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DEPUTY DIRECTOR

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

September 17, 2019
Honolulu, Hawaii

Mokulē'ia Ag Lands, LLC
APPLICATIONS FOR A GROUND WATER USE, WELL CONSTRUCTION AND PUMP INSTALLATION PERMITS
4Rs Well (Well No. 3411-016), TMK (3) 6-8-003:046, GWUP No. 01091
New Agricultural Use for 0.058 mgd
Mokulē'ia Ground Water Management Area, Oahu

APPLICANT:

Mokulē'ia Ag Lands, LLC
705 South King St., Unit 204
Honolulu, HI 96813

LANDOWNER:

Mokulē'ia Ag Lands, LLC
705 South King St., Unit 204
Honolulu, HI 96813

SUMMARY OF REQUEST:

The applicant requests that the Commission on Water Resource Management (Commission) approve a ground water use permit for an allocation of **0.058** million gallons per day (mgd) of potable basal ground water from a new well to supply 17.25 net acres of mix of crops consisting of hemp, banana, citrus, cassava, pidgeon peas, lilikoi, papaya, and a single domestic use.

LOCATION MAPS: See Exhibit 1

BACKGROUND:

June 3, 2019	Consultant Tom Nance filed an incomplete ground water use permit application on behalf of Mokulē'ia Ag Lands, LLC and its principal Ryan Totoki.
June 18, 2019	Following an information exchange clarifying the application, it was accepted as complete for public notice.
July 5 & 12, 2019	Public Notice published in the Honolulu Star-Advertiser and the July & August issues of the Commission's monthly Water Resource Bulletin.

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, and the recently updated 2019 Water Resource Protection Plan component, the Commission has adopted 17 mgd as the sustainable yield for the **Mokulē'ia** 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. Mokulē'ia Aquifer System Area

ITEM	**Mokulē'ia** Aquifer System Area (mgd)
Sustainable Yield	17
Less: Other Existing Water Use Permits (shown in Exhibit 4)	7.701
Reservation to DHHL	0
Subtotal (Current Available Allocation)	9.229
Less: Other Completed Applications (also shown in Exhibit 4)	0
Less: This Application	0.058
Subtotal (Potential Available Allocation/Allocation Deficit)	9.241

Therefore, there is adequate water available to accommodate this application request.

(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 17.25 net acres of mixed crops in the following prospective amounts, spread across nine condominium lots, each lot with a different choice and proportion:

Hemp:	7.8 acres	Lilikoi:	1.6 acres
Banana:	3.1 "	Citrus:	0.85 "
Papaya:	3.3 "	Cassava:	0.4 "
Pidgeon pea:	0.4 "		

II. Quantity Justification

The applicant is requesting a total of just over **0.057** mgd to irrigate all these mixed crops, each crop at an appropriate rate (refer to Exhibit 6 for IWREDDS calculations), and another **500** gpd for a single dwelling (domestic use), rounding up to a total of **0.058** mgd (refer to Exhibit 7 for total use request summary).

The applicant has made the following estimates of their crop requirements, prepared by ITC Water Management, Inc. These figures were derived from talking with area farmers growing the same crops, with the exception of hemp, which figures were derived from online research. The estimates for each crop are calculated on plant spacing and the hourly flow to each plant, by individual crop, to serve its irrigation demand. This method is not directly comparable to the comprehensive parameters found in the IWREDSS model as the consultant's estimates are based more on reported experience from local farmers

Staff uses the Irrigation Water Requirement Estimate Decision Support System (IWREDSS Version 2.1) model produced by the University of Hawaii College of Tropical Agriculture and Human Resources (CTAHR) as a "reasonable-beneficial estimate". IWREDSS incorporates data specific to the parcel in question, such as soil properties, synthesizes historical daily rainfall incidence and evapotranspiration averages, ambient temperature; and crop information including root depth and breadth, leaf parameters and typical water requirements; and the proposed method of irrigation, the source of the widest variation in irrigation requirements within IWREDSS. Despite the sensitivity of this model, it cannot necessarily account for the peculiarities of microclimate or for wind effects on irrigation and on evaporation; it also makes certain unspecified assumptions about commercial agriculture such as plant spacing and maturity of crop that may not apply to more intensive or more casual agriculturalists. As any given application can vary from assumed parameters and the acreage may not fall homogeneously within the area's climatic averages, some variation in outcome is expected. IWREDSS gives us a ballpark comparison.

There is additional difficulty for staff in assessing the appropriate reasonable use on this property, as these soils are poorly drained stony clay flats compared with previous applications in the Mokulē'ia area on well-drained slopes. When used for sugar plantation, this area required drainage channels to lower root zone saturation.

The range of estimated water requirements by the applicant and by IWREDSS both vary widely between crops, but do not vary in the same way. The tabulated comparison below indicates the IWREDSS results for banana and papaya are lower than the applicant's estimates at this location. Note that several proposed crops are not covered in the IWREDSS model. Amounts are expressed in gallons per day per acre (gpd/acre) for trickle drip irrigation.

Crop	gallons per day per acre (gpd/acre)		
	Totoki-ITC	IWREDSS	Total Range GPD
Hemp	3500	na	
Banana	3883	1936	10,487 – 6,002
Papaya	3398	893	11,213 – 2,947
Lilikoi	2614	na	na
Citrus	1045	2278	888 – 1,936
Cassava	2614	na	na
Pidgeon Pea	2614	na	na

There are other measures of reasonable agricultural duties that can be considered. The County Water System standards agricultural duty for O'ahu is 4,000 gpd/acre, the Waiāhole contested case provided a figure of 2,500 gpd/acre for diversified agriculture in the Pearl Harbor area, and the Hawai'i Water Plan 2004 revised Agricultural Water Use and Development Plan developed by the Department of Agricultures suggested 3,400 gpd/acre based on farming use in Lālāmilo, Hawai'i Island. The overall average duty covering the net 17.25 acres using the 58,000 gpd is 3,362 gpd/acre.

In view of fact IWREDSS can only comparably estimate 3/7 of the crop types, uncertainties regarding quantities required with respect to the applicant's consultation with area farmers, and the overall duty estimate by the applicant is reasonably comparable with other published duties, staff recommends allocating the applicant's request.

III. Efficiency of Use

The applicant states that its operations are as water efficient as possible because the calculations were made to emulate the plants' evapotranspiration rates. In addition, trickle drip irrigation minimizes the wetted area of irrigation and is generally considered the most efficient irrigation method.

IV. Analysis of Practical Alternatives

The applicant has responded to 5 alternatives to the proposed use of potable ground water. Their evaluation of each of the alternatives is as follows:

1. Municipal sources – not available for agriculture in this area.
2. Wastewater reuse – not appropriate for domestic use, and not in sufficient quality for crops.
3. Ditch system – Mokulē'ia was served by two ditch systems, the Ito Ditch system at about 200 feet elevation, which then dropped into the Wilson Ditch system, but from that point, the Wahiawā Ditch still stopped two miles short of the Kawaihāpai area. The westerly portion of the Mokulē'ia plain, specifically the subject area just makai of the former Kawaihāpai Reservoir is composed of poorly-drained stony clay that needed drainage ditches to lower the water table.
4. Desalting – two aspects of this alternative have not been solved: both extraction and disposal of brine in sufficient quantities for viable agriculture are not affordable for low-margin crops.
5. Surface (stream) water – there are no streams in this vicinity.

The 2000 Legislature amended the Water Code to include a new section, §174C-51.5 HRS that provides the Commission with the authority to require dual line (potable and non-potable) water supply systems in new industrial and commercial developments located in designated water management areas. In this case, the applicant does not have non-potable water service and is proposing to install only a single potable system. Therefore, this provision does not need to be invoked.

As a side note, §174C-51.5(3)(b) HRS requires the county boards of water supply, in consultation with the department of health, to adopt standards for non-potable water distributed through dual line water supply systems and rules regarding the use of non-potable water. The standards and rules shall be adopted in accordance with Chapter 91 and shall protect existing water quality and the health and safety of the public. Staff has requested an update from the Honolulu Board of Water Supply as to the status of their dual-line standards and rules adoption, but have not received a reply.

(3) Interference with other existing legal uses

There are 24 other wells within 1 mile of this proposed source. However, only 2 are currently in use for municipal residential purposes (refer to Exhibit 1) reporting approximately 0.147 mgd. Two others allocated irrigation water or recreation center use are reporting no use at this time. Pump 5, a large former sugar well, is allocated 2.550 mgd but has been reporting no use. The recently approved Hinshaw Well is not yet constructed. Combined use is currently about 0.200 mgd.

The ground water flow through this area is estimated to be quite large. Recharge rates including Wahiawa spill over ranges from 33 to 57 mgd, of which approximately half is assumed to discharge to the ocean. The existing 66 wells in the Mokulē'ia ASA are spread across the flank of the Mokulē'ia Plain, the interference with other wells would be negligible. Total reported 12-month moving average withdrawals from all of these wells together is 0.453 mgd and is considered small.

(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.*"

Proposed uses fall within normal agricultural activities. No streams are affected, and at only 0.489 mgd being pumped from this aquifer, only 1 % of nearly 34 mgd estimated recharge to this aquifer system area is affected – about 99% flows through to nearshore discharge. No traditional, customary uses have been specifically identified, although fishing is common in this area.

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

The proposed uses are in the State **Agriculture** District, and the county zoning is **Ag-2**. Therefore, the proposed 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 Department/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, staff believes this application meets the 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 Department/Board of Water Supply. No comments or objections have been made.

Therefore, staff believes this application meets the 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. 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. The State Water Projects Plan indicates that no reservations are currently anticipated from the Mokulē'ia Aquifer System Area. The Department of Hawaiian Home Lands (DHHL) and the Office of Hawaiian Affairs have reviewed this application and made no comments or objections.

There are no DHHL reservations for ground water in the aquifer system area. The State Water Project Plans specifies no DHHL demands for potable or non-potable water out to 2031.

Therefore, staff does not believe that this application will interfere with Hawaiian home lands rights or reservations.

(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

The OHA Kipuka database shows no sites or crown lands involved; there are no objections from OHA. No sites identified by Historic Preservation. Aha Moku review had no response.

(9) Well Construction & Pump Installation Applications

No comments or objections have been received through the normal ministerial review. The proposed construction meets the Hawai'i Well Construction and Pump Installation Standards.

September 17, 2019

RECOMMENDATION:

Staff recommends that the Commission:

1. Approve the issuance of Ground Water Use Permit (GWUP) No. 01091 to for the reasonable and beneficial use of 0.058 million gallons per day of fresh water for irrigating mixed crops and one domestic dwelling from the 4 Rs Well (Well No. 3-3411-016), 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 condition:

   A. This permit is invalid 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. Approve the well construction and pump installation permits for 4Rs Well (Well No. 3-3411-016), subject to the standard well construction permit conditions as described in Exhibit 9 and standard pump installation permit conditions as described in Exhibit 10.

Ola i ka wai,

M. KALEO MANUEL
Deputy Director

Exhibits:
1 (Location Maps A-F)
2 (Water Use Permit Detailed Information)
3 (Public Notice)
4 (Existing and Pending Water Use Permits Withdrawal)
5 (Current 12-Month Moving Average)
6 (IWREDSS Calculations)
7 (Summary Of Use Request and Recommended Allocations)
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

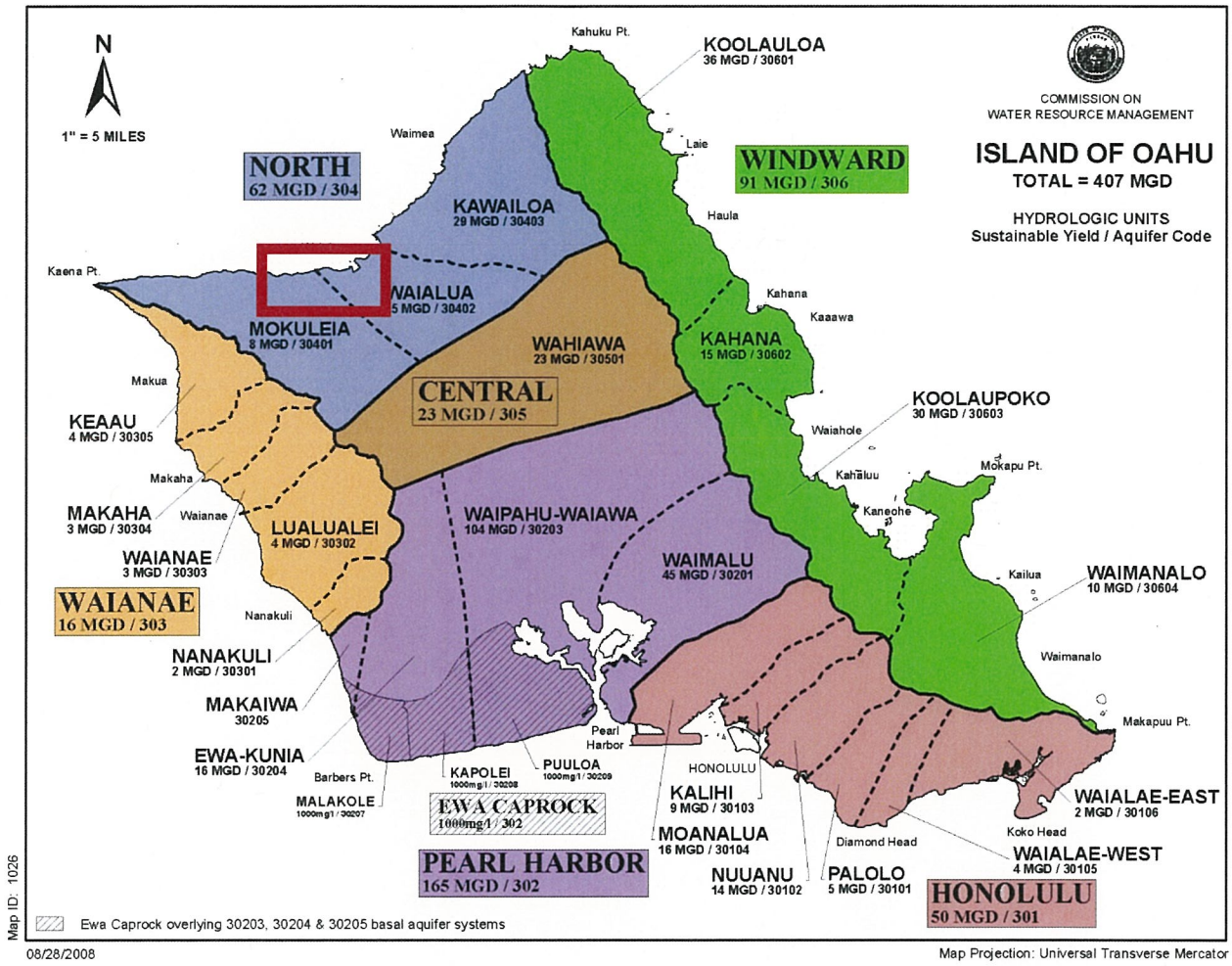


EXHIBIT 1: LOCATION MAPS A
OAHU ASA, HIGHLIGHTING AREA OF MOKULĒ'IA

EXHIBIT 1: LOCATION MAPS B
MOKULĒ'IA PLAIN WEST FROM THOMPSON CORNER

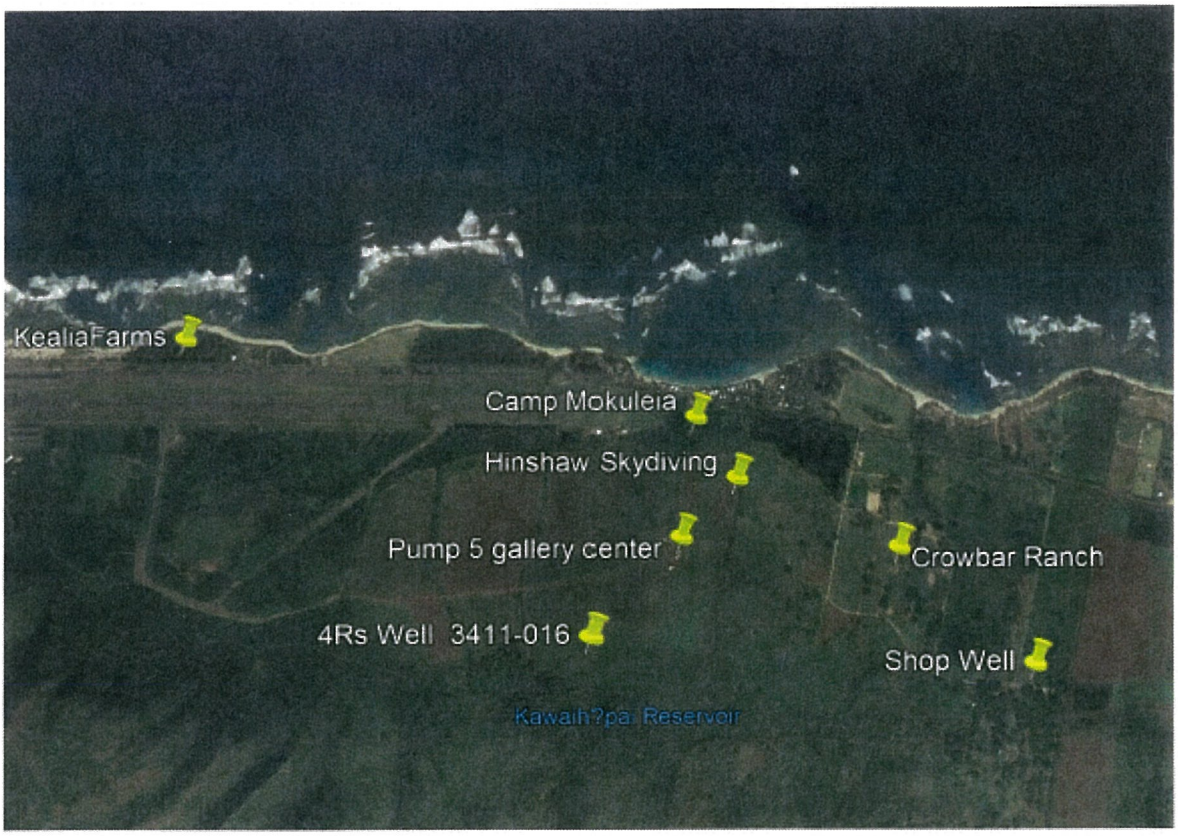


EXHIBIT 1: LOCATION MAPS C
DILLINGHAM AIRFIELD VICINITY WELLS

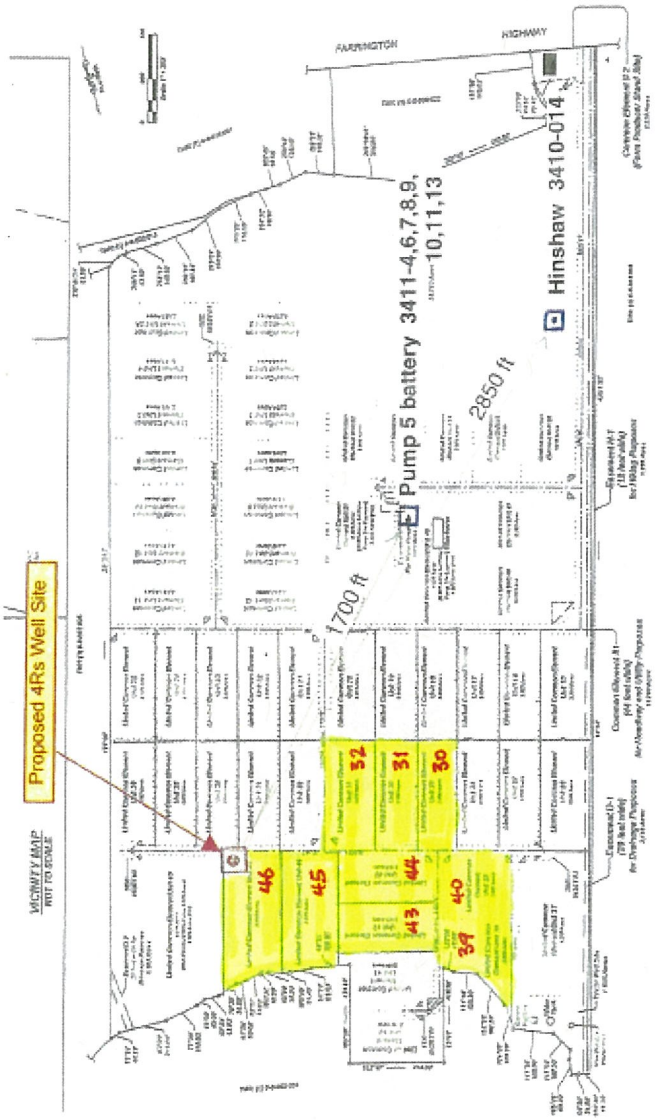
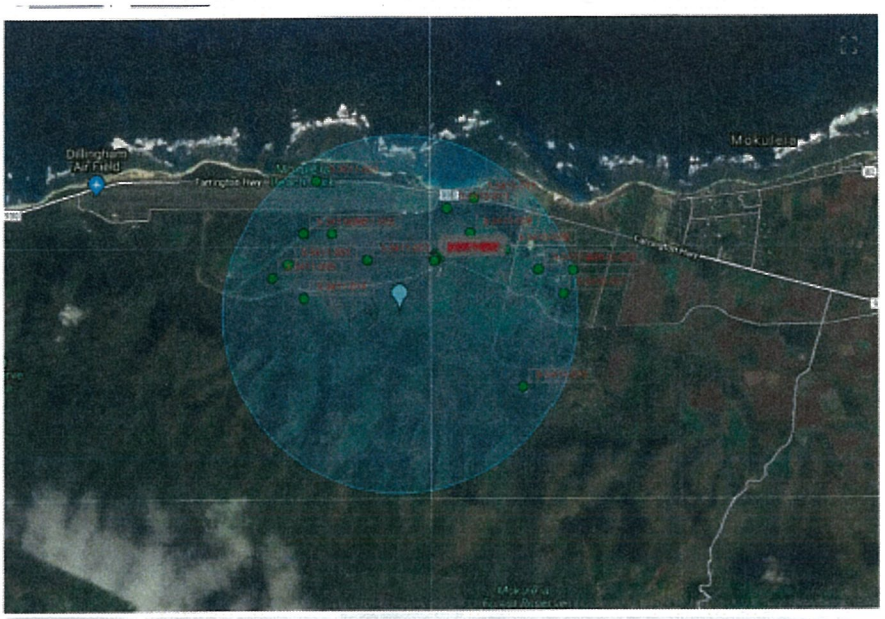


EXHIBIT 1: LOCATION MAPS D
KAWAIHĀPAI PARCEL, 4RS LOTS



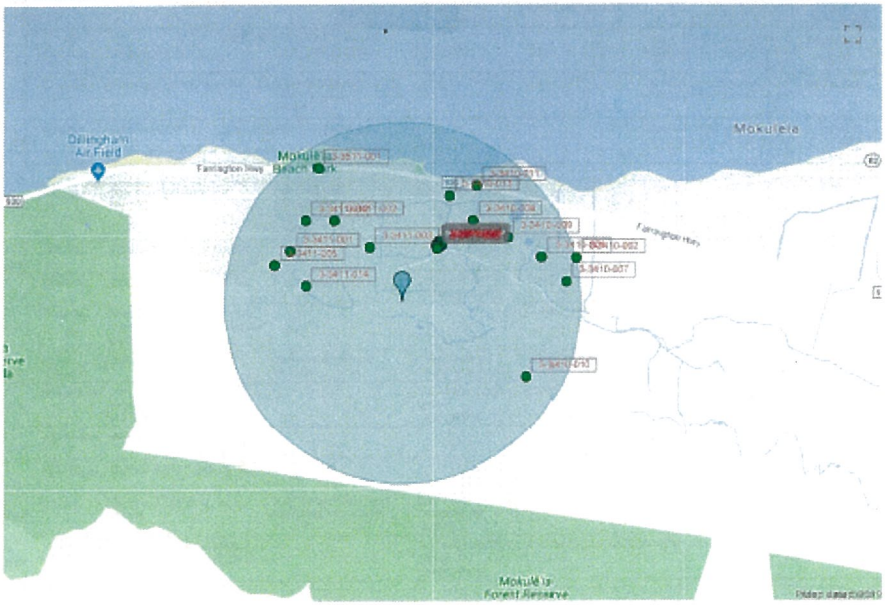


EXHIBIT 1: LOCATION MAPS E
1-MILE RADIUS, CONTRASTING VIEWS

24 matching results found.

Sort By: Well Number

Well Number	Aquifer System	Well Name	Well Owner/Operator	Water Use Reporter	Land Owner	TMK	Use	Year Drilled	Latest 12-MAV	Last Reported Date	Distance (miles)
3-3410-001	30401 Mokuleia	Crowbar Ranch	Dillingham Ranch Aina LLC	Maleeyah Machado (Pure Water Specialty Co. Oahu Office)	Dillingham Ranch Aina LLC	(1) 6-8-003:040	MUNPR	1911	0.145	4/30/2019	0.82
3-3410-002	30401 Mokuleia	Mokuleia	Mokuleia Land Co.				ABNSLC				1.00
3-3410-007	30401 Mokuleia	Mokuleia	Mokuleia Ranch				ABNSLD				0.93
3-3410-008	30401 Mokuleia	Mokuleia	Dole Food Company, Inc. Hawaii	Robert Chemet (Commission on Water Resource Management CWRM)	Dole Food Company, Inc. Hawaii	(1) 6-8-003:009	OBS	1890			0.58
3-3410-009	30401 Mokuleia	Mokuleia	Waialua Sugar Company, Inc.				ABNSLD	1890			0.69
3-3410-010	30401 Mokuleia	Mokuleia	Coastal View Properties, LLC	Ralph Gray	Coastal View Properties, LLC	(1) 6-8-003:034	COM	1946	0.002	9/1/2018	0.83
3-3410-011	30401 Mokuleia	Mokuleia	Pacific Islands Water Science Center, USGS, U.S. Geological Survey			(1) 6-8-003:009	ABNLOS	1962			0.75
3-3410-013	30401 Mokuleia	Camp Mokuleia	Camp Mokuleia	Ted Hubbard (Camp Mokuleia)	The Episcopal Church in Hawaii	(1) 6-8-003:032	AGRCP	2014	0.000	4/2/2018	0.82
3-3411-001	30401 Mokuleia	Kawaihapai	Directorate of Public Works, Environmental Division, DPW, U.S. Army Garrison		U.S. Army Garrison, Hawaii, Headquarters	(1) 6-8-003:013	ABNLOS				0.68
3-3411-002	30401 Mokuleia	Kawaihapai	Waialua Sugar Company, Inc.				ABNSLD				0.57
3-3411-003	30401 Mokuleia	Kawaihapai	Waialua Sugar Company, Inc.				ABNSLD				0.33
3-3411-004	30401 Mokuleia	Pump 5	Dole Food Company, Inc. Hawaii	Kyle Barber (Dole Food Company, Inc. Hawaii)	Dole Food Company, Inc. Hawaii	(1) 6-8-003:009	AGRCP		0.000	5/24/2019	0.34
3-3411-005	30401 Mokuleia	Kawaihapai	Directorate of Public Works, Environmental Division, DPW, U.S. Army Garrison		U.S. Army Garrison, Hawaii, Headquarters	(1) 6-8-003:013	ABNLOS	1894			0.74
3-3411-006	30401 Mokuleia	Pump 5	Dole Food Company, Inc. Hawaii	Kyle Barber (Dole Food Company, Inc. Hawaii)	Dole Food Company, Inc. Hawaii	(1) 6-8-003:009	AGRCP	1899	0.000	5/24/2019	0.33
3-3411-007	30401 Mokuleia	Pump 5	Dole Food Company, Inc. Hawaii	Kyle Barber (Dole Food Company, Inc. Hawaii)	Dole Food Company, Inc. Hawaii	(1) 6-8-003:009	AGRCP	1900	0.000	5/24/2019	0.34
3-3411-008	30401 Mokuleia	Pump 5	Dole Food Company, Inc. Hawaii	Kyle Barber (Dole Food Company, Inc. Hawaii)	Dole Food Company, Inc. Hawaii	(1) 6-8-003:009	AGRCP	1900	0.000	5/24/2019	0.36
3-3411-009	30401 Mokuleia	Pump 5	Dole Food Company, Inc. Hawaii	Kyle Barber (Dole Food Company, Inc. Hawaii)	Dole Food Company, Inc. Hawaii	(1) 6-8-003:009	AGRCP	1900	0.000	5/24/2019	0.37
3-3411-010	30401 Mokuleia	Pump 5	Dole Food Company, Inc. Hawaii	Kyle Barber (Dole Food Company, Inc. Hawaii)	Dole Food Company, Inc. Hawaii	(1) 6-8-003:009	AGRCP	1900	0.000	5/24/2019	0.35
3-3411-011	30401 Mokuleia	Pump 5	Dole Food Company, Inc. Hawaii	Kyle Barber (Dole Food Company, Inc. Hawaii)	Dole Food Company, Inc. Hawaii	(1) 6-8-003:009	AGRCP	1900	0.000	5/24/2019	0.36
3-3411-012	30401 Mokuleia	Kawaihapai	Waialua Sugar Company, Inc.				ABNSLD	1903			0.69
3-3411-013	30401 Mokuleia	Pump 5	Dole Food Company, Inc. Hawaii	Kyle Barber (Dole Food Company, Inc. Hawaii)	Dole Food Company, Inc. Hawaii	(1) 6-8-003:009	AGRCP	1916	0.000	5/24/2019	0.37
3-3411-014	30401 Mokuleia	Kawaihapai	Pacific Islands Water Science Center, USGS, U.S. Geological Survey			(1) 6-8-003:005	ABNLOS	1962			0.54
3-3411-015	30401 Mokuleia	Kawaihapai	Pacific Islands Water Science Center, USGS, U.S. Geological Survey			(1) 6-8-003:009	ABNLOS	1969			0.35
3-3511-001	30401 Mokuleia	Mokuleia Beach	Pacific Islands Water Science Center, USGS, U.S. Geological Survey			(1) 6-8-008:011	ABNLOS	1969			0.85

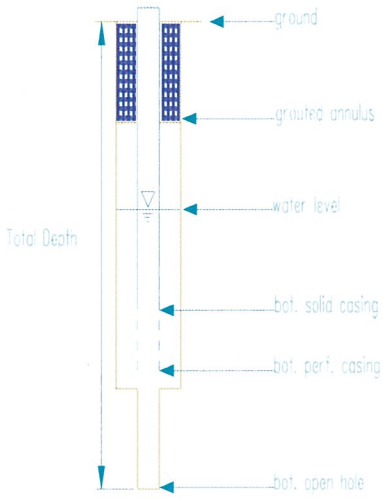
5902

EXHIBIT 1: LOCATION MAPS F
LIST OF WELLS 1 – MILE RADIUS

WATER USE PERMIT DETAILED INFORMATION

Source Information

AQUIFER:	**Mokulē'ia** System, North Sector, Oahu
Sustainable Yield:	17 mgd
Existing Water Use Permits:	5 mgd
Available Allocation:	12 mgd
Total other pending applications:	2 mgd
This application:	0.058 mgd
WELL:	4Rs (Well No. 3411-016)
Location:	Oahu, TMK: (3) 6-8-003:046
Year Drilled:	
Casing Diameter:	8 in.
Elevations (msl= 0 ft.)	
Water Level:	14 ft.
Ground:	69 ft.
Bottom of Solid Casing:	-281 ft.
Bottom of Perforated:	-341 ft.
Bottom of Open Hole:	na ft.
Total Depth:	400 ft.
Grouted Annulus Depth:	340 ft.
Pump Capacity	250 gpm



Use Information

Quantity Requested:	0.058 gallons per day.
New Type of Water Use:	agriculture
Place of Water Use:	TMK: (1) 6-8-003:009
Reported Water Usage:	0 gpd
Nearby Similar Water Usage:	0 gpd
Mokulē'ia Aquifer System	
Current 12-Month Moving Average Withdrawal (See Exhibit 2):	0.489 mgd

Nearby Surrounding Wells and Other Registered Ground Water Use

There are 4 other wells within a mile of the well (see Exhibit 1 E & F) and a fifth approved for construction. 2 of these wells are currently in use. Information from the well index indicates there are possibly 25 existing wells in the Mokulē'ia Aquifer System.

Public Notice

In accordance with HAR §13-171-17, a public notice was published in the Honolulu Advertiser on 07/05/2019 and 07/05/2019 and a copy of the notice was sent to the Office of the Mayor. Copies of the completed application were sent to the Honolulu Board of Water Supply, Department of Planning and Permitting, Department of Health, Department of Hawaiian Home Lands, Office of Hawaiian

EXHIBIT 2: WATER USE PERMIT DETAILED INFORMATION

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 July 26, 2019. Comments have been received; no objections were received.

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 July 26, 2019.

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

EXHIBIT 2: WATER USE PERMIT DETAILED INFORMATION

PUBLIC NOTICE

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

The Commission on Water Resource Management received the following water use permit application. Public Notice is given pursuant to Hawaii Administrative Rules, Section 13-171, "Designation and Regulation of Water Management Areas."

WUPA No. 01091 4Rs Well (Well No. 3411-016)

Applicant: Mokuleia Ag Lands LLC
705 South King St., Unit 204
Honolulu, HI 96813

Landowner: Mokuleia Ag Lands LLC
705 South King St., Unit 204
Honolulu, HI 96813

Date Application Filed as Complete: June 18, 2019
Hydrologic Unit / Aquifer System Area: Mokuleia System, North Sector, Oahu
Water Source: 4Rs Well (Well No. 3411-016), Tax Map Key (3) 6-8-003:009: Lot 046
Quantity Requested: 0.058 million gallons per day
New Use: 17.3 acres of diversified agricultural use of hemp, banana, lilikoi, citrus, cassava, pigeon pea, and papaya and 1 domestic unit
Place of Water Use: At Tax Map Key: (3) 6-8-003:009 lots 030, 031, 032, 039, 040, 043, 044, 045, & 046

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 July 26, 2019. 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: June 27, 2019

Publish in: Honolulu Star Advertiser issues of July 5, 2019 and July 12, 2019

EXHIBIT 3: PUBLIC NOTICE

Commission on Water Resource Management — Water Use Permit

Island of Oahu

Aquifer System Ground Water Management Area: 30401 Mokuleia

Sustainable Yield (mgd): 17

Wup No	Approved	Permittee	Well No	Well Name	WUP (mgd)	12-MAV (mgd)	Diff (mgd)	Date Last Reported
00038	09/11/1981	United States Air Force	3-3314-003	USAF Kaena Point	0.018	0.000	0.018	07/31/2019
00052	06/02/1993	Waialua Sugar Company, Inc.	3-3411-004	Pump 5	2.550	0.000	2.550	05/24/2019
			3-3411-006	Pump 5		0.000		05/24/2019
			3-3411-007	Pump 5		0.000		05/24/2019
			3-3411-008	Pump 5		0.000		05/24/2019
			3-3411-009	Pump 5		0.000		05/24/2019
			3-3411-010	Pump 5		0.000		05/24/2019
			3-3411-011	Pump 5		0.000		05/24/2019
			3-3411-013	Pump 5		0.000		05/24/2019
00053	09/11/1981	Directorate of Public Works, Environmental Division, DPW, U.S. Army Garrison	3-3412-002	Dillingham Airfield	0.055	0.116	-0.061	07/02/2019
00669	02/18/2004	Hawaii Fish Company Inc	3-3412-004	Hawaii Fish Co. 1	0.576			05/31/2019
00679	01/13/2004	KAALA RANCH	3-3309-002	Mokuleia	0.127	0.008	0.119	08/03/2019
00766	07/12/2006	Mark Hamamoto (Mohala Farms)	3-3306-016	Hamamoto 2006	0.013	0.001	0.012	01/31/2019
00777	12/14/1988	Dillingham Ranch Aina LLC	3-3310-002	Mokuleia 2	0.850	0.000	0.850	07/31/2019
00779	09/11/1981	Dillingham Ranch Aina LLC	3-3410-003	Shop Well	1.500	0.074	1.426	07/31/2019
00813	09/11/1981	North Shore Water Company, LLC	3-3410-001	Crowbar Ranch	0.500	0.144	0.356	06/30/2019
00941	09/17/2003	Stanhope Farms	3-3308-002	Stanhope Farms	0.056	0.073	-0.017	07/28/2019
00984	08/11/2015	Kealia Farms	3-3412-006	Kealia Farms	0.009	0.000	0.009	08/01/2018
00999	09/16/2015	Candace Chase	3-3208-001	Chase	0.068	0.000	0.068	03/31/2019
01002	09/16/2015	Kalea Properties LLC	3-3308-003	Kalea 2012	0.029	0.000	0.029	06/06/2019
01010	01/28/2016	G Tree Ranch, LLC	3-3308-007	G Tree	0.066			07/08/2019
01011	01/28/2016	G Tree Ranch, LLC	3-3307-026	Paty	0.130	0.000	0.130	06/30/2019
01012	01/28/2016	G Tree Ranch, LLC	3-3307-019	Waialua-Mauka	0.081	0.003	0.078	07/08/2019
01013	01/28/2016	Ka'ala Ranch LLC	3-3307-030	Pietsch	0.462	0.001	0.461	07/31/2019
01044	07/10/2018	Pioneer Hi-Bred International, Inc.	3-3307-031	Gay and Ranch Exploratory	0.530	0.069	0.461	07/30/2019
01088	07/16/2019	Frank Hinshaw	3-3410-014	Hinshaw	0.081			
Summary for Mokuleia (26 detail records)				**Total:**	7.701	0.489	7.212	
				SY Available:	9.299			

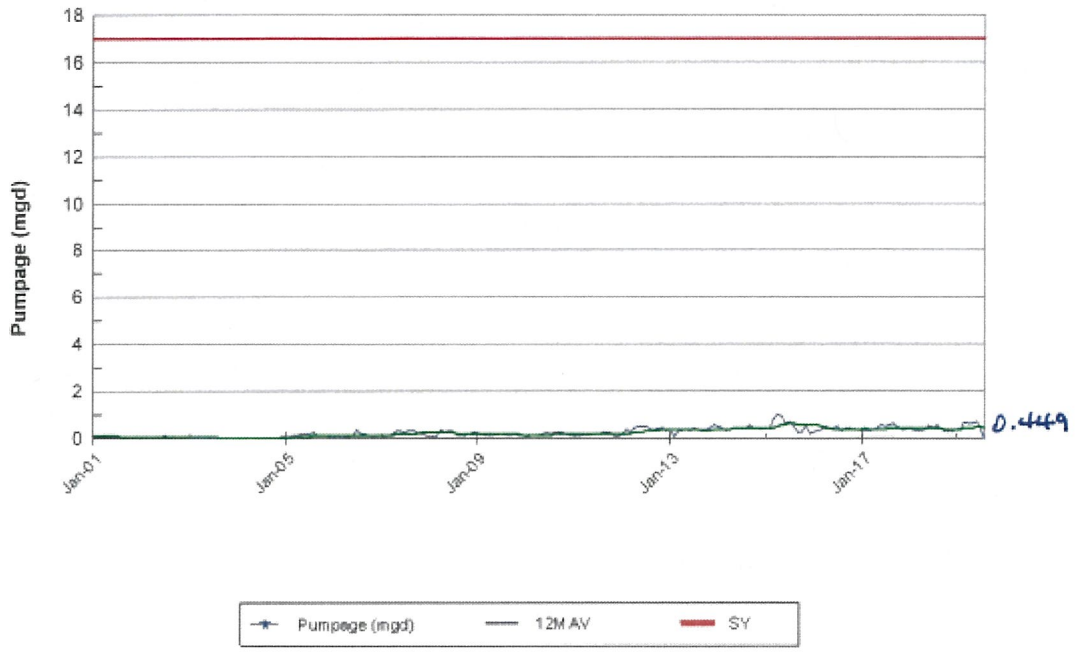
Commission on Water Resource Management — Pending Water Use Permit

WUPA No	Well No.	Applicant	Well Name	mgd	Received	Accept
Aquifer System: 30401 Mokuleia						
1003	3-3410-001	North Shore Water Company, LLC	Crowbar Ranch	1.709	07/02/2015	
1003	3-3410-003	North Shore Water Company, LLC	Shop Well		07/02/2015	
1004		North Shore Water Company, LLC	Well 1	1.300	07/02/2015	
1004		North Shore Water Company, LLC	Well 2		07/02/2015	
1090	3-3208-002	David Summers	Summers 2019	0.037	05/13/2019	
1091	3411-016	Mokuleia Ag Lands LLC	4Rs	0.058	06/03/2019	06/18/2019
			4 WUPAs totalling 3.104			

EXHIBIT 4: EXISTING WATER USE PERMITS AND 12-MONTH MOVING AVERAGE WITHDRAWAL

Commission on Water Resource Management

Monthly Pumpage Chart
12 Month Moving Average



Report Parameters

Date	01/01/2001 - 08/14/2019
Island	Oahu
Well Owner	All
Well Reporter	All
Well # Prefix	All
Aquifer Sector	All
Aquifer	30401 Mokuleia
Potable/Non-Potable	Potable, Non-Potable
TMK	All
PWS	All
Aquifer Type	Alluvial, Basal, Caprock, Dike, Perched, Not Specified
Pump Capacity	All
Well Use	All

EXHIBIT 5: CURRENT 12-MONTH MOVING AVERAGE

4 Rs - Mokulē'ia Ag Lands, LLC
TMK: (1) 6-8-003:009 Lots 30-32, 39-40, 43-46
17.25 net irrigated acres

IWREDSS Results Summary

Total Parcel Area in Acres: 28.670

Banana

Drought Frequency:	1 in 2 years	1 in 5 years	1 in 10 years	1 in 20 years
Inches per acre:	23.598	26.020	27.125	27.965
gpd/acre:	1,756	1,936	2,018	2,080
Total Parcel Mgd:	0.050	0.056	0.058	0.060

IWREDSS Results Summary

Total Parcel Area in Acres: 28.670

Citrus

Drought Frequency:	1 in 2 years	1 in 5 years	1 in 10 years	1 in 20 years
Inches per acre:	28.082	30.624	31.773	32.645
gpd/acre:	2,089	2,278	2,364	2,429
Total Parcel Mgd:	0.060	0.065	0.068	0.070

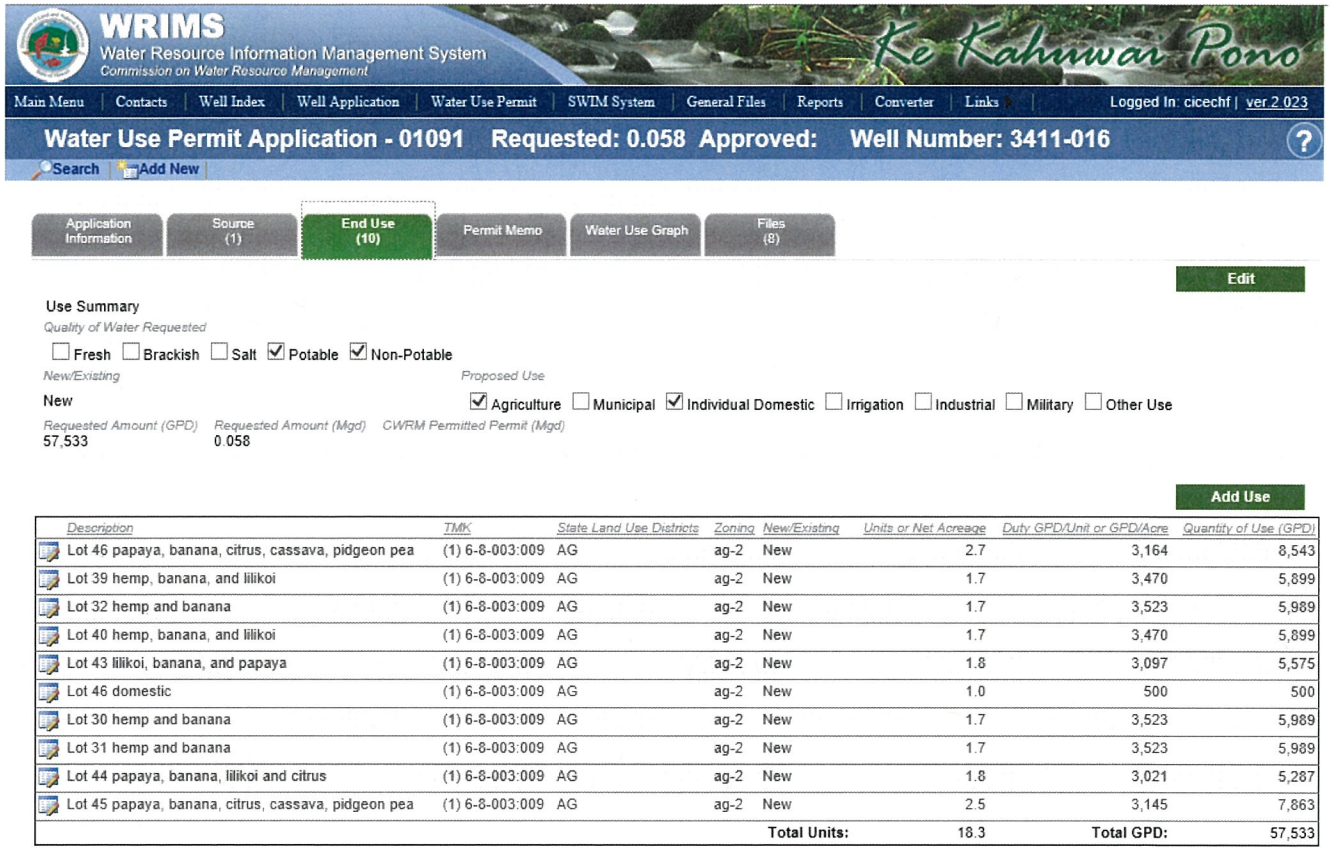
IWREDSS Results Summary

Total Parcel Area in Acres: 28.670

Papaya

Drought Frequency:	1 in 2 years	1 in 5 years	1 in 10 years	1 in 20 years
Inches per acre:	10.155	12.000	12.882	13.571
gpd/acre:	755	893	958	1,010
Total Parcel Mgd:	0.022	0.026	0.027	0.029

EXHIBIT 6: IWREDSS CALCULATIONS



WRIMS
Water Resource Information Management System
Commission on Water Resource Management

Ke Kahuwai Pono

Main Menu | Contacts | Well Index | Well Application | Water Use Permit | SWIM System | General Files | Reports | Converter | Links | Logged In: cicechf | ver.2.023

Water Use Permit Application - 01091 Requested: 0.058 Approved: Well Number: 3411-016

Search | Add New

Application Information | Source (1) | End Use (10) | Permit Memo | Water Use Graph | Files (8)

Edit

Use Summary

Quality of Water Requested

☐ Fresh ☐ Brackish ☐ Salt ☑ Potable ☑ Non-Potable

New/Existing

New

Proposed Use

☑ Agriculture ☐ Municipal ☑ Individual Domestic ☐ Irrigation ☐ Industrial ☐ Military ☐ Other Use

Requested Amount (GPD)	*Requested Amount (Mgd)*	*CWRM Permitted Permit (Mgd)*
57,533	0.058	

Add Use

Description	TMK	State Land Use Districts	Zoning	New/Existing	Units or Net Acreage	Duty GPD/Unit or GPD/Acre	Quantity of Use (GPD)
Lot 46 papaya, banana, citrus, cassava, pidgeon pea	(1) 6-8-003:009	AG	ag-2	New	2.7	3,164	8,543
Lot 39 hemp, banana, and lilikoi	(1) 6-8-003:009	AG	ag-2	New	1.7	3,470	5,899
Lot 32 hemp and banana	(1) 6-8-003:009	AG	ag-2	New	1.7	3,523	5,989
Lot 40 hemp, banana, and lilikoi	(1) 6-8-003:009	AG	ag-2	New	1.7	3,470	5,899
Lot 43 lilikoi, banana, and papaya	(1) 6-8-003:009	AG	ag-2	New	1.8	3,097	5,575
Lot 46 domestic	(1) 6-8-003:009	AG	ag-2	New	1.0	500	500
Lot 30 hemp and banana	(1) 6-8-003:009	AG	ag-2	New	1.7	3,523	5,989
Lot 31 hemp and banana	(1) 6-8-003:009	AG	ag-2	New	1.7	3,523	5,989
Lot 44 papaya, banana, lilikoi and citrus	(1) 6-8-003:009	AG	ag-2	New	1.8	3,021	5,287
Lot 45 papaya, banana, citrus, cassava, pidgeon pea	(1) 6-8-003:009	AG	ag-2	New	2.5	3,145	7,863
				Total Units:	18.3	**Total GPD:**	57,533

EXHIBIT 7: SUMMARY OF USE REQUEST AND RECOMMENDED ALLOCATIONS

Acreage and GPD by Crop and Lot

Crop	Lot #s	acres	gpd
Hemp	30	1.6	5600
	31	1.6	5600
	32	1.6	5600
	39	1.5	5250
	40	1.5	5250
		7.8 ac	27300
Banana	30	0.1	388
	31	0.1	388
	32	0.1	388
	39	0.1	388
	40	0.1	388
	43	0.5	1942
	44	0.5	1942
	45	0.8	3106
	46	0.8	3106
		3.1 ac	12036
Lilikoi	39	0.1	261
	40	0.1	261
	43	1.0	2614
	44	0.4	2614
		1.6 ac	5750
Papaya	43	0.3	1019
	44	0.6	2039
	45	1.0	3398
	46	1.2	4078
		3.1 ac	10534
Citrus	44	0.25	261
	45	0.3	314
	46	0.3	314
		0.85 ac	889
Cassava	45	0.2	523
	46	0.2	523
		0.4 ac	1046
Pidgeon Pea	45	0.2	523
	46	0.2	523
		0.4 ac	1046

Summary	acres	gpd	gad
hemp	7.8	27300	**3500**
banana	3.1	12036	**3883**
lilikoi	1.6	4182	**2614**
papaya	3.1	10534	**3398**
citrus	0.85	889	**1046**
cassava	0.4	1046	**2615**
Pidgeon pea	0.4	1046	**2615**
all crops	**17.25**	**57033**	

EXHIBIT 7: SUMMARY OF USE REQUEST AND RECOMMENDED ALLOCATIONS

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 **Mokulē'ia** 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 **Mokulē'ia** 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 **Mokulē'ia** 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/cwrm/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/cwrm/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 250 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/cwrm/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.