



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

STAFF SUBMITTAL

for the meeting of the
COMMISSION ON WATER RESOURCE MANAGEMENT

October 16, 2018
Honolulu, Hawai'i

Department of Hawaiian Home Lands'
Reservation of 0.513 Million Gallons per Day of Surface Water from the
Wailua River, Wailua Surface Water Hydrologic Unit, Kaua'i

SUMMARY OF REQUEST

Staff requests that the Commission on Water Resource Management (Commission) approve a surface water reservation of 0.513 million gallons per day (mgd) for the Department of Hawaiian Home Lands (DHHL) to meet their foreseeable future surface water needs in the surface water hydrologic unit of Wailua which is a non-designated water management area.

LOCATION Wailua River, Wailua, Kaua'i. See Exhibit 1.

LEGAL AUTHORITY

The State Water Code provides for reservations of water in both designated and non-designated water management areas. In designated areas, water reservations may be made pursuant to §174C-49(d), Hawaii Revised Statutes (HRS), which states:

The commission, by rule, may reserve water in such locations and quantities and for such seasons of the year as in its judgment may be necessary. Such reservations shall be subject to periodic review and revision in the light of changed conditions; provided that all presently existing legal uses of water shall be protected.

Hawaii Administrative Rules (HAR) Subchapter 6 (Reservation of Water) includes §13-171-60 (Reservations of water) that provides further guidance for water reservations in water management areas:

(a) *As provided in HRS §174C-49(d), the commission, by rule, may reserve water in such locations and quantities and for such seasons of the year as in its judgment may be necessary.*

(b) *The commission shall adopt within this subchapter specific reservations of water in water management areas in such quantities as are deemed necessary for purposes which are consistent with the public interest, including the provision of water for current and foreseeable development and use of Hawaiian home lands pursuant to section 221 of the Hawaiian Homes Commission Act and HRS §174C-101(a).*

(c) *Proceedings for the establishment of a reservation of water resources within a designated water management area by the commission may be initiated:*

- (1) *Upon recommendation by the chairperson; or*
- (2) *Upon written petition to the commission by any interested person with proper standing.*

(d) *Reserved water shall not be allocated from water management areas by the commission except upon application for a water use permit by the party, or parties, for whom the water was reserved.*

(e) *All reservations shall be subject to periodic review and revision in light of changed conditions.*

HRS §174C-101(a) also authorizes water reservations for DHHL, whether or not the area has been designated a water management area:

Decisions of the commission on water resource management relating to the planning for, regulation, management, and conservation of water resources in the State shall, to the extent applicable and consistent with other legal requirements and authority, incorporate and protect adequate reserves of water for current and foreseeable development and use of Hawaiian home lands as set forth in section 221 of the Hawaiian Homes Commission Act.

EXISTING WATER RESERVATIONS

Thus far, the Commission has established a total of 25 water reservations, all for DHHL, in both water management areas and non-designated water management areas.

Table 1 shows the three water reservations made by rule in water management areas, pursuant to HRS §174C-49(d).

Table 1. DHHL Water Reservations in Water Management Areas.

Administrative Rule	Island	Water Management Area	Effective Date	Initial Reservation (mgd)	Current Reservation (mgd)
§13-171-61	O'ahu	Waipahu-Waiawa	02/18/1994	1.724	1.358
§13-171-62	O'ahu	Waimānalo	02/18/1994	0.124	0.124
§13-171-63	Moloka'i	Kualapu'u	06/10/1995	2.905	2.905

Table 2 shows water reservations established via Commission action in non-designated water management areas, pursuant to HRS §174C-101(a).

Table 2. DHHL Water Reservations in Non-Designated Water Management Areas

Island	Hydrologic Unit	Action Date	Initial Reservation (mgd)	Current Reservation (mgd)
Kaua'i	Waimea*	06/20/2017	6.903	6.903
	Wailua	09/18/2018	0.708	0.708
	Anahola	09/18/2018	1.470	1.470
	Kekaha	09/18/2018	0.336	0.336
	Makaweli	09/18/2018	0.405	0.405
Lana'i	Leeward	09/18/2018	0.067	0.067
Maui	Honokōwai	09/18/2018	0.770	0.770
	Kama'ole	09/18/2018	2.547	2.547
	Ke'anae	09/18/2018	0.003	0.003
	Kawaiipapa	09/18/2018	0.118	0.118
	Luala'iula	09/18/2018	0.063	0.063
Hawai'i	Keauhou	08/17/2015	3.398	3.398
	Hawi	09/18/2018	0.148	0.148
	Māhukona	09/18/2018	3.014	3.014
	Honoka'a	09/18/2018	0.396	0.396
	Hakalau	09/18/2018	0.083	0.083
	Onomea	09/18/2018	0.250	0.250
	Hilo	09/18/2018	0.492	0.492
	Kea'au	09/18/2018	1.336	1.336
	'Ōla'a	09/18/2018	0.025	0.025
	Nā'ālehu	09/18/2018	0.185	0.185
Pāhoa	09/18/2018	0.660	0.660	

* Surface Water Hydrologic Unit

STATE WATER PROJECTS PLAN 2017 UPDATE

The most recent reservation actions, shown above in Table 2, were supported by preliminary findings in the most recent update of the State Water Projects Plan, which was formally adopted by the Commission on May 16, 2017. The State Water Projects Plan is the component of the Hawaii Water Plan that documents the water needs of all State agencies over a 20-year planning horizon. The Engineering Division of the Department of Land and Natural Resources is responsible for the development and updating of the State Water Projects Plan. In addition to inventorying the existing and future water needs for State projects, through the State Water Projects Plan, Engineering Division also promotes partnerships and cost sharing to coordinate water development projects and water infrastructure improvements of potentially competing State agencies. Based on the State Water Projects Plan, Engineering Division pursues legislative funding to support new source development through Capital Improvement Project requests and administers a water credit allocation program for State agencies. Implementation of the State Water Projects Plan in close coordination with the County Water Use and Development Plan is needed to ensure orderly authorization and development of new State sources and water system infrastructure.

Initially adopted in 1990 and revised in 2003, a third update of the State Water Projects Plan was completed and adopted in 2017¹. Due to funding constraints, Engineering Division focused this most recent State Water Projects Plan update exclusively on DHHL. DHHL was selected because: 1) they are the largest landowner amongst State agencies and thus could have the most significant impact on water resource development and use, and 2) DHHL water needs are an identified public trust purpose under the State Constitution and Water Code.

Engineering Division and its consultant worked extensively with DHHL staff to identify priority tracts and proposed phasing over the 20-year planning horizon and to determine the breakdown of each tract in terms of residential units and agricultural acreages. The 20-year timeframe is established under HAR §13-170-42(c), which requires the State Water Projects Plan to consider a twenty-year projection period for analysis purposes.

Potable water requirements were calculated by correlating DHHL's land use designations to an equivalent zoning designation in the County Water System Standards and applying the respective unit rate (Exhibit 2). All demands from the domestic component of homesteading (Residential, Subsistence Agriculture, Pastoral) and municipal (Community Use, Commercial, Industrial) land use designations were considered to be potable.

Non-potable requirements were considered to be irrigation demands for agricultural land use designations (Subsistence, Supplemental, and General Agriculture) and stock water (sustenance water for livestock) for the Pastoral land use designation. Agricultural non-potable demands were calculated using a unit rate of 3,400 gallons per acre per day, as recommended by the Department of Agriculture's Agricultural Water Use and Development Plan. Based on published studies, a livestock watering unit rate of 20 gallons per head per day was used for Pastoral land use designations. The unit rate non-potable requirements are shown in Exhibit 3.

A range of forecasts - high, medium, and low – were developed for both potable and non-potable end use water demands. Variability was achieved by adjusting project development data while keeping water demand unit rates fixed. Examples of adjustments included varying unit buildout rates, utilizing different unit density rates, and using different percentages of utilization of the total area for development. However, while the range of water demands for the various end uses were assessed, only the medium demand projections by water source (e.g., aquifer system areas to be developed) were provided. Thus, the recommended reservation amounts are based on the medium demand projections, which is the only available information on resource needs.

The 2017 update of the State Water Projects Plan provides a sound basis and rationale for water reservations statewide for DHHL for both potable needs (ground water) and non-potable needs (surface water) by hydrologic unit. After discussion with DHHL staff, it was decided that

¹ Engineering Division also received separate funding to update the State Water Projects Plan for the North Kona region on the island of Hawai'i, as well as for a comprehensive statewide update. The statewide update will incorporate the 2017 update (which documents DHHL water needs) as well as the regional update for North Kona in order to develop comprehensive and coordinated water development strategies that consider and coordinate the needs and plans of all State agencies.

establishment of additional water reservations begin with potable ground water needs in non-designated areas on the islands of Kaua'i, Maui, Lana'i, and Hawai'i for the following reasons:

- DHHL's needs within designated ground water management areas on the island of O'ahu are to be met through the Honolulu Board of Water Supply's (HBWS) integrated municipal water system. As shown in Table 1, DHHL has existing reservations from the Waipahu-Waiawa and Waimanalo Aquifer System Areas on O'ahu. As DHHL tracts are developed, these reservations are to be converted to water use permits and transferred to the HBWS for water service. DHHL will not be pursuing new source development and does not plan to operate new water systems on O'ahu. According to DHHL, DHHL is already in discussions with HBWS to service DHHL tracts on O'ahu and has received verbal commitment from HBWS. HBWS is in the process of updating its Water Use and Development Plan, and the regional watershed management plans for the Primary Urban Center, 'Ewa District, and Central O'ahu are currently underway and should incorporate DHHL needs and strategies based on the 2017 State Water Projects Plan.
- DHHL's needs within non-designated aquifer system areas on the island of O'ahu (Wai'anae Sector Area) will also be met through the Honolulu Board of Water Supply's (HBWS) integrated municipal water system. DHHL will not be pursuing new source development or any plans to operate new water systems in the Wai'anae Sector Area. DHHL is already in discussions with HBWS to service DHHL tracts on O'ahu and has received verbal commitment from HBWS.
- Besides O'ahu, the only other island that is currently designated as a ground water management area is the island of Moloka'i. As shown in Table 1, there is an existing water reservation for DHHL for the Kualapu'u Ground water Management Area for 2.905 mgd; however, the 2017 State Water Projects Plan shows a projected need for only 0.840 mgd until 2031. Commission and DHHL staff are in agreement that any revision to the reservation for Kualapu'u should be deferred pending: 1) the Supreme Court decision on Moloka'i Ranch's appeal of the Commission's dismissal of the contested case hearing on its water use permit application, and 2) completion of the forthcoming USGS Moloka'i ground water model. Better predictive data for DHHL's overall needs on Moloka'i may be derived from these two activities.
- Staff's preliminary review of non-potable surface water needs in the 2017 State Water Projects Plan indicate that in some cases, where there are available streamflow records, proposed future needs exceed the available flow in the stream. In most cases, however, there is no available streamflow data to compare with the proposed water needs. (Should stream flow be insufficient, non-potable needs may need to be met with ground water or another alternative.)
- Additionally, current information on other existing offshore uses is lacking. Furthermore, DHHL's needs should be balanced against instream needs and other public trust purposes. Therefore, reservations for surface waters should be done in concert with staff's

establishment of instream flow standards, which will involve the collection of the data and information necessary to vet the amounts to be reserved.

- On August 21, 2018, the Commission staff recommended amended interim instream flow standards for Waikoko and North Fork Wailua Streams in the Wailua surface water hydrologic unit. However, before making a decision, several requests for a contested case hearing were made before the Commission. Despite this, the Commission staff believes that there is sufficient water within the Wailua hydrologic unit to meet DHHL's foreseeable future surface water needs.

DHHL'S WATER RESERVATION REQUEST

According to their Kaua'i Island Plan (updated June 4, 2004), DHHL currently has planned uses for 526 acres in Wailua which is located in the surface water hydrologic unit of Kawailoa, adjacent to the mouth of the Wailua River and the Wailua surface water hydrologic unit (Exhibit 1). DHHL's Wailua Regional Plan (December 2009) identifies the residential Wailua community project as the first priority project of the Kaua'i Island Plan. The Wailua tract includes plans for 640 residential lots at 10,000 sq. ft. (216 acres), 47 acres of commercial lands, 20 acres of community use lands, 92 acres of Special District lands, 25 agricultural homestead lots at 2 acres (99 acres), and 52 acres of General Agricultural lands.

On September 18, 2018, the Commission approved a reservation of 0.708 mgd from the Wailua Aquifer System Area for potable water needs.

This reservation request is for 0.513 mgd from the Wailua surface water hydrologic unit based on the medium-range demand for non-potable water demands in the Wailua tract, requiring a transfer of water to the Kawailoa (ID: 2041) surface water hydrologic unit.

In the 2017 State Water Projects Plan Update, DHHL indicates that the majority of the Wailua tract is within the service area of the East Kaua'i Irrigation System. The Hanamā'ulu Ditch ends at Reservoir 21 along the Kālepa Ridge mauka of the tract and the Hawai'i Department of Agriculture has indicated that a tunnel through the ridge extends to the tract. There are several plantation-era ditches within the tract, but their condition is not known.

HYDROLOGICAL CONTEXT

The availability of surface water from the Wailua hydrologic unit to meet the non-potable needs of DHHL can be estimated based on historic streamflow records and record augmentation. Selected natural low-flow duration discharge exceedance values were estimated for various locations on the North Fork Wailua and 'Ōpaeka'a streams for the current (1984-2013) climate period by the USGS (Table 3). Such natural low-flow data are not available for the South Fork Wailua River, where historically, water was diverted from the stream for agriculture on parcels that DHHL now owns. During the 1912-1918 period, the USGS operated stream and ditch gaging stations on the Upper Līhu'e Ditch (16057000), the Hanamā'ulu Ditch (USGS station 16057000) and the South Fork Wailua River below the Hanamā'ulu Ditch (16060000). During this period, no water was being

transferred from the North Fork Wailua River via the Ili‘ili‘ula-North Wailua Ditch or the Stable Storm Ditch.

Table 3. Selected natural low-flow duration discharge exceedance values for continuous-record streamflow gaging stations corrected for the current (1984-2013) climate period in the Wailua hydrologic unit, Kaua‘i. (Source: Cheng 2016)
[Flows are in cubic feet per second (million gallons per day)]

Station ID	Station Name	Discharge (Q) for a selected percentage (xx) discharge was equaled or exceeded				
		Q ₅₀	Q ₆₀	Q ₇₀	Q ₈₀	Q ₉₀
16068000	EB NF Wailua	27 (17.5)	24 (15.5)	21 (13.6)	18 (11.6)	15 (9.69)
16071500	LB ‘Ōpaeka‘a Stream	1.3 (0.84)	1.1 (0.71)	0.89 (0.58)	0.74 (0.48)	0.58 (0.37)
16063000	NF Wailua nr 650 ft	43 (27.8)	38 (24.6)	34 (22.0)	29 (18.7)	25 (16.2)

Thus, total water flow in the South Fork Wailua River during this period can be estimated by the summation of daily flow values (1551 overlapping days) from these stations (Table 4). Due to changing climate conditions, present day stream flow on the East Branch of the North Fork Wailua River (16068000) has declined approximately 30.7% compared to the 1912-1918 period.

Table 4. Selected low-flow duration discharge exceedance values for continuous-record gaging stations from 1912-1918 on the South Fork Wailua in the Wailua hydrologic unit, Kaua‘i. (Source: USGS)
[Flows are in cubic feet per second (million gallons per day)]

Station ID	Station Name	Discharge (Q) for a selected percentage (xx) discharge was equaled or exceeded				
		Q ₅₀	Q ₆₀	Q ₇₀	Q ₈₀	Q ₉₀
16058000	Upper Līhu‘e Ditch	9.4 (6.1)	8.0 (5.2)	7.2 (4.7)	5.6 (3.6)	0.0 (0.0)
16057000	Hanamā‘ulu Ditch	32.0 (20.7)	29.0 (18.7)	28.0 (18.1)	17.0 (11.0)	8.0 (5.2)
16060000	SF Wailua River nr Līhu‘e	123.5 (79.8)	102.0 (65.9)	85.0 (54.9)	63.0 (40.7)	43.0 (27.8)
	Total	161.8 (104.6)	143.0 (92.4)	123.5 (79.8)	105.0 (67.9)	88.0 (56.9)

Assuming climate conditions that influence streamflow at station 16068000 on the North Fork Wailua are similar to those influencing streamflow on the South Fork Wailua, estimated natural low-flow duration discharge exceedance values on the South Fork Wailua at station 16060000 are provided in Table 5.

Table 5. Estimated selected natural low-flow duration discharge exceedance values for the current (1984-2013) climate period on the South Fork Wailua River in the Wailua hydrologic unit, Kaua‘i. (Source: CWRM)
[Flows are in cubic feet per second (million gallons per day)]

Station ID	Station Name	Discharge (Q) for a selected percentage (xx) discharge was equaled or exceeded				
		Q ₅₀	Q ₆₀	Q ₇₀	Q ₈₀	Q ₉₀
16060000	SF Wailua River nr Līhu‘e	90.1 (58.3)	76.5 (49.4)	57.6 (37.2)	43.6 (28.2)	29.3 (18.9)

CONSISTENCY WITH THE HAWAII WATER PLAN:

The Hawai‘i Water Plan is the State’s long-range water plan, and staff believes it is important that water reservations be consistent with, and have basis in, the Hawai‘i Water Plan (HWP). The appropriate parts of the HWP that justify reservations are the State Water Projects Plan and the County Water Use and Development Plans. Under the current planning framework, the State Water Projects Plan outlines the water needs for State projects, identifies potential supply

options, and feeds into the County Water Use and Development Plans. This enables State water needs to be integrated with the needs of all other use sectors (i.e., military, municipal, private, and agriculture) within each county into a comprehensive resource development strategy and implementation plan.

However, the County Water Use and Development Plans are in various stages of being updated. Due to the high priority rights of DHHL under the State Constitution, State Water Code, and Hawaiian Homes Commission Act, staff does not believe it is prudent nor necessary to wait for the county plans to incorporate the needs of DHHL. Should water reservations be approved, staff will inform the counties so that the reservations will be incorporated into the County Water Use and Development Plans as required by law. Reserving water for DHHL promotes the Commission's approach to managing the resource and protecting the public trust through the collaboration and consistency framework provided by the HWP.

IMPLICATIONS OF WATER RESERVATION

Should the Commission approve this water reservation, the water reservation will be documented in the Water Resource Protection Plan, along with the prior approved water reservations. The reservation will be included in the calculation of authorized planned use for consideration in water management area designation. Upon the designation of any of the hydrologic units as surface water management areas, staff will initiate review and rule-making pursuant to HRS §174C-49(d) and Hawaii Administrative Rule §13-171-60(b).

The utilization of 0.513 mgd of surface water from the Wailua surface water hydrologic unit will have no long-term negative implications for instream uses, as defined by the HRS §174C-3, as this use is less than 1% of the estimated 58.3 mgd median flow (50th percentile exceedance flow) and less than 3% of the 18.9 mgd low-flow (90th percentile exceedance flow) as indicated by the USGS' station on the South Fork Wailua River near Līhu'e (Station ID: 16060000).

ENVIRONMENTAL REVIEW (CHAPTER 343)

Hawaii Revised Statutes (HRS) Chapter 343 is not triggered by the proposed DHHL surface water reservation request because the proposal does not meet applicability requirements pursuant to HRS §343-5.

RECOMMENDATION

Based on the above, and all applicable authority, Staff recommends that the Commission:

1. Approve a reservation of surface water for the Department of Hawaiian Home Lands based on the medium-range demands to 2031, as identified in the 2017 State Water Projects Plan, in the amount of 0.513 mgd from the Wailua surface water hydrologic unit, Wailua, Kaua'i.

Respectfully submitted,



JEFFREY T. PEARSON, P.E.
Deputy Director

- | | |
|-----------|-------------------------------------------------------------|
| Exhibit 1 | Location Map. |
| Exhibit 2 | Potable Water Demand Unit Rates by Land Use Designation |
| Exhibit 3 | Non-potable Water Demand Unit Rates by Land Use Designation |

APPROVED FOR SUBMITTAL:



SUZANNE D. CASE
Chairperson

Location Map.

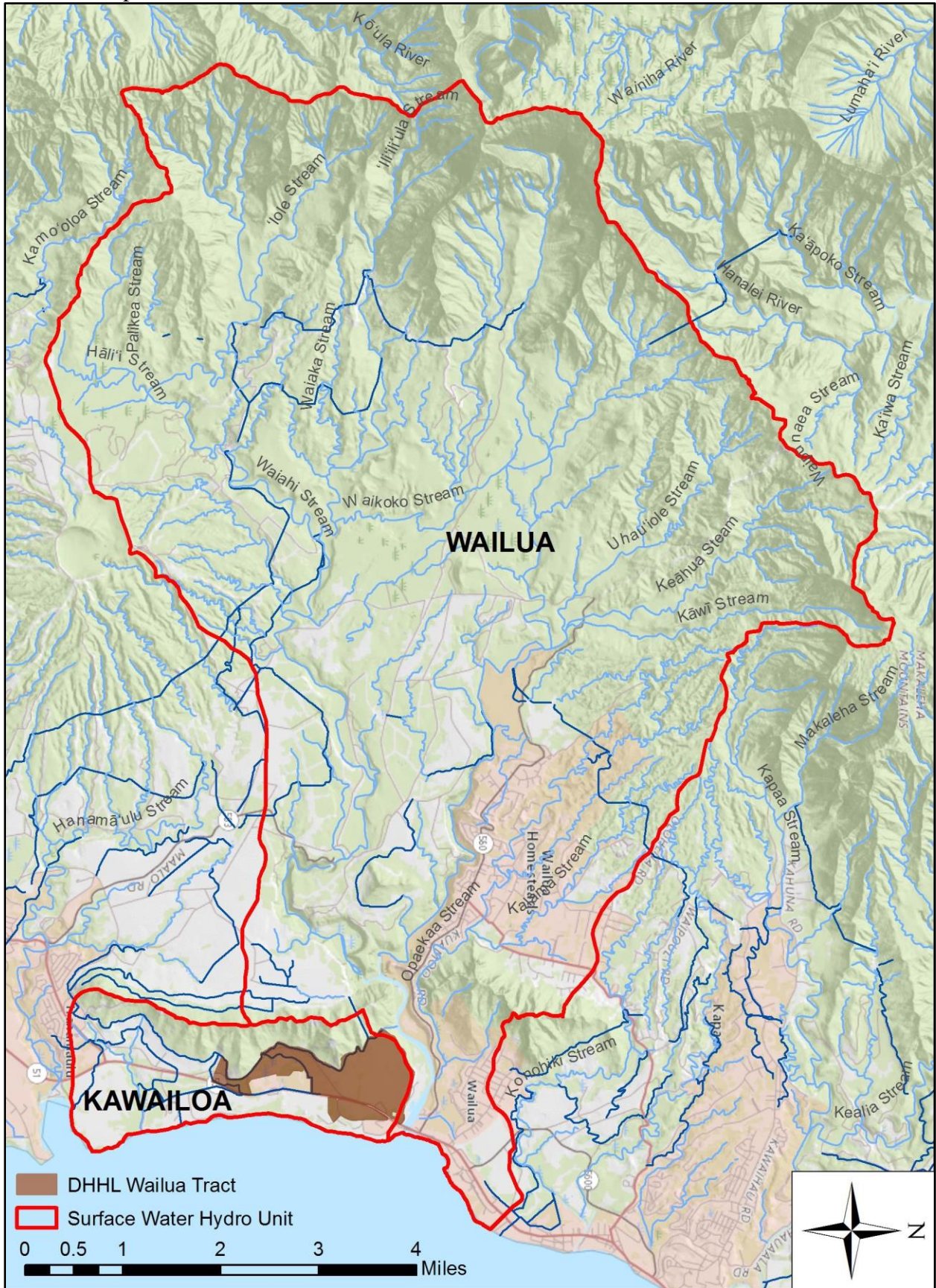


EXHIBIT 1

Proposed Water Related DHHL Projects

Table 3.4: SWPPP Potable Water Demand Unit Rates by Land Use Designation

DHHL Land Use Designation	Water System Standards Designation	Potable Water Demand Unit Rate (Average Day)			
		Hawaii'i	Kauai'i	Maui	O'ahu
Residential	Residential: Single Family or Duplex	400 gal/unit	500 gal/unit	600 gal/unit	500 gal/unit
Subsistence Agriculture	Residential: Single Family or Duplex	400 gal/unit	500 gal/unit	600 gal/unit	500 gal/unit
Supplemental Agriculture	N/A	None	None	None	None
Pastoral	Residential: Single Family or Duplex	400 gal/unit	500 gal/unit	600 gal/unit	500 gal/unit
General Agriculture	N/A	None	None	None	None
Special District	Varies	Varies	Varies	Varies	Varies
Community Use	Schools, Parks	4,000 gal/acre or 60 gal/student	4,000 gal/acre or 60 gal/student	1,700 gal/acre or 60 gal/student	4,000 gal/acre or 60 gal/student
Conservation	N/A	None	None	None	None
Commercial	Commercial Only	3,000 gal/acre	3,000 gal/acre	3,000 gal/acre	3,000 gal/acre
	Commercial-Industrial Mix	140 gal/1,000 SF	140 gal/1,000 SF	140 gal/1,000 SF	140 gal/1,000 SF
Industrial	Light Industry	4,000 gal/acre	4,000 gal/acre	6,000 gal/acre	4,000 gal/acre

Table 3.5: SWPP Non-Potable Water Demand Unit Rates by Land Use Designation

DHL Land Use Designation	Non-Potable Water Demand Unit Rate (Average Day)			
	Hawai'i	Kaua'i	Maui	O'ahu
Residential	None	None	None	None
Subsistence Agriculture	3,400 gal/acre	3,400 gal/acre	3,400 gal/acre	3,400 gal/acre
Supplemental Agriculture	3,400 gal/acre	3,400 gal/acre	3,400 gal/acre	3,400 gal/acre
Pastoral	20 gal/acre	20 gal/acre	20 gal/acre	20 gal/acre
General Agriculture	3,400 gal/acre	3,400 gal/acre	3,400 gal/acre	3,400 gal/acre
Special District	Varies	Varies	Varies	Varies
Community Use	None	None	None	None
Conservation	None	None	None	None
Commercial	None	None	None	None
Industrial	None	None	None	None

Note: In areas to be developed as Lo'i Kalo, non-potable water demand unit rate 150,000 gal/acre/day superseded unit rate in Table 3.5.