



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

STAFF SUBMITTAL

COMMISSION ON WATER RESOURCE MANAGEMENT

November 16, 2021  
Honolulu, O'ahu

Wong's Taro Leaf and Farm Inc. / Precision Drilling Services LLC  
APPLICATION FOR WATER USE, WELL CONSTRUCTION  
AND PUMP INSTALLATION PERMITS, INCLUDING VARIANCE FROM WELL STANDARDS  
WTLF-1 (Well No. 3-3406-020), TMK (1) 6-2-007:007, WUP No. 01095  
New Agricultural Use for 0.490 mgd  
Waialua Ground Water Management Area, O'ahu

WATER USE PERMIT APPLICANT AND LANDOWNER	Clifford Wong Wong's Taro Leaf and Farm Inc. 47-544 Ahilama Road Kāne'ōhe, HI 96744
WELL DRILLER AND PUMP INSTALLER	Mr. Tomas Fernandez Precision Drilling Services LLC 373 Waiopua Place Honolulu, HI 96825 License No. C-29152

SUMMARY OF REQUEST:

The applicant requests that the Commission approve a water use permit for an allocation of 0.490 million gallons per day (mgd) of potable basal ground water from a proposed new well to supply 7 acres of kalo leaf irrigation.

The well driller and pump installer request approval of well construction and pump installation permits for the proposed well, and also a variance from the ¼ aquifer depth limit.

LOCATION MAP: See Exhibit 1

BACKGROUND:

On March 12, 2020, water use, well construction and pump installation permit applications were submitted by Wong's Taro Leaf and Farm Inc. to the Commission on Water Resource Management (Commission).

On May 7, 2020, the project consultant, Tom Nance, requested a variance of the Well Construction and Pump Installation Standards, to drill the well deeper than the ¼ aquifer thickness limit.

On May 17, 2021, after several iterations of applications were submitted, the water use permit application was deemed complete and routed out for agency review. Additional information regarding the source, use, notification, objections, and field investigation is provided in Exhibit 2.

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 17 mgd as the sustainable yield for the Waialua Aquifer System Area. Individual existing water use permits in this aquifer system area are shown in Exhibit 4. A summary of the current ground water conditions in the aquifer is provided in Table 1:

**Table 1. Waialua Aquifer System Area**

<u>ITEM</u>	<b>Waialua Aquifer System Area (mgd)</b>
<b>Sustainable Yield</b>	17
Less: Other Existing Water Use Permits (shown in Exhibit 4)	13.250
Reservation to DHHL	0
<b>Subtotal (Current Available Allocation)</b>	3.750
Less: Other Completed Applications	0
Less: This Application	0.490
<b>Subtotal (Potential Available Allocation/Allocation Deficit)</b>	2.900

Based on the above analysis, there is adequate water available to accommodate the requested allocation.

(2) Reasonable-beneficial

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

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

### *I. Purpose of Use*

The applicant is requesting the use of potable ground water to irrigate taro for commercial purposes. This is considered agricultural use of water. The Declaration of Policy section, §174C-2(c) HRS, states that the Water Code shall be liberally interpreted to obtain maximum beneficial use of the waters of the State for various purposes including agricultural uses. Therefore, the use is reasonable and beneficial.

However, the Commission's Water Resource Protection Plan, Page 12, policy #10 states that "quality of the water source should be matched to the quality of water needed", and this use is not consistent with that policy.

### *II. Quantity Justification*

The applicant is requesting a total of 0.490 mgd of potable fresh water for wetland taro cultivation on seven acres of land (70,000 gad) (refer to Exhibit 6 for IWREDDSS calculations and Exhibit 7 for total use request summary)

The lo'i kalo is currently supplied spring water. As the spring water supply is diminishing with time, the applicant is requesting water from the well to supplement existing spring water. Because of this, actual needs won't be as much as would be required if there were no water currently available.

The City and County of Honolulu Board of Water Supply's North Shore Watershed Management Plan, December 2016 estimates water requirements for kalo between 100,000 – 300,000 gpd/acre.

Commission staff uses a program called IWREDSS Ver. 2.0 to estimate irrigation demands for various crops, using parameters such as soil type, evapotranspiration and rainfall, as well as user-provided information like crop type, irrigation method, growing cycle, etc. IWREDSS indicates that for a 1-in-5 drought condition, the actual consumptive demand is 11,707 gpd/acre. This discrepancy is probably attributed to the fact that taro growth requires a high pass-through volume of water to maintain high oxygen levels that prevent rot organisms from attacking the taro (kalo). (Source: <http://hbs.bishopmuseum.org/botany/taro/key/HawaiianKalo/Media/Html/characters/cultivation.html>)

Requesting potable fresh groundwater for lo'i kalo irrigation is uncommon but not unprecedented. In October 2018, the Commission approved an allocation of 0.471 mgd of potable fresh water from a well in the Ko'olauloa Ground Water Management Area based on 200,000 gpd/acre for lo'i kalo use.

In its most recent Decision and Order related to the Nā Wai ‘Ehā Contested Case Hearing (CCH-MA15-01), the Commission determined that 150,000 gpd/acre for lo‘i kalo was a reasonable allocation in the issuance of Surface Water User Permits.

Even though the actual consumption of taro might be 11,707 gpd/acre, the amount of water passing through should be in the higher range of 100,000 - 300,000 gpd/acre. The applicant is requesting a smaller duty per acre, which is possibly attributed to residual spring water supplying some of the demand.

Staff requested that the applicant address the measurement of flow from the spring source. The following is the applicant’s response.

*The “Spring” is actually three separate, small, and distinct seeps and, to a lesser extent, diffuse seepage into an unlined earthen trench. Their flows are delivered directly into the taro fields in pipes of 6-, 8-, and 12-inch sizes. There is no reservoir storage. Difficulty in measuring these flow rates are as follows:*

- *All of the delivery pipes flow partially full, virtually always less than half full, so installation of flow meters on partially full pipes is infeasible.*
- *The available artesian head from the seeps to the taro fields is marginal at best. Mr. Wong reports that lifting the pipes just several inches drastically reduces their already very modest flow rates. That means the pipes can not be modified to ensure full pipe flow without drastically reducing their already insufficient supply.*

*For these conditions, the proposal is to develop rating curves for each of the pipes based on manually measured depths of water. The depths of water will be measured once a day and converted to flow rate based on the rating curves. Daily flows will be compiled into monthly amounts and submitted to the CWRM.*

After passing through the lo‘i, the applicant states that the water will be diverted to Helemano stream. Staff requested the applicant to address the requirement of discharge permits for water returned to Helemano Stream. The following is the applicant’s response:

*Mr. Wong purchased the taro farm with its pre-existing pipes and two internal ditches which empty into Helemano Stream. None of these have been or will be modified or altered in any way. As such, permits from DOH or the Army Corps of Engineers are not required.*

The Army Corps of Engineers has verified that no permit is required for discharge into Helemano Stream.

Therefore, staff feels that 70,000 gallons per day per acre is a reasonable requested quantity.

*III. Efficiency of Use*

The applicant states that its operations are as water efficient as possible because “he is using this "ancient Hawaiian farming loi system" by filling each loi and overflowing to the lowest loi in his farm and back into the adjacent stream. He controls the flow rate to the minimum needed to provide enough flow to maintain a minimum water level in each of his taro loi. The existing farm has control piping into and out of each loi and have control valves to keep the water level to a minimum level to sustain taro growth. So all water used into and out of the loi is controlled to optimize source efficiency. He's estimating he will need up to 490,000 gpd if the entire farm is under production and will cut flow rates to what he needs in accordance to the area he's farming.”

*IV. Analysis of Practical Alternatives*

The applicant was asked to explain why there are no practical alternatives to the use of groundwater through their own well. The following explanations were provided.

1. Municipal source – the applicant explains that municipal water is not available and is not an appropriate use. Staff concurs that municipal water is not a suitable alternative, even if available.
2. Wastewater reuse – the applicant states that it is not available and is not an appropriate use for taro. Staff concurs.
3. Ditch system – the applicant states the following:

*The nearest irrigation ditch is 1.1 miles inland of Mr. Wong's taro farm on land owned by KSBE. The surface water in this ditch system, which is reserved for agricultural irrigation use by KSBE lessees, is supplemented by groundwater pumped from wells tapping the same Aquifer System as the well proposed for Wong's taro farm. Adding supply for the Wong taro farm would require additional groundwater pumping. As such, nothing would be gained in utilizing the KSBE ditch system as an alternative to the proposed taro farm well.*

Staff concurs with this assessment.

4. Desalinization – the applicant states that this is not an appropriate application at this site. Staff concurs with this assessment.
5. Surface water – the applicant states that Helemano Stream is nearby, but the flow is inadequate for extended periods. Additionally, applicant states that water from Helemano Stream is typically highly turbid, is salty during low streamflow and tidal action. Further, they state that any stream intake would require a substantial structure and investment to avoid being destroyed during storm events. Staff concurs with their assessment.

(3) Interference with other existing legal uses

There are 52 other wells within a mile of the well (see Exhibit 1). 23 of these wells are currently in use, and 6 of these wells are observation wells. Staff will analyze the applicant's pump test to determine if there are potential adverse impacts to any other existing uses, including other wells or the resource as a whole. Because the well is anticipated to be drilled into a confined aquifer, staff also does not feel that Helemano Stream will be adversely impacted.

Staff recommends including a condition to state that if adverse impacts are observed from the pump test analysis, that staff will require reductions in the pump capacity until adverse effects are not observed.

(4) Public interest

Public interest is defined under §174C-2 - Declaration of policy, as follows:

*“(c) The state water code shall be liberally interpreted to obtain maximum beneficial use of the waters of the State for purposes such as domestic uses, aquaculture uses, irrigation and other agricultural uses, power development, and commercial and industrial uses. However, adequate provision shall be made for the protection of traditional and customary Hawaiian rights, the protection and procreation of fish and wildlife, the maintenance of proper ecological balance and scenic beauty, and the preservation and enhancement of waters of the State for municipal uses, public recreation, public water supply, agriculture, and navigation. Such objectives are declared to be in the public interest.”*

Additionally, there have been no comment or objections to this application.

Therefore, because the use is agricultural and there are no anticipated impacts to the environment, staff feels that this application meets the criteria to be in the public interest.

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

The proposed uses are in the State **AG** District, and the county zoning is **AG-1**. Therefore, the proposed agricultural use is consistent with these land use designations.

Normal agency review includes:

- 1) the State's Department of Land and Natural Resources (DLNR) and its State Parks, Aquatic Resources, Historic Preservation, and Land Divisions; the Department of Health (DOH) with its Clean Water, Safe Drinking Water, and Wastewater Branches; the Department of Hawaiian Home Lands (DDHL), and Land Use Commission (LUC); and the Office of Hawaiian Affairs (OHA);
- 2) the Office of the Mayor, Department of Planning and Permitting, and the Board of Water Supply.

No comments or objections have been made through this review. These proposed uses are consistent with the state and county general plans and land use designations.

Therefore, this application meets the requirement for compliance with state & county general plans and land use designations.

(6) County land use plans and policies

Again, normal County review includes Office of the Mayor, Department of Planning and Permitting, and the Board of Water Supply. No comments or objections have been made.

Therefore, this application meets the requirement for compliance 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. This application was routed to The Department of Hawaiian Home Lands (DHHL) and the Office of Hawaiian Affairs for their review and comment. No response was received. There are no pending DHHL reservation requests for water within the Waialua Ground Water Management Area and DHHL does not own any lands in the region. Further, standard water use permit conditions 3.g., 6., and 9.f. notify all water use permittees that their permits are subject to and cannot interfere with Hawaiian home land rights.

Therefore, this application will not interfere with Hawaiian home lands rights.

(8) Other issues

*I. Chapter 343 – Environmental Assessment (EA) Compliance*

**EA Triggers**

In accordance with §HRS 343-5(a), the applicant’s proposed action does not trigger the need for an EA.

*II. Traditional and Customary Practices*

***Ka Pa‘akai Analysis***

In *Ka Pa‘akai O Ka‘aina v. Land Use Commission*, the Hawai‘i Supreme Court recognized that the State has an obligation to protect Hawaiian traditional and customary practices to the extent feasible, and that the proponent of an action must show sufficient evidence that these types of practices are protected, if they exist in the location in question. This “Ka Pa‘akai framework” was created by the Court “to help ensure the enforcement of traditional and customary native Hawaiian rights while reasonably accommodating competing private development interests.” The Commission is obligated to conduct a “Ka Pa‘akai analysis” of a proposed action requiring CWRM approval independent of the entity proposing the action. This analysis should be used to inform any decision on the impact of the proposed action on traditional and customary practices.

Consequently, the Court required an assessment of the following:

- (1) “the identity and scope of ‘valued cultural, historical, or natural resources’ in the petition

area, including the extent to which traditional and customary native Hawaiian rights are exercised in the petition area;

The applicant states that *“Helemano Stream is tidal for a substantial distance inland, including inland beyond the Wong taro farm. The stream bed and its sides are mud rather than rock and the stream’s water is always mud colored with essentially no clarity. Mr. Wong states that no one has ever engaged in traditional or customary practices in the portion of the stream channel that crosses around his farm. Further, in discussions he has had with neighbors, it has been widely known for decades that the stream’s water is contaminated such that no one fishes, goes into, or otherwise uses the water between the Wong Farm and the stream’s ocean outlet. In other words, the condition of the stream channel itself and the stream’s widely known contamination prevent its use for traditional and customary practices.”*

(2) “the extent to which those resources -- including traditional and customary native Hawaiian rights -- will be affected or impaired by the proposed action;” and

Again, the applicant states that *“no one has ever engaged in traditional or customary practices in the portion of the stream channel that crosses around his farm. Further, in discussions he has had with neighbors, it has been widely known for decades that the stream’s water is contaminated such that no one fishes, goes into, or otherwise uses the water between the Wong Farm and the stream’s ocean outlet. In other words, the condition of the stream channel itself and the stream’s widely known contamination prevent its use for traditional and customary practices.”*

(3) “the feasible action, if any, to be taken ... to reasonably protect native Hawaiian rights if they are found to exist.”

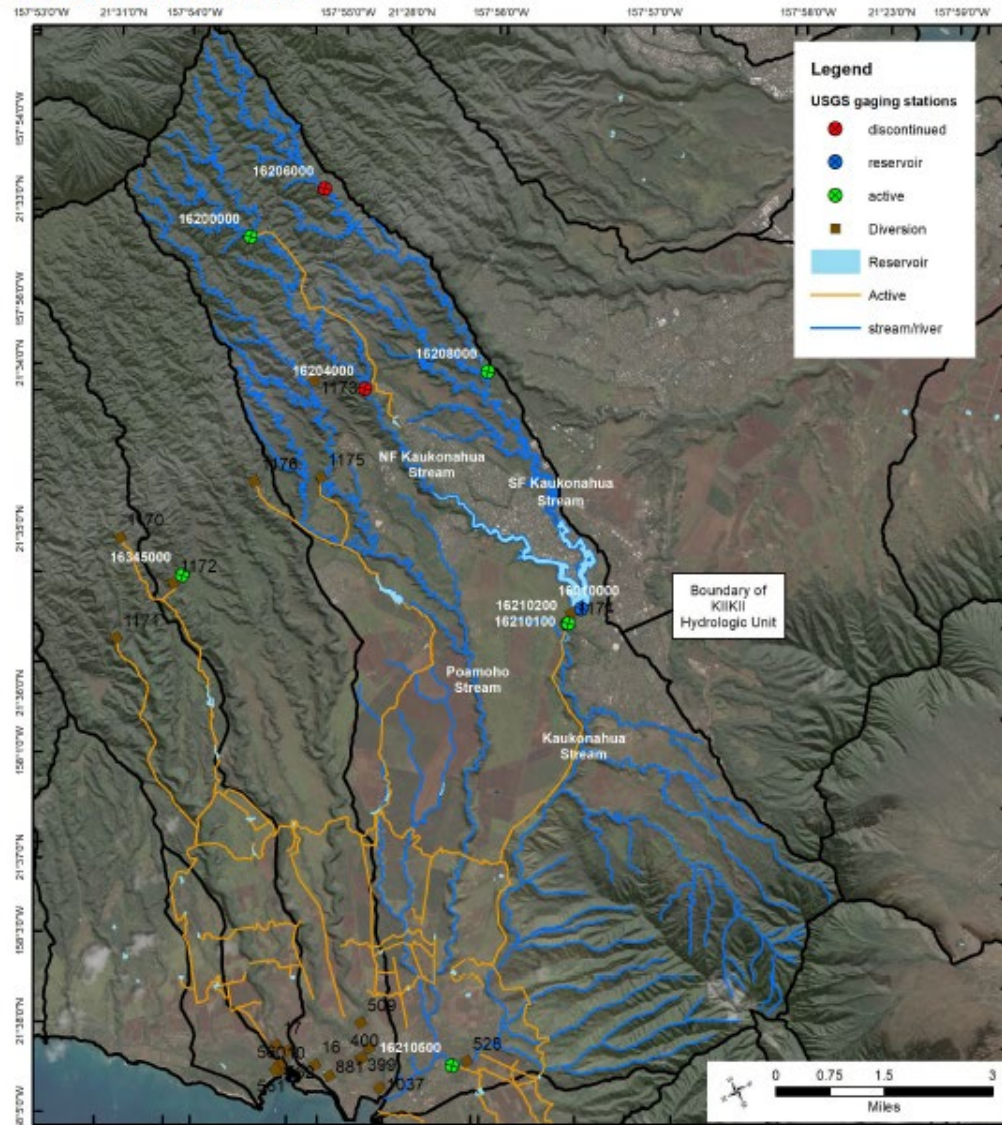
The applicant states that nothing in the development will change the poor stream conditions and impact traditional and customary Hawaiian rights. However, should use of this confined aquifer somehow impact Hawaiian rights elsewhere, the Commission can always reserve the right to partially or fully revoke the allocation until such time as these impacts are addressed.

In the interim instream flow standard amendment for Ki’iki’i surface water hydrologic unit, adopted by the Commission on August 17, 2021, staff noted the following (graphic from submittal also follows text):

Ki’iki’i did not receive a rating for cultural resources by the Hawaii Stream Assessment. There are archeological sites along Kaukonahua Gulch with ‘auwai and terracing, indicating lo’i kalo production was evident. Heiau of different sizes are present and scattered house sites are found in the gulches. Kaukonahua Gulch was the original location of the Keanini stone, although it was moved out of the gulch and placed next to the Kūkaniloko birthing stones. A variety of limu was historically collected from the muliwai in Kaiaka Bay, but sedimentation, a lack of streamflow, and overfishing has decimated the nearshore environment. Stream restoration would likely benefit the return of these cultural practices.



Figure 1. Streams, reservoirs, irrigation systems, registered stream diversions, with active and discontinued USGS stream gaging stations in the Kīkīi hydrologic unit, Leeward O'ahu.



The interim instream flow standard report identified cultural resources in the area, and are a good reference absent of any additional information. The indication that stream restoration would not have negative impacts on cultural practices and resources suggests that additional flow added to Helemano Stream would probably not either. Given that the well will possibly withdraw water from a confined aquifer, direct stream flow impacts are not anticipated. However, pump tests should indicate whether resources are impacted. As such, staff does not anticipate that the use of the proposed well and subsequent discharge will have impacts to traditional and customary Hawaiian rights, but again, CWRM reserves the right to bring this application back to the Commission if pump tests show adverse impacts to resources.

## WELL CONSTRUCTION AND PUMP INSTALLATION PERMITS

Typically, Well Construction Permits have been delegated to be approved by the Chair in ground-water management areas under the presumption that they are exploratory, and therefore have no reliance issues related to obtaining the final Water Use Permit. Pump Installation Permits in ground-water management areas are typically approved in conjunction with the Water Use Permit, as is being presented here. Both are presented to the Commission here for approval.

## VARIANCE FROM WELL STANDARDS

The applicant's consultant anticipates finding water in a confined situation. Hawaii Well Construction and Pump Installation Standards Section 2.2, Basal Well Depth, states that:

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

This standard has been problematic because sometimes, a basal aquifer can be in a confined situation, where there is an impermeable rock layer overlying the basal lens and thus shifting the aquifer and possibly the transition zone from fresh to brackish water down to a lower elevation. In this confined but basal situation, as is anticipated for this well, the  $\frac{1}{4}$  aquifer thickness below sea level may not actually allow the well to be productive.

The applicant's consultant states the following:

*The basis for the proposed well dimensions and the need for a variance to drill below the 1/4 basal lens thickness is provided by the finished dimensions of two nearby wells. They are Nos. 3406-002 (also known as Waialua Pump 9) and 3406-003. Although no drillers logs for either well are available, their depths of solid casing are indicative of the thickness of the overlying confining layer and their drilled depths of both exceed the 1/4 basal lens thickness:*

Parameter	Well No. 3406-002	Well No. 3406-003
Year Drilled	1898	1946
Ground Elevation (Ft. MSL)	14	9
Total Depth (Feet)	218	198
Elevation @ Bottom (Ft. MSL)	-204	-189
Solid Casing Length (Feet)	86	61
Static Water Level (Ft. MSL)	11.6	10.8
1/4 Lens Thickness (Ft. MSL)	-107.3	-99.9
1/2 Lens Thickness (Ft. MSL)	-226.2	-210.6

*Based on the dimensions of these wells, the thickness of the confining layer is likely to be in the range of 60 to 90 feet and the water level is likely to be on the order of 10 to 12 feet above sea level. Casing and drilled depth of the proposed well would be adjusted based on information obtained during drilling, but it appears certain that drilling below the 1/4 lens thickness but less than 1/2 the lens thickness will be required.*

Future updates to the Well Standards should address and clarify the confined basal lens restriction. However, without the clarification, the applicant is requesting a variance from the standards to drill possibly deeper than the ½ aquifer thickness that could be approved by the Chair.

The potential for resource damage can be reasonably assessed via a pump test on the well, and approval of this variance should be conditioned upon submission of a pump test run in accordance with the Standards, as well as analysis and approval by Commission staff that the pump capacity will have no adverse environmental impacts.

**RECOMMENDATION:**

Staff recommends that the Commission:

- A. Approve the issuance of water use permit no. 01095 to Wong's Taro Leaf and Farm Inc. for the reasonable and beneficial use of 0.490 million gallons per day of potable ground water for agricultural use from the WTLF-1 (Well No. 3-3406-020), as described in the recommended allocation portion of Exhibit 7, and subject to the standard water use permit conditions listed in Exhibit 8 and the following special conditions:
  1. This permit is subject to suspension and/or revocation if the use as described in Exhibit 7 changes. This includes, but is not limited to: type of use, location of use, land use classification changes, or anything that varies from the application.
  2. 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.

3. 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.
  4. This permit is subject to determination by the State of Hawaii's Department of Health that no discharge permit is required for discharge into Helemano Stream. If a permit is required, it must be obtained prior to water being used from this well.
  5. If adverse impacts to streamflow or other resources are indicated through the pump test analysis, the water use permit will not be valid until a second Commission approval is obtained.
- B. Approve a well construction permit for WTLF-1 (Well No. 3-3406-020), subject to the standard well construction permit conditions as described in Exhibit 9, with a variance to drill deeper than what is calculated as the  $\frac{1}{4}$  aquifer depth but no deeper than  $\frac{1}{2}$  aquifer depth, with the condition that a pump test must be analyzed and approved by staff before the final pump capacity is allowed. If adverse impacts are determined via the pump test, these permits must be revisited with another Commission action.
- C. Approve a pump installation permit for WTLF-1 (Well No. 3-3406-020), subject to the standard pump installation permit conditions as described in Exhibit 10.
- D. In addition to the required monthly water use reporting from the well, the applicant shall also report monthly water usage from the three pipes that supply water from the spring/seeps.

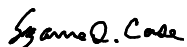
Respectfully submitted,



M. KALEO MANUEL  
Deputy Director

- Exhibits:
- 1 (Location Map)
  - 2 (Water Use Permit Detailed Information)
  - 3 (Field Investigation Notes and Photos)
  - 4 (Public Notice)
  - 5 (Existing Water Use Permits and 12-Month Moving Average Withdrawal)
  - 6 (IWREDSS calculation)
  - 7 (Summary of use request and recommended allocation)
  - 8 (Water Use Permit Standard Conditions)
  - 9 (Well Construction Permit Standard Conditions)
  - 10 (Pump Installation Permit Standard Conditions)

APPROVED FOR SUBMITTAL:



SUZANNE D. CASE  
Chairperson



Proposed well location

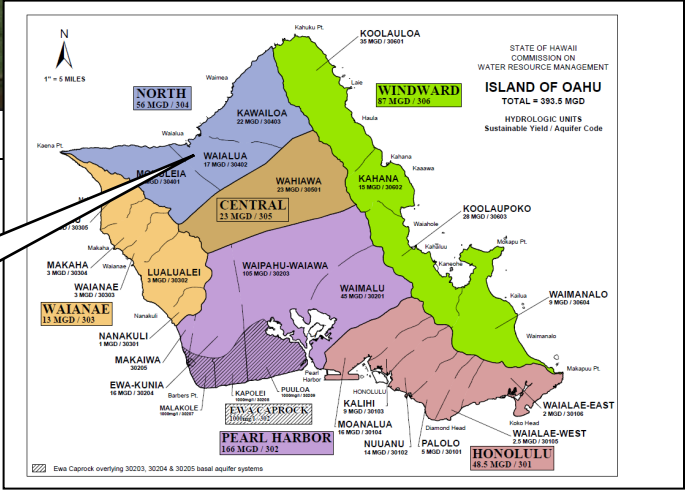
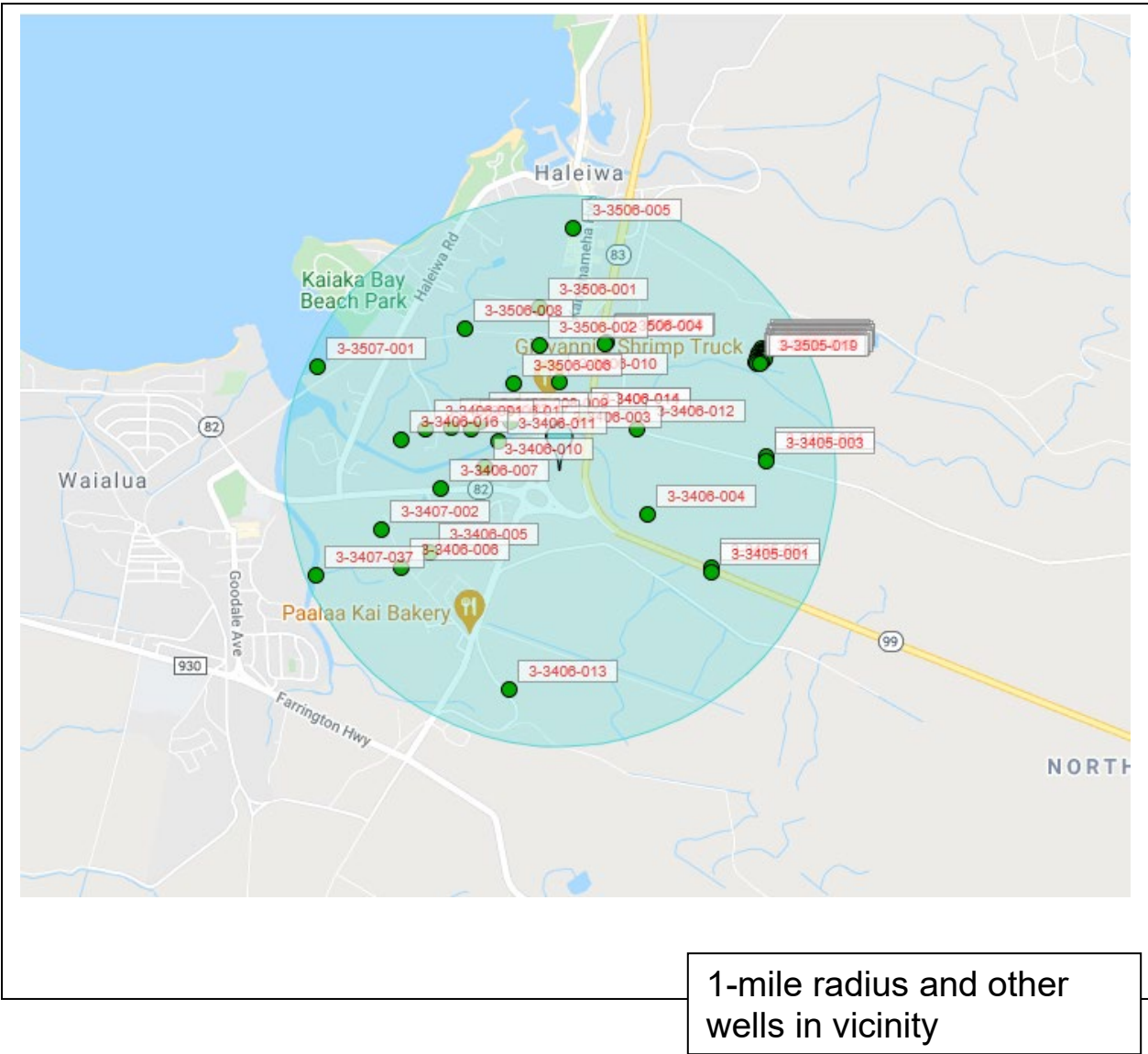


EXHIBIT 1: LOCATION MAP



1-mile radius and other wells in vicinity



**WATER USE PERMIT DETAILED INFORMATION**

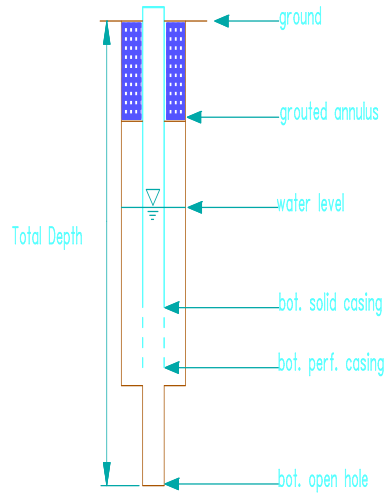
**Source Information**

<b>AQUIFER:</b>	Waialua System, North Sector, Oahu
Sustainable Yield:	17 mgd
Existing Water Use Permits:	13.250 mgd
Available Allocation:	3.750 mgd
Total other pending applications:	0.360 mgd
This application:	0.490 mgd

<b>WELL:</b>	WTLF-1 (Well No. 3-3406-020)
Location:	Oahu, TMK: (1) 6-2-007:007
Casing Diameter:	12 in.
<b>Proposed Elevations</b> (msl= 0 ft.)	
Water Level:	12 ft.
Ground:	15 ft.
Bottom of Solid Casing:	-85 ft.
Bottom of Open Hole:	-175 ft.

Total Depth:	190 ft.
Grouted Annulus Depth:	90 ft.

Pump Capacity	700 gpm
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### Use Information

Quantity Requested: 0.490 gallons per day  
Type of Water Use: Agricultural (Taro)  
Place of Water Use: TMK: (1) 6-2-007:007

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

### Nearby Surrounding Wells and Other Registered Ground Water Use

There are 52 other wells within a mile of the well (see Exhibit 1). 23 of these wells are currently in use, and 6 of these wells are observation wells.

### Public Notice

In accordance with HAR §13-171-17, a public notice was published in the Honolulu Advertiser on May 24, 2021 and May 31, 2021 and a copy of the notice was sent to the Office of the Mayor. Copies of the completed application were sent to the Board of Water Supply, Department of Planning and Permitting, 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 14, 2021.

### 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 .

To the best of staff's knowledge there are no objectors who have property interest within the Waialua 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 use was investigated by Charley Ice on May 27, 2020. The investigation verified the applicant's request for water use permit (refer to Exhibit 3)

Field Visit to Wong Taro Leaf Farm  
26 May 2020 9 am – 10:30 am

I arrived as Mr. Clifford Wong and 6-8 workers were finishing packing large clear plastic bags (2' x 3') with kalo leaves cut that morning. He spent our time with a little tour of the property, talking nearly continuously, regarding his operation and ideas about shoring up Hawaii's food economy.

The lo'i kalo occupy 7 acres along a curve of Helemano Stream under the Joseph Leong Haleiwa Bypass Highway, butted up against a rock face of about 20 feet high along the flood plain, with elevations on the property from maybe 15 feet along the rock face to 3 feet at the stream. Water supply is not from the sluggish stream but from springs and seeps at the rock face, and held in a long channel along the rock face ("reservoir") that is stocked with fish who fertilize the water going out into the lo'i (he feeds dog food to grass carp, catfish, and mullet).

Water is then piped through 8-inch plastic piping underground to the lo'i, where it is connected with piping to each lo'i at a junction box, "valved" through a simple plastic pipe elbow that can be rotated to regulate the opening surface. (This is a Wong innovation since caught on with other growers.) I was quite surprised that the amount of water apparent in the reservoir, though constantly fed by spring and seep, is able to reach the entire 7 acres. As we toured the far reaches of the property, some of the lo'i were drying, and he acknowledged that he would lose those plants. He does not suffer from pests, but does not use the root; he manages several resprouts and cuts from each plant. The root is thereby gradually depleted; I did not inquire how often he replants.

He showed me the proposed well site and planned to improve the reservoir to hold more water with the increased amount of flow. I did not ask about the discharge to the stream, although there was no apparent discharge point; it appeared that the lower fields simply dried to bank storage at the stream. A further question is to identify the water table – how near the surface? The well proposal is to drill to 190 feet below ground surface (bgs), to get below caprock to the confined basal aquifer, generally under artesian pressure. The well bore will be grouted to 90 ft bgs.

Incidentally, Mr. Wong provides his workers with medical coverage and a profit share. I do not know the work hours or his other cultivation practices.

Given another opportunity, we would like to take temperature measurements at various places throughout the property (including along the reservoir) and also in Helemano Stream.



Lo'i kalo



Lo'i kalo



Opposite end from well site



Spring-fed reservoir



Well site – cart - bypass

**PUBLIC NOTICE**

Application for Water Use Permit  
Waialua Ground Water Management Area, Oahu

The Commission on Water Resource Management received the following Ground Water Use Permit Application. Public Notice is given pursuant to Hawaii Administrative Rules, Section 13-171, "Designation and Regulation of Water Management Areas."

GWUPA No. 01095 WTLF-1 well (Well No. 3-3406-020)

Full application link: <https://dlnr.hawaii.gov/cwrm/newsevents/notices>

Applicant: Wong Taro Leaf Farm Inc.  
47-544 Ahilama Rd.  
Kaneohe, HI 96744

Landowner: Wong Taro Leaf Farm Inc.  
47-544 Ahilama Rd.  
Kaneohe, HI 96744

Date Application Filed as Complete: May 17, 2021  
Hydrologic Unit / Aquifer System Area: Waialua System, North Sector, Oahu

Water Source

Well No.	Well Name	Tax Map Key	Aquifer System Area
3-3406-020	WTLF-1	(1) 6-2-007:007	Waialua System, North Sector, Oahu

Quantity Requested: 0.490 million gallons per day.

Proposed Use: Agriculture

End Use

New/Existing	Description	Place of Water Use	Qty of Use (GPD)
New	7 acres of kalo leaf	at Tax Map Key: (1) 6-2-007:007	490,000

Written objections or comments on this application 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 use, or any other interested person. Written objections must (1) state the 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 permit. Written objections must be received by June 14, 2021. 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



M. KALEO MANUEL, Deputy Director for  
SUZANNE D. CASE, Chairperson

Dated: May 18, 2021

Publish in: Honolulu Star Advertiser issues of May 24, 2021 and May 31, 2021



**Report Parameters**

WUP Type: Water Use Permit, Administrative Modification, Reservation, Transfer, CWRM Decision and Orders,  
Court Orders, Other  
Island: Oahu  
Applicant: All  
Well # Prefix: All  
Date: All  
Issued Date: All  
Date Accepted: All  
Aquifer Sector: All  
Aquifer: 30402 Waialua  
Source or End Use TMK: All  
Aquifer Type: Alluvial, Basal, Dike, Perched, Not Specified  
Water Quality: Fresh, Brackish, Potable, Non-Potable, Not Specified  
Not  
Proposed Use: All

WUP = Water Use Permit, 12-MAV = 12 month moving average, Diff = WUP-12-MAV, mgd = million gallons per day

**Island of Oahu**

**Aquifer System Ground Water Management Area: 30402 Waialua**

**Sustainable Yield (mgd): 17**

Wup No	Approved	Permittee	Well No	Well Name	WUP (mgd)	12-MAV (mgd)	Diff (mgd)	Date Last Reported
00041	09/11/1991	Honolulu Board of Water Supply, BWS	3-3405-003	Haleiwa 1	1.000	0.000	1.000	04/30/2021
			3-3405-004	Haleiwa 2		0.000		04/30/2021
00175	10/13/1993	Poamoho Venture, L.P.	3-3205-002	Poamoho A	0.600	0.027	0.573	05/10/2021
00353	11/16/1994	A.J. Lopez Sons Inc.	3-3406-016	Haleiwa-Lopez 1	0.072	0.010	0.062	12/31/1996
00643	07/16/2003	Paradise Shrimp Farm	3-3407-038	Paradise Shrimp	0.576	0.054	0.522	09/14/2017
00732	06/02/1993	Michael Jewett & Megan Ward	3-3406-002	Waialua Pump 9	0.160	0.008	0.152	04/30/2020
00868	10/10/2012	Honolulu Board of Water Supply, BWS	3-3405-001	Waialua	2.000	1.996	0.004	04/30/2021
			3-3405-002	Waialua		0.000		04/30/2021
00894	06/02/1993	Kamehameha Schools, KS	3-3505-001	Opaeula Pump 3 Well A	1.552	0.000	1.552	09/01/2021
			3-3505-002	Opaeula Pump 3 Well B		0.000		09/01/2021
			3-3505-003	Opaeula Pump 3 Well C		0.000		09/01/2021
			3-3505-004	Opaeula Pump 3 Well D		0.000		09/01/2021
			3-3505-005	Opaeula Pump 3 Well E		0.000		09/01/2021
			3-3505-006	Opaeula Pump 3 Well F		0.000		09/01/2021
			3-3505-007	Opaeula Pump 3 Well G		0.000		09/01/2021
			3-3505-008	Opaeula Pump 3 Well H		0.000		09/01/2021
			3-3505-009	Opaeula Pump 3 Well I		0.000		09/01/2021
			3-3505-010	Opaeula Pump 3 Well J		0.000		09/01/2021
			3-3505-011	Opaeula Pump 3 Well K		0.000		09/01/2021
			3-3505-012	Opaeula Pump 3 Well L		0.000		09/01/2021
			3-3505-013	Opaeula Pump 3 Well M		0.000		09/01/2021
			3-3505-014	Opaeula Pump 3 Well N		0.000		09/01/2021
			3-3505-015	Opaeula Pump 3 Well O		0.000		09/01/2021
			3-3505-016	Opaeula Pump 3 Well P		0.000		09/01/2021
			3-3505-017	Opaeula Pump 3 Well Q		0.000		09/01/2021
			3-3505-018	Opaeula Pump 3 Well R		0.000		09/01/2021
			3-3505-019	Opaeula Pump 3 Well S		0.000		09/01/2021
			3-3505-020	Opaeula Pump 3 Well T		0.000		09/01/2021
00895	06/02/1993	Kamehameha Schools, KS	3-3506-003	Pump 8A	1.660	0.000	1.633	09/01/2021
			3-3506-004	Pump 8B		0.027		09/01/2021



Report Parameters

WUP Type: Water Use Permit, Administrative Modification, Reservation, Transfer, CWRM Decision and Orders, Court Orders, Other

**Island of Oahu**

**Aquifer System Ground Water Management Area: 30402 Waialua**

**Sustainable Yield (mgd): 17**

Wup No	Approved	Permittee	Well No	Well Name	WUP (mgd)	12-MAV (mgd)	Diff (mgd)	Date Last Reported
00944	12/19/2012	Dole Food Company, Inc. Hawaii	3-3407-011	Pump 7 B	0.425	0.318	0.107	04/30/2021
			3-3407-012	Pump 7 C		0.000		04/30/2021
00950	10/10/2012	Theodore J.P. Lopez Trust	3-3407-002	Lopez 2	0.144	0.081	0.063	01/10/2019
00952	10/10/2012	Mary Lou Gora Trust	3-3406-017	Gora 2011	0.029	0.003	0.026	08/29/2021
00965	09/11/1981	Michael Aki	3-3406-008	Gora	0.144	0.001	0.143	06/30/2011
00968	01/23/2013	Dole Food Company, Inc. Hawaii	3-3407-004	Pump 1	0.982	0.491	0.491	04/30/2021
			3-3407-005	Pump 1		0.000		04/30/2021
			3-3407-006	Pump 1		0.000		04/30/2021
			3-3407-014	Pump 1		0.000		04/30/2021
			3-3407-015	Pump 1		0.000		04/30/2021
00969	01/23/2013	Dole Food Company, Inc. Hawaii	3-3307-001	Waialua P2 Battery Well "D"	0.406	0.000	0.148	05/31/2021
			3-3307-002	Waialua P2 Battery "E"		0.000		05/31/2021
			3-3307-003	Waialua P2 Battery "F"		0.192		05/31/2021
			3-3307-004	Waialua P2 Battery "G"		0.066		05/31/2021
			3-3307-005	Waialua P2 Battery "H"		0.000		05/31/2021
			3-3307-006	Waialua P2 Battery "I"		0.000		05/31/2021
			3-3307-008	Waialua P2 Battery "A"		0.000		05/31/2021
			3-3307-009	Waialua P2 Battery "B"		0.000		05/31/2021
			3-3307-010	Waialua P2 Battery "C"		0.000		05/31/2021
			00972	06/19/2018		Dole Food Company, Inc. Hawaii	3-3404-001	Waialua Pump 17
01032	01/17/2017	Kaukonahua Ho'ola, LLC	1-3105-001	Kaukonahua-Hoola				

Summary for Waialua (51 detail records)

Total: 13.250 3.274 9.976

SY Available: 3.750

Sustainable Yield: 409

SY Available: 395.75

EXHIBIT 5: EXISTING WATER USE PERMITS AND 12-MONTH MOVING AVERAGE WITHDRAWAL

# IWREDSS Results Summary

Total Parcel Area in Acres: 8.310

<b>Drought Frequency:</b>	<b>1 in 2 years</b>	<b>1 in 5 years (recommended)</b>	<b>1 in 10 years</b>	<b>1 in 20 years</b>
Inches per acre:	147.874	157.360	161.576	164.745
gpd/acre:	11,001	11,707	12,020	12,256
Total Parcel Mgd:	0.091	0.097	0.100	0.102

9/7/2021 4:17 PM

REQUESTED:

Duty requested: 70,000 gallons per day/acre

Acreage: 7 acres

Total allocation requested: 490,000 gallons/day

IWREDSS:

Duty calculated: 11,707 gallons per day/acre

Acreage: 7 acres

Total allocation recommended if using IWREDSS: 82,949 gallons/day

COMPARABLE APPROVED ALLOCATION:

Duty approved: 150,000 gallons per day/acre

Acreage: 7 acres

Total allocation recommended if using COMPARABLE: 1,050,000 gallons/day



## 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 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) need not 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 basis (attached).
- 11. This permit shall be subject to the Commission's periodic review of the **Waialua** Aquifer System Area's sustainable yield. The amount of water authorized by this permit may be reduced by the Commission if the sustainable yield of the **Waialua** Aquifer System Area, 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 **Waialua** 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.

## 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 and staff shall be allowed to inspect installation activities in accordance with §13-168-15, Hawaii Administrative Rules (HAR).
2. This permit shall be prominently displayed, or made available, at the site of construction work until work is completed.
3. The well construction permit shall be for construction and testing of the well only. The permittee shall coordinate with the Chairperson and conduct a pumping test in accordance with the HWCPIS (the latest pump test worksheet can be obtained by contacting Commission staff or at <http://files.hawaii.gov/dlnr/cwrp/forms/APTR.pdf>). The permittee shall submit to the Chairperson the test results as a basis for supporting an application to install a permanent pump. No permanent pump may be installed until a pump installation permit is approved and issued by the Chairperson. No withdrawal of water shall be made for purposes other than testing without a Certificate of Pump Installation Completion. The permitted pump capacity described on the pump installation permit **may be reduced** in the event that the pump test does not support the capacity.
4. 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. If it can be shown that the well does not tap basal ground water then this condition may be waived after consultation with and acceptance by Commission staff. However, in no instance can the well be drilled deeper than one-half (1/2) of the theoretical thickness without Commission approval.
5. 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.
6. In the event that historically significant remains such as artifacts, burials or concentrations of shells or charcoal are encountered during construction, the permittee shall stop work and immediately contact the Department of Land and Natural Resources' State Historic Preservation Division. Work may recommence only after written concurrence by the State Historic Preservation Division.
7. 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.
8. The Well Completion Report Part I shall be submitted to the Chairperson within sixty (60) days after completion of work (please contact staff or visit <http://files.hawaii.gov/dlnr/cwrp/forms/WCR1.pdf> for current form).
9. The permittee shall comply with all applicable laws, rules, and ordinances; non-compliance may be grounds for revocation of this permit.
10. The well construction permit application and, if relevant, any related staff submittal approved by the Commission are incorporated into this permit by reference.
11. If the HWCPIS are not followed and as a consequence water is wasted or contaminated, a lien on the property may result.
12. Any variances from the HWCPIS shall be approved by the Chairperson prior to invoking the variance.
13. 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 the date the permit expires.

14. If the well is not to be used it must be properly capped. If the well is to be abandoned during the course of the project then the permittee must apply for a well abandonment permit in accordance with §13-168-12(f), HAR, prior to any well sealing or plugging work.
15. The permittee, its successors, and assigns shall indemnify, defend, and hold the State of Hawaii harmless from and against any loss, liability, claim, or demand for property damage, personal injury, or death arising out of any act or omission of the applicant, assigns, officers, employees, contractors, and agents under this permit or relating to or connected with the granting of this permit.
16. This permit shall apply to the location shown on the application only. If the well is to be relocated, the permittee shall apply for a new well construction/pump installation permit in accordance with §13-168-12(f), HAR.
17. Special conditions in the attached cover transmittal letter are incorporated herein by reference.

## STANDARD PUMP INSTALLATION PERMIT 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 (HAR).
2. No withdrawal of water shall be made other than for testing until a Certificate of Pump Installation Completion has been issued by the Commission.
3. This permit shall be prominently displayed, or made available, at the site of construction work until work is completed.
4. The pump installation permit shall be for installation of a gpm rated capacity, or less, pump in the well. This permanent capacity may be reduced in the event that the pump test data does not support the capacity.
5. A water-level measurement access shall be permanently installed, in a manner acceptable to the Chairperson, to accurately record water levels.
6. The permittee shall install an approved meter or other appropriate means for measuring and reporting withdrawals and appropriate devices or means for measuring chlorides and temperature at the well head.
7. Well Completion Report Part II shall be submitted to the Chairperson within sixty (60) days after completion of work (please contact staff or visit <http://files.hawaii.gov/dlnr/cwrp/forms/WCR2.pdf> for current form).
8. The permittee, well operator, and/or well owner shall comply with all applicable laws, rules, and ordinances, and non-compliance may be grounds for revocation of this permit.
9. The pump installation permit application and, if relevant, any related staff submittal approved by the Commission are incorporated into this permit by reference.
10. If the HWCPIs are not followed and as a consequence water is wasted or contaminated, a lien on the property may result.
11. Any variances from the HWCPIs shall be approved by the Chairperson **prior** to invoking the variance.
12. 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 the date the permit expires.
13. The permittee, its successors, and assigns shall indemnify, defend, and hold the State of Hawaii harmless from and against any loss, liability, claim, or demand for property damage, personal injury, or death arising out of any act or omission of the applicant, assigns, officers, employees, contractors, and agents under this permit or relating to or connected with the granting of this permit.
14. Special conditions in the attached cover transmittal letter are incorporated herein by reference.