho gage no.3 near Wahiawa	non-recording	Oahu
882.4	Poamoho gage no.2 near Wahiawa	recording	Oahu
883.12	Poamoho gage no.1 near Wahiawa	recording	Oahu
884.3	Punaluu gage near Punaluu	non-recording	Oahu
886.4	Kahana at altitude 95 ft. near Kahana	recording	Oahu
886.6	Waikane gage at altitude 75 ft. at Waikane	recording	Oahu
897.1	Kamananui at Pupukea Military Road near Kamananui	recording	Oahu
897.9	Pupukea Road at altitude 1,600 ft. near Haleiwa	recording	Oahu
540.1	Waikolu Stream at altitude 900 ft. near Kalaupapa	non-recording	Molokai
551.5	Kakaako gage near Mauna Loa	recording	Molokai
255.0	Kepuni Gulch near Kaupo	recording	Maui
297.0	Olowalu gage near Olowalu	recording	Maui
xx.x	Pa'auau Gulch (new location)	non-recording	Hawaii
70.7	Waiaha gage at Luawai	non-recording	Hawaii
83.0	Quarry at Saddle Road gage	non-recording	Hawaii
185.4	Upper Hamakua ditch below Kawaiki Stream near Kamuela	non-recording	Hawaii
190.4	Keanuiomano gage near Kamuela	non-recording	Hawaii

Form 9-1366
(May 1996)

U.S. Department of the Interior
U.S. Geological Survey
Joint Funding Agreement
FOR
WATER RESOURCES INVESTIGATIONS

THIS AGREEMENT is entered into as of the 1st day of October 1998 by the U.S. GEOLOGICAL SURVEY, UNITED STATES DEPARTMENT OF THE INTERIOR, party of the first part, and the **Commission on Water Resource Management, State of Hawaii**, party of the second part.

1. The parties hereto agree that subject to the availability of appropriations and in accordance with their respective authorities there shall be maintained in cooperation **on investigations of the water resources in the State of Hawaii,** hereinafter called the program.

2. The following amounts shall be contributed to cover all of the cost of the necessary field and analytical work directly related to this program.

   (a) **$415,175.00** by the party of the first part during the period **October 1, 1998** to **September 30, 1999**

   (b) **$415,175.00** by the party of the second part during the period **October 1, 1998** to **September 30, 1999**

   (c) Additional or reduced amounts by each party during the above period or succeeding periods as may be determined by mutual agreement and set forth in an exchange of letters between the parties.

3. The costs of this program may be paid by either party in conformity with the laws and regulations respectively governing each party.

4. The field and analytical work pertaining to this program shall be under the direction of or subject to periodic review by an authorized representative of the party of the first part.

5. The areas to be included in the program shall be determined by mutual agreement between the parties hereto or their authorized representatives. The methods employed in the field and office shall be those adopted by the party of the first part to insure the required standards of accuracy subject to modification by mutual agreement.

6. During the course of this program, all field and analytical work of either party pertaining to this program shall be open to the inspection of the other party, and if the work is not being carried on in a mutually satisfactory manner, either party may terminate this agreement upon 60 days written notice to the other party.

7. The original records resulting from this program will be deposited in the office of origin of those records. Upon request, copies of the original records will be provided to the office of the other party.

8. The maps, records or reports resulting from this program shall be made available to the public as promptly as possible. The maps, records or reports normally will be published by the party of the first part. However, the party of the second part reserves the right to publish the results of this program and, if already published by the party of the first part shall, upon request, be furnished by the party of the first part, at cost, impressions suitable for purposes of reproduction similar to that for which the original copy was prepared. The maps, records or reports published by either party shall contain a statement of the cooperative relations between the parties.

9. Billing for this agreement will be rendered **quarterly**. Payments of bills are due within 60 days after the billing date. If not paid by the due date, interest will be charged at the current Treasury rate for each 30 day period, or portion thereof, that the payment is delayed beyond the due date. (31 USC 3717; Comptroller General File B-212222, August 23, 1983.).

U.S. GEOLOGICAL SURVEY
UNITED STATES
DEPARTMENT OF THE INTERIOR

By _____
(SIGNATURE & TITLE)
William Meyer, District Chief

STATE OF HAWAII
COMMISSION ON WATER RESOURCE MANAGEMENT

By _____

By _____

By _____

(USE REVERSE SIDE IF ADDITIONAL SIGNATURES ARE REQUIRED)

EXHIBIT 2

SUMMARY OF CHANGES TO THE COOPERATIVE PROGRAM

Fiscal Year	No. of Continuous Stream Gages	No. of Crest-State Stream Gages	No. of Low-Flow Stream Gages	No. Wells Ground Water Levels & Water Quality	No. of Rain Gages	Total $	Comments
1991	49	62	6	187	30	$399,750	6-continuous Stream Gaging Stations transferred to new cooperator (DOA).
1992	43	62	6	187	36	$396,550	FY 1992 to 1995 - No changes to the program but, inflationary cost factor increased program costs. Percent increases were FY 1993 - 4.2%, FY 1994 - 5%, and FY 1995 - 3.3%.
1993	43	62	6	187	36	$413,080	
1994	43	62	6	187	36	$433,734	
1995	43	62	6	187	36	$448,000	
1996	40	59	-	160	36	$407,500	Reductions made to program due to budgetary restraints.
1997	40	59	-	160	36	$407,500	No changes.
1998	41	48	-	160	33	$415,175	FY 1998 Changes: 1. Deleted one continuous stream gage (Pelekuuu Valley) and added two continuous stream gages (in Punaluu Valley) which the Hon. BWS previously funded. Net cost increase to program = $7,675. 2. Savings from the reduction of crest-stage gages and rain gages are used to offset relocation costs for the Hanalei and Hilea Gulch continuous stream gages.
1999	41	47	-	158	32	$415,175	See Table 6 (attached) – Summary of FY 1999 Changes to Program

Note: The USGS waived adding an inflationary factor to the cost of the program since FY 1995 in recognition of the States' fiscal shortfalls.

EXHIBIT 3

TABLE 6: CHANGES TO THE COMMISSION ON WATER RESOURCE MANAGEMENT-U.S. GEOLOGICAL SURVEY COOPERATIVE HYDROLOGIC MONITORING PROGRAM, WATER YEAR 1999

KAUAI

CONTINUOUS SURFACE-WATER STATIONS

16103000 Hanalei River near Hanalei--begin operation in new location

CREST-STAGE GAGES

no changes

MONITORING WELLS

no changes

RAIN GAGES

no changes

OAHU

CONTINUOUS SURFACE-WATER STATIONS

no changes

MONITORING WELLS

3-2006-12 BWS, Kahe Point--discontinue
3-2153-05 DOWALD, Moanalua deep observation well--discontinue
3-2600-04 BWS, Mililani No. 8--replace

RAIN GAGES

773.3, Kalihi Raingage at Kalihi--discontinue (funding from Corps of Engineers is adequate to operate station)

MOLOKAI

CONTINUOUS SURFACE-WATER STATIONS

no changes

CREST-STAGE GAGES

no changes

MONITORING WELLS

no changes

RAIN GAGES

no changes

MAUI

CONTINUOUS SURFACE-WATER STATIONS

no changes

CREST-STAGE GAGES

no changes

MONITORING WELLS

no changes

RAIN GAGES

no changes

HAWAII

CONTINUOUS SURFACE-WATER STATIONS

16770500 Pa'auau Gulch at Pahala--replacement for Hilea Gulch gage, begin operation

CREST-STAGE GAGES

16770500 Pa'auau Gulch at Pahala--replace with continuous station

MONITORING WELLS

no changes

RAIN GAGES

12.13 Hilea Tributary rain gage near Honuapo--relocate

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P.O. BOX 621
HONOLULU, HAWAII 96809

STAFF SUBMITTAL

for the meeting of the
COMMISSION ON WATER RESOURCE MANAGEMENT

March 19, 1999
Honolulu, Oahu

Puu Makakilo, Inc.
REVOCATION OF WATER USE PERMIT
Makakilo GC Wells, Well Nos. 1904-02 & 03 (WUP Nos. 162 & 347)
Kapolei Ground Water Management Area, Oahu

LOCATION MAP: See Exhibit 1

BACKGROUND:

On March 15, 1990, the Commission on Water Resource Management (Commission) approved a permanent water use permit for 1.150 mgd for Well No. 1904-02 for irrigation of the Makakilo Golf Course (WUP No. 162). Because there were concerns regarding the application of the brackish water (580 - 600 ppm) over the basal aquifer, the applicant agreed to install a desalinization plant to treat the water prior to application. The desalinization plant was never built.

On April 21, 1991, a water use permit for Well No. 1904-03 as a backup source for Well No. 1904-02 was administratively approved (WUP No. 347).

Puu Makakilo, Inc. (Puu Makakilo) was a party in the Waiahole Ditch Contested Case Hearing. Puu Makakilo applied for a golf course use over the basal aquifer. Its request to use 0.750 mgd was granted (Decision and Order dated December 24, 1997).

On March 3, 1999, Puu Makakilo submitted an application to abandon/seal the wells.

ANALYSIS/ISSUES

Puu Makakilo was using water for golf course construction in 1992. Since then, the well has been unused. Partial or total nonuse of the water allowed by the permit for a period of four continuous years or more constitutes a ground for revocation of the permit, pursuant to §174C-58(4) Hawaii Revised Statutes (HRS). In this case, the entire 1.150 mgd allocation may be revoked.

This submittal fulfills the hearing requirement under §174C-58 HRS for revocation of a water use permit.

RECOMMENDATION:

Staff recommends that the Commission:

1. Revoke WUP Nos. 162 and 247.

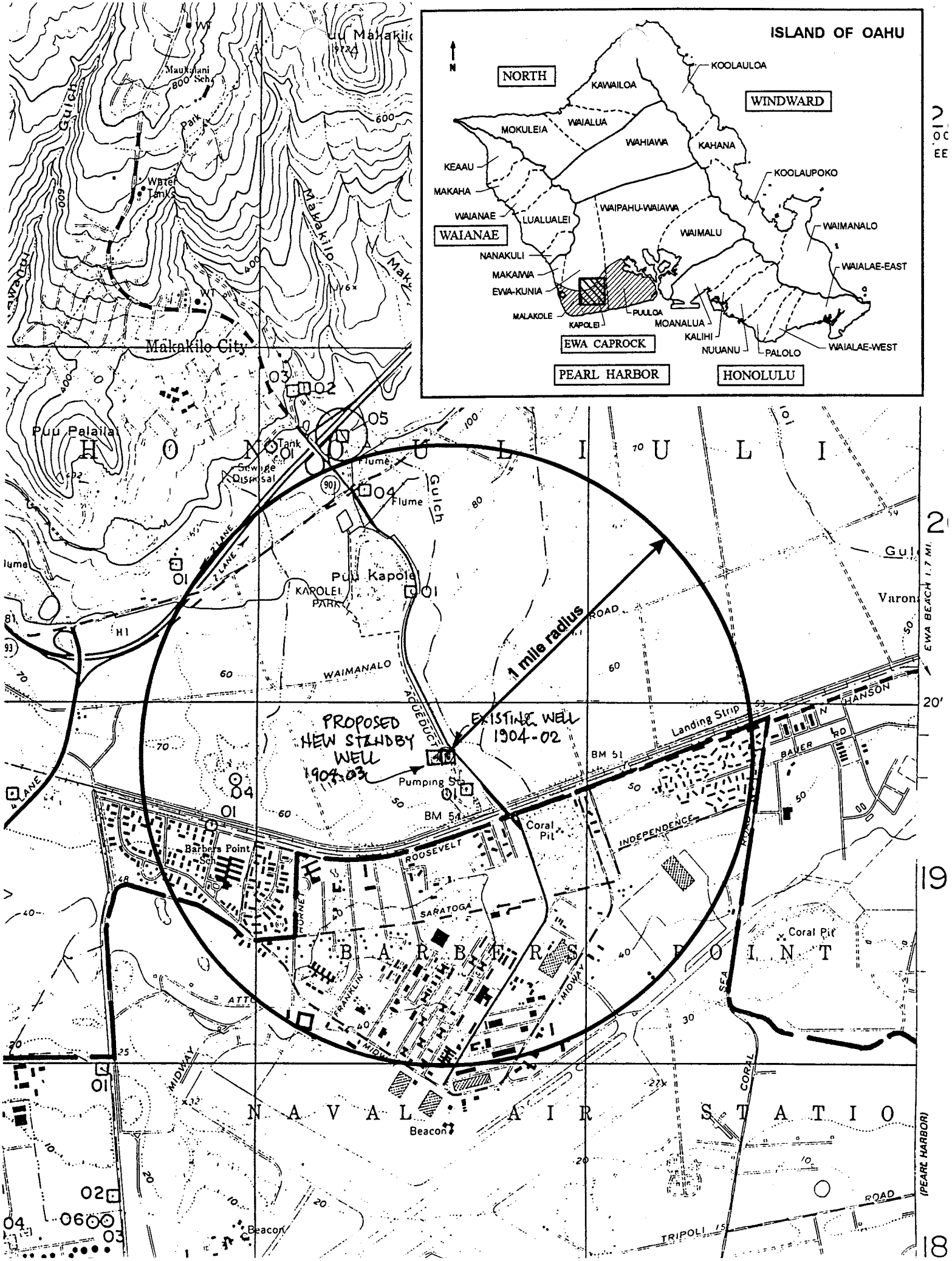
Respectfully submitted,

Edwin T. Sakoda
EDWIN T. SAKODA
Acting Deputy Director

as amended
Approved by Commission on
Water Resource Management
at the meeting held on
MAR 19 1999

Exhibit(s): 1 (Location Map)

AGENDA 1
Item 5


ISLAND OF OAHU
N
NORTH
WINDWARD
KOOLAULOA
KAWAILOA
WAIALUA
MOKULEIA
WAHIAWA
KAHANA
KEAAU
MAKAHA
WAIANAE
LUALUALEI
WAIPAHU-WAIAWA
KOOLAUPOKO
WAIMANALO
WAIMALU
WAIALAE-EAST
NANAKULI
MAKAIWA
EWA-KUNIA
MALAKOLE
KAPOLEI
PUULOA
MOANALUA
KALIHI
NUUANU
PALOLO
WAIALAE-WEST
EWA CAPROCK
PEARL HARBOR
HONOLULU
Mākakilo City
Puu Palailai
HONOULIULI
Puu Kapolei
KAPOLEI PARK
1 mile radius
PROPOSED NEW STANDBY WELL 1904-03
EXISTING WELL 1904-02
Pumping Sta
Barbers Point Sch
BARBERS POINT
NAVAL AIR STATIO
Coral Pit
Landing Strip
WAIMANALO
ROOSEVELT
SARATOGA
INDEPENDENCE
FRANKLIN
MIDWAY
HANSON
BAKER
TRIPOLI
CORAL SEA
EWA BEACH 1.7 MI.
(PEARL HARBOR)
Beacon
H1

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P.O. BOX 621
HONOLULU, HAWAII 96809

STAFF SUBMITTAL

for the meeting of the
COMMISSION ON WATER RESOURCE MANAGEMENT

March 19, 1999
Honolulu, Oahu

Housing & Community Development Corporation of Hawaii
APPLICATION FOR WATER USE PERMIT
East Kapolei Well (Well No. 2003-08), TMK 9-1-16:108
Future Irrigation and Dust Control Use for 0.500 mgd
Kapolei Ground Water Management Area, Oahu

APPLICANT:

Housing & Community Development
Corporation of Hawaii
677 Queen St., Ste. 300
Honolulu, HI 96813

LANDOWNER:

Same

LOCATION MAP: See Exhibit 1

BACKGROUND:

On November 20, 1998, a completed water use permit application was received from the Housing & Community Development Corporation of Hawaii (HCDCH) by the Commission on Water Resource Management (Commission).

On February 8, 1999, an exploratory well construction permit was issued.

Additional information regarding the source, use, notification, objections, and field investigation(s) is provided in Attachment A.

ANALYSIS/ISSUES:

Section 174C-49(a) of the State Water Code establishes seven (7) criteria that must be met to obtain a water use permit. An analysis of the proposed permit in relation to these criteria follows:

Approved by Commission on
Water Resource Management
at the meeting held on
MAR 19 1999

AGENDA 1
Item 6

(1) Water availability

Protection Of The Resource

The current sustainable yield for the Kapolei Aquifer System is defined by a sustainable capacity at all irrigation wells which prohibits individual pumpages that cause the specific well to exceed a 1,000 mg/l chloride cap. There is no aggregate sustainable yield number for the aquifer. Enforcement of the chloride cap provides adequate protection for the aquifer.

The chloride cap is tied to anticipated wastewater reuse, which was planned to occur via a percolation trench to recharge the caprock aquifer with up to 13 million gallons per day (mgd) of treated effluent (Kumagai, 1996, Final Report. Recommendation for Water Reclamation, Nonpotable Water Plan for Oahu, Prepared for: Commission on Water Resource Management, State of Hawaii, and Department of Wastewater Management, City and County of Honolulu). However, the City now plans to deliver R-1 water directly to individual users. In either reuse application, the current sustainable yield method is and has been an effective means to protect the aquifer.

Maximizing The Utility Of The Resource(s)

Maximizing the utility of the caprock is intimately tied to wastewater reuse. As wastewater reuse comes on line, the sustainable yield of the caprock should increase, meaning more pumpage may be sustained under the 1,000 mg/l chloride limit. However, the distribution of reclaimed wastewater is uncertain, which will affect chloride distributions and total nonpotable supply. Although the City has not yet made reclaimed water available for nonpotable uses that will support their plans for urbanization of the Ewa area and the City-required dual water systems for new urban developments, the City has indicated that private irrigation uses over the caprock may be served by reclaimed water by July, 2001. Of the projected total 13 mgd R-1 water from the Honouliuli Wastewater Treatment Plant, 1 mgd is needed for in-plant process water, and 2 mgd is planned for industrial uses at James Campbell Industrial Park. This leaves about 10 mgd available for irrigation needs in the region.

Given the City's current plans, the staff estimates that the potential future supply of nonpotable water for irrigation uses on lands overlying the Kapolei Aquifer System, could be up to about 13 mgd: 10 mgd reclaimed water plus approximately 3 mgd natural sustainable yield (Bauer, 1996) and assumes that 100% of the treated effluent will be available for reuse in Kapolei (which is unlikely since two City golf courses, which are prime candidates for reclaimed water use are located in Puuloa to the east, and the Puuloa area is also where much of the Second City developments will occur). However, the availability of reclaimed water will present permittees with a possible alternative should their wells exceed the 1,000 mg/l chloride limit. Likewise, should the 1,000 mg/l limit not be exceeded, the permittees may continue to pump and may even work out a management plan which would allow for alternating between caprock and wastewater reuse to maximize the economical use of both resources.

Management of the resource via a chloride cap was adopted on May 14, 1997 as an interim management plan, subject to review in two (2) years. By May, 1999 or as total allocations begin to approach the total nonpotable supply, the Commission may consider establishing a regional sustainable yield. It is uncertain whether the chloride cap would be supplanted by a regional sustainable yield number.

Exhibit 2 shows the current permitted uses in the Kapolei Aquifer System. Of the 2.946 mgd current permitted uses, 1.150 mgd may be revoked due to four years of nonuse. (The proposed revocation of WUP Nos. 162 & 247 is submitted as a separate item on this agenda). Assuming the proposed revocation action is approved, then the remaining 1.796 mgd allocations plus this proposed use of an additional 0.500 mgd is well within the natural sustainable yield of 3 mgd. Exhibit 3 shows chlorides at Kapolei wells (HFDC A to E) have remained relatively stable at 500 mg/l or less through 1998.

(2) Reasonable-beneficial

Section 174C-3 HRS defines "reasonable-beneficial use" is

"...the use of water in such a quantity as is necessary for economic and efficient utilization, for a purpose, and in a manner which is both reasonable and consistent with the state and county land use plans and the public interest".

The proposed use is for 0.500 mgd of brackish, nonpotable water for dust control during construction; landscaping, turf, and roadway irrigation; and contingency (see Exhibit 4).

The proposed use of water for landscape and turf irrigation, 4,000 gpd/ac to 4080 gpd/ac, is within the guideline established by the Commission for the Ewa area (May 14, 1997 Staff Submittal). The proposed use of water for dust control, 1,000 gpd/ac, is consistent with the Commission guideline.

An issue is the proposed allocation of 75,000 gpd for contingency purposes. The applicant has clarified that additional water was requested to be consistent with master plan projections and in case plans to develop a 5-acre nursery and 15.4-acre park at TMK 9-1-16:108(por) were realized. Although uncertain at the time of the application filing, the park and nursery are now part of the project and requested quantities for 4,000 gpd/ac for the park and 2,400 gpd/ac for the nursery (which totals to 73,600 gpd) are within the Commission guidelines.

Other reasonable-beneficial use issues will be discussed in the following sections.

(3) Interference with other existing legal uses

Since there are no Ewa Caprock ground-water models (solute-transport) which can accurately predict chloride response to pumpage at individual well sites, close monitoring of the resource and enforcement of the chloride cap is critical to protect the resource in this interim period while the City finalizes plans to implement a reclamation program. Exhibit 5 shows that the caprock aquifer (particularly the Puuloa area to the east) was significantly influenced

by sugarcane irrigation practices and is still in a state of flux. Currently, all interim permittees are required to submit weekly reports of pumpage, water levels, chlorides, and water temperature (unless a variance from this requirement has been approved) according to the chloride sampling protocol (Exhibit 6). All permittees have been put on notice that the reporting requirement will be strictly enforced.

Although enforcement of the 1,000 mg/l chloride cap at each well site will provide adequate protection for the resource, it may not be sufficient to preclude well interference. However, not only will wastewater reuse further protect the resource, it will also help to reduce the effects of well interference that may cause individual wells to exceed the 1,000 mg/l chloride cap. A Special Condition has been added to all interim permits for new irrigation uses in the Kapolei Aquifer System that puts the permittee on notice of the risk of reliance on caprock ground water and its uncertain sustainable yield.

(4) Public interest

Section 174C-2 Haw. Rev. Stat. states that the Water Code shall be liberally interpreted to obtain maximum beneficial use of the State's waters for purposes such as irrigation uses. Reasonable-beneficial water use for irrigation, that is consistent with the conditions under §174C-49(a) Haw. Rev. Stat., is deemed to be in the public interest.

(5) State & county general plans and land use designations

The Land Use Commission (LUC) has commented that a boundary change to the Urban District would be necessary to permit the Sports Complex. The proposed use of water for the Sports Complex is therefore not consistent with the state land use designation. A petition to reclassify the area to the Urban District was submitted to the LUC on March 5, 1999. The applicant estimates that the LUC will act on the petition within six (6) months and is requesting that the Commission defer action on the proposed water use for the Sports Complex for six (6) months.

(6) County land use plans and policies

The proposed uses are consistent with county land use plans and policies.

(7) Interference with Hawaiian home lands rights

All permits are subject to the prior rights of Hawaiian home lands. The Department of Hawaiian Home Lands (DHHL) and the Office of Hawaiian Affairs have reviewed this application. No concerns or objections were raised.

SUMMARY:

Based on the above analyses, the proposed water use for dust control and landscaping for the North-South Roadway (163,000 gpd), for the 15.4-acre park (61,600 gpd), and the 5-acre nursery (12,000 gpd) meet the conditions for a water use permit. The staff is recommending that the Commission subject this proposed permit to a similar set of standard and special conditions that have been attached to other new water use permits approved for the Kapolei Aquifer System.

RECOMMENDATION:

Staff recommends that the Commission:

1. Approve the issuance of an interim water use permit to the Housing & Community Development Corporation of Hawaii for the reasonable and beneficial use of 236,600 gallons per day of brackish water for North-South Roadway (TMK 9-1-16:109) landscape irrigation and dust control and nursery and park irrigation (TMK 9-1-16:108 (por)) from the East Kapolei Well (Well No. 2003-08), subject to the standard water use permit conditions listed in Attachment B and the following special conditions:

   a. Should an alternate permanent source of water be found for this use, then the Commission reserves the right to revoke this permit, after a hearing.

   b. In the event that the tax map key at the location of the water use is changed, the permittee shall notify the Commission in writing of the tax map key change within thirty (30) days after the permittee receives notice of the tax map key change.

   c. Pumping shall cease immediately if the chloride reports show that the brackish water developed in the well exceeds 1,000 mg/l of chloride.

   d. The duration of the interim permit shall be to
      a) to July, 2001, or
      b) until treated wastewater is available and acceptable for use, or
      c) until such time that a significant change in permitted, actual, or projected uses or water supply occurs.

   e. This permit is approved under the assumption that wastewater will become available for reuse as an alternative supply source.

   f. Require adherence to the chloride sampling protocol (Exhibit 6) and the submittal of **weekly** chloride data.

   g. Require adherence to the Conservation Conditions (Exhibit 7).

2. Defer action on the proposed use of 262,000 gpd for the Sports Complex for six (6) months. If documentation from the Land Use Commission confirming the reclassification of TMK 9-1-16:108(por) from the Agricultural to the Urban District is not submitted to the Commission within six (6) months from the date of this submittal, then this portion of the application shall be deemed denied without prejudice upon expiration of the six-month deferral period.

Respectfully submitted,

Edwin T. Sakoda

EDWIN T. SAKODA
Acting Deputy Director

Attachment(s):
A (Water Use Permit Detailed Information)
B (Water Use Permit Standard Conditions)

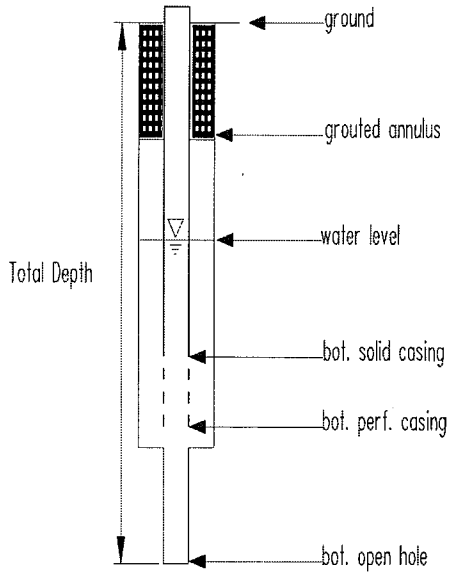
Exhibit(s):
1 (Location Map)
2 (Existing Water Use Permits and 12-Month Moving Average Withdrawal)
3 (Chloride and Pumpage of Ewa Shallow Wells, Ewa Caprock, Oahu)
4 (Description and Schedule for Proposed Use)
5 (Chloride and Pumpage of Ewa Plantation Shallow Wells, Ewa Caprock, Oahu)
6 (Chloride Sampling Protocol)
7 (Conservation Conditions)

Staff Submittal March 19, 1999

WATER USE PERMIT DETAILED INFORMATION

Source Information

AQUIFER:	Kapolei System, Ewa Caprock Sector, Oahu
Sustainable Yield:	NA mgd
Existing Water Use Permits:	2.946 mgd
Available Allocation:	NA mgd
Total of other pending allocations:	0 mgd
PROPOSED WELL:	East Kapolei Well (Well No. 2003-08)
Location:	Ewa, Oahu, TMK:9-1-16:108(por); 9-1-16:109
Year Drilled:	NA
Casing Diameter:	12 in.
Elevations (msl= 0 ft.)	
Water Level:	NA ft.
Ground:	56 ft.
Bottom of Solid Casing:	4 ft.
Bottom of Perforated:	-23 ft.
Bottom of Open Hole:	-23 ft.
Total Depth:	81 ft.
Grouted Annulus Depth:	50 ft.
Pump Capacity	350 gpm



Use Information

Quantity Requested:	500,000 gallons per day.
Proposed Type of Water Use:	Landscape Irrigation; Dust Control
Place of Water Use:	TMK 9-1-16:108 (por); 9-1-16:109
Reported Water Usage:	NA gpd

ATTACHMENT A

Kapolei Aquifer System
Current 12-Month Moving Average Withdrawal (See Exhibit 2): 1.222 mgd

Nearby Surrounding Wells

There are twenty-two (22) other wells within a mile of the well (see Exhibit 1). Nine (9) of these wells are currently being used for irrigation or industrial purposes. Eleven (11) of the wells have been sealed, and one (1) well is currently unused.

Public Notice

In accordance with HAR §13-171-17, a public notice was published in the Honolulu Advertiser on January 6 and 13, 1999 and a copy of the notice was sent to the Mayor's office. Copies of the completed application were sent to the Department/Board of Water Supply, Planning Department, Department of Land Utilization (Oahu only), Department of Health, Department of Hawaiian Home Lands, Office of Hawaiian Affairs, the various divisions within the Department of Land and Natural Resources, and other interested parties for comments. Written comments and objections to the proposed permit were to be submitted to the Commission by January 28, 1999.

Objections

The public notice specifies that an objector meet the following requirements: (1) state property or other interest in the matter; (2) set forth questions of procedure, fact, law, or policy, to which objections are taken; (3) state all grounds for objections to the proposed permits, (4) provide a copy of the objection letter(s) to the applicant, and (5) submit objections meeting the previous requirements to the Commission by January 28, 1999.

To the best of staff's knowledge there are no objectors who have property interest within the Kapolei Aquifer System or who will be directly and immediately affected by the proposed water use.

Briefs in Support

Responses to objections, or briefs in support, regarding the application are required to be filed with the Commission ten (10) days after an objection is filed and, presumably, copies are served to the applicant. No briefs in support were filed with the Commission.

Field Investigation

Because this is for a new well and water use, no field investigation was conducted.

STANDARD WATER USE PERMIT CONDITIONS

1. The water described in this water use permit may only be taken from the location described and used for the reasonable beneficial use described at the location described above. Reasonable beneficial uses means "the use of water in such a quantity as is necessary for economic and efficient utilization which is both reasonable and consistent with State and County land use plans and the public interest." (HRS § 174C-3)

2. The right to use ground water is a shared use right.

3. The water use must at all times meet the requirements set forth in HRS § 174C-49(a), which means that it:

   a. Can be accommodated with the available water source;
   b. Is a reasonable-beneficial use as defined in HRS § 174C-3;
   c. Will not interfere with any existing legal use of water;
   d. Is consistent with the public interest;
   e. Is consistent with State and County general plans and land use designations;
   f. Is consistent with County land use plans and policies; and
   g. Will not interfere with the rights of the Department of Hawaiian Home Lands as provided in section 221 of the Hawaiian Homes Commission Act and HRS § 174C-101(a).

4. The ground water use here must not interfere with surface or other ground water rights or reservations.

5. The ground water use here must not interfere with interim or permanent instream flow standards. If it does, then:

   a. A separate water use permit for surface water must be obtained in the case an area is also designated as a surface water management area;
   b. The interim or permanent instream flow standard, as applicable, must be amended.

6. The water use authorized here is subject to the requirements of the Hawaiian Homes Commission Act, as amended, if applicable.

7. The water use permit application and submittal, as amended, approved by the Commission at its **March 19, 1999** meeting are incorporated into this permit by reference.

8. Any modification of the permit terms, conditions, or uses may only be made with the express written consent of the Commission.

9. This permit may be modified by the Commission and the amount of water initially granted to the permittee may be reduced if the Commission determines it is necessary to:

   a. protect the water sources (quantity or quality);
   b. meet other legal obligations including other correlative rights;
   c. insure adequate conservation measures;
   d. require efficiency of water uses;
   e. reserve water for future uses, provided that all legal existing uses of water as of June, 1987 shall be protected;
   f. meet legal obligations to the Department of Hawaiian Home Lands, if applicable; or
   g. carry out such other necessary and proper exercise of the State's and the Commission's police powers under law as may be required.

   Prior to any reduction, the Commission shall give notice of its proposed action to the permittee and provide the permittee an opportunity to be heard.

10. If the ground water source does not presently exist, the new well shall be completed, i.e. able to withdraw water for the proposed use on a regular basis, within twenty-four (24) months from the date the water use permit is approved.

11. An approved flowmeter(s) **must** be installed to measure monthly withdrawals and a monthly record of withdrawals, salinity, temperature, and pumping times must be kept and reported to the Commission on Water Resource Management on forms provided by the Commission on a **monthly** basis (attached).

12. This permit shall be subject to the Commission's periodic review of the **Kapolei** Aquifer System's sustainable yield. The amount of water authorized by this permit may be reduced by the Commission if the sustainable yield of the **Kapolei** Aquifer System, or relevant modified aquifer(s), is reduced.

13. A permit may be transferred, in whole or in part, from the permittee to another, if:

    a. The conditions of use of the permit, including, but not limited to, place, quantity, and purpose of the use, remain the same; and
    b. The Commission is informed of the transfer within ninety days.

    Failure to inform the department of the transfer invalidates the transfer and constitutes a ground for revocation of the permit. A transfer which involves a change in any condition of the permit, including a change in use covered in HRS § 174C-57, is also invalid and constitutes a ground for revocation.

14. The use(s) authorized by law and by this permit do not constitute ownership rights.

15. The permittee shall request modification of the permit as necessary to comply with all applicable laws, rules, and ordinances which will affect the permittee's water use.

16. The permittee understands that under HRS § 174C-58(4), that partial or total nonuse, for reasons other than conservation, of the water allowed by this permit for a period of four (4) continuous years or more may result in a permanent revocation as to the amount of water not in use. The Commission and the permittee may enter into a written agreement that, for reasons satisfactory to the Commission, any period of nonuse may not apply towards the four-year period. Any period of nonuse which is caused by a declaration of water shortage pursuant to section HRS § 174C-62 shall not apply towards the four-year period of forfeiture.

17. The permittee shall prepare and submit a water shortage plan within 30 days of the issuance of this permit as required by HAR § 13-171-42(c). The permittee's water shortage plan shall identify what the permittee is willing to do should the Commission declare a water shortage in the **Kapolei** Ground Water Management Area.

18. The water use permit granted shall be an interim water use permit, pursuant to HAR § 13-167-3(6). The final determination of the water use quantity shall be made within five years.

19. The water use permit shall be subject to the Commission's establishment of instream standards and policies relating to the Stream Protection and Management (SPAM) program, as well as legislative mandates to protect stream resources.

20. The permittee understands that any willful violation of any of the above conditions or any provisions of HRS § 174C or HAR § 13-171 may result in the suspension or revocation of this permit.

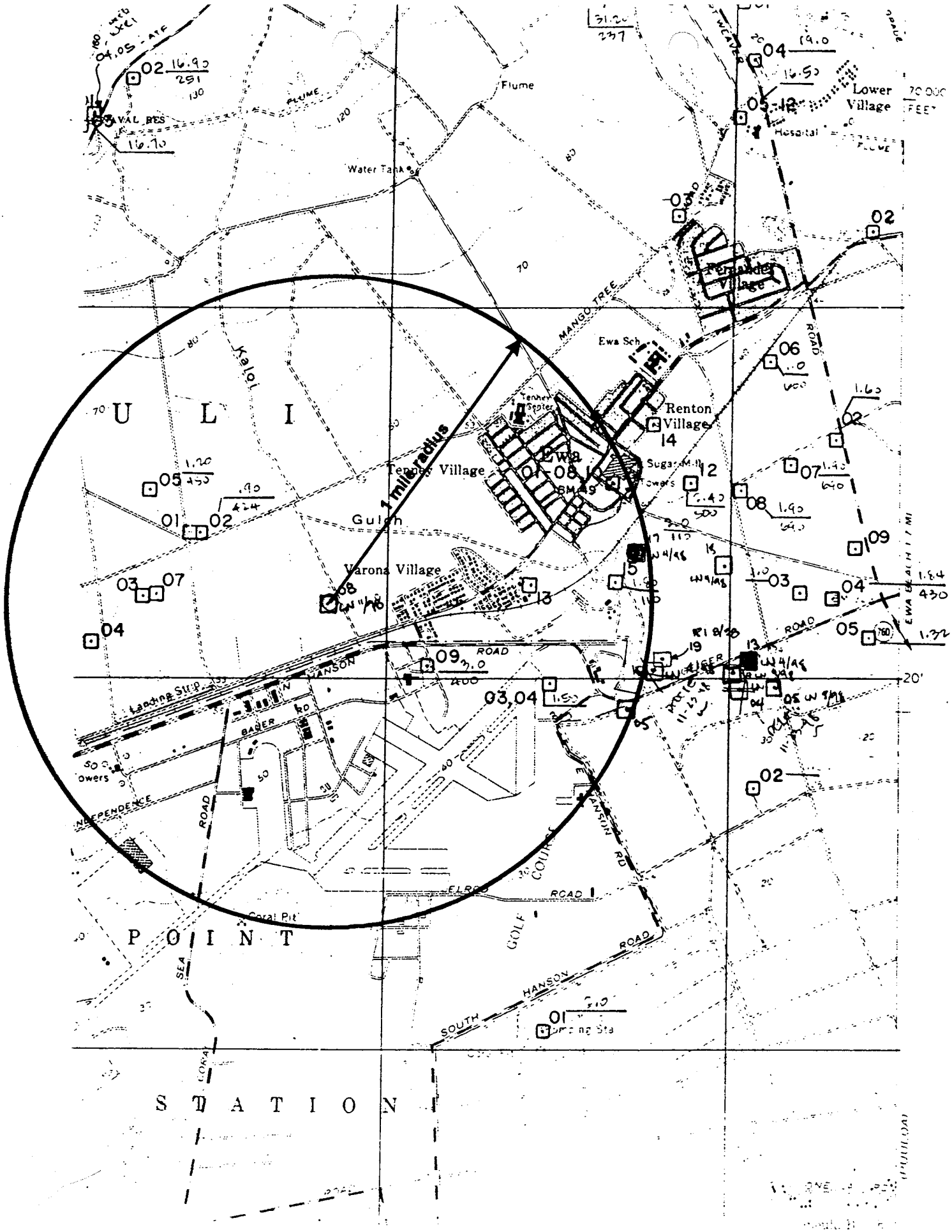

1 mile radius
Flume
Water Tank
Lower Village
Hospital
Ewa Sch
Renton Village
Tenney Village
Ewa
Varona Village
Gulch
Kaloi
MANGO TREE ROAD
HANSON ROAD
BAKER ROAD
INDEPENDENCE ROAD
ELROY ROAD
GOLF COURSE
SOUTH HANSON ROAD
Coral Pit
U L I
P O I N T
S T A T I O N

EXHIBIT 1

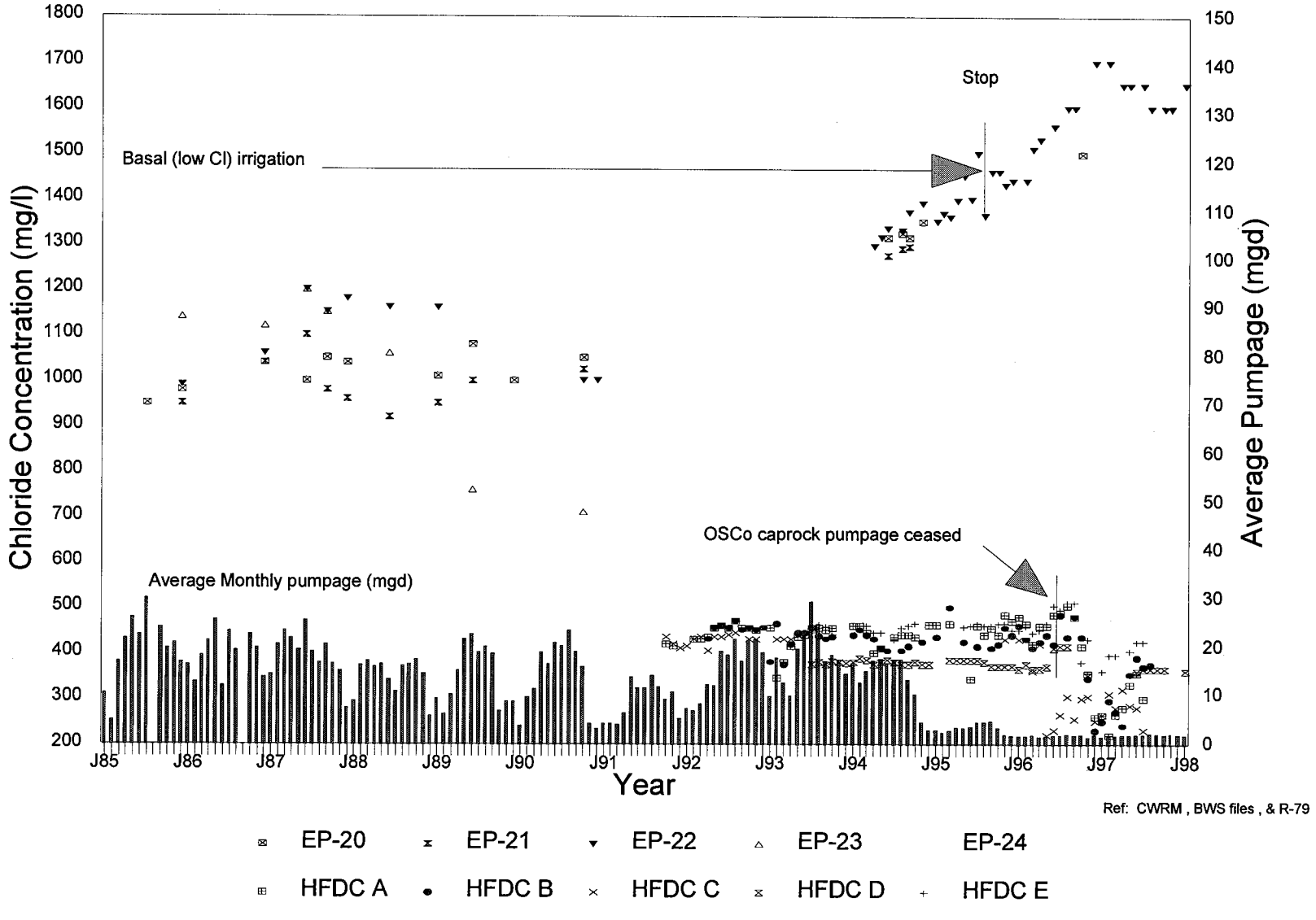
Current Active Water Use Permits (Excluding salt water use permits\..wup-wma.rpt) March 3, 1999

ISLAND OF **OAHU**
WMA Aquifer System: **KAPOLEI**
Sustainable Yield = **mgd**

Wup No.	Approved	Applicant	Well No	Well Name	WUP (mgd)	12-MAV (mgd)	Diff (mg
162	3/15/90	PUU MAKAKILO INC.	1904-02	MAKAKILO GC	1.150	ϕ	
247	4/24/91	PUU MAKAKILO INC.	1904-03	MAKAKILO GC STBYDB			
182	5/14/97	CAMPBELL ESTATE	1905-08	KAPOLEI IRR 1	0.302	0.152	
182	5/14/97	CAMPBELL ESTATE	1905-10	KAPOLEI IRR 2		0.045	
438	5/14/97	KAPOLEI PEOPLE'S, INC.	2003-01	KAPOLEI G.COURSE A	1.000	0.340	
438	5/14/97	KAPOLEI PEOPLE'S, INC.	2003-02	KAPOLEI G.COURSE A		0.409	
432	5/14/97	STATE HFDC	2003-04	KAPOLEI IRR D	0.494	0.064	
438	5/14/97	KAPOLEI PEOPLE'S, INC.	2003-05	KAPOLEI G.COURSE A		0.115	
432	5/14/97	STATE HFDC	2003-07	KAPOLEI IRR C-1		0.097	
				9 Permits Totalling	2.946		
				Available SY		1.222	

EXHIBIT 3

Chloride and Pumpage of Ewa Shallow Wells, Ewa Caprock, Oahu



Ref: CWRM , BWS files , & R-79

Proposed Schedule of Nonpotable Water Demand

16. REMARKS, EXPLANATIONS

Sports Complex construction estimated to begin 7/99 and be completed 7/2001

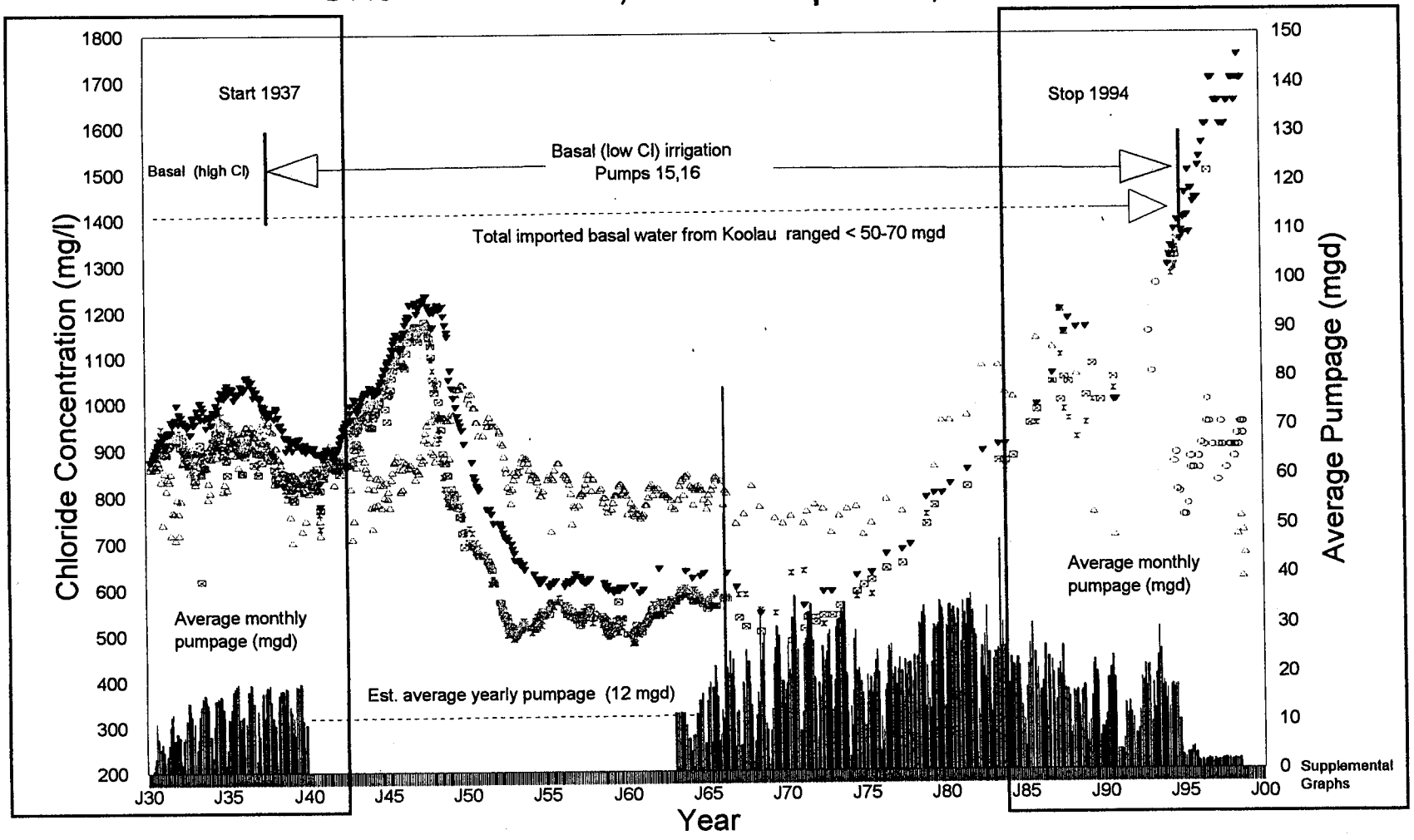
North-South Roadway construction estimated to begin 1/2000 and be completed 7/2001

PROJECT NAME & PHASES	EXISTING or NEW USE	POTABLE or NONPOTABLE	TMK	CURRENT COUNTY ZONING CODE	UNITS or NET ACRES	GPD/UNIT or GPD/ACRE	4-YEAR PROJECTED DEMAND				TOTAL GPD
							YEAR 1 (year)	YEAR 2 (year)	YEAR 3 (year)	YEAR 4 (year)	
1. Sports Complex	New	Nonpotable	9-1-16:108(por)	AG-1	64.3	1000 4080	32,000 --	64,300 87,000	32,000 262,000	-- 262,000	262,000
2. North-South Roadway	New	Nonpotable	9-1-16:109	AG-1	40.7	1000 4000	-- --	40,000 81,000	20,000 163,000	-- 163,000	163,000
3.									Contingency		75,000
4.											
5.											
6. * 1,000 gpd/ac for dust control during construction (see remarks above)											
7. 4,800 gpd/ac for landscaping and turf in the sports complex located in Ewa area, estimated to start irrigation Sept. 2000											
8. 4,000 pgd/ac for landscaping & irrigation along roadway, estimated to start irrigation June 2000											
9.											
10.											
TOTAL GPD											500,000

EXHIBIT 4

EXHIBIT 5

Chloride and Pumpage of Ewa Plantation Shallow Wells, Ewa Caprock, Oahu



Ref: CWRM , BWS files , R-79, & Stearns (1935, 1940)

EP-20 EP-21 EP-22 EP-23 EP-24 EP27,28 EP30

GUIDELINES FOR CHLORIDE CONCENTRATION SAMPLING FOR EWA CAPROCK

1. Sample Collection

- Sampling Schedule

The sampling schedule depends upon your pump capacity:

Pump Capacity (gpm)	Sampling Schedule
Less than or equal to 50	Once a month
Greater than 50	Once a week

- When to Sample

Before taking a sample, allow a minimum length of time to elapse after turning on the pump. This minimum time can be read off the attached table for your well casing diameter and your pump capacity. If you sample 20 minutes after the minimum time, you should consistently sample 20 minutes after the minimum time each time you take samples.

- Sample Bottle

Use a plastic container and cap that holds a volume of about a pint. Rinse the container three times with the water to be sampled before taking the sample. Also rinse the cap with sample water.

- Labeling

On the sample bottle, affix a label that contains the following information:

Well No.
Date
Time Sampled
Elapsed Time after pump on
Sampler's Name
Water Temperature (if available)
Pumping Rate (prior to sampling)

EXHIBIT 6

2. Determination of Chloride Concentration

- Private Laboratories

  If the sample is sent to a private laboratory, then prepare the water sample and label the bottle in the manner described above.

  Private laboratories will use methods that are more accurate than field methods described below.

- Hach Kit (Drop Count Titrator)

  Be aware of the approximate chloride concentration range in your well. Use the appropriate sample bottle for titration. Be consistent with the end-point color change.

  For low chloride concentrations (5-100 mg/l) each drop will equal 5 mg/l. For higher concentrations (20-400 mg/l) each drop equals 20 mg/l. Other kits for concentrations greater than 400 mg/l (500-10,000 mg/l) each drop is equal to 500 mg/l. Obviously, for water greater than 400 mg/l, a "drop-count" Hach Kit is not appropriate, and a digital titrator, described below, should be used.

- Hach Kit (Digital Titrator)

  A digital titrator is the appropriate method for water with greater than 400 mg/l chloride. A digital titrator using silver nitrate is accurate to within 10 mg/l for a chloride range from 10-10,000 mg/l, and for a titrator using mercuric nitrate accuracy varies from 0.1-20 mg/l for a chloride range of 10-8,000 mg/l.

  Note: Be consistent with the end-point color. Silver nitrate ages and needs to be replenished within the recommended guidelines of the Hach Company.

- Other Methods

  An ion-selective probe for chloride is available, and can measure concentration from 1.8-35,500 mg/l.

3. Reporting Results

- How to Report

The following information should be entered on the "Monthly Ground Water Use Report" form provided by the Commission on Water Resource Management:

1. Chloride concentration (mg/l) and temperature (°F) in the columns provided.

Under "Notes" Section of the Monthly Water Use Report:

2. Method used for chloride analysis:_____

3. Total elapsed time before sampling:_____

If there are any questions, please call the Commission on Water Resource Management staff at 587-0265 on Oahu or toll free from the neighbor islands 1-800-468-4644 ext. 70265.

FIVE WELL VOLUMES[1] PLUS 60 MINUTES MINIMUM TIME BEFORE CHLORIDE SAMPLING		
CASING DIAMETER (in.)	PUMP CAPACITY (gpm)	MINIMUM TIME (min.)
6	10-20 20-50	140 110
8	10-20 20-50 50-100 100-250 >250	190 125 85 75 75
12	10-20 20-50 50-100 100-250 250-500 500-700 700-1000 >1000	360 210 120 90 75 68 68 68
16	10-20 20-50 50-100 100-250 250-500 500-700 700-1000 >1000	560 310 160 110 80 70 65 65
20	50-100 100-250 250-500 500-700 700-1000 >1000	220 140 95 78 72 72

[1] Assumes saturated well depth of 100 feet.

[2] Five well volumes is a standard guideline recommended by EPA.

CONSERVATION CONDITONS
EWA CAPROCK WATER USE PERMITS

1. The permittee shall adopt self-administered water conservation programs and plans with collective monitoring to protect and maintain the caprock resource. Water conservation programs and plans shall be submitted to the Commission within 60 days from the date of Commission approval.

2. Water conservation programs and plans shall address (as applicable) but not be limited to the following:

   a. Reduce the demand for non-potable water by:

      - Identifying and utilizing water efficient plants and drought tolerant plants for landscaping and quantifying their demands (Xeriscape);
      - Mulching planting areas with organic materials, etc., to minimize evaporation;
      - Efficiently maintaining the plants;
      - Improving land management practices to conserve water.

   b. Improve efficiency in use and reduce losses and waste of non-potable water by:

      - Using efficiently designed landscaping and irrigation systems;
      - Monitoring irrigation requirements and controlling usage accordingly;
      - Managing irrigation scheduling to minimize water demand;
      - Eliminating opportunities for water wastage;
      - Maintaining and improving irrigation systems as necessary.

   c. Industrial users should employ the recirculation of cooling water and the reuse of cooling and process water.

3. The permittee shall pursue and participate in alternative non-potable water source development and use such as wastewater reuse (direct reuse and/or recharge injection).

4. In the event that water conservation programs and plans are not complied with or that a waste of water is occurring, the Commission shall proceed with the necessary actions to revoke this permit.

EXHIBIT 7

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P.O. BOX 621
HONOLULU, HAWAII 96809

STAFF SUBMITTAL

for the meeting of the
COMMISSION ON WATER RESOURCE MANAGEMENT

March 19, 1999
Honolulu, Oahu

Revisions to
Hawaii Well Construction and Pump Installation Standards

Background:

§174C-86, Hawaii Revised Statutes (HRS) requires the Commission on Water Resource Management (Commission) to adopt minimum standards for the construction of wells and the installation of pumps and pumping equipment. The administrative rule implementing this section of the State Water Code is § 13-168-14, Hawaii Administrative Rules (Rule). The Rule originally incorporated by reference, as minimum standards, two documents: 1) Water System Standards, State of Hawaii, 1985 and 2) American Water Works Association Standards. The Rule allows the Commission to review and modify these minimum standards as necessary.

On January 23, 1997, the Commission approved the adoption of the Hawaii Well Construction and Pump Installation Standards (HWCPIS) to replace the two documents incorporated by reference in the Rule. The edited January 23, 1997 version of the HWCPIS is included as Attachment A.

Proposed Revisions

The primary purpose for this revision is to clarify Section 1.6, Well Drillers and Contractors, which states in part:

> All work required in the construction, modification, or sealing of wells shall be performed by well drillers (with a C-57 license) or general contractors (with a C license)

deferred
MAR 19 1999

AGENDA 1
Item 7

licensed by the Hawaii Department of Commerce and Consumer Affairs (DCCA), Division of Professional and Vocational Licensing.

We have since received clarification from DCCA that well drilling work must be performed by a contractor with specifically a C-57 license, not just a C license. The only exemption from the C-57 license requirement is if it is for a public works project (§ 444-2, HRS).

Because the existing language is not clear, any person with a C license subclass instead of the appropriate C-57 license could apply to construct a well. Therefore, we would like to clarify the language and at the same time, take the opportunity to make other minor corrections and clarifications to the HWCPIS.

We are planning, in the near future, to address more substantive revisions such as size of the annular space, clearer definition of test hole, accuracy of measurements, etc. However, we propose to send those issues out for comments from the public and other affected interests before bringing them to the Commission for approval.

The revisions proposed by this submittal are as follows:

- deletions are in strikeout format;
- additions are underlined and in bold lettering.

Additionally, pump test forms are attached (Attachments B&C) for further information.

Recommendation:

That the Commission adopt the proposed revisions to the Hawaii Well Construction and Pump Installation Standards as indicated in Attachment A.

Respectfully submitted,

Edwin T. Sakoda

EDWIN T. SAKODA
Acting Deputy Director

Attachments: A Hawaii Well Construction and Pump Installation Standards, Revised March 1999.

B Step-Drawdown Test Form

C Constant-Rate Test Form

Department of Land and Natural Resources

COMMISSION ON WATER RESOURCE MANAGEMENT

HAWAII
Well Construction & Pump Installation STANDARDS

Honolulu, Hawaii
Revised March 1999

ATTACHMENT A

BENJAMIN J. CAYETANO
Governor

DEPARTMENT OF LAND AND NATURAL RESOURCES

COMMISSION ON WATER RESOURCE MANAGEMENT

~~Michael D. Wilson~~ **Timothy E. Johns**, Chairperson

Bruce S. Anderson
Richard Cox
Robert G. Girald
~~Lawrence H. Miike~~
David A. Nobriga
H.M. Richards

~~**DEPARTMENT OF LAND AND NATURAL RESOURCES**~~

~~Michael D. Wilson, Chairperson~~
~~Rae M. Loui, Deputy for Water Resource Management~~

FOREWORD

About 50 percent of Hawaii's water supply comes from ground-water sources. Ground water, which is also used for agricultural, industrial, and domestic purposes, is the principal source of municipal water supplies in Hawaii. Consequently, protecting the quality of ground water throughout the State is essential to Hawaii's future well being.

Improperly and inadequately constructed wells can cause pollution of ground-water sources to the point of requiring cessation of use or expensive treatment before use. The Hawaii State Water Code and the Administrative Rules of the Department of Land and Natural Resources require the Commission on Water Resource Management to develop minimum standards for the construction, modification, repair/maintenance, and sealing/abandonment of wells in order to protect the quality of Hawaii's ground-water resources.

The State Department of Health and ~~C~~county water supply departments also play a critical role in maintaining drinking water sources and protecting ground-water quality. Consequently, these government agencies may have adopted or may adopt in the future more stringent standards for wells than are provided in these state-wide minimum standards.

ACKNOWLEDGMENT

This report was prepared after consideration of all comments and suggestions from private parties and public agencies. Private parties included individuals, well drillers, water users, and consultants. Public agencies included ~~C~~ county water departments, State Department of Health, and State Department of Land and Natural Resources (Land Division).

Many comments and suggestions were received orally at public hearings and in writing and the Commission on Water Resource Management wishes to thank all for their time and effort during the review process.

TABLES

Part 1.

GENERAL PROVISIONS

Part 1.
GENERAL PROVISIONS

Section 1.1 Purpose and Scope

These Standards shall be known as the **Hawaii Well Construction and Pump Installation Standards** of the Department of Land and Natural Resources and are referred to hereinafter as the "Standards."

These Standards establish **minimum** requirements for the purpose of protecting and preventing the pollution, contamination, and wasting of ground water in the State of Hawaii in the course of:

- Construction of wells,
- Modification of wells,
- Abandonment and permanent sealing of wells and test borings, and
- Installation and repair of pumps.

These Standards apply to all wells constructed for the purpose of locating, exploring, monitoring, developing, injecting, or recharging of ground-water aquifers. However, only Part 3, "Well Abandonment/Sealing" of these Standards apply to test borings (temporary excavations or drilled holes whose purpose is the immediate determination of hydrologic or soil conditions at a site).

These minimum Standards do not preclude other enforcing agencies, state or county, from establishing more stringent standards to meet their objectives.

Section 1.2 Authority

Under § 174C-82, Hawaii Revised Statutes, the Commission must develop these standards. These Standards fulfill ~~Hawaii Administrative Rules 168-14 and Section 174C-86 of the State Water Code (Hawaii Revised Statutes)~~ **§ 174C-86 of the State Water Code**

(Hawaii Revised Statutes) and Hawaii Administrative Rules § 13-168-14 which read as follows:

"§174C-86 Well Construction and Pump Installation Standards.

(a) The commission shall adopt minimum standards for the construction of wells and the installation of pumps and pumping equipment. The standards shall be such as to ensure the safe and sanitary maintenance and operation of wells, the prevention of waste, and the prevention of contamination of the waters. The minimum standards for well construction shall include the criteria for well location and the procedures for grouting, sealing, capping, and plugging wells. They shall also provide for the installation of devices to measure the amount of ground water being withdrawn from the wells. The minimum standards for the installation of pumps and pumping equipment shall include the required equipment characteristics and construction.

(b) If any well construction or pump installation standard is violated and as a consequence ground water is wasted or any well is contaminated, the commission, after giving notice of the defect to the owner of the land on which the well is located and giving such owner a reasonable time to correct the defect, may itself correct the defect and charge the land owner for the cost of such correction. Such cost constitutes a lien on the land until paid. The lien may be foreclosed in any court of competent jurisdiction, and in such foreclosure suit the court shall allow the commission reasonable attorney's fees."

§13-168-14 Well construction and pump installation standards.

(a) The minimum standards referenced in this section, shall be such as to ensure the safe and sanitary maintenance and operation of wells, the prevention of waste, and the prevention of contamination of ground water aquifers. The standards for well construction specified in Volume I, Part III, section 5, of the publication entitled Water System Standards, State of Hawaii, 1985, adopted by the counties, and as may be amended, are hereby incorporated by reference.

(b) The minimum standards for the installation of pumps and pumping equipment shall also provide for the installation of devices to measure the amount of ground water being withdrawn from the wells. Standards specified in the American Water Works Association Standards (ANSI/AWWA E101-77), and as may be amended, are hereby incorporated by reference.

(c) The well construction and pump installation standards referenced in this section shall serve as minimum guidelines and shall be subject to review and modification by the commission.

(d) If any well construction or pump installation standard is violated and as a consequence ground water is wasted or any well is contaminated, the commission, after giving notice of the defect to the owner of the land on which the well is located, and giving such owner a reasonable time to correct the defect, may itself correct the defect and charge the land owner for the cost of such correction. Such cost constitutes a lien on the land until paid. The lien may be foreclosed in any court of competent jurisdiction, and in such foreclosure suit, the court shall allow the commission reasonable attorney's fees.

Section 1.3 Standards of Other Agencies

(a) **New Drinking Water Wells**

In addition to the requirements of these minimum Standards, all wells to be used to supply a public water system must meet the requirements of the State Department of Health, Safe Drinking Water Branch, under their rules, Title 11, Chapter 20, entitled "Rules Relating to Potable Water Systems" and as may be amended.

In addition to the requirements of these minimum Standards, all wells to be used by the Water Departments of the respective Counties of the State of Hawaii shall meet their standards specified in Volume I, Part III, Section 5, "Water System Standards, State of Hawaii," 1985, and as may be amended.

(b) **Injection Wells**

In addition to the requirements of these minimum Standards, the location, construction, and operation of injection wells must meet the permit requirements of the State Department of Health, Safe Drinking Water Branch under their rules, Chapter 11-23, "Underground Injection Control." The commission does not require a permit for the construction and operation of injection wells, but the owner or operator of an injection well must notify the commission by submitting a copy of the injection well permit approved by the Department of Health.

(c) **Geothermal Wells**

In addition to these minimum Standards, geothermal wells must meet the permit requirements of the Department of Land and Natural Resources, Land Division under their rules, Title 13, Chapter 183, "Rules on Leasing and Drilling of Geothermal Resources." The commission does not require a permit for geothermal wells, but the owner or operator of a geothermal well must notify the commission by submitting a copy of the geothermal well permit approved by the Land Division of the Department of Land and Natural Resources.

(d) **Test Borings**

The commission does not require a permit for temporary test borings. However, test borings related to underground storage tanks and environmental monitoring or remediation must meet the requirements of the State Department of Health. However, test borings which are permanent in nature for long-term monitoring of water levels and chlorides are considered monitoring wells which require a well construction permit from the commission.

Section 1.4 Definitions

The following definitions shall apply in the interpretation of these Standards:

"Abandoned well" means any well whose use has been permanently discontinued. Any well shall be deemed abandoned which has been allowed to become unsealed, leaking,

polluting, deteriorating in quality, uncontrollable, buried, or which is in such a state of disrepair that continued use for the purpose of obtaining ground water is impracticable or unsafe.

"Annular seal" means the grouted length of annular space between casing and the wall of the drilled or otherwise constructed hole.

"Annular space" means the space between the casing in a well and the wall of the hole or between two concentric strings of well casing.

"ANSI" means the American National Standards Institute.

"Aquifer" means a body of rock that is sufficiently permeable to conduct ground water and to yield economically significant quantities of water to wells.

"Artesian well" means a well in which the water rises above the top of the aquifer, whether or not it flows out at the land surface.

"ASTM" means the American Society for Testing and Materials.

"AWWA" means the American Water Works Association.

"Basal aquifer" means an aquifer in which a body of ground water floats on a body of salt water in accordance with the buoyant density difference of the two bodies of water. As a general rule, each foot of ground water above mean sea level is supported by 40 feet of ground water below mean sea level.

"Chairperson" means the chairperson of the commission on water resource management.

"Commission" means the commission on water resource management.

"Enforcing agency" means a state or county governmental agency duly authorized to administer and enforce laws or rules pertaining to the construction, alteration, maintenance, operation, and closure of wells in Hawaii.

"FDA" means the United States Food and Drug Administration

"Geothermal well" means any well constructed for the location, exploration, monitoring, development, or injection of geothermal resources or the natural heat of the earth, the energy which may be extracted from the natural heat in whatever form found below the surface of the earth as defined by Chapter 182-1, HRS.

"Ground water" means any water found beneath the surface of the earth, whether in perched supply, dike confined, flowing, or percolating in underground channels or streams, under artesian pressure or not, or otherwise.

"Grout" means a neat cement or sand-cement slurry used to seal any part of a well.

"Head" means the elevation in feet above mean sea level of the water level in a well or aquifer.

"High-level aquifer" means an aquifer in which a body of ground water is maintained at a higher level above mean sea level than that which can be explained by the buoyant density difference of ground water and salt water. Geologic structures, such as volcanic dikes or poorly permeable formations, generally play a key role in high-level occurrence of ground water.

"Injection well" means any well used or intended to be used for the subsurface disposal of any substance or material which flows or moves whether semi-solid, liquid, or gas.

"Installation of pumps and pumping equipment" means the placement and preparation for operation of pumps and pumping equipment, including all construction involved in making entrance to the well, and establishing seals and repairs to existing installations.

"Monitor well" means any well drilled for the purpose of monitoring ground-water levels, quality of ground water, or concentrations of contaminants in ground water occurring in the saturated zone.

"Potable water well" means any well that taps a fresh or brackish aquifer for potable water use.

"Public water system" means a system for the provision to the public of piped water for human consumption, if such system has at least fifteen service connections or regularly serves an average of at least twenty-five individuals daily at least sixty days out of the year. Such term includes (1) any collection, treatment, storage, and distribution facilities under control of the operator of such system and used primarily in connection with such system, and (2) any collection or pretreatment storage facilities not under such control which are used primarily in connection with such system [Ref: Chapter 11-20, Hawaii Administrative Rules, "Potable Water Systems].

"Pump installation" means the installation, replacement, or repairs of any equipment and appurtenances utilized or intended for use in withdrawing or obtaining water from a water source.

"Pump installation contractor" means any person licensed in the State of Hawaii to install, replace, or repair pumps and pumping equipment.

"Pumps and pumping equipment" means all equipment and appurtenances utilized or intended for use in withdrawing or obtaining ground water. It includes seals, tanks, fittings, measuring devices, and controls.

"Repairs" means any replacement, change, or modification of any well, pump or pumping equipment. Customary or normal maintenance is not included in this definition.

"Test boring" means any temporary excavation or temporary small diameter drilled hole whose purpose is the immediate determination of subsurface geologic, hydrologic, or contaminated conditions usually, but not always, in the unsaturated zone above the ground-water level. This definition includes borings for foundation, underground storage tanks, and hazardous water remediation.

"USDA" means the United States Department of Agriculture.

"Water well" means any well, water development shaft, or tunnel being used, intended to be used, or capable of being used to withdraw ground water or any well, water development shaft, or tunnel to be constructed for the purpose of investigating, exploring, testing, or development of ground water.

"Water management area" means a geographic area which has been designated for management of the ground or surface-water resource therein, as provided in Chapter 13-171, "Designation and Regulation of Water Management Areas."

"Well" means any excavation or opening into the ground, or an artificial enlargement of a natural opening drilled, tunneled, dug, or otherwise constructed for the location, exploration, monitoring, development, injection, or recharge of ground water and by which ground water is drawn or is capable of being withdrawn or made to flow.

"Well construction" means the drilling, tunneling, digging or otherwise constructing a well for whatever purpose, including any alteration or repairs of an existing well, but excluding the installation of pumps and pumping equipment.

"Well driller" means any person licensed in the State of Hawaii to construct, modify, or repair wells.

Section 1.5 Exemptions from Unusual Conditions

Although the Standards presented herein are considered adequate for the prevention of contamination and waste of ground water throughout the State of Hawaii, if the commission finds that compliance with any of the requirements of these Standards is impractical or will not provide adequate protection of ground-water quality because of unusual local conditions or circumstances, a variance may be requested and the commission may waive compliance and prescribe alternative requirements which will prevent contamination and waste of ground water in a manner otherwise equal to these Standards.

Section 1.6 Well Drillers and Contractors

All work required in the construction, modification, or sealing of wells shall be performed by well drillers **who have obtained** ~~(with~~ a C-57 license~~) or [general contractors (with a C license)] licensed by~~ **from** the Hawaii Department of Commerce and Consumer Affairs, Division of Professional and Vocational Licensing.

All work required in the installation of pumps and pumping equipment shall be performed by well drillers with a C-57 license, pump installers with a C-57a license, or general contractors with an A license **obtained from the Hawaii Department of Commerce and Consumer Affairs, Division of Professional and Vocational Licensing. To validate permits, licensed well drillers and/or pump installers must sign permits before any work is performed. Upon completion of work, well drillers and/or pump installers are required to sign well completion reports.**

Section 1.7 Permits Required

In the State of Hawaii, work on water wells and monitor wells requires a well construction permit from the commission; work on injection wells requires a permit from the State Department of Health; and work on geothermal wells requires a permit from the Department of Land and Natural Resources, Land Division. Work on test borings does not require a permit, but all test borings should be sealed with neat cement before abandonment. The various permits required, the enforcing agency, and the applicable standards are summarized in Table 1, "Well Permits and Reports Required."

Applicants for well construction (includes modification), pump installation, and water use permits issued by the commission, should check with the commission for the latest updated form.

Section 1.8 Reports Required

Reports relating to construction, modification, and abandonment of water wells and monitor wells are required to be filed **by the applicant, driller, and surveyor** with the commission as provided in the appropriate sections of these Standards. Reports for injection and geothermal wells are required to be filed with the corresponding enforcing agency (see Table 1).

Persons filing a well completion report, well abandonment/sealing report, or pumping test record required by the commission should check with the commission for the latest updated form **or may refer to its web page at www.hawaii.gov/dlnr/dwrm/dwrm.html**.

Section 1.9 Exclusions

The requirements in Part 2, "Well Construction" of these Standards do not apply to temporary test borings. However, the requirements of Part 3, "Well Abandonment/ Sealing" do apply to all test borings.

Table 1. WELL PERMITS AND REPORTS REQUIRED

Well Type	Proposed Activity	Permit Requirements			Applicable Well Standards
		Permit	Report	Enforcing Agency	
Water Well (fresh, brackish, & salt water)	Drill new well. Modify existing well. Redrill existing well. Deepen existing well. Relocate incomplete well. Abandon/seal existing well.	Well Construction	Well completion report. Well abandonment/sealing report.	Commission	These Standards
	Install new pump. Modify existing pump. Replace existing pump.	Pump Installation	Well completion report.	Commission	These Standards
Monitor Well	Drill new well. Abandon/seal existing well.	Well Construction	Well completion report.	Commission	These Standards
Injection Well	Construct; Operate; Abandon/Seal.	Underground Injection Control (UIC)	Refer to Chap. 11-23, HAR	State Department of Health	These Standards and Chapter 11-23, HAR
Geothermal Well	Drill; Modify; Modify use; Abandon/seal.	Geothermal	Refer to Chap. 13-183, HAR	State Department of Land & Natural Resources	These Standards and Chapter 13-183, HAR
Test Boring (temporary)	Excavate/drill. Abandon/seal.	None	None	None	None
Dry wells (drainage)	**Excavate/drill. Abandon/seal.**	**None**	**None**	**None**	**None**

Note: New wells to be used to supply a public water system must meet the requirements of Chapter 11-20, entitled, "Rules Relating to Potable Water Systems" of the State Department of Health. Test borings related to UIC and environmental monitoring or remediation are subject to the State Department of Health.

HAR = Hawaii Administrative Rule.

requires signatures of applicant and driller and may require surveyor signature.

Part 2.

WELL CONSTRUCTION

Part 2.
WELL CONSTRUCTION

Section 2.1 Well Construction Permits

No well, except injection, geothermal, and temporary test boring type wells shall be constructed, modified, repaired, or abandoned and sealed without a well construction permit approved by the chairperson. Injection wells and geothermal wells require permits from other state agencies (see Table 1 of these Standards). Temporary test borings do not require a well construction permit. Permanent test borings for hydrologic monitoring of water levels and/or water quality are considered monitor wells which require a well construction permit. Wells for withdrawal purposes in commission-designated water management areas require a water use permit approved by the commission prior to well construction permit approval. An application for a well construction permit shall be accompanied by a non-refundable filing fee, excepting government agencies, and shall be required for all areas of the state.

Applications for a well construction permit shall be made on forms provided by the commission. A fully completed **and accepted** application shall be approved or disapproved within 90 calendar days of receipt. Each application shall contain the name of well owner or operator; well location; preliminary elevation; well driller's license number; purpose of proposed construction; proposed withdrawal and use of water; water use permit information, if applicable; type, size, and expected capacity of the well; and such other information as the commission may require on the form provided.

A well construction permit may be **approved and** issued only if the proposed construction complies with all applicable laws, rules, and standards. Before an application for a well construction permit is approved, the chairperson will consult with the Department of Health for compliance with their rules and standards concerning, among other things, the appropriateness of the well location.

Every permit for construction or modification of a water supply well shall require a pumping test, if none has been performed. Measurements of time, pumping rate, drawdown, chloride content, and temperature shall be recorded and reported as required in these Standards.

Every well construction permit shall require the well driller to file a well completion report. The permit shall be prominently displayed at the site of the well at all times until the well construction is completed.

The holder of a well construction permit, with the approval of the chairperson, may change the location of the well before or after start of construction. A written request to change the location shall state the location, proposed depth, method of construction, size, and expected capacity of the new well. The request to change the location shall also state the manner of sealing or plugging the abandoned well if applicable. The chairperson may consult with the Department of Health for compliance with their rules and standards concerning, among other things, the appropriateness of the location of the well.

An amended well construction permit may be issued by the chairperson if it is determined that the proposed new well location will serve the same use as the original well, draw upon the same supply of water, and will not be contrary to any applicable law, rule, order, or regulation; and that the incomplete and abandoned well will be sealed or plugged in an approved manner.

Any applicant for a well construction permit whose application is rejected or amended by the chairperson may obtain a hearing before the commission by filing within 30 days of the mailing of the notice of a rejected or amended application, a written petition requesting such a hearing. The hearing shall be conducted as provided in Chapter 13-167, "Rules of Practice and Procedure for the Commission on Water Resource Management."

The commission may modify, suspend, or revoke a permit, after notice and hearing, on any of the following grounds:

1. Material misstatement or misrepresentation in the application for a permit.
2. Failure to comply with the provisions set forth in the permit.
3. Willful disregard or violation of any provision of this part or any rule adopted pursuant thereto.

4. Material change of circumstances or conditions existing at the time the permit was issued.

Every well construction permit issued shall be for ~~a specified period not to exceed~~ two years, unless otherwise specified in the permit and shall contain the ~~commencement~~ **approval** and ~~completion~~ **expiration** dates for the permitted activity. In determining the ~~commencement and completion~~ **expiration** date of the activity, the chairperson shall take into consideration the following:

1. Cost and magnitude of the project.
2. Engineering and physical features involved.
3. Existing conditions.
4. Public interest affected.

The chairperson may extend the ~~completion~~ **expiration** date of the activity prescribed in the well construction permit upon a showing of good cause and good-faith performance. ~~If the commencement or completion date is not complied with, the permittee shall be notified by certified mail that the permit is to be revoked by the commission within 60 days of the notice, unless the permittee can show good cause that it should not be revoked.~~

Section 2.2 Well Depth

Except for salt-water wells, any well constructed in basal aquifers for the purpose of nonpotable or potable water withdrawal shall be initially designed and pump tested at a depth below sea level not exceeding one-fourth of the theoretical thickness (41 times the head) of the basal ground-water body, unless authorized by the chairperson. Upon request by the applicant and submission of an analysis of preliminary yield, drawdown, and chloride data prepared by a qualified ground-water geologist, hydrologist, or engineer, the chairperson may allow deepening and subsequent testing of such wells to a depth below sea level not exceeding one-half of the theoretical thickness of the basal ground-water body. The chairperson may request a statement of qualifications of the preparer of the analysis.

Section 2.3 Well Location

(a) General

Wells shall be located so that they are minimally exposed to known potential sources of pollutants and permanently accessible for modification, repair, maintenance, and abandonment/sealing. When avoidable, wells shall not be located in flood, drainage, or runoff areas. Relief from the requirements for well location may be granted by the enforcing agency when unusual conditions exist at the well site.

(b) Distance from Sources of Pollution

As a guideline, wells to be constructed for potable water use should be located a minimum horizontal distance from known or suspected sources of pollutants as indicated in Table 2. On a case-by-case basis, the chairperson may increase or decrease the distances shown in Table 2 based on local geologic or hydrologic conditions.

The location of monitor wells and nonpotable water wells are exempt from the minimum distance requirements listed in Table 2. The location of injection wells are subject to the requirements of Chapter 11-23, "Underground Injection Control" of the State Department of Health.

Table 2. Minimum Distances for Potable Water Wells

Source of Pollution	Minimum Horizontal Distance from Pollution Source*
Any sewer line	50 feet
Cesspool, septic tank, or subsurface sewage leaching field	1000 feet
Hazardous waste landfills and ponds, or chemical storage	1000 feet
Treated effluent injection well	1/4 mile

*** based on § 11-23, HRS, "Underground Injection Control"**

(c) **Gradients (slopes)**

Where possible, wells shall be located hydraulically up-gradient (normally on a higher slope) from potential sources of pollution. Consideration should also be given to the fact that pumping a well may cause a localized reversal of the existing ground-water gradient due to drawdown of the ground-water table.

(d) **Flood and Drainage Areas**

Potable water wells located in flood and drainage areas should have well casing terminated above the 100-year level of flooding, as shown on the latest FEMA (Federal Emergency Management Agency) map and be properly designed to avoid potential contamination of the aquifer from flood waters. If necessary, the immediate area around a potable water well should be built up so that drainage moves away from the well.

(e) **Accessibility**

All wells shall be located an adequate distance from buildings and other structures to allow permanent access for well modification, maintenance, repair, and abandonment/sealing, unless otherwise approved by the enforcing agency.

Section 2.4 Well Casing

(a) **General**

Wells which are to be used for water supply, monitoring, or injection shall be constructed with well casing adequate to maintain the structural integrity and intended use of the well and to maintain the natural pre-existing state of protection of the ground-water aquifer from pollution or contamination. Well casing shall be strong enough to resist the forces imposed upon it during and after installation. Steel is the material most frequently used for casing wells in Hawaii. Casing standards apply only to permanent well casing and not to casing installed temporarily for construction purposes.

(b) **Diameter of Casing**

The diameter of casings for water supply wells shall be of sufficient diameter to receive a pump assembly of sufficient size to discharge the planned pumping capacity. The minimum casing diameter for water wells shall conform to Table 3 and the water well standards of AWWA publication ANSI/AWWA A100-90, as may be amended. The casing diameter of monitor wells and injection wells shall meet the requirement of the well owner and Chapter 11-23 of the State Department of Health, respectively.

Table 3. Minimum Casing Diameters for Water Supply Wells

Maximum Outside Diameter of Pump Assembly (inches)	Minimum Inside Diameter of Well Casing (inches)
4	5
5	6
6	8
8	10
10	12
12	14
14	16
16	18
18	20
20	22

Reference: ANSI/AWWA A100-90

(c) **Wall Thickness of Casing**

The wall thickness of well casing shall be selected in accordance with good design practices applied with due consideration to conditions at the site of the well and shall be sufficient to withstand anticipated formation and hydrostatic pressures imposed on the casing during its installation, grouting, well development, and use. The minimum wall thickness of carbon-steel casings in wells shall conform to Table 4 and the AWWA standards for water wells (ANSI/AWWA A100-90), as may be amended.

The wall thickness for steel casing in county water supply wells shall be as listed in Table 5 and "Water System Standards," State of Hawaii, 1985, Vol. I, p. 258, as may be amended.

Table 4. Minimum Wall Thickness for Non-County Water Supply Wells

Depth of Casing (ft)	MINIMUM WALL THICKNESS (in fractions of an inch)									
	Nominal Casing Diameter in inches:									
	8	10	12	14	16	18	20	22	24	30
0-100	1/4	1/4	1/4	1/4	1/4	1/4	1/4	5/16	5/16	5/16
100-200	1/4	1/4	1/4	1/4	1/4	1/4	1/4	5/16	5/16	5/16
200-300	1/4	1/4	1/4	1/4	1/4	5/16	5/16	5/16	5/16	3/8
300-400	1/4	1/4	1/4	1/4	5/16	5/16	5/16	5/16	3/8	3/8
400-600	1/4	1/4	1/4	1/4	5/16	5/16	5/16	3/8	3/8	7/16
600-800	1/4	1/4	1/4	5/16	5/16	5/16	3/8	3/8	3/8	7/16
800-1000	1/4	1/4	1/4	5/16	5/16	5/16	3/8	7/16	7/16	½
1000-1500	1/4	5/16	5/16	5/16	3/8	3/8	3/8	7/16		
1500-2000	1/4	5/16	5/16	5/16	3/8	3/8	7/16	7/16		

Reference: ANSI/AWWA A100-90

Table 5. Minimum Wall Thickness for **State and** County Water Supply **Including Irrigation** Wells

Nominal Diameter (inches)	Wall Thickness (inches)
2	0.154
2-1/2	0.203
3	0.216
3-1/2	0.226
4	0.237
6-8	0.280
10	0.322
12	0.365
14	0.375
16	0.375
18	0.375
20	0.375
22	0.500
24	0.500
26	0.500

Reference: 1985 County Water System Standards

(d) **Minimum Length of Solid Casing**

All wells (excepting salt-water wells, artesian wells, and temporary monitor wells designed for immediate or short-term monitoring purposes and subsequent abandonment/sealing) shall be constructed with a casing string having a minimum length of solid casing equal to 90 percent of the depth measured from the ground surface to the top of the selected aquifer, less 10%. A section of perforated or screen casing may or may not be included at the bottom of the solid casing string. Minimum length of solid casing for salt water wells shall be through the entire fresh and brackish water portion of the lens.

(e) **Casing Materials**

(1) *Steel.* All water wells shall be cased with new steel casing conforming to one of the manufacturing standards listed in Table 6 and in the standards of AWWA publication ANSI/AWWA A100-90, as may be amended. The physical properties of the steel shall conform to ASTM A-242, ASTM A53, Type E or S, Grade B, or approved

equal. The well casing shall be manufactured in accordance with applicable sections of ASTM A139, as may be amended.

Table 6. Water Well Casing Materials

Manufacturing Standards for Carbon-Steel Well Casing:
ANSI/AWWA C200
API Spec. 5L
ASTM A53
ASTM A139

(2) *Stainless Steel.* Stainless steel casing for wells shall meet the provisions of ASTM A409, "Standard Specification for Welded Large Diameter Austenitic Steel Pipe for Corrosive or High Temperature Service," and any revision. Stainless steel casing for monitor wells shall meet the provisions of ASTM A312, "Standard Specifications for Seamless and Welded Austenitic Stainless Steel Pipe," and any revision.

(3) *Plastic and Thermoset Plastic (Fiberglass).* Except as determined by the chairperson on a case-by-case basis, plastic casing shall not be used in wells where well depth exceeds 100 feet or where cement grouting requirements may distort or collapse the plastic casing or where drilling tools are contemplated to be used to re-enter the well following installation of the casing.

Except for possible contamination by organic solvents or petroleum products, thermoplastics or thermoset plastics are acceptable materials for plastic well casing. Thermoplastics are plastics which can be softened with the application of heat. Therefore, one should consider and be careful of the effects of heat generated by the setting and curing of solvent cement. Thermoplastics used for well casing include ABS (acrylonitrile butadiene styrene) and PVC (poly vinyl chloride).

Thermoplastic well casing shall meet the requirements of ASTM F480, "Standard Specification for Thermoplastic Well Casing Pipe and Couplings Made in Standard Dimension Ratios (SDR), SCH 40 and SCH 80", and any revision. (*Note:* A

"dimension ratio" is the ratio of pipe diameter to pipe wall thickness.) Pipe made in Schedule 40 and 80 wall thicknesses and pipe designated according to certain pressure classifications are listed in ASTM F480, as well as casing specials referencing the following ASTM standards and any revision:

> ABS Pipe. ASTM D1527, "Standard Specifications for Acrylonitrile-Butadiene-Styrene (ABS) Plastic Pipe, Schedules 40 and 80."
>
> PVC Pipe. ASTM D1785, "Standard Specifications for Poly Vinyl Chloride (PVC) Plastic Pipe, Schedules 40, 80, and 120."
>
> Pressure-Rated PVC Pipe. ASTM D2241, "Standard Specifications for Poly Vinyl Chloride (PVC) Pressure-Rated Pipe (SDR Series)."

Thermoplastic well casing that may be subject to significant impact stress during or after installation shall meet or exceed the requirements for impact resistance classification set forth in Section 6.5 of ASTM F480. Casing that may be subject to significant impact forces includes, but is not limited to, casing that is installed in large diameter, deep boreholes and casing through which drilling tools pass following installation of the casing in a borehole.

Thermoset plastics cannot be reformed after heating. The molecules become set during manufacture as a result of heat and/or chemical reactions. The most common thermoset plastic used for well casing is fiberglass. Thermoset casing material shall meet the following standards, as applicable, and any revision:

> Filament Wound Resin Pipe. ASTM D2996, "Standard Specification for Filament Wound Reinforced Thermosetting Resin Pipe."
>
> Centrifugally Cast Resin Pipe. ASTM D2997, "Standard Specification for Centrifugally Cast Reinforced Thermosetting Resin Pipe."

Reinforced Plastic Mortar Pressure Pipe. ASTM D3517, "Standard Specification for Reinforced Plastic Mortar Pressure Pipe."

Glass Fiber Reinforced Resin Pressure Pipe. AWWA C950, "AWWA Standard for Glass-Fiber-Reinforced Thermosetting-Resin Pressure Pipe."

Fluorocarbon casing materials are generally considered immune to chemical attack and, consequently, are used in certain monitor well applications. Materials include fluorinated ethylene propylene (FEP) and polytetra fluorethylene (PTFE). Fluorocarbon casing materials shall meet the following standards and any subsequent revision:

ASTM D3296, Standard Specifications for PTFE Tubing.

ASTM D3296, Standard Specifications for FEP-Fluorocarbon Tube.

(f) **Casing Joints**

Steel casing may be joined by welds, threads, threaded couplings, or combination thereof. Welding shall be accomplished in accordance with the standards of the American Welding Society or the most recent revision of the American Society of Mechanical Engineers Boiler Construction Code. Casing joints shall be of the types listed in Table 7 and in AWWA publication ANSI/AWWA A100-90, as may be amended.

Table 7. Well Casing Joint Standards

Casing Material	Type of Joint	Standard
Steel	Welded or threaded	AWWA C206
Plastic	Threaded or solvent-welded	ASTM F480

Plastic casing may be joined by solvent welding or mechanically joined by threads or other means, depending on the type of material and its fabrication. Solvent cement used for solvent welding shall meet specifications for the type of plastic casing used and shall be applied in accordance with solvent and casing manufacturer instructions. Particular attention shall be given to instructions pertaining to required setting time for joints to develop strength.

The following standards for solvent cements and joints for PVC casing shall be met, including any revision:

> ASTM D2564, "Standard Specification for Solvent Cements for Poly Vinyl Chloride (PVC) Plastic Pipe and Fittings."
>
> ASTM D2855, "Standard Practice for Making Solvent-Cemented Joints with Poly Vinyl Chloride (PVC) Pipe and Fittings."

Plastic casing or screen shall not be subjected to excessive stress during installation and shall not be driven into place. Care shall be taken to insure that plastic casing and joints are not subjected to excessive heat from cement-based sealing material.

Section 2.5 Rock or Gravel Packing the Annular Space

(a) General

Most water wells in Hawaii are drilled in stable, hard rock strata consisting of fresh to partly weathered basaltic lava flows. Consequently, rock or gravel packing the aquifer section of a well may not be required to stabilize the walls of a drilled hole. In general, rock packing the aquifer section tends to decrease the specific capacity of a well in highly permeable basalt and limestone formations. However, rock packing the annular space may be used where unconsolidated fine-grained volcanics or coastal sediments occur.

(b) Rock or Gravel Packing Materials

Rock or gravel packing may consist of locally produced crushed basaltic aggregate or, preferably, commercially available smooth, water-worn, rounded gravel.

Such rock or gravel packing material shall be obtained from clean, non-contaminated sources and shall be inert. Handling and storage of the rock or gravel packing material at the well site shall be such that it remains free of contaminants and debris until placed in the annular space and shall be disinfected by drenching with a 100 mg/l chlorine solution, see Section 2-8(a), just before placement in the well.

Section 2.6 Grouting the Annular Space

(a) General

The space between the well casing and the wall of the drilled hole is called the "annular space." The reason that the annular space of all wells must be sealed with grout from the ground surface to a minimum specified depth is to prevent the downward passage of poor quality water, pollutants, or contaminants from surface sources and subsurface sources in the unsaturated zone above the aquifer. Other reasons for grouting the annular space are to prevent corrosion of steel casing and stabilize the wall of the drilled hole, or to prevent vertical movement of water along casing in a saturated zone (e.g. salt-water wells).

(b) Conductor Casing

Conductor casing (often called conductor pipe) is sometimes installed on a temporary basis to stabilize the near-surface part of the drilled hole during well construction. However, any conductor casing intended to be permanent or having a length of more than 30 feet must be installed with a grouted annular space having a minimum thickness of three inches to prevent surface contamination of the well. Conductor casings installed without a grouted annular space must be removed in a manner that will permit complete grouting of the annular space between the permanent well casing and drilled hole to the ground surface.

(c) **Minimum Depth of Grouted Annular Space**

To prevent surface contamination, the annular space of all cased non-artesian wells (except monitor wells designed for immediate and short-term monitoring purposes and subsequent abandonment) must be sealed with grout from the ground surface to a minimum depth of 500 feet or 70% of the vertical distance between the ground surface and the top of the aquifer selected for exploration, long-term monitoring, or development, whichever depth is less. Artesian wells shall be considered on a case-by-case basis. Salt-water wells shall be grouted through the entire fresh and brackish portion of the basal lens.

(d) **Minimum Thickness of Grouted Annular Space**

The annular space of wells to be grouted must be a minimum of three inches all around the casing to permit effective placement of grout with a tremie pipe having a minimum diameter of 1¼ inches. Should casing with collars be used, the drilled hole shall be increased to provide a minimum three-inch annular space at the collars.

(e) **Grouting Materials for Annular Sealing**

The grouting materials commonly used to seal the annular space of wells in Hawaii include neat cement or a mixture of sand and cement.

Drill cuttings or drilling mud shall not be used for any part of the grout material. Neat cement used to grout wells shall conform to the requirements of ASTM C150 for Portland Cement, Type I. Special cement-setting accelerators and retardants and other additives may be used, if necessary. Such additives shall meet the requirements of ASTM C494, "Standard Specifications for Chemical Admixtures for Concrete", and any revision. Sand used for sand-cement grouting of the annular space by tremie pipe shall conform to "concrete sand," 100% passing 3/8-inch screen and 2 to 10% passing No. 200 sieve (ASTM C-33), or "masonry sand," 100% passing No. 4 sieve and 0 to 10% passing No. 200 sieve (ASTM C-144).

(1) *Sand-Cement Grout.* Sand-cement for grouting shall be mixed at a ratio of not more than one part sand to one part cement, by weight, and not more than six gallons of potable water per sack of cement.

(2) *Neat Cement Grout.* Neat cement for grouting shall be mixed at a ratio of one 94-pound sack of Portland cement to not more than six gallons of potable water.

(f) **Placement of the Annular Grout**

The annular space shall be grouted as soon as possible after installation of the casing. In order to ensure successful grouting of the annular space, the grout material shall be installed by pumping or gravity-flowing it through a 1¼-inch minimum diameter grout pipe placed so as to prevent inclusion of foreign materials, or bridging, dilution or separation of grout materials. In order to minimize bridging and plugging of the pipe, the grout pipe should be flushed with potable water before the introduction of the grout slurry.

Placing the grout in the annular space may be done in stages with time allowed for the grout to set between stages so as to prevent distortion or collapse of the casing by heat or pressure. After each stage, the grout pipe shall be pulled up a safe distance to avoid any possibility of the grout pipe being accidentally frozen in solid grout.

Grouting the annular space may be accomplished by freefall placement if the annular space to be grouted is no deeper than 30 feet below ground surface and is in the unsaturated zone above the ground-water level.

Section 2.7 Well Development

Development or redevelopment of a well shall be performed with care so as to prevent damage to the well and casing. Development and redevelopment operations shall be performed with special care where a well has been constructed in an area of known or suspected pollution or contamination.

Water, sediment, or waste removed by well development or re-development operations shall be disposed of in accordance with applicable federal, state, and county requirements. **For example, the permittee should check with the State Department of Health if a Clean Water Act Section 402, (NPDES) permit is applicable.** The enforcing agency shall be contacted concerning the proper disposal of waste from development operations.

Section 2.8 Well Disinfection

(a) **General**

All non-artesian water supply wells for potable use or tapping aquifers having a chloride concentration of less than 250 milligrams per liter shall be disinfected with the proper amount of chlorine following the completion of any work, including pump installation and repair and well abandonment. The purpose of disinfection is to mitigate the introduction of pathogens into the aquifer.

A 100 mg/l chlorine solution can be prepared by mixing 0.7 quart of sodium hypochlorite (common household bleach, containing 5% available chlorine) with 100 gallons of water or by mixing 2¼ ounces of dry calcium hypochlorite (commonly used in swimming pools, containing 70% available chlorine) with 100 gallons of water.

(b) **Disinfection of Well Casing**

The inside wall of the casing of all such newly constructed wells shall be thoroughly disinfected by applying with a hose or sprayer a dilute chlorine solution with a minimum concentration of 100 milligrams per liter (mg/l) uniformly around the inside of the casing. Sufficient solution must be used to wet and disinfect the entire length of casing from the top to the ground-water level. The casing shall be thoroughly flushed with potable water for 30 minutes or more after application.

(c) **Disinfection of Aquifer Section**

The aquifer section of all wells described in Section 2-8(a) shall be disinfected by using sodium or calcium hypochlorite. Depending upon the situation, the chlorine shall be placed and thoroughly mixed in the aquifer by pouring directly, using a bailer, using the rotary drill pipe, or using the test pump, as appropriate. Mixing shall be accomplished by running the bailer or drill pipe up and down the aquifer three or four times, or gently pump surging, as the case may be. The chlorine solution shall be allowed to remain in the well overnight or at least eight hours, except for emergency situations

when water is needed without delay. A minimum contact time of 30 minutes shall be provided for emergency situations.

Sufficient chlorine shall be placed in the well to obtain a chlorine concentration of at least 100 mg/l when mixed with the volume of water in the drilled hole. The amount of liquid sodium hypochlorite (common household bleach) or dry calcium hypochlorite (used in swimming pools) to be used for well disinfection depends upon the diameter of the drilled hole and the depth of aquifer penetration and may be determined from the information in Table 8, "Chlorine Required for Well Disinfection."

(d) **Disinfection of Permanent Pump and Pumping Equipment**

All permanent pumps and pumping equipment to be installed in wells described in Section 2-8(a) shall be disinfected by drenching or spraying with a 100 mg/l chlorine solution, see Section 2-8(a), just before placement in the well.

Table 8. Chlorine Required for Well Disinfection*

Drilled Hole Diameter (inches)	Unit Volume of Water in Well (gals/lin. ft.)	CHLORINE REQUIRED/LINEAL FOOT OF AQUIFER	
		Sodium Hypochlorite, household bleach, 5% available chlorine (Quarts/lin. ft.)	Calcium Hypochlorite, dry granule, 70% available chlorine (Ounces/lin. ft.)
4	0.66	0.0046	0.0148
5	1.04	0.0073	0.0233
6	1.50	0.0105	0.0336
8	2.61	0.0183	0.0585
10	4.08	0.0286	0.0914
12	5.88	0.0411	0.1317
14	8.00	0.0560	0.1792
16	10.44	0.0731	0.2338
18	13.22	0.0925	0.2961
20	16.32	0.1142	0.3656
24	23.51	0.1646	0.5266

* To obtain chlorine concentration of 100 mg/l in the drilled hole.

2.9 Minimum Well Testing

(a) Purpose

Well testing is required when new wells are drilled or when existing wells are modified and have not been previously tested in accordance with the provisions of these Standards. Well testing shall normally consist of a short step-drawdown test and a long-term constant-rate test. Well testing is not mandatory for monitor wells. The purpose of well testing in the prescribed manner is to obtain hydrologic information needed to determine the well's performance and efficiency with regard to yield and drawdown; the well's trend with regard to drawdown, recovery, and salinity; and the nearby hydraulic properties of the aquifer.

(b) **Step-Drawdown Tests (Well Efficiency Test)**

Step-drawdown tests are required to establish the efficiency of the well and to provide preliminary information on the yield, drawdown, and salinity (chloride content) of the well. Step-drawdown tests are not required for wells proposed for production of less than ~~100,000~~ **25,000** gallons per day or ~~70~~ **20 gpm (HAR § 13-171-14(b))** gallons per minute. The water level in the pumped well shall be measured at ~~15-minute intervals for 45 minutes prior to the initiation of the step-drawdown test in order to verify the pre-test static water levels.~~ **minimum intervals according to forms provided by the Commission**. The step-drawdown test shall consist of pumping the well at progressively increasing fractions of the maximum discharge capacity proposed by the permittee or determined during well development. The minimum length of time for each discharge rate shall be one-half hour and the minimum number of discharge rates shall be 3, depending upon the maximum discharge capacity and the occurrence of observable changes in pumping water levels from one pumping rate to the next. The step-drawdown test shall begin with the lowest pumping rate and conclude with the highest rate. Pumping shall be continuous throughout the entire step-drawdown test. As a minimum, a water sample taken at the end of the test shall be tested for chloride content.

(c) **Constant-Rate Tests (Aquifer Test)**

Constant-rate tests are required on all wells intended for **exploration or** production of ground water to determine the hydraulic properties of the aquifer, to identify any nearby hydrologic boundaries such as dikes in wells located in confined and semi-confined aquifers, or to determine any trend in salinity (chloride content) in wells located in aquifers affected by salt-water intrusion. The constant-rate test shall not commence until the water level in the pumped well has fully recovered from the step-drawdown test. Prior to the start of the constant-rate test, the static water level in the pumped well shall be measured at 15-minute intervals for 45 minutes.

The pumping rate for the constant-rate test shall be an amount as determined by the results of the step-drawdown test or equal to the pump capacity

proposed by the well owner/operator. Constant-rate tests shall be pumped continuously for a minimum period of time, as shown in Table 9.

Table 9. Minimum Test Period for Constant Rate Tests

Proposed Use of Well	Proposed Capacity (gpm)	Minimum Test Period (hours)
Non-County Water Supply	0 - 50 51 - 100 101 - 300 301 - 700 701 – 1000 1001 +	0 8 24 48 72 96
~~County Water Supply~~ **State and County Water Supply**		96

The water discharged from a well during constant-rate tests shall be transported to a distance sufficient to prevent the pumped water from reaching the ground-water table and affecting the test results and shall be discharged in a manner that meets best management practices to eliminate erosion.

(d) **Accuracy of Measurements**

The rate of pumping shall be recorded in gallons per minute (gpm) and shall be maintained within ±30 gpm or ±10 percent of the designated rate, whichever is less. The depth to water shall be measured as accurately as possible, but in no case less accurate than to the nearest one-tenth of a foot. Time shall be measured as accurately as possible, but in no case less accurate than to the nearest minute. In observation wells, accuracy of measurement shall be no less than one-hundredth of a foot.

(e) **Minimum Frequency of Measurements**

For constant-rate tests, the depth to water in the pumped well shall be measured at **minimum** intervals ~~of ten (10) minutes or less during the first two hours of pumping, at intervals of one hour or less thereafter to the 24th hour, and at an interval of~~

~~two (2) hours or less for the remainder of the required constant-rate test period.~~ **according to pump test forms provided by the Commission.** Immediately upon termination of the constant-rate test, the depth to water in the pumped well shall be measured at a frequency that corresponds to the pattern required during the pumping period and for such a period of time required for the water level in the well to recover to within eighty (80) percent of the water level observed at the beginning of the constant-rate test. If recovery to within 80 percent takes longer than four hours, the interval of time for measuring the depth to water in the well may be adjusted as necessary to determine the trend to full recovery.

(f) **Pumping Test Records and Reports**

Within 30 days after completion of the step-drawdown and constant-rate pumping tests, the well driller shall file with the commission the following:

(1) *Step-Drawdown Pumping Test Record* (on forms provided by the commission or copy thereof). The record shall include the as-built well depths and other dimensions, date and time of measurements, pumping rates, drawdowns, temperature, and salinity (chlorides) of water samples taken.

(2) *Constant-Rate Pumping Test Record* (on forms provided by the commission or copy thereof). The record shall include the as-built well depths and other dimensions, date and time of measurements, pumping rates, drawdowns, temperature, and salinity (chloride concentration) of water samples taken.

(g) **Water Quality Analyses Report**

Within 60 days after water sampling or 30 days after laboratory results are received, the well owner or operator shall file with the commission the dates and results of any elective water quality analyses performed on water samples taken during the constant-rate pumping test. The results of any analyses for drinking water standards shall also be submitted.

Section 2.10 Well Completion

(a) **General**

Wells must be adequately protected at all times during and after construction to prevent the entrance of surface water runoff, pollutants, and contaminants; unauthorized access; and damage to the well. All non-producing wells, including water wells which are commonly not put into production until several years after construction, must be completed with the casing extended a minimum of two (2) feet above the ground surface and capped in a manner that will prevent unauthorized entry or any pollutants from entering the well. Such wells shall conform to the following:

(1) *Lockable Cover.* The top of the well casing shall be cut smooth and straight with a lockable cover to prevent unauthorized access and prevent a safety hazard to humans and animals. The cover shall be weather and vermin proof.

(2) *Casing Cap.* Alternatively, the top of the well casing may be capped with a welded steel plate or solvent-welded plastic cap (for plastic casings) fitted with a 1½-inch minimum diameter threaded cap or plug which cannot be easily opened with small or light tools. Openings or passages for probing, venting, cables, or discharge tubing shall be protected against entry of surface water, pollutants, contaminants, and vermin.

(3) *Flooding.* The top of the well casing should terminate above ground surface and known levels of flooding, except where site conditions, such as vehicular traffic, will not allow.

(4) *Concrete Base.* Unless otherwise approved by the enforcing agency, a concrete base shall be constructed around the well casing at ground surface in contact with the annular grout seal. The base shall be at least four inches thick and shall slope slightly to drain away from the well casing. The base shall extend at least two feet laterally in all directions from the outside of the well casing. The concrete base shall be free of cracks, voids, and other significant defects likely to prevent water tightness. Contacts between the base and the annular grout seal, and the base and the well casing must be water tight. **An accurate elevation benchmark shall be clearly established on the concrete base by a licensed surveyor. Documentation and surveyor's stamp shall be submitted.**

(5) *Well Pits or Vaults.* The use of well pits, vaults, or equivalent features to house the top of a potable water well below ground surface must be avoided, if possible, because of their susceptibility to the entrance of surface water runoff, contaminants and pollutants. Well pits or vaults can only be used with approval of the chairperson.

The vault shall contact the annular grout seal in a manner to form a watertight and structurally sound connection. Contacts between the vault and the annular seal, and the vault and the well casing shall not cause the failure of the well casing or annular seal.

The space between the walls of the vault and the excavation into which it is placed shall be grouted to form a seal and structurally sound foundation for the vault.

The vault cover or lid shall be watertight but shall allow the venting of gases. The lid shall be fitted with a security device to prevent unauthorized access. The outside of the lid shall be clearly and permanently labeled as to the type of well. The vault and its lid shall be strong enough to support vehicular traffic where such traffic might occur. The top of the vault shall be set at or above grade so that drainage is away from the vault. The top of the well casing contained within the vault shall be protected with a cover so that surface water, contaminants, and pollutants that may enter the vault will not enter the well casing. The cover shall be provided with a pressure relief or venting device for gases.

(6) *Protection from Vehicles.* Protective steel posts, or the equivalent, shall be installed around a monitoring well where it is terminated above ground surface in areas of vehicular traffic. The posts shall be easily seen and shall protect the well from vehicular impact.

(7) *Paint and Markings.* The well shall be permanently marked by attaching an engraved plate showing the well's assigned State well number and the casing painted so as to be easily visible, located, and identified in the field.

(b) **Well Completion Report and Records**

Within 60 days after the completion of the construction, modification, or repair of a well (excepting injection and geothermal wells), the applicant shall file with the commission, as appropriate, the following:

1. For all wells, a well construction report (Part I of Well Completion Report form provided by the commission).

2. For all permanent pumps, a pump installation report (Part II of Well Completion Report form provided by the commission).

Part 3.

WELL ABANDONMENT/SEALING

Part 3.
WELL ABANDONMENT/SEALING

Section 3.1 General

All wells and test borings as defined in these Standards must be properly abandoned and permanently sealed to protect the ground-water resources of the State of Hawaii from contamination and waste and to protect public health and safety, whenever:

1. Their purpose has been served, or

2. Their use has been permanently discontinued, and

3. Their physical condition is causing or threatening contamination, deterioration in quality, or waste of ground-water resources, or

4. Their state of disrepair makes their continued use impractical or creates a hazard to public health or safety.

The objective of permanently sealing a well or test boring before abandonment is to restore the geological and hydrological conditions that existed before the well or test boring was constructed, taking into account any changes which may have occurred since the time of construction. (For example, a well which may have originally produced potable water, but which now produces nonpotable water.) The well casing must be removed if such removal is necessary to accomplish the objective. However, if the casing cannot be readily removed, the blank casing above the aquifer must be perforated to allow grouting of the annular space. Permanent sealing of a well shall be accomplished by grouting with a tremie pipe from bottom to top.

Abandonment and permanent sealing of a well requires a permit from the commission. A permit is not required for abandonment/sealing of test borings. All well abandonment and sealing shall be performed by a licensed well driller (with a C-57 license) ~~or general contractor (with a C license)~~. A detailed record of the abandonment and

sealing of all wells must be maintained by the well driller ~~or general contractor~~ for future reference and demonstration that the well was properly sealed. A well abandonment/sealing report must be filed with the commission within 60 days after completion of the work.

The commission shall be notified before work on abandonment and sealing begins.

Section 3.2 Responsibility for Abandonment/Sealing

The responsibility and cost for voluntary or involuntary abandonment/sealing of a well rests with the well owner or operator. The owner or operator of a well to be abandoned and sealed shall not commence with the required remedial work until an application has been made and a well construction permit has been approved by the chairperson.

Within 30 days after completion of the required work, the owner shall file with the commission a well abandonment/sealing report on forms provided by the commission. Information required includes the owner's name and address; the water use permit number, if any; the name and address of the well driller or contractor who performed the work; the reason for abandonment; a complete description of the work performed; and such other information as the commission may require.

Section 3.3 Determination of Abandonment/Sealing

(a) **Declaration by Well Owner or Operator**

The owner or operator of a well may voluntarily seek abandonment/ sealing of a well by first submitting an application for a well construction permit on forms provided by the commission. The application shall include the reason for abandonment and a description of the proposed procedure and work to be performed.

(b) **Declaration by Commission**

The Commission may declare that a well is abandoned and shall notify the owner or operator that it must be permanently sealed if it finds:

(1) That the well has served its purpose, or

(2) That the use of the well has been permanently discontinued, and

(3) That the well is not being properly maintained, or

(4) That the physical condition of the well is causing a waste of ground water or is impairing or threatens to impair the quality of the ground-water resources, or

(5) That the well is in such a state of disrepair that its continued use is impractical or it is a hazard to public health or safety.

Section 3.4 Grouting Materials for Permanent Sealing

Grouting material acceptable for use to permanently seal wells and test borings is either neat cement or sand-cement.

Sand used for sand-cement grout shall conform to "Masonry Sand", ASTM-C-144 or 100% passing No. 4 sieve and 0 to 10% passing No. 200 sieve. Cement used for neat cement and sand-cement grout shall conform to the requirements of ASTM C150 for Portland Cement, Type I.

(1) *Sand-Cement Grout.* Sand-cement for grouting shall be mixed at a ratio of not more than one part sand to one part cement, by weight, and not more than six gallons of water per sack of cement.

(2) *Neat Cement Grout.* Neat cement shall be mixed at a ratio of one 94-pound sack of Portland cement to not more than six gallons of potable water.

Section 3.5 Preliminary Work

(a) **Wells in General**

Wells which are to be abandoned and permanently sealed shall be investigated by studying existing well records and verifying the physical conditions and as-built dimensions of the well. Such wells shall be sounded with a bailer or other appropriate tool to check and clear the well of any obstructions, undesirable debris or cavein material, oil from an oil-lubricated pump, or other pollutants which could interfere with a satisfactory well seal. Depending upon the situation, such wells may also be probed with a magnet, video camera, caliper log, or other well tools to determine depths, dimensions, and conditions of the well casing and artesian leakage.

All equipment, loose casing, foreign materials, and obstructions which may interfere with sealing operations must be removed from the well, if possible. Any casing and conductor pipe not removed from the well must be cut off at least two feet below the ground surface and the remaining hole filled with material appropriate to the site or grouted with cement-based material, if in hard rock.

The chairperson shall be notified as soon as possible if pollutants or contaminants are known, discovered, or suspected to be present in the to-be-abandoned and sealed well.

After the well has been properly cleaned and prepared for sealing, the commission shall be notified before sealing operations begin.

(b) **Wells in Polluted or Contaminated Areas**

(1) *Properly Cased Wells.* Cased wells constructed with a grouted annular space conforming to these Standards shall be prepared for sealing as provided in Section 3.5(a), "Wells in General."

(2) Improperly Cased Wells. Cased wells constructed without a grouted annular space conforming to these Standards shall be prepared for sealing as provided in Section 3.5(a) and additionally by perforating the ungrouted section of solid casing. The solid casing shall be sufficiently perforated so that the annular space can be sealed with

grout and not serve as a path for surface and subsurface source of pollutants and contaminants to move down the well to the aquifer. The perforated solid casing and annular space shall be grouted with neat cement in a manner conforming to these Standards.

Section 3.6 Sealing the Aquifer Section of a Well

(a) Open Hole Section

After the preliminary work of abandonment and sealing has been completed, the well must be grouted as soon as possible from bottom to top beginning with the open hole section, if any, of the well.

The open hole section of the well shall be grouted with sand-cement slurry by pumping or gravity-flowing it through a 1¼-inch minimum diameter grout pipe. The bottom of the grout pipe shall be placed at the bottom of the well and flushed with potable water immediately before the introduction of the sand-cement slurry so as to minimize bridging or clogging of the pipe. The bottom of the grout pipe shall be withdrawn in stages as the open hole becomes filled, but shall extend into the slurry column while the grout is being placed so as to prevent inclusion of cavein or foreign material, bridging, dilution or separation of grout materials. The grouting of the well may be probed for effectiveness with the grout pipe or, if more practical, with a suitable probe attached to a light-weight cable.

If an interval of open hole occurs in cavernous or highly fractured formations which causes excessive loss of sand-cement slurry, No. 4 crushed aggregate (conforming to ASTM 10M) or concrete sand (conforming to ASTM C-33) may be used to fill such intervals of loss, before continuing to grout with sand-cement.

Optionally, neat cement slurry may be used to grout the open hole section, particularly if the open hole is in low permeability formations.

(b) **Perforated Casing Section**

After the open hole section of the well has been grouted, the perforated casing section of the well shall next be sealed with neat cement placed from bottom to top with a tremie pipe in a manner conforming to the grouting of the open hole section. However, if the perforated casing section occurs in highly fractured or cavernous formations which causes an excessive loss of neat cement slurry, a mixture of sand and cement conforming to the standards for permanent sealing may be used to fill such intervals of loss before continuing the sealing of the perforated casing section with neat cement.

Section 3.7 Sealing the Solid Casing Section of a Well

(a) **Properly Grouted Wells**

The solid casing section of a well with a properly grouted annular space may be sealed with sand-cement grout in one continuous operation from bottom to the ground surface. The grout must be placed with a 1¼-inch minimum diameter grout pipe in a manner conforming to these Standards.

(b) **Improperly Grouted Wells**

If a well has no record of having a properly grouted annular space and poses a significant threat of surface contamination of an underlying potable aquifer or waste of artesian ground water, the solid casing must be perforated before grouting begins. The solid casing section shall be sealed with neat cement in one continuous operation from bottom to ground surface using a 1¼-inch minimum diameter grout pipe in a manner conforming to these Standards. If an interval of the solid casing section cannot be filled after placement of a reasonable amount of neat cement slurry, sand-cement grout conforming to the standards for permanent sealing may be used to fill such interval before continuing the sealing of the blank casing section with neat cement.

Section 3.8 Special Provisions for Artesian Wells

(a) General

Many artesian wells in Hawaii are old and probably have a deteriorated, leaking casing. Consequently, such artesian wells must be abandoned and permanently sealed if found to be leaking, wasting ground water, or not in use. Artesian wells have the same purpose, objectives, and requirements of the abandonment and sealing of wells in general, but usually require more thorough investigation of the physical condition of the well and any possible artesian flow or leakage in the well before satisfactory grouting can be accomplished to assure that hydrogeologic conditions that existed before the well was constructed are restored, taking into account changes which may have occurred since the time of construction.

(b) Preliminary Work

In addition to the preliminary work required for wells in general and described elsewhere in these Standards, artesian wells to be abandoned must be investigated to determine the occurrence, depths and magnitude of any ground-water leakage from the aquifer upward into overlying strata through well casing which has been perforated by corrosion and whose annular space has not been properly grouted. A video or caliper log of the well may be required in such cases, especially if leakage may interfere with proper sealing of the well. An assessment of well conditions and proposed sealing procedures shall be discussed with the commission staff before sealing operations are started. The assessment may include a survey of water levels in adjacent wells, a video log, or a vertical flow meter log to confirm whether or not an artesian well is leaking.

(c) Sealing Procedures

Before placement of grout to permanently seal an artesian well, any flow or leakage in the well must be stopped or reduced so that the confining strata above the artesian aquifer can be effectively sealed with neat cement or sand-cement grout. (Neat cement tends to run away in a flowing artesian well.) The well driller may propose and

use, after consultation with the commission staff, various methods to reduce or stop the artesian flow or leakage, such as the placement of temporary casing.

For example, if the artesian flow is occurring from the open hole section of the well, placement of large rounded cobbles followed by lesser size cobbles and crushed aggregate, or placement of specially formed concrete cylinders may significantly reduce flow in the well. Packers with grout pipe extending below the packer may also be effective in sealing the open hole section.

Once flow from the artesian aquifer has been stopped or significantly reduced, the solid casing may have to be perforated (see Sec. 3.7.b) before grouting the remaining part of the artesian well with sand-cement slurry. Placing or pumping the sand-cement slurry at a high rate through a minimum of 1¼-inch or larger diameter grout pipe may be required to successfully complete the sealing operation, if artesian leakage continues to occur.

If the solid casing is intact and there is no flow in the annular space, the flow inside the casing may be stopped by installing a riser pipe before sealing an artesian well from bottom to top with sand-cement slurry.

Section 3.9 Well Abandonment/Sealing Report

Within 60 days after completion of the required work, the owner or operator of an abandoned well shall file with the commission a well abandonment/sealing report containing the owner's and operator's name and address, the water use permit number, if any, the name and address of the well driller who performed the work, the reason for abandonment/sealing, and a complete description of the work performed.

Section 3.10 Sealing Test Borings (Guidelines)

All test borings after their use has been completed must be abandoned and permanently sealed to protect ground-water resources from potential surface contamination. All obstructions that could interfere with effective sealing operations

should be removed. The State Department of Health must be notified as soon as possible if pollutants or contaminants are known or suspected in the test boring.

Test borings should be completely filled with neat cement slurry from bottom to top in a manner that meets the objectives of the well abandonment/sealing section of these Standards.

Part 4.

PUMP INSTALLATION

Part 4.
PUMP INSTALLATION

Section 4.1 Pump Installation Permits

(a) **General**

No pump or pumping equipment shall be installed, replaced, modified, or repaired in a well without an appropriate permit, unless otherwise provided for in this section.

Within commission-designated water management areas (or aquifer systems), a pump installation permit to install a new pump or replace, modify, or repair an existing pump in a well may be approved by the chairperson if the applicant holds an approved water use permit for such a well. If no water use permit has been obtained, the commission must ~~approve~~ **act on** the application for a pump installation permit.

Within non-designated water management areas (or aquifer systems), a pump installation permit to install a new pump or replace, modify, or repair an existing pump in a well may be approved by the chairperson if the estimated actual water use totals less than 70% of the sustainable yield of the aquifer system in which the well is located. If the estimated actual water use totals 70% or more than the sustainable yield of the aquifer system in which the well is located, the commission must approve such application for a pump installation permit.

The replacement, modification, or repair of an existing permanent pump does not require a pump installation permit if such work does not exceed the existing **or permitted** pump capacity. However, in such cases, the well owner shall notify the chairperson in writing no later than the first working day after initiation of such work and within 30 days of completion of such work shall submit a completed pump installation report (Part II of Well Completion Report form).

Applications for a pump installation permit may be submitted for consideration concurrently with an application for a well construction permit, but will be

approved only after satisfying the conditions of the well construction permit. Applications shall be made on forms provided by the commission and shall be accompanied by a non-refundable filing fee, excepting government agencies, and shall be required for all areas of the state.

The chairperson shall approve or disapprove an acceptably completed pump installation permit application within 90 calendar days of receipt, unless it is filed concurrently with a well construction permit application. Each application shall contain the name of owner or operator; location; contractor's license number; purpose of pump installation; proposed withdrawal and use of water; water use permit information if applicable; type, size, and capacity of the pump; and such other information as the commission may require.

A pump installation permit shall be issued only if the proposed construction complies with all applicable laws, rules, and standards.

Every pump installation permit for ~~an~~ **a new or** existing well without a pumping test meeting these Standards may require that a pumping test under these Standards be conducted. Measurements of time, pumping rate, drawdown, chloride and temperature content shall be recorded and reported as required in these Standards.

Every pump installation permit shall require the pump installation contractor to file a well completion report as required in these Standards.

The permit shall be prominently displayed at the site of the well at all times until the pump installation is completed.

An application for a pump installation permit whose application or amended application is rejected may obtain a hearing before the commission by filing within 30 days of the mailing of the notice of rejection a written petition requesting such a hearing. The hearing shall be conducted as provided in Chapter 13-167, "Rules of Practice and Procedure for the Commission on Water Resource Management."

The commission may modify, suspend, or revoke a permit, after notice and hearing, on any of the following grounds:

1. Material misstatement or misrepresentation in the application for a permit.

2. Failure to comply with the provisions set forth in the permit.

3. Willful disregard or violation of any provision of this part or any rule adopted pursuant thereto.

4. Material change of circumstances or conditions existing at the time the permit was issued.

Every pump installation permit issued shall be for a specified period not to exceed two years, unless otherwise specified in the permit and shall contain the commencement and completion dates for the permitted activity. In determining the commencement and completion dates of the activity, the commission shall take into consideration the:

1. Cost and magnitude of the project.
2. Engineering and physical features involved.
3. Existing conditions.
4. Public interest affected.

The chairperson may extend the completion date of the activity prescribed in the pump installation permit upon a showing of good cause and good-faith performance. If the commencement or completion date is not complied with, the chairperson shall cause the permittee to be notified by certified mail that the permit shall be revoked within 60 days unless the permittee can show good cause that it should not be revoked.

(b) **Emergencies**

When emergency alteration, repair, or replacement of a pump or pumping equipment, including the repair or restoration of structures damaged by a sudden and unforeseen event, is required to prevent or minimize loss of life, risk to public health and safety, or damage to property, a well owner may proceed to effect the emergency work without a permit. Such emergency work shall not increase, but may lower the existing pump capacity.

No later than the first working day after initiation of any emergency work, the well owner effecting the work shall notify the chairperson and describe the nature and circumstances of the remedial work so that the chairperson may issue an emergency authorization.

Within 30 days of notification to the chairperson the well owner effecting the emergency work shall submit to the chairperson a report describing the nature and extent of the emergency work performed, including relevant maps and diagrams showing the details of the work completed.

Section 4.2 General Installation Requirements

(a) Pumps and Pumping Equipment

All installations of pump and pumping equipment on wells should be constructed in such a manner as to prevent the pollution and contamination of the well from surface sources. All installations shall be designed and maintained so that the well, pump, and pumping equipment will be:

1. Designed within the well's pumping characteristics.
2 Installed in a weather and vermin proof manner.
3. Installed for operation without priming, excepting low head, nonpotable irrigation wells.

(b) Above-Grade Pump Connections

All pump installations shall be completed such that the top of the well casing extends a minimum of 12 inches above the prepared ground surface or pump house floor. Pumps may be installed directly onto the well casing and may be connected by threaded or welded joints, bolted flanges with rubber gaskets, or on a concrete platform constructed around the well casing.

For wells located in floodplains, the top of the well casing should extend at least two feet above the 100-year flood level.

(c) **Water Suction Lines**

Water suction lines from a well to a pump installed offset to the well should be installed a minimum of 12 inches above the ground surface or pump house floor. However, water suction lines may be installed below grade for use in manifold systems under negative pressures to connect a battery of low-head nonpotable, irrigation wells.

(d) **Well Vents**

All pump installations shall include a vermin-proof vent installed in the top of the well casing terminating at least one-half foot above the top of the casing, opening pointing downward, and protected with a noncorroding metallic screen.

(e) **Water-Level Monitor Tubes**

Water-level monitor tubes may be required and made accessible for obtaining miscellaneous water-level measurements with a sounding or electronic probe.

Pump installations on water wells located in aquifers where the head is greater than 6.0 feet shall include the installation of a water-level monitor tube attached to the pump column, unless waived by the chairperson. The monitor tube shall consist of 1¼-inch diameter Schedule 80 PVC plastic pipe as listed in ASTM D1785 "Standard Specifications for Poly Vinyl Chloride (PVC) Plastic Pipe, Schedules 40, 80, and 120," and shall be mechanically joined by square form flush joint threads (2 threads per inch) conforming to ASTM F480, or equal.

The bottom of the monitor tube shall be capped and submerged 20 feet below the planned drawdown in wells tapping high-level aquifers, or five feet below mean sea level in wells tapping basal aquifers. The bottom of the monitor tube, just above the bottom cap, shall be perforated with three horizontally drilled, equally spaced, 3/4-inch diameter holes. The top of the monitor tube shall be terminated with a threaded cap and a point which allows easy access for water-level monitoring.

The requirement for installation of a monitor tube shall be in addition to any airline pressure recorder assembly installed.

(f) **Standards of Other Agencies**

The published standards for vertical turbine pump-line shaft and submersible types of the American Water Works Association (ANSI/AWWA E101-88) and as may be amended are incorporated by reference as a part of these Standards. In addition to these Standards, pump and pumping equipment installations for wells to be used by the Water Department of the respective Counties of the State of Hawaii shall meet the standards specified in Volume I, Part III, Section 3 of "Water System Standards, State of Hawaii," 1985, and as may be amended.

Section 4.3 Lineshaft Turbine Pumps

(a) **Mounting**

Lineshaft turbine pumps may be installed directly onto steel well casings using a welded or threaded steel pipe flange with bolts and a watertight gasket, or bolted and sealed with a gasket onto a reinforced concrete platform constructed around the well casing so as to effectively seal the top of the well. All openings through the discharge head into the well constructed for airline and vent shall be sealed watertight with appropriate weather-resistant sealant or gasket.

(b) **Concrete Platform**

Concrete platforms shall be constructed so that the well casing projects at least one inch up into the pump discharge head. If the pump discharge head cannot extend down over the well casing at least one inch, a cast iron or steel subbase sanitary ring at least one inch thick shall be bolted to the base of the discharge head and centered over the well casing. A compressible neoprene gasket shall be installed between the base of the discharge and the sanitary ring unless the metal surfaces are machined. As an alternative, a flange may be welded to the top of the well casing.

(c) **Lubrication**

Water-lubricated lineshaft turbine pumps shall be used for potable wells. Water for lubrication of the pump shall be supplied from the potable water supply system. Water-lubricated lineshaft pumps are recommended for nonpotable wells. Oil-lubricated lineshaft turbine pumps may be used for potable wells provided the oil lubricant conforms to USDA or FDA approved food contact grade formulations.

Section 4.4 Submersible Turbine Pumps

Submersible type turbine pumps may be installed directly onto steel well casings using a welded or threaded steel plate with bolts and a watertight gasket or bolted and sealed with a gasket onto a reinforced concrete platform constructed around the well casing so as to effectively seal the top of the well.

Section 4.5 Discharge Line Configurations

All discharge line configurations shall include an above-ground discharge line, an air-vacuum relief valve near the wellhead followed by a check valve, a tap for water sampling, and an approved water meter or other appropriate device or means for measuring and reporting total water withdrawal on a monthly calendar or work-schedule basis.

Section 4.6 Airlines for Water Level Measurements

Pump installations on wells may be optionally equipped with an airline assembly for the measurement of static and pumping water levels in the wells. The airline assembly shall include a ¼-inch diameter galvanized iron or brass pipe or nylon tubing installed at a depth sufficient to accommodate the maximum planned drawdown in the well. The airline shall be securely strapped to the pump column throughout its length and the elevation of

the bottom of the airline shall be accurately established and reported. The opening in the pump discharge head or pump base plate for the airline shall be constructed so that a weatherproof, watertight seal with caulking or gasket is obtained.

Section 4.7 Pump Installation Report

Within 60 days after the completion of a pump installation, modification, or repair, the pump installation contractor shall file with the commission the following:

1. Pump installation report (on forms provided by the commission).
2. As-built sectional drawing of the well and pump installation.
3. Pumping test record (if no pumping test conforming to these Standards has been performed).

Section 4.8 Water Use, Water Level, and Salinity Records

(a) **Water Use**

The owner or operator of any producing water well shall record the water use on a monthly basis, a work month or preferably a calendar basis. Water use records for all wells shall be reported in gallons per month based upon water meter readings.

(b) **Water Levels**

The owner or operator of a well shall measure and report static water levels in the well on a monthly basis unless the well owner or operator requests and the chairperson agrees that such monthly reports provide no significant hydrologic information. Static water levels shall be measured accurately to the nearest tenth of a foot. **Water levels should be recorded at the end of the longest non-pumping period for the month and pumping water levels reported should be the lowest water level measured for the month if pumping occurred.**

(c) Salinity

The owner or operator of a well shall take grab samples and report the salinity of the well on a monthly basis or less frequently if the well owner or operator requests and the chairperson agrees that such monthly reports provide no significant hydrologic information. The salinity shall be reported as chlorides in milligrams per liter and shall be based on chemical titration methods or on electrical conductivity measurements calibrated against chloride titration data for the well.

(d) **Frequency of Reporting Records**

The frequency of reporting the monthly records shall be specified in the permit or by the chairperson.

Table 1 (SDPTD Form 12/17/97)

STEP-DRAWDOWN PUMP TEST DATA

(not required for wells producing < 100,000 gpd or 70 gpm)

Pumped Well No. _____ Observation well no. _____

Pumped Well Name _____ Distance between Obs. & Pumped Well _____ ft.

Target Q _____ gpm Reference pt. for depth to water _____ ft. msl

Static Water Level @ start of test _____ ft. msl

Water level measurements by: ☐ steel tape ☐ pressure transducer ☐ airline

START TEST Date: _____ Time of day: _____

Flow Meter Reading Start: _____ gals

Suggested Elapsed time **t** (min)	Actual Elapsed Time **t** (min)	Depth to water (nearest 0.1 ft)	Drawdown **S** (unadjusted to nearest 0.1 ft)	Pumping rate **Q** (at least 3 steps) (gpm)	EC (µmhos)	Cl^- (mg/l)	Temp. ___ ° F or ___ ° C	Data in this table is for: ☐ Pumped Well ☐ Observation Well Remarks
-45				0			.	**Start test/ Step 1**
-30				0			.	
-15				0			.	
0				[1]			.	**Start pump**
1							.	
1.5							.	
2							.	
2.5							.	
3							.	
4							.	
5							.	
6							.	
7							.	
8							.	
10							.	
15							.	
20							.	
25							.	
30[2]						[3]	.	**Chloride sample taken**
							.	**Step 2 begin?**
							.	
							.	
							.	
							.	
							.	

Table 1 (SDPTD Form 12/17/97)

Suggested Elapsed time **t** (min)	Actual Elapsed Time **t** (min)	Depth to water (nearest 0.1 ft)	Drawdown **S** (unadjusted to nearest 0.1 ft)	Pumping rate **Q** (at least 3 steps) (gpm)	**EC** (µmhos)	**Cl⁻** (mg/l)	Temp. ___ ° F or ___ ° C	Data in this table is for: ☐ Pumped Well ☐ Observation Well Remarks
							.	
							.	
							.	
							.	
							.	
							.	
							.	
							.	
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Table 1 (SDPTD Form 12/17/97)

Suggested Elapsed time **t** (min)	Actual Elapsed Time **t** (min)	Depth to water (nearest 0.1 ft)	Drawdown **S** (unadjusted to nearest 0.1 ft)	Pumping rate **Q** (at least 3 steps) (gpm)	EC (µmhos)	Cl- (mg/l)	Temp. ___ ° F or ___ ° C	Data in this table is for: ☐ Pumped Well ☐ Observation Well Remarks
							.	
							.	
							.	
							.	
							.	
							.	
							.	
							.	
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							.	
							.	
							.	
							.	
							.	
							.	
							.	
							.	
							.	
							.	
								Max possible duration, water level or quality did not stabilize for any 24 period
			[4]	0				**Begin recovery data next page** Flow meter reading at end of pumped period: ________________ gals

[1] starting pumping rate Q

[2] minimum length of step period of constant pumping rate

[3] minimum mandatory Chloride (Cl^-) measurement/sampling at end of every step

[4] Use same ending drawdown figure as start for recovery

Table 1 (SDPTD Form 12/17/97)

Suggested elapsed time **t** (min)	Actual elapsed time **t** (min)	Depth To Water (nearest 0.1 ft)	Recovery Drawdown **s** (unadjusted to nearest 0.1 ft)	Pumping rate **Q** (gpm)	EC (μmhos)	Cl^- mg/l	Temp. ___° F or ___° C	Data in this table is for: ☐ Pumped Well ☐ Observation Well Remarks
0	0			0			.	**Pump off, start recovery**
1				0			.	
1.5				0			.	
2				0			.	
2.5				0			.	
3				0			.	
4				0			.	
5				0			.	
6				0			.	
7				0			.	
8				0			.	
10				0			.	
15				0			.	
20				0			.	
25				0			.	
30				0			.	
40				0			.	
50				0			.	
60				0			.	
70				0			.	
80				0			.	
90				0			.	
100				0			.	
150				0			.	
200				0			.	
250				0			.	☐ 80% recovery achieved ☐ 80% recovery not achieved

END TEST Date: _____ Time of day: _____

ADDITIONAL REMARKS:

Person in charge of pump test (print):_____

Signature:_____

The signature above indicates that the data reported on this form is accurate and true to the best of the person's knowledge who operated this pump test.

Table 2 (CRPTD Form 12/17/97)

CONSTANT-RATE PUMP TEST DATA

Pumped Well No. _____ Observation well no. _____
Pumped Well Name _____ Distance between Obs. & Pumped Well _____ ft.
Target Q _____ gpm Reference pt. for depth to water _____ ft. msl
Static Water Level @ start of test _____ ft. msl

Water level measurements by: ☐ steel tape ☐ pressure transducer ☐ airline

START TEST Date: _____ Time of day: _____

Flow Meter Reading Start: _____ gals

Suggested elapsed time **t** (min)	Actual elapsed time **t** (min)	Depth to water (nearest 0.1 ft)	Drawdown **s** (unadjusted to nearest 0.1 ft)	Pumping rate **Q** (gpm)	**EC** (µmhos)	**Cl⁻** (mg/l)	Temp. ___ ° F or ___ ° C	Data in this table is for: ☐ Pumped Well ☐ Observation Well Remarks
-45								**Start Test**
-30								
-15								
0	0		0.00			1	.	**Start pump/Cl⁻ taken**
1							.	
1.5							.	
2							.	
2.5							.	
3							.	
4							.	
5							.	
6							.	
7							.	
8							.	
10							.	
15							.	
20							.	
25							.	
30							.	
40							.	
50							.	
60							.	
70							.	
80							.	
90							.	
100							.	

Table 2 (CRPTD Form 12/17/97)

Suggested elapsed time **t** (min)	Actual elapsed time **t** (min)	Depth to water (nearest 0.1 ft)	Drawdown **s** (unadjusted to nearest 0.1 ft)	Pumping rate **Q** (gpm)	**EC** (µmhos)	**Cl⁻** (mg/l)	Temp. ___ ° F or ___ ° C	Data in this table is for: ☐ Pumped Well ☐ Observation Well Remarks
150							.	
200							.	
250							.	
300							.	
400						[1]	.	**Cl⁻ sample taken**
500							.	
600							.	
700							.	
800						[1]	.	**Cl⁻ sample taken**
900							.	
1000						[1]	.	**Cl⁻ sample taken**
1500						[1]	.	**Cl⁻ sample taken**
2000						[1]	.	**Cl⁻ sample taken**
2500						[1]	.	**Cl⁻ sample taken**
3000						[1]	.	**Cl⁻ sample taken**
4000						[1]	.	**Cl⁻ sample taken**
5000						[1]	.	**Cl⁻ sample taken**
6000						[1]	.	**Cl⁻ sample taken**
7000						[1]	.	**Cl⁻ sample taken**
8000						[1]	.	**Cl⁻ sample taken**
9000						[1]	.	**Cl⁻ sample taken**
10000								**Max possible duration,** water level or quality did not stabilize for any 24 period
			[2]	0				**Begin recovery data next page** Flow meter reading at end of pumped period: _____ gals

[1] Chloride sampling required

[2] Use same ending drawdown figure as start for recovery

Table 2 (CRPTD Form 12/17/97)

Suggested elapsed time **t** (min)	Actual elapsed time **t** (min)	Depth to water (nearest 0.1 ft)	Recovery Drawdown **s** (unadjusted to nearest 0.1 ft)	Pumping rate **Q** (gpm)	EC (µmhos)	Cl^- (mg/l)	Temp. ___ ° F or ___ ° C	Data in this table is for: ☐ Pumped Well ☐ Observation Well Remarks
0	0			0			.	**Start recovery**
1				0			.	
1.5				0			.	
2				0			.	
2.5				0			.	
3				0			.	
4				0			.	
5				0			.	
6				0			.	
7				0			.	
8				0			.	
10				0			.	
15				0			.	
20				0			.	
25				0			.	
30				0			.	
40				0			.	
50				0			.	
60				0			.	
70				0			.	
80				0			.	
90				0			.	
100				0			.	
150				0			.	
200				0			.	
250				0			.	☐ 80% recovery achieved ☐ 80% recovery not achieved

END TEST Date: _____ Time of day: _____

ADDITIONAL REMARKS:

Person in charge of pump test (print):_____

Signature:_____

The signature above indicates that the data reported on this form is accurate and true to the best of the person's knowledge who operated this pump test.

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P.O. BOX 621
HONOLULU, HAWAII 96809

Staff Submittal

for the meeting of the
COMMISSION ON WATER RESOURCE MANAGEMENT

March 19, 1999
Honolulu, Oahu

Declaratory Ruling No. DEC-ADM99-S8

STREAM CLEARING ACTIVITIES

BACKGROUND:

Agencies and private applicants periodically need and are required, by Hawaii Revised Statutes (HRS), §46-11.5, to clear streams and streambanks to restore drainage capacity for public safety and flooding issues. Since 1992, staff has received nineteen (19) stream channel alteration permit applications specifically for stream clearing and one request for a declaratory ruling for stream clearing. Although, staff routinely advises applicants whether proposed clearing activities require Stream Channel Alteration Permits (SCAPs), after-the-fact SCAPs and fines have occurred due to confusion over multiple regulatory agency overview and certain statue and rule language. The language in the Water Code exempts routine streambed maintenance activities, but it does not specifically define what constitutes a routine streambed maintenance activity. Stream clearing projects may range from simple hand clearing of vegetation, to major reconstruction of entire channel linings. Also, although most stream clearing activities are minor and do not pose any substantial threat to instream uses, major stream clearing activities can adversely affect instream uses such as water quality and aquatic life.

Since April 15, 1998, staff has been representing to the Commission that it was working on a declaratory ruling that would attempt to clarify and streamline approvals for stream clearing activities. Other regulatory agencies involved and interested in reviewing this clearing work are the State Department of Health (DOH), the U.S. Army Corps of Engineers (COE), U.S. Fish & Wildlife Service (FWS), and the State Divisions of Aquatic Resources (DAR) and Historic Preservation (DOHP). Further, the State Department of Transportation (DOT), Department of Land and Natural Resource (DLNR), and other county agencies are regularly involved with such clearing activities and would like better guidance and clarity to the overall stream regulatory picture for compliance purposes. This declaratory ruling provides a small step towards clarifying and streamlining one part of the overall governmental stream regulatory picture; the Commission's SCAP requirements for stream clearing activities.

as amended
Approved by Commission on
Water Resource Management
at the meeting held on
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AGENDA 1
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Besides greater regulatory clarity, additional objectives that would be realized through this declaratory ruling would be:

- Saving of time and money required for the applicant, reviewing agencies, and formal Commission approval of minor clearing activities;
- Avoiding after-the-fact SCAP applications and associated fines;
- The Commission retaining jurisdictional oversight on certain clearing activities which may adversely affect instream uses.

Staff has reviewed the Commission's statue, rules, declaratory rulings, and previous SCAP actions to clarify the types of watercourse clearing activities that do or do not require SCAPs. Also in this review, staff identifies certain stream clearing activities that the Commission should continue to require SCAPs, but allow the Chairperson to administratively approve.

ANALYSIS/ISSUES:

For this declaratory ruling, the pertinent statutory language is as follows:

HRS §174C-71(3)(A) - *"The Commission shall require persons to obtain a permit from the commission prior to undertaking a stream channel alteration; provided that routine streambed and drainageway maintenance activities and maintenance of existing facilities are exempt from obtaining a permit."*

HRS §174C-3 - ***"Channel alteration"*** *means: (1) to obstruct, diminished, destroy, modify, or relocate a stream channel; (2) to change the direction of flow of water in a stream channel; (3) to place any material or structures in a stream channel; and (4) to remove any material or structures from a stream channel.*

HRS §174C-3 - ***"Stream"*** *means any river, creek, slough, or natural watercourse in which water usually flows in a defined bed or channel. It is not essential that the flowing be uniform or uninterrupted. The fact that some parts of the bed or channel have been dredged or improved does not prevent the watercourse from being a stream.*

HRS §174C-3 - ***"Instream use"*** *means beneficial uses of stream water for significant purposes which are located in the stream and which are achieved by leaving the water in the stream. Instream uses include, but are not limited to:*

(1) Maintenance of fish and wildlife habitats;
(2) Outdoor recreational activities;
(3) Maintenance of ecosystems such as estuaries, wetlands, and stream vegetation;
(4) Aesthetic values such as waterfalls and scenic waterways;
(5) Navigation;
(6) Instream hydropower generation;
(7) Maintenance of water quality;

(8) *The conveyance of irrigation and domestic water supplies to downstream points of diversion; and*

(9) *The protection of traditional and customary Hawaiian rights.*

Key in this language, but not specifically defined, are the terms "*natural watercourse*" and "*routine streambed and drainageway maintenance activities*". The Commission's administrative rules offer no further clarification. Staff believes these terms, in addition to protecting instream uses, make the crucial distinction whether a SCAP is required for watercourse clearing activities.

Part A of this analysis addresses those watercourse clearing activities which are exempted from the SCAP process, while Part B is an analysis of the past SCAPs for stream clearing projects that should continue to require SCAPs but with Chairperson approval if certain criteria are met. Additionally, staff has met with the various affected agencies and has not received any objections to these analyses and recommendations.

Part A. - Watercourse clearing activities for which SCAPs are not required

To assess if a SCAP is required in responding to requests for determination or SCAP applications for watercourse clearing activities, staff first assesses if the water course is a '*natural watercourse*' to make sure it qualifies as a stream. If it does not meet this criterion, then the clearing activity is not subject to the SCAP process.

Staff believes the following types of watercourses do not meet the definition of a stream and, therefore, do not require a SCAP:

a. Watercourses which are man-made or are part of an irrigation system;
b. Excavated subdivision drains;
c. Man-made drainage channels in low lying coastal plains areas;
d. Highway interceptor ditches;
e. Auwai; and
f. Dry gulches (per Declaratory Ruling No. DEC-94-S3 relating to Manawainui Gulch, Molokai).

If the watercourse is determined to be 'natural', and therefore meets the definition of stream, the staff then assesses the magnitude of channel alteration and the reasonable expectation of impacts to instream uses. From past experience, staff believes the following stream clearing activities qualify as 'routine maintenance', do not constitute significant channel alteration or impact on instream uses; therefore, qualify to be exempt from SCAPs under HRS §174C-71(3)(A):

a. Manual clearing of streams or work without the use of heavy equipment.

b. Clearing of sand plugs at stream mouths, as long as the sand plugs are not submerged or do not contain silt or mud.

c. Clearing of lined channels, as long as the work does not disturb submerged (accumulated) silt and mud.

d. Clearing of vegetation, rock, silt, and debris of artificially lined (concrete or grouted rubble paving) non-submerged portions of streams. These activities also include removal of rocks from boulder basins.

e. Reconstruction of channel linings to original configuration. These include activities such as repairing of spalls, patching concrete channel linings, and re-grouting of rubble pavement.

Part B: - Stream clearing activities that affect instream uses:

The scope of these stream-clearing projects usually includes the use of heavy equipment (bulldozer, bobcat, loaders, clamshell, dragline, etc.). Such stream and drainageway clearing is most often done by the City and County of Honolulu, Department of Facility Maintenance (Formerly Department of Public Works), but a few similar projects have also been done by private landowners, the DOT and DLNR.

Staff reviewed and analyzed past SCAPs relating to this category of stream clearing. The pertinent SCAPs and the Declaratory Ruling are listed on the attached Exhibit 1. The length of the stream reach and the amount of material excavated are listed as an indication of the magnitude of the project. In addition, staff reviewed special conditions that were issued with the permits, especially in relation to interagency stream protection regulation (Exhibit 2).

After reviewing and analyzing past stream clearing projects, staff has found:

1. The overriding concern about stream clearing projects is the possible effects the stream clearing will have on water quality, which is an instream use. DAR and FWS consistently raise this concern.

2. Most water quality concerns can be addressed by requiring that the applicant obtain a Section 404 permit from the COE. In cases where a 404 permit is not required, the Commission can impose a special condition on the applicant requiring a Best Management Practice Plan acceptable to the DOH.

3. The majority of stream clearing projects remove less than 500 cubic yards of material and take less than two weeks to complete. Water pollution can be effectively minimized by the use of silt curtains or sandbags and by scheduling work during low streamflow conditions. Larger clearing projects usually require dewatering and may take years to implement. The staff recommends larger stream clearing projects be subject to full agency, public, and Commission review of SCAP applications.

4. DOHP may have concerns over clearing activities in selected streams where archaeological remains have previously been found. Archaeological assessments should be part of evaluating stream-clearing projects. Special conditions should be imposed where necessary. Standard SCAP conditions notify and will continue to notify applicants to take action acceptable to DOHP for all non-exempt stream-clearing activities.

RECOMMENDATIONS:

That the Commission adopt Declaratory Ruling No. DEC-ADM99-S8 as follows:

A. Stream channel alteration permits are not required for activities listed in Part A.

B. The Chairperson may approve stream channel alteration permits for stream clearing activities that may affect instream uses, but meet the flowing criteria:

1. The stream channel alteration permit application must contain the following:

a. A copy of the Clean Water Act, Section 404 permit from the U. S. Army Corps of Engineers, and the Clean Water Act, Section 401 Water Quality Certification and Best Management Practices Plan from the Department of Health. In the event that the project is not subject to these sections of the Clean Water Act the applicant shall submit written documentation from the Corps of Engineers citing the exemption.

b. Clean Water Act Section 402 (NPDES) permit if applicable.

c. Written description of the scope of work including:

1) A location map showing affected stream reach. Cross section(s) showing typical contours of the before and after removal of material. Photographs.

2) Amount of material to be removed.

3) Method of clearing including a description of the types of equipment to be used.

4) Location and practice of spoils disposal.

5) Frequency of clearing time required for each clearing.

6) Written concurrence from the State Historic Preservation Division and the Division of Aquatic Resources that the work may proceed.

2. Must not alter stream diversion works or interim instream flow standard.

3. The amount of material to be removed is less than 500 cubic yards and will take less than 2 weeks to complete the work.

4. Clearing activity does not include the placement or removal of any structures in the stream.

5. Clearing must not be after-the-fact.

6. Clearing must not be in violation of any other applicable Federal, State, or County permit.

7. Must not restrict access to property.

8. Must not be subject to a Special Management Area Permit (HRS, Chapter 205A).

9. Chairperson approved SCAPs are subject to the following conditions:

   a. Standard Chairperson Approved SCAP Conditions (Exhibit 3).

   b. Special conditions may be added by the Chairperson including but not limited to:

      1) Requiring the applicant to produce a Best Management Practice Plan acceptable to the Department of Health.;

      2) Requiring the applicant to notify the State Historic Preservation Division on start of clearing activities.

   c. The permit will be valid as long as the Commission does not revoke the permit or until the Commission amends this Declaratory Ruling.

Respectfully submitted,

Edwin T. Sakoda

EDWINT. T. SAKODA
Acting Deputy Director

Exhibit(s) 1 (Summary of Stream Channel Alteration Permits for Stream Clearing Projects)
2 (Special Conditions Imposed Stream Clearing Projects)
3 (Standard Stream Channel Alteration Permit Conditions for Stream Clearing Projects)

SUMMARY OF STREAM CHANNEL ALTERATION PERMITS FOR
STREAM CLEARING PROJECTS

NUMBER	Applicant	Stream	Cubic Yds	Reach(ft)	Dewater(402)	404
SCAP110	C&CHONDPW	Kahaluu	71,000	1,600	Y	Y
DEC94-S4	DOWALD	Kahawai	2,450	4,500	N	N
SCAP200	C&CHONDPW	Kaneohe	20,000	1,300	Y	Y
SCAP202	C&CHONDPW	Laiewai	1,200	800	Y	N
SCAP225	C&CHONDPW	Manoa	462	3000	N	Y ATF
SCAP232	DOT-HWY	Kaalaea	300	60	N	Y
SCAP235	C&CHONDPW	Oneawa	374	1,200	N	Y
SCAP237	C&CHONDFM	Kaalaea	500	450	N	Y
SCAP238	C&CHONDFM	Kalihi	500	3,900	N	Y
SCAP242	C&CHONDFM	Manoa/Palolo	300	1,400	N	Y
SCAP243	C&CHONDFM	Waolani	200	2,000	N	Y
SCAP244	C&CHONDFM	Nuuanu	50	900	N	Y
SCAP253	C&CHONDFM	Waiomao	30	60	N	Y
SCAP256	C&CHONDFM	Kahawai	100	1,503	N	Y
SCAP259	C&CHONDFM	Waimanalo	100	1,118	N	Y
SCAP260	C&CHONDFM	Kaupuni	100	5,000	N	Y
SCAP262	C&CHONDFM	Pahoa	10	64	N	Y
SCAO263	C&CHONDFM	Kalauao	20	1,056	N	Y
SCAP265	C&CHONDFM	Aiea	20	1,320	N	Y
SCAP266	Campbell Est.	Various	260	17,200	N	Y

EXHIBIT 1

SPECIAL CONDITIONS IMPOSED STREAM CLEARING PROJECTS

NUMBER	SPECIAL CONDITIONS
SCAP-OA-110	Special condition relating to spoils handling
DEC ORD 94-S4	BMPP acceptable to DOH.
SCAP-OA-200	None
SCAP-OA-202	BMPP acceptable to DOH.
SCAP-OA-225	After-the-Fact 404/401 approvals from Corps and DOH w/in 90 days
SCAP-OA-232	Certification of No-rise determination
SCAP-OA-235	401 Certification
SCAP-OA-237	Delegate to chairperson for extension
SCAP-OA-238	Notify DAR on start of clearing activity
SCAP-OA-242	Notify DAR on start of clearing activity
SCAP-OA-243	Notify DAR on start of clearing activity
SCAP-OA-244	Notify DAR on start of clearing activity
SCAP-OA-253	Notify DAR on start of clearing activity
SCAP-OA-256	Notify DAR on start of clearing activity
SCAP-OA-259	Notify DAR on start of clearing activity
	Notify SHPD on start of clearing activity
SCAP-OA-260	Notify DAR on start of clearing activity
SCAP-OA-262	Notify DAR on start of clearing activity
SCAP-OA-263	Notify DAR on start of clearing activity
SCPA-OA-265	Notify DAR on start of clearing activity
SCAP-OA-266	Notify DAR on start of clearing activity
	Notify FWS on start of clearing activity

EXHIBIT 2

STANDARD STREAM CHANNEL ALTERATION PERMIT CONDITIONS
FOR STREAM CLEARING PROJECTS

1. The permit application and shall be incorporated herein by reference.

2. The permittee shall comply with all other applicable statutes, ordinances, and regulations of the Federal, State, and County of governments.

3. The permittee, his successors, assigns, officers, employees, contractors, agents, and representatives, shall indemnify, defend, and hold the State of Hawaii harmless from and against any claim or demand for loss, liability, or damage including claims for property damage, personal injury, or death arising out of any act or omission of the permittee or his successors, assigns, officers, employees, contractors, and agents under this permit or related to the granting of this permit.

4. The permittee shall utilize appropriate erosion control measures during construction, and shall perform construction activities only during periods of low stream flow. The permittee shall prevent debris and construction materials, including cement, petroleum products, and other pollutants, from entering the stream. Wash and dust control water shall be properly disposed.

5. In the event that subsurface cultural remains such as artifacts, burials or deposits of shells or charcoal are encountered during excavation work, the applicant shall stop work in the area of the find and contact the Department's Historic Preservation Division (692-8015) immediately. Work may recommence only after written concurrence by the State Historic Preservation Division.

6. Special conditions in the attached cover transmittal letter are incorporated herein by reference.

EXHIBIT 3

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P.O. BOX 621
HONOLULU, HAWAII 96809

STAFF SUBMITTAL

for the meeting of the
COMMISSION ON WATER RESOURCE MANAGEMENT

February 18, 2004
Honolulu, Hawaii

Revisions to the Hawaii Well Construction and Pump Installation Standards

SUMMARY

The Water Code (§174C-86 HRS) mandates that the Commission shall adopt minimum standards for the construction of wells and the installation of pumps and pumping equipment. The first edition of the Hawaii Well Construction and Pump Installation Standards (Standards) was adopted in 1997. Since then, the Commission staff has been compiling suggestions for revisions based on our experience in working with the Standards and suggestions from drillers, consultants and well owners. In 2003, staff began revising the standards. Since August 2003, when staff distributed a revised draft (attachment A, Proposed revised Standards) for public review, the goal has been to maximize participation from the interested public. Staff's goal in this revision has been to streamline the Standards. Some of the other major goals in the revision efforts are:

- Delegate the authority to the Chairperson to approve variances from the Standards for technical matters
- Maximize resource protection
- Address the suggestions of drillers, well owners and CWRM staff (Attachment B, Summary of written and verbal comments)
- Allow drillers, consultants and well owners more latitude in designing wells and well pumps
- Remove references to regulatory procedures that are already addressed in administrative or declaratory rules

BACKGROUND:

January 23, 1997: The Commission adopted the Hawaii Well Construction and Pump Installation Standards. The adoption of the Standards facilitated the efficient processing of applications by delegating approval of well construction and pump installation permit application approvals from

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Water Resource Management
at the meeting held on
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EXHIBIT 3

the Commission to the Chairperson. Prior to adoption of the Standards, the Commission voted to approve or disapprove each application. This typically required over 100 submittals for action per year.

1997 to 1999: The Commission staff accumulated a list of potential changes to the Standards to address the concerns of the regulated community and to lessen the number of requests for variances because of overly stringent standards.

March 19, 1999: The Commission staff attempted to bring a new version of the Standards to the Commission for adoption but the submittal was deferred because of questions on the rule-making process. Staff continued to add to the list of improvements and additions to the Standards.

April 2003: Staff received a verbal opinion from the Attorney General that HAR §13-168-14 (c) provides for the revision of the Standards without the need for rule-making.

May 2003: Staff began to revise the January 1997 edition of the Standards.

July 31, 2003: Staff informed the Waimea Round Table on the Island of Hawaii about the proposed revisions to the Standards and that a draft would be available soon for review and comments.

August 27, 2003: The first draft of the Standards was distributed with a request for review and comments (Attachment C, Public participation and notification). Emails were sent to interested parties.

August 27, 2003: Staff posts a webpage with information about the revision to the Standards (Attachment D, Hawaii Well Construction and Pump Installation Standards webpage).

September 15, 2003: Staff conducted a videoconference with conference sites in Hilo, Wailuku, Lihue and Honolulu (attachment E, List of attendees at the 9/15/03 meeting). Notice of the videoconference was emailed to the interested public.

September 17, 2003: Staff reported to the Commission on the proposed revision to Hawaii Well Construction & Pump Installation Standards

September 29, 2003: Staff conducted an Oahu Workshop in the Kalanimoku Building (Attachment F, List of attendees at the 9/29/03 meeting).

September 2003: The Well Standards revisions are featured in September/October edition of *The Water Spot,* a Department of Health water quality publication (Attachment G, *Water Spot* article).

October 21, 2003: Staff sent letters and copies of the revised Standards to the Maui, Hawaii and Kauai county water departments requesting feedback on the Standards (Attachment H, Letters to the county water departments).

October 2003 to December 2003: Comment collection period (Attachment I, Written comments from the Department of Health, Hawaii County Department of Water Supply, Honolulu Board of

Water Supply, Mink and Yuen, Inc., and Wai'eli Drilling; Attachment J, List of organizations and individuals that participated in the review process).

December 2003 to January 2004: Staff prepares a final draft that includes input from drillers, consultants and well owners for submittal to the Commission.

January 16, 2004: Staff emailed the final draft to well drillers, consultants, government agencies, county water departments and other potentially interested parties (Attachment K, Comments on final draft).

ANALYSIS/ISSUES:

I. Procedures for Revising Standards

The Water Code (§174C-86 HRS) requires that the Commission on Water Resource Management (Commission) adopt minimum standards for the construction of wells and the installation of pumps and pumping equipment. Administrative Rule §13-168-14 states:

§13-168-14 Well construction and pump installation standards.

(a) The minimum standards referenced in this section, shall be such as to ensure the safe and sanitary maintenance and operation of wells, the prevention of waste, and the prevention of contamination of ground water aquifers. The standards for well construction specified in The Hawaii Well Construction and Pump Installation Standards, adopted by the Commission on Water Resource Management, and as may be amended, is hereby incorporated by reference.

(b) The minimum standards for the installation of pumps and pumping equipment shall also provide for the installation of devices to measure the amount of ground water being withdrawn from the wells. The Hawaii Well Construction and Pump Installation Standards, as may be amended, is hereby incorporated by reference.

(c) The well construction and pump installation standards referenced in this section shall serve as minimum guidelines and shall be subject to review and modification by the commission.

(d) If any well construction or pump installation standard is violated and as a consequence ground water is wasted or any well is contaminated, the commission, after giving notice of the defect to the owner of the land on which the well is located, and giving such owner a reasonable time to correct the defect, may itself correct the defect and charge the land owner for the cost of such correction. Such cost constitutes a lien on the land until paid. The lien may be foreclosed in any court of competent jurisdiction, and in such foreclosure suit, the court shall allow the commission reasonable attorney's fees. [Eff. March 21, 1997] (Auth: HRS §174C-8) (Imp: HRS §174C-82, 174C-86)

Note that HAR §13-168-14 (c) of this rule allows the Commission to review and modify these minimum standards as necessary. The Attorney General has confirmed that the procedure for revising the Standards is through adoption by the Commission at a regular meeting.

II. Delegation of Variance Approvals

Under the current rules, the Commission is required to rule on variances from the Standards. Staff recognizes that the Standards do not apply to all cases. The proposed adoption of the revised Standards will facilitate the efficient processing of variance requests by delegating the approval of variances to the Chairperson. There were fifteen requests for variances before the Commission from 2000 to 2003. Delegation of this authority to the Chairperson will result in faster service to the public and reduce staff and Commission time requirements. Also, the reduction of paperwork will increase the latitude for innovation in well construction among drillers and water resource consultants.

Section 1.5 of the Standards deals with exemptions (variances) from unusual conditions. Currently the standards delegate this authority to the Commission. The following paragraphs highlight the changes.

Current Standards:

> Section 1.5 Exemptions from Unusual Conditions
>
> Although the Standards presented herein are considered adequate for the prevention of contamination and waste of ground water throughout the State of Hawaii, if the commission finds that compliance with any of the requirements of these Standards is impractical or will not provide adequate protection of ground-water quality because of unusual local conditions or circumstances, a variance may be requested and the commission may waive compliance and prescribe alternative requirements which will prevent contamination and waste of ground water in a manner otherwise equal to these Standards.

Proposed Standards:

> Section 1.5 Exemptions from Unusual Conditions
>
> The Standards presented herein are considered adequate for the protection of ground water and the prevention of ground-water waste from improper construction. If the Chairperson finds that compliance with any of the requirements of these Standards is impractical because of unusual conditions or circumstances the Chairperson may waive compliance with that requirement and prescribe alternative requirements. If the Chairperson determines that because of unusual conditions or circumstances these Standards do not provide adequate protection of the aquifer, then the Chairperson may also prescribe alternative or additional requirements.

The Commission has previously approved some delegation of well permits. On February 15, 1989, the Commission authorized the Chairperson to approve well construction permits for monitor, sampling, observation wells and test holes and for the sealing of unused or abandoned wells. On March 16, 1994, the Commission authorized the Chairperson to approve permit applications for the replacement of pumps less than or equal to the existing pump capacity where there are no other disputes or complaints. On January 23, 1997 the Commission authorized the Chairperson to approve well construction and well modification permit applications (under Hawaii Revised Statutes §174C-86). Also, in aquifer systems that are not designated water management areas and where estimated water usage as of the date of application is less than 70% of sustainable yield, the Chairperson was authorized to approve pump installation and pump modification

permits. In January 1997 the Commission also eliminated the requirement for a new or additional permit application for the replacement of pumps less than or equal to the existing pump capacity.

III. Summary of Significant Revisions

- Added a section to safeguard agricultural wells from backflow.
- Added more flexibility in grouting methods. Removed requirement for the 1-¼ inch tremie pipe.
- Added more flexibility in water-level monitoring methodology.
- Added more flexibility to the pump test procedures while still allowing for the collection of valuable water resource data.
- Added more grouting materials – cement, bentonite and other materials upon request.
- Clarified the well disinfection section to make it more useful in the field.
- Deleted text that was already in the water code or the administrative rules.
- Defer elevation surveys for permanent pump capacities less than 70 gpm.
- The driller or pump installer is responsible for applying and complying with the well drilling or pump installation permit.
- Made pump installation more flexible.
- Minimum grouted annular space is 1.5 inches if positive displacement is used.
- Reduced the testing and monitoring requirements for salt-water wells.

IV. Promulgation of Standards

If the Commission adopts these revisions to the Standards:

- The revised Standards will provide a foundation for updating the permitting process. For example, the revised Standards emphasize that the driller or pump installer is responsible for applying for the drilling permit and complying with the conditions of the permit.
- Staff will arrange with the Department of Commerce and Consumer Affairs to have questions from the Standards placed on the licensing examination for new well drilling and pump installation contractors licenses.
- Staff will mail copies of the Standards to drillers, well drilling consultants, and to the county water departments. Also, the Standards will be available on the CWRM webpage and hard copies will be available on request.

RECOMMENDATION:

1. The Commission adopts the proposed February 2004 edition of the **Hawaii Well Construction and Pump Installation Standards**, Attachment A.

Respectfully submitted,

ERNEST Y.W. LAU
Deputy Director

Attachment A	Proposed revised Standards
Attachment B	Summary of written and verbal comments
Attachment C	Public participation and notification
Attachment D	Hawaii Well Construction and Pump Installation Standards webpage
Attachment E	List of attendees at the 9/15/03 meeting
Attachment F	List of attendees at the 9/29/03 meeting
Attachment G	*Water Spot* article
Attachment H	Letters to the county water departments
Attachment I	Written comments from the Department of Health, Hawaii County Department of Water Supply, Honolulu Board of Water Supply, Mink and Yuen, Inc., and Wai'eli Drilling
Attachment J	List of organizations and individuals that participated in the review process
Attachment K	Comments on final draft

APPROVED FOR SUBMITTAL:

PETER T. YOUNG
Chairperson