Dear Water Use Permittee:

Hawaii Prince Golf Club/Hawaii Prince Hotel Waikiki Corp.,
Well Nos. 1900-02, 1900-17 to 20, 1901-03, WUP No. 469, 0.301 mgd, TMK 9-1-10:6
Haseko (Ewa), Inc., Well Nos. 1901-06, 1902-01, 1902-09 to 11, WUP No. 650, 3.300 mgd, TMK 9-1-12:5
Department of Parks and Recreation, Well No. 2001-03, WUP No. 167, 0.030 mgd, TMK 9-1-61:35
Palm Court Association, Well No. 2002-12, WUP No. 169, 0.040 mgd, TMK 9-1-61:22
Palm Villa II Association, Well No. 2001-08, WUP No. 168, 0.048 mgd, TMK 9-1-61:27
Arbors Association, Well No. 2001-07, WUP No. 171, 0.063 mgd, TMK 9-1-61:32
U.S. Fish & Wildlife, Well No. 2101-14, WUP No. 247, 0.216 mgd, TMK 9-1-17:12
Gentry Development Co., Well No. 2001-04, WUP No. 302, 0.040 mgd, TMK 9-1-61:7
Gentry Development Co., Well No. 2001-09, WUP No. 344, 0.023 mgd, TMK 9-1-61:2
Ewa by Gentry Community Association, Well No. 2001-05, WUP No. 450, 0.066 mgd, TMK 9-1-70:132
Gentry Homes, Ltd., Well No. 2001-12, WUP No. 504, 0.249 mgd, TMK 9-1-102:31
Gentry Homes, Ltd., Well No. 1901-05, WUP No. 505, 0.056 mgd, TMK 9-1-69:8
U.S. DOC/NOAA/NWS, Well No. 1900-23, WUP No. 501, 0.023 mgd, TMK 9-1-1:1
Coral Creek Golf, Inc., Well No. 2002-17, WUP No. 577, 0.498 mgd, TMK 9-1-69:10
Coral Creek Golf, Inc., Well No. 2001-13, WUP No. 578, 0.800 mgd, TMK 9-1-69:10
Coral Creek Golf, Inc., Well Nos. 2001-14, 2002-15, 17, 19, WUP No. 579, 0.892 mgd, TMK 9-1-69:10&11, 9-1-61:54
AOAO Suncrest/The Shores/Lombard Way/Avalon, Well No. 2001-10, WUP No. 629, 0.022 mgd, TMK 9-1-10:17
State Housing Community Development Corporation of Hawaii, Well Nos. 2003-04, 07, WUP No. 432, 0.494 mgd, TMK 9-1-16:25
State Housing Community Development Corporation of Hawaii, Well Nos. 2003-08, WUP No. 520, 0.237 mgd, TMK 9-1-16:108
Kapolei People’s Inc., Well Nos. 2003-01, 02, 05, WUP No. 438, 1.000 mgd, TMK 9-1-16:25
Honolulu Board of Water Supply, Well Nos. 1905-08, 10, WUP No. 740, 0.302 mgd, TMK 9-1-16:1

Conversion of Interim Water Use Permits for
New Irrigation Uses to Permanent Water Use Permits
Puuloa and Kapolei Ground Water Management Areas, Oahu

This letter serves as your official notice of action by the Commission on Water Resource Management (Commission) on the subject water use permits.
By a unanimous vote at their meeting on July 12, 2006, the Commission corrected the error of approving and issuing interim permits for new irrigation uses in the Puuloa and Kapolei Ground Water Management Areas of the Ewa Caprock Aquifer Sector Area by converting the subject interim water use permits to permanent water use permits. All terms and conditions of the permits shall remain unchanged, except for Special Condition d., which is deleted.

The Commission ruled that permittees shall be notified by letter of the Commission’s action to convert these water use permits from interim to permanent and the deletion of Special Condition d. The Commission further ruled that re-issuance of these water use permits is not necessary.

Please be advised that a compliance review will be initiated shortly as required under §174C-56 Hawaii Revised Statutes. We recommend that you carefully review the conditions of your permit and ensure that you are in compliance with all Standard and Special Conditions.

If you have any questions, please contact Lenore Nakama at 587-0218.

Sincerely,

DEAN A. NAKANO
Acting Deputy Director

LYN:ss
4. The permittee shall submit a detailed agriculture plan to support any future water use permit application for increased agricultural use at this parcel.

MOTION: (Ching/Frazier)
To approve submittal as amended by staff
UNANIMOUSLY APPROVED

C. GROUND WATER REGULATION


CONVERSION OF INTERIM WATER USE PERMITS, FOR NEW IRRIGATION USES TO PERMANENT WATER USE PERMITS, Puuloa and Kapolei Ground Water Management Areas, Oahu

Presentation of submittal: Lenore Nakama
RECOMMENDATION:

Staff recommends that the Commission correct the error of approving and issuing interim permits for new irrigation uses in the Puuloa and Kapolei Ground Water Management Areas of the Ewa Caprock Aquifer Sector Area by converting the subject interim water use permits to permanent water use permits. All terms and conditions of the permits shall remain unchanged, except for Special Condition d., which is deleted. The permittees shall be notified by letter of the Commission’s action to convert these water use permits from interim to permanent and the deletion of Special Condition d. Re-issuance of these water use permits is not necessary.

DISCUSSION:

Ms. Nakama stated that these interim permits expired on July 1, 2006 and staff is recommending that the Commission correct the error that was made in issuing the permits as interim, rather than permanent, water use permits. Action is also requested to inform these users that they may continue to pump their wells in accordance with their allocations and the chloride limit placed on irrigation wells in the Ewa Caprock Aquifer Sector Area.

Commissioner Ching inquired whether the subject permits covered all the users in the Ewa Caprock Aquifer Sector Area. She was concerned that giving certain permits a permanent status may give them a higher priority or status over other interim permits.

Ms. Nakama stated that the submittal covered all the new irrigation users which had a duration of July 1, 2006 attached to their interim permits. There are other interim permits that have been issued for industrial and other non-irrigation uses in the Ewa Caprock Aquifer Sector Area, there are also other interim permits that have been issued for other new and existing uses elsewhere in the State. Staff will address the rest of the interim permits as part of the 20-year compliance review that is mandated by the Water Code. Staff does not feel that the type of permit (i.e., interim or permanent) under which the water is being used will have a bearing on water use priorities should a future competition situation arise.

MOTION: (Ching/Frazier)
Approval of staff recommendation
UNANIMOUSLY APPROVED

G. NON-ACTION ITEMS

1. Rainfall Index Update Presentation by Dr. Pao Shin Chu, State Climatologist, University of Hawaii, Department of Meteorology

Presentor of non-action item: Neal Fujii
Minutes July 12, 2006

Graduate student, Ms. Cindy Ditner presented an update of rainfall throughout the state through a PowerPoint presentation. She stated that it has been 33 years since the last update was done. In preparing this index they gathered rainfall data throughout the State through temperature, elevation and rain gages. If a station did not submit information for 4 months within a calendar year then it was deleted.

H. NEXT COMMISSION MEETING (TENTATIVE)

1. August 16, 2006
2. September 20, 2006

The meeting was adjourned at 12:00 p.m.

Respectfully submitted,

PAULYNE K. ANAKALEA
Secretary

Approved as submitted:

DEAN A. NAKANO
Acting Deputy Director
Ref: ewa caprock interim wup conversion.sub

STAFF SUBMITTAL

for the meeting of the
COMMISSION ON WATER RESOURCE MANAGEMENT

July 12, 2006
Honolulu, Oahu

Hawaii Prince Golf Club/Hawaii Prince Hotel Waikiki Corp.,
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CONVERSION OF INTERIM WATER USE PERMITS
FOR NEW IRRIGATION USES TO PERMANENT WATER USE PERMITS
Puualo and Kapolei Ground Water Management Areas, Oahu

ITEM C-2
PERMITTEES: See Exhibit 1
LANDOWNERS: See Exhibit 1

SUMMARY OF REQUEST:

Staff recommends that the Commission correct past water use permit approval errors in the Puuloa and Kapolei Aquifer Systems Areas of the Ewa Caprock Ground Water Management Area and convert the interim water use permits for new irrigation uses to permanent water use permits.

LOCATION MAP: See Exhibit 2

BACKGROUND:

On March 3, 1993, the Commission officially adopted the boundary of the entire brackish Ewa Caprock Aquifer as a separate aquifer overlying the existing designated ground water management areas of the Waipahu-Waiawa, Ewa-Kunia, and Makaiwa Aquifer System Areas. Due to uncertainties regarding the caprock's sustainable yield and nonpotable utility, the Commission did not adopt a sustainable yield estimate for the caprock. All permitted Ewa Caprock irrigation uses prior to 1993 were operating under permanent water use permits.

Designation of the Ewa Caprock and its Aquifer System Areas as water management areas was precipitated by the City and County of Honolulu's (City) urbanization plans for the Ewa area and a City ordinance requiring dual water systems for all new developments. Potable water was to be provided through the municipal system. Possible sources of non-potable water were brackish ground water from the Ewa Caprock Aquifer Sector Area and reclaimed sewage effluent from the Honouliuli Wastewater Reclamation Facility. The estimated non-potable demand of 25 mgd after full buildout (Kumagai, 1996) far exceeded the estimated natural recharge to the caprock aquifer of less than 16 mgd (Bauer, 1996).

Because there were concerns regarding the future viability of the caprock as a dependable source of brackish water due to the significant loss of return irrigation recharge from sugarcane agriculture, in 1993, the Commission began awarding temporary one-year permits for new uses of caprock ground water. In analyzing water availability, the Commission used guidelines for estimating sustainable yields for the Puuloa, Kapolei, and Malakole Aquifer System Areas (Yuen & Associates, Inc., 1989; Exhibit 2).

On July 13, 1994, the Commission extended temporary one-year permits. The duration of the extended permits was to July 12, 1995.

On July 5, 1995, the Commission extended the permits, which were now called interim (instead of temporary) permits.

On March 13, 1996, the Commission deferred action on existing interim permits and new applications pending a decision on the establishment of a formal sustainable yield for the caprock.

Also on March 13, 1996, the Commission adopted the following policy statement, clearing the way for application of reclaimed water on lands overlying the Ewa Caprock Aquifer Sector Area:
"It is the policy of the Commission on Water Resource Management (Commission) to promote the viable and appropriate reuse of reclaimed water in so far as it does not compromise beneficial uses of existing water resources.

I. Ewa Caprock

Recognizing that reclaimed water is a valuable resource in the Ewa Plain, direct or indirect reuse will be championed by the Commission. It is the policy of the Commission that the water resources of the Ewa Caprock Aquifer will be allocated only for nonpotable uses."

On May 14, 1997, the Commission adopted a sustainable yield based on a sustainable capacity for each individual irrigation well at 1,000 milligrams per liter (mg/l) of chloride as an interim management plan, subject to review within two (2) years. The rationale behind the chloride cap was to limit pumpage in those wells approaching the limit, to prevent a build-up of sodium in the clay soils, and to protect other users adjacent to those pumping higher chloride water. The Commission also adopted the Puuloa, Kapolei, and Malakole Aquifer System Areas in the Ewa Caprock Aquifer Sector Area and approved pending applications for new and continued irrigation uses. The interim water use permits were to expire on October, 1998 or until such time that a significant change in permitted, actual, or projected uses or water supply occurs. The October, 1998 date coincided with the possible revocation of unused (former Oahu Sugar Company) agricultural permits and also provided a milestone date to check on the progress of wastewater reuse for private caprock well owners, the availability of which was then scheduled for July, 1999. (Note: Wastewater reuse was anticipated due to the 309 Consent Decree settlement between the City and DOH/EPA in 1994, which required the City to implement a reuse program with agreed-upon time schedule and associated volumes: 2.0 mgd by 7/1/98, 5 mgd by 6/30/99 and 10 mgd by 7/1/01. The City requested and received extensions to the implementation schedule.)

On October 22, 1998, the Commission extended the interim water use permits, subject to the Standard Conditions of a water use permit and new special conditions. The interim permits specified a duration to July, 2001, or 1) until treated wastewater is available and acceptable for use, or 2) until such time that a significant change in permitted, actual, or projected uses or water supply occurs.

On July 20, 2000, an agreement was reached between the Honolulu Board of Water Supply (BWS), the City, and U.S. Filter for BWS' purchase of the Honolulu Wastewater Reclamation Facility. The agreement includes BWS becoming the purveyor of reuse water, with the task of securing customers for 10 mgd by July 1, 2001. U.S. Filter will operate the facility for BWS under a 20-year service agreement. The City will provide secondary effluent to the facility and will take back 4 mgd of the R-1 water for City reuse applications. Some of the reclaimed water will supply industrial uses at Campbell Industrial Park.

On July 18, 2001, the Commission extended the interim water use permits, subject to the Standard Conditions of a water use permit and new special conditions (Exhibits 3 and 4). Special Condition 3 specifies that the duration of the interim permits is to July 1, 2006, or 1) until treated wastewater is available and acceptable for use, or 2) until such time that a significant change in permitted, actual, or projected uses of water supply occurs.
ANALYSIS/ISSUES:

All of the subject permits are for new irrigation uses that have a July 1, 2006 expiration date. Under the Water Code and Administrative Rules, interim permits are only mentioned in the sections dealing with existing uses. Section §174C-50 HRS contains the provisions for existing uses. Subsection (e) provides for the issuance of interim permits for existing uses:

“§174C-50 Existing uses. ...(e) The commission shall issue an interim permit; provided that the existing use meets the conditions of subsection (b). The commission shall also issue an interim permit for an estimated, initial allocation of water if the quantity of water consumed under the existing use is not immediately verifiable, but the existing use otherwise meets the conditions of subsection (b) for a permit of an interim permit. An interim permit is valid for such time period specified therein. The commission may issue successive interim permits of limited duration. Interim permits are subject to revocation under section 174C-58. Whenever interim permits are to be issued, the time periods specified in subsection (d) apply to the issuance or nonissuance of interim permits.” §174C-50(e) HRS

Staff believes the intent of the provision is to bring existing users in newly-designated areas under regulation in a timely manner by issuing interim permits pending verification of the quantity of the existing use. Subsection (f) provides for the installation of metering or gauging devices, and if so prescribed, “...such metering or gauging devices shall be in place and operational for at least one year before a determination is made as to the quantity of water being consumed in an existing use and a final permit is issued.” §174C-50(f) HRS

Because the Water Code gives preference to existing uses over new uses and water reservations, it is important that permitted existing use quantities be verified. In the event of future competition, existing uses may have a higher priority than new uses.

In issuing permits for new uses, the applicable statute, §174C-53 HRS, does not mention interim permits.

The recommended action is to correct the error that was made in issuing interim permits for new uses and to let users know that they can continue their use beyond July 1, 2006, subject to the Standard and Special Conditions that have been attached to these permits (Exhibits 3 and 4), with the exception of Special Condition d., which limits the duration of these new use permits. Special Condition d. is not necessary because the Water Code provides for review of water use permits (§174C-56 HRS), modification of water use permits (§174C-57 HRS), and revocation of water use permits (§174C-58 HRS); therefore, permanent permits are still subject to review, modification, and revocation.

The Deputies Attorney General have concurred that the awarding of interim permit for new uses is an error. The erroneous practice of approving and issuing interim permits for new uses was corrected beginning in about 2003. The current practice of the Commission is to approve permanent permits for new uses, which are always subject to standard and special conditions that define limitations of these permits.

There are other instances in which the Commission has issued interim permits for new uses in the Ewa Caprock and other water management areas. However, the Commission did not attach specific expiration dates to other interim permits for new uses. Therefore, the staff is planning to address the status of other interim permits, as well as all permanent water use permits, including the subject permits, as part of the 20-year compliance review that is required under §174C-56 HRS. This compliance review will be initiated in 2007 and completed in 2008.
RECOMMENDATION:

Staff recommends that the Commission correct the error of approving and issuing interim permits for new irrigation uses in the Puuloa and Kapolei Ground Water Management Areas of the Ewa Caprock Aquifer Sector Area by converting the subject interim water use permits to permanent water use permits. All terms and conditions of the permits shall remain unchanged, except for Special Condition d., which is deleted. The permittees shall be notified by letter of the Commission’s action to convert these water use permits from interim to permanent and the deletion of Special Condition d. Re-issuance of these water use permits is not necessary.

Respectfully submitted,

DEAN A. NAKANO
Acting Deputy Director

Exhibit(s):
1 (Interim Water Use Permittees)
2 (Location Map)
3 (Standard Water Use Permit Conditions)
4 (Special Water Use Permit Conditions)

APPROVED FOR SUBMITTAL:

PETER T. YOUNG
Chairperson
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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 July 18, 2001 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;

EXHIBIT 3
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. 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).

11. This permit shall be subject to the Commission's periodic review of the [Puuloa or 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 [Puuloa or Kapolei] Aquifer System, or relevant modified aquifer(s), is reduced.

12. 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.

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

14. 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.

15. 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.

EXHIBIT 3
16. 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 [Puuloa or Kapolei] Ground-Water Management Area.

17. 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.

18. Special conditions in the attached cover transmittal letter are incorporated herein by reference.

19. 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.
SPECIAL CONDITIONS

a. Should an alternate permanent source of water be found, the Commission reserves the right to revoke the 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, unless a variance from the chloride limit has been granted. The authority to approve future variance requests is delegated to the Chairperson.

d. The duration of the interim permit shall be
   a) to July 1, 2006, 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. Action on any interim permit may be initiated by the Commission or any permittee upon letter request or pursuant to §174C-57 Haw. Rev. Stat. (Modification of permit terms).

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

g. Require adherence to the chloride sampling protocol shown in Attachment B and the submittal of weekly chloride data. The authority to approve variances from the weekly reporting requirement is delegated to the Chairperson.

h. Require adherence to the Conservation Conditions shown in Attachment C.

i. In the event a water shortage is declared by the Commission, permittees in the Puuloa Aquifer System shall comply with the Puuloa Water Shortage Plan adopted by the Commission.
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)

Attachment B
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.
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1 Assumes saturated well depth of 100 feet.

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

Attachment C
June 17, 2004

Ref: coral creek variance request.act

Mr. K.Y. Kang
Coral Creek
91-1111 Geiger Road
Ewa Beach, HI 96706

Dear Mr. Kang:

Notice of Commission Action
Request for a Variance from the 1,000 MG/l Chloride Limit
(Well Nos. 2001-13 & 2002-15,17,19)

This letter serves as your official notice of action taken by the Commission on Water Resource Management (Commission). By a unanimous vote of the Commission at their meeting on June 16, 2004, the Commission denied the subject request.

If you have any questions, please contact Lenore Nakama of Commission staff at 587-0218.

Sincerely,

YVONNE Y. IZU
Deputy Director

LN:ss
MINUTES
FOR THE MEETING OF THE
COMMISSION ON WATER RESOURCE MANAGEMENT

DATE: WEDNESDAY, JUNE 16, 2004
TIME: 9:00 A.M.
PLACE: KALANIMOKU BUILDING
CONFERENCE ROOM 132
1151 PUNCHBOWL STREET
HONOLULU, HAWAII 96813

CALL TO ORDER

Chairperson Peter Young called the meeting of the Commission on Water Resource Management to order at 9:04 a.m.

ROLL CALL

The following were in attendance:

MEMBERS
Mr. Peter Young
Mr. Clayton Dela Cruz
Dr. Chiyome Fukino
Mr. James Frazier
Ms. Stephanie Whalen

STAFF
Deputy Director Yvonne Izu, Roy Hardy, Ed Sakoda, Faith Ching, Kevin Gooding, Charley Ice, Lenore Nakama and Dean Nakano

COUNSEL
Jay Paige, Esq.

OTHERS
Koa Kaulukukui, Kat Brady, Dr. Jonathan Scheuer, Kapua Sproat, Neal Fukumoto, Melvyn Ho, Mel Lima, Manabu Tagomori, Kyun Kim, Rachael Oshiro, Lance Foster, Ben Ishii, Jason Yazawa and Barry Usagawa

All written testimonies submitted at the meetings are filed in the Commission office and are available for review by interested parties.
APPROVAL OF MINUTES

Deputy Director Izu indicated that the dates in the header of the minutes were incorrect and should have read May 19, 2004 instead of June 16, 2004.

MOTION: (Whalen/Frazier)
To approve as amended, the minutes of the May 19, 2004 meeting as circulated.

SUBMITTALS


Deputy Director Izu stated that staff will be providing the Commissioners with a briefing on the history of the Ewa caprock and reuse issues prior to presentation of the submittal.

Kevin Gooding passed out documents to the Commissioners and also provided a map of the Ewa Caprock Aquifer. Mr. Gooding pointed out on the map that the formation of the caprock varies in size from 1000 feet thick and narrows down to nothing. He also pointed out the principal water-producing areas on the map. Mr. Gooding indicated that there are two general formations, the upper limestone and the lower limestone. He indicated that the lower limestone is salty. The upper limestone is brackish, is exploited for water use, and is also recharged by fresh water from either irrigation return, leakage from the basalt or from rainfall. Mr. Gooding indicated that it does not rain much (maximum 20-inches) over the caprock. Mr. Gooding also gave a brief history of the chlorides and indicated that all the issues regarding the caprock related to the chloride content of the ground water. He went on to discuss the chloride history starting from the 1930's when the plantations began producing water from the caprock. Additionally, imported irrigation water from old plantation basal wells was also being applied. Because the applied basal irrigation water was salty, the return irrigation water was salty, and the general water quality of the caprock was fairly brackish. He continued by indicating that around 1950, they sealed the old wells and brought on newer wells. Mr. Gooding indicated that in a thirty-year period, chloride levels were relatively low because return water was fresher. In November 1994, the plantation shut down, which stopped the pumping of the EP sources and the chlorides continued on up.

Mr. Gooding pointed out on the map a well that was recently installed near the Hawaii Prince source (EP-22) and also indicated that the well has been producing 1400 to 1800 parts per million (ppm) chloride. Mr. Gooding indicated that there are several Gentry wells that are located in sweet zones (chlorides are relatively
low, 500 to 700 ppm chloride). They are located in the vicinity of Coral Creek Golf Course. Mr. Gooding indicated that the Hawaii Prince source has generally been over 1,000 ppm whereas Gentry wells have been well below 1,000 ppm. Since the plantation closed, there has been almost no basal water irrigation return, significant land use changes and a change from sugarcane to weeds. Although water use has decreased since the plantation time, chlorides have been steadily increasing at many wells. Mr. Gooding indicated that the Gentry wells have been stable and some of the Coral Creek Golf Course wells are chloride-sensitive. Mr. Gooding said that before Coral Creek Golf Course had access to R-1 water, they pumped up to 1,500,000 gallons per day out of their caprock wells. In October 2001, they almost stopped pumping, when they began to receive R-1 water. The chloride content of Coral Creek’s well water has been as high as 4,000 ppm, and in more recent history, around 1,000 ppm when they are almost not pumping at all. Mr. Gooding continued by saying that the caprock was heterogeneous and that it changes a lot. Over a very short area, wells can have a much different chloride content.

Lenore Nakama continued by summarizing the history of reclaimed water and water issues surrounding the Ewa Caprock Aquifer. The following topics were covered:

- 1984 Ewa Water Master Plan
- Development of dual water systems
- 2020 potable and non-potable water demands forecasts
- Demonstration Recharge Trench
- 309 Consent Decree
- CWRM Reclaimed Water Policy
- CWRM Re-evaluation of the Ewa Caprock sustainable yield
- Puuloa Caprock Users Group
- CWRM Interim Management Plan Adoption
- Reclaimed Water Champions Group
- BWS Purchase of Honouliuli Wastewater Reclamation Facility

PRESENTATION OF SUBMITTAL: Lenore Nakama

RECOMMENDATION:

Based on the foregoing, staff recommends that the Commission deny Coral Creek Golf Course’s request for a variance from the 1,000 mg/L chloride cap.

DISCUSSION:

Commissioner Frazier asked the staff if the water features on the golf course were recycling the same water or if pumped water is going into the feature then percolating through. Mr. Gooding replied that some of the features are intersecting ground water and that there are signs that they may be plugged up by
clay and they are not very efficient, but that they are at the ground water level. Ms. Nakama continued by stating that some of the water features are actually areas of recharge, where pumped water from a drilled well circulates down through a series percolation ponds. Therefore some of the sources are discharge points and some of them are functioning as recharge points.

Commissioner Whalen asked if the lined reservoirs were being used for storage for irrigation and if the other ones were aesthetic. Staff indicated that there is only one lined reservoir and that it is being used for storage. Commission Whalen asked if connecting to the aquifer means the salty aquifer and not the deep aquifer. Staff indicated that they were referring to the brackish aquifer in the upper limestone formation.

Commissioner Whalen asked if the request was for interim permits to use the wells and if there is a lot of use of the wells. Ms. Nakama indicated that the permits allow the use to continue until the Commissioners are scheduled to revisit the interim permits in July 2006 or when one of the other two triggers are met. At this time, all the interim permittees are allowed to pump their wells within their allocations, provided they do not exceed the chloride cap. Coral Creek Golf Course sources are extremely chloride-sensitive and they would like to exceed the chloride cap.

Commissioner Frazier asked if Coral Creek Golf Course is using the most efficient turf and plants. Ms. Nakama indicated that they understand that Coral Creek Golf Course is using the most salt-tolerant turf.

Commissioner Whalen asked if the rest of the landscaping on the golf course ground was also salt-tolerant, if Coral Creek Golf Course was getting enough R-1 water, and if there is a limit from Honolulu Board of Water Supply (BWS) as to the amount of R-1 water that is available to them. Ms. Nakama indicated that a representative from Coral Creek Golf Course and BWS was available for questions.

Commissioner Whalen asked if Coral Creek Golf Course is using drought-tolerant plant species in their non-turf areas. Mr. Kyun Kim, representing Coral Creek Golf Course, indicated that the grass that they are planting could sustain chloride levels greater than 4,000 ppm. Also the kiawe trees and other plantings can also sustain high chloride levels. Mr. Kyun also stated that approximately 70 to 80 percent of the non-turf areas are in drought-tolerant plants. Commissioner Whalen asked Mr. Kyun if Coral Creek Golf Course had enough R-1 water for irrigation and Mr. Kyun replied that they do.

Chairperson Young asked Mr. Kyun if he had any other questions in the event the Commission may not support their request. Mr. Kyun replied he had no other questions.
Mr. Barry Usagawa representing the BWS testified that they support the staff’s recommendation to deny the variance and also clarified that BWS and Coral Creek are currently in discussions to address the long-term affordability of R-1 water. Mr. Usagawa said that, under the current contract, R-1 water rates are scheduled to ratchet up to market rates on July 1, 2006; therefore, they are in discussions at this point. BWS is well aware of the issues of economic affordability. Mr. Usagawa also clarified that the non-residential water rate schedule, which shows an increase to $2.24 effective July 1, 2004, will remain at $1.98 per the Board’s decision in their May 2004 Board meeting.

Commissioner Whalen asked Mr. Usagawa if BWS is looking at land uses when negotiating water rates and if negotiations were being done on an individual case-by-case basis. Mr. Usagawa indicated that it is the intent of BWS to provide recycled water for agricultural lands. Mr. Usagawa said that it is a question of ability and rate for agricultural lands, as he understands that agricultural water users are not able to pay higher rates. Mr. Usagawa said that it is an individual negotiation process at this time and that BWS does not have set recycled water rates for different types of uses. Mr. Usagawa indicated that BWS is currently undergoing a rate study, but at this point, it is individually negotiated. If BWS can come to terms with all users, Mr. Usagawa indicated that they have enough recycled water to sell.

Commissioner Frazier asked about the experience of the recharge trench in the caprock. Ms. Nakama indicated that there hasn’t been any experience because it was targeted to be a pilot demonstration project and has not been utilized as yet.

MOTION: (Dela Cruz/Whalen)
To approve as presented by staff
UNANIMOUSLY APPROVED

B-1. Application for a Stream Channel Alteration Permit (SCAP-HA-368),
County of Hawaii, Department of Public Works, Kawaihali Street Bridge Replacement, Waiakea Stream, South Hilo, Hawaii (TMK (3) 2-4-03: 022, 2-4-63: 120 & 121; 2-4-70:042)

PRESENTATION OF SUBMITTAL: Ed Sakoda

RECOMMENDATION:

That the Commission approve a stream channel alteration permit for a bridge replacement, lining, and channelizing of Waiakea Stream at Kawaihali Street, Hilo, Hawaii (TMK (3) 2-4-003: 022; 2-4-063: 120 & 121; 2-4-070:042). The stream channel alteration permit shall be valid for two years subject the Commission’s standard conditions in Exhibit 6, and the following special condition:
"The transition area between the bed of the lined channel and the bed of the natural channel shall be at the same invert elevation to provide for the migration of aquatic life."

DISCUSSION:

Commissioner Frazier indicated that he understands that the stream has been altered many times before. Mr. Sakoda said that he believes it has been but the low flow part of the channel is fairly new.

MOTION: (Dela Cruz/Frazier) To approve as presented by staff UNANIMOUSLY APPROVED

C-1. Honolulu International Country Club, Mel's Water Works, APPARENT VIOLATIONS OF A PUMP INSTALLATION PERMIT, Honolulu International Country Club (Well No. 2154-01), TMK 1-1-75:87 Moanalua Ground Water Management Area, Oahu

PRESENTATION OF SUBMITTAL: Lenore Nakama

RECOMMENDATION:

Staff recommends that the Commission:

1. Find Honolulu International Country Club in violation of HRS §174C-85 and Standard Condition 5 of the Pump Installation Permit for Well No. 2154-01 for failure to submit a timely Well Completion Report – Part II in the Moanalua Ground-Water Management Area.

2. Impose a fine of $1000 on Honolulu International Country Club, as summarized in Exhibit 6, payable within thirty (30) days for the violation in Recommendation 1.

3. Issue a warning to Honolulu International Country Club that any future violations of Chapter 174C shall be considered repeat violations, subject to fines of up to $1000 per day.

4. Suspend any current, pending or future applications by Honolulu International Country Club until the fine is paid.


6. Impose no fines for the violation in Recommendation 5.
STAFF SUBMITTAL

for the meeting of the
COMMISSION ON WATER RESOURCE MANAGEMENT

June 16, 2004
Honolulu, Oahu

Coral Creek Golf Course

REQUEST FOR A VARIANCE FROM THE 1,000 MG/L CHLORIDE LIMIT
Puuloa Ground Water Management Area, Oahu

APPLICANT:

Coral Creek Golf Course
91-1111 Geiger Road
Ewa Beach, HI 96706

LANDOWNER:

Same

SUMMARY OF REQUEST:

Coral Creek Golf Course (CCGC) is requesting a variance from the 1,000 milligram per liter (mg/L) chloride limit that has been established as the sustainable capacity for all irrigation wells in the Puuloa Ground-Water Management Area. CCGC believes that approval of their variance request will not result in any harm to the aquifer or other existing users. CCGC asserts that denial of the variance request will cause financial hardship.

LOCATION MAP: See Exhibit 1

BACKGROUND:

CCGC first began constructing wells and using brackish well water in 1998 for their newly-developed golf course in Ewa, Oahu (the former proposed Gentry Golf Course). Currently, a total of twelve new wells have been constructed on CCGC’s property. Five of the wells are passive water features, two are observation wells, four are irrigation supply sources, and one is unused. Some of the wells are shallow dug wells that resemble lakes; other wells have been drilled. Exhibit 2 provides a summary of the existing wells.
At the time of their first application for a new water use permit in 1996, the Commission had already been approving one-year interim permits for other caprock wells since 1993 because of the uncertainty in the long-term sustainability of the brackish Ewa Caprock aquifer. The Ewa Caprock aquifer had been artificially recharged with imported basal water for sugarcane irrigation since the 1930's. Development plans for the Second City indicated a significant nonpotable demand component, and the City and County of Honolulu passed an ordinance requiring the use of dual lines in all new developments. When Oahu Sugar Company announced its impending closure in 1993, the Commission realized this man-made aquifer would salt-up and began issuing one-year interim permits with special conditions to encourage users to convert to reclaimed water. Oahu Sugar Company ceased their sugarcane agriculture operations on the Ewa Plain in 1994.

Although the Ewa Caprock aquifer was officially designated a ground-water management area in 1985 under Chapter 177 by the Board of Land and Natural Resources, a sustainable yield for the Ewa Caprock aquifer was not established until 1997, when the Commission set a sustainable capacity per well at 1,000 mg/L of chloride for each pumped irrigation well water, in lieu of an aggregate sustainable yield flow figure.

In their 1997 action to adopt the 1,000 mg/L chloride cap as a sustainable yield, the Commission recognized that some users had no other source of irrigation water available until R-1 water became available, so a provision was added for variances from the chloride cap on a case-by-case basis with the understanding that R-1 would be used when it became available. By establishing a sustainable capacity for each irrigation well, degradation of the aquifer and well interference over the long-term should be precluded. This chloride cap is in addition to a pumpage cap based on 12-month moving average withdrawals.

In 1997, the Commission spearheaded the formation of a Reuse Champions Group to actively promote the reuse of treated wastewater on the Ewa Plain. Additional discussion on the Reuse Champions Group is contained in a following section.

The interim permits were last renewed on July 18, 2001. In that action, the Commission granted variances to several users, stipulating that the “variances shall expire 6 months after the first date of reclaimed water delivery”. CCGC first received a variance in August 2001, based in part on the fact that an agreement to convert to reclaimed water had been signed.

In December 2003, staff confirmed with Honolulu Board of Water Supply (BWS) that CCGC had been receiving reclaimed water since October 2001. Therefore, their variance to the 1,000 mg/L chloride cap expired in April 2002. Staff sent a letter in December 2003 notifying CCGC that their variance had expired.

In February 2004, CCGC submitted a new request for a variance (Exhibit 3).

In a letter dated February 18, 2004, staff requested that CCGC provide their reasons why they should be exempt from the chloride limit (Exhibit 4).
On March 15, 2004, the Commission received CCOC's response. CCOC provided hydrologic and financial bases to support their request (Exhibit 5).

On April 7, 2004, staff forwarded CCOC's March 12, 2004 letter to BWS and requested BWS provide information on the R-1 water delivery system and purchase agreement (Exhibit 6).

On April 26, 2004, the Commission received BWS’ response (Exhibit 7). BWS supports the renewal or extension of water use permits for CCOC's caprock wells for emergency use in the absence of sufficient volumes or quality of R-1 water. BWS also supports the 1,000 mg/L chloride limit as an appropriate management parameter. A discussion on the service agreement purchase rates is contained in a following section.

On May 4, 2004, a representative from the City Department of Environmental Services (DES) informed staff that DES is considering recharging the Ewa Caprock aquifer with R-1 water via an existing trench to meet the City’s consent decree with the Environmental Protection Agency (EPA) to reuse 10 mgd of R-1 water by July 1, 2001. Although the City believed that they had met the terms and conditions of the Consent Decree, EPA is now questioning some of the end uses of R-1. As a result, the City is seeking other markets and beneficial uses of R-1, such as aquifer recharge via a percolation trench. We are awaiting a written proposal from DES for our review and comment.

ANALYSIS/ISSUES:

I. Management Strategy for the Puuloa Ground-Water Management Area

The current sustainable yield for the Puuloa Ground-Water Management Area is defined by a 1,000 mg/L chloride cap at all irrigation wells. The rationale behind the chloride cap was to restrict pumpage in those wells approaching the limit, to prevent a build-up of sodium in the clay soils, and to protect other users adjacent to those pumping higher chloride water. Sodium build-up in the soil will require flushing with fresh water. The Ewa Plain is a dry region with relatively low rainfall; natural flushing does not occur regularly. The basis for a chloride cap is to allow pumping to be self-regulating, since 1,000 mg/L of chloride is considered the upper limit of irrigation water quality. Enforcement of the chloride cap provides adequate protection for the aquifer.

Maximizing the utility of the caprock aquifer is intimately tied to wastewater reuse. As wastewater reuse comes on line, the sustainable yield of the caprock will 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. Even with reclaimed water as the primary irrigation source, ground water would still be used for the golf course water features, to maintain the pumps, and to mitigate potential reclaimed water quality or odor issues that may arise.

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.
There has been some discussion between CCGC and staff regarding modification of the chloride cap to allow a higher chloride limit, for example 1,500 mg/L, and to require the chloride content of the blended irrigation water to be limited to 1,000 mg/L. However, staff feels that it is a "slippery slope" that would set a precedent for other caprock users to obtain variances now that R-1 water is available by proposing other blending schemes. Why not 1,800 mg/L or 2,000 mg/L? Reporting and enforcement are focused on withdrawals at the source, not the end-of-the-pipe delivery system. We are also concerned about the impact on nearby Gentry Homeowners Association wells, which are adjacent to CCGC. BWS has stated that they will not supply R-1 water to these residential developments that rely on caprock well water to maintain landscape irrigation in common areas. These users have no other alternate non-potable source available, except for potable water from the municipal system, which is discouraged. CCGC may have salt-tolerant turf, but the Gentry common areas do not. Lastly, the management strategy will be impacted by the recharge trench right next to CCGC discussed in Section VI of this submittal. For these reasons, staff is not recommending modification of the chloride cap.

II. Ewa Caprock Water Use Permit Special Conditions

The interim water use permits were last renewed on July 18, 2001. Special Conditions attached to the permits to support the Commission's management strategy include:

Special Condition a.
*Should an alternate permanent source of water be found, the Commission reserves the right to revoke the permit, after a hearing.*

Special Condition 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, unless a variance from the chloride limit has been granted.*

Special Condition d.
*The duration of the interim permit shall be*

a) to July 1, 2006, 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.

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

It should be noted that the original staff recommendation in an October 22, 1998 submittal to renew the interim permits was to have the duration be "...b) until treated wastewater is available, affordable, and acceptable for use ..." [emphasis added]. However, the Commission amended staff's recommendation to delete the word "affordable". This special condition language carried over to the subsequent July 18, 2001 renewal action.
III. CCGC Justification for Request

CCGC has provided their reasons why a variance should be granted (Exhibit 5). The reasons are grouped into two general categories: 1) hydrologic and 2) financial.

Hydrologic Basis:
CCGC’s position is that the management test should be whether or not pumpage by the wells is a threat to the integrity of the aquifer or impairs the use of the aquifer by others. CCGC has provided data from 2 monitor wells that show consistent, yet opposite trends in salinity throughout the period of high-chloride well water application (11/98 - 10/01) and R-I water application (11/01 – present). Chlorides in CCGC’s caprock irrigation wells have ranged from about 500 mg/L to as much as 4,000 mg/L, while the chloride content of the R-I water is about 250 mg/L. CCGC believes the data indicate that regardless of the chloride content of the applied irrigation water, the onsite monitor wells are not affected.

However, staff believes that the contradictory monitor well data trends and the heterogeneity within the caprock, as CCGC also acknowledges exists, renders the monitor well data inconclusive. A field investigation by staff on April 14, 2004 confirmed the monitor wells are both located in the golf course. However, much more analysis needs to be done before the monitor well data can be fully understood. Such analysis would include studying the history and effects of rainfall, drainage, and R-I water application; the degree of sedimentation in the dug monitor well, which can affect the degree to which the water stored in the lake communicates with the aquifer; and the actual elevations of the dug well water level in relation to other wells (the dug wells do not have an established elevation benchmark). There is uncertainty regarding the long-term impacts of pumping. Because of this uncertainty and in light of the Commission’s public trust responsibilities and the precautionary principle, the Commission has adopted a unique, proactive management approach, based on the best available data, which seeks to provide adequate protection for the aquifer for irrigation and other nonpotable uses. CCGC’s request is basically to ignore the sustainable yield that the Commission has established. It is analogous to a new user requesting water from an over-allocated aquifer.

Financial Basis:
CCGC’s pumping cost is about $0.10/1,000 gallons. Currently, under the terms of their agreement with BWS, CCGC pays $0.25/1,000 gallons of R-I water. Under the agreement, CCGC’s rate will increase to $0.40/1,000 gallons beginning on July 1, 2004. Assuming an irrigation demand of 700,000 gpd and 100% R-I supply, the annual difference in cost from this rate increase would be about $38,300. This is a conservative estimate because CCGC will be able to supplement the R-I with pumped well water that is less than 1,000 mg/L of chloride. CCGC’s letter cites an annual cost increase of about $230,000, but that is based on an anticipated market rate of $1.00/1,000 gallons, which isn’t scheduled to kick in until July 1, 2006. In addition, there is an option to extend the current rate of $0.25/1,000 gallons and CCGC’s commitment of 100% R-I water use indefinitely.

IV. Water Rate Comparison

R-I water is automatically delivered to a lined onsite reservoir via a permanent distribution pipeline using an on-demand control methodology driven by reservoir water level sensing instrumentation. The R-I service agreement purchase rates for CCGC are shown in Exhibit 7.
To provide some perspective and for comparative purposes, staff researched the irrigation water costs to other golf courses on Oahu. BWS is charging Mid-Pacific, Olomana, and other golf courses using municipal water for irrigation $1.98/1,000 gallons. This municipal non-residential rate is scheduled to increase to $2.24/1,000 gallons on July 1, 2004. The city golf courses in Ewa, West Loch and Ewa Villages, currently pay $1.20/1,000 gallons for the same R-1 water from the Honolulu Wastewater Treatment Plant. Staff also notes that farmers in Leeward Oahu that receive irrigation water from the Waiahole Ditch system pay over $0.40/1,000 gallons. For easier visual comparison, water rates for select projects as of July 1, 2004 are summarized in the following table.

<table>
<thead>
<tr>
<th>Project</th>
<th>7/1/04 Price / 1,000 gallons</th>
<th>Supply Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>CCGC</td>
<td>$0.40</td>
<td>R-1 from Honolulu WWTP</td>
</tr>
<tr>
<td>Ewa Villages Golf Course</td>
<td>$1.20</td>
<td>R-1 from Honolulu WWTP</td>
</tr>
<tr>
<td>West Loch Golf Course</td>
<td>$1.20</td>
<td>R-1 from Honolulu WWTP</td>
</tr>
<tr>
<td>Mid-Pacific Golf Course</td>
<td>$2.24</td>
<td>BWS Municipal System</td>
</tr>
<tr>
<td>Leeward Agriculture</td>
<td>$0.40</td>
<td>Waiahole Ditch</td>
</tr>
</tbody>
</table>

V. Evaporative Losses from Dug Wells

There are a total of seven dug wells onsite. The development plan called for water from drilled wells to move downgradient into the “lakes” that are excavated exposures of the ground water table in the caprock and will function as percolation basins. An issue is the potential salting up of the ground water near the man-made lakes. Pan evaporation in the vicinity of CCGC is estimated to be about 85 inches per year (Eckern and Chang, 1985). The following table provides the dimensions, areas, and depths of the existing lakes.

<table>
<thead>
<tr>
<th>State Well No.</th>
<th>Dimensions (feet)</th>
<th>Surface Area (acres)</th>
<th>Evaporative Loss @ 85&quot;/year (mgd)</th>
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<tbody>
<tr>
<td></td>
<td>Max Length</td>
<td>Max Width</td>
<td></td>
</tr>
<tr>
<td>1902-06</td>
<td>630</td>
<td>325</td>
<td>3.50^1</td>
</tr>
<tr>
<td>1902-07</td>
<td>210</td>
<td>100</td>
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<tr>
<td>1902-08</td>
<td>240</td>
<td>75</td>
<td>0.30^1</td>
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<tr>
<td>2001-14</td>
<td>1050</td>
<td>920</td>
<td>15.84^2</td>
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<tr>
<td>2001-15</td>
<td>315</td>
<td>80</td>
<td>0.46^1</td>
</tr>
<tr>
<td>2002-19</td>
<td>640</td>
<td>340</td>
<td>4.32^2</td>
</tr>
<tr>
<td>2002-20</td>
<td>195</td>
<td>80</td>
<td>0.26^1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>25.0</strong></td>
<td></td>
<td><strong>0.156</strong></td>
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</tbody>
</table>

^1 Surface areas provided by Tom Nance.

^2 Adjustment factor of 0.72 used to approximate difference between rectangle and actual lake shape.
Based on the combined surface area of the lakes, 25 acres, about 0.156 mgd will be lost to evaporation, as the water moves down the creeks, into the lakes and eventually the caprock aquifer through percolation. As a result, the water that will recharge the aquifer via the man-made lakes will have higher chloride concentrations. CCGC's golf course design is contributing to their chloride problems. (The evaporative losses are accommodated in the current water use permit allocations.)

VI. Recharge Trench

The City Department of Environmental Services (DES) is currently considering recharging the Ewa Caprock aquifer with R-1 water via existing seepage trenches. In 1996, the Commission and the former Department of Wastewater Management (now integrated within DES) jointly funded the development of a Nonpotable Water Plan for Oahu. The report recommended caprock recharge by a subsurface infiltration and percolation system. The trenches, which were constructed but never used, are located at the Honouliuli Wastewater Treatment Plant. DES staff are anticipating the freshening effects on the caprock aquifer will occur immediately downgradient and at the adjacent Coral Creek and Gentry homeowners sites. This would make it easier for CCGC to meet the chloride cap.

VII. The Commission is a Champion of Reuse

On March 13, 1996, the Commission adopted the following policy statement, clearing the way for application of reclaimed water on lands overlying the Ewa Caprock Aquifer:

"It is the policy of the Commission on Water Resource Management (Commission) to promote the viable and appropriate reuse of reclaimed water in so far as it does not compromise beneficial uses of existing water resources.

I. Ewa Caprock

Recognizing that reclaimed water is a valuable resource in the Ewa Plain, direct or indirect reuse will be championed by the Commission. It is the policy of the Commission that the water resources of the Ewa Caprock Aquifer will be allocated only for nonpotable uses."

Beginning in 1997, the Commission participated in the formation of a Reuse Champions Group. The members included representatives from the Department of Health, Board of Water Supply, and the City Departments of Environmental Services, Design and Construction, and Planning and Permitting. The group met regularly to champion the cause of reuse, by identifying regulatory barriers and challenges as well actions to promote and implement water reclamation projects.

A significant change in the water supply picture has been the acquisition of the Honouliuli Wastewater Reclamation Facility by the BWS on July 20, 2000 and BWS' new role as purveyor of reclaimed water. Since their recent acquisition of the plant, BWS has been actively promoting the use of reclaimed water for non-potable needs over the Ewa Caprock Aquifer.
VIII. Summary

To summarize, staff is recommending that the variance request be denied at this time for the following reasons:

- Adherence to the chloride cap will help prevent the degradation of the aquifer's water quality over the long-term so that the aquifer may remain a source of irrigation water to those users who have no other alternative, and it will also prevent the possible salting up of other nearby wells, whose landscaping may have a lower chloride tolerance than CCGC's.

- The Commission is not denying CCGC use of their wells; CCGC may continue to pump their wells within their allocation as long as the chlorides do not exceed 1,000 mg/L.

- The Commission has always been clear that use of the brackish wells should be considered an interim measure pending the availability of an alternate supply source, such as R-1.

- There are many other users in the caprock who may also request new or continued variances even though an R-1 alternative is available (see Exhibit 8 for a current list of irrigation water use permit holders). Granting a variance to CCGC, which has not provided any compelling or unique circumstance to support their request, would set a precedent in that the Commission would have no basis to deny any other user. This would, in effect, negate the sustainable yield that the Commission established and discourage switching to the R-1 alternative.

- CCGC's has not satisfactorily demonstrated financial hardship resulting from a rate increase of $0.15/1,000 gallons, beginning on July 1, 2004. Additionally, there is an option that can be exercised in the agreement to keep the current R-1 rate the same.

- CCGC constructed a series of unlined dug wells which function as water features as well as potential irrigation supply sources. Chloride levels may be exacerbated by these features, which essentially expose groundwater to surface evaporation, thereby increasing the salinity of ground water in the vicinity of these features.

- The City DES is proposing to recharge the Ewa Caprock Aquifer via a percolation trench. If this project comes to fruition, it is expected to result in a freshening of the caprock aquifer in the vicinity of CCGC and facilitate their meeting the 1,000 mg/L chloride cap.

- The Commission is a champion of reuse and has adopted a policy to promote and encourage the utilization of reclaimed water when it is available and acceptable for the proposed end use.
RECOMMENDATION:

Based on the foregoing, staff recommends that the Commission deny Coral Creek Golf Course's request for a variance from the 1,000 mg/L chloride cap.

Respectfully submitted,

YVONNE Y. IZU
Deputy Director

Exhibit(s):
1 (Location Map)
2 (Summary of Coral Creek Wells)
3 (January 29, 2004 Letter from Ron Huffman to Ernest Y.W. Lau)
4 (February 18, 2004 Letter from Ernest Y.W. Lau to Ron Huffman)
5 (March 12, 2004 Letter from Ron Huffman to Ernest Y.W. Lau)
6 (April 7, 2004 Letter from Ernest Y.W. Lau to Clifford S. Jamile)
7 (April 23, 2004 Letter from Clifford S. Jamile to Ernest Y.W. Lau)
8 (Current Permitted Irrigation Uses in the Puuloa Ground-Water Management Area)

APPROVED FOR SUBMITTAL:

PETER T. YOUNG
Chairperson
ref: 2001-13, 2002-15,17,19 variance.ft.tab

### Coral Creek Wells

<table>
<thead>
<tr>
<th>Well No.</th>
<th>Well Name</th>
<th>Well or Lake?</th>
<th>Approved WUPs</th>
<th>Active WUPs¹</th>
<th>Variance Requested?</th>
<th>Use</th>
<th>Pump Capacity</th>
<th>Pump Test Chlorides</th>
<th>Initial Chlorides</th>
<th>Current Reported Chlorides²</th>
<th>4/14/04 Chlorides</th>
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</table>

¹ WUP No. 578=0.800
² WUP No. 579=0.892
TOTAL WUPs = 2.190

Reported chlorides for 12/03

R-1 Water tested on 4/14/04 from the lined irrigation reservoir was 245 ppm.

Exhibit 2
Mr. Ernest Y.W. Lau
Deputy Director
Commission on Water Resource Management
Department of Land and Natural Resources
State of Hawaii
P. O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Lau:

Request for Variance on the 1000 MG/L Chloride Limit for the Coral Creek Golf Course Caprock Wells

By this letter, we respectfully request a variance from the 1000 MG/L chloride limit for Coral Creek Golf Course Wells 1 (2002-15), 2 (2002-17), and 4 (2001-13) and Lake 1 (2002-19). At the present time, only Well 4 is run on a daily basis. It supplies water to the water feature at the 10th green. As the attached graph shows, its chlorides generally range between 900 and 1300 MG/L. Its pumped water is discharged into the adjacent unlined lake. Since this lake is an exposure of the caprock water, the water is being returned to the caprock aquifer with negligible consumptive use.

The other two wells and Lake 1 are sources of irrigation supply. Since late 2001, that supply has been R-1 treated Honolulu WWTP effluent rather than our caprock sources. The wells are presently only operated once a month to keep their pumps operational and to obtain samples for chloride analysis. As the attached graphs show, their chlorides have generally been less than 1000 MG/L since use of the R-1 effluent was implemented. However, under continuous use, past performance has shown that their chlorides will rise above 1000 MG/L.

Our agreement to purchase R-1 effluent from BWS is for a period of five years beginning on July 1, 2001. For the first three years, ending on June 30, 2004, we are committed to irrigating entirely by R-1 effluent. For the last two years of the agreement, from July 1, 2004 to June 30, 2006, the irrigation supply will be a blend of R-1 effluent and our caprock wells. So beginning in July 2004, greater use of our caprock wells will occur and this use is expected to cause their chloride levels to rise above 1000 MG/L.

Exhibit 3
Please feel free to call me or our consultant, Tom Nance (537-1141), if you have any questions on this variance request. Thank you for your consideration on this matter.

Sincerely,

Ron Huffman

Attachments

cc: Tom Nance
CORAL CREEK GOLF COURSE WELLS
CHLORIDES FROM JANUARY 1999 TO DATE

YEAR

CHLORIDES (MG/L)

WELL 1 @ NO. 2 TEE — WELL 2 ALONG HOLE 3 — WELL 4 @ HOLE 10
CORAL CREEK GOLF COURSE LAKES
CHLORIDES FROM JANUARY 1999 TO DATE

- - LAKE A @ NO. 1 TEE - - IRIGATION LAKE
February 18, 2004

Ref: 2001-13, 2002-15,17,19 variance.let

Mr. Ron Huffman
Coral Creek
91-1111 Geiger Road
Ewa Beach, HI 96706

Dear Mr. Huffman:

This is in response to your January 29, 2004 letter, requesting a variance from the 1000 mg/l chloride limit for Well Nos. 2001-13 and 2002-15,17,19. From your letter, we understand that only Well No. 2001-13 is being run at this time, with chlorides generally ranging between 900 and 1300 mg/l. However, you anticipate resuming pumping at the other three wells beginning in about July 2004, and past performance has shown that chlorides will rise above 1000 mg/l under continuous use. R-1 effluent has been available as an alternate nonpotable water supply source since July 1, 2001 through an agreement with the Board of Water Supply.

The chloride limit was established by the Commission in lieu of an aggregate sustainable yield number for the aquifer. The 1000 mg/l chloride limit at individual irrigation wells is considered the sustainable capacity of each irrigation well and is, in effect, the established sustainable yield for the Puuloa Aquifer System. The Commission established a 1000 mg/l chloride limit for all irrigation wells to provide adequate protection for the aquifer and other irrigation water users.

Variances from the chloride cap were granted by the Commission in recognition of hardship that would be encountered during the interim period when no other nonpotable alternatives were available. Water Use Permit Special Condition f. specifically states that “[t]his permit is approved under the assumption that wastewater will become available for reuse as an alternative supply source”. Now that reclaimed water is available as an alternative, please provide your reasons why Coral Creek should be exempt from the chloride limit. Please respond to this letter by March 15, 2004.

If you have any questions, please contact Lenore Nakama at 587-0218.

Sincerely,

[Signature]
ERNEST Y.W. LAU
Deputy Director

LN:ss

Exhibit 4
March 12, 2004  
04/123 (97-43)  

Mr. Ernest Y.W. Lau  
Deputy Director  
Commission on Water Resource Management  
Department of Land and Natural Resources  
State of Hawaii  
P.O. Box 621  
Honolulu, HI 96809  

Dear Mr. Lau:  

Requested Chloride Variance for the  
Coral Creek Golf Course Wells in the Puuloa Sector of the  
Ewa Caprock Aquifer  

This letter responds to your February 18, 2004 request to provide additional reasons why our golf course’s caprock wells should receive a variance from the 1000 MG/L chloride limit now that R-1 effluent is available as an alternative. The reasons can be grouped into two categories, hydrologic and financial, and they are discussed under these heading in the paragraphs following:  

Hydrologic Basis for the Requested Chloride Variance  

As an alternative to adopting a sustainable yield, the Commission elected to set a 1000 MG/L limit for chlorides as its management tool for preserving the integrity of the aquifer. However, as extensively detailed in the January 22, 1997 report prepared for the Puuloa Caprock Users Group and presented to the CWRM at that time, chloride levels throughout the Puuloa Sector do not fit into the typical predictable pattern for a thin basal
lens. Our wells, for example, produce chlorides which are much higher than wells on either side of us – the formerly used caprock wells at the Honolulu Treatment Plant to the west and the Ewa by Gentry wells to the east. Depending on where you are situated in the aquifer, you may be fortunate to have chloride levels substantially less than 1000 MG/L or unavoidably higher than that threshold. Our golf course has a number of water features which are exposures of the groundwater table. These are not pumped and their chloride levels, except following substantial rainstorms such have occurred recently, have and remain above 1000 MG/L. It is an unavoidable consequence of our location within the aquifer.

For situations such as we face, the management test should be whether or not pumpage by the wells in question is a threat to the integrity of the aquifer or that it impairs the use of the aquifer by others. Our reliance on our caprock wells from November 1998 through October 2001 when R-1 effluent became available, while pumping water with chlorides almost always in excess of 1000 MG/L, did not harm the aquifer or impair its use by others. Among the most compelling evidence of this are the salinity trends in our two monitoring wells which are plotted on the attached graphs. Salinity has gone steadily up in Well 3 (State No. 2002-18) and steadily down in Well 5 (State No. 1902-05) since monitoring began in May 1999. Conversion to R-1 effluent in October 2001, which ended use of our wells at that time, has made no impact on these trends. It has also made no impact on the chloride levels of the nearby Ewa by Gentry wells.

**Financial Basis of the Requested Chloride Variance**

Coral Creek Golf Course, along with two other caprock irrigated golf course in Ewa, entered into a five-year R-1 effluent purchase agreement with the Honolulu Board of Water Supply (BWS) which runs from mid-2001 to mid-2006. Key features of this agreement are:

- The purchase price for the R-1 effluent was adjusted in recognition of the disparity between the cost for the golf courses to continue to use caprock groundwater and the "market" price for the R-1 effluent. We can pump groundwater into our irrigation lake alongside the No. 1 green for about $0.10 per thousand gallons. The market price for R-1 effluent is more than $1.00. At an average irrigation use of 700,000 GPD, that is a difference of about $230,000 annually.

- In exchange for a commitment to do all of our irrigation with R-1 effluent for the first three years of the agreement, its purchase price was fixed during the period. BWS has the option to extend this fixed price and our commitment for 100 percent effluent use indefinitely at its discretion. Coral Creek is amenable to such an extension if it were offered.

- For the 4th and 5th years of the agreement, BWS has the option to increase the purchase price. In recognition of the financial burden this would create, the agreement also allows us to cut back from 100 percent R-1 effluent use and supplement the supply with well water. The intent was to make the combined cost of R-1 effluent and brackish groundwater be comparable to 100 percent R-1
effluent use at a lesser purchase price. This option can be exercised by BWS starting on July 1, 2004. BWS has not yet indicated if it will do so.

The plain facts are that Coral Creek is not opposed to the use of R-1 effluent for all or a portion of its irrigation supply as long as it is affordable, that denying our chloride variance would give us no other choice but to use R-1 effluent at a price that we cannot afford, that using our caprock wells along with R-1 effluent will enable us to keep the cost of irrigation at affordable levels, and that use of our caprock wells will not threaten the integrity of the aquifer or impair its use by others.

We hope that the Commission will consider the foregoing and approve our variance request. Preventing our use of caprock water does not conserve it for other “higher” uses. We are not, for example, utilizing groundwater that might otherwise be conserved for future potable use. We are simply seeking the right to bend this water with R-1 effluent to achieve an irrigation supply which best balances salinity and affordability.

Sincerely,

Ron Huffman
Coral Creek Golf Course
TRENDS OF SALINITY 10 FEET INTO GROUNDWATER
AT CORAL CREEK WELLS 3 AND 5 SINCE MAY 1999

YEAR
1999 2000 2001 2002 2003 2004 2005

SALINITY (PPT)
0.0 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0 2.2

- -WELL 3 (2002-18) - -WELL 5 (1902-05)
TRENDS OF SALINITY TWO FEET INTO GROUNDWATER AT CORAL CREEK WELLS 3 AND 5 SINCE MAY 1999
April 7, 2004

Ref: 2001-13, 2002-15, 17, 19 variance.bws.let

Mr. Clifford S. Jamile  
Manager and Chief Engineer  
City and County of Honolulu  
Board of Water Supply  
630 South Beretania Street  
Honolulu, HI 96843

Dear Mr. Jamile:

Coral Creek is requesting a variance from the 1,000 mg/l chloride cap that was established as the sustainable capacity for irrigation wells in the Ewa Caprock aquifer. Please find attached a copy of Coral Creek’s request and a second letter that provides further justification for their request. One of the reasons that Coral Creek cites is the uncertainty in the rates for R-1 water. In order to help the Commission reach a decision on Coral Creek’s request, we would like some information on the R-1 delivery system and purchase agreement:

- We understand that R-1 delivery began in October 2001. To your knowledge, has Coral Creek been irrigating solely with R-1 since then?
- How is the R-1 water delivered? Is it stored in one of their unlined lakes or a lined reservoir, or is it piped directly into the irrigation system?
- What will the purchase rate for R-1 water be in the fourth and fifth years of your purchase agreement? Will the rate remain constant thereafter or be subject to change?

Lastly, we are interested in any comments Board of Water Supply may have on Coral Creek’s variance request.

We are planning to submit Coral Creek’s request for action at the May 19, 2004 Commission meeting. Therefore, we would appreciate your response to this letter by April 26, 2004.

If you have any questions, please contact Lenore Nakama at 587-0218.

Sincerely,

[Signature]
ERNEST Y.W. LAU  
Deputy Director

LN:ss  
Attachments

Exhibit 6
Mr. Ernest Y. W. Lau, Deputy Director
Commission on Water Resource Management
State Department of Land and Natural Resources
P.O. Box 621
Honolulu, HI 96809

Subject: Requested Chloride Variance Coral Creek Golf Course Wells Puuloa Sector of the Ewa Caprock Aquifer

Dear Mr. Lau:

We are pleased to respond to your request for comments and information in the matter of R-1 water supply to the Coral Creek Golf Course (CCGC). The Honolulu Board of Water Supply (BWS) is proud of its leadership role in the production and distribution of recycled water on O'ahu. Recycled water is an important alternative water resource in our overall groundwater conservation strategy for the island especially in the Ewa plain region.

CCGC R-1 Water Consumption History

R-1 water delivery to the CCGC began on October 29, 2001. According to the terms of the service agreement executed on April 5, 2001, CCGC is required to meet 100% of their irrigation needs with R-1 water until June 30, 2004. According to the agreement, CCGC may utilize nominal amounts of caprock well water to maintain the viability of their well pumps or to meet demand should BWS be unable to deliver sufficient quantity or quality water.

BWS has no direct knowledge of CCGC utilizing caprock well water outside the terms of the agreement. Since service initiation, the Honolulu Water Reclamation Facility (HWRF) R-1 production capacity has been sufficient to meet all of the service demands of the CCGC as well as several other R-1 users in the vicinity. We expect the HWRF production capacity to remain sufficient well into the future. Attached are time-series R-1 water consumption data for CCGC (Exhibit A), the Hawaii Prince Golf Course (Exhibit B), and the Kapolei Golf Course (Exhibit C).

CCGC R-1 Water Delivery Method

R-1 water is automatically delivered to CCGC via a permanent distribution pipeline using an on-demand control methodology driven by reservoir water level sensing instrumentation. R-1 water is stored in a lined reservoir at the CCGC site. It is not piped directly into the irrigation system.

Exhibit 7
Service Agreement Purchase Rates

The service agreement provides for periodic rate adjustments and corresponding R-1 water use levels agreed to by CCGC.

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* The July 1, 2006 market rate at the time of CCGC service agreement execution was anticipated to be $1.00 / 1,000 gallons. The market rate may be adjusted annually or less frequently according to BWS rate adjustment policies and procedures. BWS rate setting philosophy rests in part on rate stability for predictable cost of supply for all of its customers. The current rate for government R-1 water users is $1.20 / 1,000 gallons.

**HWRF R-1 Water Quality:**

The HWRF R-1 water quality is superior to caprock water both in terms of chloride content (< 300 mg/l) and nutrient content. Our landscape irrigation customers report varying reductions in the amounts of required supplemental fertilizers and their attendant cost to maintain desired vegetation quality. Nutrient analysis data for R-1 water from the HWRF are shown in Exhibit D.

**Variance Request Comments:**

The service agreement with CCGC recognizes the importance of sustaining CCGC's water use permits for its caprock wells for emergency use in the absence of sufficient volumes or quality of R-1 water should that occur. For this purpose, we support the removal or extension of its water use permits and any efforts by CCGC to prevent the revocation or modification of its permits based on non-use as provided in HRS § 174C-38 (1993).

However, BWS has not conducted any definitive research that would contradict either the use of chloride limits as a management technique or the specific chloride limits currently identified as prudent for aquifer protection. Therefore, in the public interest, BWS supports the 1,000 mg/l chloride limit as an appropriate management parameter in lieu of sustainable yield for the Ewa caprock aquifer.
BWS stands ready to work with CCGC to resolve its concerns regarding the cost-effective use of R-1 water within the confines of the service agreement and CWRM aquifer management policy.

Please feel free to contact us for additional information in this matter.

Very truly yours,

CLIFFORD S. JAMILE
Manager & Chief Engineer
Honolulu Board of Water Supply

cc  Donna Kiyosaki
    Jan Gouveia
    Barry Usagawa
    Joe Myers

Attachments
Exhibit A
Coral Creek Golf Course
R-1 Water Consumption

Use (gpd)

Date

10/29/2001
11/29/2001
12/29/2001
1/29/2002
2/28/2002
3/29/2002
4/29/2002
5/29/2002
6/29/2002
7/29/2002
8/29/2002
9/29/2002
10/29/2002
11/29/2002
12/29/2002
1/29/2003
2/28/2003
3/29/2003
4/29/2003
5/29/2003
6/29/2003
7/29/2003
8/29/2003
9/29/2003
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11/29/2003
12/29/2003
1/29/2004
2/29/2004

Daily Flow
7 Day Moving Average
Aquifer System Water Use Permit Index (non-saltwater)

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Monday, May 24, 2004

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<td>CORAL CREEK GOLF, INC.</td>
<td>2002-19</td>
<td>CORAL CREEK LAK</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Summary for 'SYSTEM' = PUUOLA (38 detail records)

Totalling 12.803
Coral Creek Site Visit
April 14, 2004

Water Use Reports:
- Are all sources metered? Type of meter? (take photos) Yes, totalizers
- Protocol for chloride sampling? Following CWRM protocol.
- Method for determining chlorides? Tom Pardoe

R-1 Water:
- Has R-1 been the sole source of irrigation water since 10/01? 100% just now funds to cap active
- How is R-1 delivered? Where is it stored? Delivery schedule? Same reservoir as regular irrigation system
- Has R-1 storage or application led to freshening of any of the wells? No change
- What is the maximum rate that Coral Creek could pay for R-1 water and remain financially viable? Can't even make a profit right now.
- What is the chloride content of the R-1? ~ 300,000
- Problems/constraints with R-1 water?

Caprock Wells:
- Why can't other wells be pumped? OBO, water feature, etc.
- What wells are connected to the irrigation distribution system? All except for 2002-19
- Any plans to line the lakes/ponds? No ponds.
- What is the maximum chloride content that the turf can handle? 1,500 is good, 2,000 is bad.
- What does Coral Creek want the new chloride cap to be? 1,500 is good, 2,000 is bad.
- (CWRM to verify well nos. with well names) OBO 1902-05 need to confirm w/ Nancy

General:
- How is irrigation need determined? Timer? Soo low sensors? At night (Handout) Y P P P P
- Description of distribution system(s) for R-1 water & well water, if separate
- Weather station controls system

EQUIPMENT:
- Sample bottles 12+
- Conductivity meter
- Digital camera
- GPS
- Gallon container
- Fishing pole

Other Background Material (Roy has 1 copy):
- CWRM Chloride sampling protocol
- Database printouts (Puuloa WUPS, Coral Creek WUPS, Well Index)
- Maps (topographic & Ingrid's)
- Coral Creek's Request for Variance
### Chloride Titration Record

**Location**: Corn Creek Golf Course Well

**Titrations conducted by**: M. Oliver

**Project or Job No.**: April 14, 2004

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Date Taken</th>
<th>Sample (ml)</th>
<th>Burette Rdg Before</th>
<th>Burette Rdg After</th>
<th>AgNO₃ ml</th>
<th>AgNO₃ ml</th>
<th>Multi-Chlorides ppm</th>
<th>Sol.</th>
<th>.5 mgl/l cl</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-1902-06</td>
<td>10</td>
<td>0.0</td>
<td>9.20</td>
<td>9.20</td>
<td>9.0</td>
<td>50</td>
<td>450</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3-1902-07</td>
<td>10</td>
<td>1.0</td>
<td>3.80</td>
<td>2.80</td>
<td>2.60</td>
<td>50</td>
<td>130</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3-1902-08</td>
<td>10</td>
<td>4.0</td>
<td>6.50</td>
<td>2.50</td>
<td>2.30</td>
<td>50</td>
<td>115</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5-2001-13</td>
<td>10</td>
<td>1.10</td>
<td>19.0</td>
<td>17.90</td>
<td>17.70</td>
<td>50</td>
<td>885</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3-2002-13</td>
<td>10</td>
<td>0.0</td>
<td>5.10</td>
<td>5.10</td>
<td>4.90</td>
<td>50</td>
<td>245</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3-2002-17</td>
<td>10</td>
<td>5.90</td>
<td>19.90</td>
<td>13.40</td>
<td>13.20</td>
<td>50</td>
<td>660</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3-2002-19</td>
<td>10</td>
<td>7.0</td>
<td>12.10</td>
<td>5.70</td>
<td>5.50</td>
<td>50</td>
<td>275</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R-1</td>
<td>10</td>
<td>13.0</td>
<td>19.10</td>
<td>5.10</td>
<td>4.90</td>
<td>50</td>
<td>245</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
04-12-2004   Total Flow: 749610 gallons
Mr. Ernest Y. W. Lau, Deputy Director
Commission on Water Resource Management
State Department of Land and Natural Resources
P.O. Box 621
Honolulu, HI 96809

Subject: Requested Chloride Variance Coral Creek Golf Course Wells Puuloa Sector of the Ewa Caprock Aquifer

Dear Mr. Lau:

We are pleased to respond to your request for comments and information in the matter of R-1 water supply to the Coral Creek Golf Course (CCGC). The Honolulu Board of Water Supply (BWS) is proud of its leadership role in the production and distribution of recycled water on O‘ahu. Recycled water is an important alternative water resource in our overall groundwater conservation strategy for the island especially in the Ewa plain region.

CCGC R-1 Water Consumption History

R-1 water delivery to the CCGC began on October 29, 2001. According to the terms of the service agreement executed on April 5, 2001, CCGC is required to meet 100% of their irrigation needs with R-1 water until June 30, 2004. According to the agreement, CCGC may utilize nominal amounts of caprock well water to maintain the viability of their well pumps or to meet demand should BWS be unable to deliver sufficient quantity or quality water.

BWS has no direct knowledge of CCGC utilizing caprock well water outside the terms of the agreement. Since service initiation, the Honouliuli Water Reclamation Facility (HWRF) R-1 production capacity has been sufficient to meet all of the service demands of the CCGC as well as several other R-1 users in the vicinity. We expect the HWRF production capacity to remain sufficient well into the future. Attached are time-series R-1 water consumption data for CCGC (Exhibit A), the Hawaii Prince Golf Course (Exhibit B), and the Kapolei Golf Course (Exhibit C).

CCGC R-1 Water Delivery Method

R-1 water is automatically delivered to CCGC via a permanent distribution pipeline using an on-demand control methodology driven by reservoir water level sensing instrumentation. R-1 water is stored in a lined reservoir at the CCGC site. It is not piped directly into the irrigation system.
Service Agreement Purchase Rates

The service agreement provides for periodic rate adjustments and corresponding R-1 water use levels agreed to by CCGC.

<table>
<thead>
<tr>
<th>Year</th>
<th>Price / 1,000 gallons</th>
<th>Percentage of then current Irrigation use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Until June 30, 2004</td>
<td>$0.25</td>
<td>Not less than 1,000</td>
</tr>
<tr>
<td>July 1, 2004 - June 30, 2005</td>
<td>$0.40</td>
<td>Not less than 50</td>
</tr>
<tr>
<td>July 1, 2005 - June 30, 2006</td>
<td>$0.55</td>
<td>Not less than 40</td>
</tr>
<tr>
<td>July 1, 2006 - thereafter</td>
<td>Market rate*</td>
<td>CCGC specified amount</td>
</tr>
</tbody>
</table>

* The July 1, 2006 market rate at the time of CCGC service agreement execution was anticipated to be $1.80 / 1,000 gallons. The market rate may be adjusted annually or less frequently according to BWS rate adjustment policies and procedures. BWS rate setting philosophy rests in part on rate stability for predictable cost of supply for all its customers. The current rate for government R-1 water users is $1.20 / 1,000 gallons.

HWRF R-1 Water Quality

The HWRF R-1 water quality is superior to caprock water both in terms of chloride content (< 500 mg/l) and sulfate content. Our landscape irrigation customers report varying reductions in the amounts of required supplemental fertilizers and their associated cost to maintain desired vegetation quality. Nutrient analysis data for R-1 water from the HWRF are shown in Exhibit D.

Variance Request Comments

The service agreement with CCGC recognizes the importance of sustaining CCGC's water use permits for its caprock wells for emergency use in the absence of sufficient volumes or quality of R-1 water should that occur. For this purpose, we support the retention or extension of its water use permits and any efforts by CCGC to prevent the revocation or modification of its permits based on non-use as provided in HRS § 174-58 (1993).

However, BWS has not conducted any definitive research that would contradict either the use of chloride limits as a management technique or the specific chloride limits currently identified as prudent for aquifer protection. Therefore, in the public interest, BWS supports the 1,500 mg/l chloride limit as an appropriate management parameter in lieu of sustainable yield for the Ewa caprock aquifer.
BWS stands ready to work with CCGC to resolve its concerns regarding the cost-effective use of R-1 water within the confines of the service agreement and CWRM aquifer management policy.

Please feel free to contact us for additional information in this matter.

Very truly yours,

CLIFFORD S. JAMILE
Manager & Chief Engineer
Honolulu Board of Water Supply

c  Donna Kiyosaki
    Jan Gouveia
    Barry Usagawa
    Joe Myers

Attachments
Exhibit D - RT Nutrient Data - Honolulu WRF
April 7, 2004

Ref: 2001-13, 2002-15,17,19 variance.bws.let

Mr. Clifford S. Jamile
Manager and Chief Engineer
City and County of Honolulu
Board of Water Supply
630 South Beretania Street
Honolulu, HI 96843

Dear Mr. Jamile:

Coral Creek is requesting a variance from the 1,000 mg/l chloride cap that was established as the sustainable capacity for irrigation wells in the Ewa Caprock aquifer. Please find attached a copy of Coral Creek’s request and a second letter that provides further justification for their request. One of the reasons that Coral Creek cites is the uncertainty in the rates for R-1 water. In order to help the Commission reach a decision on Coral Creek’s request, we would like some information on the R-1 delivery system and purchase agreement:

- We understand that R-1 delivery began in October 2001. To your knowledge, has Coral Creek been irrigating solely with R-1 since then?
- How is the R-1 water delivered? Is it stored in one of their unlined lakes or a lined reservoir, or is it piped directly into the irrigation system?
- What will the purchase rate for R-1 water be in the fourth and fifth years of your purchase agreement? Will the rate remain constant thereafter or be subject to change?

Lastly, we are interested in any comments Board of Water Supply may have on Coral Creek’s variance request.

We are planning to submit Coral Creek’s request for action at the May 19, 2004 Commission meeting. Therefore, we would appreciate your response to this letter by April 26, 2004.

If you have any questions, please contact Lenore Nakama at 587-0218.

Sincerely,

Ernest Y.W. Lau
Deputy Director

LN:ss
Attachments
March 12, 2004 04/123 (97-43)

Mr. Ernest Y.W. Lau
Deputy Director
Commission on Water Resource Management
Department of Land and Natural Resources
State of Hawaii
P.O. Box 621
Honolulu, HI 96809

Dear Mr. Lau:

Requested Chloride Variance for the Coral Creek Golf Course Wells in the Puuloa Sector of the Ewa Caprock Aquifer

This letter responds to your February 18, 2004 request to provide additional reasons why our golf course’s caprock wells should receive a variance from the 1000 MG/L chloride limit now that R-1 effluent is available as an alternative. The reasons can be grouped into two categories, hydrologic and financial, and they are discussed under these heading in the paragraphs following:

Hydrologic Basis for the Requested Chloride Variance

As an alternative to adopting a sustainable yield, the Commission elected to set a 1000 MG/L limit for chlorides as its management tool for preserving the integrity of the aquifer. However, as extensively detailed in the January 22, 1997 report prepared for the Puuloa Caprock Users Group and presented to the CWRM at that time, chloride levels throughout the Puuloa Sector do not fit into the typical predictable pattern for a thin basal...
lens. Our wells, for example, produce chlorides which are much higher than wells on either side of us – the formerly used caprock wells at the Honouliuli Treatment Plant to the west and the Ewa by Gentry wells to the east. Depending on where you are situated in the aquifer, you may be fortunate to have chloride levels substantially less than 1000 MG/L or unavoidably higher than that threshold. Our golf course has a number of water features which are exposures of the groundwater table. These are not pumped and their chloride levels, except following substantial rainstorms such have occurred recently, have and remain above 1000 MG/L. It is an unavoidable consequence of our location within the aquifer.

For situations such as we face, the management test should be whether or not pumpage by the wells in question is a threat to the integrity of the aquifer or that it impairs the use of the aquifer by others. Our reliance on our caprock wells from November 1998 through October 2001 when R-1 effluent became available, while pumping water with chlorides almost always in excess of 1000 MG/L, did not harm the aquifer or impair its use by others. Among the most compelling evidence of this are the salinity trends in our two monitoring wells which are plotted on the attached graphs. Salinity has gone steadily up in Well 3 (State No. 2002-18) and steadily down in Well 5 (State No. 1902-05) since monitoring began in May 1999. Conversion to R-1 effluent in October 2001, which ended use of our wells at that time, has made no impact on these trends. It has also made no impact on the chloride levels of the nearby Ewa by Gentry wells.

Financial Basis of the Requested Chloride Variance

Coral Creek Golf Course, along with two other caprock irrigated golf course in Ewa, entered into a five-year R-1 effluent purchase agreement with the Honolulu Board of Water Supply (BWS) which runs from mid-2001 to mid-2006. Key features of this agreement are:

- The purchase price for the R-1 effluent was adjusted in recognition of the disparity between the cost for the golf courses to continue to use caprock groundwater and the “market” price for the R-1 effluent. We can pump groundwater into our irrigation lake alongside the No. 1 green for about $0.10 per thousand gallons. The market price for R-1 effluent is more than $1.00. At an average irrigation use of 700,000 GPD, that is a difference of about $230,000 annually.
- In exchange for a commitment to do all of our irrigation with R-1 effluent for the first three years of the agreement, its purchase price was fixed during the period. BWS has the option to extend this fixed price and our commitment for 100 percent effluent use indefinitely at its discretion. Coral Creek is amenable to such an extension if it were offered.
- For the 4th and 5th years of the agreement, BWS has the option to increase the purchase price. In recognition of the financial burden this would create, the agreement also allows us to cut back from 100 percent R-1 effluent use and supplement the supply with well water. The intent was to make the combined cost of R-1 effluent and brackish groundwater be comparable to 100 percent R-1
effluent use at a lesser purchase price. This option can be exercised by BWS starting on July 1, 2004. BWS has not yet indicated if it will do so.

The plain facts are that Coral Creek is not opposed to the use of R-1 effluent for all or a portion of its irrigation supply as long as it is affordable, that denying our chloride variance would give us no other choice but to use R-1 effluent at a price that we cannot afford, that using our caprock wells along with R-1 effluent will enable us to keep the cost of irrigation at affordable levels, and that use of our caprock wells will not threaten the integrity of the aquifer or impair its use by others.

We hope that the Commission will consider the foregoing and approve our variance request. Preventing our use of caprock water does not conserve it for other "higher" uses. We are not, for example, utilizing groundwater that might otherwise be conserved for future potable use. We are simply seeking the right to bend this water with R-1 effluent to achieve an irrigation supply which best balances salinity and affordability.

Sincerely,

Ron Huffman
Coral Creek Golf Course
TRENDS OF SALINITY 10 FEET INTO GROUNDWATER AT CORAL CREEK WELLS 3 AND 5 SINCE MAY 1999
TRENDS OF SALINITY TWO FEET INTO GROUNDWATER AT CORAL CREEK WELLS 3 AND 5 SINCE MAY 1999

YEAR

1999 2000 2001 2002 2003 2004 2005

SALINITY (PPT)

2.2 2.0 1.8 1.6 1.4 1.2 1.0 0.8 0.6 0.4 0.2 0.0

--- O WELL 3 (2002-18) --- WELL 5 (1902-05)
February 18, 2004

Ref: 2001-13, 2002-15,17,19 variance.let

Mr. Ron Huffman
Coral Creek
91-1111 Geiger Road
Ewa Beach, HI 96706

Dear Mr. Huffman:

This is in response to your January 29, 2004 letter, requesting a variance from the 1000 mg/l chloride limit for Well Nos. 2001-13 and 2002-15,17,19. From your letter, we understand that only Well No. 2001-13 is being run at this time, with chlorides generally ranging between 900 and 1300 mg/l. However, you anticipate resuming pumping at the other three wells beginning in about July 2004, and past performance has shown that chlorides will rise above 1000 mg/l under continuous use. R-1 effluent has been available as an alternate nonpotable water supply source since July 1, 2001 through an agreement with the Board of Water Supply.

The chloride limit was established by the Commission in lieu of an aggregate sustainable yield number for the aquifer. The 1000 mg/l chloride limit at individual irrigation wells is considered the sustainable capacity of each irrigation well and is, in effect, the established sustainable yield for the Puuloa Aquifer System. The Commission established a 1000 mg/l chloride limit for all irrigation wells to provide adequate protection for the aquifer and other irrigation water users.

Variances from the chloride cap were granted by the Commission in recognition of hardship that would be encountered during the interim period when no other nonpotable alternatives were available. Water Use Permit Special Condition f. specifically states that “[t]his permit is approved under the assumption that wastewater will become available for reuse as an alternative supply source.” Now that reclaimed water is available as an alternative, please provide your reasons why Coral Creek should be exempt from the chloride limit. Please respond to this letter by March 15, 2004.

If you have any questions, please contact Lenore Nakama at 587-0218.

Sincerely,

[Signature]

ERNEST Y. W. LAU
Deputy Director

LN:ss
Mr. Ernest Y.W. Lau  
Deputy Director  
Commission on Water Resource Management  
Department of Land and Natural Resources  
State of Hawaii  
P. O. Box 621  
Honolulu, Hawaii 96809  

Dear Mr. Lau:

Request for Variance on the 1000 MG/L Chloride Limit  
for the Coral Creek Golf Course Caprock Wells

By this letter, we respectfully request a variance from the 1000 MG/L chloride limit for Coral Creek Golf Course Wells 1 (2002-15), 2 (2002-17), and 4 (2001-13) and Lake 1 (2002-19). At the present time, only Well 4 is run on a daily basis. It supplies water to the water feature at the 10th green. As the attached graph shows, its chlorides generally range between 900 and 1300 MG/L. Its pumped water is discharged into the adjacent unlined lake. Since this lake is an exposure of the caprock water, the water is being returned to the caprock aquifer with negligible consumptive use.

The other two wells and Lake 1 are sources of irrigation supply. Since late 2001, that supply has been R-1 treated Honouliuli WWTP effluent rather than our caprock sources. The wells are presently only operated once a month to keep their pumps operational and to obtain samples for chloride analysis. As the attached graphs show, their chlorides have generally been less than 1000 MG/L since use of the R-1 effluent was implemented. However, under continuous use, past performance has shown that their chlorides will rise above 1000 MG/L.

Our agreement to purchase R-1 effluent from BWS is for a period of five years beginning on July 1, 2001. For the first three years, ending on June 30, 2004, we are committed to irrigating entirely by R-1 effluent. For the last two years of the agreement, from July 1, 2004 to June 30, 2006, the irrigation supply will be a blend of R-1 effluent and our caprock wells. So beginning in July 2004, greater use of our caprock wells will occur and this use is expected to cause their chloride levels to rise above 1000 MG/L.
Please feel free to call me or our consultant, Tom Nance (537-1141), if you have any questions on this variance request. Thank you for your consideration on this matter.

Sincerely,

Ron Huffman

Attachments

cc: Tom Nance
CORAL CREEK GOLF COURSE WELLS
CHLORIDES FROM JANUARY 1999 TO DATE

YEAR

CHLORIDES (MG/L)

- WELL 1 @ NO. 2 TEE
- WELL 2 ALONG HOLE 3
- WELL 4 @ HOLE 10
Coral Creek Golf Course Lakes
Chlorides from January 1999 to Date

Chlorides (mg/L) vs Year

- Lake A @ No. 1 Tee
- Irrigation Lake
Ref: 2002-15,17,19 & 2001-13,14,let

December 29, 2003

Mr. Ron Huffman
Coral Creek Golf Course, Inc.
91-1111 Geiger Road
Ewa Beach, HI 96706

Dear Mr. Huffman:

We have recently confirmed with the Honolulu Board of Water Supply that the Coral Creek Golf Course began receiving reclaimed water for irrigation supply on October 29, 2001. This is a reminder that the variance from the 1,000 mg/l chloride limit expired on April 29, 2002, six (6) months after the first date of reclaimed water delivery. In accordance with the Commission’s action on July 18, 2001, individual well pumping shall cease immediately if the chloride concentrations from individual wells exceed the 1,000 mg/l chloride limit, unless a new variance from the chloride limit is granted.

If you have any questions, please contact Lenore Nakama at 587-0218.

Sincerely,

ERNEST Y.W. LAU
Deputy Director

LN:ss

c: Teri Kondo, Watanabe Ing & Kawashima
Ref: ewa golf course.let

Ms. Teri Y. Kondo
Watanabe Ing & Kawashima
First Hawaiian Center
999 Bishop Street, 23rd Floor
Honolulu, HI 96813

Dear Ms. Kondo:

This is in response to your July 20, 2001 letter requesting relief from the weekly chloride monitoring requirement for Hawaii Prince Golf Club and Coral Creek Golf Course.

Based on our review of the historic data and your reasons for requesting relief, your request is hereby approved. Chlorides may be reported on a regular monthly basis along with the pumpage, water levels, and temperature.

Aloha,

GILBERT COLOMA-AGARAN
Chairperson

LN:ky
MEMORANDUM FOR THE RECORD

From: Lenore Nakama
Subject: Typographical Error in 8/13/01 CWRM Letter

8/16/01 Left a message for Ron Huffman that our 8/13/01 letter (approving variances from the weekly reporting requirement and chloride cap) contained a typographical error. The variances were approved for 2001-13 & 14 (not 2002-13 & 14). Asked him to correct his copy of our letter.
Ref: coral1.let

AUG 13 2001

Mr. Ron Huffman
Coral Creek Golf Course, Inc.
91-1111 Geiger Road
Ewa Beach, HI 96706

Dear Mr. Huffman:

This is in response to your July 20, 2001 letter requesting: 1) monthly, rather than weekly, reporting of chlorides, and 2) a variance from the 1000 mg/l chloride limit for Well Nos. 2002-15, 17, & 19 & 2002-13 & 14.

Based on our review of the historic data, the wells' proximity to the ocean, and recognizing that you have signed an agreement to convert to reclaimed water, both of your requests are hereby approved. Chlorides may be reported on a regular monthly basis along with the pumpage, water levels, and temperature. The chloride limitation of 1000 mg/l is waived; this variance shall expire six (6) months after the first date of reclaimed water service delivery. (The Chairperson may extend future variance requests.)

Aloha,

GILBERT COLOMA-AGARAN
Chairperson
Ref: ewa_13k.act
CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Ron Huffman
Coral Creek Golf, Inc.
91-1111 Geiger Road
Ewa Beach, HI 96706

Dear Mr. Huffman:

Notice of Action
Extension of Interim Water Use Permits
Puuloa Ground Water Management Area, Oahu

This letter serves as your official notice of action by the Commission on Water Resource Management (Commission). By a unanimous vote at the meeting on July 18, 2001, the Commission:

1. Extended your interim water use permits (WUP Nos 577, 578, & 579; Well Nos. 2001-13, 2001-14, 2002-15, 2002-16, & 2002-19), subject to the Standard Conditions of a Water Use Permit (Attachment A) and the following Special Conditions (which replace former special conditions):

   a. Should an alternate permanent source of water be found, the Commission reserves the right to revoke the 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, unless a variance from the chloride limit has been granted. The authority to approve future variance requests is delegated to the Chairperson.

   d. The duration of the interim permit shall be
   a) to July 1, 2006, 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.
Action on any interim permit may be initiated by the Commission or any permittee upon letter request or pursuant to §174C-57 Haw. Rev. Stat. (Modification of permit terms).

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

Require adherence to the chloride sampling protocol shown in Attachment B and the submittal of weekly chloride data. The authority to approve variances from the weekly reporting requirement is delegated to the Chairperson.

Require adherence to the Conservation Conditions shown in Attachment C.

Require adherence to the Conservation Conditions shown in Attachment C.

In the event a water shortage is declared by the Commission, permittees in the Puuloa Aquifer System shall comply with the Puuloa Water Shortage Plan adopted by the Commission.

Suspended the four-year period of nonuse for Well Nos. 2001-13, 2001-14, 2002-15, 2002-17, & 2002-19, beginning from the first date of reclaimed water service delivery under the agreement with the Board of Water Supply. The suspension will be for the duration of these interim permits or until the agreement with Board of Water Supply for reclaimed water service delivery ends, whichever comes first. This condition shall apply to any other interim permittee that converts to reclaimed water service.

The Commission decided that interim permittees shall be notified by letter of the Commission action and extended permit duration and that re-issuance of new interim water use permits for these extended permits is unnecessary.

If you have any questions, please contact Lenore Nakama at 587-0218.

Sincerely,

LINNEL T. NISHIOKA
Deputy Director

LN:ky
Attachments
SENDER:
- Complete items 1 and/or 2 for additional services.
- Complete items 3, 4a, and 4b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

3. Article Addressed to:
   Mr. Ron Huffman
   Coral Creek Golf, Inc.
   91-1111 Geiger Road
   Ewa Beach, HI 96706

4a. Article Number
   P 354 448 618

4b. Service Type
   ☐ Registered
   ☐ Certified
   ☐ Express Mail
   ☐ Insured
   ☐ Return Receipt for Merchandise
   ☐ COD

7. Date of Delivery
   11/10

5. Received By: (Print Name)
   L. Ai

6. Signature (Addresser or Agent)
   X

Is your RETURN ADDRESS completed on the reverse side?

1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Thank you for using Return Receipt Service.

I also wish to receive the following services (for an extra fee):

Consult postmaster for fee.

7. Addressee's Address (Only if requested and fee is paid)

TOTAL Postage and Fees
$ 4.17
TESTIMONY BY APPLICANT:

Mrs. Harms stated that according to the Hawaii County Department of Water Supply (DWS), she would need 2 hookups per unit and a total of 16 units that require water. She stated that the units are located approximately 100 feet from where the County system terminates at the entrance to Vacationland. Mrs. Harms stated that DWS informed her that only 50 hookups were allowable to the Association meter, and that the association meter was filled to the maximum. At the present, Mrs. Harms stated that she has a temporary hookup of 10 lines with DWS.

MOTION: (RICHARDS/NOBRIGA)
To approve the submittal as amended in Alternate Recommendation #1.
UNANIMOUSLY APPROVED AS AMENDED.

4. Extension Of Interim Water Use Permits, Puuloa and Kapolei Ground Water Management Areas, Oahu

PRESENTATION OF SUBMITTAL: Ms. Lenore Nakama

AMENDED RECOMMENDATIONS:

That the Commission:

1. Extend the interim permits shown in Exhibit 4, subject to the Standard Conditions of a Water Use Permit (Attachment A) and the following Special Conditions (which replace the former special conditions):

   a. Should an alternate permanent source of water be found, the Commission reserves the right to revoke the 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, unless a variance from the chloride limit has been granted.
   
   d. The duration of the interim permit shall be

      a) to July 1, 2006, 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. Action on any interim permit may be initiated by the Commission or any permittee upon letter request or pursuant to §174C-57 Haw. Rev. Stat. (Modification of permit terms).

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

g. Require adherence to the chloride sampling protocol shown in Exhibit 8 and the submittal of weekly chloride data. The authority to approve variances from the weekly reporting requirements is delegated to the Chairperson.

h. Require adherence to the Conservation Conditions shown in Exhibit 9.

i. In the event a water shortage is declared by the Commission, permittees in the Puuloa Aquifer System shall comply with the Puuloa Water Shortage Plan adopted by the Commission.

2. Grant variances from the 1,000 mg/l chloride limit to Hawaii Prince Golf Club (Well Nos. 1900-02, 1900-17 to 20, 1901-03), Pacific Tsunami Warning Center (Well No. 1900-23), and The Estate of James Campbell (Well Nos. 1905-08, 10). The variances shall expire six (6) months after the first date of reclaimed water service delivery.

3. Delegate the authority to the Chairperson to approve future variance requests.

4. The permittees shall be notified by letter of the Commission action and extended permit duration. Re-issuance of new interim water use permits for these extended permits is unnecessary.

5. Suspend the four-year period of nonuse for the Hawaii Prince Golf Club, Coral Creek Golf Course and Barbers Point Kapolei Golf Course, beginning from the first date of reclaimed water service delivery under their agreement with the Board of Water Supply. The suspension will be for the duration of these interim permits or until the agreement with Honolulu Board of Water Supply for reclaimed water service delivery ends whichever comes first. This condition shall apply to any other interim permittee that converts to reclaimed water service.

TESTIMONY BY APPLICANT:

Ms. Terry Kondo of Watanabe Ing & Kawashima representing Hawaii Prince Golf Course expressed concerns on staff recommendations #2, and 1g.

Mr. Tom Nance stated that when the golf course switches over to the effluent, the wells will not be run weekly. They will be run on occasion to keep them viable for use when effluent is not available. They will not be used on a weekly basis so providing a weekly data will become difficult. In the case of Hawaii Prince, samples that were obtained at one-half to
one-hour intervals were misleading. An internal sample protocol was developed so that all
wells have to be run continuously for 24 hours before samples can be obtained. For that
reason, Mr. Nance asked if condition 1 g could be modified so that reporting be done on a
monthly basis. He stated that trends are better noticed on a monthly data report.

Ms. Nakama stated that an administrative waiver was granted for Kapolei Golf Course
because the long-term data was so stable. No significant movements were indicated in the
water levels. Hawaii Prince and Coral Creek could request an administrative waiver from
the weekly chloride-sampling requirement from the Chairperson.

Mr. Glenn Bauer stated that records showed that there were no major differences for Hawaii
Prince’s chlorides in the weekly and monthly data. He felt that monthly data reporting
would be sufficient.

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

5. County of Hawaii, Department of Public Works, Application for a Stream Channel
Alteration Permit (SCAP-HA-325), Install Three Concrete Culverts and Replace
Bridge Structures, Waiakea Stream, Hilo, Hawaii (TMK 2-4-01:007, 010, 122)

PRESENTATION OF SUBMITTAL: Mr. Edwin Sakoda

RECOMMENDATION:

That the Commission:

Approve a stream channel alteration permit for the construction of culverts at Puainako
Street and bridge modifications at Komohana Street, Waiakea Stream, Hilo, Hawaii
(TMK: 2-4-01:007, 010, 122). The permit shall be valid for two years subject to the
standard stream channel alteration permit conditions in Exhibit 5.

MOTION: (NOBRIGA/RICHARDS)
To approve the submittal.
UNANIMOUSLY APPROVED.

7. West Hawaii Water Company, Application For Variance To Well Construction
Standards, Parker Well #1 (Well No. 5548-01), Well Construction: 10-inch Casing
Diameter, 849-ft Deep Well, Pump Installation: 600 gpm for Irrigation Use, TMK 6-8-
1: 48, Waikoloa, Hawaii

PRESENTATION OF SUBMITTAL: Mr. Ryan Imata
BACKGROUND:

On March 3, 1993, the Commission officially adopted the boundary of the entire brackish Ewa Caprock Aquifer as a separate aquifer overlying the existing designated ground water management areas of the Waipahu-Waiawa, Ewa-Kunia, and Makaiwa Aquifer Systems. Due to uncertainties regarding the caprock’s sustainable yield and nonpotable utility, the Commission did not adopt a sustainable yield estimate for the caprock. Then-current uses were operating under permanent water use permits.

Designation of the Ewa Caprock as a water management area was precipitated by the City and County of Honolulu’s (City) urbanization plans for the Ewa area and a City ordinance requiring dual water systems for all new developments. Potable water was to be provided through the municipal system. Possible sources of non-potable water were brackish ground water from the Ewa Caprock aquifer and reclaimed sewage effluent. The estimated non-potable demand of 25 mgd after full buildout (Kumagai, 1996) far exceeded the estimated natural recharge to the caprock aquifer of less than 16 mgd (Bauer, 1996).

Because there were concerns regarding the future viability of the caprock as a dependable source of brackish water due to the significant loss of return irrigation recharge from sugarcane agriculture, in 1993, the Commission began awarding temporary one-year permits for new uses of caprock ground water. In analyzing water availability, the Commission used guidelines for estimating sustainable yields for the Puuloa, Kapolei, and Malakolel areas (Yuen & Associates, Inc., 1989).
On July 13, 1994, the Commission extended temporary one-year permits. The duration of the extended permits was to July 12, 1995.

At the July 5, 1995 Commission meeting in Honokaa, Hawaii, the Commission extended the permits, which were now called interim permits, until such time that a formal decision could be made on Oahu.

On March 13, 1996, the Commission deferred action on existing interim permits and new applications pending a decision on the establishment of a sustainable yield for the caprock.

Also on March 13, 1996, the Commission adopted the following policy statement, clearing the way for application of reclaimed water on lands overlying the Ewa Caprock Aquifer:

"It is the policy of the Commission on Water Resource Management (Commission) to promote the viable and appropriate reuse of reclaimed water in so far as it does not compromise beneficial uses of existing water resources.

I. Ewa Caprock

Recognizing that reclaimed water is a valuable resource in the Ewa Plain, direct or indirect reuse will be championed by the Commission. It is the policy of the Commission that the water resources of the Ewa Caprock Aquifer will be allocated only for non-potable uses."

On May 14, 1997, the Commission adopted a sustainable yield based on a sustainable capacity for individual irrigation wells at 1,000 milligrams per liter (mg/l) of chloride as an interim management plan, subject to review within two (2) years. The rationale behind the chloride cap was to limit pumpage in those wells approaching the limit, to prevent a build-up of sodium in the clay soils, and to protect other users adjacent to those pumping higher chloride water. The Commission also adopted the Puuloa, Kapolei, and Malakole Aquifer Systems in the Ewa Caprock Sector and approved pending applications for new and continued irrigation uses. The specified duration of the interim water use permits was to October, 1998 or until such time that a significant change in permitted, actual, or projected uses or water supply occurs. The October, 1998 date coincided with the possible revocation of unused (former Oahu Sugar Company) agricultural permits and also provided a milestone date to check on the progress of wastewater reuse for private caprock well owners, the availability of which was then scheduled for July, 1999.

On October 22, 1998, the Commission extended the interim water use permits, subject to the Standard Conditions of a water use permit and new special conditions (Exhibit 3). The interim permits specified a duration to: 1) July, 2001, or 2) until treated wastewater is available and acceptable for use, or 3) until such time that a significant change in permitted, actual, or projected uses or water supply occurs. The list of interim permits due to expire in July, 2001 is shown in Exhibit 4. The graphs of reported pumpage and chlorides are shown in Exhibit 5.

On July 20, 2000, an agreement was reached between the Honolulu Board of Water Supply (BWS), the City, and U.S. Filter for BWS' purchase of the Honouliuli Wastewater Reclamation Facility. The agreement includes BWS becoming the purveyor of reuse water, with the task of securing customers for 10 mgd by July 1, 2001. U.S. Filter will operate the facility for BWS under a 20-year service agreement. The City will provide secondary effluent to the facility and will take back 4 mgd of the R-1 water for City reuse applications. Some of the reclaimed water will supply industrial uses at Campbell
Industrial Park. (A briefing by the BWS on their reclamation program is scheduled as a separate item on this agenda.)

**ANALYSIS/ISSUES:**

A significant change in the water supply picture has been the acquisition of the Hono'uliuli Wastewater Reclamation Facility by the BWS and BWS' new role as purveyor of reclaimed water. Since their recent acquisition of the plant, BWS has been actively promoting the use of reclaimed water for non-potable needs over the Ewa Caprock Aquifer. Negotiations have been finalized for some City projects (West Loch and Ewa Villages developments) and for some of the golf courses that have interim caprock permits. Currently, we understand that a memorandum of understanding for golf course irrigation has been negotiated with Coral Creek, Hawaii Prince, and Barber Point. The agreement provides for a set rate to July 1, 2006. The staff feels that this would be a good time to revisit these permits and the progress of the reclaimed water effort.

Even with reclaimed water as the primary irrigation source, ground water would still be used for the golf course water features, to maintain the pumps, and to mitigate potential reclaimed water quality or odor issues that may arise. The long-term goal of the golf courses is to blend reclaimed water with caprock ground water. Until reclaimed water is actually delivered and has been shown to be a reliable and acceptable source, the golf courses have requested that their interim permits be renewed for the same quantities. They have also requested that the Commission suspend the four-year nonuse clause for permit revocation. Section 174C-58 Haw. Rev. Stat. provides for the Commission and permittee to enter into a written agreement that, for reasons satisfactory to the Commission, any period of nonuse may not apply towards the four-year revocation period. The staff feels that the promotion of alternative non-potable sources to meet non-potable needs is a satisfactory reason to suspend the four-year revocation period, given the uncertainties associated with this new source conversion, provided that other users and the resource are adequately protected.

**PROTECTION OF THE RESOURCE**

The current sustainable yield for the caprock aquifers is defined by a sustainable capacity at all irrigation wells in the Pualoa and Kapolei Aquifer Systems which prohibits individual pumpages that cause the specific well to exceed a 1,000 mg/l chloride cap. Enforcement of the chloride cap provides adequate protection for the aquifer. Management of the resource via a chloride cap was adopted on May 14, 1997 as an interim management plan. The staff feels that this management approach has been effective and is not recommending that the strategy be changed at this time.

**MAXIMIZING THE UTILITY OF THE RESOURCE**

Maximizing the utility of the caprock is intimately tied to wastewater reuse. As wastewater reuse comes on line, the sustainable yield of the caprock will 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. Of the projected total 13 mgd of R-1 water from the Hono'uliuli Wastewater Reclamation 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 Puuloa Aquifer System, where the competition for nonpotable irrigation water is most severe, could be up to about 15 mgd: 10 mgd reclaimed water plus approximately 5 mgd natural sustainable yield (Bauer, 1996). This assumes that 100% of the treated effluent will be available for reuse in Puuloa, which is improbable. But the availability of reclaimed water will present permitees 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 permitees 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. But ultimately, based on current reclaimed water plans, total allocations for the Puuloa Aquifer System should not exceed 15 mgd. Current allocations in the Puuloa Aquifer System total 14.817.

WELL INTERFERENCE

Since there are no ground-water models (solute-transport) that can 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 fully implement its reclamation program. Exhibit 6 shows that the caprock aquifer was significantly influenced by sugarcane irrigation practices and is still in a state of flux. Currently, all interim permitees are required to submit weekly reports of pumpage, water levels, chlorides, and water temperature (unless a variance from this requirement has been approved). All permitees 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. Special Condition f. has been added to the existing interim permits recommended for extension and will be added to all future caprock permits to put the permitees on notice of the risk of reliance on caprock ground water and its uncertain sustainable yield.

The staff has been sending all interim permitees in Puuloa the monthly bulletin which shows all pending permit applications, which should provide the permitees sufficient notice of new proposed uses of Puuloa Caprock ground water. Permittees should review new applications and water data from other nearby wells to proactively protect their sources. Permittees are encouraged to submit comments or objections in accordance with Administrative Rule 13-171-18 (Objection to Proposed Water Use Permit). Further, the staff has been analyzing the weekly water data reports, and we are continuing to work on triggers to implement a water shortage plan. These triggers may be related to some modification of Exhibit 6. Should valid claims of well interference be raised, either by permitees or as a result of the staff’s analysis, the Commission may consider implementing a water shortage plan to address the well interference issue.

At this time, only an informal and incomplete water shortage plan exists. On May 14, 1997, the Commission approved a permit classification system for a water shortage plan for the Puuloa Aquifer System as provided under Administrative Rule 13-171-42:

"(a) The commission shall formulate a plan for implementation during periods of water shortage. As a part of the plan, the commission shall adopt a reasonable system of permit..."
classification according to source of water supply, method of extraction or diversion, use of water, or a combination thereof.

(b) In accordance with this chapter, the commission may impose such restrictions on one or more classes of permits as may be necessary to protect the water resources of the area from serious harm and to restore them to their previous condition.

(c) All permittees, unless exempted by the commission, shall submit a water shortage plan outlining how it will reduce its own water use in case of a shortage. Every water shortage plan shall be subject to approval or modification by the commission.

For the Puuloa Aquifer System, the Commission established the highest priority of nonpotable use as agriculture because the State’s policy is to promote agriculture, and also because agricultural correlative uses are assured through the 1978 Constitutional Amendment. The second priority in water use is golf course irrigation because of the economic impacts that may result from inadequate water supply. The lowest priority in water use is landscape irrigation and dust control.

Water shortage plans were requested from all of the users in Puuloa, with the exception of United States Fish and Wildlife Service. The requirement to submit individual water shortage plans is highlighted in the cover letter that transmits the permit and is also stated in Standard Condition 17. The staff will continue to work with users to develop their individual plans. As part of the May 14, 1997 action, the Commission has also delegated the authority to the Chairperson to approve individual water shortage plans and the regional water shortage plan for the Puuloa Aquifer System.

CHLORIDE CONCENTRATION TRENDS

The Commission staff established a caprock well monitoring network in 1993. Each month, the staff collects water level and chloride data at selected caprock wells. The staff’s analysis of the chloride trends at the individual wells and regionally is attached (Exhibit 7). The data show that the chloride concentration in the caprock water varies significantly from place-to-place and from well to well. Some of the reasons for these disparities include the subsurface geology, distance from the coast, well construction, pump capacity, and pumping schedule. Many of the sources have not exceeded the 1,000 mg/l chloride limit. The baseline data suggest that those wells that have exceeded the limit will continue to pump water exceeding 1,000 mg/l of chloride unless there is an influx of less saline water or a complete cessation of pumpage. The staff recommends that those operators with wells and/or batteries having >1,000 mg/l of chloride should apply for a variance from the established limit. Once reclaimed water is available, these wells should only be used for back-up purposes or for blending with reclaimed water to a quality of 1,000 mg/l of chloride or less.

Currently, variances from the chloride cap have been granted to Hawaii Prince Golf Club (Well Nos. 1900-02, 1901-17 to 20, 1901-03) and Pacific Tsunami Warning Center (Well No. 1900-23). In a letter dated August 7, 2000, The Estate of James Campbell (Campbell) requested that the Commission waive the salinity limit for its two nonpotable wells (Well Nos. 1905-08,10). The Commission denied the request on November 16, 2000 because Campbell was in the process of transferring the nonpotable system to the BWS and an alternative source (reclaimed water) would soon be in place. Negotiations are still ongoing for the transfer of the nonpotable water system. Chloride levels at the Campbell wells are now about 1,200 ppm. The staff is recommending that the Commission approve temporary variances from the chloride limit pending the implementation of the reclaimed water system for those users that have requested variances. Other users whose wells are close to the chloride cap may also request variances. Unless a variance is requested and approved, wells exceeding the chloride limit
must shut down. The staff’s recommendation on a variance request would be made with consideration to the well’s proximity to the ocean and to other wells, its history of chloride and pumpage, the availability of alternative sources of water and possibility for conversion. The staff is recommending that future variance requests be delegated to the Chairperson for disposition.

RECOMMENDATIONS:

That the Commission:

1. Extend the interim permits shown in Exhibit 4, subject to the Standard Conditions of a Water Use Permit (Attachment A) and the following Special Conditions (which replace the former special conditions):
   a. Should an alternate permanent source of water be found, the Commission reserves the right to revoke the 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, unless a variance from the chloride limit has been granted.
   d. The duration of the interim permit shall be
      a) to July 1, 2006, 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. Action on any interim permit may be initiated by the Commission or any permittee upon letter request or pursuant to §174C-57 Haw. Rev. Stat. (Modification of permit terms).
   f. This permit is approved under the assumption that wastewater will become available for reuse as an alternative supply source.
   g. Require adherence to the chloride sampling protocol shown in Exhibit 8 and the submittal of weekly chloride data.
   h. Require adherence to the Conservation Conditions shown in Exhibit 9.
   i. In the event a water shortage is declared by the Commission, permittees in the Puuloa Aquifer System shall comply with the Puuloa Water Shortage Plan adopted by the Commission.

2. Grant variances from the 1,000 mg/l chloride limit to Hawaii Prince Golf Club (Well Nos. 1900-02, 1900-17 to 20, 1901-03), Pacific Tsunami Warning Center (Well No. 1900-23), and
The Estate of James Campbell (Well Nos. 1905-08,10). The variances shall expire six (6) months after the first date of reclaimed water service delivery.

3. Delegate the authority to the Chairperson to approve future variance requests.

4. The permittees shall be notified by letter of the Commission action and extended permit duration. Re-issuance of new interim water use permits for these extended permits is unnecessary.

5. Suspend the four-year period of nonuse for the Hawaii Prince Golf Club, Coral Creek Golf Course and Barber's Point Golf Course, beginning from the first date of reclaimed water service delivery under their agreement with the Board of Water Supply. The suspension will be for the duration of these interim permits or until the agreement with Honolulu Board of Water Supply for reclaimed water service delivery ends whichever comes first. This condition shall apply to any other interim permittee that converts to reclaimed water service.

Respectfully submitted,

LINNEL T. NISHIOKA
Deputy Director

Attachment(s):
A  (Standard Conditions for a Water Use Permit)

Exhibit(s):
1  (Interim Permittees and Landowners at the Source Location)
2  (Well Location Map)
3  (Standard and Special Conditions, approved October 28, 1998)
4  (Interim Permitted Uses, Puuloa and Kapolei Aquifer Systems)
5  (Graphs of Reported Pumpage and Chlorides)
6  (Chloride and Pumpage of Ewa Plantation Shallow Wells)
7  (Chloride Concentration Trends)
8  (Chloride Sampling Protocol)
9  (Conservation Conditions)
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 July 20, 2001 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:

ATTACHMENT A
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. 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).

11. This permit shall be subject to the Commission's periodic review of the applicable 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 applicable aquifer system, or relevant modified aquifer(s), is reduced.

12. A permit may be transferred, in whole or in part, from the permittee to another, if:
   a. The conditions of use of 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.

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

14. 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.

15. 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.

ATTACHMENT A
pursuant to section HRS § 174C-62 shall not apply towards the four-year period of forfeiture.

16. 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 applicable Ground-Water Management Area.

17. 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.

18. Special conditions in the attached cover transmittal letter are incorporated herein by reference.

19. 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.

ATTACHMENT A
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<td>GENTRY DEVELOPMENT CO.</td>
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EXHIBIT 2
EWA CAPROCK INTERIM PERMITS
Special Conditions
(approved on October 22, 1998)

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 (Attachment C) and the submittal of weekly chloride data.

g. Require adherence to the Conservation Conditions (Attachment D).

EXHIBIT 3
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 October 22, 1998 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;

EXHIBIT 3
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 Puuloa or 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 Puuloa or 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 Puuloa or 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.
Aquifer System Water Use Permit Index

**ISLAND OF OAHU**

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Summary for 'SYSTEM' = KAPOLEI (6 detail records)

Totalling 2.033

**WMA Aquifer System: PUUOLA**

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Summary for 'SYSTEM' = PUULOA (25 detail records)

Totalling 4.867 3.466
Hawaii Prince G.C. Combined Pumpage
(Well Nos. 1900-02, 17 to 20; 1901-03)
Haseko (Ewa) Inc. Pumpage (EP27)
Well No. 1902-01

Date (latest data 4/01)

- Monthly pumpage
- 12-MAV
- WUP
- Max Cl-
Campbell Estate Caprock Pumpage
Kapolei Irr. Wells 1&2 (1905-08,10)

Combined Monthly Pumpage  12-MAV  WUP  1905-08 Chloride

Date (latest data 04/01)
Ewa By Gentry Community Association
Soda Creek III (Well No. 2001-05)

Graph showing pumpage (mgd) and chloride (mg/l) over time.
Palm Villa II Homeowners Association
Palm Villa II Well (Well No. 2001-08)

EXHIBIT 5

Pumpage (mgd)

Date (latest data 04/01)

--- monthly values  --- WUP  --- 12-MAV
Gentry Pacific, Ltd. Pumpage
Coronado Well (Well No. 2001-09)

EXHIBIT 5
Coral Creek Golf Course Withdrawals
Well 4 (2001-13)

Date (latest data 4/01)

Pumpage (mgd)  12-MAV  Max chloride level
Coral Creek Golf Course Withdrawals
Well 1 (2002-15)
State HCDCH Kapolei Wells
Well Nos. 2003-04,07 Combined

EXHIBIT 5
Chloride and Pumpage of Ewa Plantation
Shallow Wells, Ewa Caprock, Oahu

Start

Basal (high Cl)
irrigation

Initial caprock Cl
(average year)

Basal (low Cl) irrigation

Stop

Non plantation
wells

Average Yearly pumpage (mgd)

Average monthly
pumpage (mgd)

Year

EP-20
EP-21
EP-22
EP-23
EP-24
Gentry Palm Villa 1
Kapolei Golf B

Ref: CWRM, BWS files, & R-79
MEMORANDUM FOR THE RECORD

FROM: Glenn Bauer

SUBJECT: Chloride Concentration Trends in the Ewa Caprock Aquifer

Background

Commission staff has been collecting water samples from various wells and well batteries within the caprock aquifer from Puuloa to Malakole since 1993. Our baseline sampling effort began before the demise of Oahu Sugar Company in 1994, and was augmented by the required reporting of weekly chlorides by caprock water users.

The end of sugar cultivation on the Ewa Plain brought with it an end to the importation of low to moderate salinity basal ground water for irrigation. Prior to 1994, when drip irrigation practices were employed, the estimated return irrigation component from basal ground water was 16 mgd (Mink, 1989) with 8 mgd going to the Puuloa area and 8 mgd going to the Kapolei-Malakole area. At the same time, the plantation pumped an average of 14 mgd (Bauer, 1996) from their shallow wells. After 1994, ground-water input to the caprock included natural inflow from the basal aquifer into the caprock and direct recharge from rainfall and storm runoff. Various authors report a range of natural inflow into the caprock from the basalt. Most of these numbers were derived by numerical models or by salinity mixing model equations and are small when considered on a flux/mile basis. Estimates range from <1 mgd to 3± mgd/mile (Bauer, 1996). Long-term annual average rainfall input over the Ewa Plain has been estimated to be about 5± mgd (summary of results in Bauer, 1996). In addition, long-term annual average for storm runoff recharge over the caprock from Kaloi and Makakilo Gulches was estimated to be between 1 and 2 mgd (Mink, 1989).

In 1997 the Commission adopted a 1,000 mg/l chloride cap for individual wells developing caprock water. The reasoning behind this cap was to limit pumpage in those wells approaching the limit and to prevent a sodium build-up in the clay soils which would adversely affect the growth of certain grasses for golf courses, and to protect other users adjacent to those using higher chloride water.

Chloride Trends Since 1994 East of Fort Weaver Road

The chloride concentration in the caprock water varies significantly from place-to-place, and from well to well. Some of the reasons for these disparities include the subsurface geology, distance from the coast, well construction, pump capacity, and pumping schedule.

Generally, those pumping batteries that have long-term records, are east and south of Fort Weaver Road and Iroquois Point Road respectively, show a rising trend in
chlorides over time. This trend is partly due to irrigation practices and partly due to the lack of recharge of fresher water into the aquifer and proximity to the shoreline.

Ewa Beach International Golf Club

For Ewa Beach International, chlorides have risen from a low of 1,000 mg/l in late 1996 (due to recharge from a large storm on Election night) to 1,800± mg/l at the present time. CWRM staff samples Well No. 1900-21 at a 1-acre pond (Pond E). Evaporation from the pond undoubtedly affects chloride concentration. Pumpage from this source is less than 1 mgd.

Hawaii Prince Golf Club

Hawaii Prince Golf Club pumps water from 6 wells. Total average pumpage is slightly greater than 1 mgd. CWRM staff typically samples the wells after they have been running for several hours. Hawaii Prince Irrigation Wells 1-5 (1901-03, 1900-17-20) and EP-22 (1900-02). Chloride concentration in Hawaii Prince Wells 1 and 2 have remained relatively stable over the period of record. Well 1 remains about 1,000 mg/l, while Well 2 changed from about 1,000 mg/l in 1994 to 1,200± mg/l at the present time. Wells east of Well 2 are much more saline. The magnitude of the increase in salinity has ranged from 300 mg/l (Well 3) to 500 mg/l (Well 5 and EP-22) over the period of record.

U. S. Fish and Wildlife Well 2101-14

This well is north of Iroquois Point Road. Average pumpage is less than 0.5 mgd. The chloride concentration has shown an improvement since 1996 and remains stable at 1,000± mg/l.

Chloride Trends Since 1994 West of Fort Weaver Road

Gentry Wells

CWRM staff has monitored 5 of the 9 wells developed by Gentry. These wells are low capacity and are used exclusively for irrigation of the common areas within each development. Total Gentry pumpage is less than 0.5 mgd. Since 1997, chloride concentration has remained consistently between 400 and 800 mg/l, well below the 1,000 mg/l cap. The wells monitored are Palm Villa I (2001-06), Palm Villa II (2001-08), Palm Court III (2002-12, monitoring discontinued in 1997), Sunrise (2001-04), and Sun Terra (2001-05). Pump capacities for these wells range from 100-110 gpm.

Haseko EP-27 Well (1902-01)

CWRM staff began monitoring this source in 1994 just after the closing of Oahu Sugar. Static (non-pumping) samples were collected from the open pit near the pump house. Chlorides ranged from 800 to 900 mg/l. In 1997, Haseko began to pump this source at rates approaching 2 mgd. The average rate is about 1 mgd. Chloride
Concentration remains stable at 900± mg/l. The stable nature could be that the pumping source skims the top water from the pit.

**Coral Creek Golf Course**

In 1998, several large pits were excavated and noted north and south of Geiger Road just east of the Honouliuli STP. These pits and drilled wells became part of the Coral Creek battery. Water from the pits is used for water features and for a back-up source (Lake Well 1, 2002-19). Coral Creek Golf Club irrigates using water from Coral Creek Well 1 (2002-15), Coral Creek Well 2 (2002-17), and Coral Creek Well 4 (2001-13). Pumpage is slightly greater than 1 mgd; however, the chloride concentration from the sources ranges between 1,000 mg/l to almost 4,000 mg/l at Well 2. According to golf course personnel, Well 4 pumps the least amount and is the most stable in terms of chloride concentration. It was also noted by golf course personnel that the longer Well 1 and 2 pumps, the saltier the water becomes. Pump capacities for these wells are high. Coral Creek 1 and 2 have 800 gpm pumps, while Coral Creek 4 has a 1,000 gpm pump.

High evaporation rate (close to 90 inches/year) in the Ewa Plain could cause the salinization of the lakes, which, in turn, could be the reason for the high chlorides localized at Well 1 and 2. However, the chloride samples taken from the Lake Well 1 show concentrations ranging from 1,000 to 1,200 mg/l. At the present time, Coral Creek’s saline water does not seem to affect the Gentry sources to the east.

**Chloride Trends Since 1994 in the Kapolei Region**

**HFDCH Kapolei Golf Course**

The Kapolei Golf Course utilizes Kapolei Irrigation Wells A, B, C, D, E, and C-l (well nos. 2003-01-05, 07). Well C-1 is a replacement well for Well C. Chlorides have been remarkably stable, hovering between 200± mg/l to 600 mg/l, with little variation or trends. It is thought that basal ground-water inflow from the Waianae aquifer in conjunction with a thin caprock is responsible for the stability of the water chemistry in this area. Variations in pumpage are seasonal, but average about 1 mgd.

**Kapolei City Wells**

Campbell Estates’ Kapolei City Wells (1905-08, 10) supply irrigation water for Kapolei. Average daily pumpage is less than 0.5 mgd. Since 1995 chloride concentrations in both wells have been rising from 600 mg/l to 1,200-1,400 mg/l at the present time. Well 1905-08 (east well) water quality is slightly better than 1905-10. Duration of pumpage prior to sample collection probably influences the chloride concentration. However, it is evident that the overall trend is upwards.

**Conclusions**
Since the cessation of sugar irrigation the common chloride trend is generally a linear increase for wells that exceed the 1,000 mg/l cap. The long-term prognosis for these wells will be a continued increase in salinity. However, there are several well batteries and wells that do not fit this trend (e.g. U.S. Fish and Wildlife, Gentry, Haseko, HFDCH Kapolei), and exhibit remarkable chloride stability. The scatter of chloride data associated with Coral Creek cannot be easily explained. Bottom hole elevations are not as great as some of the Gentry Wells, yet the chlorides are much greater and the sensitivity of chloride concentration to pumpage suggest that localized upconing, in conjunction with the high pump capacities, is taking place. Moreover, the relationship of the large lakes (surface evaporation) to the wells is not clearly understood and could play a role in contributing to the pool of high chloride ground water.

As stated above, many of the sources have not exceeded the 1,000 mg/l cap. Those that have, the baseline data suggest that these wells will never pump \( \geq 1,000 \) mg/l again unless there is an influx of less saline water (e.g. reuse, an increase of recharge from storms i.e. a more normal weather pattern) or a complete cessation of pumpage. In the meantime, those operators with wells and/or batteries \( >1,000 \) mg/l chloride should apply for a variance from the 1,000 mg/l cap. It should be implicitly stipulated that once reuse is available, then these wells will only be used as back-up sources or blended with reuse water to a quality of 1,000 mg/l or less.

References:


Ewa Beach International Golf Club
Pumpage and Chlorides

EXHIBIT 7.
Hawaii Prince Golf Course
Pumpage and Chlorides

Graph showing average monthly pumpage and chloride concentrations over time for various wells.
U. S. Fish and Wildlife Well 2101-14
Pumpage and Chlorides

Average Monthly Pumpage (mgd)

Monthly Chloride (mg/l)

Month/Year

1,000 Cl Cap
Coral Creek Golf Course
Pumpage and Chlorides

Average Monthly Pumpage (mgd)

Month/Year

10
9
8
7
6
5
4
3
2
1
0

1,000 Cl Cap
Lake Well 1
Well 2
Well 1
Well 4
Kapolei City Wells (Campbell Estate)
Pumpage and Chlorides

Month Near
2000
1800
1600
1400
1200
1000
800
600
400
200
0

Average Monthly Pumpage (mgd)

1,000 Cl Cap
Well 1905-10 (West Well)
Well 1905-08 (East Well)

Monthly Chloride (mg/l)

Month/Year
GUIDELINES FOR CHLORIDE CONCENTRATION SAMPLING FOR EWA CAPROCK

1. Sample Collection
   
   • Sampling Schedule
   
   The sampling schedule depends upon your pump capacity:

<table>
<thead>
<tr>
<th>Pump Capacity (gpm)</th>
<th>Sampling Schedule</th>
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<tbody>
<tr>
<td>Less than or equal to 50</td>
<td>Once a month</td>
</tr>
<tr>
<td>Greater than 50</td>
<td>Once a week</td>
</tr>
</tbody>
</table>

   • 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)
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\textsuperscript{1} PLUS 60 MINUTES
MINIMUM TIME BEFORE CHLORIDE SAMPLING

<table>
<thead>
<tr>
<th>CASING DIAMETER (in.)</th>
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<th>MINIMUM TIME (min.)</th>
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\textsuperscript{1} Assumes saturated well depth of 100 feet.

\textsuperscript{2} Five well volumes is a standard guideline recommended by EPA.
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.
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<tr>
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<td>$4.30</td>
</tr>
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PS Form 3800, March 1993

Postmark or Date: OCT 13, 2000
1. If you want this receipt postmarked, stick the gummed stub to the right of the return address leaving the receipt attached and present the article at a post office service window or hand it to your rural carrier (no extra charge).

If you do not want this receipt postmarked, stick the gummed stub to the right of the return address and mail the article.

2. If you want a return receipt, write the certified mail number and your name and address on a blank receipt card, Form 3811, and attach it to the front of the article by means of the gummed label, or affix it to back of article. Endorse front of article RETURN RECEIPT to the addressee, or to an authorized agent of the addressee, for restricted delivery on the front of the article.

3. Indicate the services requested in the appropriate spaces on the front of this receipt. If other services are requested, check the applicable blanks in item 1 of Form 3811.

4. Seal the receipt and present it if you make inquiry.
Modification of Water Use Permit for Well No. 2002-17
Puuloa Ground-Water Management Area, Oahu

This letter transmits your water use permit for Well 2 (Well No. 2002-17) for use of 0.498 million gallons per day (mgd) of water on a 12-month moving average basis that has been administratively modified pursuant to your September 9, 2000 letter and Declaratory Ruling DEC-ADM97-A1. As part of the Chairperson's approval, the following special conditions were added and are part of your permit under Standard Permit Condition 18:

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 permits shall be to
   a) 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 (attached) and the submittal of weekly chloride data.
OCT 13 2000

Mr. Ron Huffman
Page 2

Require adherence to the Conservation Conditions (attached).

WUP No. 496 is revoked. This water use permit, WUP No. 577, shall supersede WUP No. 496.

Enclosed with this letter of approval are the following:

1. Your water use permit
2. Your official water use report form

Please be sure to read the conditions of your approved permit.

We draw your attention to two key conditions of your permit that require your response. First, you are required to keep a record of your monthly total pumpage, water level, salinity, and water temperature. This information must be submitted to the Commission on a regular weekly basis using the enclosed water use report form. You should make copies of the enclosed report form as needed.

Second, you are required to submit a water shortage plan to the Commission within thirty (30) days of the issuance date of this permit. Your water shortage plan simply identifies what you are willing to do should the Commission declare a water shortage situation in the Puuloa Ground-Water Management Area and can be as short as a one page letter. In a water shortage situation, the Commission may require temporary reductions in pumpage from all sources. The Commission is required, by law, to formulate a plan to implement such area-wide reductions, which should accommodate, include, and be consistent with your plans. Therefore, your help, by submitting your water shortage plan, is greatly needed in formulating the Commission's overall Water Shortage Plan.

If you have any questions, please call Lenore Nakama of the Commission staff at 587-0218.

Aloha,

TIMOTHY E. JOHNS
Chairperson

Attachments
Pursuant to Hawaii's State Constitution, Article XI, Section 7, Hawaii Revised Statutes, Chapter 174C; Hawaii Administrative Rules, Chapters 13-167 through 13-171; and Hawaii decisional law and custom, the permittee is hereby authorized to use ground water from the sources and in the amount and from and upon the locations described above; subject however, to the requirements of law including but not limited to the following 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 February 17, 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. 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 weekly basis (attached).

11. This permit shall be subject to the Commission's periodic review of the Puuloa 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 Puuloa Aquifer System, or relevant modified aquifer(s), is reduced.

12. 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.

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

15. 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.

16. 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 Puuloa Ground-Water Management Area.

17. 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.

18. Special conditions in the attached cover transmittal letter are incorporated herein by reference.

19. 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.

TIMOTHY E. JOHNS, Chairperson
Commission on Water Resource Management
Ms. Linnel T. Nishioka
Deputy Director
Commission on Water Resource Management
Department of Land and Natural Resources
State of Hawaii
P. O. Box 621
Honolulu, Hawaii 96809

Re: Water Use Permit Application for Coral Creek Lake No. 1 (2002-19), Well 1 (2002-15), and Well 2 (2002-17) at the Coral Creek Golf Course in Ewa Beach, Oahu

Dear Ms. Nishioka:

On June 17, 2000, Coral Creek Golf Course, Inc. submitted an Application for Water Use Permit for Coral Creek Lake No. 1 (2002-19), Well 1 (2002-15), and Well 2 (2002-17) at the Coral Creek Golf Course in Ewa Beach. The request sought an increase in permitted use from 0.69 to 0.89 mgd. Coral Creek hereby withdraws that water use application.

Pursuant to Declaratory Ruling No. DEC-ADM97-A1, Coral Creek Golf Course seeks as an alternative, the modification of the terms of its existing water use permits. These permits are as follows:
Coral Creek Golf Course would like to rebalance its utilization of water among its existing permits and the allowed usage. By reducing the usage at certain permitted sources and increasing usage at other permitted sources, no net change will occur. Thus, the net change in permitted use within the permitted wells is zero. The proposed modification would result in more efficient and optimal operation of multiple sources under a single operator. Please see the attached report and justification regarding the background and use of the existing permitted sources.

No adverse impacts to the caprock aquifer or other existing legal uses of this resource are anticipated. The proposed modification will better distribute the water withdrawal to achieve better water quality and less potential impact. The ultimate use of the water, landscaping and irrigation, remains unchanged. The Commission’s Declaratory Ruling No. DEC-ADM97-A1 allows for such modifications. The proposed modifications are as follows:
Ms. Linell T. Nishioka  
September 9, 2000  
Page 4

<table>
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<tr>
<th>Permit No.</th>
<th>Well</th>
<th>Usage (MGD)</th>
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<tr>
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<td>Well 2 (2002-17)</td>
<td>0.498</td>
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<tr>
<td>497</td>
<td>Well 4 (2001-13)</td>
<td>0.800</td>
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<td>508</td>
<td>Lake 10 (2001-14)</td>
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<td>Lake 1 (2002-19)</td>
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<td><strong>Total:</strong></td>
<td><strong>2.190</strong></td>
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Based upon the foregoing and the attached report, Coral Creek requests that this modification be administratively processed. Should you have any questions or need any additional information, please contact the undersigned or our consultant, Tom Nance.

Sincerely,

Ron Huffman, Manager  
Coral Creek Golf Club

Enclosure

cc: Tom Nance
Analysis of the Use and Performance of the Coral Creek Golf Course's Caprock Wells in Support of the Proposed Modifications of Water Use Permit Nos. 496, 497, and 508 in the Puuloa Caprock Aquifer System

September 2000
Analysis of the Use and Performance of the Coral Creek Golf Course's Caprock Wells in Support of the Proposed Modifications of Water Use Permit Nos. 496, 497, and 508 in the Puuloa Caprock Aquifer System

September 2000
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<td>Chlorides and Pumpage of HASEKO's EP 27 (1902-01)</td>
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Introduction

Coral Creek has three water use permits (WUPs) for wells which enable it to draw from the Puuloa (Caprock) Aquifer System (refer to the tally below). WUP 508 for irrigation use of 0.69 MGD was based on a turf evapotranspiration calculation that did not adequately account for application inefficiencies (wind) and the need to periodically leach salts. The amount also did not account for greater water use during the course's grow-in and maturation. The permit modifications proposed herein (also in the tally below) will rectify this situation without resulting in an increase in total water use by the golf course.

<table>
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<tr>
<th>Permit No.</th>
<th>Well(s) Permitted Use (MGD)</th>
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<tbody>
<tr>
<td>508</td>
<td>Lake 10</td>
</tr>
<tr>
<td></td>
<td>Well 1</td>
</tr>
<tr>
<td></td>
<td>Well 2</td>
</tr>
<tr>
<td></td>
<td>Lake 1</td>
</tr>
<tr>
<td>496</td>
<td>Well 2</td>
</tr>
<tr>
<td>497</td>
<td>Well 4</td>
</tr>
<tr>
<td>Total</td>
<td></td>
</tr>
</tbody>
</table>

Grow-In and Maturation of the Golf Course

Grow-in of the golf course began in August 1998. The 18-month to two-year process of grow-in and maturation, when water use is at greater rate than for a fully matured course, is just now coming to an end. A number of factors led to greater water use and a longer maturation period than might otherwise be expected:

- The weather has been unusually hot and dry and is just now starting to cool off (the course's paspallum grass is sensitive to temperature).
- Soils which were compacted during mass grading were not properly prepared prior to planting. Aerifying equipment had to be purchased to break up the soil, thereby allowing proper root establishment. Until this was initiated, the compacted soil retarded the growth of the grass and required more water to be applied.
- Unlike the choice of paspallum grass, most of the course's other landscaping was incompatible with the irrigation water quality. This landscaping had to be changed, requiring more water for this second grow-in of landscaping.
A sod farm was constructed in May 2000 to replenish damaged turf. During its establishment period, it also required greater water use.

Now that most of these problems have been satisfactorily addressed, irrigation water use has been significantly reduced and will remain within the requested 0.892 MGD amount.

Specifics on the Use and Performance of the Coral Creek Puuloa (Caprock) Aquifer Wells

Under WUP 508, Coral Creek has used three of the four wells permitted. These three are Well 1 (2002-15), Well 2 (2002-17), and Lake 1 (2002-19). The fourth well listed under this permit, Lake 10 (2001-14), has not been used to date. Combined use of the three actively used irrigation wells since August 1998 is presented on Figure 1. During the golf course's grow-in and maturation, the 12-month moving average of pumpage exceeded the course's 0.69 MGD permitted irrigation use. As the course has gradually matured this year, irrigation use has been correspondingly reduced. It is anticipated that the 12-MAV of future irrigation use will remain within the requested 0.892 MGD.

The water feature well next to Lake 10 (Well 4, State No. 2001-13) is operated under WUP 497. Its use has been greater than its 0.6 MGD permitted amount (Figure 2). The proposed modification will enable the well's use to conform to the permit. To date, there has been essentially no use of Well 2 (2002-17) under permit 496. The requested modification moves portions of this permitted use to the course's two other permits.

During the golf course's initial period of high irrigation use under WUP 508, Wells 1 and 2 have performed relatively poorly. Their chlorides are sensitive to the amount of use (Figures 3 and 4). Lake 1, which has actually provided most of the irrigation supply, has performed significantly better. Its chlorides rose above 1000 MG/L for a short period in mid-2000 but have dropped back under that level in recent weeks (Figure 5). Chlorides of Well 4 next to Lake 10 have generally been below 1000 MG/L, although this level has been exceeded several times during periods of recent high use (Figure 6).

Basis of the Proposed Modification of Coral Creek's Groundwater Use

Modifications of the use of the course's wells and lakes are proposed based on the performance of the wells to date and a more realistic assessment of the course's irrigation requirements. Specifics of these proposed changes are as follows:

1. Lake 1 (2002-19) will continue to provide about one-half to two-thirds of the irrigation requirement, essentially the same share of the irrigation requirement that it has provided to date.

2. A pump will be installed in Lake 10 (2001-14), the fourth and as-yet unused well under WUP 508. The pump will skim the lake's water to provide the remainder of the irrigation supply. Prior to this, this 3.8-acre lake has only been used as a water and landscaping feature.
FIGURE 1. PUMPAGE OF THE CORAL CREEK GOLF COURSE IRRIGATION WELLS

MONTHLY AVERAGE PUMPAGE (MGD)

1.0
1.2
1.4
1.6
1.8
2.0


YEAR

Requested Use (0.89 MGD)

Present WUP (0.69 MGD)

MONTHLY PUMPAGE — 12-MO. MOVING AVG.
FIGURE 2. PUMPAGE OF THE WATER FEATURE
WELL, STATE NO. 2001-13

MONTHLY AVERAGE PUMPAGE (MGD)

YEAR

0.0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0

MONTHLY PUMPAGE 
PERMITTED USE
FIGURE 3. USE AND PERFORMANCE OF CORAL CREEK WELL 1 (STATE NO. 2002-15)

WEEKLY CHLORIDES (MG/L)

MONTHLY PUMPAGE (MGD)

YEAR


CLORIDES PUMPAGE
FIGURE 4. USE AND PERFORMANCE OF CORAL CREEK WELL 2 (STATE NO. 2002-17)
FIGURE 6. USE AND PERFORMANCE OF CORAL CREEK WELL 4 (STATE NO. 2001-13)
3. Wells 1 and 2 (2002-15 and 17) will provide back-up capacity, to be used in the event that one or the other of the lake pumps malfunctions or as needed to manage chloride levels. Experience has shown that if these wells are used infrequently for relatively short periods, their chlorides will stay at reasonable levels. The spikes of high chlorides in these wells shown on Figures 3 and 4 occurred during periods of extended continuous pumping.

4. Use of Well 4 (2001-13) for the water and landscaping feature at Lake 10 will be kept within the 0.8 MGD requested amount. If it proves necessary to manage chlorides, the running time of the well can be curtailed.

Analysis of the Effects of Coral Creek's Groundwater Use on the Puuloa Aquifer and Other Users of the Resource

Particularly in view of the spikes of high chlorides in Wells 1 and 2, it is appropriate to investigate whether or not Coral Creek's groundwater use has affected the aquifer beyond the golf course boundaries and/or the use of the aquifer by others. There are a number of small to moderate capacity caprock wells in nearby Ewa by Gentry and HASEKO's EP-27 well (1902-01), which is used at a relatively high rate, is about 6000 feet makai of the closest Coral Creek well. Potential effects on the aquifer can be tracked with Coral Creek's two monitoring wells. Effects on use of the aquifer by others is best shown by their chloride levels before August 1998 (the start of Coral Creek's groundwater use) and since that time.

Trends in Coral Creek's Monitoring Wells. Salinity profiles in Coral Creek's Wells 3 and 5 (2002-18 and 1902-05) are made on a regular basis (typical profiles are shown on Figure 7). These results are then translated into a trend of salinity at depths of two and 10 feet (Figure 8). There has been a slight salinity increase in Well 3 which is located to the east of Coral Creek's pumping wells. In Well 5, which is directly makai of Lake 1 and the course's two other irrigation wells, the salinity has actually decreased. These changes are generally consistent with longer-term adjustments in the aquifer's thickness and surface salinity resulting from the end of Oahu Sugar Company's use of the caprock in October 1994 and the substantial rainstorms in November 1996 (Figure 9). No significant changes attributable to Coral Creek's use of groundwater are evident in these data. However, the monitoring will be continued to ensure that this continues to be the case.

Chlorides in Nearby Wells. Chlorides and pumpage of wells in Ewa by Gentry, as portrayed by the data filed by the users with the CWRM, are depicted on Figures 10 to 16. All of these wells are to the east and northeast of the wells pumped by Coral Creek and at distances of 1500 to 4000 feet. None of these wells show a trend of increasing chlorides since the start of Coral Creek's use of the caprock.

Pumpage and chloride data from EP 27 (1902-01) in HASEKO's Ocean Pointe project are presented on Figure 17. As with the Ewa by Gentry wells, no trend of increasing chlorides since the start of Coral Creek's use of the caprock aquifer is evident.
Figure 7
Salinity and Temperature Profiles in Coral Creek Wells 3 and 5
Figure 8

Trends in Surface Water Salinity in Coral Creek Wells 3 and 5
TRENDS OF THE SALINITY PROFILES OF FGE-1 IN EWÁ BY GENTRY EAST

End of OSCO's Use of the Caprock

Figure 9
FIGURE 10. CHLORIDES AND PUMPAGE OF THE SUNRISE WELL (2001-04)
FIGURE 11. CHLORIDES AND PUMPAGE OF THE SODA CREEK III WELL (2001-05)
FIGURE 12. CHLORIDES AND PUMPAGE OF THE PALM VILLA I WELL (2001-06)
FIGURE 13. CHLORIDES AND PUMPAGE OF THE ARBORS WELL (2001-07)
FIGURE 14. CHLORIDES AND PUMPAGE OF THE PALM VILLA II WELL (2001-08)
FIGURE 15. CHLORIDES AND PUMPAGE OF THE CORONADO WELL (2001-09)
FIGURE 16. CHLORIDES AND PUMPAGE OF THE SUNCREST WELL (2001-10)
FIGURE 17. CHLORIDES AND PUMPAGE OF HASEKO'S EP 27 (1902-01)

CHLORIDES (MG/L)

PUMPAGE (MGD)

YEAR


CHLORIDES - PUMPAGE
SEE FOLDER FOR 2001-14, 2002-14, 17, 17 FOR WIND 549

THIS FOLDER CONTAINS CANDIDATE...
Mr. Hoolae Paoa
Coral Creek Golf, Inc.
55 Merchant Street, Suite 1810
Honolulu, HI 96813

Dear Mr. Paoa:

NOTICE OF ACTION
After-the-Fact Application for Well Construction/
Pump Installation and Water Use Permit
Coral Creek Lake No. 1, Well No. 2002-19 (WUP No. 503)
Future Backup Irrigation Use

Application for Well Construction/
Pump Installation and Water Use Permit
Coral Creek Lake No. 10, Well No. 2001-14 (WUP No. 508)
Future Backup Irrigation Use

Revocation/Modification of Water Use Permits
Coral Creek No. 1, Well No. 2002-15 (WUP No. 437)
Coral Creek Nos. 2 & 3, Well Nos. 2002-17 & 18 (WUP No. 496)
Coral Creek No. 5, Well No. 1902-05 (WUP No. 498)
Puuloa Ground Water Management Area, Oahu

This letter serves as your official notice of action by the Commission on Water Resource Management (Commission) on the subject applications and permits.

By a unanimous vote of the Commission at their meeting of February 17, 1999, the Commission:


3. Determined that an emergency existed; therefore, no fines be imposed for the violations in Actions 1 and 2.
4. Revoked WUP No. 498 (for Well No. 1902-05).

5. Required the owner of Well No. 1902-05 to properly abandon and seal the well in accordance with the Hawaii Well Construction and Pump Installation Standards (January, 1997). If the owner wishes to retain the well as an observation hole, then water levels and chlorides shall be measured monthly and reported to the Commission on a regular monthly basis.


7. Required the owner of Well No. 2002-18 to properly abandon and seal the well in accordance with the Hawaii Well Construction and Pump Installation Standards (January, 1997). If the owner wishes to retain the well as an observation hole, then water levels and chlorides shall be measured monthly and reported to the Commission on a regular monthly basis.

8. Required Coral Creek to submit after-the-fact applications for all existing lakes within thirty (30) days for administrative approval. Well construction permit applications must be obtained prior to the construction or excavation of any future dug wells/lakes that intercept the ground-water table.

9. Approved an after-the-fact well construction and pump installation permit for Well No. 2002-19, subject to the Standard Well Construction and Pump Installation Permit Conditions shown in Attachments C and D.

10. Approved a well construction and pump installation permit for Well No. 2001-14, subject to the Standard Well Construction and Pump Installation Permit Conditions shown in Attachments C and D.

11. Approved the issuance of an interim water use permit (WUP No. 508) to Coral Creek Golf, Inc. for the reasonable and beneficial use of 690,000 gallons per day of brackish water for golf course irrigation from Coral Creek Well No. 1 (Well No. 2002-15), Coral Creek Lake No. 1 (Well No. 2002-19 and former pending WUP No. 503), Coral Creek Well No. 2 (Well No. 2002-17), and Coral Creek Lake No. 10 (Well No. 2001-14), 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.
The applicant shall contact the Environmental Management Division, State Department of Health, at 586-4304, concerning "GUIDELINES APPLICABLE TO GOLF COURSES IN HAWAI'I" dated August, 1994 (version 5). The applicant shall obtain a written statement from the Department of Health indicating that their concerns have been addressed, and a copy of that statement shall be sent to the Commission.

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

e. 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.

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

g. If effluent is used for irrigation, the applicant is required to conform with Department of Health requirements for effluent reuse.

h. Require adherence to the chloride sampling protocol (Attachment C) and the submittal of weekly chloride data.

i. Require adherence to the Conservation Conditions (Attachment D).

j. Revoke WUP Nos. 437 and 496. This water use permit, WUP No. 508, shall supersede WUP Nos. 437 and 496 and subsume pending WUP No. 503.

k. The Commission shall stay enforcement of the permitted use quantity through the grow-in period (to December 31, 1999).

The permits will be transmitted to you under separate cover. Please inform us of your plans for Well Nos. 1902-05 and 2002-18. If you have any questions, please contact Lenore Nakama at 587-0218.

Sincerely,

[Signature]

EDWIN T. SAKODA
Acting Deputy Director

LN:ss
Mr. Hoolae Paoa  
Coral Creek Golf, Inc.  
55 Merchant St., Ste. 1810  
Honolulu, HI 96813  

Dear Mr. Paoa:

Approval of Water Use Permit for Well Nos. 2002-15, 2002-17, 2002-19, and 2001-14  
Punalu Ground-Water Management Area, Oahu

This letter transmits your water use permit for Well Nos. 2002-15, 2002-17, 2002-19, and 2001-14 for use of 0.690 million gallons per day (mgd) of water on a 12-month moving average basis that was approved by the Commission on Water Resource Management (Commission) on February 17, 1999. As part of the Commission's approval, the following special conditions were added and are part of your permit under Standard Permit Condition 20:

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. The applicant shall contact the Environmental Management Division, State Department of Health, at 586-4304, concerning "GUIDELINES APPLICABLE TO GOLF COURSES IN HAWAII" dated August, 1994 (version 5). The applicant shall obtain a written statement from the Department of Health indicating that their concerns have been addressed, and a copy of that statement shall be sent to the Commission.

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

e. 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.

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

g. If effluent is used for irrigation, the applicant is required to conform with Department of Health requirements for effluent reuse.

h. Require adherence to the chloride sampling protocol (Attachment C) and the submittal of weekly chloride data.
Require adherence to the Conservation Conditions (Attachment D).

j. Revoke WUP Nos. 437 and 496. This water use permit, WUP No. 508, shall supersede WUP Nos. 437 and 496 and subsume pending WUP No. 503.

k. The Commission shall stay enforcement of the permitted use quantity through the grow-in period (to December 31, 1999).

Enclosed with this letter of approval are the following:

1. Your water use permit

2. Your official monthly water use report form

Please be sure to read the conditions of your approved permit. If you accept these terms, please sign and return one copy of this permit to the Commission and retain a copy for your record.

We draw your attention to two key conditions of your permit that require your response. First, you are required to keep a record of your monthly total pumpage, water level, salinity, and water temperature. This information must be submitted to the Commission on a regular monthly basis using the enclosed water use report form. You should make copies of the enclosed report form as needed. Note that chloride reports should be submitted weekly.

Second, you are required to submit a water shortage plan to the Commission within thirty (30) days of the issuance date of this permit. Your water shortage plan simply identifies what you are willing to do should the Commission declare a water shortage situation in the Puuloa Ground-Water Management Area and can be as short as a one page letter. In a water shortage situation, the Commission may require temporary reductions in pumpage from all sources. The Commission is required, by law, to formulate a plan to implement such area-wide reductions, which should accommodate, include, and be consistent with your plans. Therefore, your help, by submitting your water shortage plan, is greatly needed in formulating the Commission's overall Water Shortage Plan.

If you have any questions, please call the Commission staff at 587-0218.

Aloha,

Timothy E. Johns
Chairperson

Attachments
GROUND-WATER USE PERMIT
WUP NO. 508

PERMITTEE

Permittee/Water User | Landowner of Source
--- | ---
CORAL CREEK GOLF, INC. | CORAL CREEK GOLF, INC.
55 MERCHANT ST., STE.1810 | 55 MERCHANT ST., STE.1810
HONOLULU, HI 96813 | HONOLULU, HI 96813

PERMITTED SOURCE INFORMATION

| Island | OAHU |
| Water Management Area | PUULOA |
| Aquifer Sector | EWA CAPROCK |
| Aquifer System | PUULOA |
| System Sustainable Yield | NA mgd |
| Well Name | CORAL CREEK NOS. 1 & 2, LAKE NOS. 1 & 10 |
| State Well No. | 2002-15, 2002-17, 2002-19, 2001-14 |

PERMITTED USE INFORMATION

| Reasonable beneficial use | GOLF COURSE IRRIGATION |
| Withdrawal (12 month moving ave.) | 0.690 mgd |
| Chloride Cap | 1,000 mg/l |
| Location of water use | |
| TMK # | 9-1-61-2; 9-1-69-10,7 |
| Address | CORAL CREEK GOLF COURSE |
| State land use classification | URBAN |
| County zoning classification | P-2 |

Pursuant to Hawaii’s State Constitution, Article XI, Section 7, Hawaii Revised Statutes, Chapter 174C; Hawaii Administrative Rules, Chapters 13-167 through 13-171; and Hawaii decisional law and custom, the permittee is hereby authorized to use ground water from the sources and in the amount and from and upon the locations described above; subject however, to the requirements of law including but not limited to the following 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 February 17, 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 Puuloa 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 Puuloa 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 Puuloa 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 of the filing of the application.

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. Special conditions in the attached cover transmittal letter are incorporated herein by reference.

21. 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.

Timothy E. Jonas, Chairperson
Commission on Water Resource Management

I have read the conditions and terms of this permit and understand them. I accept and agree to meet these conditions as a prerequisite and underlying condition of my ability to proceed and understand that I do not hold a valid permit until I have signed, dated, and returned the permit to the Commission. I also understand that non-compliance with any permit condition may be grounds for revocation and fines of up to $1000 per day starting from the date of this permit approval.

Permittee's Signature: ___________________________ Date: _________________________

Printed Name: ________________________________ Firm or Title: __________________________

Please sign both copies of this permit, return one to the Commission, and retain the other for your records.
STAFF SUBMITTAL

for the meeting of the
COMMISSION ON WATER RESOURCE MANAGEMENT

February 17, 1999
Honolulu, Oahu

Coral Creek Golf, Inc.

AFTER-THE-FACT APPLICATION FOR WELL CONSTRUCTION/
PUMP INSTALLATION AND WATER USE PERMIT
Coral Creek Lake No. 1, Well No. 2002-19 (WUP No. 503)
Future Backup Irrigation Use

APPLICATION FOR WELL CONSTRUCTION/
PUMP INSTALLATION AND WATER USE PERMIT
Coral Creek Lake No. 10, Well No. 2001-14 (WUP No. 508)
Future Backup Irrigation Use

REVOCATION/MODIFICATION OF WATER USE PERMITS
Coral Creek No. 1, Well No. 2002-15 (WUP No. 437)
Coral Creek Nos. 2 & 3, Well Nos. 2002-17 & 18 (WUP No. 496)
Coral Creek No. 5, Well No. 1902-05 (WUP No. 498)
Puuloa Ground Water Management Area, Oahu

APPLICANT:
Coral Creek Golf, Inc.
55 Merchant St., Ste.1810
Honolulu, HI 96813

LOCATION MAP: See Exhibits 1 and 4

BACKGROUND:

I. Well No. 2002-19

On August 27, 1998, a completed water use permit application was received from Coral Creek Golf, Inc. (Coral Creek) by the Commission on Water Resource Management (Commission).
On November 18, 1998, the (Commission) deferred action on after-the-fact applications for well construction/pump installation and water use permits for Coral Creek Golf, Inc. (Coral Creek) for Well No. 2002-19 pending:

1. Submittal of a master plan for the golf course identifying all existing and proposed water sources and lake water features, including but not limited to:
   a) a map of all existing and proposed water sources and lakes; and
   b) a corresponding table identifying the well numbers, lake acreages, and proposed uses.

2. Establishment of compliance with the Conservation Conditions.


Because after-the-fact applications and potential violations were involved, the Commission required Coral Creek to submit written documentation to address the above issues within thirty (30) days or be subject to fines of up to one thousand dollars per day for each day and each source beyond the thirty-day period.

On November 27, 1998, Coral Creek transmitted their written response to the November 18, 1998 action (Exhibit 2).

II. Well No. 2001-14

On September 25, 1998, completed applications for well construction/pump installation and water use permits were received from Coral Creek. These applications are to construct and use an additional dug well for future backup golf course irrigation in battery with Well Nos. 2002-19, 2002-15, and 2002-17.

The ninety-day requirement for action expired on December 25, 1998. This application was originally scheduled for action at the December 16, 1998 Commission meeting, which was cancelled due to lack of quorum. The January 21, 1999 meeting was also canceled.

On January 29, 1999, the Commission deferred action on the subject applications and permits per the applicant’s January 13, 1999 letter request.

Presently, only Well No. 2002-15 has been permitted for golf course irrigation use. Well No. 2002-17 is currently permitted for water feature supply in battery with Well No. 2002-18.

The current status and permitting information for Coral Creek Golf, Inc.’s (Coral Creek) water use permits and applications for golf course irrigation and water feature supply is summarized in Table 1.
Table 1. Current PermittedSources and Uses (see Exhibit 4a)

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<th>Well Name</th>
<th>Type</th>
<th>Water Surface Acreage</th>
<th>Use</th>
<th>Allocation (mgd)</th>
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<tr>
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<td>2002-15</td>
<td>Gentry G.C. Irr</td>
<td>Drilled</td>
<td>NA</td>
<td>Golf Course Irrigation</td>
<td>0.690</td>
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<tr>
<td></td>
<td>2002-17</td>
<td>Coral Creek No. 2</td>
<td>Drilled</td>
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<td>Water Feature Supply</td>
<td>0.900¹</td>
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<tr>
<td></td>
<td>2002-18</td>
<td>Coral Creek No. 3</td>
<td>Drilled</td>
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<td>Backup Water Feature Supply</td>
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<tr>
<td>496</td>
<td>2001-13</td>
<td>Coral Creek No. 4</td>
<td>Drilled</td>
<td>NA</td>
<td>Water Feature Supply</td>
<td>0.600²</td>
<td>Approved 7/15/98</td>
</tr>
<tr>
<td>498</td>
<td>1902-05</td>
<td>Coral Creek No. 5</td>
<td>Drilled</td>
<td>NA</td>
<td>Water Feature Supply</td>
<td>0.480³</td>
<td>Approved 7/15/98</td>
</tr>
<tr>
<td>503</td>
<td>2002-19</td>
<td>Coral Creek Lake No. 1</td>
<td>Dug</td>
<td>1.50</td>
<td>Backup Golf Course Irrigation</td>
<td>0.000⁴</td>
<td>Deferred 11/19/98</td>
</tr>
<tr>
<td>508</td>
<td>2001-14</td>
<td>Coral Creek No. 10</td>
<td>Dug</td>
<td>3.60</td>
<td>Backup Golf Course Irrigation</td>
<td>0.000⁴</td>
<td>Pending</td>
</tr>
</tbody>
</table>

¹ Total pumpage for water feature supply (estimated actual net evaporative loss is 10,200 gpd).
² Total pumpage for water feature supply (estimated actual net evaporative loss is 19,300 gpd).
³ Total pumpage for water feature supply (estimated actual net evaporative loss is 22,600 gpd).
⁴ Pending application.

From a November 17, 1998 meeting with representatives of Coral Creek and a February 8, 1999 facsimile, staff understands that Coral Creek would like to modify permitted uses and voluntarily relinquish water use permits according to Table 2 as follows:
Table 2. Proposed Modifications to Permitted Sources and Uses in Table 1 (see Exhibit 4b)

<table>
<thead>
<tr>
<th>WUP No.</th>
<th>Well No.</th>
<th>Well Name</th>
<th>Type</th>
<th>Surface Acreage</th>
<th>Use</th>
<th>Allocation (mgd)</th>
</tr>
</thead>
<tbody>
<tr>
<td>437</td>
<td>2002-15</td>
<td>Coral Creek Well #1</td>
<td>Drilled</td>
<td>NA</td>
<td>Golf Course</td>
<td>Revoke</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Irrigation</td>
<td></td>
</tr>
<tr>
<td>496</td>
<td>2002-17</td>
<td>Coral Creek Well #2</td>
<td>Drilled</td>
<td>NA</td>
<td>Water Feature</td>
<td>0.900</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Supply</td>
<td></td>
</tr>
<tr>
<td>2002-18</td>
<td>Coral Creek No. 3</td>
<td>Drilled</td>
<td>NA</td>
<td>Backup Water Feature</td>
<td>Supply</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>497</td>
<td>2001-13</td>
<td>Coral Creek Well #4</td>
<td>Drilled</td>
<td>NA</td>
<td>Water Feature</td>
<td>0.600</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Supply</td>
<td></td>
</tr>
<tr>
<td>498</td>
<td>1902-05</td>
<td>Coral Creek No. 5</td>
<td>Drilled</td>
<td>NA</td>
<td>Water Feature</td>
<td>Revoke</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Supply</td>
<td></td>
</tr>
<tr>
<td>503</td>
<td>2002-19</td>
<td>Coral Creek Lake #1</td>
<td>Dug</td>
<td>1.18</td>
<td>Golf Course</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Irrigation</td>
<td></td>
</tr>
<tr>
<td>508</td>
<td>2001-14</td>
<td>Coral Creek Lake #10</td>
<td>Dug</td>
<td>3.64</td>
<td>Backup Golf Course</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Irrigation</td>
<td>0.690</td>
</tr>
<tr>
<td></td>
<td>2002-15</td>
<td>Coral Creek Well #1</td>
<td>Drilled</td>
<td>NA</td>
<td>Golf Course</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Irrigation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2002-17</td>
<td>Coral Creek Well #2</td>
<td>Drilled</td>
<td>NA</td>
<td>Backup Golf Course</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Irrigation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2002-19</td>
<td>Coral Creek Lake #1</td>
<td>Dug</td>
<td>1.18</td>
<td>Backup Golf Course</td>
<td></td>
</tr>
</tbody>
</table>

1. Pending application.
2. To be subsumed under WUP No. 508.

The proposed modifications include:

1. Revocation of WUP Nos. 496 (for Well No. 2002-18) and 498 (for Well No. 1902-05).

2. Combining Well Nos. 2002-15, 2002-17, 2002-19, and 2001-14 into a "battery" under a single allocation for 0.690 mgd for the golf course irrigation. Well No. 2002-15 has been identified as the primary pumping source, with the other three (3) wells included as backup supply wells. (For administrative purposes, we are assigning WUP No. 508 to the proposed battery use, which would subsume WUP No. 503 as shown in Table 2.)
Additional information regarding the sources, use, notification, objections, and field investigation(s) is provided in Attachment A.

ANALYSIS/ISSUES:

The two major issues are a pending water use permit application and after-the-fact well construction permits. A discussion of the after-the-fact well permits will follow an analysis of the proposed water use permit.

I. WATER USE PERMIT

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:

(1) Water availability

Protection Of The Resource

The current sustainable yield for the Puuloa 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 uses of 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 Puuloa Aquifer System, where the competition for nonpotable irrigation water is most severe, could be up to about 15 mgd: 10 mgd reclaimed water plus approximately 5 mgd natural sustainable yield (Bauer, 1996) and assumes that 100% of the treated effluent will be available for reuse in Puuloa. 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. But ultimately, based on current reclaimed water plans, total allocations should not exceed approximately 15 mgd.

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 in Puuloa, the Commission may consider establishing a regional sustainable yield, which would be something less than 15 mgd for the Puuloa area, unless additional water supply (e.g., expansion of the wastewater reclamation plant) becomes available. It is uncertain whether the chloride cap would be supplanted by a regional sustainable yield number.

Exhibit 3 shows the current permitted uses in the Puuloa Aquifer System. Of the 15.116 mgd current permitted uses, 5.620 mgd may be revoked due to four years of nonuse (4.590 mgd from EP 23, WUP No. 189 and 1.030 mgd from EP 27, WUP No. 192). The staff's recommendations to revoke these unused allocations were deferred on October 22, 1998 for various reasons. In addition, WUP Nos. 492 and 494 expired on December 31, 1998 (for 0.074 mgd and 0.050 mgd, respectively); these permits were for temporary construction water during the grading of the golf course. Also, Coral Creek is voluntarily relinquishing WUP No. 498 (for 0.480 mgd). These actions would reduce the permitted uses in Puuloa from 15.116 mgd to 8.892 mgd, which should offer a reasonable factor of safety for the aquifer's utility as a non-potable resource.
Reasonable-beneficial

Section 174C-3 Haw. Rev. Stat. defines "reasonable-beneficial use" as

"...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".

Coral Creek has constructed at least six (6) lakes used as pumping sources and/or golf course water features. Exhibit 4 and Table 3 describe the locations and sizes of the lakes:

<table>
<thead>
<tr>
<th>Nearest Holes</th>
<th>Lake Size (Acres)</th>
<th>Well No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 &amp; 9</td>
<td>1.18</td>
<td>2002-19</td>
</tr>
<tr>
<td>2</td>
<td>0.69</td>
<td>Unassigned</td>
</tr>
<tr>
<td>5,6,7</td>
<td>1.44</td>
<td>Unassigned</td>
</tr>
<tr>
<td>10</td>
<td>3.64</td>
<td>2001-14</td>
</tr>
<tr>
<td>13 &amp; 14</td>
<td>4.37</td>
<td>Unassigned</td>
</tr>
<tr>
<td>15 &amp; 16</td>
<td>NA</td>
<td>Unassigned</td>
</tr>
<tr>
<td>Kaloi Gulch</td>
<td>0.39</td>
<td>Unassigned</td>
</tr>
<tr>
<td>TOTAL</td>
<td>11.71+1</td>
<td></td>
</tr>
</tbody>
</table>

1 Evaporative Loss = 87 in/yr * 1 yr/365 day * 27,154 gal/ac-in * 11.71 ac = 75,791 gal/day

An issue is the potential impact on the ground-water resource as a result of the evaporative losses from the lakes. Evaporative losses in the Ewa area are about 87 inches/year (Station 751.2, 1964-80). Given this pan evaporation rate of 87 inches, the annual evaporative loss from the 11.71 acres (combined acreage of lakes/dug wells in Table 3) of exposed ground water in the lakes is estimated to be about 76,000 gpd. However, the Commission has not required water use permits where no pumps are installed to induce ground-water withdrawals above the natural evaporation rate. Because the rate of lake evaporation cannot be metered, it would be difficult to regulate, enforce, and verify if a permit were required and approved. Given that this 76,000 gpd amounts to about 5% of the applicant's use and that these lakes are part of a large stormwater detention system (which could also enhance recharge), staff does not think it is reasonable to require water use permits for this issue. The 1,000 mg/l limit from the applicant's sources should serve adequate accounting and protection of the resource.
Another issue is adherence to the Conservation Conditions (Exhibit 5), which were specifically formulated for the Ewa Caprock aquifer because of the uncertainties in supply coupled with the extensive planned uses of the aquifer. The Conservation Conditions encourage practices to eliminate wastage and to minimize evaporation and demand. Coral Creek's position on its compliance with the Conservation Conditions is shown in Exhibit 2. Coral Creek is utilizing drought- and salt-tolerant landscaping and ground cover in keeping with the requirements of the Conservation Conditions. With regard to the large lakes and dug wells and their attendant evaporative losses, these features add to the hydraulic carrying capacity of the realigned Kaloi Gulch under stormflow conditions. The need for stormwater retention is the primary reason for the existence of a golf course at this location. The retained stormwater will also add to the recharge rate of the Ewa Caprock aquifer.

Another issue is the substantiation of the emergency situation that resulted in the construction of Well No. 2002-19 and use of ground water without first obtaining the necessary permits. Coral Creek and its contractors have previously been found in violation of §174C-48 Haw. Rev. Stat. for unpermitted water use, and a warning was issued that any future unpermitted activities would be considered willful violations and would result in a fine of at least five hundred dollars ($500) (Exhibits 6 and 7). Coral Creek feels that the rapid rise in chlorides at Well No. 2002-15, their primary irrigation well, resulted in an emergency situation for the golf course. A graph of the chlorides and pumpage for Well Nos. 2002-15 and 2002-19 is shown in Exhibit 8. The data show that the chlorides at Well No. 2002-15 exceeded the 1000 mg/l chloride cap once in August, 1998.

Section 174C-3 Haw. Rev. Stat. defines "emergency" as:

"...the absence of a sufficient quantity and quality of water in any area whether designated or not which threatens the public health, safety, and welfare as determined by the commission."

The Commission must determine whether an emergency, under the above definition, existed. Representatives for Coral Creek met with staff members in August, 1998 to discuss Coral Creek water issues. Since Coral Creek would have to cease pumping if their source exceeded 1000 mg/l, which has occurred in at least one instance, and they are in the initial stages of grassing, Coral Creek could suffer economic harm, which would be an emergency to any applicant. Staff directed Coral Creek to go ahead and apply for after-the-fact permits though violations may hinge upon the emergency nature of the work. Although the initial emergency is to a private applicant, the situation could turn into a public emergency should massive grading be left ungrassed and dust problems threaten the health and welfare of the neighboring public.

The cover letter to the application indicates that irrigation usage for the golf course during the grow-in period is expected to exceed the 0.690 mgd permitted use. According to Coral Creek's consultant, the grow-in period was to December 31, 1998, with average usage expected to be 1.2 to 1.3 mgd. However, because the Commission allocates water based on
long-term average use using established guidelines, the staff recommends that the Commission recognize that greater water use will occur during the grow-in period and stay enforcement of the permitted use quantity through the duration of the grow-in period (to December 31, 1999).

(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 9 shows that the caprock aquifer 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). 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 Puuloa Aquifer System that puts the permittee on notice of the risk of reliance on caprock ground water and its uncertain sustainable yield.

The staff is sending all interim permittees in Puuloa the monthly bulletin which shows all pending permit applications, which should provide the permittees sufficient notice of new proposed uses of Puuloa Caprock ground water. Permittees should review new applications and water data from other nearby wells to proactively protect their sources. Permittees are encouraged to submit comments or objections in accordance with Administrative Rule 13-171-18 (Objection to Proposed Water Use Permit). Further, the staff has been analyzing the weekly water data reports, and we are currently working on triggers to implement a water shortage plan. These triggers may be related to some modification of Exhibit 9. Should valid claims of well interference be raised, either by permittees or as a result of the staff’s analysis, the Commission may consider implementing a water shortage plan to address the well interference issue. The staff is currently working towards the development of a water shortage plan for the Puuloa Aquifer System.

(4) Public interest

The reasonable-beneficial use of water for golf course irrigation is deemed to be in the public interest, provided that the use complies with the provisions of §174C-49(a) Haw. Rev. Stat.
(5) State & county general plans and land use designations

These proposed uses are consistent with the state and county general plans and land use designations.

(6) County land use plans and policies

These 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 (OHA) have reviewed this application. No comments or objections were received from DHHL.

OHA has expressed concern regarding the potential impact of the proposed irrigation use on adjoining aquifers, such as the Waipahu-Waiawa Aquifer System. However, the staff hydrogeologists believe that the caprock is a discharge point for basal ground water, meaning water flows from the basal aquifer to the caprock aquifer and not the other way around. As such, withdrawals from the caprock aquifer should not affect basal aquifers. Further, monitoring wells in the vicinity show that there is pure salt water between the brackish upper limestone aquifer and the basal water at depth, signifying that the source of fresh water/ground water flux for the caprock aquifer originates more inland.

II. AFTER-THE-FACT WELL CONSTRUCTION PERMITS

Section 174C-3 Haw. Rev. Stat. defines a "well" as:

"[a]n artificial excavation or opening into the ground, or an artificial enlargement of a natural opening by which ground water is drawn or is or may be used or can be made to be usable to supply reasonable and beneficial uses within the State".

Under this definition, all excavations that intersect the water table are subject to well construction permit regulations. Table 3 and Exhibit 4 show that there are about five (5) additional "wells" that require after-the-fact well construction permits. The consultant for the project did call the staff in advance of excavation to inquire as to whether well construction permit applications should be made. However, because no pump or pumping equipment were planned for installation, the staff erroneously informed the consultant that well construction permit applications were unnecessary. As such, there should be no finding of violation or fines imposed for unpermitted well construction for the lakes (listed in Table 3) for which no pump or pumping equipment were installed.
RECOMMENDATION:

That the Commission:


3. Determine an emergency existed; therefore, no fines be imposed for the violations in Recommendations 1 and 2.

4. Revoke WUP No. 498 (for Well No. 1902-05).

5. Require the owner of Well No. 1902-05 to properly abandon and seal the well in accordance with the Hawaii Well Construction and Pump Installation Standards (January, 1997). If the owner wishes to retain the well as an observation hole, then water levels and chlorides shall be measured monthly and reported to the Commission on a regular monthly basis.


7. Require the owner of Well No. 2002-18 to properly abandon and seal the well in accordance with the Hawaii Well Construction and Pump Installation Standards (January, 1997). If the owner wishes to retain the well as an observation hole, then water levels and chlorides shall be measured monthly and reported to the Commission on a regular monthly basis.

8. Require Coral Creek to submit after-the-fact applications for all existing lakes within thirty (30) days for administrative approval. Well construction permit applications must be obtained prior to the construction or excavation of any future dug wells/lakes that intercept the ground-water table.

9. Approve an after-the-fact well construction and pump installation permit for Well No. 2002-19, subject to the Standard Well Construction and Pump Installation Permit Conditions shown in Attachments C and D.

10. Approve a well construction and pump installation permit for Well No. 2001-14, subject to the Standard Well Construction and Pump Installation Permit Conditions shown in Attachments C and D.
11. Approve the issuance of an interim water use permit (WUP No. 508) to Coral Creek Golf, Inc. for the reasonable and beneficial use of 690,000 gallons per day of brackish water for golf course irrigation from Coral Creek Well No. 1 (Well No. 2002-15), Coral Creek Lake No. 1 (Well No. 2002-19 and former pending WUP No. 503), Coral Creek Well No. 2 (Well No. 2002-17), and Coral Creek Lake No. 10 (Well No. 2001-14), 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. The applicant shall contact the Environmental Management Division, State Department of Health, at 586-4304, concerning "GUIDELINES APPLICABLE TO GOLF COURSES IN HAWAII" dated August, 1994 (version 5). The applicant shall obtain a written statement from the Department of Health indicating that their concerns have been addressed, and a copy of that statement shall be sent to the Commission.

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

e. 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.

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

   Require adherence to the chloride sampling protocol (Attachment C) and the submittal of weekly chloride data.

   Require adherence to the Conservation Conditions (Attachment D).

Revoke WUP Nos. 437 and 496. This water use permit, WUP No. 508, shall supersede WUP Nos. 437 and 496 and subsume pending WUP No. 503.

If effluent is used for irrigation, the applicant is required to conform W/D/WA requirements for effluent reuse.
The Commission shall stay enforcement of the permitted use quantity through the grow-in period (to December 31, 1999).

Respectfully submitted,

EDWIN T. SAKODA
Acting Deputy Director

Attachment(s):
A (Water Use Permit Detailed Information)
B (Water Use Permit Standard Conditions)
C (Well Construction Permit Standard Conditions)
D (Pump Installation Permit Standard Conditions)

Exhibit(s):
1 (Location Map)
2 (November 27, 1999 Letter from Joseph P. Livingood to Lenore Nakama)
3 (Current Permitted Uses and 12-Month Moving Average Withdrawal)
4a (Location Map for Current Permitted Sources and Uses)
4b (Location Map for Proposed Modifications to Permitted Sources and Uses)
5 (Conservation Conditions)
6 (Notice of Action, After-the-Fact Applications for Water Use, Well Construction, and Pump Installation Permits for Well No. 2002-15)
7 (Notice of Action, After-the-Fact Applications for Water Use, Well Construction, and Pump Installation Permits for Well No. 1901-04)
8 (Graph of Chlorides and Pumpage for Well Nos. 2002-15 & 2002-19)
9 (Chloride and Pumpage of Ewa Plantation Shallow Wells, Ewa Caprock, Oahu)
WATER USE PERMIT DETAILED INFORMATION

Source Information

AQUIFER:
Sustainable Yield: Puuloa System, Ewa Caprock Sector, Oahu
Existing Water Use Permits: NA mgd
Available Allocation: 15.116 mgd
Total of other pending allocations: NA mgd
0 mgd

PROPOSED WELL:
Location: Coral Creek Lake 1 (Well No. 2002-19)
Geiger Road, Ewa Beach, Oahu, TMK:9-1-69:10
Year Drilled: NA
Casing Diameter: NA in.
Elevations (msl = 0 ft.)
Water Level: NA ft.
Ground: NA ft.
Bottom of Solid Casing: NA ft.
Bottom of Perforated: NA ft.
Bottom of Open Hole: -5 ft.
Total Depth: NA ft.
Grouted Annulus Depth: NA ft.
Pump Capacity: 800 gpm

PROPOSED WELL:
Location: Coral Creek Lake No. 10 (Well No. 2001-14)
Coral Creek Golf Course, Oahu, TMK:9-1-69:11
Year Drilled: NA
Casing Diameter: NA in.
Elevations (msl = 0 ft.)
Water Level: NA ft.
Ground: NA ft.
Bottom of Solid Casing: NA ft.
Bottom of Perforated: NA ft.
Bottom of Open Hole: -5 ft.
Total Depth: NA ft.
Grouted Annulus Depth: NA ft.
Pump Capacity: 800 gpm

ATTACHMENT A
Use Information

Quantity Requested: 690,000 gallons per day
Proposed Type of Water Use: Golf Course Irrigation
Place of Water Use: Coral Creek Golf Course, Ewa at TMK:9-1-61:2,9-1-69:10,7

3-MAV Reported Water Usage:
- 634,000 gpd (2002-15)
- 369,000 gpd (2002-19)

Puuloa Aquifer System
Current 12-Month Moving Average Withdrawal (See Exhibit 2): 3.028 gpd

Nearby Surrounding Wells and Other Registered Ground Water Use

There are about thirty-three (33) other wells within a mile of the well (see Exhibit 1). About twenty (20) of these wells are currently being used, mainly for irrigation. Other uses include dust control, water feature supply, and industrial uses.

ATTACHMENT A
Public Notice

In accordance with HAR §13-171-17, a public notice was published in the Honolulu Advertiser on September 14 and 21, 1998 (for Well No. 2002-19) and on October 13 and 20, 1998 (for Well No. 2001-14) 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 October 5, 1998 (for Well No. 2002-19) and November 4, 1998 (for Well No. 2001-14).

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 October 5, 1998 (for Well No. 2002-19) and November 4, 1998 (for Well No. 2001-14).

To the best of staff’s knowledge there are no objectors who have property interest within the Puuloa 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

The water source and proposed use were investigated on November 16, 1998. The staff will incorporate selected Coral Creek Golf, Inc. water sources in the Commission’s monitoring network.
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 February 17, 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.

ATTACHMENT B
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 Puuloa 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 Puuloa 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 Puuloa 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.

ATTACHMENT B
STANDARD WELL CONSTRUCTION PERMIT CONDITIONS

1. The Chairperson of the Commission on Water Resource Management (Commission), P.O. Box 621, Honolulu, HI 96809, shall be notified, in writing, at least two (2) weeks before any work authorized by this permit commences.

2. The well construction permit shall be for construction and testing of the well only. A minimum one-inch diameter monitor tube shall be permanently installed, in a manner acceptable to the Chairperson, to accurately record water levels. The permittee shall coordinate with the Chairperson and conduct a pumping test in accordance with the Standards (a pump testing worksheet is attached). The permittee shall submit to the Chairperson the test results as a basis for supporting an application to install a permanent pump and withdraw water for use. No permanent pump may be installed until a pump installation permit is approved and issued by the Chairperson.

3. In basal ground water, the depth of the well may not exceed one-fourth (1/4) of the theoretical thickness (41 times initial head) of the basal ground water unless otherwise authorized by the Chairperson.

4. The permittee shall incorporate mitigation measures to prevent construction debris from entering the aquatic environment, to schedule work to avoid periods of high rainfall, and to revegetate any cleared areas as soon as possible.

5. In the event that subsurface cultural remains such as artifacts, burials or concentrations of shells or charcoal are encountered during construction, the permittee shall stop work and contact the Department's Historic Preservation Division (587-0045) immediately.

6. The proposed well construction shall not adversely affect existing or future legal uses of water in the area, including any surface water or established instream flow standards. This permit or the authorization to construct the well shall not constitute a determination of correlative water rights.

7. The following shall be submitted to the Chairperson within sixty (60) days after completion of work:
   b. Elevation (referenced to mean sea level, msl) survey by a Hawaii-licensed surveyor.
   c. As-built sectional drawing of the well.
   d. Plot plan and map showing the exact location of the well.
   e. Complete pumping test records, including time, pumping rate, drawdown, chloride content, and other data.

8. The permittee shall comply with all applicable laws, rules, and ordinances; non-compliance may be grounds for revocation of this permit.

9. The well construction permit application is incorporated into this permit by reference and is subject to the Hawaii Well Construction & Pump Installation Standards (January 23, 1997; HWCPIS). If the HWCPIS are not followed and as a consequence water is wasted or contaminated, a lien on the property may result.

ATTACHMENT C
10. The permit may be revoked by the Commission if work is not started within six (6) months after the date of approval or if work is suspended or abandoned for six (6) months, unless otherwise specified. The work proposed in the well construction permit application shall be completed within two (2) years from the date of permit approval, unless otherwise specified. The permit may be extended by the Chairperson upon a showing of good cause and good-faith performance. A request to extend the permit shall be submitted to the Chairperson no later than three (3) months prior to the date the permit expires. If the commencement date is not met, the Commission may revoke the permit after giving the permittee notice of the proposed action and an opportunity to be heard.

11. If the well is not to be used it must be properly capped. If the well is to be abandoned then the permittee must apply for a well abandonment permit in accordance with §13-168-12(f) prior to any well sealing or plugging work.
STANDARD PUMP INSTALLATION PERMIT CONDITION

1. The Chairperson to the Commission on Water Resource Management (Commission), P.O. Box 621, Honolulu, HI 96809, shall be notified, in writing, at least two (2) weeks before any work covered by this permit commences and staff shall be allowed to inspect installation activities in accordance with §13-168-15, Hawaii Administrative Rules.

2. The pump installation permit shall be for installation of a 800 gpm capacity, or less, pump in the well.

3. The permittee shall provide and maintain an approved meter or other appropriate means for measuring and reporting withdrawals and water levels, and appropriate devices or means for measuring chlorides and temperature. These data shall be measured monthly and reported to the Commission on a monthly basis, on forms provided by the Chairperson (attached).

4. The proposed use shall not adversely affect existing or future legal uses of water in the area, including any surface water or established instream flow standards. This permit or the authorization to pump water from a well shall not constitute a determination of correlative water rights. The permittee is notified and by this provision understands that the quantity of water taken from the well could be reduced by the Commission in the future. This permit is not a commitment that the pump capacity permitted here or even some lesser amount is guaranteed in the future.

5. The permittee shall complete and submit as-built drawings and Part II - (Permanent) Pump Installation Report of the Well Completion Report (attached) to the Chairperson within sixty (60) days after completion of work.

6. The permittee shall comply with all applicable laws, rules, and ordinances, and non-compliance may be grounds for revocation of this permit.

7. The pump installation permit application is incorporated into this permit by reference and is subject to the Hawaii Well Construction & Pump Installation Standards (1/23/97).

8. The permit may be revoked if work is not started within six (6) months after the date of approval or if work is suspended or abandoned for six (6) months, unless otherwise specified. The work proposed in the pump installation permit application shall be completed within two (2) years from the date of permit approval, unless otherwise specified. The permit may be extended by the Chairperson upon a showing of good cause and good-faith performance. A request to extend the permit shall be submitted to the Chairperson no later than three (3) months prior to the date the permit expires. If the commencement date is not met, the Commission may revoke the permit after giving the permittee notice of the proposed action and an opportunity to be heard.

9. If the well is not to be used it must be properly capped. If the well is to be abandoned then the permittee must apply for a well abandonment permit in accordance with §13-168-12(f) prior to any well sealing or plugging work.

ATTACHMENT D
**MONTHLY GROUND WATER USE REPORT**

Coral Creek Golf, Inc.  
55 Merchant St., Ste. 1810  
Honolulu, HI 96813

Month of __________, 19__

**INSTRUCTIONS:** Please TYPE OR PRINT CLEARLY. Complete this form to report total monthly ground water use, and, if required, other information from each of your well sources. Mail to: Commission on Water Resource Management, P.O. Box 621, Honolulu HI 96809. For assistance, please call (808) 587-0263.

<table>
<thead>
<tr>
<th>State Well No.</th>
<th>Well Name</th>
<th>Measurement End Date (mm/dd/yy)</th>
<th>Quantity Pumped (gallons)</th>
<th>Method of Measurement</th>
<th>Chloride (mg/L)**</th>
<th>Temp (°F)</th>
<th>Lowest Pumping Water Level (ft. above sea level)***</th>
<th>Highest Non-Pumping Water Level (ft. above sea level)***</th>
</tr>
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<tr>
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- Flow meter, electrical consumption, weir of flume, not metered (estimated).
- **Indicate how long pump was on or off when chloride sample was taken.
- ***Minimum time between pump/well turned-off and water level measurement must be at least 24 hours; if pumping schedule did not allow for at least 24 hours rest during the month, please indicate amount of time pump was off before measurement.

Other comments or additional information (e.g., date and method of chloride measurement; how pumpage amounts are estimated; etc...):

Submitted by (print) ___________________________  
Signature ___________________________  
Date ___________________________  
Telephone No. ___________________________

Submitter Signature ___________________________  
Title ___________________________  
Date ___________________________  
Telephone No. ___________________________
MONTHLY GROUND WATER DELIVERY REPORT
INFORMATION TO BE USED BY U.S. GEOLOGICAL SURVEY

Coral Creek Golf, Inc.
55 Merchant St., Ste 1810
Honolulu, HI 96813

Month of __________ 19__

INSTRUCTIONS: Please TYPE OR PRINT CLEARLY. Complete this form to report total monthly ground water use and other information from each of your well sources. Mail to: Commission on Water Resource Management, P.O. Box 821, Honolulu HI 96809. For assistance, please call (808) 587-0264.

<table>
<thead>
<tr>
<th>State Well No.</th>
<th>Delivery Begin Date (mm/dd/yy)</th>
<th>Delivery End Date (mm/dd/yy)</th>
<th>Quantity Delivered (gallons)</th>
<th>Type of Use*</th>
<th>Field No(s)</th>
<th>Acres Irrigated</th>
<th>Crop Type</th>
<th>Method of Measurement**</th>
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</table>

* Use of water code:

AQ: Aquaculture
C: Commercial
D: Domestic
ID: Irrigation - Drip
IF: Irrigation - Furrow
IS: Irrigation - Sprinkle

** For estimated values use code:
P: Power consumption
T: Total time of operation
D: Comparison with past data
X: Other means - (indicate method)

Other comments or additional information:

Submitted by (print) _______________________________ Title _______________________________
Signature ______________________________________ Date _______________________________
State of Hawaii
COMMISSION ON WATER RESOURCE MANAGEMENT
Department of Land and Natural Resources

WELL COMPLETION REPORT
2/27/98 WCR Form

Part I. Well Construction & Part II. Permanent Pump Installation

Instructions: Please print or type and submit completed report within 60 days after well completion to the Commission on Water Resource Management, P.O. Box 621, Honolulu, Hawaii 96809. An as-built drawing of the well and chemical analysis should also be submitted. For assistance call the Commission Regulation Branch at 587-0225, or 1-800-468-4644 Extension 70225.

1. State Well No.: ___________ Well Name: ___________ Island: ___________

2. Location/Address: ___________ Tax Map Key: ___________

---

PART I. WELL CONSTRUCTION REPORT

3. Drilling Company: ____________________________

4. Name of driller who performed work: ____________________________

5. Type of rig/construction: ____________________________

6. Date(s) Well Construction and pump tests (if any) completed: ____________________________

7. GROUND ELEVATION (referenced to mean sea level, msI): ____________________________ ft.
   Well Bench Mark (description/location): ____________________________ Elevation(msl): ____________________________ ft.

8. DRILLER'S LOG: Please attach geologic log (if available or if required by permit)
   Depths (ft.) Rock Description, Water Level, Dates, etc. Depths (ft.) Rock Description, Water Level, Dates, etc.
   ____________________________ to ____________________________
   ____________________________ to ____________________________
   ____________________________ to ____________________________
   ____________________________ to ____________________________
   ____________________________ to ____________________________
   ____________________________ to ____________________________
   ____________________________ to ____________________________

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

9. Total depth of well below ground: ____________________________ ft.

10. Hole size: ____________________________ inch dia. from ____________________________ ft. to ____________________________ ft. below ground
    ____________________________ inch dia. from ____________________________ ft. to ____________________________ ft. below ground
    ____________________________ inch dia. from ____________________________ ft. to ____________________________ ft. below ground

11. Casing installed: ____________________________ in. I.D. x ____________________________ in. wall solid section to ____________________________ ft. below ground
    ____________________________ in. I.D. x ____________________________ in. wall perforated section to ____________________________ ft. below ground

12. Annulus: Grouted from ____________________________ ft. below ground to ____________________________ ft. below ground
    Gravel packed from ____________________________ ft. below ground to ____________________________ ft. below ground

13. Initial water level: ____________________________ ft. below ground. Date and time of measurement: ____________________________

14. Initial chloride: ____________________________ ppm Date and time of sampling: ____________________________

15. Initial temperature: ____________________________ °F Date and time of measurement: ____________________________

16. PUMPING TESTS: Reference Point (R.P.) used: ____________________________, which elevation is ____________________________ ft.
   (1) Step-Drawdown Test Date ____________________________
   (2) Long-term Aquifer Test Date ____________________________
   Start water level ____________________________ ft. below R.P.
   End water level ____________________________ ft. below R.P.
   Start water level ____________________________ ft. below R.P.
   End water level ____________________________ ft. below R.P.

17. Pump Test Procedures data & graphs (12/17/97 SDPTD & CRPTD Forms) attached? __ Yes __ No

18. As-built drawings attached attached? __ Yes __ No

19. Other remarks/comments: (On back of this form)

---

Well Drilling Contractor (print) ____________________________ C-57 Lic. No. ____________________________
Signature ____________________________ Date ____________________________

Surveyor (print) ____________________________ Lic. No. ____________________________
Signature ____________________________ Date ____________________________

Applicant (print) ____________________________
Signature ____________________________ Date ____________________________
**PART II. (PERMANENT) PUMP INSTALLATION REPORT**

20. Pump Installation Company: ________________________________

21. Name of person performing work: ____________________________

22. Date Pump Installation Completed: ____________________________

23. PUMP INSTALLATION:
   - Pump Type, Make, Serial No.: ________________________________ Capacity: ______ gpm
   - Motor type, H.P., Voltage, rpm: ______________________________
   - Depth of Pump Intake Setting: ______ ft. below □ ground □ well bench mark
   - Depth to bottom of airline: ______ ft. below □ ground □ well bench mark
   - Pumping Head is ______ ft. Type of flow meter: ______________ which measures in ______

24. As-built drawings attached? Yes □ No □

25. Other remarks/comments: (See below)

---

<table>
<thead>
<tr>
<th>Pump Installation Contractor (print)</th>
<th>C-57 Lic. No.</th>
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<tbody>
<tr>
<td>Signature</td>
<td>Date</td>
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</table>

| Applicant (print)                   | Signature    | Date |
|-------------------------------------|--------------|

8. (cont'd) DRILLER'S LOG (cont'd):

<table>
<thead>
<tr>
<th>Depths (ft)</th>
<th>Rock Description, Water Level, Dates, etc.</th>
<th>Depths (ft)</th>
<th>Rock Description, Water Level, Dates, etc.</th>
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19. & 25. Remarks:

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# Table 1 (SDPTD Form 12/17/97)

**STEP-DRAWDOWN PUMP TEST DATA**

(not required for wells producing < 100,000 gpd or 70 gpm)

<table>
<thead>
<tr>
<th>Pumped Well No.</th>
<th>Observation well no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pumped Well Name</td>
<td>Distance between Obs. &amp; Pumped Well</td>
</tr>
<tr>
<td>Target Q</td>
<td>ft.</td>
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<tr>
<td>gpm</td>
<td>ft.</td>
</tr>
</tbody>
</table>

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 (µhos) | Cl (mg/l) | Temp. °F or °C | Data in this table is for:  
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Max possible duration, water level or quality did not stabilize for any 24 period

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
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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.
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Chloride sampling required

Use same ending drawdown figure as start for recovery

Begin recovery data next page
Flow meter reading at end of pumped period: ___________ gals
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**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.
November 25, 1998

Lenore Nakama
Department of Land and Natural Resources
Commission on Water Resource Management
P.O. Box 621
Honolulu, HI 96809


This letter is written documentation of the requests of the water commission for Coral Creek Golf, Inc.

ITEM 1 & # 2 SUBMIT WEEKLY CHLORIDE DATA

Coral Creek has submitted via fax and mail all weekly chloride and pumpage data for wells 2002-15 and 2002-19 since August 1, 1998. (Please note that the weekly data sheets report well number 2002-19 as 2002-16). Data has also been submitted for wells number 1902-05, 2001-13, 2002-17, 2002-18 even though the wells were not in use.

If there is any missing information, or data that may need clarification, please contact Joe Livingood directly at 440-1111.

ITEM # 3a SUBMIT OF MASTER PLAN FOR GOLF COURSE

Please see following attachment which was distributed during the November 19 meeting which details all existing and proposed water sources, lakes and water features and corresponding acreage.

Coral Creek Golf, Inc. would like to voluntarily delete wells number 2002-18 and 1902-05 from the Coral Creek well table.
ITEM # 3b  ESTABLISHMENT OF COMPLIANCE WITH CONSERVATION CONDITIONS

Please see attached water conservation plan which lists steps taken by Coral Creek Golf, Inc. to comply with Ewa Caprock Water Use Permits.

ITEM # 3c  WELL COMPLETION REPORT FOR WELL NO. 2002-15

The staff has been given the well completion report for well no. 2002-15.

ITEM # 3d  DOCUMENTATION OF EMERGENCY PUMP INSTALLATION 2002-19

Please see attached document which states reasons for emergency pump installation for well number 2002-19.

ITEM # 4  SUBMISSION OF DOCUMENTS WITHIN 30 DAYS

Purpose of this letter.

ITEM # 5  GREATER WATER USAGE THROUGH DEC 1999

Coral Creek Golf, Inc. recognizes during the grow-in period a greater water usage, and will reduce water usage as golf course matures. CCG anticipates that the water usage will decrease to normal consumption during the 2nd quarter of 1999.

ITEM # 6  1,000 MG/L CHLORIDE CAP

Coral Creek Golf will continue to monitor all wells in adherence with 1,000 mg/l chloride levels.

Should you or any staff members have any questions about the above responses, please feel free to contact me directly at 440-1111.

Sincerely,

Joseph D. Livingood
Billy Casper Golf Management

EXHIBIT 2
Coral Creek Master Plan - Battery of Wells for Golf Course Irrigation

<table>
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<th>WUP No.</th>
<th>Well No.</th>
<th>Well Name</th>
<th>Type</th>
<th>Acreage</th>
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** Included into the proposed battery of wells for irrigation cumulative use not to exceed Well number 2002-15 golf course irrigation allocation of 0.690 (mgd).

Coral Creek Water Feature Wells

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<tr>
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<th>Well Name</th>
<th>Type</th>
<th>Acreage</th>
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Coral Creek Total Water Allocation Amount

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Coral Creek Lake Sizes (Acres) & Nearest Holes

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EXHIBIT 2
Coral Creek Golf Course

Water Conservation Conditions

Coral Creek Golf Course has selected landscaping and ground covers that utilize efficient water consumption. Naupaka, Kaua trees, various palm trees and seashore paspalum grass are more efficient ground covers and trees for water utilization. Coral Creek Golf Course also provides an excellent recreational opportunity for both Ewa and Oahu residents to enjoy.

The irrigation system installed at Coral Creek allows us to program each head on the turf portion of the golf course to allow for optimum usage. The Rainbird system installed at Coral Creek is considered among the best in golf course irrigation, allowing the operator to efficient schedule the irrigation of their facility. The scheduling of irrigation times for the post grow in period will be done primarily at night when temperatures are cooler, and evaporation is reduced. The G-1 and G-2 areas of the golf course (Holes 1-9) are being switched over to evening irrigation schedules.

Coral Creek Golf has employed a full time irrigation technician to monitor our system, and repair all damaged or improperly working irrigation heads. By employing this technician internally, we can minimize any water loss due to breakage or a malfunction in the irrigation system.

Coral Creek Golf and other area golf courses are interested in pursuing negotiations with the city government to utilize alternative water sources for golf course irrigation. We ask that the Water Commission assist in the utilization of this alternative water source.
November 25, 1998

Lenore Nakama  
Department of Land and Natural Resources  
Commission on Water Resource Management  
P.O. Box 621  
Honolulu, HI 96809

RE: EMERGENCY PUMP INSTALLATION WELL # 2002-19

After well pumping began for well number 2002-15, Tom Nance our water resources consultant was concerned about the rising chloride levels for our only irrigation water source. The weekly water pumpage and chloride level report for August illustrates the increase in the chloride level for well # 2002-15.

Tom had sampled alternative open water sources, and recommended that we install a pump into Lake # 1 (Well # 2002-19) and apply for an after the fact permit due to the emergency situation that was developing. This water source was the best solution in regards to proximity and quality of water.

Tom Nance and Bob Imose meet with staff members Tim Johns and Roy Hardy on a Saturday in August and discussed this solution. Based upon this conversation and the rise of chloride levels in Well # 2002-15, we installed a pump in Lake # 1 and applied for an after the fact permit. Coral Creek has applied for an after the fact permit for this water source.

We have since developed a “Battery of Wells” for irrigation purposes which collectively make up our irrigation water allocation of 0.690 mgd. This battery of wells will be used to provide for the best quality of water, while providing alternative irrigation sources should a pump failure or other emergency arise.

The committee has deferred action until the December 16th meeting for the after the fact permit for well number 2002-19.
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37 Permits Totalling 15.116

Available SY 3.028
Coral Creek Golf Course
EWA, OAHU, HAWAII

EXHIBIT 46
CONSERVATION CONDITIONS
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.
Mr. Art Lambert  
Goodfellow Bros., Inc.  
P.O. Box 700728  
Kapolei, HI 96709

Dear Mr. Lambert:

Notice of Action  
After-the-Fact Applications for Water Use,  
Well Construction, and Pump Installation Permits for Well No. 2002-16  
Puuloa Ground-Water Management Area, Oahu

This letter serves as your official notice of action by the Commission on Water Resource Management (Commission) on your after-the-fact applications for water use, well construction and pump installation permits for Well No. 2002-16. The following was approved by a unanimous vote of the Commission at their meeting of August 26, 1998:

1. Find Goodfellow Bros., Inc./Coral Creek Golf, Inc. in violation of §174C-48 HRS for unpermitted water use.

2. Find Goodfellow Bros., Inc. in violation of §174C-84 HRS for unpermitted well construction and pump installation.

3. Find that the violations were not willful violations.

4. Issue a warning that any future such violation will be considered a willful violation and will result in a fine of at least five hundred dollars ($500) per violation.

The Commission also approved the issuance of after-the-fact permits for water use, well construction, and pump installation, subject to standard permit conditions and special conditions. The permit documents will be issued under separate cover.

If you have any questions, please contact Lenore Nakama at 587-0218.

Sincerely,

TIMOTHY E. JOHNS  
Deputy Director

LN:ss  
c: Hoolae Paoa, Coral Creek Golf, Inc.

EXHIBIT 6
CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Stephen C.L. Wong
R.H.S. Lee, Inc.
96-1414 Waihona Place
Pearl City, HI 96782

Dear Mr. Wong:

Notice of Action
After-the-Fact Applications for Water Use,
Well Construction and Pump Installation Permits for Well No. 1901-04
Puuloa Ground-Water Management Area, Oahu

This letter serves as your official notice of action by the Commission on Water Resource Management (Commission) on your after-the-fact applications for water use, well construction and pump installation permits for Well No. 1901-04. The following was approved by a unanimous vote of the Commission at their meeting of June 17, 1998:

1. Find R.H.S. Lee, Inc./Coral Creek Golf, Inc. in violation of §174C-48 HRS for unpermitted water use.

2. Find R.H.S. Lee, Inc. in violation of §174C-48 HRS for unpermitted well construction and pump installation.

3. Find that the violations were not willful violations.

4. Issue a warning that any future such violation will be considered a willful violation and will result in a fine of at least five hundred dollars ($500) per violation.

The Commission also approved the issuance of after-the-fact permits for water use, well construction, and pump installation, subject to standard permit conditions and special conditions. The permit documents will be issued under separate cover.

If you have any questions, please contact Lenore Nakama at 587-0218.

Sincerely,

Timothy E. Johs
Deputy Director

Exhibit 7
Coral Creek GC Weekly Pumpage & Chloride (Well #1 and Lake #1)

EXHIBIT 8
Chloride and Pumpage of Ewa Plantation
Shallow Wells, Ewa Caprock, Oahu

Start 1937
Basal (High Cl) Irrigation
Pumps 15, 16
Total imported basal water from Ko'olau ranged < 50-70 mgd

Average monthly pumpage (mgd)
Est. average yearly pumpage (12)

Average Pumpage (mgd)
Ref: CWRM, BWS Res. R-79, & Shears (1935, 1940)

MINUTES
FOR THE MEETING OF THE
COMMISSION ON WATER RESOURCE MANAGEMENT

Chairperson Timothy E. Johns called the meeting of the Commission on Water Resource Management to order at 9:05 a.m.

The following were in attendance:

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

STAFF:  Mr. Edwin Sakoda  
         Mr. Roy Hardy  
         Ms. Lenore Nakama  
         Mr. David Higa  
         Mr. Charley Ice  
         Mr. Eric Hirano  
         Mr. Dean Nakano  
         Ms. Faith Ching

COUNSEL:  Ms. Linnel Nishioka

OTHERS:  Benjamin Kudo  
         Manabu Tagomori  
         Kapua Sproat  
         Charles Reppun  
         George Hudes  
         Mike Miyahira  
         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.

1. Minutes of the November 6 and 18, 1998.

Typographical corrections to the November 6, 1998 minutes were on page 4, first paragraph of the testimonies to correct the word “comission” to “commission”; on page 5, the last line, delete the words “which was”; and on page 6 under Colette Machado’s testimony, second to the last sentence, take off the word “the” between words “that” and “she”.

MOTION: (RICHARDS/COX)
To approve the November 6 minutes as corrected.
TESTIMONIES:

Mr. Mike Miyahira from Akinaka and Associates prepared the application on behalf of the Department of Transportation. In answer to Commissioner Cox's question, the existing sidewalk will remain in place. The project is not expected to affect the bridge. The second question relating to the canoe racing or the recreation activities, Mr. Miyahira stated that they have been in contact with Hawaii Canoe Racing Association as well as the various canoe racing clubs, yachting clubs, etc. Approximately 73 organizations were contacted as a part of the EA that was processed. As for the timing of the project with respect to the dredging, Mr. Miyahira's understanding was that it was to take place in late 1999, commencing around that period. He stated that the project currently does not have funding so it is undetermined as to exactly when this project will start. He has coordinated, when applicable, with the dredging project and will stay in touch with them whenever the project schedule gets settled. In clarifying the dredged spoils, since the application was submitted, sediment testing has been performed on the material within the area of the project. He stated that they plan to put the material in the Nanakuli Waste Landfill. The results have returned and they have verbal approval that the material is allowable in the landfill.

MOTION: (NOBRIGA/RICHARDS)
To approve the recommendation.
UNANIMOUSLY APPROVED.


APPLICATION FOR WELL CONSTRUCTION/PUMP INSTALLATION AND WATER USE PERMIT, Coral Creek Lake No. 10, Well No. 2001-14 (WUP No. 508), Future Backup Irrigation Use

REVOCATION/MODIFICATION OF WATER USE PERMITS, Coral Creek No. 1, Well No. 2002-15 (WUP No. 437), Coral Creek Nos. 2 & 3, Well Nos. 2002-17 & 18 (WUP No. 496), Coral Creek No. 5, Well No. 1902-05 (WUP No. 498), Puuloa Ground Water Management Area, Oahu

PRESENTATION OF SUBMITTAL: Ms. Lenore Nakama

STAFF RECOMMENDATION:

Staff recommended deferral at the request of the applicant because applicant was out of town.

MOTION: (NOBRIGA/RICHARDS)
UNANIMOUSLY APPROVED TO DEFER.

7. Kamehameha Schools Bernice Pauahi Bishop Estate, APPLICATION FOR A WATER USE PERMIT (WUP No. 474), Waiaawa Development Tunnel (Well No. 2657-05), TMK 9-6-05 & 06, Existing/Future Irrigation and Dust Control Use for 4.2 mgd, Waipahu-Waiawa Ground Water Management Area, Oahu

PRESENTATION OF SUBMITTAL: Ms. Lenore Nakama

STAFF RECOMMENDATION:

1. Find that Waiahole-Waikane Community Association, Hakipuu Ohana, Kahaluu Neighborhood Board, and Ka Lahui Hawaii have standing to object to the subject permit application.

2. Direct staff to initiate a public hearing proceeding on this application.

TESTIMONY BY APPLICANT:

Mr. Benjamin Kudo, KSBE, clarified that they were not applying for Windward stream water but that they were applying for the water that is on KSBE land which is downstream from the Windward stream sources. He believes that the Commission has its own authority to hold a public hearing.

TESTIMONIES:

Kapua Sproat, Attorney for Earthjustice Legal Defense Fund representing Waiahole-Waikane Community Association (WWCA), stated that her clients have standing to object to the application because both the entities that they represent, as well as the individuals within those organizations, are directly and immediately affected by the proposed use. She also stated that any water that is allocated to KSBE from the ditch, reduces the flow in the Windward streams. Because of that, it affects the availability of water for legal and existing Windward uses. She also stated that WWCA seeks a public hearing on any water use application before the Commission. She also feels that this permit is part of the Waiahole Ditch Contested Case Hearing in the sense that it renewes an application that was initially submitted in the contested case and for that reason feels that this permit application is a conflict of interest for Commissioners that recused themselves.

Charlie Reppun stated that information should be gathered first before going into a public hearing and if they feel that information is not complete, then they would have to ask for a contested case before the end of the public hearing. To avoid this we should figure out how to implement an integrated water use plan. Feels that it’s the Commission’s duty and the Commission has the means to be able to do that.

Felix Limitaco made clarification on the Integrated Water Plan (of the City) saying that the contract for the consultants to undertake this project is being processed. Public participation program is being developed. He is hoping the process would be ready sometime in
Mr. Joe Livingood
Coral Creek Golf, Inc.
55 Merchant Street, Ste. 1810
Honolulu, HI 96813

Dear Mr. Livingood:

NOTICE OF ACTION

AFTER-THE-FACT APPLICATION FOR WELL CONSTRUCTION/ PUMP INSTALLATION AND WATER USE PERMIT
Coral Creek Lake No. 1, Well No. 2002-19 (WUP No. 503) Future Backup Irrigation Use

APPLICATION FOR WELL CONSTRUCTION/ PUMP INSTALLATION AND WATER USE PERMIT
Coral Creek Lake No. 10, Well No. 2001-14 (WUP No. 508) Future Backup Irrigation Use

REVOCATION/ MODIFICATION OF WATER USE PERMITS
Coral Creek No. 1, Well No. 2002-15 (WUP No. 437)
Coral Creek Nos. 2 & 3, Well Nos. 2002-17 & 18 (WUP No. 496)
Coral Creek No. 5, Well No. 1902-05 (WUP No. 498)
Puuloa Ground Water Management Area, Oahu

This letter serves as your official notice of action by the Commission on Water Resource Management (Commission) on the subject applications and permits for water use, well construction and pump installation.

By a unanimous vote of the Commission at their meeting of January 29, 1999, the Commission deferred action on the subject applications and permits per your letter request. We will reschedule the applications and permits for action at the February 17, 1999 Commission meeting.

If you have any questions, please contact Lenore Nakama at 587-0218.

Sincerely,

Edwin T. Sakoda
Acting Deputy Director
Below is a summary of the proposed modifications to permitted water source uses. This should help clean up the listing of available water sources, as well as minimize the quantity of water used while maximizing the quality of water used. Tom Nance on Coral Creeks behalf is in the process of submitting after-the-fact applications for all existing lakes as requested in the January 29th staff submittal.

Should you have any questions, please feel free to contact me directly at 440-1123. I thank you for your time and help with these matters.

Coral Creek Proposed Modifications to Permitted Sources and Uses

<table>
<thead>
<tr>
<th>WUP No.</th>
<th>Well No.</th>
<th>Well Name</th>
<th>Type</th>
<th>Acreage</th>
<th>Use</th>
<th>Allocation</th>
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<tr>
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<td>2002-15</td>
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<td>Golf Course Irrigation</td>
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<td>NA</td>
<td>Water Feature Supply</td>
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<td>2002-18</td>
<td>Coral Creek Well # 3</td>
<td>Drilled</td>
<td>NA</td>
<td>Backup Water Feature Supply</td>
<td>Revoke</td>
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<td>2001-13</td>
<td>Coral Creek Well # 4</td>
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<td>NA</td>
<td>Water Feature Supply</td>
<td>0.600</td>
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<td>Coral Creek Well # 5</td>
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<td>NA</td>
<td>Water Feature Supply</td>
<td>Revoke</td>
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<td>503</td>
<td>2002-19</td>
<td>Coral Creek Lake # 1</td>
<td>Dug</td>
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<td>Golf Course Irrigation</td>
<td>0.000</td>
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<td>Coral Creek Lake # 10</td>
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<td>3.64</td>
<td>Backup Golf Course Irrigation</td>
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<td>2002-15</td>
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<td>Drilled</td>
<td>NA</td>
<td>Golf Course Irrigation</td>
<td></td>
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<tr>
<td></td>
<td>2002-17</td>
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<td>Drilled</td>
<td>NA</td>
<td>Backup Golf Course Irrigation</td>
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<tr>
<td></td>
<td>2002-19</td>
<td>Coral Creek Lake # 1</td>
<td>Dug</td>
<td>1.18</td>
<td>Backup Golf Course Irrigation</td>
<td></td>
</tr>
</tbody>
</table>

Sincerely,

Joseph D. Livingood
Billy Casper Golf Management
Mr. Howard Kihune  
Coral Creek Golf, Inc.  
55 Merchant St., Ste. 1810  
Honolulu, HI  96813

Dear Mr. Kihune:

Notice Of Action  
Extension of Interim Water Use Permits  
Puuloa and Kapolei Ground Water Management Areas, Oahu

This letter serves as your official notice of action by the Commission on Water Resource Management (Commission) on October 22, 1998, to extend your interim water use permit, subject to the Standard Conditions of a Water Use Permit (Attachment A) and the following Special Conditions (which replace the former 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 (Attachment C) and the submittal of weekly chloride data.

g. Require adherence to the Conservation Conditions (Attachment D).

Although specific action was not taken, the Commission did note that variances approved through the May 14, 1997 action are also extended.

The Commission decided that interim permittees shall be notified by letter of the Commission action and extended permit duration and that re-issuance of new interim water use permits for these extended permits is unnecessary. Attachment B shows the list of extended interim permits.

Please be advised that the Commission directed staff to strictly enforce the weekly water data reporting requirement and the requirement to submit a water shortage plan. (If you have not done so already, please submit your water shortage plan, as required under Standard Condition 17.) In addition, all interim permittees will be sent the monthly bulletin which shows all pending permit applications. Permittees are encouraged to review new applications and water data from nearby wells to proactively protect their sources.

If you have any questions, please contact Lenore Nakama at 587-0218.

Sincerely,

TIMOTHY E. JOHNS
Deputy Director

LN:ss

Attachment(s):  A (Standard Conditions for a Water Use Permit)
               B (Extended Interim Water Use Permits)
               C (Chloride Sampling Protocol)
               D (Conservation Conditions)
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 October 22, 1998 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.

ATTACHMENT A
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 Puuloa or 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 Puuloa or 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 Puuloa or 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.

ATTACHMENT A
Extended Interim Water Use Permits

<table>
<thead>
<tr>
<th>Permittee</th>
<th>Well No(s)</th>
<th>WUP No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Estate of James Campbell</td>
<td>1905-08, 10</td>
<td>182</td>
</tr>
<tr>
<td>State of Hawaii, Housing Finance &amp; Development Corp.</td>
<td>2003-04, 07</td>
<td>432</td>
</tr>
<tr>
<td>Kapolei People’s Inc.</td>
<td>2003-01, 02, 05</td>
<td>438</td>
</tr>
<tr>
<td>Hawaii Prince Golf Club</td>
<td>1900-02, 17 to 20 &amp; 1901-03</td>
<td>469</td>
</tr>
<tr>
<td>City and County of Honolulu</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Department of Parks and Recreation</td>
<td>2001-03</td>
<td>167</td>
</tr>
<tr>
<td>Gentry Development Co.</td>
<td>2001-04, 2001-09, 2001-10</td>
<td>302, 344, 355</td>
</tr>
<tr>
<td>Ewa by Gentry Community Association</td>
<td>2001-05</td>
<td>450</td>
</tr>
<tr>
<td>The Arbors Association</td>
<td>2001-07</td>
<td>171</td>
</tr>
<tr>
<td>Palm Villas II Association</td>
<td>2001-08</td>
<td>168</td>
</tr>
<tr>
<td>Palm Court Association</td>
<td>2002-12</td>
<td>169</td>
</tr>
<tr>
<td>Coral Creek Golf, Inc.</td>
<td>1902-05, 2001-13, 2002-15, 2002-17 &amp; 18</td>
<td>498, 497, 437, 496</td>
</tr>
<tr>
<td>U.S. DOC/NOAA/National Weather Service</td>
<td>1900-23</td>
<td>501</td>
</tr>
</tbody>
</table>

ATTACHMENT B
GUIDELINES FOR CHLORIDE CONCENTRATION SAMPLING FOR EWA CAPROCK

1. Sample Collection

• Sampling Schedule

The sampling schedule depends upon your pump capacity:

<table>
<thead>
<tr>
<th>Pump Capacity (gpm)</th>
<th>Sampling Schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than or equal to 50</td>
<td>Once a month</td>
</tr>
<tr>
<td>Greater than 50</td>
<td>Once a week</td>
</tr>
</tbody>
</table>

• 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)

Attachment C
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.
<table>
<thead>
<tr>
<th>CASING DIAMETER (in.)</th>
<th>PUMP CAPACITY (gpm)</th>
<th>MINIMUM TIME (min.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>10-20</td>
<td>140</td>
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1. Assumes saturated well depth of 100 feet.
2. Five well volumes is a standard guideline recommended by EPA.
CONSERVATION CONDITIONS
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.

Attachment D
STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P.O. BOX 291
HONOLULU, HAWAI'I 96806

STAFF SUBMITTAL
for the meeting of the
COMMISSION ON WATER RESOURCE MANAGEMENT
October 22, 1998
Honolulu, Oahu

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

PERMITEE(S):

(Well Nos. 1905-08, 10)
The Estate of James Campbell
1001 Kamokila Blvd.
Kapolei, HI 96707

(Well Nos. 2003-04, 07)
The State of Hawaii,
Housing Finance & Development Corp.
7 Waterfront Plaza, Suite 300
500 Ala Moana Blvd.
Honolulu, HI 96813

(Well Nos. 2003-01, 02, 05)
Kapolei People's Inc.
91-701 Farrington Hwy.
Kapolei, HI 96707

(Well Nos. 1900-02, 17 to 20 & 1901-03)
Hawaii Prince Golf Club
91-1200 Fort Weaver Rd.
Ewa Beach, HI 96706

(Well No. 2001-03)
The City and County of Honolulu
Department of Parks and Recreation
650 South King Street
Honolulu, HI 96813

(Well Nos. 2001-04, 09, 10)
Gentry Development Co.
P.O. Box 295
Honolulu, HI 96809

LANDOWNER(S):

Same

Same

Same

Same

Same

Same

Item 12
BACKGROUND:

On March 3, 1993, the Commission officially adopted the boundary of the entire brackish Ewa Caprock Aquifer as a separate aquifer overlying the existing designated ground water management areas of the Waipahu-Waiawa, Ewa-Kunia, and Makaiwa Aquifer Systems. Due to uncertainties regarding the caprock’s sustainable yield and nonpotable utility, the Commission did not adopt a sustainable yield estimate for the caprock.

On April 28, 1993, the Commission awarded temporary one-year permits for new irrigation uses of ground water in the Ewa Caprock because there were concerns regarding the future viability of the caprock as a dependable source of brackish water due to the significant loss of return irrigation recharge from sugarcane agriculture. In analyzing water availability, the Commission used guidelines for sustainable yields for the Puuloa, Kapolei, and Malakole areas (Yuen & Associates, Inc., 1989).

On July 13, 1994, the Commission extended temporary one-year permits. The duration of the extended permits was to July 12, 1995.
At the July 5, 1995 Commission meeting in Honokaa, Hawaii, the Commission extended the permits, which were now called interim permits, until such time that a formal decision could be made on Oahu.

On March 13, 1996, the Commission deferred action on existing interim permits and new applications pending a decision on the establishment of a sustainable yield for the caprock.

On May 14, 1997, the Commission adopted a sustainable yield based on a sustainable capacity for individual irrigation wells at 1,000 milligrams per liter (mg/l) of chloride as an interim management plan, subject to review within two (2) years. The Commission also adopted the Puuloa, Kapolei, and Malakole Aquifer Systems in the Ewa Caprock Sector and approved pending applications for new and continued irrigation uses. The specified duration of the interim water use permits is to October, 1998 or until such time that a significant change in permitted, actual, or projected uses or water supply occurs. The October, 1998 date coincides with the possible revocation of unused (former Oahu Sugar Company) agricultural permits and also provides a milestone date to check on the progress of wastewater reuse for private caprock well owners, the availability of which was then scheduled for July, 1999.

ANALYSIS/ISSUES:

There has been no significant change in permitted, actual, or projected uses or water supply. Current interim water use permits and 12-month moving average withdrawals are shown in Exhibit 2. (Standard and Special Conditions of the interim permits are shown in Attachments A and B.) Exhibit 3 contains a complete listing of all permitted uses in the Puuloa and Kapolei Aquifer Systems. (Please note that the October 22, 1998 agenda includes three items that, if approved, will reduce the total permitted uses in Puuloa.)

PROTECTION OF THE RESOURCE

The current sustainable yield for the caprock aquifers is defined by a sustainable capacity at all irrigation wells in the Puuloa and Kapolei Aquifer Systems which prohibits individual pumpages that cause the specific well to exceed a 1,000 mg/l chloride cap. 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 will 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.

The City is in the process of finalizing a contract with U.S. Filters for the construction, operation, and marketing for a reclamation system. Until the contract is finalized, the City will not enter into any agreements with individual users for the purchase of the R-1 water. As such, Special Condition D (Attachment B) could not be met by the users, and these users should not be penalized for this noncompliance.

Given the City's current plans, the staff estimates that the potential future supply of nonpotable water for irrigation uses on lands overlying the Puuloa Aquifer System, where the competition for nonpotable irrigation water is most severe, could be up to about 15 mgd: 10 mgd reclaimed water plus approximately 5 mgd natural sustainable yield (Bauer, 1996). This assumes that 100% of the treated effluent will be available for reuse in Puuloa, which is improbable. But 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. But ultimately, based on current reclaimed water plans, total allocations should not exceed 15 mgd.

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 in Puuloa, the Commission may consider establishing a regional sustainable yield, which would be something less than 15 mgd for the Puuloa area, unless additional water supply (e.g., expansion of the wastewater reclamation plant) becomes available. It is uncertain whether the chloride cap would be supplanted by a regional sustainable yield number.

WELL INTERFERENCE

Since there are no ground-water models (solute-transport) which can 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 6 shows that the caprock aquifer 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). All permittees are 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. Special Condition e. has been added to the existing interim permits recommended for extension and will be added to all future caprock permits to put the permittees on notice of the risk of reliance on caprock ground water and its uncertain sustainable yield.

The staff proposes to send all interim permittees in Puuloa the monthly bulletin which shows all pending permit applications, which should provide the permittees sufficient notice of new proposed uses of Puuloa Caprock ground water. Permittees should review new applications and water data from other nearby wells to proactively protect their sources. Permittees are encouraged to submit comments or objections in accordance with Administrative Rule 13-171-18 (Objection to Proposed
Water Use Permit). Further, the staff has been analyzing the weekly water data reports, and we are currently working on triggers to implement a water shortage plan. These triggers may be related to some modification of Exhibit 6. Should valid claims of well interference be raised, either by permittees or as a result of the staff’s analysis, the Commission may consider implementing a water shortage plan to address the well interference issue.

However, at this time, only an informal and incomplete water shortage plan exists. On May 14, 1997, the Commission approved a permit classification system for a water shortage plan for the Puuloa Aquifer System as provided under Administrative Rule 13-171-42:

(a) The commission shall formulate a plan for implementation during periods of water shortage. As a part of the plan, the commission shall adopt a reasonable system of permit classification according to source of water supply, method of extraction or diversion, use of water, or a combination thereof.

(b) In accordance with this chapter, the commission may impose such restrictions on one or more classes of permits as may be necessary to protect the water resources of the area from serious harm and to restore them to their previous condition.

(c) All permittees, unless exempted by the commission, shall submit a water shortage plan outlining how it will reduce its own water use in case of a shortage. Every water shortage plan shall be subject to approval or modification by the commission."

The highest priority of nonpotable use is agriculture because the State’s policy is to promote agriculture, and also because agricultural correlative uses are assured through the 1978 Constitutional Amendment. The second priority in water use is golf course irrigation because of the economic impacts that may result from inadequate water supply. The lowest priority in water use is landscape irrigation and dust control.

The priorities assigned to each permitted use and the maximum reductions indicated in the individual users’ water shortage plans are shown in the last two columns of Exhibit 7. Individual water shortage plans outline smaller initial cutbacks (i.e., 10% to 30%), however under the most severe shortage situations, Exhibit 7 shows the maximum reduction in Puuloa Aquifer System pumpage would have been at least 3.718 mgd. However, this 3.718 mgd amount is subject to change following proposed revocation actions for unused agricultural allocations and formulation and adoption of a regional shortage plan.

Water shortage plans were requested from all of the users in Puuloa, with the exception of United States Fish and Wildlife Service. The requirement to submit individual water shortage plans is highlighted in the cover letter which transmits the permit and is also stated in Standard Condition 17. Not all users have submitted water shortage plans nor returned signed permits (see Exhibit 8). The staff will continue to work with these users to develop their individual plans. As part of the May 14, 1997 action, the Commission has also delegated the authority to the Chairperson to approve individual water shortage plans and the regional water shortage plan for the Puuloa Aquifer System.

RECOMMENDATIONS:

That the Commission:

1. Extend the interim permits shown in Exhibit 2, subject to the Standard Conditions of a Water Use Permit (Attachment A) and the following Special Conditions (which replace the former 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, acceptable, and affordable 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 shown in Exhibit 4 and the submittal of weekly chloride data.

g. Require adherence to the Conservation Conditions shown in Exhibit 5.

h. In the event a water shortage is declared by the Commission, permittees shall comply with the Puuloa Water Shortage Plan adopted by the Commission.

2. The permittees shall be notified by letter of the Commission action and extended permit duration. Re-issuance of new interim water use permits for these extended permits is unnecessary.

Respectfully submitted,

TIMOTHY E. JOHNS
Deputy Director

Attachment(s):
A (Standard Conditions for a Water Use Permit)
B (Special Interim Water Use Permit Conditions)

Exhibit(s):
1 (Location Map)
2 (Current Interim Permitted Uses, Puuloa and Kapolei Aquifer Systems)
3 (Current Permitted Uses, Puuloa and Kapolei Aquifer Systems)
4 (Chloride Sampling Protocol)
5 (Conservation Conditions)
6 (Chloride and Pumpage of Ewa Plantation Shallow Wells)
7 (Partial Water Shortage Plan)
8 (Summary of Unsigned Permits and No Water Shortage Plan)
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 October 22, 1998 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.

ATTACHMENT A
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 Puuloa or 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 Puuloa or 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 Puuloa or 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.

ATTACHMENT A
SPECIAL INTERIM WATER USE PERMIT CONDITIONS

a. The duration of the interim permits shall be to October, 1998 or until such time that a significant change in permitted, actual, or projected use or water supply occurs.

b. Require adherence to the chloride sampling protocol shown in Exhibit 8 and the submittal of weekly chloride data.

c. Require adherence to the Conservation Conditions shown in Exhibit 12.

d. Require the following PCUG members to sign a contract within twelve (12) months with the City Department of Wastewater Management to buy reclaimed water by July 1, 1999 for the cumulative amounts specified in Exhibit 7 (Pro-Rata Share):

1) Gentry Investment Co. - Commitment to use a total of 0.430 mgd of R-1 by July, 1999 for a corresponding reduction in allocation for Well No. 2002-15 and Well No. 2001-10.

2) Haseko (Ewa), Inc. - Commitment to use a total of 0.40 mgd of R-1 by July, 1999 for a corresponding reduction in allocation for Well No. 1902-01.

3) Hawaii Prince Golf Club - Commitment to use a total of 0.40 mgd of R-1 by July, 1999 for a corresponding reduction in allocation for Well Nos. 1900-02, 17 to 20 & 1901-03.

4) Ewa Beach International Golf Club - Commitment to use a total of 0.27 mgd of R-1 by July, 1999 for a corresponding reduction in allocation for Well Nos. 1900-21, 22 & 1959-08.

ATTACHMENT B
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7 Permits Totalling Available SY

EXHIBIT 2
## Current Active Water Use Permits (Excluding salt water use permits)

**ISLAND OF OAHU**

**WMA Aquifer System:** PUULOA

### Sustainable Yield = mgd

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<td></td>
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</tr>
</tbody>
</table>

### 21 Permits Totaling Available SY

---

**EXHIBIT 2**

(t:\work\database\reports\wup-wma.rpt)
## Current Active Water Use Permits

*(Excluding salt water use permits)*

**ISLAND OF OAHU**

**WMA Aquifer System:** PUULOA

**Sustainable Yield = mgd**

<table>
<thead>
<tr>
<th>Wup</th>
<th>No. Approved</th>
<th>Applicant</th>
<th>Well No</th>
<th>Well Name</th>
<th>WUP (mgd)</th>
</tr>
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<tbody>
<tr>
<td>152</td>
<td>10/19/88</td>
<td>HAWAII PRINCE GOLF CLUB</td>
<td>1900-02</td>
<td>EP 22</td>
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<tr>
<td>469</td>
<td>1/14/98</td>
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<td>170</td>
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<tr>
<td>492</td>
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<td>R.H.S. LEE, INC.</td>
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<td>EP 27A,27B,28,29</td>
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<td>167</td>
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<td>GEIGER PARK</td>
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<td>171</td>
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<td>249</td>
<td>11/29/91</td>
<td>GENTRY PACIFIC, LTD.</td>
<td>2002-12</td>
<td>PALM COURT 3</td>
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<td>169</td>
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<td>2002-12</td>
<td>PALM COURT 3</td>
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<td>437</td>
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<td>GENTRY G.C. IRR</td>
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<td>GOODFELLOWS CONSTR</td>
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<td>496</td>
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<td>CORAL CREEK NO 3</td>
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<td>247</td>
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<td>HONOLULI UNIT</td>
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</table>

38 Permits Totalling 17.196

Available SY

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*EXHIBIT 3*
Current Active Water Use Permits (Excluding salt water use permits) October 7, 1998

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

Wup
No. Approved Applicant

<table>
<thead>
<tr>
<th>No.</th>
<th>Approved Date</th>
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<th>Well No</th>
<th>Well Name</th>
<th>WUP (mgd)</th>
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<tr>
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<td>1904-02</td>
<td>MAKAKILO GC</td>
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<td>MAKAKILO GC SBYOB</td>
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<td>1905-06</td>
<td>KAPOLEI IRR 1</td>
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<td>CAMPBELL ESTATE</td>
<td>1905-10</td>
<td>KAPOLEI IRR 2</td>
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</tr>
<tr>
<td>438</td>
<td>5/14/97</td>
<td>KAPOLEI PEOPLE'S, INC.</td>
<td>2003-01</td>
<td>KAPOLEI G.COURSE A</td>
<td>1.000</td>
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<tr>
<td>438</td>
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<td>2003-02</td>
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<td></td>
</tr>
<tr>
<td>432</td>
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<td>STATE HFDC</td>
<td>2003-04</td>
<td>KAPOLEI IRR D</td>
<td>0.494</td>
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<td>KAPOLEI G.COURSE A</td>
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<td>2003-07</td>
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</tbody>
</table>

9 Permits Totalling 2.946 Available SY

EXHIBIT 3
GUIDELINES FOR CHLORIDE CONCENTRATION SAMPLING FOR EWA CAPROCK

1. Sample Collection

• Sampling Schedule

The sampling schedule depends upon your pump capacity:

<table>
<thead>
<tr>
<th>Pump Capacity (gpm)</th>
<th>Sampling Schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than or equal to 50</td>
<td>Once a month</td>
</tr>
<tr>
<td>Greater than 50</td>
<td>Once a week</td>
</tr>
</tbody>
</table>

• 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)
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.
<table>
<thead>
<tr>
<th>CASING DIAMETER (in.)</th>
<th>PUMP CAPACITY (gpm)</th>
<th>MINIMUM TIME (min.)</th>
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</thead>
<tbody>
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<td>140</td>
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<tr>
<td></td>
<td>20-50</td>
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<td>72</td>
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</table>

1 Assumes saturated well depth of 100 feet.

2 Five well volumes is a standard guideline recommended by EPA.
CONSERVATION CONDITIONS
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.
Chloride and Pumpage of Ewa Plantation
Shallow Wells, Ewa Caprock, Oahu

FIGURE 7

Average Chloride Concentration (mg/l)

Average monthly pumpage (mgd)

Est. average yearly pumpage (mgd)

Start 1937

Basal (low Cl) irrigation
Pumps 15, 16

Total imported basal water from Koolau ranged < 50-70 mgd

Stop 1994

Average Pumpage (mgd)

<table>
<thead>
<tr>
<th>User</th>
<th>Well Name/No.</th>
<th>Use</th>
<th>Current Allocation</th>
<th>Recommended Allocation</th>
<th>Basis</th>
<th>Water Shortage Plan</th>
<th>Priority</th>
<th>Reduction</th>
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<td>EP 21/2000-01</td>
<td>Ag</td>
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<td>G.Course</td>
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<td>0.700</td>
<td>Actual Use</td>
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<td>Puuola Homes (EBIGC)</td>
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1 = Highest priority (Ag)
2 = Intermediate priority (G. Course)
3 = Lowest priority (Landscape Irr., dust control)

Maximum reduction indicated in water shortage plan
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*38 Permits Totaling 17.196 Available SY*
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9 Permits Totalling 2.946
Available SY
Mr. Howard Kihune
Coral Creek Golf, Inc.
55 Merchant St., Ste. 1810
Honolulu, HI 96813

Dear Mr. Kihune:

Approval of Water Use Permit for Well Nos. 2002-17 & 18
Puuloa Ground-Water Management Area, Oahu

This letter transmits your water use permit for Coral Creek Nos. 2 & 3 Wells (Well Nos. 2002-17 & 18) for use of 0.900 million gallons per day (mgd) of water on a 12-month moving average basis that was approved by the Commission on Water Resource Management (Commission) on July 15, 1998. As part of the Commission’s approval, the Commission noted that only about 0.052 mgd would actually be used (from the water feature wells, Coral Creek Well Nos. 2 to 5, Well Nos. 2002-17 & 18, 2001-13, and 1902-05), the rest of the water would go to aquifer recharge. In addition, the following special conditions were added and are part of your permit under Standard Permit Condition 20:

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. The duration of the interim permits shall be to October, 1998 or until such time that a significant change in permitted, actual, or projected use or water supply occurs.

c. 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.

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

e. Require adherence to the chloride sampling protocol shown in Exhibit 4 and the submittal of weekly chloride data.

f. Require adherence to the Conservation Conditions shown in Exhibit 7.

(We have enclosed the above-referenced Exhibits 4 and 7 from the July 15, 1998 Staff Submittal.)
Enclosed with this letter of approval are the following:

1. Your water use permit
2. Your official monthly water use report form

Please be sure to read the conditions of your approved permit. If you accept these terms, please sign and return one copy of this permit to the Commission and retain a copy for your record.

We draw your attention to two key conditions of your permit that require your response. First, you are required to keep a record of your monthly total pumpage, water level, salinity, and water temperature. This information must be submitted to the Commission on a regular weekly basis using the enclosed water use report form. You should make copies of the enclosed report form as needed.

Second, you are required to submit a water shortage plan to the Commission within thirty (30) days of the issuance date of this permit. Your water shortage plan simply identifies what you are willing to do should the Commission declare a water shortage situation in the Puuloa Ground-Water Management Area and can be as short as a one page letter. In a water shortage situation, the Commission may require temporary reductions in pumpage from all sources. The Commission is required, by law, to formulate a plan to implement such area-wide reductions, which should accommodate, include, and be consistent with your plans. Therefore, your help, by submitting your water shortage plan, is greatly needed in formulating the Commission's overall Water Shortage Plan.

If you have any questions, please call the Commission staff at 587-0218.

Aloha,

[Signature]
Michael D. Wilson
Chairperson

Attachments
GROUND-WATER USE PERMIT
WUP NO. 496

PERMITTEE

Permittee/Water User
Address  CORAL CREEK GOLF, INC.
55 MERCHANT ST., STE. 1810
HONOLULU, HI 96813

Landowner of Source
Address  CORAL CREEK GOLF, INC.
55 MERCHANT ST., STE. 1810
HONOLULU, HI 96813

PERMITTED SOURCE INFORMATION

Island  OAHU
Water Management Area  PUULOA
Aquifer Sector  EWA CAPROCK
Aquifer System  PUULOA
System Sustainable Yield  NA
Well Name  CORAL CREEK NOS. 2 & 3
State Well No.  2002-17 & 18

PERMITTED USE INFORMATION

Reasonable beneficial use  GOLF COURSE WATER FEATURE
Withdrawal (12 month moving ave.)  0.900 mgd
Chloride Cap  1.000 mg/l
Location of water use
TMK #  9-1-69:10
Address  CORAL CREEK GOLF COURSE
State land use classification  URBAN
County zoning classification  P-2

Pursuant to Hawaii’s State Constitution, Article XI, Section 7, Hawaii Revised Statutes, Chapter 174C; Hawaii Administrative Rules, Chapters 13-167 through 13-171; and Hawaii decisional law and custom, the permittee is hereby authorized to use ground water from the sources and in the amount and from and upon the locations described above; subject however, to the requirements of law including but not limited to the following 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 July 15, 1998 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 weekly basis (attached).

12. This permit shall be subject to the Commission’s periodic review of the Puuloa 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 Puuloa 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 Puuolua 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 of the filing of the application.

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. Special conditions in the attached cover transmittal letter are incorporated herein by reference.

21. 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.

I have read the conditions and terms of this permit and understand them. I accept and agree to meet these conditions as a prerequisite and underlying condition of my ability to proceed and that this permit is not valid until I have signed and returned the permit to the Commission.

Permittee's Signature: ___________________________ Date: ______________

Printed Name: ___________________________ Firm or Title: ___________________________

Please sign both copies of this permit, return one to the Commission, and retain the other for your records.

Attachment
STAFF SUBMITTAL

for the meeting of the
COMMISSION ON WATER RESOURCE MANAGEMENT

July 15, 1998
Honolulu, Oahu

Coral Creek Golf, Inc.
APPLICATIONS FOR WATER USE PERMITS
Coral Creek Nos. 2 & 3, Well Nos. 2002-17 & 18 (WUP No. 496)
Coral Creek No. 4, Well No. 2001-13 (WUP No. 497)
Coral Creek No. 5, Well No. 1902-05 (WUP No. 498), TMK 9-1-69:7
Future Golf Course Water Feature Use for 1.98 mgd (Total)
Puuloa Ground Water Management Area, Oahu

APPLICANT: 
Coral Creek Golf, Inc.
55 Merchant St., Ste. 1810
Honolulu, HI 96813

LANDOWNER: 
Coral Creek Golf, Inc.
55 Merchant St., Ste. 1810
Honolulu, HI 96813

LOCATION MAP: See Exhibit 1

BACKGROUND:
On April 22, 1998, completed water use permit applications and well construction/pump installation permit applications for four (4) proposed sources were received from Coral Creek Golf, Inc. (Coral Creek) by the Commission on Water Resource Management (Commission).

The applicant requested expedited processing of the well construction permit applications with the understanding that the drilling would be proceeding without the assurance that water use permits would be granted.

On May 28, 1998, the well construction permits were administratively approved. 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:

(1) Water availability

Through the Hawaii Water Plan, the Commission has adopted 1,000 mg/l of chloride as the sustainable capacity for irrigation wells in the Puuloa Aquifer System. There is no aggregate sustainable yield number for the aquifer system. Individual existing water use permits in this aquifer system are shown in Exhibit 2. Other pending applications in Puuloa are shown in Exhibit 3.

Since 1994, expiration dates have been attached to water use permits in the Puuloa Aquifer System because there are concerns regarding the impacts of land and water use changes on the future viability of the aquifer as a dependable source of brackish irrigation water, the uncertainty of reuse wastewater availability, and potential revocation of unused allocations formerly held by Oahu Sugar Co., Ltd. All other interim permits for new uses will expire or are subject to review in October, 1998.

The wells will be used to supply water features in the Coral Creek Golf Course. Brackish water will be withdrawn from four (4) drilled wells and delivered to adjacent man-made creeks and a waterfall. The water will move downgradient into man-made lakes that are excavated exposures of the ground water in the caprock and will function as "percolation basins". (The "lakes" are currently being used as a water source for dust control.) Coral Creek also has interim permitted use of 0.690 mgd from Well No. 2002-15 for irrigation of the golf course (WUP No. 437 due to expire in 10/98).

An issue is the potential salting up of the ground water near the man-made lakes. It is estimated that, of the 1.98 mgd of ground water to be withdrawn from these four (4) drilled wells, about 52,100 gpd will be lost to evaporation, as the water moves down the creeks, into the lakes and eventually the caprock aquifer through percolation. As a result, the water that will recharge the aquifer via the man-made lakes will have higher chloride concentrations.

Although the water will supply water features only, the wells are in close proximity to other caprock irrigation wells in Puuloa, with chloride concentrations in the range of 250 mg/l to 400 mg/l. As such, the sources being considered in these applications should be subject to the 1,000 mg/l chloride cap. The ability of the source to sustain 1,000 mg/l of chloride will be determined through monthly chloride reports that will be required as a condition of the water use permit. In addition, the staff will continue to collect monthly chloride data from selected caprock wells to monitor the response of the aquifer.
Staff Submittal
July 15, 1998

(2) **Reasonable-beneficial**

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

"...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 requested quantities represent a balance between the cost of pumping and the vision of the golf course landscape architect. There is no guideline or duty for reasonable use for water features. In the past, the Commission has approved water use permits to supply water features. Other reasonable-beneficial use criteria are discussed in the following sections.

(3) **Interference with other existing legal uses**

The staff will continue to monitor chloride reports and conduct monthly chloride samples to determine the impact on the aquifer. Similar to conditions place on other caprock interim permits, the staff recommends that the Commission condition these permits on weekly chloride sampling according the attached protocol (Exhibit 4). Standard Condition 3.c. provides for modification or revocation of the permit should this use interfere with other existing legal uses.

(4) **Public interest**

The use of brackish water to supply golf course water features is deemed to be in the public interest, provided that the use complies with the provisions of §174C-49(a) HRS. It does not appear that this use will interfere with or negatively impact other public interest objectives.

The Honolulu Board of Water Supply (BWS) is recommending that the permits be denied (Exhibit 5). BWS recommends that the use of reclaimed effluent be investigated. BWS also expressed concern over the increasing chlorides in caprock wells and the impact of additional pumpage.

The staff notes that the Coral Creek Golf Course is adjacent to the Honolulu Wastewater Treatment plant. Recharging the caprock aquifer with reclaimed effluent via the man-made lakes would be beneficial, providing that economic, health, environmental and other concerns are adequately addressed. A special condition has been added to provide the Commission with the right to revoke the proposed permits, after a hearing, should an alternate, permanent source of water be found for these uses.

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

This proposed use is consistent with the state and county general plans and land use designations.

(6) **County land use plans and policies**

This proposed use is 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 (OHA) have reviewed this application.

DHHL has commented that it has no objections to the subject applications provided that there is no impact on DHHL's existing and pending reservation request for Waipahu-Waiawa Aquifer System ground water.

OHA has reviewed the applications (Exhibit 6) and has expressed the following concerns:

1. This request for large water allocations is viewed as a mechanism to monopolize water usage in the area.
2. There is a lack of specifics regarding the use of the water. Assuming it is for irrigation, OHA is concerned that the applicant may not be able to address on-site and off-site impacts such as salinization, waterlogging, and non-point source pollution.
3. The intent of storing water in artificial creeks and lakes raises serious concerns about the issue of submerged lands, which are ceded lands; Native Hawaiians must be closely consulted on land use decisions concerning ceded lands.

Although the proposed uses are to supply water features and not irrigation, salinization and pollution are valid concerns. A special condition will be added to the water use permit for irrigation of the golf course (WUP No. 437 for Well No. 2002-15) to ensure the golf course is compliant with DOH's "Guidelines Applicable To Golf Courses In Hawaii", dated August, 1994 (Version 5). (This special condition was inadvertently omitted from WUP No. 437, but will be added if the Commission approves a new water use permit for Well No. 2002-15 when WUP No. 437 expires in October, 1998). DOH has reviewed these applications. No comments, concerns, or objections were raised.

The Attorney General's Office has clarified that submerged lands refer to navigable waters (i.e., marinas, harbors). Therefore, these "lakes" do not qualify as submerged lands. Further, use of ceded lands is a Board of Land and Natural Resources issue, and private lands cannot be ceded lands. Although the Attorney General has issued an opinion that submerged lands are ceded lands, the opinion refers to the ocean, not aquifers. Further, the lakes and channels do not store the water for use and are only for aesthetic purposes.

**RECOMMENDATION:**

Staff recommends that the Commission:

1. Approve the issuance of an interim water use permit (WUP No. 496) to Coral Creek Golf, Inc. for the reasonable and beneficial use of 900,000 gallons per day of brackish water for golf course water feature use from the Coral Creek Nos. 2 & 3 Wells (Well Nos. 2002-17 & 18), 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. The duration of the interim permits shall be to October, 1998 or until such time that a significant change in permitted, actual, or projected use or water supply occurs.

c. 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.

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

e. Require adherence to the chloride sampling protocol shown in Exhibit 4 and the submittal of weekly chloride data.

f. Require adherence to the Conservation Conditions shown in Exhibit 7.

2. Approve the issuance of an interim water use permit (WUP No. 497) to Coral Creek Golf, Inc. for the reasonable and beneficial use of 600,000 gallons per day of brackish water for golf course water feature use from the Coral Creek No. 4 Well (Well No. 2001-13), 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. The duration of the interim permits shall be to October, 1998 or until such time that a significant change in permitted, actual, or projected use or water supply occurs.

c. 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.

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

e. Require adherence to the chloride sampling protocol shown in Exhibit 4 and the submittal of weekly chloride data.

f. Require adherence to the Conservation Conditions shown in Exhibit 7.

3. Approve the issuance of an interim water use permit (WUP No. 498) to Coral Creek Golf, Inc. for the reasonable and beneficial use of 480,000 gallons per day of brackish water for golf course water feature use from the Coral Creek No. 5 Well (Well No. 1902-05), 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. The duration of the interim permits shall be to October, 1998 or until such time that a significant change in permitted, actual, or projected use or water supply occurs.
c. 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.

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

e. Require adherence to the chloride sampling protocol shown in Exhibit 4 and the submittal of weekly chloride data.

f. Require adherence to the Conservation Conditions shown in Exhibit 7.

Respectfully submitted,

TIMOTHY E. JOHNS
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 (Pending Water Use Permit Applications)
4 (Chloride Sampling Protocol)
5 (May 15, 1998 Review Comments from Honolulu Board of Water Supply)
6 (May 22, 1998 Review Comments from Office of Hawaiian Affairs)
7 (Conservation Conditions)
WATER USE PERMIT DETAILED INFORMATION

Source Information

AQUIFER: Puuloa System, Ewa Caprock Sector, Oahu
Sustainable Yield: 1,000 mg/l of chloride
Existing Water Use Permits: 16.643 mgd
Available Allocation: NA mgd
Total of other pending allocations: 0.223 mgd

WELL: Coral Creek No. 2 Well (Well No. 2002-17)
Location: Coral Creek Golf Course, Oahu, TMK:9-1-69:10
Year Drilled: NA
Casing Diameter: 14 in.

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WELL: Coral Creek No. 3 Well (Well No. 2002-18)
Location: Coral Creek Golf Course, Oahu, TMK:9-1-69:10
Year Drilled: NA
Casing Diameter: 14 in.

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WELL: Coral Creek No. 4 Well (Well No. 2001-13)
Location: Coral Creek Golf Course, Oahu, TMK:9-1-69:10
Year Drilled: NA
Casing Diameter: 14 in.

|--------------------------|--------------------|----------------|-------------------------------|-----------------------------|-----------------------------|

ATTACHMENT A
Staff Submittal

Year Drilled:
Casing Diameter:

Elevations (msl = 0 ft.)
Water Level:
Ground:
Bottom of Solid Casing:
Bottom of Perforated:
Bottom of Open Hole:

Total Depth:
Grouted Annulus Depth:

Pump Capacity

Use Information

Quantity Requested:
Proposed Type of Water Use:
Place of Water Use:

Reported Water Usage:

Puuleo Aquifer System
Current 12-Month Moving Average Withdrawal (See Exhibit 2):

1,980,000 gallons per day (total)
Golf Course Water Feature
9-1-69:10
NA gpd

ATTACHMENT A
Nearly Surrounding Wells and Other Registered Ground Water Use

There are twenty-six (26) other wells within a mile of the well (see Exhibit 1). Fourteen (14) of these wells are currently being used for primarily irrigation use. In addition, there is one (1) other well that is currently being constructed, and three (3) proposed new wells that have recently been permitted for construction and testing.

Public Notice

In accordance with HAR §13-171-17, a public notice was published in the Honolulu Advertiser on May 15 and 22, 1998 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 June 8, 1998.

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 June 8, 1998.

To the best of staff’s knowledge there are no objectors who have property interest within the Puuola 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

No field investigation has been conducted as these applications are for proposed sources and uses.
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 July 15, 1998 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;

ATTACHMENT B
Staff Submittal

July 15, 1998

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 weekly basis (attached).

12. This permit shall be subject to the Commission's periodic review of the Puuloa 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 Puuloa 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.

ATTACHMENT B
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 Puuloa 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.
STATE OF HAWAII
COMMISSION ON WATER RESOURCE MANAGEMENT
DEPARTMENT OF LAND AND NATURAL RESOURCES

MONTHLY GROUND WATER DELIVERY REPORT
(INFORMATION TO BE USED BY U.S. GEOLOGICAL SURVEY)

Coral Creek Golf, Inc.
55 Merchant St., Suite 1810
Honolulu, HI 96813

Month of __________ 19_

INSTRUCTIONS: Please TYPE OR PRINT CLEARLY. Complete this form to report total monthly ground water use and other information from each of your well sources. Mail to: Commission on Water Resource Management, P.O. Box 821, Honolulu HI 96805. For assistance, please call (808) 587-2284.

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<th>State Well No.</th>
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<th>Delivery End Date (mm/dd/yyyy)</th>
<th>Quantity Delivered (gallons)</th>
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* Use of water code:
AQ: Aquaculture
C: Commercial
D: Domestic
I: Irrigation - Drip
F: Irrigation - Furrow
B: Irrigation - Sprinkle

** For estimated values use code:
P: Power consumption
T: Total time of operation
D: Comparison with past data
X: Other means - (indicate method)

Other comments or additional information:

Submitted by (print) ___________________________                Title ___________________________
Signature ___________________________________________________________________________   Date ___________________________________________________________________________
# MONTHLY GROUND WATER USE REPORT

Coral Creek Golf, Inc.
55 Merchant St., Suite 1810
Honolulu, Hawaii 96813

Month of __________, 19__

INSTRUCTIONS: Please TYPE OR PRINT CLEANLY. Complete this form to report total monthly ground water use, and, if required, other information from each of your well sources. Mail to: Commission on Water Resources Management, P.O. Box 821, Honolulu HI 96809. For assistance, please call (808) 587-0264.

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<th>Period End Date (mm/dd/yy)</th>
<th>Quantity Pumped (gallons)</th>
<th>Method* of Measurement</th>
<th>Chloride (mg/l)</th>
<th>Temp. (°F)</th>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1902-05</td>
<td>Coral Creek No. 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* - Flow meter, electrical consumption, weir or flume, not metered (estimated).
** - Measurement should be taken while pump is NOT running just prior to a pumping cycle; if measurement is taken while pump is running, please indicate so.

Other comments or additional information (e.g. - date and method of chloride measurement; how pumpage amounts are estimated; etc...):

Submitted by (print) ___________________________________ Title ___________________________________
Signature ___________________________________ Date ___________________________________
### Current Active Water Use Permits

**ISLAND OF OAHU**

**WMA Aquifer System:** PUULOA

**Sustainable Yield:** 18 mgd

<table>
<thead>
<tr>
<th>Well No</th>
<th>Well Name</th>
<th>WUP (mgd)</th>
<th>12-MAY (mgd)</th>
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<tbody>
<tr>
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<td>1000-02</td>
<td>0.900</td>
<td>1.123 (MDL)</td>
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<td>1000-02</td>
<td>0.301</td>
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<td>WELL 2</td>
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<td></td>
</tr>
<tr>
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<td>1000-18</td>
<td></td>
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<td>1000-19</td>
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</tr>
<tr>
<td>WELL 5</td>
<td>1000-20</td>
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<tr>
<td>PUULOA GC IRR</td>
<td>1900-21</td>
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<td>0.144</td>
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<tr>
<td>PUULOA DUG WELLS</td>
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<td>0.949</td>
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<td>WELL 1</td>
<td>1901-03</td>
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<td></td>
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<tr>
<td>CORAL CREEK TEMP</td>
<td>1901-04</td>
<td>0.074</td>
<td>0.126</td>
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<td>EP 27A, 27B, 28, 29</td>
<td>1902-01</td>
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<td>HASEKO WELL NO. 11</td>
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<td>1.000</td>
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<td>HONOLULU STP 1</td>
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<td>0.500</td>
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<tr>
<td>HONOLULU STP 1</td>
<td>1902-03</td>
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<td></td>
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<tr>
<td>HONOLULU STP 2</td>
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<td></td>
</tr>
<tr>
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<tr>
<td>EP 23</td>
<td>2000-01</td>
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<td>EP 23</td>
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<td>EWA GENTRY</td>
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<td>GEGER PARK</td>
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<td>ARBORS</td>
<td>2001-07</td>
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<tr>
<td>FORT WEAVER APT.</td>
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<td>0.004</td>
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<td>GENTRY AREA 24</td>
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<td>0</td>
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<td>PALM COURT 3</td>
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<td>0.011</td>
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<tr>
<td>HONOLULU UNIT</td>
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<td>0.216</td>
<td>0.159</td>
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**34 Permits Totaling 16,643 Available SY**
<table>
<thead>
<tr>
<th>WUP</th>
<th>Applicant</th>
<th>Well Name</th>
<th>Well No.</th>
<th>Received</th>
<th>Acknow</th>
<th>Accepted</th>
<th>Public1</th>
<th>Public2</th>
<th>Objection</th>
<th>Suspense</th>
<th>Agenda</th>
<th>Mgd</th>
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</thead>
<tbody>
<tr>
<td>409</td>
<td>HASEKO (EWA), INC.</td>
<td>EWA MARINA</td>
<td>3/9/94</td>
<td>3/29/94</td>
<td>7/27/94</td>
<td>8/12/94</td>
<td>8/15/94</td>
<td>9/2/94</td>
<td>1/23/95</td>
<td>12/19/94</td>
<td>0.000</td>
<td></td>
</tr>
</tbody>
</table>

There are 7 which total 2.203

EXHIBIT 3
GUIDELINES FOR CHLORIDE CONCENTRATION SAMPLING FOR EVA CAPROCK

1. Sample Collection

   • Sampling Schedule

   The sampling schedule depends upon your pump capacity:

<table>
<thead>
<tr>
<th>Pump Capacity (gpm)</th>
<th>Sampling Schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than or equal to 50</td>
<td>Once a month</td>
</tr>
<tr>
<td>Greater than 50</td>
<td>Once a week</td>
</tr>
</tbody>
</table>

   • 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 4
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.
<table>
<thead>
<tr>
<th>CASING DIAMETER (in.)</th>
<th>PUMP CAPACITY (gpm)</th>
<th>MINIMUM TIME (min.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>10-20</td>
<td>140</td>
</tr>
<tr>
<td></td>
<td>20-50</td>
<td>110</td>
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<tr>
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<tr>
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<td>78</td>
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<tr>
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<td>700-1000</td>
<td>72</td>
</tr>
<tr>
<td></td>
<td>&gt;1000</td>
<td>72</td>
</tr>
</tbody>
</table>

1 Assumes saturated well depth of 100 feet.

2 Five well volumes is a standard guideline recommended by EPA.
TO: PATRICK T. ONISHI, CHIEF PLANNING OFFICER  
PLANNING DEPARTMENT

FROM: BROOKS H. M. YUEN, ACTING MANAGER AND CHIEF ENGINEER  
BOARD OF WATER SUPPLY

SUBJECT: WATER USE PERMITS FOR CAPROCK WELLS OF CORAL CREEK  
GOLF COURSE, INC. WELL NOS. 2001-13 AND 1902-05

May 15, 1998

We recommend that the City recommend denial of these water use permits. We assisted in drilling and testing of three exploratory caprock wells for this purpose.

We instead recommend that the developer investigate the use of reclaimed effluent Honouliuli Sewage Treatment Plant for the golf courses in the Ewa area.

The chloride is increasing in wells in the Ewa Plain area and the additional pumpages could aggravate the problem.

EXHIBIT 5
Mr. Michael D. Wilson
Commission on Water Resource Management
P.O. Box 621
Honolulu, HI 96809

Subject: Water Use Permit Applications for Coral Creek Golf, Inc, for Wells 2, 3, and 5, Pauuloa System, Ewa Caprock Sector, Island of Oahu

Dear Mr. Wilson:

Thank you for the opportunity to review the Water Use Permit Applications for Coral Creek Golf, Inc, for Coral Creek Wells 2, 3, and 5, Pauuloa System, Ewa Caprock Sector, Island of Oahu. The applicant is seeking authorization to pump brackish water from the Pauuloa Groundwater System for a combined amount of 1.98 mgd.

The Office of Hawaiian Affairs (OHA) has reviewed the applications and has the following concerns. First, as an agency empowered to preserve and conserve natural resources for current and future generations of Native Hawaiians, OHA views this request for large water allocations as a mechanism to monopolize water usage in the area.

Second, the fact that no specific use is outlined in the applications, other than the water will be stored in "man-made creeks", raises serious questions about usage and management as well. Assuming that the water will be used to irrigate the golf course, OHA wonders if the applicant is aware of potential adverse impacts associated with improper management of low quality irrigation. Because of the lack of specifics in the application, OHA is concerned that the applicant may not be able to address on-site and off-site impacts such as salinization, waterlogging, and non-point source pollution.
Third, the intent of storing water in artificial creeks and lakes raises serious questions about the issue of submerged lands. Submerged lands are ceded lands and Native Hawaiians must be closely consulted on land use decisions concerning ceded lands. In view of the above concerns, OHA urges the applicant to take a critical look of the application and review and amend it accordingly.

Please contact Colin Kippen (594-1938), LNR Officer, or Luis Manrique (594-1758), should you have any questions on this matter.

Sincerely yours,

[Signature]

Randall Ogata
Administrator

[Signature]

Colin Kippen
Officer,
Land and Natural
Resources Division

cc: Board of Trustees
OEQC

EXHIBIT 6
CONSERVATION CONDITIONS
EW A 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
Mr. Michael D. Wilson
Commission on Water Resource Management
P.O. Box 621
Honolulu, HI 96809

Subject: Water Use Permit Applications for Coral Creek Golf, Inc, for Wells 2, 3, and 5, Pauuloa System, Ewa Caprock Sector, Island of Oahu

Dear Mr. Wilson:

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Third, the intent of storing water in artificial creeks and lakes raises serious questions about the issue of submerged lands. Submerged lands are ceded lands and Native Hawaiians must be closely consulted on land use decisions concerning ceded lands. In view of the above concerns, OHA urges the applicant to take a critical look of the application and review and amend it accordingly.

Please contact Colin Kippen (594-1938), LNR Officer, or Luis Manrique (594-1758), should you have any questions on this matter.

Sincerely yours,

Randall Ogata
Administrator

Colin Kippen
Officer,
Land and Natural Resources Division

cc: Board of Trustees
OEQC

EXHIBIT 6
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.

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   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;
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      - 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 compiled with or that a waste of water is occurring, the Commission shall proceed with the necessary actions to revoke this permit.
Mr. Howard Kihune  
Coral Creek Golf, Inc.  
55 Merchant Street, Suite 1810  
Honolulu, HI 96813

Dear Mr. Kihune:

Applications for Water Use Permits  
Coral Creek Nos. 2, 3, 4 & 5 (Well Nos. 2002-17 & 18, 2001-13, 1902-05)  
Puuloa Ground-Water Management Area, Oahu

We are forwarding for your review comments from the Planning Department (and Board of Water Supply), dated May 27, 1998, on your water use permit applications.

If you have any questions, please contact Lenore Nakama at 587-0218.

Sincerely,

TIMOTHY E. JOHNS  
Deputy Director

LN:ss  
Attachment
June 4, 1998

Honorable Michael D. Wilson, Chairperson
Commission on Water Resource Management
Department of Land and Natural Resources
State of Hawaii
P.O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Wilson:

Water Use Permit Applications for
Coral Creek Golf Course, Well Nos.
1902-05, 2001-13, and 2002-17 & 18

Enclosed are comments from the Department of Land Utilization (DLU) on the subject applications. They were received after we transmitted Planning Department comments to you on May 27, 1998.

Should you have any questions, please call Eugene Takahashi of our staff at 527-6022.

Yours very truly,

PTO: lh

ATTACHMENTS

c: The Honorable Jeremy Harris, Mayor
MEMORANDUM

TO:        PATRICK T. ONISHI, CHIEF PLANNING OFFICER
           PLANNING DEPARTMENT

FROM:      LORETTA K.C. CHEE, ACTING DIRECTOR
           DEPARTMENT OF LAND UTILIZATION

SUBJECT:   WATER USE PERMIT APPLICATION

Applicant: Coral Creek Golf, Inc.
Tax Map Key:  9-1-69: por. 07
Type of Use: Golf Course - Water Feature Source
Well No. :  1902-05

We have reviewed the application information received on May 5, 1998, and have the following comments:

• We confirm that the proposed use area (line item 6) is currently zoned P-2 General Preservation.

• We also confirm that both the proposed use of this area as a golf course and the use of water for a water feature is permitted under this P-2 zoning.

The proposed project has been reviewed for the purpose of providing the above information and does not imply a recommendation of approval by this Department.

Should you have any questions, please contact Steve Tagawa of our Environmental Review Branch at 523-4817.

LORETTA K.C. CHEE
Acting Director of Land Utilization

May 27, 1998
May 27, 1998

Honorable Michael D. Wilson, Chairperson
Commission on Water Resource Management
Department of Land and Natural Resources
State of Hawaii
P.O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Wilson:

Water Use Permit Applications for
Coral Creek Golf Course, Well Nos.
1902-05, 2001-13, and 2002-17 & 18

This is in response to your memorandums dated May 4, 1998. We have reviewed the subject applications and provide the comments below for your consideration.

- The proposed Coral Creek Golf Course (formerly called Ewa Gentry Golf Course) is identified as part of the open space and greenways network in the Ewa Development Plan. The proposed golf course is consistent with the plan.

- It is our understanding that the applicant's combined request for 1.98 MGD (million gallons per day) of non-potable water would be used to establish several water features within the proposed golf course. Of the 1.98 MGD, approximately 54,100 gallons per day is estimated to be lost through evaporation from the creeks and lakes and the remaining balance would be recharged back into caprock aquifer. Any change in use of this water (e.g., to irrigate the proposed golf course) would require an approval by the Commission.

- The use of non-potable water is encouraged whenever possible to meet golf course water demands.
The Board of Water Supply (BWS) recommended denial of these water use permit applications. BWS recommended that the developer investigate the use of reclaimed effluent for the proposed golf course. See attached comments.

Per discussion with BWS staff, the withdrawal of 1.98 MGD of non-potable water from this general proximity may have a negative impact on other non-potable water wells in the area. We recommend that the applicant contact BWS to address their concerns.

Should you have any questions, please call Eugene Takahashi of our staff at 527-6022.

Yours very truly,

[Signature]

PATRICK T. ONISHI
Chief Planning Officer

PTO:lh

Attachments

c: The Honorable Jeremy Harris, Mayor
TO: PATRICK T. ONISHI, CHIEF PLANNING OFFICER
   PLANNING DEPARTMENT

FROM: BROOKS H. M. YUEN, ACTING MANAGER AND CHIEF ENGINEER
   BOARD OF WATER SUPPLY

SUBJECT: WATER USE PERMITS FOR CAPROCK WELLS OF CORAL CREEK
   GOLF COURSE, INC. WELL Nos. 2001-13 AND 1902-05

We recommend that the City recommend denial of these water use permits. We assisted in drilling and testing of three exploratory caprock wells for this purpose.

We instead recommend that the developer investigate the use of reclaimed effluent Honolulu Sewage Treatment Plant for the golf courses in the Ewa area.

The chloride is increasing in wells in the Ewa Plain area and the additional pumpages could aggravate the problem.
Mr. Howard Kihune
Coral Creek Golf, Inc.
55 Merchant Street, Suite 1810
Honolulu, HI 96813

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Coral Creek Nos. 2, 3, & 5 (Well Nos. 2002-17 & 18, 1902-05)
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We are forwarding for your review comments from the Office of Hawaiian Affairs on your water use permit application.

If you have any questions, please contact Lenore Nakama at 587-0218.

Sincerely,

TIMOTHY E. JOHNS
Deputy Director

LN:ss
Attachment
Mr. Michael D. Wilson  
Commission on Water Resource Management  
P.O. Box 621  
Honolulu, HI 96809

Subject: Water Use Permit Applications for Coral Creek Golf, Inc, for Wells 2, 3, and 5, Pauuloa System, Ewa Caprock Sector, Island of Oahu

Dear Mr. Wilson:

Thank you for the opportunity to review the Water Use Permit Applications for Coral Creek Golf, Inc, for Coral Creek Wells 2, 3, and 5, Pauuloa System, Ewa Caprock Sector, Island of Oahu. The applicant is seeking authorization to pump brackish water from the Puuloa Groundwater System for a combined amount of 1.98 mgd.

The Office of Hawaiian Affairs (OHA) has reviewed the applications and has the following concerns. First, as an agency empowered to preserve and conserve natural resources for current and future generations of Native Hawaiians, OHA views this request for large water allocations as a mechanism to monopolize water usage in the area.

Second, the fact that no specific use is outlined in the applications, other than the water will be stored in "man-made creeks", raises serious questions about usage and management as well. Assuming that the water will be used to irrigate the golf course, OHA wonders if the applicant is aware of potential adverse impacts associated with improper management of low quality irrigation. Because of the lack of specifics in the application, OHA is concerned that the applicant may not be able to address on-site and off-site impacts such as salinization, waterlogging, and non-point source pollution.
Letter to Mr. Michael D. Wilson
May 22, 1998
Page 2

Third, the intent of storing water in artificial creeks and lakes raises serious questions about the issue of submerged lands. Submerged lands are ceded lands and Native Hawaiians must be closely consulted on land use decisions concerning ceded lands. In view of the above concerns, OHA urges the applicant to take a critical look of the application and review and amend it accordingly.

Please contact Colin Kippen (594-1938), LNR Officer, or Luis Manrique (594-1758), should you have any questions on this matter.

Sincerely yours,

Randall Ogata
Administrator

Colin Kippen
Officer,
Land and Natural
Resources Division

cc: Board of Trustees
OEQC
TO: Aquatic Resources  
Forestry and Wildlife/Natural Area Reserve System  
Historic Preservation  
Land Division  
State Parks

FROM: Edwin T. Sakoda, Acting Deputy Director  
Commission on Water Resource Management

SUBJECT: Request for Comments  
Water Use Permit Application  
Puuloa Ground Water Management Area, Oahu

Transmitted for your review and comment is a copy of a water use permit application for Coral Creek Golf, Inc. for Well Nos. 2002-17 & 18. Public notice of this application will be published in the Honolulu Advertiser issues of May 15 and 22, 1998.

We would appreciate your review of the attached application for any conflicts or inconsistencies with the programs, plans, and objectives specific to your division only. Please respond by returning this cover memo form by June 8, 1998.

If you have any questions, require additional information, or would like to request an extension of the review period for this application, please contact Lenore Nakama at 587-0218.

Response:

( ) We have no comments  
( ) We have no objections  
( ) Comments attached

Contact Person: Annette Tagawa  
Phone: 7-0543

Signed: [Signature]  
Date: 5-26-98
State of Hawaii
Department of Land and Natural Resources
DIVISION OF AQUATIC RESOURCES

May 21, 1998

MEMORANDUM

TO: Edwin Sakoda, Acting Deputy Director
   Commission on Water Resource Management

FROM: Bill Devick, Acting Administrator
       Division of Aquatic Resources

SUBJECT: Comments on Water Use Permit Application for Puuloa Ground Water
         Management Area, Oahu (TMK: 9-1-69:10)

The applicant, Coral Creek Golf, Inc., proposes to withdraw 900,000 gallons per day of
brackish water from the Puuloa Sector of the Ewa Caprock. A well & pump system will be used
to withdraw the water which will be delivered to man-made “creeks” on the golf course. Water
will move downgradient into a lake between the 1st and 9th holes (immediately mauka of Geiger
Road). The lake is an excavation exposure of the groundwater caprock.

The Division has no objections to this request since the proposed project is not expected
to have significant adverse impact on aquatic resource values in this area. However, since Kaloi
Gulch is near the project site, construction activities for the proposed well could have short
term impacts on aquatic resources such as turbidity, biota displacement and disturbance.
Therefore, mitigation measures should be taken during construction activities to prevent
petroleum products, sediment, and other debris from blowing, leaching, draining, or entering
the aquatic environment. We also suggest that site work be scheduled for periods of minimal
rainfall, and lands denuded of vegetation be replanted or covered as quickly as possible to control
erosion.
TO: Aquatic Resources  
Forestry and Wildlife/Natural Area Reserve System  
Historic Preservation  
Land Division  
State Parks

FROM: Edwin T. Sakoda, Acting Deputy Director  
Commission on Water Resource Management

SUBJECT: Request for Comments  
Water Use Permit Application  
Puuloa Ground Water Management Area, Oahu

Transmitted for your review and comment is a copy of a water use permit application for Coral Creek Golf, Inc. for Well Nos. 2002-17 & 18. Public notice of this application will be published in the Honolulu Advertiser issues of May 15 and 22, 1998.

We would appreciate your review of the attached application for any conflicts or inconsistencies with the programs, plans, and objectives specific to your division only. Please respond by returning this cover memo form by June 8, 1998.

If you have any questions, require additional information, or would like to request an extension of the review period for this application, please contact Lenore Nakama at 808-687-02

Response:

( ) We have no comments  
( ) We have no objections  
( ) Comments attached  

Contact Person: Cecil B. Santos  
Phone: 808-704-23  
Signed: Cecil B. Santos  
Date: 5/21/98
TO: Honorable Kali Watson, Chairperson
Department of Hawaiian Home Lands

Honorable Lawrence Milke, Director
Department of Health
Attn: Mr. Dennis Tulang
Attn: Mr. William Wong

Honorable A. Frenchy DeSoto, Chairperson
Office of Hawaiian Affairs

Mr. Brooks Yuen, Acting Manager & Chief Engineer
Honolulu Board of Water Supply
Attn: Mr. Chester Lao
Attn: Mr. Barry Usugawa

Mr. Patrick Onishi, Chief Planning Officer
Planning Department

FROM: Michael D. Wilson, Chairperson
Commission on Water Resource Management

SUBJECT: Water Use Permit Application
Puuloa Ground Water Management Area, Oahu

Transmitted for your review and comment is a copy of a water use permit application for Coral Creek Golf, Inc. for Well Nos. 2002-17 & 18. Public notice of this application will be published in the Honolulu Advertiser issues of May 15 and 22, 1998.

We would appreciate your review of the proposed use that is described in the attached application for any conflicts or inconsistencies with the land use designations, plans, policies, programs, or objectives specific to your organization or department only. Please respond by returning this cover memo form by June 8, 1998.

If you have any questions, require additional information, or would like to request an extension of the review period for this application, please contact Lenore Nakama at 587-0218.

Response:

We have no comments
We have no objections
Comments attached

Contact Person: William Wong Phone: 586-4258
Signed: William Wong Date: 05/13/98
TO: Aquatic Resources  
Forestry and Wildlife/Natural Area Reserve System  
Historic Preservation  
Land Division  
State Parks  

FROM: Edwin T. Sakoda, Acting Deputy Director  
Commission on Water Resource Management  

SUBJECT: Request for Comments  
Water Use Permit Application  
Puuloa Ground Water Management Area, Oahu  

Transmitted for your review and comment is a copy of a water use permit application for Coral Creek Golf, Inc. for Well Nos. 2002-17 & 18. Public notice of this application will be published in the Honolulu Advertiser issues of May 15 and 22, 1998.

We would appreciate your review of the attached application for any conflicts or inconsistencies with the programs, plans, and objectives specific to your division only. Please respond by returning this cover memo form by June 8, 1998.

If you have any questions, require additional information, or would like to request an extension of the review period for this application, please contact Lenore Nakama at 587-0218.

Response:

( ) We have no comments  
( ) We have no objections  
( ) Comments attached  

Contact Person: Elaine Bourland  
Phone: 587-0014

Signed: [Signature]  
Date: 5/12/98
TO: Honorable Kali Watson, Chairperson  
   Department of Hawaiian Home Lands  
   Honorable Lawrence Miike, Director  
   Department of Health  
   Attn: Mr. Dennis Tulang  
   Attn: Mr. William Wong  
   Honorable A. Frenchy DeSoto, Chairperson  
   Office of Hawaiian Affairs  
   Mr. Brooks Yuen, Acting Manager & Chief Engineer  
   Honolulu Board of Water Supply  
   Attn: Mr. Chester Lao  
   Attn: Mr. Barry Usugawa  
   Mr. Patrick Onishi, Chief Planning Officer  
   Planning Department  

FROM: Michael D. Wilson, Chairperson  
   Commission on Water Resource Management  

SUBJECT: Water Use Permit Application  
   Puuloa Ground Water Management Area, Oahu  

Transmitted for your review and comment is a copy of a water use permit application for Coral Creek Golf, Inc. for Well Nos. 2002-17 & 18. Public notice of this application will be published in the Honolulu Advertiser issues of May 15 and 22, 1998.

We would appreciate your review of the proposed use that is described in the attached application for any conflicts or inconsistencies with the land use designations, plans, policies, programs, or objectives specific to your organization or department only. Please respond by returning this cover memo form by June 8, 1998.

If you have any questions, require additional information, or would like to request an extension of the review period for this application, please contact Lenore Nakama at 587-0218.

Response:

( ) We have no comments  
( ) We have no objections  
( ) Comments attached

Contact Person: Rebecca Alakai/Darrell Yagodich  
Phone: 586-3836

Signed: Darrell Yagodich  
Date: 5/7/98
May 8, 1998

TO: Timothy Johns, Deputy Director
Commission on Water Resource Management

FROM: Darrell Yagodich, Planning Office Administrator
Department of Hawaiian Home Lands

SUBJECT: Water Use Permit Application
Coral Creek Golf, Inc., Well Nos. 2002-17 & 18
Puuloa Groundwater Management Area, Oahu

Thank you for the opportunity to comment on the subject permit application. Coral Creek Golf, Inc. is requesting a new use of 900,000 gallons per day to deliver water to a man-made creek and lake on its golf course.

Under Hawaii Revised Statutes (HRS), 174C-49(d), Hawaii Administrative Rules (HAR), 13-171-13(d), and the Hawaiian Homes Commission Act, Section 221, the Department of Hawaiian Home Lands has an existing water reservation and pending reservation request with the Commission on Water Resource Management in the Waipahu-Waiawa groundwater management area. We understand that the sustainable yield of the Waipahu-Waiawa groundwater management area may also be reduced in the near future. Our pending reservation request will then be heard in rule-making procedures. We have no objections to the subject application provided it has no impact on our existing and pending water reservations.

Should you have any questions, please call Rebecca Alakai of our Planning Office at 587-6423.
TO:  Ms. Esther Ueda, Executive Officer  
Land Use Commission

FROM:  Edwin T. Sakoda

SUBJECT:  WATER USE PERMIT APPLICATION  
Puuloa Ground Water Management Area, Oahu

Transmitted for your review and comment is a copy of a water use permit application for Coral Creek Golf, Inc. for Well Nos. 2002-17 & 18. Public notice of this application will be published in the Honolulu Advertiser issues of May 15 and 22, 1998.

We would appreciate your review of the proposed use that is described in the attached application (i.e. line item 6 or Table 1). Specifically, we request that you inform us of the current state land use designation for the TMK parcel, or portion thereof, for the proposed use area(s) and, secondly, whether the current state land use designation is appropriate for the proposed water use.

We have attached a TMK map(s) that covers the proposed use area(s). Where water is proposed for use on only a portion of a TMK parcel, or on parcels with multiple zoning, the proposed use area(s) has been clearly delineated on the attached map. Please respond by returning this cover memo along with your review comments by June 8, 1998.

If you have any questions, require additional information, or would like to request an extension of the review period for this application, please contact Lenore Nakama at 587-2318.

Response:

( ) The proposed water use(s) is consistent with the current zoning designation(s).
(x) Comments attached

Contact Person:  Esther Ueda  
Phone:  587-3822

Signed:  Esther Ueda  
Date:  5/7/98
May 7, 1998

Mr. Michael D. Wilson, Chairperson
Commission on Water Resource Management
Department of Land and Natural Resources
P.O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Wilson:

Subject: Water Use Permit Application
Puuoloa Ground Water Management Area, Oahu
Coral Creek Golf, Inc.
Well Nos. 2002-17 & 18

We have reviewed the subject water use permit application, as transmitted by your memorandum dated May 4, 1998, and have the following comments to offer:

1) We confirm that the location of Well Nos. 2002-17 & 18, and location of proposed use, both identified as TMK: 9-1-69: 10, is within the State Land Use Urban District.

2) Proposed Well 2 (2002-17) is located within a portion of the parcel that was reclassified from the Agricultural District to the Urban District on May 8, 1989 by approval of LUC Docket No. A88-627/Gentry Development Company.

Of the 27 conditions imposed upon the property by the Commission, Condition No. 5 relates to development of water sources for the property.

We refer you to our comments provided for the Water Use Permit Application of Goodfellow Bros., Inc. (Well No. 2002-16) which included a copy of the Decision and Order map, and the conditions imposed upon the reclassified area.

3) Proposed Well 3 (2002-18) is located within an area that was placed into the Urban District pursuant to the
1974 State Land Use District Boundary Review. No conditions were imposed by the Commission upon this portion of the parcel.

4) In regards to your request as to whether the proposed water use is appropriate for the state land use district designation, pursuant to Condition No. 24 of the Commission's Decision and Order for LUC Docket No. A88-627/Gentry Development Company, the Petitioner is required to develop the property in substantial compliance with the representations made to the Commission.

We note that in LUC Docket No. A88-627, Petitioner represented that the reclassified area would include the following uses: single and multi-family dwellings, 18-hole golf course, neighborhood commercial center, light industrial/business parks, elementary school, parks, and circulation improvements.

In addition, pursuant to Chapter 205-2(b), Hawai'i Revised Statutes, permitted activities or uses within the State Land Use Urban District are determined by the respective counties by ordinance or regulations. Therefore, the City and County of Honolulu should be requested to provide a response as to the appropriateness of the proposed water use in the Urban District.

We have no further comments to offer at this time.

Thank you for the opportunity to provide comments on the subject application.

As requested, please find enclosed the cover memorandum for the subject application.

If you have any questions in regards to this matter, please feel free to contact me or Leo Asuncion of my staff at 587-3822.

Sincerely,

ESTHER UEDA
Executive Officer
TO: Honorable Kali Watson, Chairperson
Department of Hawaiian Home Lands

Honorable Lawrence Milke, Director
Department of Health
Attn: Mr. Dennis Tulang
Attn: Mr. William Wong

Honorable A. Frenchy DeSoto, Chairperson
Office of Hawaiian Affairs

Mr. Brooks Yuen, Acting Manager & Chief Engineer
Honolulu Board of Water Supply
Attn: Mr. Chester Lao
Attn: Mr. Barry Usugawa

Mr. Patrick Onishi, Chief Planning Officer
Planning Department

FROM: Michael D. Wilson, Chairperson
Commission on Water Resource Management

SUBJECT: Water Use Permit Application
Puuloa Ground Water Management Area, Oahu

Transmitted for your review and comment is a copy of a water use permit application for Coral Creek Golf, Inc. for Well Nos. 2002-17 & 18. Public notice of this application will be published in the Honolulu Advertiser issues of May 15 and 22, 1998.

We would appreciate your review of the proposed use that is described in the attached application for any conflicts or inconsistencies with the land use designations, plans, policies, programs, or objectives specific to your organization or department only. Please respond by returning this cover memo form by June 8, 1998.

If you have any questions, require additional information, or would like to request an extension of the review period for this application, please contact Lenore Nakama at 587-0218.

LN:ss
Attachment(s)

Response:

X We have no comments

X We have no objections

Comments attached

Contact Person: Lani Kajiwara Phone: 808-429-4
Signed: Lani Kajiwara Date: 5-0-98
TO: Aquatic Resources
    Forestry and Wildlife/Natural Area Reserve System
    Historic Preservation
    Land Division
    State Parks

FROM: Edwin T. Sakoda, Acting Deputy Director
      Commission on Water Resource Management

SUBJECT: Request for Comments
          Water Use Permit Application
          Puuloa Ground Water Management Area, Oahu

Transmitted for your review and comment is a copy of a water use permit application for Coral Creek Golf, Inc. for Well Nos. 2002-17 & 18. Public notice of this application will be published in the Honolulu Advertiser issues of May 15 and 22, 1998.

We would appreciate your review of the attached application for any conflicts or inconsistencies with the programs, plans, and objectives specific to your division only. Please respond by returning this cover memo form by June 8, 1998.

If you have any questions, require additional information, or would like to request an extension of the review period for this application, please contact Lenore Nakama at 587-1218.

Response:

☐ We have no comments
☐ We have no objections
☐ Comments attached

Contact Person:   Phone:
Signed:  Date: MAY - 5 1998
Subject: Request for Comments

Water Use Permit Application
Puuloa Ground Water Management Area, Oahu

Transmitted for your review and comment is a copy of a water use permit application for Coral Creek Golf, Inc. for Well Nos. 2002-17 & 18. Public notice of this application will be published in the Honolulu Advertiser issues of May 15 and 22, 1998.

We would appreciate your review of the attached application for any conflicts or inconsistencies with the programs, plans, and objectives specific to your division only. Please respond by returning this cover memo form by June 8, 1998.

If you have any questions, require additional information, or would like to request an extension of the review period for this application, please contact Lenore Nakama at 587-0218.

Response:

We have no comments
We have no objections
Comments attached

Contact Person: Phone: 587-0218
Signed: Date: 5/15/98
PUBLIC NOTICE

Applications for Water Use Permits
Puuloa Ground Water Management Area, Oahu

The following applications for water use permits have been received and are hereby made public in accordance with Department of Land and Natural Resources Administrative Rules 13-171, "Designation and Regulation of Water Management Areas."

Applicant: Coral Creek Golf, Inc.
55 Merchant St., Ste. 1810
Honolulu, HI 96813

Date Completed Applications Received: April 22, 1998

Aquifer: Puuloa System, Ewa Caprock Sector, Oahu

New Water Use: Golf Course Water Features (The wells will supply man-made creeks and a waterfall. The water will discharge to man-made lakes that are excavated exposures of the ground water.)

Location of Water Source: Coral Creek Golf Course at Tax Map Key: 9-1-69:10
Place of Water Use: Coral Creek Golf Course at Tax Map Key: 9-1-69:10

1. Coral Creek Nos. 2 & 3 (Well Nos. 2002-17 & 18)
   Water Source: Coral Creek Nos. 2 & 3 Wells (Well Nos. 2002-17 & 18)
   Quantity Requested: 900,000 gallons per day.

2. Coral Creek No. 4 (Well No. 2001-13)
   Water Source: Coral Creek No. 4 Well (Well No. 2001-13)
   Quantity Requested: 600,000 gallons per day.

3. Coral Creek No. 5 (Well No. 1902-05)
   Water Source: Coral Creek No. 5 Well (Well No. 1902-05)
   Quantity Requested: 480,000 gallons per day.

Written objections or comments on the above applications may be filed by any person who has property interest in any land within the hydrologic unit of the source of water supply, any person who will be directly and immediately affected by the proposed water uses, or any other interested person. Written objections shall: (1) state property or other interest in the matter (provide TMK information); (2) set forth questions of procedure, fact, law, or policy, to which objections are taken; and (3) state all grounds for objections to the proposed permits. Written objections must be received by June 8, 1998. Objections must be sent to 1) the Commission on Water Resource Management, P.O. Box 621, Honolulu, Hawaii 96809 and 2) the applicant at the above address.

COMMISSION ON WATER RESOURCE MANAGEMENT

EDWIN T. SAKODA, Acting Deputy Director for
MICHAEL D. WILSON, Chairperson

Dated: MAY 4 1998

Publish in: Honolulu Advertiser issues of May 15 and 22, 1998
Mr. Howard Kihune  
Coral Creek Golf, Inc.  
55 Merchant St., Ste. 1810  
Honolulu, HI 96813

Dear Mr. Kihune:

We acknowledge receipt, on April 22, 1998, of your completed applications for water use permits and well construction/pump installation permits for Coral Creek Nos. 2 to 5 Wells (Well Nos. 2002-17 & 18, 2001-13, and 1902-05, respectively). You can expect your water use permit applications to be processed within ninety (90) days from the date of receipt unless there are objections to your applications.

Enclosed is a copy of the public notice for your water use permit applications which will be published in the Honolulu Advertiser issues of May 15 and 22, 1998.

Please be aware that there may be objections to your applications. If objections are made, the objector is required to file such objections with the Commission and is also required to send you a copy of the objections.

You, or any other party, may respond to objections by filing a brief in support of your applications with the Commission within ten (10) days of the filing of an objection. You, or the other party, must also send a copy of the response to the objector.

We understand you are requesting expedited processing of the well construction permit applications with the understanding that you would be proceeding without the assurance that water use permits will be granted. As such, we will recommend that the Chairperson approve these applications, with appropriate special conditions, prior to approval of the water use permits.

If you have any questions, please contact Lenore Nakama at 587-0218.

Sincerely,

Edwin T. Sakoda  
Acting Deputy Director

LN:ss  
Enclosure
TO: Aquatic Resources
   Forestry and Wildlife/Natural Area Reserve System
   Historic Preservation
   Land Division
   State Parks
FROM: Edwin T. Sakoda, Acting Deputy Director
      Commission on Water Resource Management
SUBJECT: Request for Comments
         Water Use Permit Application
         Puuoa Ground Water Management Area, Oahu

Transmitted for your review and comment is a copy of a water use permit application for Coral Creek Golf, Inc. for Well Nos. 2002-17 & 18. Public notice of this application will be published in the Honolulu Advertiser issues of May 15 and 22, 1998.

We would appreciate your review of the attached application for any conflicts or inconsistencies with the programs, plans, and objectives specific to your division only. Please respond by returning this cover memo form by June 8, 1998.

If you have any questions, require additional information, or would like to request an extension of the review period for this application, please contact Lenore Nakama at 587-0218.

LN:ss
Attachment(s)
Response:

( ) We have no comments
( ) We have no objections
( ) Comments attached

Contact Person: __________________________ Phone: __________________________

Signed: __________________________ Date: __________________________
TO: Other Interested Parties
FROM: Edwin T. Sakoda, Acting Deputy Director
Commission on Water Resource Management
SUBJECT: Request for Comments
Water Use Permit Application
Puualoa Ground Water Management Area, Oahu

Transmitted for your review and comment is a copy of a water use permit application for Coral Creek Golf, Inc. for Well Nos. 2002-17 & 18. Public notice of this application will be published in the Honolulu Advertiser issues of May 15 and 22, 1998.

We would appreciate your review of the attached application for any conflicts or interferences with the programs, plans, and objectives of the organization or agency that you represent. Written objections should be made in accordance with Section 13-171-18 of our Administrative Rules and must be filed by the June 8, 1998 deadline.

If you have any questions, require additional information, or would like to request an extension of the review period for this application, please contact Lenore Nakama at 587-0218.

Response:

( ) We have no comments
( ) We have no objections
( ) Comments attached

Contact Person: ___________________________ Phone: ___________________________
Signed: ___________________________ Date: ___________________________
TO: Honorable Kali Watson, Chairperson
   Department of Hawaiian Home Lands

   Honorable Lawrence Miike, Director
   Department of Health
   Attn: Mr. Dennis Tulang
   Attn: Mr. William Wong

   Honorable A. Frenchy DeSoto, Chairperson
   Office of Hawaiian Affairs

   Mr. Brooks Yuen, Acting Manager & Chief Engineer
   Honolulu Board of Water Supply
   Attn: Mr. Chester Lao
   Attn: Mr. Barry Usugawa

   Mr. Patrick Onishi, Chief Planning Officer
   Planning Department

FROM: Michael D. Wilson, Chairperson
   Commission on Water Resource Management

SUBJECT: Water Use Permit Application
   Puuloa Ground Water Management Area, Oahu

Transmitted for your review and comment is a copy of a water use permit application for Coral Creek Golf, Inc. for Well Nos. 2002-17 & 18. Public notice of this application will be published in the Honolulu Advertiser issues of May 15 and 22, 1998.

We would appreciate your review of the proposed use that is described in the attached application for any conflicts or inconsistencies with the land use designations, plans, policies, programs, or objectives specific to your organization or department only. Please respond by returning this cover memo form by June 8, 1998.

If you have any questions, require additional information, or would like to request an extension of the review period for this application, please contact Lenore Nakama at 587-0218.

LN:ss
Attachment(s)

Response:

( ) We have no comments
( ) We have no objections
( ) Comments attached

Contact Person: ___________________________ Phone: ___________________________

Signed: ___________________________ Date: ___________________________
TO: Ms. Esther Ueda, Executive Officer  
Land Use Commission  

FROM: Edwin T. Sakoda  
Commission on Water Resource Management  

SUBJECT: WATER USE PERMIT APPLICATION  
Pualoa Ground Water Management Area, Oahu  

Transmitted for your review and comment is a copy of a water use permit application for Coral Creek Golf, Inc. for Well Nos. 2002-17 & 18. Public notice of this application will be published in the Honolulu Advertiser issues of May 15 and 22, 1998.

We would appreciate your review of the proposed use that is described in the attached application (i.e. line item 6 or Table 1). Specifically, we request that you inform us of the current state land use designation for the TMK parcel, or portion thereof, for the proposed use area(s) and, secondly, whether the current state land use designation is appropriate for the proposed water use.

We have attached a TMK map(s) that covers the proposed use area(s). Where water is proposed for use on only a portion of a TMK parcel, or on parcels with multiple zoning, the proposed use area(s) has been clearly delineated on the attached map. Please respond by returning this cover memo along with your review comments by June 8, 1998.

If you have any questions, require additional information, or would like to request an extension of the review period for this application, please contact Lenore Nakama at 587-0218.

Response:

( ) The proposed water use(s) is consistent with the current zoning designation(s).
( ) Comments attached

Contact Person: __________________________ Phone: __________________________

Signed: __________________________ Date: __________________________
TO: Ms. Jan Sullivan, Director
Department of Land Utilization
FROM: Michael D. Wilson, Chairperson
Commission on Water Resource Management
SUBJECT: WATER USE PERMIT APPLICATION
Puuloa Ground Water Management Area, Oahu

Transmitted for your review and comment is a copy of a water use permit application for Coral Creek Golf, Inc. for Well Nos. 2002-17 & 18. Public notice of this application will be published in the Honolulu Advertiser issues of May 15 and 22, 1998.

We would appreciate your review of the proposed use that is described in the attached application (i.e. line item 6 or Table 1). Specifically, we request that you inform us of the current zoning designation for the TMK parcel, or portion thereof, for the proposed use area(s) and, secondly, whether the current zoning designation is appropriate for the proposed water use.

We have attached a TMK map(s) that covers the proposed use area(s). Where water is proposed for use on only a portion of a TMK parcel, or on parcels with multiple zoning, the proposed use area(s) has been clearly delineated on the attached map. Please respond by returning this cover memo along with your review comments by June 8, 1998.

If you have any questions, require additional information, or would like to request an extension of the review period for this application, please contact Lenore Nakama at 587-0218.

LN:ss
Attachment(s)

Response:

( ) The proposed water use(s) is consistent with the current zoning designation(s).
( ) Comments attached

Contact Person: ________________________ Phone: ________________________
Signed: ________________________ Date: ________________________
Honorable Jeremy Harris, Mayor
City & County of Honolulu
City Hall
Honolulu, HI 96813

Dear Mayor Harris:

Notice of an Application for Water Use Permit
Puuloa Ground Water Management Area, Oahu

In accordance with the Department of Land and Natural Resources Administrative Rules, Section 13-171-17(a), we are sending you a copy of the public notice and water use permit applications for Coral Creek Golf, Inc. for Well Nos. 2002-17 & 18, 2001-13, and 1902-05, which will be published in the Honolulu Advertiser.

In addition, Section 13-171-13(b), of our Administrative Rules, states:

"Within sixty days after receipt of notice of a permit application, the county shall inform the commission if the proposed use is inconsistent with the county land use plans and policies."

We understand that the Planning Department is responsible for coordinating the review comments for City agencies. In accordance with the procedure that has been established by the Planning Department, we have also sent copies of the applications and individual requests for comments to the Planning Department, the Department of Land Utilization, and the Board of Water Supply to facilitate and expedite City agencies review. We will look forward to receiving the review comments from the Planning Department within the next sixty (60) days, on whether this water use is consistent with county plans, policies, and land use designations.

Very truly yours,

[Signature]

Enclosures
Mr. Michael D. Wilson - Chairperson  
Commission on Water Resource Management  
Department of Land and Natural Resources  
State of Hawaii  
P. O. Box 621  
Honolulu, Hawaii 96809

Dear Mr. Wilson:

Water Use and Well Construction Permit Applications for  
Groundwater Lakes and Circulation Wells at the  
Coral Creek Golf Course in Ewa, Oahu

Enclosed are water use and well construction permit applications and filing fees for three groundwater lakes and four circulating wells in the Coral Creek golf course in Ewa, Oahu. The lakes are excavated exposures of the shallow caprock aquifer. In order to minimize algae growth, as well as to provide the aesthetics of moving water in man-made creeks and a waterfall, we propose to construct four circulating wells. Water drawn from the aquifer by these wells would be returned to the aquifer at these lakes. After discussions with your staff, it was agreed that the consumptive use of this circulating scheme would be the net evaporative loss from the lake surfaces and the various "creeks" constructed to convey water from the wells to the lakes. The requested water use amounts reflect this. They are based on 90 inches of evaporation and 20 inches of rainfall for a net loss of 70 inches per year. For the three water features combined, the net evaporative loss would be 52,100 GPD.

We respectfully request expedited processing of the well construction permit applications with the understanding that we would be proceeding without the assurance that the water use permits will be granted. The expedited processing is needed because the golf course construction is proceeding rapidly and access for the drill rig will soon be closed off. Thank you for your consideration of these applications. Please feel free to call if you have any questions.

Sincerely,

[Signature]

Tom Nance

cc: Hoolae Paoa - Coral Creek Golf, Inc.

Enclosures
APPLICATION FOR WATER USE PERMIT

COMMISSION ON WATER RESOURCE MANAGEMENT
Department of Land and Natural Resources

APPLICATION FOR WATER USE PERMIT

97-4306
4-21-98

Instructions: Please print in ink or type and send completed application with attachments plus 15 copies to the Commission on Water Resource Management, P.O. Box 621, Honolulu, Hawaii 96809. Application must be accompanied by a non-refundable fee of $25.00 payable to the Dept. of Land and Natural Resources. The Commission does not accept incomplete applications. For assistance, call the Regulation Branch at 528-0233 (neighbor islands, 1-800-448-444.)

PERMITTEE INFORMATION

1. (a) APPLICANT
Firm/Name: Coral Creek Golf, Inc.
Contact Person: Howard Khune
Address: 55 Merchant Street - Suite 1810
Honolulu, Hawaii 96813
Phone: 528-4404 Fax: 528-1514

(b) LANDOWNER OF SOURCE
Firm/Name: Coral Creek Golf, Inc.
Contact Person: Howard Khune
Address: 55 Merchant Street - Suite 1810
Honolulu, Hawaii 96813
Phone: 528-4404 Fax: 528-1514

SOURCE INFORMATION

2. WATER MANAGEMENT AREA: Pualoa Sector of the Ewa Caprock ISLAND: Oahu

3. (a) EXITING WELL/DIVERSION AREA AND STATE NUMBER:

(b) PROPOSED (NEW) WELL/DIVERSION NAME: Coral Creek Nos. 2 and 3 2002 - 17-111

(c) LOCATION: In the Coral Creek Golf Course

(d) Address: Coral Creek Golf Course

(e) Current State Land Use District(s): P-2

(f) Current County Zoning District(s):

USE INFORMATION

6. LOCATION OF PROPOSED WATER USE: (If possible, show on same maps as source location. Otherwise, attach similar maps)
(a) PUC-Regulated System
(b) Proposed use of water &
(c) Tax Map Key: 9-1-69:10 (if location of use is over multiple TMKs, please complete Table 1 on back of application)
(d) Address:

7. QUANTITY OF WATER REQUESTED: 10,200 gallons per day (averaged over 1 year)

8. METHOD OF MEASUREMENT:

9. QUALITY OF WATER REQUESTED:

10. PROPOSED USE:

11. TOTAL NUMBER OF RESIDENCES TO BE SERVED: None

12. TOTAL ACRES TO BE IRRIGATED AND TYPE OF CROP:

13. PROPOSED TIME OF WATER WITHDRAWAL OR DIVERSION: Primarily Daytime

14. APPLICANT MUST ESTABLISH THAT THE PROPOSED USE OF WATER:

15. REMARKS, EXPLANATIONS: (see backside of this application)

NOTE: Signing below indicates that the signatories understand and swear that: 1) the information provided on this application is accurate and true to the best of the their knowledge; 2) item 14 is the responsibility of the applicant prior to Commission approval; 3) if necessary, further information may be required before the application is considered complete; 4) if a water use permit is granted by the Commission, this permit is subject to prior existing permitted uses, changes in sustainable yields and instream flow standards, reserved uses as defined by the Commission, and Hawaiian Home Lands future uses; and 5) upon permit approval, a water shortage plan must be submitted by the applicant should the Commission require one.

Applicant (print) Coral Creek Golf, Inc.
Signature 4-21-98

Landowner (print) Coral Creek Golf, Inc.
Signature 4-21-98

Note: Amended per telecomm. w/ Tom Hance to reflect proposed withdrawal rather than consumptive use. Aloha to N
"Reasonable-beneficial use" means 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 not wasteful and is both reasonable and consistent with the state and county land use plans and the public interest.

15. REMARKS, EXPLANATIONS (cont'd): Two wells, one along the third fairway and the other next to the 8th tee will draw brackish groundwater and deliver it into adjacent man-made "creeks". Water will move downgradient into a lake between the 1st and 9th holes (immediately mauka of Geiger Road). The lake is an excavated exposure of the groundwater in the caprock. The quantity of water requested is for the evaporation loss in the "creeks" and in the 1.4 acre lake, based on a net evaporative loss (evaporation less rainfall) of 70 inches per year.

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</table>
Mr. Joseph P. Livingood  
Coral Creek Golf, Inc.  
91-1111 Geiger Road  
Ewa Beach, HI 96706

Dear Mr. Livingood:

Well Completion Reports for Well Nos. 1902-05 & 2002-18

We have received your Well Completion Reports Part I for Well Nos. 1902-05 & 2002-18 and acknowledge that they are complete. Thank you for your assistance and cooperation in this matter.

If you have any questions, please contact Lenore Nakama of the Commission staff at 587-0218.

Sincerely,

[Signature]
EDWIN T. SAKODA  
Acting Deputy Director
Mr. Joseph D. Livingood  
Coral Creek Golf, Inc.  
91-1111 Geiger Road  
Ewa Beach, HI 96706

Dear Mr. Livingood:

Coral Creek Well Nos. 3 and 5  
Well Nos. 1902-05 and 2002-18  
Puuloa Aquifer System, Oahu

This is in response to your recent request to convert Well Nos. 1902-05 and 2002-18 into monitor wells, rather than sealing the wells.

The Commission’s February 17, 1999 action allowed for the retention of the wells as observation holes, provided that water levels and chlorides are measured monthly and reported to the Commission on a regular monthly basis. We understand that you will be submitting monthly profiles of conductivity and temperature with depth, along with monthly water level measurements. We will look forward to receiving these data from Well Nos. 1902-05 and 2002-18. Per your April 13, 1999 telephone discussion with my staff, we understand that you are withdrawing your abandonment applications and will update our record accordingly.

Also, please submit the items required under Condition 7 of the Well Construction Permits for Well Nos. 1902-05 & 2002-18:

b. Elevation (referenced to mean sea level, msl) survey by a Hawaii-licensed surveyor.
c. As-built sectional drawing of the well.
d. Plot plan and map showing the exact location of the well.
e. Complete pumping test records, including time, pumping rate, drawdown, chloride content, and other data.

If you have any questions, please contact Lenore Nakama at 587-0218.

Sincerely,

[Signature]
EDWIN T. SAKODA  
Acting Deputy Director
Dear Mr. Johns:

Coral Creek Well Nos. 3 and 5  
State Nos. 2002-18 and 1902-05 in the  
Puuloa Sector of the Ewa Limestone Aquifer

At its February 1999 meeting, the Commission revoked the water use permits for Coral Creek's Well Nos. 3 and 5 (State Nos. 2002-18 and 1902-05). The wells had been drilled to supply golf course water features, but due to changes in our plans, they are no longer needed for that purpose. Rather than abandon the wells according to the Commission's standards by sealing them with cement, we are requesting permission to convert them into water level monitoring sites.

We would install continuous water level recording devices in both wells. Data would be downloaded monthly and included with our regular monthly submittals of pumping amounts and chlorides. These water level recordings would be submitted to comply with the water level reporting requirements for the four wells that we currently utilize (State Nos. 2001-13 and 2002-15, -17, and -19). We are hoping that since the continuous recordings will provide more comprehensive information, you will agree that they are an acceptable substitute. I look forward to hearing from you.

Thank you for your consideration of this matter.

Sincerely,

Joseph D. Livingood  
Regional Operations Manager
Mr. Hoolae Paoa
Coral Creek Golf, Inc.
55 Merchant Street, Ste. 1810
Honolulu, HI 96813

Dear Mr. Paoa:

Well Construction Permit Applications to Abandon/Seal Well Nos. 1902-05 & 2002-18

We acknowledge receipt, on March 5, 1999, of your completed well construction permit applications to abandon/seal Well Nos. 1902-05 & 2002-18. You can expect your applications to be processed within ninety (90) days from this date.

If you have any questions about your permit application, please contact Lenore Nakama of the Commission staff at 587-0218.

Sincerely,

[Signature]

EDWIN T. SAKODA
Acting Deputy Director
TO: Honorable Bruce S. Anderson, Director  
    Department of Health  
    Attention: Dennis Tulang, Wastewater Branch  
              William Wong, Safe Drinking Water Branch  
FROM: Timothy E. Johns, Chairperson  
      Commission on Water Resource Management  
SUBJECT: Well Construction Permit Applications to Abandon/Seal  
         Well Nos. 1902-05 & 2002-16  
          Transmitted for your review and comment is a copy of the captioned well applications.  

We would appreciate your comments on the captioned applications for any conflicts or inconsistencies with the programs, plans, and objectives specific to your department. Please respond by returning this cover memo form by April 26, 1999.  

Please find a map, attached, to locate the proposed well. If you have any questions about these permit applications, request additional information, or request additional review time, please contact Lenore Nakama of the Commission staff at 587-0218.  

LN:ss  
Attachment(s)  

RESPONSE:  
[ ] This well qualifies as a source which will serve as a source of potable water to a public water system (serving 25 or more people at least 60 days per year or has 15 or more service connections) and must receive Director of Health approval prior to its use to comply with Hawaii Administrative Rules (HAR), Title 11, Chapter 20, Rules Relating to Potable Water Systems, §11-20-2.  

[ ] This well does not qualify as a source serving a public water system (serves less than 25 people or more people at least 60 days per year or 15 service connections) and if the well water is used for drinking, the private owner should test for bacteriological and chemical presence before initiating such use and routinely monitor the water quality thereafter. However, if future planned use from this source increases to meet the public water system definition then Director of Health approval is required prior to implementation.  

[ ] If the well is used to supply both potable and non-potable purposes in a single system, the user shall eliminate cross-connections and backflow connections by physically separating potable and non-potable systems by an air gap or an approved backflow preventer, and by clearly labeling all non-potable spigots with warning signs to prevent inadvertent consumption of non-potable water. Backflow prevention devices should be routinely inspected and tested.  

[ ] It does not appear that this well will be used for consumptive purposes and is not subject to Safe Drinking Water Regulations.  

[ ] For the applicant's information, a source of possible wastewater contamination [] is [] is not located near the proposed well site (information attached).  

[ ] Other relevant DOH rules/regulations, information, or recommendations are attached.  

[ ] No comments/objections  

Contact Person: ___________________________ Phone: ___________________________  
Signed: ___________________________ Date: ___________________________
DEPARTMENT OF LAND AND NATURAL RESOURCES

UAC OR ATTACHED WORKSHEET

DATE: 4/7/99

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REMARKS:
LINE (1) Well No. 2002-20, 2001-15, 1902-04, 08
LINE (2) Well No. 1902-05 & 2002-14
LINE (3) Well No. 1221-04
LINE (4) Well No. 1222-04

Coral Creek Golf, Inc.
Coral Creek Golf, Inc.
Oasis Water Systems, Inc.
Oasis Water Systems, Inc.

First Hawaiian Bank
MAIN BANKING CENTER
HONOLULU, HAWAII

Pay To The Order Of
Dpt. of Land & Natural Resources $50.00

Fifty and 0/100 Dollars

March 3, 99

[Signature]
Enclosed are AS-BUILT DRAWINGS for Coral Creek wells #2 and #4 as requested.

Please let us know if any additional information is required.

[Signature]
Mr. Howard Kihune  
Coral Creek Golf, Inc.  
55 Merchant Street, Suite 1810  
Honolulu, Hawaii 96813

Dear Mr. Kihune:

Well Completion Report for Well No. 2002-17

We have received your Well Completion Report Part II for the Coral Creek Well No. 2 (Well No. 2002-17). However, matters which must be addressed before we accept your report as complete are as follows:

1. Please submit the as-built drawing of the installed pump (Standard Condition 5 of Pump Installation Permit).

Please respond to the above item(s) within sixty (60) days of this letter’s date. Failure to do so may result in fines of up to $1000 per day.

If you have any questions, please contact Lenore Nakama of the Commission staff at 587-0218.

Sincerely,

Timothy E. Johns
Deputy Director

LN:ss
**WCR 2 Check for Well No. 2002-17** *(survey to regulation memo)*

### 1. Pump Tests Check

**Special condition of PIP? Yes/No**  
Glenn Bauer_\(\text{\underline{V}}\) (initial if yes)  
Yes | No  
---|---  
If no, describe deficiency

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<td>← If yes, identify most probable stream</td>
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### 2. Pump Installation Check

**Mitch Ohye_\(\text{\underline{V}}\) (initial)**

<table>
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<th>Yes</th>
<th>No</th>
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PART II. (PERMANENT) PUMP INSTALLATION REPORT

20. Pump Installation Company: ROSCOE MOSS HAWAII, INC.
21. Name of person performing work: CLAYTON IGARASHI
22. Date Pump Installation Completed: DECEMBER 11, 1998

23. PUMP INSTALLATION:
   Pump Type, Make, Serial No.: SUBMERSIBLE, ESP, 140039810-147
   Capacity: 800 gpm
   Motor type, H.P., Voltage, rpm: SUBMERSIBLE, 20 HP, 460 V, 1800 RPM
   Depth of Pump Intake Setting: 37.6 ft. below PUMP BASE, which elevation is ______ foot.
   Depth to bottom of airline: 34 ft. below PUMP BASE, which elevation is ______ foot.
   Pumping Head is: 66 ft. Type of flow meter: TURBINE which measures in ______ GPM.

24. As-built drawings attached? Yes No
25. Other remarks/comments: (See below)

Pump Installation Contractor (print) ROSCOE MOSS HAWAII, INC. C-57 Lic. No. AC-16437
Signature ___________________________________________ Date ____________ 12/11/98
Applicant (print) ______________________________________ Date
Signature ___________________________________________ Date

8.(cont'd) DRILLER'S LOG (cont'd):

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<tr>
<th>Water Level Dates</th>
<th>Depth (ft.)</th>
<th>Rock Description, Remarks,</th>
<th>Water Level Dates</th>
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# WELL COMPLETION REPORT

**Department of Land and Natural Resources**

**Commission on Water Resource Management**

**State of Hawaii**

---

**Well Name:** CORAL CREEK NO. 2  
**Island:** OAHU  
**Location/Address:** CORAL CREEK GOLF COURSE  
**Tax Map Key:** 9-1-69:7

---

**PART I. WELL CONSTRUCTION REPORT**

1. **State Well No.:** 2002-17  
2. **Well Name:** CORAL CREEK NO. 2  
3. **Island:** OAHU

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### Depth Log (If more space is needed, continue on back)

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<th>Depth (ft.)</th>
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<th>Rock Description, Water Level, Dates, etc.</th>
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11. **Casing installed:**

- **In. diam. from** ft. below ground to ft. below ground
- **In. diam. from** ft. below ground to ft. below ground

---

12. **Annulus:**

- **Grouted from** ft. below ground to ft. below ground
- **Gravel packed from** ft. below ground to ft. below ground

---

13. **Initial water level:** ft. below ground.  
14. **Initial chloride:** ppm  
15. **Initial temperature:** °F

---

16. **PUMPING TESTS:**

- **Reference Point (R.P.) used:** , which elevation is ft.
  - **Step-Drawdown Test Date:**
    - **Start water level:** ft. below R.P.
    - **End water level:** ft. below R.P.
  - **Long-term Aquifer Test Date:**
    - **Start water level:** ft. below R.P.
    - **End water level:** ft. below R.P.

---

17. **Aquifer Pump Test Procedures data & graphs (1/9/96 LTAT Form) attached?** _Yes _No

---

19. **As-built drawings attached attached?** _Yes _No

---

20. **Other remarks/comments:**

---

**Well Drilling Contractor (print):**  
**C-57 Lic. No.:**  
**Signature:**  
**Date:**

---

**Surveyor (print):**  
**Lic. No.:**  
**Signature:**  
**Date:**

---

**Applicant (print):**  
**Signature:**  
**Date:**
PUMP INSTALLATION PERMIT

Coral Creek No. 2 Well, Well No. 2002-17

In accordance with Department of Land and Natural Resources, Commission on Water Resource Management's Administrative Rules, Section 13-168, entitled "Water Use, Wells, and Stream Diversion Works", this document permits the pump installation for Coral Creek No. 2 Well (Well No. 2002-17) at Coral Creek Golf Course, Oahu, TMK 9-1-69-7, subject to the Hawaii Well Construction & Pump Installation Standards (1/23/97) which include but are not limited to the following conditions:

1. The Chairperson to the Commission on Water Resource Management (Commission), P.O. Box 621, Honolulu, HI 96803, shall be notified, in writing, at least two (2) weeks before any work covered by this permit commences and staff shall be allowed to inspect installation activities in accordance with §13-168-15, Hawaii Administrative Rules.

2. The pump installation permit shall be for installation of a 800 gpm capacity, or less, pump in the well.

3. The permittee shall provide and maintain an approved meter or other appropriate means for measuring and reporting withdrawals and water levels, and appropriate devices or means for measuring chlorides and temperature. These data shall be measured monthly and reported to the Commission on a monthly basis, on forms provided by the Chairperson (attached).

4. The proposed use shall not adversely affect existing or future legal uses of water in the area, including any surface water or established instream flow standards. This permit or the authorization to pump water from a well shall not constitute a determination of correlative water rights. The permittee is notified and by this provision understands that the quantity of water taken from the well could be reduced by the Commission in the future. This permit is not a commitment that the pump capacity permitted here or even some lesser amount is guaranteed in the future.

5. The permittee shall complete and submit as-built drawings and Part II - (Permanent) Pump Installation Report of the Well Completion Report (attached) to the Chairperson within sixty (60) days after completion of work.

6. The permittee shall comply with all applicable laws, rules, and ordinances, and non-compliance may be grounds for revocation of this permit.

7. The pump installation permit application is incorporated into this permit by reference and is subject to the Hawaii Well Construction & Pump Installation Standards (1/23/97).

8. The permit may be revoked if work is not started within six (6) months after the date of approval or if work is suspended or abandoned for six (6) months, unless otherwise specified. The work proposed in the pump installation permit application shall be completed within two (2) years from the date of permit approval, unless otherwise specified. The permit may be extended by the Chairperson upon a showing of good cause and good-faith performance. A request to extend the permit shall be submitted to the Chairperson no later than three (3) months prior to the date the permit expires. If the commencement date is not met, the Commission may revoke the permit; after giving the permittee notice of the proposed action and an opportunity to be heard.

9. If the well is not to be used it must be properly capped. If the well is to be abandoned then the permittee must apply for a well abandonment permit in accordance with §13-168-12(f) prior to any well sealing or plugging work.

10. Special conditions in the attached cover transmittal letter are incorporated herein by reference.

Date of Approval: September 21, 1998
Expiration Date: September 21, 2000

I have read the conditions and terms of this permit and understand them. I accept and agree to meet these conditions as a prerequisite and underlying condition of my ability to proceed and understand that I do not hold a valid permit until I and the pump installer have signed, dated, and returned the permit to the Commission. I also understand that non-compliance with any permit condition may be grounds for revocation and fines of up to $1000 per day.

Permittee's Signature: ___________________________ Date: 11/16/98
Printed Name: ___________________________ Firm or Title:
Installer's Signature: ___________________________ License #: AEC 70/62 Date: 11/16/98
Printed Name: ___________________________ Firm or Title: GODFELLOW BROS., INC.

Please sign both copies of this permit, return one to the Chairperson, and retain the other for your records.

Attachments
c: USGS
Department of Health/ Safe Drinking Water & Wastewater Branches
Honolulu Board of Water Supply
CORAL CREEK CIRCULATION WELL NO. 2 2002-17
SALINITY AND TEMPERATURE PROFILES

DEPTH INTO WATER (FEET)

SALINITY (PPT)

TEMPERATURE (DEG F)

SALINITY

TEMPERATURE

0.250
0.275
0.300
0.325
0.350
0.375
0.400
0.425
0.450
0.475
0.500
77.20
77.25
77.30
77.35
77.40
77.45
77.50
77.55
77.60
77.65
77.70
0 2 4 6 8 10 12 14 16 18 20 22 24 26
Mr. Howard Kihune  
Coral Creek Golf, Inc.  
55 Merchant Street, Suite 1810  
Honolulu, Hawaii 96813

Dear Mr. Kihune:

Pump Installation Permit  
Coral Creek No. 2 (Well No. 2002-17)

Enclosed are two (2) originals of your approved Pump Installation Permit for the captioned well(s) which authorizes permanent pump installation work for your well(s). As part of the Chairperson's approval, the following special conditions were added and are part of your permit under Permit Condition 10:

Special Conditions

1. Require adherence to the chloride sampling protocol (attached) and the submittal of weekly chloride data.

The well owner is responsible for all conditions of the permit. This includes ensuring that the pump installation contractor, or other party who installs the pump, submits a completed Part II of the Well Completion Report form (enclosed) within sixty (60) days after the pump installation work is completed. Be advised that you may be subject to fines of up to $1000 per day for any violations of your permit conditions.

To validate your pump installation permit, please sign and have the contractor sign both permit originals and return one for our files.

A copy of the Well Completion Report (Part II) and a copy of your water use report form are enclosed for your use. Except for the monthly water use report form, please provide copies of all the information in this packet to your pump installation contractor.

Finally, this letter is notice that we have accepted your Well Completion Report - Part I as complete.

If you have any questions, please call the Commission staff at 587-0218.

Aloha,

[Signature]

MICHAEL D. WILSON
Chairperson

Enclosures
PUMP INSTALLATION PERMIT

Coral Creek No. 2 Well, Well No. 2002-17

In accordance with Department of Land and Natural Resources, Commission on Water Resource Management's Administrative Rules, Section 13-168, entitled "Water Use, Wells, and Stream Diversion Works", this document permits the pump installation for Coral Creek No. 2 Well (Well No. 2002-17) at Coral Creek Golf Course, Oahu, TMK 9-1-697, subject to the Hawaii Well Construction & Pump Installation Standards (1/23/97) which include but are not limited to the following conditions:

1. The Chairperson to the Commission on Water Resource Management (Commission), P.O. Box 621, Honolulu, HI 96809, shall be notified, in writing, at least two (2) weeks before any work covered by this permit commences and staff shall be allowed to inspect installation activities in accordance with §13-168-15, Hawaii Administrative Rules.

2. The pump installation permit shall be for installation of a 800 gpm capacity, or less, pump in the well.

3. The permittee shall provide and maintain an approved meter or other appropriate means for measuring and reporting withdrawals and water levels, and appropriate devices or means for measuring chlorides and temperature. These data shall be measured monthly and reported to the Commission on a monthly basis, on forms provided by the Chairperson (attached).

4. The proposed use shall not adversely affect existing or future legal uses of water in the area, including any surface water or established instream flow standards. This permit or the authorization to pump water from a well shall not constitute a determination of correlative water rights. The permittee is notified and by this provision understands that the quantity of water taken from the well could be reduced by the Commission in the future. This permit is not a commitment that the pump capacity permitted here or even some lesser amount is guaranteed in the future.

5. The permittee shall complete and submit as-built drawings and Part II - (Permanent) Pump Installation Report of the Well Completion Report (attached) to the Chairperson within sixty (60) days after completion of work.

6. The permittee shall comply with all applicable laws, rules, and ordinances, and non-compliance may be grounds for revocation of this permit.

7. The pump installation permit application is incorporated into this permit by reference and is subject to the Hawaii Well Construction & Pump Installation Standards (1/23/97).

8. The permit may be revoked if work is not started within six (6) months after the date of approval or if work is suspended or abandoned for six (6) months, unless otherwise specified. The work proposed in the pump installation permit application shall be completed within two (2) years from the date of permit approval, unless otherwise specified. The permit may be extended by the Chairperson upon a showing of good cause and good-faith performance. A request to extend the permit shall be submitted to the Chairperson no later than three (3) months prior to the date the permit expires. If the commencement date is not met, the Commission may revoke the permit after giving the permittee notice of the proposed action and an opportunity to be heard.

9. If the well is not to be used it must be properly capped. If the well is to be abandoned then the permittee must apply for a well abandonment permit in accordance with §13-168-12(f) prior to any well sealing or plugging work.

10. Special conditions in the attached cover transmittal letter are incorporated herein by reference.

Date of Approval: September 21, 1998
Expiration Date: September 21, 2000

I have read the conditions and terms of this permit and understand them. I accept and agree to meet these conditions as a prerequisite and underlying condition of my ability to proceed and understand that I do not hold a valid permit until I and the pump installer have signed, dated, and returned the permit to the Commission. I also understand that non-compliance with any permit condition may be grounds for revocation and fines of up to $1000 per day.

Permittee's Signature: ___________________________ Date: __________

Printed Name: ___________________________ Firm or Title: ___________________________

Installer's Signature: ___________________________ License #: ________ Date: ________

Printed Name: ___________________________ Firm or Title: ___________________________

Please sign both copies of this permit, return one to the Chairperson, and retain the other for your records.

Attachments

C: USGS
Department of Health/ Safe Drinking Water & Wastewater Branches
Honolulu Board of Water Supply
STEP-DRAWDOWN ANALYSIS

NAME OF WELL: Coral Creek Well No. 2 (2002-17)
DATE OF TEST: July 8, 1998
DATE OF ANALYSIS: 18-Aug-98

<table>
<thead>
<tr>
<th>s(ft)</th>
<th>d(s) (ft)</th>
<th>GPM</th>
<th>s/Q</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.48</td>
<td>1.48</td>
<td>440</td>
<td>0.0034</td>
</tr>
<tr>
<td>3.28</td>
<td>1.8</td>
<td>688</td>
<td>0.0049</td>
</tr>
<tr>
<td>5.12</td>
<td>3.32</td>
<td>870</td>
<td>0.0059</td>
</tr>
</tbody>
</table>

Regression Output:

- Constant = 0.00084 = b
- Std Err of Y Est = 0.0017
- R Squared = 0.99095
- No. of Observations = 3
- Degrees of Freedom = 1
- X Coefficient(s) = 5.9E-06 = c
- Std Err of Coef. = 5.6E-07

Drawdown(tot) = Drawdown(aq.) + Drawdown(well)

\[ s = bQ + cQ^2 \]

if \( Q = 870 \) gpm

- \( b = 0.731 \) calc. \( s = 5.184 \) ft.
- \( c = 4.453 \)
- \( L = 14.10 \) PERCENT OF HEAD LOSS = LAMINAR FLOW

adjusted drawdown using \( L @ 870 \) gpm

- \( 0.00 \) ft.

Polubarinova-Kochina Eq.

\[ Q \ln \left( \frac{1.6Lr}{2\pi Ls} \right) / 2\pi Ls = 3.504 \text{ ft/d} \]

K = \( Q \ln(1.6Lr/2\pi Ls) \)
L = length of open interval in well = 47 ft
r = radius of well in ft. = 0.83 ft
s = drawdown in well adjusted for well loss = 0.73 ft
Q = pumping rate in cu. ft./d = 167,487 cu. ft./d
h = water level = 2
b = thickness of aquifer (41*H) = 62 ft
T = transmissivity = k*b = 215,500 ft^2/d

SPECIFIC CAPACITY \( Q/s = \)

- FOR ANY \( Q \)

<table>
<thead>
<tr>
<th>( Q = )</th>
<th>( 870 ) gpm</th>
</tr>
</thead>
<tbody>
<tr>
<td>( Q/s = )</td>
<td>262 GAL/FT OF DD</td>
</tr>
</tbody>
</table>

Notes: Thickness of aquifer is assumed to be: 62 ft.
<table>
<thead>
<tr>
<th>WCR 1 Check for Well No. 2002-17 (survey to regulation memo)</th>
</tr>
</thead>
</table>

1. **Pump Tests Check**
   - Glenn Bauer (initial)
   - Yes | No | If no, describe deficiency
   - Step-Drawdown Test:
     - acceptable ☑️
     - followed WCPI Stds ☑️
     - analysis attached ☑️
     - proposed pump cap o.k. ☑️
   - Aquifer Pump Test:
     - acceptable ☑️
     - followed WCPI Stds ☑️
     - T & S analysis attached ☑️
   - Well Interference:
     - estimated Steady-State drawdown at 1-mile radius is ________ ft.
     - analysis attached ☑️
   - Stream Surface Water Impacted: ☑️ ← if yes, identify most probable stream

2. **Construction Check**
   - Mitch Ohye (initial)
   - Yes | No | If no, describe deficiency
   - data complete ☑️
   - followed WCPI Stds ☑️
   - wellphys.dbf updated ☑️
   - welaplic.dbf updated ☑️
August 10, 1998
98-317 97-34

Mr. Timothy E. Johns - Deputy Director
Commission on Water Resource Management
Department of Land and Natural Resources
State of Hawaii
P.O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Johns:

Well Completion Reports for Circulation Well Nos. 2 and 4
(State Nos. 2002-17 and 2001-13) in the Coral Creek Golf Course

Enclosed are the Well Completion Reports and accompanying pump test data for Circulation Well Nos. 2 and 4 in the Coral Creek Golf Course in Ewa, O'ahu. Because of the near proximity of residences, pump testing had to be of limited duration. Submittal of weekly chloride data when the wells are put in service will provide a better indication of long term water quality.

If you have questions or require additional information, please feel free to call.

Sincerely,

Tom Nance

Enclosures
TN/eb

cc: Hoolae Paoa - Coral Creek
**WELL COMPLETION REPORT**

**PART I. WELL CONSTRUCTION REPORT**

<table>
<thead>
<tr>
<th>1. State Well No.: 2002-17</th>
<th>Well Name: Coral Creek No. 2</th>
<th>Island: Oahu</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Location/Address: Coral Creek Golf Course</td>
<td>Tax Map Key: 9-1-69-7</td>
<td></td>
</tr>
</tbody>
</table>

**3. Drilling Company:** Roscoe Moss Hawaii, Inc.  
**4. Name of driller who performed work:** Jerry Bourne, Clayton Igarashi  
**5. Type of rig/construction:** Bucket, auger  
**6. Date(s) Well Construction and pump tests (if any) completed:** 05-08-98

**7. GROUND ELEVATION** (referenced to mean sea level, msl): +30 ft.  
Well Bench Mark (description/location):  
Elevation (msl): ______ ft.

**8. DRILLER’S LOG:** Please attach geologic log (if available or if required by permit).

<table>
<thead>
<tr>
<th>Depths (ft.)</th>
<th>Rock Description, Water Level, Dates, etc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 1.5</td>
<td>fill material 4 to 12 tan to brown coral</td>
</tr>
<tr>
<td>1.5 to 4</td>
<td>tanish white coral</td>
</tr>
<tr>
<td>4 to 12</td>
<td>tan coral</td>
</tr>
</tbody>
</table>

(If more space is needed, continue on back)

| 9. Total depth of well below ground: | 48 ft. |
| 10. Hole size: | 20 inch dia. from 0 ft. to 48 ft. below ground |
|               | 12.5 in. I.D. x 0.750 in. wall solid section to 36.8 ft. below ground |
|               | 12.5 in. I.D. x 0.750 in. wall perforated section to 46.8 ft. below ground |
|               | PVC (0.128 x 0.250) |

**11. Casing installed:**
- 12.5 in. 1.0 x 0.750 in. wall solid section to 36.8 ft. below ground
- 12.5 in. 1.0 x 0.750 in. wall perforated section to 46.8 ft. below ground

**12. Annulus:**
- Grouted from 28.5 ft. below ground to 0 ft. below ground
- Gravel packed from N/A ft. below ground to 0 ft. below ground

**13. Initial water level:** 28 ft. below ground.  
**Date and time of measurement:** 05-14-98

**14. Initial chloride:** 110 ppm  
**Date and time of sampling:** 11:30 AM 7-8-98

**15. Initial temperature:** 77 °F  
**Date and time of measurement:** 11:30 AM 7-8-98

**16. PUMPING TESTS:**
- **Reference Point (R.P.) used:** Pump, which elevation is 31.30 ft.
- **Step-Drawdown Test Date:** 7-8-98
- **Start water level:** ft. below R.P.
- **End water level:** ft. below R.P.
- **Long-term Aquifer Test Date:** 7-8-98
- **Start water level:** ft. below R.P.
- **End water level:** ft. below R.P.

**17. Pump Test Procedures data & graphs (12/17/97 SDPTD & CRPTD Forms) attached?** Yes No

**18. As-built drawings attached?** Yes No

**19. Other remarks/comments:** (On back of this form)

---

**Well Drilling Contractor (print):** Roscoe Moss Hawaii, Inc.  
**Lic. No.:** AC-16437

**Surveyor (print):**  
**Lic. No.:**  
**Date:**

**Applicant (print):**  
**Signature:**  
**Date:**

---

**Instructions:** Please print or type and submit completed report within 60 days after well completion to the Commission on Water Resource Management, P.O. Box 621, Honolulu, Hawaii 96809. An as-built drawing of the well and chemical analysis should also be submitted. For assistance call the Commission Regulation Branch at 587-0225, or 1-800-468-4644 Extension 70225.

---

**1. State Well No.: 2002-17**  
**Well Name:** Coral Creek No. 2  
**Island:** Oahu

**2. Location/Address:** Coral Creek Golf Course  
**Tax Map Key:** 9-1-69-7

---

**3. Well Completion Report**

<table>
<thead>
<tr>
<th>Depth (ft.)</th>
<th>Rock Description, Water Level, Dates, etc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 1.5</td>
<td>fill material 4 to 12 tan to brown coral</td>
</tr>
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<td>1.5 to 4</td>
<td>tanish white coral</td>
</tr>
<tr>
<td>4 to 12</td>
<td>tan coral</td>
</tr>
</tbody>
</table>

---

**4. Name of driller who performed work:** Jerry Bourne, Clayton Igarashi

**5. Type of rig/construction:** Bucket, auger

**6. Date(s) Well Construction and pump tests (if any) completed:** 05-08-98

**7. GROUND ELEVATION** (referenced to mean sea level, msl): +30 ft.  
Well Bench Mark (description/location):  
Elevation (msl): ______ ft.

**8. DRILLER’S LOG:** Please attach geologic log (if available or if required by permit).

**9. Total depth of well below ground:** 48 ft.

---

**12. Casing installed:**
- 12.5 in. 1.0 x 0.750 in. wall solid section to 36.8 ft. below ground
- 12.5 in. 1.0 x 0.750 in. wall perforated section to 46.8 ft. below ground

---

**13. Initial water level:** 28 ft. below ground.  
**Date and time of measurement:** 05-14-98

**14. Initial chloride:** 110 ppm  
**Date and time of sampling:** 11:30 AM 7-8-98

**15. Initial temperature:** 77 °F  
**Date and time of measurement:** 11:30 AM 7-8-98

**16. PUMPING TESTS:**
- **Reference Point (R.P.) used:** Pump, which elevation is 31.30 ft.
- **Step-Drawdown Test Date:** 7-8-98
- **Start water level:** ft. below R.P.
- **End water level:** ft. below R.P.
- **Long-term Aquifer Test Date:** 7-8-98
- **Start water level:** ft. below R.P.
- **End water level:** ft. below R.P.

**17. Pump Test Procedures data & graphs (12/17/97 SDPTD & CRPTD Forms) attached?** Yes No

**18. As-built drawings attached?** Yes No

**19. Other remarks/comments:** (On back of this form)
PART II. (PERMANENT) PUMP INSTALLATION REPORT

20. Pump Installation Company: __________________________

21. Name of person performing work: __________________________

22. Date Pump Installation Completed: __________________________

23. PUMP INSTALLATION:
   Pump Type, Make, Serial No.: __________________________
   Capacity: __________ gpm
   Motor type, H.P., Voltage, rpm: __________________________
   Depth of Pump Intake Setting __________ ft. below □ ground □ well bench mark
   Depth to bottom of airline __________ ft. below □ ground □ well bench mark
   Pumping Head is __________ ft. Type of flow meter: __________________________ which measures in __________________________

24. As-built drawings attached? __ Yes __ No

25. Other remarks/comments: (See below)

Pump Installation Contractor (print) __________________________ C-57 Lic. No. __________________________
Signature __________________________ Date __________________________

Applicant (print) __________________________
Signature __________________________ Date __________________________

8.(cont'd) DRILLER'S LOG (cont'd):

<table>
<thead>
<tr>
<th>Depths (ft.)</th>
<th>Rock Description, Water Level, Dates, etc.</th>
<th>Depths (ft.)</th>
<th>Rock Description, Water Level, Dates, etc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>16 to 21</td>
<td>tan coral with sed. streaks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21 to 28</td>
<td>tan coral sed. mix</td>
<td></td>
<td></td>
</tr>
<tr>
<td>28 to 29.5</td>
<td>red clay seam</td>
<td></td>
<td></td>
</tr>
<tr>
<td>29.5 to 31</td>
<td>tanish brown coral</td>
<td></td>
<td></td>
</tr>
<tr>
<td>31 to 35</td>
<td>light tan coral; clean</td>
<td></td>
<td></td>
</tr>
<tr>
<td>35 to 42</td>
<td>light tan coral sea sed.; clean</td>
<td></td>
<td></td>
</tr>
<tr>
<td>42 to 48</td>
<td>light tan coral; loose</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

August 7, 1998

TOM NANCE WATER RESOURCE ENGINEERING
680 ALA MOANA BLVD. SUITE 406
HONOLULU, HI 96813

Attention: MR. GREG FUKUMITSU

SUBJECT: CORAL CREEK GOLF COURSE

Gentlemen:

This is to certify that we performed a vertical survey for the water well No.2 for the Coral Creek Golf Course located near the northerly corner of lot 7911A, Land Court Application 1069 at Honouliuli, Ewa, Oahu, Hawaii as shown on Tax Map Key: 9-1-69:10

The following elevations were noted:
1. The top of the PVC pipe is at elevation 30.00 feet.
2. The box cut in concrete approximately 18 feet south of the well is at elevation 28.56 feet.

The benchmark for the Ewa plain survey is the city and county Street Monument located at the intersection of Farrington Highway and Makakilo Drive.

Very truly yours,

ControlPoint Surveying, Inc.

Alden S. Kajioka
President
Licensed Professional
Land Surveyor 6605
## WATER QUALITY RESULTS DURING PUMP TESTS OF CORAL CREEK WELL NO. 2
STATE NO. 2002-17

<table>
<thead>
<tr>
<th>Test</th>
<th>Day</th>
<th>Time</th>
<th>Flow rate (GPM)</th>
<th>Conductivity (micromhos)</th>
<th>Chlorides (MG/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step-Drawdown</td>
<td>7/8</td>
<td>1130</td>
<td>440</td>
<td>779</td>
<td>107</td>
</tr>
<tr>
<td></td>
<td>7/8</td>
<td>1200</td>
<td>670</td>
<td>791</td>
<td>90</td>
</tr>
<tr>
<td></td>
<td>7/8</td>
<td>1230</td>
<td>1020</td>
<td>797</td>
<td>83</td>
</tr>
<tr>
<td></td>
<td>7/8</td>
<td>1300</td>
<td>870</td>
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<td>80</td>
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<tr>
<td>Constant Rate</td>
<td>7/9</td>
<td>0740</td>
<td>800</td>
<td>806</td>
<td>102</td>
</tr>
<tr>
<td></td>
<td>7/9</td>
<td>1330</td>
<td>800</td>
<td>849</td>
<td>104</td>
</tr>
<tr>
<td></td>
<td>7/9</td>
<td>1930</td>
<td>800</td>
<td>926</td>
<td>124</td>
</tr>
<tr>
<td></td>
<td>7/10</td>
<td>0730</td>
<td>800</td>
<td>1257</td>
<td>214</td>
</tr>
<tr>
<td></td>
<td>7/10</td>
<td>1330</td>
<td>800</td>
<td>1507</td>
<td>298</td>
</tr>
</tbody>
</table>
CORAL CREEK CIRCULATION WELL NO. 2
STEP-DRAWDOWN TEST OF JULY 8, 1997

FLOWRATE (GPM)

DRAWDOWN (FEET)
Coral Creek Circulation Well No. 2
Step-Drawdown Test of July 8, 1997

Water Level (feet MSL)

HOUR OF THE DAY

10.5 11 11.5 12 12.5 13 13.5 14

440 GPM 668 GPM 1020 GPM 870 GPM

1.4 V 3.25

Static Level 9.65 5.1 V

\[ \frac{x}{25} = \frac{25}{1'} \]
# Coral Creek Golf Course Well No. 2 Sustained Rate Pump Test

800 GPM

<table>
<thead>
<tr>
<th>Time</th>
<th>Meter Reading (X 100)</th>
<th>Time Per 1000 gal (M:S)</th>
<th>Water Level (FT)</th>
<th>Water Temp (deg C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>7/9/98</td>
<td>07:30</td>
<td>1.13.89</td>
<td>30.07</td>
<td>24.61</td>
</tr>
<tr>
<td></td>
<td>08:30</td>
<td>1.15.71</td>
<td>34.72</td>
<td>25.40</td>
</tr>
<tr>
<td></td>
<td>09:30</td>
<td>1.13.82</td>
<td>34.72</td>
<td>25.40</td>
</tr>
<tr>
<td></td>
<td>10:30</td>
<td>1.13.11</td>
<td>34.73</td>
<td>25.40</td>
</tr>
<tr>
<td></td>
<td>11:30</td>
<td>1.15.03</td>
<td>34.72</td>
<td>25.40</td>
</tr>
<tr>
<td></td>
<td>12:30</td>
<td>1.13.81</td>
<td>34.76</td>
<td>25.40</td>
</tr>
<tr>
<td></td>
<td>13:30</td>
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In accordance with Department of Land and Natural Resources, Commission on Water Resource Management's Administrative Rules, Section 13-168, entitled "Water Use, Wells, and Stream Diversion Works", this document permits the construction and testing of Coral Creek Nos. 2 & 3 Wells (Well Nos. 2002-17 & 18) at Coral Creek Golf Course, Oahu, TMK 9-1-69:7, subject to the Hawaii Well Construction & Pump Installation Standards (123/97) which include but are not limited to the following conditions:

1. The Chairperson of the Commission on Water Resource Management (Commission), P.O. Box 621, Honolulu, HI 96809, shall be notified, in writing, at least two (2) weeks before any work authorized by this permit commences.

2. The well construction permit shall be for construction and testing of the well only. A minimum one-inch diameter monitor tube shall be permanently installed, in a manner acceptable to the Chairperson, to accurately record water levels. The permittee shall coordinate with the Chairperson and conduct a pumping test in accordance with the Standards (a pump testing worksheet is attached). The permittee shall submit to the Chairperson the test results as a basis for supporting an application to install a permanent pump and withdraw water for use. No permanent pump may be installed until a pump installation permit is approved and issued by the Chairperson.

3. In basal ground water, the depth of the well may not exceed one-fourth (1/4) of the theoretical thickness (41 times initial head) of the basal ground water unless otherwise authorized by the Chairperson.

4. The permittee shall incorporate mitigation measures to prevent construction debris from entering the aquatic environment, to schedule work to avoid periods of high rainfall, and to revegetate any cleared areas as soon as possible.

5. In the event that subsurface cultural remains such as artifacts, burials or concentrations of shells or charcoal are encountered during construction, the permittee shall stop work and contact the Department's Historic Preservation Division (587-0045) immediately.

6. The proposed well construction shall not adversely affect existing or future legal uses of water in the area, including any surface water or established instream flow standards. This permit or the authorization to construct the well shall not constitute a determination of correlative water rights.

7. The following shall be submitted to the Chairperson within sixty (60) days after completion of work:
   b. Elevation (referenced to mean sea level, msl) survey by a Hawaii-licensed surveyor.
   c. As-built sectional drawing of the well.
   d. Plot plan and map showing the exact location of the well.
   e. Complete pumping test records, including time, pumping rate, drawdown, chloride content, and other data.

8. The permittee shall comply with all applicable laws, rules, and ordinances; non-compliance may be grounds for revocation of this permit.

9. The well construction permit application is incorporated into this permit by reference and is subject to the Hawaii Well Construction & Pump Installation Standards (123/97).

10. The permit may be revoked if work is not started within six (6) months after the date of approval or if work is suspended or abandoned for six (6) months, unless otherwise specified. The work proposed in the well construction permit application shall be completed within two (2) years from the date of permit approval, unless otherwise specified. The permit may be extended by the Chairperson upon showing of good cause and good-faith performance. A request to extend the permit shall be submitted to the Chairperson no later than three (3) months prior to the date the permit expires. If the commencement date is not met, the Commission may revoke the permit after giving the permittee notice of the proposed action and an opportunity to be heard.

11. If the well is not to be used it must be properly capped. If the well is to be abandoned then the permittee must apply for a well abandonment permit in accordance with §13-168-12(f) prior to any well sealing or plugging work.

12. Special conditions in the attached cover transmittal letter are incorporated herein by reference.

Date of Approval: May 28, 1998
Expiration Date: May 28, 2000

I have read the conditions and terms of this permit and understand them. I accept and agree to meet these conditions as a prerequisite and underlying condition of my ability to proceed. I also understand that non-compliance with any permit condition may be grounds for revocation and fines of up to $1000 per day.

Permittee's Signature: ___________________________ Date: ________________
Printed Name: ___________________________
Driller's Signature: ___________________________ License #: C-16437 Date: 6-15-98
Printed Name: ___________________________
Firm or Title: Roscoe Moss Hawaii, Inc.

Please sign both copies of this permit, return one to the Chairperson, and retain the other for your records.

Attachment c: USGS
Department of Health/ Safe Drinking Water, Wastewater, and Clean Water Branches
Honolulu Board of Water Supply
DATE: June 16, 1998

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

ATTENTION: Lenore Nakama

We herewith transmit the following:

<table>
<thead>
<tr>
<th>Original</th>
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<tbody>
<tr>
<td>Original</td>
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<td>Well Construction Permit - Coral Creeks Well No. 4.</td>
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<td>Original</td>
<td>6/15/98</td>
<td>Well Construction Permit - Coral Creeks Well No. 5.</td>
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</tbody>
</table>

Remarks:

We herewith transmit the above documents for your records.

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

Sincerely,

Tom Nance Water Resource Engineering

Greg Fukumitsu

cc: Coral Creek Golf Inc. - Hoolae Paoa (trans only)
Mr. Howard Kihune  
Coral Creek Golf, Inc.  
55 Merchant Street, Suite 1810  
Honolulu, Hawaii 96813  

Dear Mr. Kihune:  

Well Construction Permit  
Coral Creek Nos. 2 & 3 (Well Nos. 2002-17 & 2001-16)  

Enclosed are two (2) copies of your approved Well Construction Permit for the captioned well(s) which authorizes well construction activities but excludes installation work for your permanent pump. As part of the Chairperson’s approval, the following special conditions were added and are part of your permit under Permit Condition 12:  

**Special Conditions**  

1. A water use permit must be obtained prior to issuance of a pump installation permit for this well.  
2. The applicant shall agree that the issuance of the well construction permit shall in no way prejudice any future consideration by the Commission on the issuance or non-issuance of a water use permit.  
3. 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.  
4. 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.  
5. 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:  

- **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).”
This permit **does not** authorize work for your permanent pump installation. Approval and issuance of your pump installation permit is contingent upon completed application and information provided to and accepted by Commission staff as required in the Well Construction & Pump Installation Standards (1/23/97) and any special conditions performed under this permit. However, in accordance with the Commission’s April 15, 1998 Declaratory Ruling No. DEC-ADM98-G5, which states that:

"Permanent pump installation for capacities between 0-70 gpm and where the proposed use is for private individual needs in non-ground-water management areas may be allowed prior to the final pump installation permit issuance. When required as a condition of the well construction permit, subsequent pumping tests shall validate the acceptability of the permanent pump. The permanent pump installed prior to final pump installation permit issuance is subject to removal if the testing shows that a smaller pump is required to reduce the potential of affecting neighboring wells and localized upconing at the applicant’s well.”

a permanent pump may be installed prior to the permanent pump installation permit issuance. If you qualify and wish to take advantage of this ruling, please include a written request to install the permanent pump prior to final pump installation permit issuance when you return to us your validated well construction permit.

To validate your permit, please sign and have the contractor sign both permit originals and return one for our files. Also, copies of the aquifer pump test worksheet and the well completion report form are enclosed for your use. Please provide all the information in this packet to your well drilling contractor.

**IMPORTANT** - The well owner is responsible for all conditions of the permit. This includes ensuring that the well construction contractor, or other party who constructs the well(s), submits a completed Part I of the Well Completion Report form (enclosed) within sixty (60) days after the well construction work is completed. Be advised that you may be subject to fines of up to $1000 per day for any violations of your permit conditions.

If you have any questions, please call the Commission staff at 587-0218.

Aloha,

![Signature]

MICHAEL D. WILSON
Chairperson

Enclosures
WELL CONSTRUCTION PERMIT

Coral Creek Nos. 2 & 3 Wells, Well Nos. 2002-17 & 18

In accordance with Department of Land and Natural Resources, Commission on Water Resource Management’s Administrative Rules, Section 13-168, entitled “Water Use, Wells, and Stream Diversion Works”, this document permits the construction and testing of Coral Creek Nos. 2 & 3 Wells (Well Nos. 2002-17 & 18) at Coral Creek Golf Course, Oahu, TMK 9-1-69:7, subject to the Hawaii Well Construction & Pump Installation Standards (1/23/97) which include but are not limited to the following conditions:

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3. In basal ground water, the depth of the well may not exceed one-fourth (1/4) of the theoretical thickness (41 times initial head) of the basal ground water unless otherwise authorized by the Chairperson.

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5. In the event that subsurface cultural remains such as artifacts, burials or concentrations of shells or charcoal are encountered during construction, the permittee shall stop work and contact the Department’s Historic Preservation Division (587-0045) immediately.

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7. The following shall be submitted to the Chairperson within sixty (60) days after completion of work:
   b. Elevation (referenced to mean sea level, msl) survey by a Hawaii-licensed surveyor.
   c. As-built sectional drawing of the well.
   d. Plot plan and map showing the exact location of the well.
   e. Complete pumping test records, including time, pumping rate, drawdown, chloride content, and other data.

8. The permittee shall comply with all applicable laws, rules, and ordinances; non-compliance may be grounds for revocation of this permit.

9. The well construction permit application is incorporated into this permit by reference and is subject to the Hawaii Well Construction & Pump Installation Standards (1/23/97).

10. The permit may be revoked if work is not started within six (6) months after the date of approval or if work is suspended or abandoned for six (6) months, unless otherwise specified. The work proposed in the well construction permit application shall be completed within two (2) years from the date of permit approval, unless otherwise specified. The permit may be extended by the Chairperson upon a showing of good cause and good-faith performance. A request to extend the permit shall be submitted to the Chairperson no later than three (3) months prior to the date the permit expires. If the commencement date is not met, the Commission may revoke the permit after giving the permitee notice of the proposed action and an opportunity to be heard.

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12. Special conditions in the attached cover transmittal letter are incorporated herein by reference.

Date of Approval: May 28, 1998
Expiration Date: May 28, 2000

I have read the conditions and terms of this permit and understand them. I accept and agree to meet these conditions as a prerequisite and underlying condition of my ability to proceed. I also understand that non-compliance with any permit condition may be grounds for revocation and fines of up to $1000 per day.

Permittee’s Signature: ___________________________ Date: ___________

Printed Name: ___________________________ Firm or Title: ___________________________

Driller’s Signature: ___________________________ License #: ___________ Date: ___________

Printed Name: ___________________________ Firm or Title: ___________________________

Please sign both copies of this permit, return one to the Chairperson, and retain the other for your records.

Attachment
C: USGS
Department of Health/ Safe Drinking Water, Wastewater, and Clean Water Branches
Honolulu Board of Water Supply
### SECTION 1: WELL LOCATION INFORMATION

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<td>Aquifer Sector</td>
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**Proposed Use**
- Proposed Withdrawal: Coral Creek
- System Sustainable Yield: 480000

**Proposed Use**
- Other: 15

**Date of Review**
- 5/21/98

**Reviewer**
- LN

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### SECTION 2: WELL SECTION DATA

(enter data in grey cells only)

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### SECTION 3: CHECKLIST

(values to check are shaded)

**Well Depth**
- Theoretical Thickness of Aquifer: 20.5 ft.
- 1/4 Aquifer Thickness: 5.125 ft.
- Depth of Well below Sea Level: 15 ft. too deep (refer to HWCPIS Section 2.2)

**Well Casing**
- Minimum Wall Thickness
  - Material: PVC
  - County or Non-County: non-county
  - Minimum Thickness per standards: ###### in.
  - Wall Thickness Provided: 0.720 in. ###### (refer to HWCPIS Section 2.4 c)
- 90% of ground to top of aquifer: 30 ft. okay (refer to HWCPIS Section 2.4 d)
- Casing Material: ###### ###### (refer to HWCPIS Section 2.4 e)

**Annular Space**
- If the cell above reads #N/A, reference HWCPIS

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<td>Thickness of Annular Space</td>
<td>3.5 in. okay (refer to HWCPIS Section 2.6 d)</td>
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TO: Honorable Lawrence Miike, Director
Department of Health
Attention: Dennis Tulang, Wastewater Branch
William Wong, Safe Drinking Water Branch

FROM: Michael D. Wilson, Chairperson
Commission on Water Resource Management

SUBJECT: Well Construction Permit Application
Coral Creek Nos. 2 & 3 (Well Nos. 2002-17 & 18)

Transmitted for your review and comment is a copy of the captioned well application.

We would appreciate your comments on the captioned application for any conflicts or inconsistencies with the programs, plans, and objectives specific to your department. Please respond by returning this cover memo form by May 28, 1998.

Please find a map, attached, to locate the proposed well. If you have any questions about this permit application, request additional information, or request additional review time, please contact Lenore Nakama of the Commission staff at 587-0218.

LN:ss
Attachment(s)

RESPONSE:

[ ] This well qualifies as a source which will serve as a source of potable water to a public water system (serving 25 or more people at least 60 days per year or has 15 or more service connections) and must receive Director of Health approval prior to its use to comply with Hawaii Administrative Rules (HAR), Title 11, Chapter 20, Rules Relating to Potable Water Systems, §11-20-29.

[ ] This well does not qualify as a source serving a public water system (serves less than 25 people or more people at least 60 days per year or 15 service connections) and if the well water is used for drinking, the private owner should test for bacteriological and chemical presence before initiating such use and routinely monitor the water quality thereafter. However, if future planned use from this source increases to meet the public water system definition then Director of Health approval is required prior to implementation.

[ ] If the well is used to supply both potable and non-potable purposes in a single system, the user shall eliminate cross-connections and backflow connections by physically separating potable and non-potable systems by an air gap or an approved backflow preventer, and by clearly labeling all non-potable spigots with warning signs to prevent inadvertent consumption of non-potable water. Backflow prevention devices should be routinely inspected and tested.

[ ] It does not appear that this well will be used for consumptive purposes and is not subject to Safe Drinking Water Regulations.

[ ] For the applicant's information, a source of possible wastewater contamination [ ] is [ ] not located near the proposed well site (information attached).

[ ] Other relevant DOH rules/regulations, information, or recommendations are attached.

[ ] No comments/objections

Contact Person: William Wong
Phone: 586-4258
Date: 05/13/98

Signed: William Wong
TO: Honorable Lawrence Miike, Director  
Department of Health  
Attention: Dennis Tulang, Wastewater Branch  
William Wong, Safe Drinking Water Branch  

FROM: Michael D. Wilson, Chairperson  
Commission on Water Resource Management  

SUBJECT: Well Construction Permit Application  
Coral Creek Nos. 2 & 3 (Well Nos. 2002-17 & 18)  

Transmitted for your review and comment is a copy of the captioned well application.

We would appreciate your comments on the captioned application for any conflicts or inconsistencies with the programs, plans, and objectives specific to your department. Please respond by returning this cover memo form by May 28, 1998.

Please find a map, attached, to locate the proposed well. If you have any questions about this permit application, request additional information, or request additional review time, please contact Lenore Nakama of the Commission staff at 587-0218.

RESPONSE:

[ ] This well qualifies as a source which will serve as a source of potable water to a public water system (serving 25 or more people at least 60 days per year or has 15 or more service connections) and must receive Director of Health approval prior to its use to comply with Hawaii Administrative Rules (HAR), Title 11, Chapter 20, Rules Relating to Potable Water Systems, §11-20-29.

[ ] This well does not qualify as a source serving a public water system (serves less than 25 people or more people at least 60 days per year or 15 service connections) and if the well water is used for drinking, the private owner should test for bacteriological and chemical presence before initiating such use and routinely monitor the water quality thereafter. However, if future planned use from this source increases to meet the public water system definition then Director of Health approval is required prior to implementation.

[ ] If the well is used to supply both potable and non-potable purposes in a single system, the user shall eliminate cross-connections and backflow connections by physically separating potable and non-potable systems by an air gap or an approved backflow preventer, and by clearly labeling all non-potable spigots with warning signs to prevent inadvertent consumption of non-potable water. Backflow prevention devices should be routinely inspected and tested.

[ ] It does not appear that this well will be used for consumptive purposes and is not subject to Safe Drinking Water Regulations.

[ ] For the applicant's information, a source of possible wastewater contamination [ ] is not located near the proposed well site (information attached).

[ ] Other relevant DOH rules/regulations, information, or recommendations are attached.

X No comments/objections

Contact Person: Lori Kajiwara  
Phone: 586-294

Signed: Lori Kajiwara  
Date: 5-6-98
TO: Honorable Lawrence Miike, Director  
Department of Health  
Attention: Dennis Tulang, Wastewater Branch  
William Wong, Safe Drinking Water Branch

FROM: Michael D. Wilson, Chairperson  
Commission on Water Resource Management

SUBJECT: Well Construction Permit Application  
Coral Creek Nos. 2 & 3 (Well Nos. 2002-17 & 111)  

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We would appreciate your comments on the captioned application for any conflicts or inconsistencies with the programs, plans, and objectives specific to your department. Please respond by returning this cover memo form by May 28, 1998.

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LN:ss  
Attachment(s)

RESPONSE:

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[ ] No comments/objections

Contact Person: ___________________________  Phone: ___________________________

Signed: ___________________________  Date: ___________________________
**DEPARTMENT OF LAND AND NATURAL RESOURCES**

**DATE:** 4/30/98

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<td>$175.00</td>
<td>TNWRE INC.</td>
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**TOTAL:** $175.00

**REMARKS:**

- **LINE (1):** Well Nos. 1902-05, 2001-13, 2002-17 & 8 (WCPA/WUPA)
- **LINE (2):**
- **LINE (3):**

---

**TNWRE INC.**

DBA TOM NANCE WATER RESOURCE ENGINEERING

680 ALA MOANA BLVD., STE. 406

HONOLULU, HI 96813

**DATE:** April 22, 1998

**PAY**

**TO THE ORDER OF:** Department of Land and Natural Resources

**DOLLARS:** $175.00

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**DEPARTMENT OF LAND AND NATURAL RESOURCES**

**DATE:** 4/30/98

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<tr>
<th>DATE</th>
<th>DESCRIPTION</th>
<th>AMOUNT</th>
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|      | Coral Creek Golf Course (97-4306)  
Filing Fees: For Water Use and Construction Permit  
Applications For Groundwater Lakes and Circulation Wells  
[3 Water Use + 4 Well Constr. Applications @ $25 each] | $175.00 |
APPLICATION FOR PERMIT

Well Construction
Pump Installation

In accordance with the provisions of Chapter 86-3, Hawaii Revised Statutes, the water resource commission, hereby issues the following permit:

1. APPLICANT: (circle primary contact[a], b, or c) Primary Fax: 528-1514
   (a) WELL OWNER
   Firm/Name: Coral Creek Golf, Inc.
   Contact Person: Howard Khunue
   Address: 55 Merchant Street - Suite 1810 Honolulu, Hawaii 96813
   (b) LANDOWNER
   Firm/Name: Coral Creek Golf, Inc.
   Contact Person: Howard Khunue
   Address: 55 Merchant Street - Suite 1810 Honolulu, Hawaii 96813
   (c) CONTRACTOR
   Firm/Name: Roscoe Moss Hawaii, Inc.
   Contact Person: Norm Messenger
   Address: 91-259-A Olai Street Ewa Beach, HI 96707

2. WELL LOCATION/NAME: Coral Creek No. 2 Island: Oahu Address: Coral Creek Golf Course, Ewa Tax Map Key: 9-1-69:10

3. (a) PROPOSED WORK: Drill New Well
   Existing Well
   Modify Existing Well
   Abandon Seal
   Install New Pump
   Modify Pump
   Replace Pump
   * Be sure to complete and submit well abandonment report upon completion of work.

(b) WELL TYPE:
   Well
   Bored
   Drilled
   Radial

   Is this well a part of a battery of wells? Yes No
   (Briefly describe and fill in the diagram on the back of this form.)

4. PROPOSED PUMP INFORMATION:
   Rated Pump Capacity: 800 gallons per minute
   Motor:
   Deep Well Turbine
   Rotary
   Propeller
   Pump:
   Submersible
   Rotary-Displacement
   Reciprocating
   Centrifugal
   Rotary-Gear
   Impulse
   If Pump Replacement, Existing Pump Capacity:
   gallons per minute

5. PROPOSED USE:
   Municipal (including hotels, stores, etc.)
   Domestic (individual, noncommercial water sys.)
   Irrigation (crop)
   Industrial
   Dwelling Units
   Other
   Other (Explain)

6. (a) PROPOSED AMOUNT OF WITHDRAWAL: 480,000 gallons per day

(b) METHOD OF FLOW MEASUREMENT:
   Flow-meter
   Open-pipe
   Orifice Plate
   Weir

7. PENDING ACTIONS:
   CDUA
   SMA
   EIS
   EA
   NONE
   Other (Explain)

8. REMARKS, EXPLANATIONS: The 800 GPM pump will run for approximately 10 hours each day. Water will flow down a man-made "creek" and be returned to the groundwater table at a lake excavated below sea level.

(IIf more space is needed, continue on back)

I understand that approval of this application attaches the following standard conditions: 1) the proposed work is to be completed within two (2) years of the approval date; 2) the contractor shall submit to the Commission a well completion/abandonment report within 30 days after the completion date of the permitted work; 3) monthly water use data shall be submitted to the Commission; 4) such approval shall not constitute a determination of correlative water rights and shall not guarantee the pump capacity or future use up to the permitted pump capacity.

Well Owner: Coral Creek Golf Inc. Landowner: Coral Creek Golf, Inc. Contractor: Roscoe Moss Hawaii, Inc.

Signature: Date: 4-21-98

For Official Use Only:
Date Accepted: Date Field Checked By: Date Longitude: Aquifer System Name: P WRITE 3.02029
Date Late: Water Well No.: 2002-19

3 Jan 97 WCMA Form
8. Remarks, Explanations (cont'd): _____________________________

9. PROPOSED WELL SECTION

Elevation at top of casing __ ft., msl.

Cement Grout __ ft.

Rock Packing None ft.

Hole Diameter: 21 in.

Total Depth __ ft.

Ground Elevation: 30 ft., msl

Solid Casing: PVC
Length 30 ft.
Diameter 14 in.
Wall thickness 0.72 in.

Casing: □ Perforated □ Screen
Material PVC
Length 10 ft.
Diameter 14 in.
Wall thickness 0.72 in.
Openings 14.5 sq. in. ft.

Open Hole:
Length 5 ft.
Diameter 21 in.

*Approximate elevation at time of filing application. Ground elevation above mean sea level (msl) by a surveyor licensed by the State must be submitted at start of construction. Final elevations of well components shall be submitted in the well completion/well abandonment reports.