BOARD OF WATER SUPPLY

CITY AND COUNTY OF HONOLULU
630 SOUTH BERETANIA STREET
HONOLULU, HI 96843
www.boardofwatersupply.com

November 22, 2022

NOTICE

The Board of Water Supply, City and County of Honolulu, Public Hearing will be held on Monday, November 28, 2022, at 2:00 p.m., and the Regular Meeting will also be held on Monday, November 28, 2022, at 4:00 p.m. in the Boardroom, Public Service Building, 630 South Beretania Street, Honolulu, HI 96843.

Limited seating will be available for in-person testifiers in the Boardroom. The public may also view the livestream of the meeting from the lobby of the Board of Water Supply, Public Service Building, 630 S. Beretania St. Honolulu, HI 96843.

TESTIMONY

Testimony may be submitted as follows:

- Written testimony should include the submitter's address, email address, and phone number. Testimony should be received by Monday, November 28, 2022, at noon. Submit written testimony by:
  - Email to board@hbws.org
  - Online at boardofwatersupply.com/testimony
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SPECIAL REQUESTS AND ACCOMMODATIONS

If you require special assistance, an auxiliary aid or service, and/or an accommodation due to a disability to participate in this meeting (i.e., sign language interpreter; interpreter for language other than English, or wheelchair accessibility), please call (808) 748-5172 or email your request to board@hbws.org **at least three business days prior to the meeting date**. If a response is received after the requested three business days before the meeting date deadline, we will try to obtain the auxiliary aid/service or accommodation, but we cannot guarantee that request will be filled.

Upon request, this notice is available in alternate formats such as large print, Braille, or electronic copy.

The agenda for the November 28, 2022, Public Hearing and Regular Meeting of the Board of Water Supply is as follows:

PUBLIC HEARING

Considering the Board of Water Supply Water Shortage Response and Recovery Plan

ITEMS REQUIRING BOARD ACTION

1. Approval of the Minutes of the Regular Meeting Held on October 24, 2022

2. Adoption of Resolution No. 955, 2022, Adoption of the Board of Water Supply Water Shortage Response and Recovery Plan

3. Adoption of Resolution No. 956, 2022, Authorizing the Submittal of a Funding Request to the City and County of Honolulu's Coronavirus State and Local Fiscal Recovery Funds (SLFRF) program, for the Planning, Design, Construction, Operation, and Maintenance of the Proposed Kalaeloa Seawater Desalination Facility, and Authorizing the Manager and Chief Engineer, Board of Water Supply to Accept Funds for the Project

4. Adoption of Resolution No. 957, 2022, After-the-Fact Acceptance of Gifts to the Board of Water Supply from Hawaii Companies as Prizes for Halloween Contest Promoting Healthy Watersheds

5. Adoption of Resolution No. 958, 2022, Resolution of Appreciation for Ex-Officio Board Member Jade T. Butay

6. Abolishment of Positions as a Part of a Reorganization of the Field Operations Division

ITEMS FOR INFORMATION

1. Update on the Board of Water Supply's Response to the Potential Impacts of the Red Hill Fuel Contamination

2. Financial Update for the Quarter Ended September 30, 2022

3. Capital Improvement Program Quarterly Update

4. Schedule of Monthly Board Meetings for Calendar Year 2023

5. Status Update of Groundwater Levels at All Index Stations

6. Water Main Repair Report for October 2022

7. Briefing on Landfill Siting and Potential Impact on Water Resources

EXECUTIVE SESSION

1. Approval of the Minutes of the Executive Session Held on October 24, 2022

2. To Consult with the Board's Attorney on Questions and Issues Pertaining to the Board's Powers, Duties, Privileges, Immunities, and Liabilities Relating to the Siting of the Next Municipal Landfill [HRS §92-5(a)(4)]

MINUTES

THE PUBLIC HEARING OF THE BOARD OF WATER SUPPLY

November 28, 2022

At 2:00 PM on November 28, 2022, in the Board Room of the Public Service Building at 630 South Beretania Street, Honolulu, Hawaii, Board Chair Andaya called to order the Public Hearing.

Present:
Bryan P. Andaya, Chair via Zoom
Kapua Sproat, Vice Chair via Zoom
Na'alehu Anthony, Board Member via Zoom
Jonathan Kaneshiro, Board Member via Zoom
Jade T. Butay, Board Member, Ex-Officio via Zoom

Also Present:
Ernest Lau, Manager and Chief Engineer
Erwin Kawata, Deputy Manager
Jason Takaki, Program Administrator, Capital Projects Division via Vimeo
Jennifer Elflein, Program Administrator, Customer Care Division via Vimeo
Kathleen Elliott-Pahinui, Information Officer, Communications Office
Raelynn Nakabayashi, Executive Assistant I, Executive Support Office via Vimeo
Jason Nikaido, Program Administrator, Field Operations Division via Vimeo
Joseph Cooper, Waterworks Controller, Finance Division via Vimeo
Michele Thomas, Executive Assistant I, Human Resources Office via Vimeo
Henderson Nuuhiwa, Program Administrator, Program Administrator, Information Technology Division via Vimeo
Michael Matsuo, Land Administrator, Land Division via Vimeo
Barry Usagawa, Program Administrator, Water Resources Division
Kevin Ihu, Program Administrator, Water System Operations Division via Vimeo
Kathy Mitchell, Administrative Services Officer via Vimeo
Deanna Thyssen, Manager Secretary
Joy Cruz-Achiu, Board Secretary
Steven Norstrom, Information Specialist II, Communications Office
Stella Bernardo, Information Specialist II, Communications Office via Zoom

Michele Harman, Community Relations Specialist I,
Communications Office via Zoom
Wayne Maria, Information Specialist II,
Communications Office via Zoom

Others Present: Jeff Lau, Deputy Corporation Counsel
via Zoom
Jessica Wong, Deputy Corporation Counsel
via Zoom

Absent: Max Sword, Board Member
Dawn Szewczyk, Board Member

PUBLIC HEARING

Chair Bryan Andaya welcomed everyone to the November 28, 2022, Public Hearing of the Board of Water Supply (BWS). He shared that the Board of Water Supply Public Hearing notice was published in the November 18, 2022, Star Advertiser. The purpose of the Public Hearing was to allow the public the opportunity to testify on the Board of Water Supply Water Shortage Response and Recovery Plan.

Chair Andaya requested a roll call of the Board Members for the Public Hearing. Chair Andaya asked each Board Member to respond verbally and state who is present in the room if participating via Zoom when their names were called. Vice Chair Kapua Sproat, aye, and alone at her current location; Board Member Na'alehu Anthony, aye, and alone at his location; and Board Member Jade Butay, aye, and alone at his location. Chair Andaya attended via Zoom, alone at his location.

Chair Andaya introduced those present in the Boardroom, Manager Ernest Lau, Deputy Manager Erwin Kawata, Board Secretary Joy L. Cruz-Achiu, Managers Secretary Deanna Thyssen, Information Specialist II Steven Norstrom, and Water Resources Division Program Administrator Barry Usagawa. Joining by Zoom from the City and County Corporation Counsel were Jeff Lau and Jessica Wong, and Wayne Maria, Information Specialist II, Communications Office.

Chair Andaya introduced Manager and Chief Engineer Ernest Lau to give a brief overview of the BWS Water Shortage Response and Recovery Plan.

Manager Ernest Lau explained that the BWS Water Shortage Response and Recovery Plan is being presented to the Board to consider its adoption. The plan is constructed to set protocols in dealing with the water shortages that may arise due to various causes. He introduced Mr. Barry Usagawa, Program Administrator, Water Resources Division.

At 2:14 PM Board Member Jonathan Kaneshiro joined the Public Hearing via Zoom.

Mr. Barry Usagawa presented the BWS Water Shortage Response and Recovery Plan.

Mr. Usagawa stated the purpose of this plan is to provide strategic and tactical steps to assess the need to declare a water shortage condition and manage water demands related to water shortage. He explained that progressively restrictive water conservation would reduce the water demand during water shortages. The plan also includes surcharges, exemptions, appeals and penalties, and the declaration of termination of the water shortage condition and recovery phase.

Board Member Na'alehu Anthony inquired about the effects of the BWS Water Shortage Response and Recovery Plan if it were put into place now.

Mr. Usagawa explained that the draft strategies and tactics have been in place since the Red Hill crisis, which shut down three major water sources, and since Oahu has been on alert status in the summer months. He stated that Oahu will continue to face the same alert status in the summer months until new water sources become available.

Manager Lau added that the BWS Water Shortage Response and Recovery Plan would also be useful during other times when Oahu may experience drought or during an infrastructure failure which could take time to repair. He mentioned that the BWS Water Shortage Response and Recovery Plan also aligns with the Commission of Water Resource Management (CWRM) requests for a Water Shortage plan.

Mr. Usagawa stated that the CWRM has the authority to set water usage limits.

Board Member Jade Butay commented that affordable housing continues to be a top priority, however, water shortage continues to be an issue.

Chair Andaya echoed Board Member Butay's concerns and stated that he was in support of affordable housing.

At 2:29 PM Board Member Butay excused himself from the Public Hearing.

Board Member Anthony expressed his appreciation to all that submitted testimony.

At 2:31 PM Board Member Anthony excused himself from the Public Hearing.

There was a total of 24 testimonies via in-person, Zoom, and written. The list below is the names of each person that shared their testimony with the Chair, Board members, and the BWS.

IN-PERSON

Submitter's Name	**POSITION**
Susan Pcola-Davis	Support- Believes in the plan but is missing a well-defined, aggressive plan for fuel contamination in the aquifer.

WRITTEN TESTIMONY

Submitter's Name	**POSITION**
Ann Wright	Support- Place strict restrictions on those that endanger water resources Oppose- Raising water prices
Monasi Mariana	Oppose- Penalizing water shortages to Kama'aina. Support- Restricting commercial businesses
Brenda Wong	Support- Reduce and ration water usage for tourism, military, golf, construction, and restaurants Oppose- Penalizing large families

Tiare Ka'olelopono	Support- Reduce and ration water usage for tourism, military, golf, construction, and restaurants Oppose- Penalizing large families
Tiana Ka'olelopono	Support- Reduce and ration water usage for tourism, military, golf, construction, and restaurants Oppose- Penalizing large families
John Ka'olelopono	Support- Reduce and ration water usage for tourism, military, golf, construction, and restaurants Oppose- Penalizing large families
Tehani Ka'olelopono	Support- Reduce and ration water usage for tourism, military, golf, construction, and restaurants Oppose- Penalizing large families
Taimane Matua	Support- Reduce and ration water usage for tourism, military, golf, construction, and restaurants Oppose- Penalizing large families
Doreen Kaolulu	Support- Reduce and ration water usage for tourism, military, golf, construction, and restaurants Oppose- Penalizing large families
Mason Holomalia-Mulu	Support- Reduce and ration water usage for tourism, military, golf, construction, and restaurants Oppose- Penalizing large families
Kauhipola'ila'I Kamakea-Ohelo	Support- Reduce and ration water usage for tourism, military, golf, construction, and restaurants Oppose- Penalizing large families
Kawai Kupahu	Support- Reduce and ration water usage for tourism, military, golf, construction, and restaurants Oppose- Penalizing large families
Pete Doktor	Prioritize residents and the future of our sole source aquifer over meeting maximum day water demand by military, commercial, and industrial usage.
Kristin Mohl	Support- Reduce and ration water usage for tourism, military, golf, construction, and restaurants Oppose- Penalizing large families

Ida Hanahano	Support- Reduce and ration water usage for tourism, military, golf, construction, and restaurants Oppose- Penalizing large families
Chanel Servals-Bumanlag	Support- Reduce and ration water usage for tourism, military, golf, construction, and restaurants Oppose- Penalizing large families
Amber Maoankeala Nanod Sitch	Support- Reduce and ration water usage for tourism, military, golf, construction, and restaurants Oppose- Penalizing large families
Carol Paaoao	Support- Reduce and ration water usage for tourism, military, golf, construction, and restaurants Oppose- Penalizing large families
Brenda Mapes	Support- Reduce and ration water usage for tourism, military, golf, construction, and restaurants Oppose- Penalizing large families
Noel Shaw	Oppose- Penalizing large families Support- Penalizing fleeting short-term visitors
Natalie Star Mansfield	Support- Reduce and ration water usage for tourism, military, golf, construction, and restaurants Oppose- Penalizing large families
Oriana Cole	Support- Reduce and ration water usage for tourism, military, golf, construction, and restaurants Oppose- Penalizing large families
Junior Coleman	Support- Reduce and ration water usage for tourism, military, golf, construction, and restaurants Oppose- Penalizing large families

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BOARD OF WATER SUPPLY
CITY AND COUNTY OF HONOLULU

(SA1393019 11/18/22)

AFFIDAVIT OF PUBLICATION

IN THE MATTER OF
NOTICE OF PUBLIC HEARING

STATE OF HAWAII }
} SS.
City and County of Honolulu }

Doc. Date: NOV 18 2022 **# Pages:** 1
Notary Name: COLLEEN E. SORANAKA First Judicial **Circuit**
Doc. Description: Affidavit of Publication

NOV 18 2022
Notary Signature Date

COLLEEN E. SORANAKA NOTARY PUBLIC No. 90-263 STATE OF HAWAII

Barbara Suzuki being duly sworn, deposes and says that she is a clerk, duly authorized to execute this affidavit of Oahu Publications, Inc. publisher of The Honolulu Star-Advertiser, MidWeek, The Garden Island, West Hawaii Today, and Hawaii Tribune-Herald, that said newspapers are newspapers of general circulation in the State of Hawaii, and that the attached notice is true notice as was published in the

Honolulu Star-Advertiser	1	times on:
11/18/2022		
MidWeek	0	times on:
The Garden Island	0	times on:
Hawaii Tribune-Herald	0	times on:
West Hawaii Today	0	times on:
Other Publications:	0	times on:

And that affiant is not a party to or in any way interested in the above entitled matter.

Barbara Suzuki

Subscribed to and sworn before me this 18 day of November A.D. 2022

Colleen E. Soranaka, Notary Public of the First Judicial Circuit, State of Hawaii.
My commission expires: Jan 06 2024

COLLEEN E. SORANAKA NOTARY PUBLIC No. 90-263 STATE OF HAWAII

Ad # 0001393019

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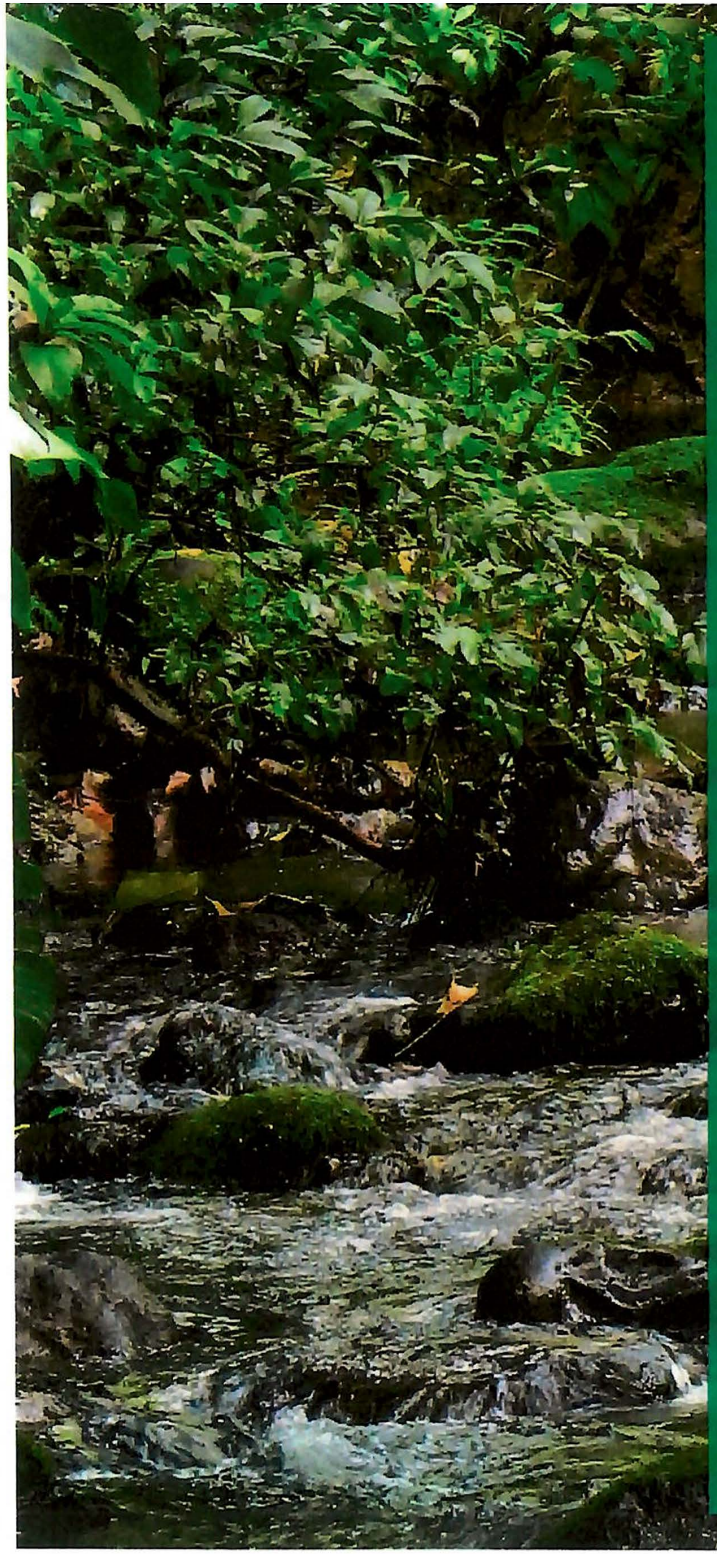
BOARD OF WATER SUPPLY
CITY AND COUNTY OF HONOLULU

(SA1393019 11/18/22)



DRAFT WATER SHORTAGE RESPONSE AND RECOVERY PLAN

Water Resources

November 28, 2022

NOTICE OF PUBLIC HEARING POSTED NOV. 18, 2022

Ad Image at Actual

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WATER SHORTAGE RESPONSE AND RECOVERY PLAN

TABLE OF CONTENTS

AUTHORIZATION

BWS WATER SHORTAGE DEFINITIONS

A water shortage condition exists when water supply is not available to meet existing and/or future max day water demands due to degradation of water quality, disruptions to water system delivery infrastructure or low groundwater condition.

A low groundwater condition exists when 3 or more index well levels fall below levels designated (caution, alert, critical), and chloride levels rise for 3 consecutive months at sufficient sources to hamper operations. Sec 3-318 to 322 BWS Rules & Regulations

THE HONOLULU CITY CHARTER, ARTICLE VII SEC 7-105 (J), POWERS, DUTIES AND FUNCTIONS OF THE BOARD OF WATER SUPPLY, DIRECTS THE BOARD TO:

Prescribe and enforce Rules and Regulations having the force and effect of law to carry out the provisions of this article of the charter, including

1. The regulation of water systems and necessary appurtenances for subdivisions and other properties and requirements for adequate water supply and storage facilities for domestic use and fire protection,
2. The prevention of waste and pollution of water,
3. The manner in which new wells or shafts may be bored, drilled or excavated, cased and capped or recased,
4. The manner in which wells or shafts shall be maintained, controlled and operated to prevent waste of water or the impairment of potability,
5. The limitation to beneficial uses of all water,
6. In times of shortage or threatened shortage of water or of danger to potability of the water of any ground water basin or area by overdraft on such basin, the restriction of the drawing of water in all wells supplied from such basin on a basis proportionate to the proper and beneficial uses served by them respectively, and
7. Other matters having for their object the proper conservation and beneficial use of the water resources available for the city.

BWS RULES AND REGULATIONS

CHAPTER II: WATER SERVICE TO CONSUMERS

Sec. 2-209: Conservation Measures and Interruption of Water Supply

1. The Department will exercise reasonable diligence to deliver water to the consumer and avoid shortages or interruptions in service, but will not be liable for any interruption, shortage, insufficiency of supply, or any loss or damage occasioned thereby.

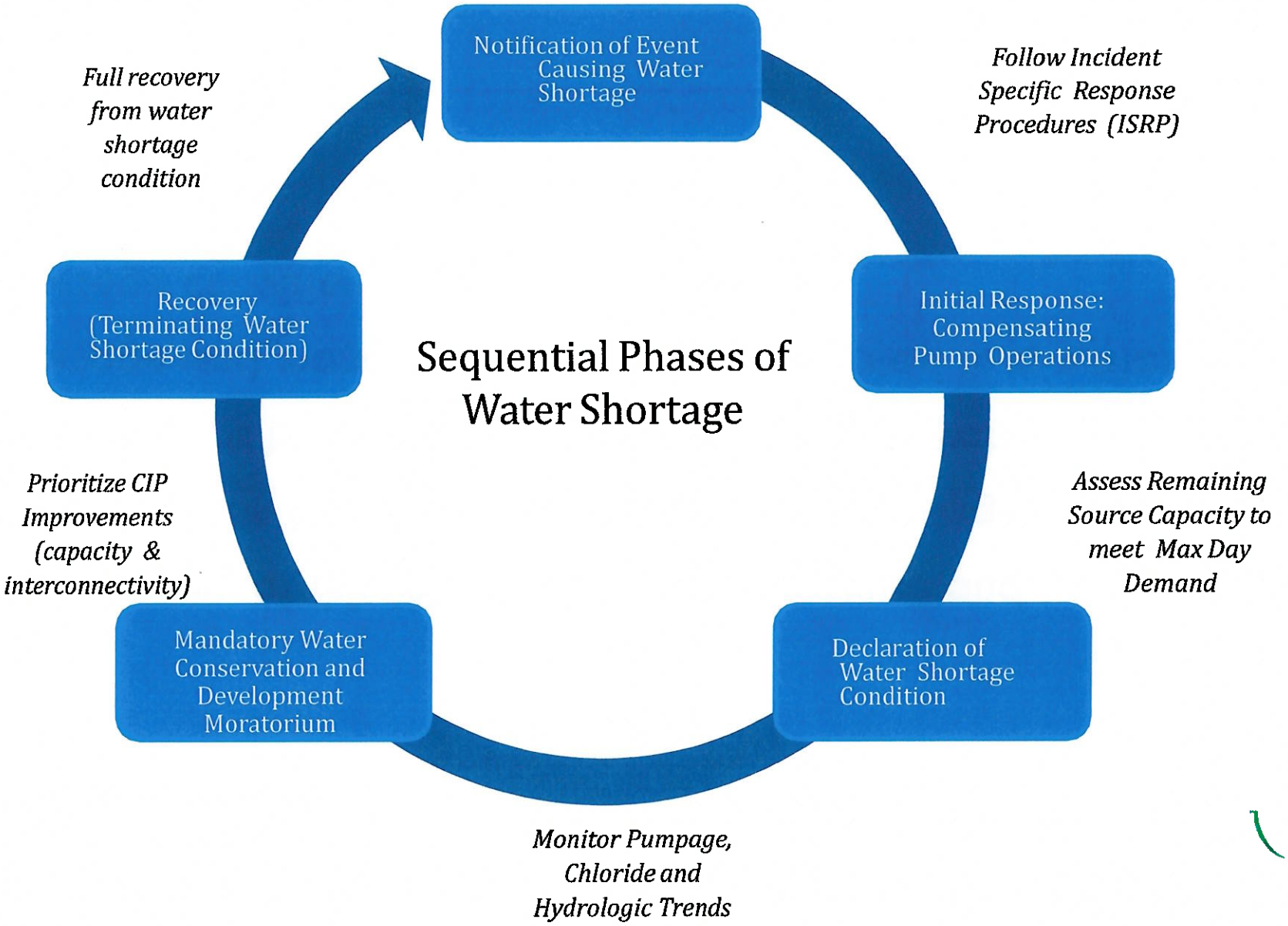
2. Whenever, in the Department's opinion, special conservation measures are advisable in order to forestall water shortages, the Department may restrict the use of water by any means or method of control.

WATER SHORTAGE PLAN OBJECTIVES, TRIGGERS AND RESPONSE

PURPOSE

The purpose of this Water Shortage Response and Recovery Plan is to provide the BWS with strategic and tactical steps to assess the need to declare a water shortage and manage water demands related to a water shortage condition

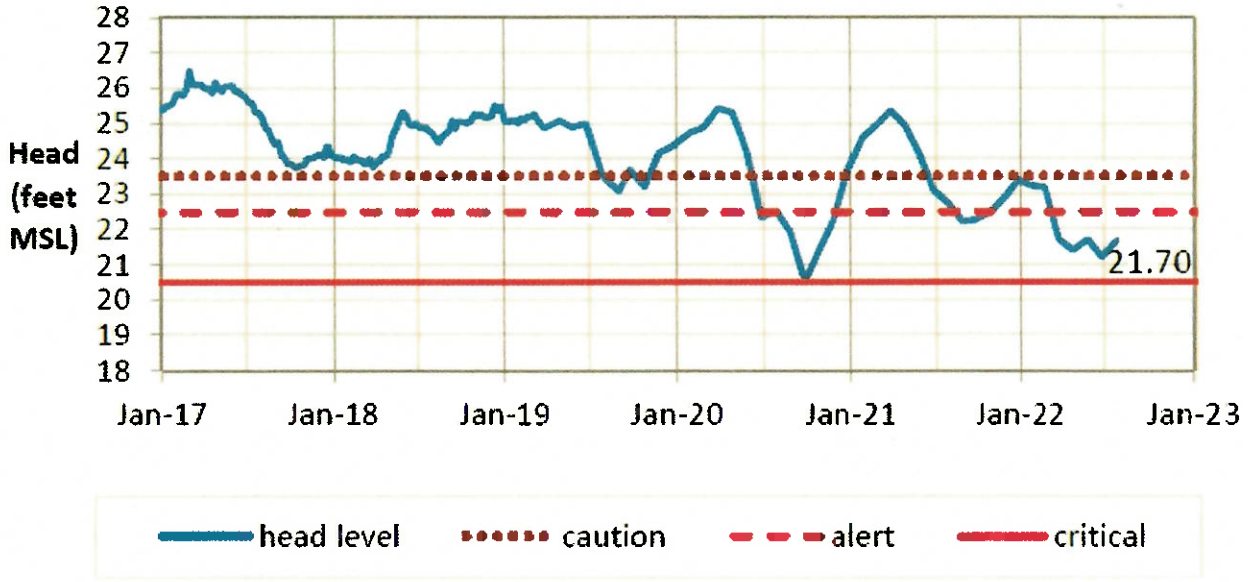
WATER SHORTAGE PLAN PHASES



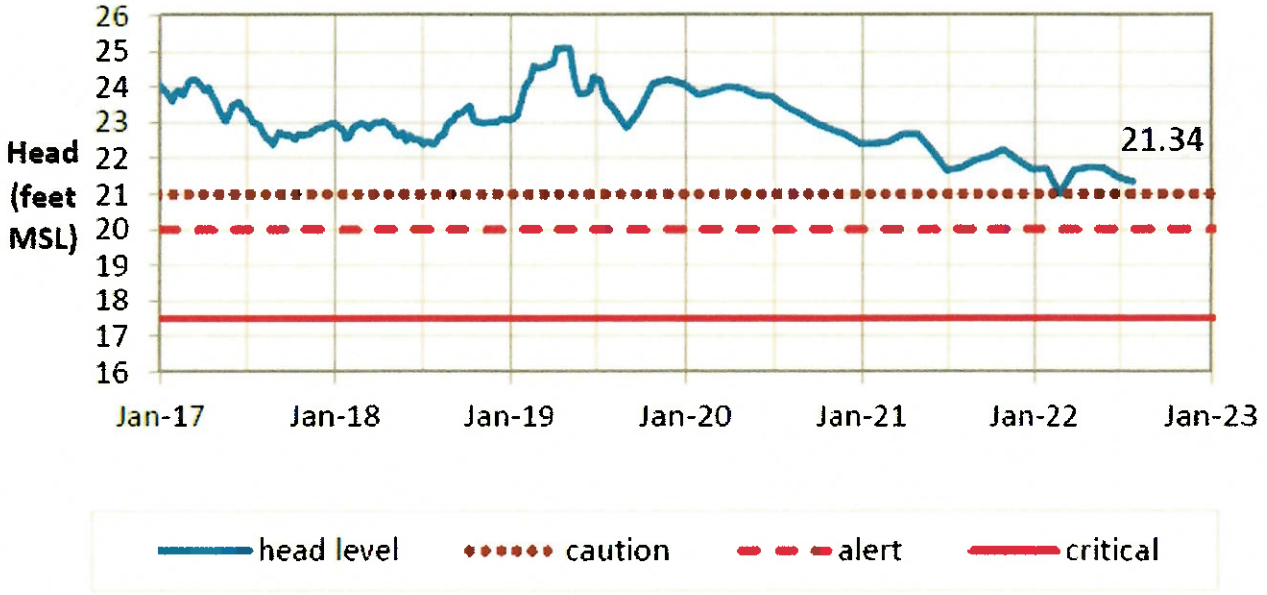
BWS INDEX WELLS AND LOW GROUNDWATER CONDITION WATER LEVEL TRIGGERS

CWRM Aquifer System	BWS Index Area	BWS Index Well Name	Avg. Median GW Elevation (ft MSL)	Caution Level (ft MSL)	Alert Level (ft MSL)	Critical Level (ft MSL)
Palolo	Kaimuki	Kaimuki H.S. 25-1A Deep MW	25.0	23.5	22.5	20.5
Nuuanu	Beretania	Thomas Square 83 MW	23.0	21.0	20.0	17.5
Kalihi	Kalihi	Kalihi "Kapalama" MW	23.0	20.5	19.5	17.0
Moanalua	Moanalua	Manaiki T-24 MW	20.0	18.5	17.5	15
Waimalu	Halawa	Halawa T-45 MW	17.0	15.5	14.5	12.0
	Kalauao	Upper Waimalu T-52 MW		15.5	14.5	12.0
Waipahu-Waiawa	Pearl City	Waiawa T-27 MW	17.0	14.0	13.0	12.0
	Waipahu	Waipahu 241 Deep MW		17.0	16.0	15.0
	Hoaeae-Kunia	Kunia T-41 Deep MW		13.0	12.0	11.0
Makaha	Makaha	Makaha V Well	18	7.0	6.0	4.0
Waialua	Helemano	Helemano MW	11	11.0	10.5	10.0
Koolauloa	Punaluu	Punaluu Deep MW	18	17.0	16.0	14.0
	Kaluanui	Kaluanui Deep MW		16.0	15.0	14.0
Waialae-West	Waialae-West	Kapakahi Well (State Well Number 3-1746-003)	8	7	6.5	6

Kaimuki 08/01/22



Beretania 08/01/22



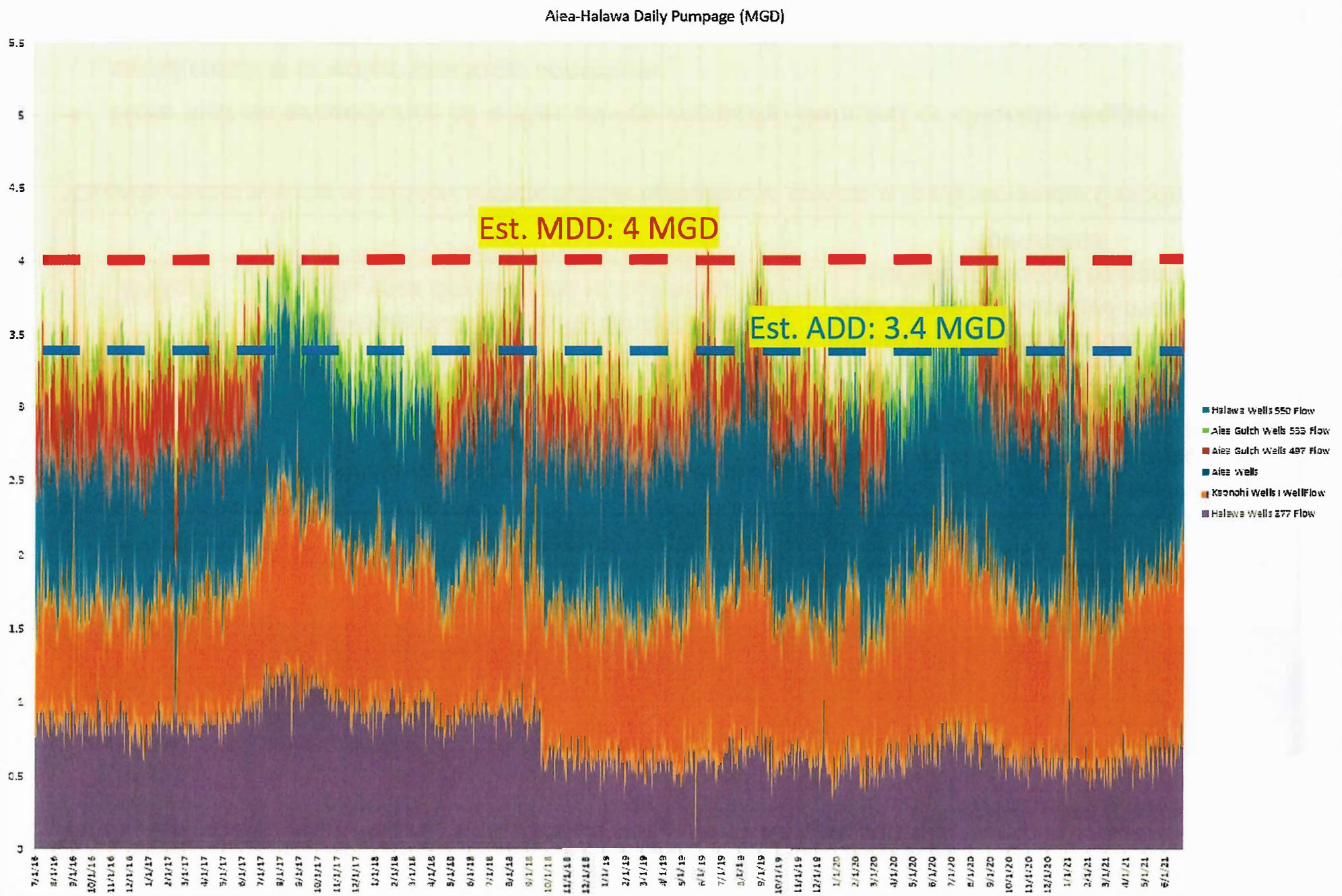
WATER SHORTAGE CONDITION TRIGGERS

Water Shortage Condition	Source Capacity Demand Trigger	Chloride Content Trigger*
No Water Shortage	Available pumping units meet max day demand in 16 hours w/ standby not included.	Stable Chloride and Head Level Trends
Alert	Available pumping units meet Q_{95} max day demand in 20 hours, standby pumps not included.*	Chloride content rises between 12 ppm and 16 ppm over three consecutive months at sufficient sources to hamper operations.
Critical	Available pumping units cannot meet Q_{95} max day demand in 22 hours, standby pumps not included*	Chloride content rises over 16 ppm over three consecutive months at sufficient sources to hamper operations.

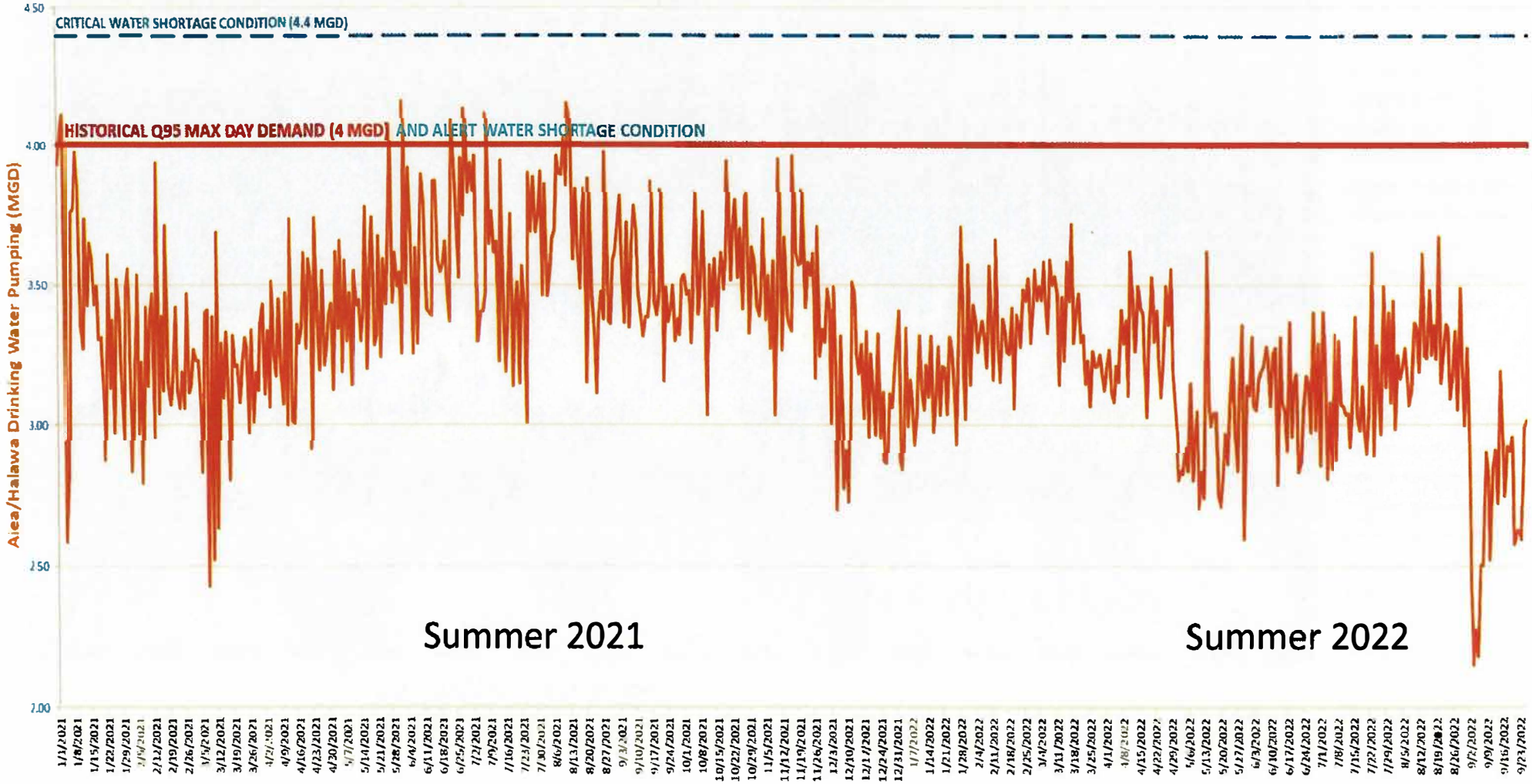
*Chloride content must rise at sufficient wells to hamper operations to activate a Low Groundwater Condition

- Note that an exceedance of either source capacity/demand or chloride trigger could result in a water shortage condition.
- A reduction in sufficient sources to hamper operations due to rising chlorides are dependent on pump operations experience and engineering judgement specific to the target water system.

Aiea Halawa Daily Pumpage FY 2017 – FY 2021

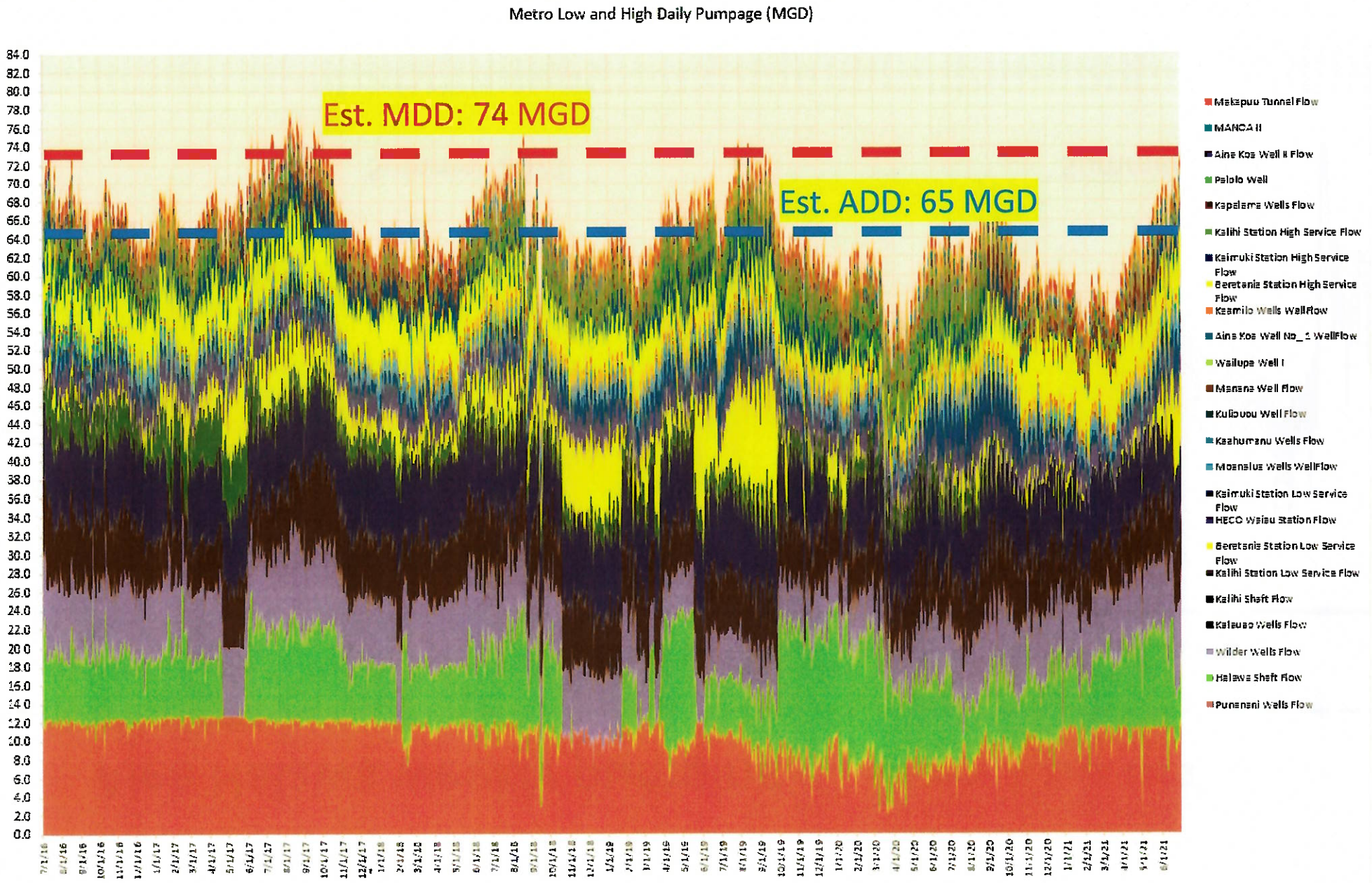


Aiea Halawa weekly pumping - Jan 2021 to Sept 2022

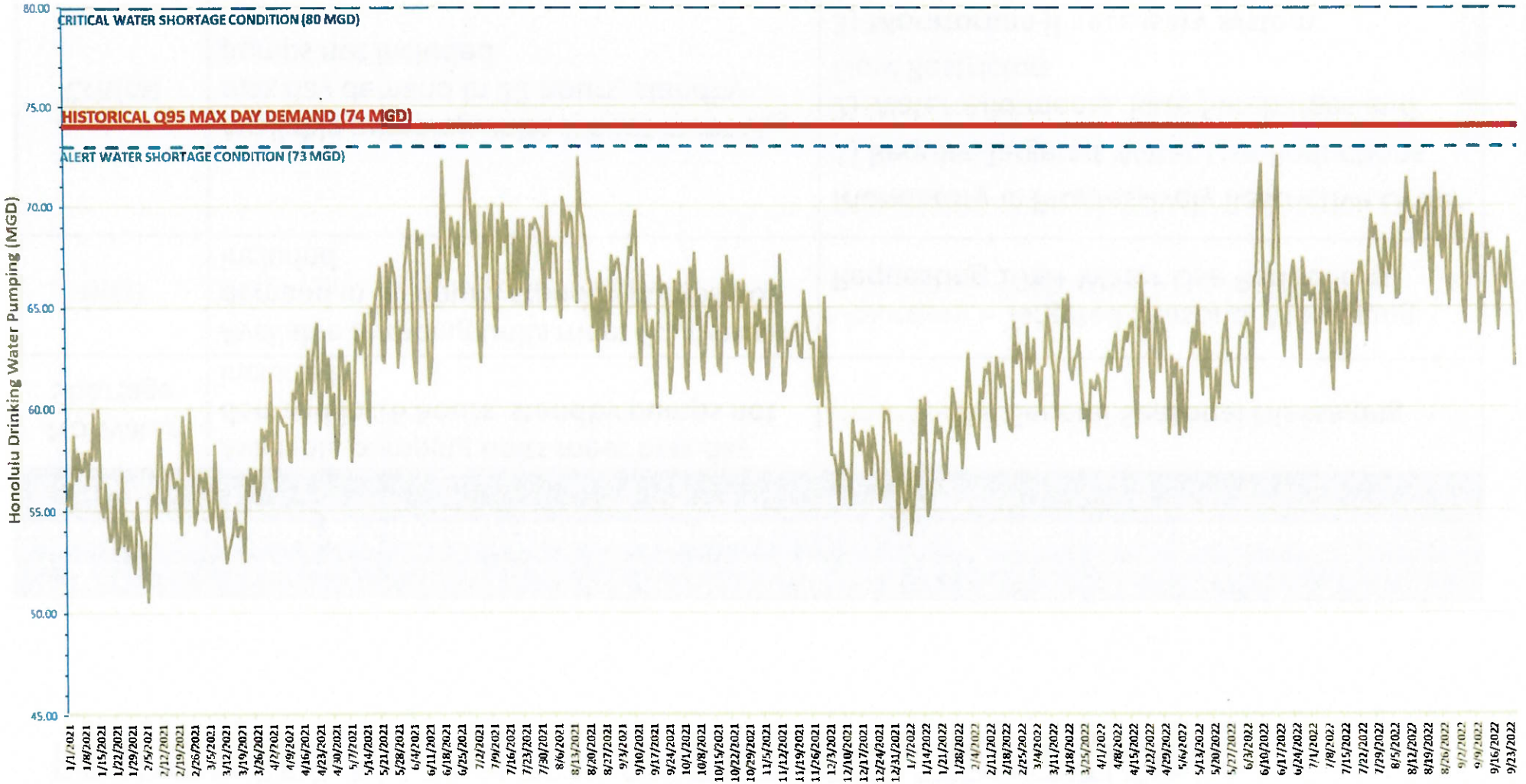


Conservation Response has been Working

Honolulu Daily Pumpage FY 2017 – FY 2021



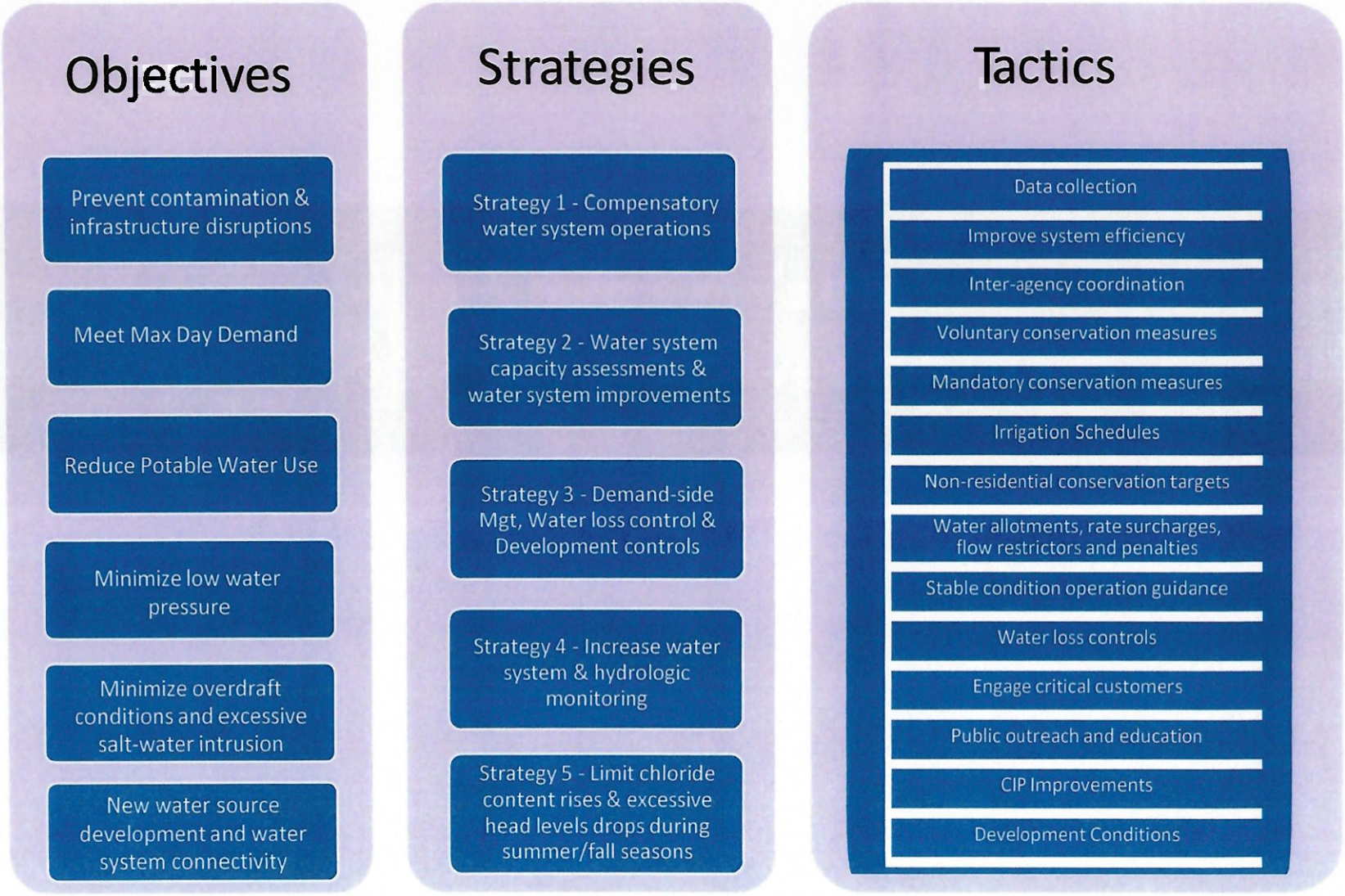
Honolulu weekly pumping - January 2021 to Sept 2022



PROGRESSIVELY RESTRICTIVE WATER CONSERVATION RESPONSES BY WATER SHORTAGE CONDITION

Water Shortage Condition	Source Capacity/Demand Trigger	Conservation Response
No Water Shortage	Available pumping units meet max day demand in 16 hours, standby pumps not included	Voluntary – General Seasonal Messaging
Alert	Available pumping units meet Q_{95} max day demand in 20 hours, standby pumps not included.	Voluntary – Targeted Seasonal Messaging Requesting 10%+ Water Use Reductions
Critical	Available pumping units cannot meet Q_{95} max day demand in 22 hours, standby pumps not included	Mandatory in Progressively Restrictive Order 1) Require Targeted Water Use Reductions 2) Water Allotments, Rate Surcharges and Flow Restrictors 3) Moratorium if necessary system improvements extend more than 2 years

WATER SHORTAGE OBJECTIVES AND STRATEGIES SHAPE THE COMPENSATING WATER SYSTEM OPERATIONS, WATER CONSERVATION, OUTREACH AND DEVELOPMENT CONTROL TACTICS



WATER SHORTAGE AFFECTING AVAILABILITY OF WATER

SECTION 1-101 AVAILABILITY OF WATER

Availability of Water for Proposed Developments. The Department may issue water commitments to proposed developments as follows:

- ***Category 1: Areas with Adequate Water Supply.*** *The Department may issue advance water commitments to proposed developments in areas where the water system has adequate supplies to assume new or additional services.*
- ***Category 2: Areas with Limited Additional Water Supply.*** *The Department may restrict the issuance of advance water commitments to proposed developments in areas where the water system has limited additional supplies to assume new or additional services.*
- ***Category 3: Areas with No Additional Water Supply.*** *The Department shall not issue water commitments to proposed developments in areas where the water system has no additional supplies to assume new or additional services.*

Water commitments are confirmed when residential subdivision construction plans or building permits are approved for all other developments.

Currently, Aiea-Halawa & Honolulu are in Alert Water Shortage and in Category 2. BWS is approving permits while requesting 10% voluntary conservation.

In a Critical Water Shortage Condition with Mandatory Conservation, Category 3 will apply for water systems with no additional water supply until the water system improvements to increase capacity are completed.

BUILDING MORATORIUM CONTROLS (DRAFT)

In a Critical Water Shortage Condition, if mandatory conservation measures and available pumping units are insufficient to accommodate existing and/or future growth, BWS may implement building development conditions to control the rate of water demand growth and the risk of water shortage. Limitations could include:

- Limit approvals to a single minimum size water meter for existing vacant lots.
- For redeveloped residential and non-residential parcels, limit water demands to:
  - Existing use or previous water allocations (previously paid WSFC), or
  - Existing water meter sizes, (meters may have more capacity than existing use)
- Require alternative onsite water supplies such as grey water reuse, stormwater catchments, A/C condensate recovery and high efficiency plumbing fixtures. Refer to the National Blue Ribbon Committee Distributed Nonpotable Water Manual.
- Fee In-Lieu: Retrofit another building with high efficiency plumbing fixtures and obtain fixture credits for the redevelopment, (No Net Gain in Water Use)

ADDITIONAL OPTIONS: (DRAFT) WITH NO DETRIMENTAL IMPACTS TO EXISTING CUSTOMERS

- Allow affordable and homeless housing providing critical social services.
- Allow an additional dwelling unit (ADU) on existing lots, per DPP rules
  - No increase in meter size.
- Allow Department of Hawaiian Homeland projects because of priority water rights.

DECLARATIONS AND NOTIFICATIONS FOR BUILDING MORATORIUM CONTROLS:

- Board Action for the Declaration of a Building Moratorium is required.
- Verify growth forecasts and building permit approvals against source capacity accounting for offsetting conservation trends.
- Report to the Board the status of the head and chloride levels and water system capacity; the weekly average of daily pumpage and demands; the effectiveness of the restrictions and allotments in force; recommendations to increase or reduce restrictions and allotments; and such other information.
- Notify affected elected officials, agencies, landowners and developers.
- Board Action for the Termination of a building moratorium is required

SURCHARGES, EXCEPTIONS, APPEALS AND PENALTIES

SPECIAL RATES AND CHARGES DURING CRITICAL WATER SHORTAGE CONDITIONS

During a critical water shortage condition, a surcharge schedule for excess water use may be established for customers whose monthly consumption is in excess of their water Allotment.

Gallons in Excess of Allotment for Meter Sizes 2" and Larger*	Gallons in excess of Allotment for Meter Sizes 5/8" to 1-1/2" (Monthly Billing)	Surcharge
25% or less	3,000 or less	2 Times Existing Water Rate
26% - 50%	3,001 – 6,000	3 Times Existing Water Rate
51% - 75%	6,001 – 9,000	4 Times Existing Water Rate
76% - 100%	9,001 – 12,000	12 Times Existing Water Rate
Over 100%	Over 12,000	20 Times Existing Water Rate

EXCEPTIONS AND APPEALS

- Consideration of written applications for exceptions regarding the allotment system or regulations and restrictions on water use are allowed.
- Written applications for exceptions shall be accepted, and may be granted, by the Manager.
- Denial of an application for exception may be appealed in writing to the Board.

QUALIFYING EXCEPTIONS

- Would cause an unnecessary and undue hardship, including but not limited to adverse economic impacts
- Would cause an emergency condition affecting the health, sanitation, fire protection, or safety of the Applicant or the public;
- Increase water allotment for >4 people per single family unit by 40 gal/person or allow 280 gals/unit for multi-family unit

PENALTIES

- Any violation by any person of the restrictions declared by the Board under Sections 3-319 and 3-320 of this Chapter shall be punishable according to Chapter II, Section 2-205 and Chapter V, Section 5-501 of these Rules and Regulations.
- Require flow restrictors for excess water use
- Charge $50 for installation and removal of the flow restrictor.
- Discontinue water service for violations after the flow restrictor is installed in accordance with Ch. II, Sec. 2-205
- In accordance with Ch. V, Sec. 5-501, charged with a misdemeanor, pursuant to Chapter 1, Article 3, Section 1-3.1, ROH

DECLARATION AND TERMINATION OF WATER SHORTAGE

PUBLIC NOTIFICATION REQUIREMENT FOR DECLARATION AND TERMINATION OF LOW GROUNDWATER LEVEL CONDITION CAUSING WATER SHORTAGE

The Manager shall inform the public and the Department's consumers of the declaration and termination of an alert or critical low groundwater condition by publishing the notice in a newspaper of general circulation on the island of Oahu at least once a day for three consecutive days.

The alert or critical low groundwater condition shall begin at midnight on the third day of the publication declaring such condition.

RECOVERY

RECOVERY PHASE

Ensure sufficient source and aquifer recovery post incident by reducing pumping when the next wet seasons reduce water demands.

- Identify pumping stations that have been pumped harder to meet max day demand and affected by drought, where chloride levels increased and head levels decreased into Alert or Critical low groundwater levels.
- Continue to monitor chloride trends and index well head levels.
- Step down water conservation measures accordingly
- Continue modified pump operations until full recovery is achieved

Mahalo!

BOARD OF WATER SUPPLY

Vice Chair Kapua Sproat and Chair Andaya expressed their appreciation to everyone that submitted testimony and joined the Public Hearing.

At 2:35 PM Chair Andaya closed the Public Hearing.

The minutes of the Public Hearing held on November 28, 2022, are respectfully submitted,

JOY CRUZ-ACHIU

APPROVED:

BRYAN P. ANDAYA
Chair of the Board

DEC 1 2 2022
Date

THE MINUTES OF THE PUBLIC HEARING HELD ON NOVEMBER 28, 2022 WERE APPROVED AT THE DECEMBER 12, 2022 BOARD MEETING			
	AYE	NO	COMMENT
BRYAN P. ANDAYA	X		
KAPUA SPROAT	X		
MAX J. SWORD			ABSENT
NA'ALEHU ANTHONY	X		
JONATHAN KANESHIRO	X		
EDWIN H. SNIFFEN			ABSTAIN
DAWN B. SZEWCZYK			ABSTAIN

MINUTES

THE REGULAR MEETING OF THE BOARD OF WATER SUPPLY

November 28, 2022

At 4:00 PM on November 28, 2022, in the Board Room of the Public Service Building at 630 South Beretania Street, Honolulu, Hawaii, Board Chair Andaya called to order the Regular Meeting.

Present:
Bryan P. Andaya, Chair via Zoom
Kapua Sproat, Vice Chair via Zoom
Na'alehu Anthony, Board Member via Zoom
Jonathan Kaneshiro, Board Member
Jade T. Butay, Board Member, Ex-Officio via Zoom
Dawn B. Szewczyk., Board Member, Ex- Officio via Zoom

Also Present:
Ernest Lau, Manager and Chief Engineer
Erwin Kawata, Deputy Manager
Jason Takaki, Program Administrator, Capital Projects Division
Jennifer Elflein, Program Administrator, Customer Care Division via Vimeo
Kathleen Elliott-Pahinui, Information Officer, Communications Office
Raelynn Nakabayashi, Executive Assistant I, Executive Support Office
Jason Nikaido, Program Administrator, Field Operations Division
Joseph Cooper, Waterworks Controller, Finance Division
Michele Thomas, Executive Assistant I, Human Resources Office via Vimeo and Zoom
Henderson Nuuhiwa, Program Administrator, Program Administrator, Information Technology Division via Vimeo
Michael Matsuo, Land Administrator, Land Division via Vimeo
Barry Usagawa, Program Administrator, Water Resources Division
Kevin Ihu, Program Administrator, Water System Operations Division via Vimeo
Kathy Mitchell, Administrative Services Officer via Vimeo
Deanna Thyssen, Manager Secretary
Joy Cruz-Achiu, Board Secretary
Steven Norstrom, Information Specialist II, Communications Office

Stella Bernardo, Information Specialist II,
Communications Office via Zoom
Michele Harman, Community Relations Specialist I,
Communications Office via Zoom
Wayne Maria, Information Specialist II,
Communications Office via Zoom

Others Present: Jeff Lau, Deputy Corporation Counsel
Jessica Wong, Deputy Corporation Counsel
via Zoom

Absent: Max J. Sword, Board Member

Chair Bryan Andaya welcomed everyone to the November 28, 2022, Regular Meeting of the Board of Water Supply (BWS). He stated that he was joining the meeting via Zoom and was alone at his location.

Before beginning the meeting Chair Andaya went over a few meeting regulations required by law. Board Members attending the Board Meeting remotely must be visible to the public to be considered present and meet quorum guidelines. He also stated that during roll call Board Members participating remotely must disclose their location and anyone that may be present at their location.

Chair Andaya announced that the public would be allowed to attend Board Meetings at the BWS, Public Service Building, 630 S. Beretania Street, Honolulu, HI 96843, via interactive conference technology.

Chair Andaya requested a roll call and asked those participating remotely to keep their cameras on during the meeting to comply and meet quorum guidelines. Chair Andaya asked each Board Member to respond verbally and state who is present in the room if participating via WebEx when their names were called. Vice Chair Kapua Sproat, aye, and alone at her current location; Board Member Jonathan Kaneshiro, aye, and in the Board room; Board Member Jade Butay, aye and alone at his location; and Board Member Dawn Szewczyk, aye and alone at her current location. Board Member Max Sword and Board Member Na'alehu Anthony were absent during the roll call.

Chair Andaya asked all attendees calling in or video conferencing to please mute their microphones when not speaking to the audience. When intending to speak, unmute their microphone and identify themselves before speaking.

Chair Andaya introduced those present in the Boardroom, Manager Ernest Lau, Deputy Manager Erwin Kawata, Board Secretary Joy L. Cruz-Achiu, Manager Secretary Deanna Thyssen, and Information Specialist II Steven Norstrom. Joining via Zoom from the City and County Corporation Counsel were Deputy Jeff Lau and Deputy Jessica Wong via Zoom, and Information Specialist II Wayne Maria.

Chair Andaya announced that all presenters are in the Board room.

The following procedures are in effect for the meeting:

Chair Andaya shared the various ways to submit testimony: Written testimony may be submitted by email to board@hbws.org, by fax to (808) 748-5079; mailed to Board of Water Supply, 630 S. Beretania St., Honolulu, HI 96843; or online at the boardofwatersupply.com/testimony, which were all due on Monday, November 28, 2022, at noon. However, late testimony will be accepted by email, fax, or mail. Videoconference testimony was accepted by registering at boardofwatersupply.com/testimony by Friday, November 25, 2022. In-person testimony is being accepted at the Board of Water Supply, Public Service Building located at 630 S. Beretania St. Honolulu, HI 96843. Pursuant to HRS Section 92-7.5, Board Meeting materials are available to view on our website at www.boardofwatersupply.com/boardmeeting.

Chair Andaya also announced the Board Meeting is broadcasted live on the BWS website at www.boardofwatersupply.com/live.

APPROVAL OF MINUTES

Approval of the Minutes of the Regular Meeting Held on October 24, 2022.

MOTION TO APPROVE

Dawn Szewczyk and Jonathan Kaneshiro motioned and seconded, respectively, to approve the Minutes of the Regular Meeting on October 24, 2022.

At 4:07 PM Board Member Na'alehu Anthony joined the Regular Meeting via Zoom.

Chair Andaya requested Board Secretary, Ms. Joy Cruz-Achiu to conduct the roll call vote.

Ms. Cruz-Achiu conducted a roll call vote: Vice Chair Kapua Sproat, aye; Board Member Jonathan Kaneshiro, aye; Board Member Jade Butay, aye; Board Member Dawn Szewczyk, aye; Chair Bryan Andaya, aye; and Board Member Na'alehu Anthony, aye.

Ms. Cruz-Achiu announced that the motion passed with six ayes.

THE MINUTES OF THE REGULAR MEETING HELD ON OCTOBER 24, 2022, WERE APPROVED AT THE NOVEMBER 28, 2022, BOARD MEETING			
	AYE	NO	COMMENT
BRYAN P. ANDAYA	X		
KAPUA SPROAT	X		
MAX J. SWORD			ABSENT
NA'ALEHU ANTHONY	X		
JONATHAN KANESHIRO	X		
JADE T. BUTAY	X		
DAWN B. SZEWCZYK	X		

"November 28, 2022

ADOPTION OF RESOLUTION NO. 955, 2022, ADOPTION OF THE BOARD OF WATER SUPPLY WATER SHORTAGE RESPONSE AND RECOVERY PLAN

Chair and Members
Board of Water Supply
City and County of Honolulu
Honolulu, Hawaii 96843

Chair and Members:

Subject: Adoption of Resolution No. 955, 2022, Adoption of the Board of Water Supply Water Shortage Response and Recovery Plan

We recommend adoption of the BWS Water Shortage Response and Recovery Plan to provide the strategic and tactical steps to assess the need to declare a water shortage and manage water demands related to a water shortage condition

Water Resources presented the BWS Water Shortage Response and Recovery Plan during a Public Hearing to consider the Plan on November 28, 2022. The affidavit attesting to the publication of the Public Hearing notice is attached.

Respectfully Submitted,

/s/ ERNEST Y. W. LAU, P.E
Manager and Chief Engineer

Attachment"

DISCUSSION: Ernest Lau, Manager and Chief Engineer, gave the report.

MOTION TO APPROVE Dawn Szewczyk and Jade Butay motioned and seconded, respectively, to approve the Adoption of Resolution No. 955, 2022, Adoption of Resolution No. 955, 2022, Adoption of the Board of Water Supply Water Shortage Response and Recovery Plan

Chair Andaya requested Board Secretary, Ms. Joy Cruz-Achiu to conduct the roll call vote.

Ms. Cruz-Achiu conducted a roll call vote: Vice Chair Kapua Sproat, aye; Board Member Na'alehu Anthony, aye; Board Member Jonathan Kaneshiro, aye; Board Member Jade Butay, aye; Board Member Dawn Szewczyk, aye; and Chair Bryan Andaya, aye.

Ms. Cruz-Achiu announced that the motion passed with six ayes.

ADOPTION OF RESOLUTION NO. 955, 2022, ADOPTION OF THE BOARD OF WATER SUPPLY WATER SHORTAGE RESPONSE AND RECOVERY PLAN WAS ADOPTED ON NOVEMBER 28, 2022			
	AYE	NO	COMMENT
BRYAN P. ANDAYA	X		
KAPUA SPROAT	X		
MAX J. SWORD			ABSENT
NA'ALEHU ANTHONY	X		
JONATHAN KANESHIRO	X		
JADE T. BUTAY	X		
DAWN B. SZEWCZYK	X		

BOARD OF WATER SUPPLY
CITY AND COUNTY OF HONOLULU

RESOLUTION NO. 955 2022

RESOLUTION ADOPTING THE WATER SHORTAGE RESPONSE AND RECOVERY PLAN

WHEREAS, the Board of Water Supply, City and County of Honolulu, desires to adopt the Water Shortage Response and Recovery Plan to provide strategic and tactical procedures to assess the need to declare a water shortage condition and control water demand during water shortages caused by low groundwater levels, contamination or infrastructure disruptions; and

WHEREAS, the Red Hill Bulk Fuel Storage Facility fuel release has contaminated the underlying aquifer causing BWS to shut down the Halawa Shaft, Halawa Wells, and Aiea Wells as a precautionary measure to protect the sources, and to slow the migration of the contaminant plume across Halawa Valley; and

WHEREAS, the City Charter directs the Board to prescribe and enforce Rules and Regulations having the force and effect of law for the prevention of waste and pollution of water and in times of shortage or threatened shortage of water or of danger to potability of the water of any ground water basin or area by overdraft on such basin, the restriction of the drawing of water in all wells supplied from such basin on a basis proportionate to the proper and beneficial uses served by them respectively; and

WHEREAS, BWS Rules and Regulations Section 2-209 states whenever, in the Department's opinion, special conservation measures are advisable in order to forestall water shortages, the Department may restrict the use of water by any means or method of control; and

WHEREAS, the Water Shortage Response and Recovery Plan establishes water shortage triggers for Alert and Critical conditions and progressively restrictive water conservation measures including voluntary and mandatory conservation, restrictions on building approvals, rate surcharges, exceptions, appeals, and penalties; and

WHEREAS, the Manager and Chief Engineer, and staff have performed an extensive and transparent outreach effort to inform elected officials, stakeholders, and the public about the Water Shortage Response and Recovery Plan; now, therefore,

BE IT RESOLVED by the Members of the Board of Water Supply, City And County of Honolulu, that the Water Shortage Response and Recovery Plan dated October 2022 be adopted with the understanding that the plan may be revised from time to time for non-substantive adjustments; and

BE IT FURTHER RESOLVED that the Manager shall have the authority to implement the plan with the understanding that Board action is required to declare and terminate mandatory water conservation in a critical water shortage condition and any restrictions on building approvals.

ADOPTED:

Bryan P. Andaya
Chair

Honolulu, Hawaii
November 28, 2022

ADOPTION OF RESOLUTION NO. 955, 2022, ADOPTION OF THE BOARD OF WATER SUPPLY WATER SHORTAGE RESPONSE AND RECOVERY PLAN WAS ADOPTED ON NOVEMBER 28, 2022

	AYE	NO	COMMENT
BRYAN P. ANDAYA	X		
KAPUA SPROAT	X		
MAX J. SWORD			ABSENT
NA'ALEHU ANTHONY	X		
JONATHAN KANESHIRO	X		
JADE T. BUTAY	X		
DAWN B. SZEWCZYK	X		

BWS Water Shortage Response and Recovery Plan

Abstract

Procedures to control water demand and optimize supply during water shortage from low groundwater levels, contamination and infrastructure disruptions

Water Resources October 2022

Table of Contents

Introduction

The purpose of this Water Shortage Response and Recovery Plan is to provide the Honolulu Board of Water Supply (BWS) with strategic and tactical steps to assess the need to declare a water shortage and manage water demands related to a water shortage condition

> *A water shortage condition exists when water supply is not available to meet existing and/or future max day water demands due to degradation of water quality or extended drought or disruptions to water system delivery infrastructure.*

The different phases of water shortage provides possible actions BWS can take to mitigate the emergency. Figure 1 shows the different phases of water shortage covered in this plan.

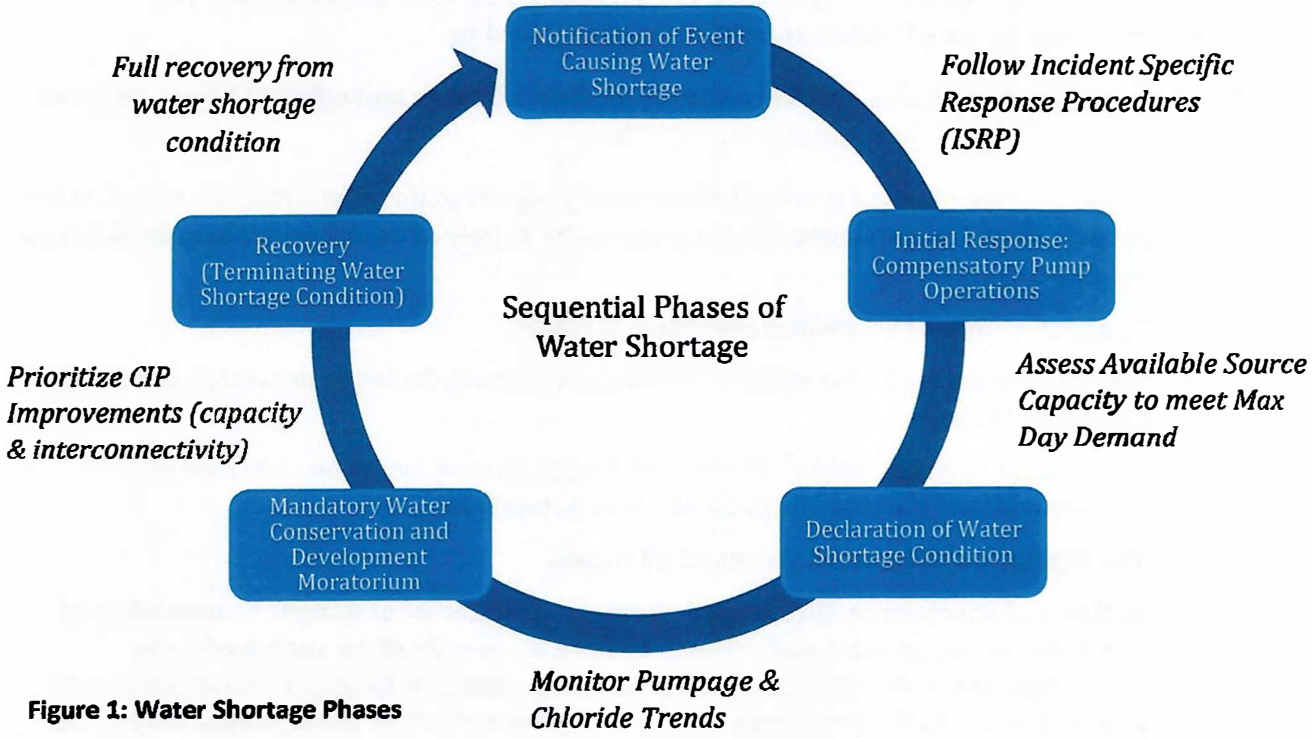


Figure 1: Water Shortage Phases

This Water Shortage Response and Recovery Plan provides recommended triggers, procedures and implementation actions to respond to a water shortage condition. The actual order in which response procedures are implemented during any specific water shortage will be at BWS's discretion to most effectively respond to the situation.

The objectives of the water shortage procedures are to reduce potable water use, prevent water service disruptions, low water pressures and groundwater quality degradation from overdraft.

Authorization

Definitions:

BWS means the Department of Water, known as the "Board of Water Supply," consisting of a Board of Water Supply, Manager and Chief Engineer and the necessary staff.

Board means the policy-making body, consisting of seven members of the Board of Water Supply

Water Shortage Condition: A water shortage condition exists when water supply is not available to meet existing and/or future max day water demands due to degradation of water quality, extended drought or disruptions to water system delivery infrastructure.

Authorization:

The **Honolulu City Charter**, under **Article VII, Section 7-105 (j), Powers, Duties and Functions of the Board of Water Supply**, directs the Board to:

Prescribe and enforce Rules and Regulations having the force and effect of law to carry out the provisions of this article of the charter, including

1. The regulation of water systems and necessary appurtenances for subdivisions and other properties and requirements for adequate water supply and storage facilities for domestic use and fire protection,
2. **The prevention of waste and pollution of water,**
3. The manner in which new wells or shafts may be bored, drilled or excavated, cased and capped or re-cased,
4. The manner in which wells or shafts shall be maintained, controlled and operated to prevent waste of water or the impairment of potability,
5. **The limitation to beneficial uses of all water,**
6. **In times of shortage or threatened shortage of water or of danger to potability of the water of any ground water basin or area by overdraft on such basin, the restriction of the drawing of water in all wells supplied from such basin on a basis proportionate to the proper and beneficial uses served by them respectively,** and
7. Other matters having for their object the proper conservation and beneficial use of the water resources available for the city.

BWS Rules and Regulations provide the authorization to restrict water use to prevent water shortages:

Sec. 2-209: Conservation Measures and Interruption of Water Supply

1. The Department will exercise reasonable diligence to deliver water to the consumer and avoid shortages or interruptions in service, but will not be liable for any interruption, shortage, insufficiency of supply, or any loss or damage occasioned thereby.

2. **Whenever, in the Department's opinion, special conservation measures are advisable in order to forestall water shortages, the Department may restrict the use of water by any means or method of control.**

A summary of the low groundwater condition rules Sections 3-318 to 3-322 provide progressively restrictive response requirements and procedures.

Sec. 3-318: Low Groundwater Level Conditions

- Establishes Caution, Alert & Critical Low Groundwater Conditions and response actions to reduce water demand to protect water resources
- 3 or more index wells must be in low groundwater condition

Sec. 3-319: Mandatory Restrictions Related to Alert Low Groundwater Condition

- The Board may set lawn and ground cover water irrigation restrictions on any of the Department's consumers.
- The Board may establish water allotments for commercial, residential, industrial, military, governmental, and agricultural consumers.

Sec. 3-320: Mandatory Restrictions Related to Critical Low Groundwater Condition

- The Board may restrict irrigation, car washing, filling pools, washing sidewalks and operating fountains.
- Require rate surcharges for excess water use and allotments

Sec. 3-321: Penalties

- Any violation by any person of the restrictions declared by the Board under Sections 3-319 and 3-320 of this Chapter shall be punishable according to Chapter II, Section 2-205 and Chapter V, Section 5-501 of these Rules and Regulations.
- Require flow restrictors for excess water use
- Charge $50 for installation and removal of the flow restrictor.
- Discontinue water service for violations after the flow restrictor is installed in accordance with Ch. II, Sec. 2-205

Sec. 3-322: Procedures for Control of Water Use During Low Groundwater Level Condition

- Declaration of Low Groundwater Level Condition
- Notice of Restrictions
- Notice of Water Allotment to Consumers
- Notice of Maximum Monthly Water Allotment to Private Well Operators
- Exceptions
- Termination of Low Groundwater Level Condition.

Sec. 5-501: Penalty (misdemeanor, pursuant to Chapter 1, Article 3, Section 1-3.1, ROH)

Water Shortage Declaration

A water shortage condition exists when water supply is not available to meet existing and/or future max day water demands due to degradation of water quality, extended drought or disruptions to water system delivery infrastructure.

During a water shortage condition, BWS will inform and coordinate response actions with the State Department of Health, Safe Drinking Water Branch and the State Commission on Water Resource Management (CWRM), and other agencies as needed. Note that a water shortage condition caused by extended drought has specific head levels and/or chloride triggers and CWRM coordination requirements listed within the Low Groundwater Response, Recovery Plan, a separate document.

In accordance with Sec. 3-318, *BWS may at any time during the period in which a low groundwater condition exists* or is anticipated:

a. *Declare that a water shortage condition exists. A water shortage condition shall continue to exist, once it is declared, until such time as BWS declares that the condition is terminated.*

b. *Implement mandatory restrictions within the scope of BWS Rules and Regulations.*

c. *Punish offenders within the scope of these Rules and Regulations.*

The Manager shall, at each regular Board meeting while a declared water shortage condition as provided herein is in effect, report to the Board the status of the head and chloride levels and water system capacity; the weekly average of daily pumpage and demands; the effectiveness of the restrictions and allotments in force; recommendations to increase or reduce restrictions and allotments; and such other information.

BWS may terminate the declared water shortage condition when the event causing degradation of water quality or disruptions to water system delivery infrastructure has been resolved.

In a Critical Water Shortage Condition where Mandatory Conservation is required because of insufficient response to voluntary conservation, the Board may declare a Building Moratorium.

BWS Water Shortage Condition Triggers

A BWS Water Shortage Condition can be declared by an actual or imminent contamination of a water source(s) that requires curtailing or shutting off wells and diverting flow from another part of the water system to meet the water demands or an extended (multi-year potential) infrastructure disruption event. A water shortage condition may also result in declining groundwater head levels or rising chloride levels in BWS water sources used to compensate for the temporary loss of available water pumping capacity. An extended drought may also cause a water shortage condition. To the extent practicable, BWS will manage pumping within the integrated water system such that the combined 12-month moving averages of the BWS sources

within each aquifer system will be within the total State permitted use, as to not detrimentally impact water resources.

BWS Water System Standards provide requirements for total pump capacity for water systems.

Section 111.08 Total Pump Capacity

- The total pump capacity for each site shall be based on the criteria that yields the maximum pumpage.
- Meet maximum day demand with an operating time of 16 hours. The largest pumping unit shall be considered out of service (standby).

Triggers for Alert and Critical Water Shortage Conditions

A trigger framework can be based on the ability for available (in-service) pump capacity in the target water system to meet max day demand (summer dry season) in progressive run times between 16 hours to 24 hours a day. Increasing pumping must be monitored for head and chloride levels to ensure a low groundwater condition does not develop.

- **Adequate pump capacity** is defined in BWS Water System Standards as meeting max day demand in 16 hours of pump run time, with the largest pumping unit considered standby. Standby pumps will be identified using pump operations experience and engineering judgement specific to the target water system.

- In a water shortage condition, **max day demand is defined as the 95th percentile (Q_{95}) of actual production**. During a water shortage condition, water conservation is assumed to flatten the highest 5% of the max day demand profile.

- **Alert Water Shortage Condition** is defined as available pumping units to meet Q_{95} max day demand in 20 hours, standby pumps are not included in pump run time calculation.

- **Critical Water Shortage Condition** is defined as available pumping units cannot meet Q_{95} max day demand in 22 hours of pump run time, standby pumps are not included in pump run time calculation.

- **Requirement for Monitoring** chloride trends, well production (peak hour and total) by pump station, index monitoring well head levels will be sampled more frequently (weekly, instead of monthly). Available remaining pumping stations may have to be pumped harder to meet Q_{95} max day summer demand and may increase chloride levels and decrease head levels into Alert or Critical low groundwater levels.

    - In accordance with Sec. 3-318 Low Groundwater Conditions, *whenever chloride content rises 16 ppm or more over three consecutive months at sufficient sources to hamper operations.*

- Index well head levels decrease into Alert or Critical low groundwater levels in 3 or more index wells within the target water system.

Table 1 presents the triggers for each Water Shortage Condition. Note that an exceedance of either source capacity/demand or chloride trigger could result in a water shortage condition. A reduction in sufficient sources to hamper operations due to rising chlorides are dependent on pump operations experience and engineering judgement specific to the target water system.

Table 1: BWS Water Shortage Condition Triggers

Water Shortage Condition	Source Capacity/Demand Trigger	Chloride Content Trigger*
No Water Shortage	Available pumping units meet max day demand in 16 hours, standby not included.	Stable Chloride and Head Level Trends
Alert	Available pumping units meet Q_{95} max day demand in 20 hours, standby pumps not included.	Chloride content rises between 12 ppm and 16 ppm over three consecutive months at sufficient sources to hamper operations.
Critical	Available pumping units cannot meet Q_{95} max day demand in 22 hours, standby pumps not included	Chloride content rises over 16 ppm over three consecutive months at sufficient sources to hamper operations.

*Chloride content must rise at sufficient wells to hamper operations to activate a Low Groundwater Condition

The Low Groundwater Condition water level triggers for each index well are presented in Table 2.

Table 2: BWS Index Wells and Low Groundwater Condition Water Level Triggers

CWRM Aquifer System	BWS Index Area	BWS Index Well Name	Avg. Median GW Elevation (ft MSL)	Caution Level (ft MSL)	Alert Level (ft MSL)	Critical Level (ft MSL)
Palolo	Kaimuki	Kaimuki H.S. 25-1A Deep MW	25.0	23.5	22.5	20.5
Nuuanu	Beretania	Thomas Square 83 MW	23.0	21.0	20.0	17.5
Kalihi	Kalihi	Kalihi "Kapalama" MW	23.0	20.5	19.5	17.0
Moanalua	Moanalua	Manaiki T-24 MW	20.0	18.5	17.5	15
Waimalu	Halawa	Halawa T-45 MW	17.0	15.5	14.5	12.0
	Kalauao	Upper Waimalu T-52 MW		15.5	14.5	12.0
Waipahu-Waiawa	Pearl City	Waiawa T-27 MW	17.0	14.0	13.0	12.0
	Waipahu	Waipahu 241 Deep MW		17.0	16.0	15.0
	Hoaeae-Kunia	Kunia T-41 Deep MW		13.0	12.0	11.0
Makaha	Makaha	Makaha V Well	18	7.0	6.0	4.0
Waialua	Helemano	Helemano MW	11	11.0	10.5	10.0
Koolauloa	Punaluu	Punaluu Deep MW	18	17.0	16.0	14.0
	Kaluanui	Kaluanui Deep MW		16.0	15.0	14.0
Waialae-West	Waialae-West	Kapakahi Well (State Well Number 3-1746-003)	8	7	6.5	6

Median groundwater elevation based on available historical data, typically available since the 1990s
Ft. MSL – Feet above mean sea level

BWS Response Objectives, Strategies, and Tactics

Water Shortage response objectives aims to ensure safe, dependable and affordable water supply for public health and safety.

- Prevent source water and water system contamination and extended delivery infrastructure disruptions
- Meet max day water demand
- Reduce potable water use through progressively restrictive water conservation measures
- Minimize low water pressure incidents
- Minimize overdraft conditions and excessive salt-water intrusion
- Pursue new water source development and water system connectivity improvements

Fire flow is expected to be available as long as storage tanks are operated within normal operating levels.

These BWS water shortage response objectives shape the compensatory water system operations, water conservation, conditions for development approvals, monitoring and tactics in this plan. Figure 2 presents the Objectives, Strategies and Tactics for the Water Shortage Response and Recovery plan.

For the purposes of this plan:

- Objectives are the goals, what needs to be achieved.
- Strategies are the approach and measurable steps on how to achieve the objective.
- Tactics are the concrete actions, tools and measures pursued associated with each strategy.

Table 3 presents progressively restrictive water conservation responses by Water Shortage Condition if water use reduction targets are not achieved and if infrastructure improvements that resolve the water shortage condition extends more than 2 years.

Table 3: Progressive Conservation Responses by Water Shortage Condition

Water Shortage Condition	Source Capacity/Demand Trigger	Conservation Response
No Water Shortage	Available pumping units meet max day demand in 16 hours, standby pumps not included	Voluntary – General Seasonal Messaging
Alert	Available pumping units meet Q_{95} max day demand in 20 hours, standby pumps not included.	Voluntary – Targeted Seasonal Messaging Requesting 10% Water Use Reductions
Critical	Available pumping units cannot meet Q_{95} max day demand in 22 hours, standby pumps not included	Mandatory in Progressively Restrictive Order 1) Require Targeted Water Use Reductions 2) Water Allotments, Flow Restrictors, Rate Surcharges 3) Moratorium if improvements extend more than 2 years

Figure 2: BWS Water Shortage Response and Recovery Objectives Strategies and Tactics

Water Shortage Response Procedures

In the assessment of meeting the water shortage objectives, relative risk can provide additional guidance in decision making. In the BWS water master plan, Risk is defined as the Consequence of Failure x the Likelihood of Failure and can be applied to water shortages from contamination, overdraft, low pressures, service disruptions, drought, etc.

Risk = Consequence of Failure x Likelihood of Failure

For example, the consequence of contaminating a water source and water system is extremely high, but the likelihood may be difficult to assess without a viable monitoring and reporting network. The consequence of losing a major source from overdraft is high, but the likelihood of over pumping a source can be managed with frequent chloride reporting and changes in pump

operation such as "Last On–First Off", limited to meeting max day demand peaks and backed off during the wet season.

A contamination event or long-duration infrastructure outage event that triggers an Alert Water Shortage Condition begins with the Initial Response. During the Initial Response, the BWS Water Shortage Response Team can recommend voluntary or progressive mandatory conservation measures from customers to prevent a Water Shortage Condition, per Section 2-209 of the BWS Rules & Regulations.

The BWS Water Shortage Response Team, will implement compensatory water system operations, monitoring, voluntary and/or mandatory conservation measures, water use allotments, flow restrictors and fines, building controls and water system improvements as presented in this plan.

Mandatory Water Conservation

In Critical Water Shortage Conditions, the BWS will declare mandatory conservation measures and progressive water use restrictions including the Restricted Irrigation and Other Outdoor Uses procedures because of insufficient response to voluntary conservation. If Mandatory Conservation is required and if infrastructure improvements are necessary, the Board may declare a Building Moratorium extending until the improvements are completed.

Building Moratorium Rules

BWS Rules and Regulations Section 1-101 Availability of Water states:

Availability of Water for Proposed Developments. The Department may issue water commitments to proposed developments as follows:

> *Category 1: Areas with Adequate Water Supply. The Department may issue advance water commitments to proposed developments in areas where the water system has adequate supplies to assume new or additional services.*
>
> *Category 2: Areas with Limited Additional Water Supply. The Department may restrict the issuance of advance water commitments to proposed developments in areas where the water system has limited additional supplies to assume new or additional services.*
>
> *Category 3: Areas with No Additional Water Supply. The Department shall not issue water commitments to proposed developments in areas where the water system has no additional supplies to assume new or additional services. The only exception shall be the issuance of a single 3/4-inch meter to proposed developments on existing single vacant lots.*

BWS typically operates under Category 2 water availability, where water commitments are confirmed when residential subdivision construction plans are approved or when building permits are approved for all other developments. In a Critical Water Shortage Condition with Mandatory Conservation, BWS will operate under Category 3, for water systems with no additional water supply until the water system improvements to increase capacity are completed.

Building Moratorium Controls

In a Critical Water Shortage Condition, if voluntary and mandatory conservation measures and available pumping units are insufficient to accommodate existing and/or future growth, BWS may implement building development conditions to control the rate of water demand growth and the risk of water shortage. The moratorium should extend until the infrastructure improvements that restore or expand water system capacity are completed. Limitations may include:

- Limit approvals to a single minimum size water meter for existing vacant lots.
- For redeveloped residential and non-residential parcels, limit water demands to:
    - Existing use or previous water allocations (previously paid WSFC), or
    - Existing water meter sizes, (meters may have more capacity than existing use)
- Require alternative onsite water supplies such as grey water reuse, stormwater catchments, A/C condensate recovery and high efficiency plumbing fixtures. Refer to the National Blue Ribbon Committee Distributed Nonpotable Water Manual.
- Fee In-Lieu: Retrofit another building to high efficiency plumbing fixtures and obtain fixture credits for the redevelopment, (No Net Gain in Water Use)

Additional Options, as long as No Detrimental Impacts to Existing Customers:

- Allow affordable and homeless housing providing critical social services.
- Allow an additional dwelling unit (ADU) on existing lots, per DPP rules, no increase in meter size.
- Allow Department of Hawaiian Homeland projects because of priority water rights.

Declarations and Notifications for Conditional Building Moratoriums:

- Board Action for the Declaration of a Building Moratorium is required.
- Before declaring moratoriums, verify that growth forecasts and development approvals (building permit and construction status) are accurate, and existing source production trends are not decreasing with conservation efficiencies offsetting incremental growth. Account for the timing of new sources and pipeline inter-connections improvements. Typical timeframes for P&E, Design and Construction of new sources are approximately 5 to 7 years. Ensure developer proposed water demands are calculated consistently and are accurate.
- The Manager shall inform and obtain approval of the Board to declare a water shortage condition building moratorium and report to the Board the status of head and chloride levels and water system capacity; the weekly average of daily pumpage and demands; the effectiveness of the restrictions and allotments in force; recommendations to increase or reduce restrictions and allotments; and such other information.

- Notify affected elected officials, agencies, landowners and developers.
- The Board may terminate the declared water shortage condition building moratoriums when the event causing degradation of water quality or disruptions to water system delivery infrastructure has been resolved.

Water Shortage Response Team

The Water Shortage Response Team is comprised of BWS Divisions and Water Resources branches that will assess the extent of the water shortage condition, support compensatory pump operations, control water demand and recommend any system improvements in support of the Incident Specific Response Plan. Figure 3 presents the Water Shortage Response Team.

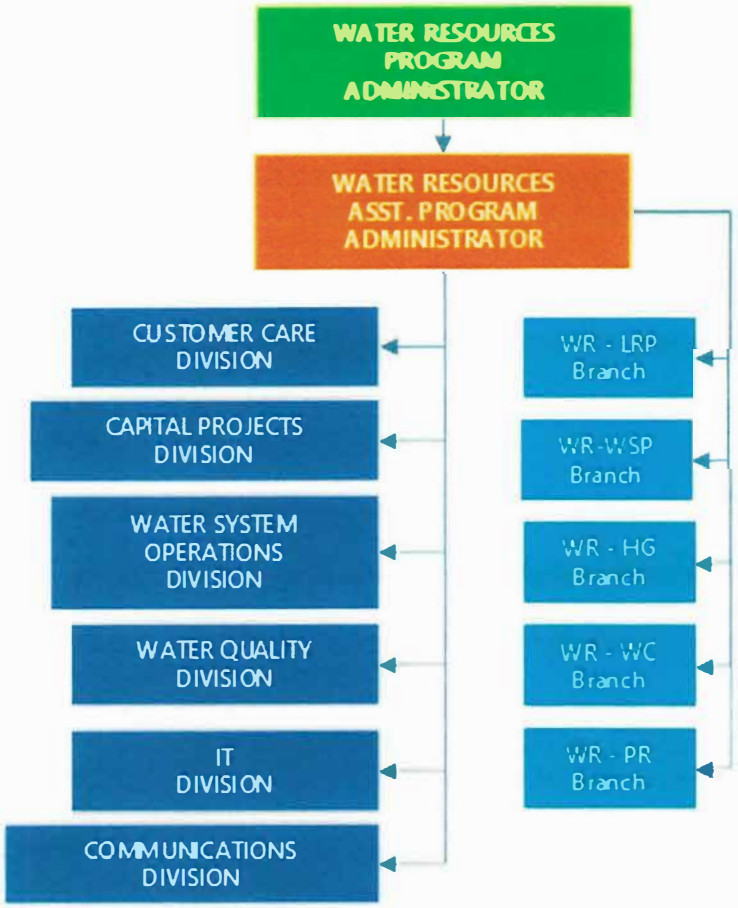


Figure 3: Water Shortage Response Team

Consistent with the Drought Response and Recovery Plan, the Water Resources Division Program Administrator will lead of the Water Shortage Team and act as liaison to the BWS Manager and Deputy Manager, and Incident Command. The Water Resources Assistant Division Head is the co-coordinator. Initial Response procedures are presented in the next section.

Initial Response

The BWS declares a water shortage condition after a contamination event or long-duration infrastructure outage event. Table 4 presents the Initial Response procedures available to BWS during a water shortage.

Table 4: Initial Response Procedures

Tactic		Responsible BWS Division
Data Collection and Analysis	▪ Increase frequency of water supply and well production monitoring to detect changes in supply availability. ▪ Monitor available pumping units and run times relative to max day demand ▪ Track rainfall across the aquifers sectors to determine potential for an eventual Low Groundwater Condition	Water Resources
	▪ Initiate annual or more frequent water loss audits, determining possible pressure zones in need of improvements to reduce water loss ▪ Identify and prioritize non-essential uses such as outdoor landscaping, decorative pools, swimming pool refilling, irrigation or recreational facilities; determine which uses can be reduced or eliminated during the Water Shortage Conditions	Water Resources
Inter-Agency Coordination	▪ Establish direct communication with City Dept. of Emergency Management to keep them informed of water shortage conditions for critical facilities where public health and safety is threatened, such as hospitals, government facilities, etc ▪ Meet with CWRM, developers, landowners, and other stakeholders (as needed) to discuss anticipated water shortages o Exchange ideas, advocate for joint solutions, and share media and public information messaging and costs fairly ▪ Partner with other agencies, utilities, and private sector and volunteer organizations that share common interests or special expertise, such as water-efficient landscaping o Share ideas and potential ways to save water o Coordinate shortage response activities, apply for funding, share resources, and work through regulatory issues ▪ Require HFD to notify BWS when they connect their portable wildland fire fighting dip tanks to the BWS system o Portable dip tank pad locations and BWS reservoirs near them are shown in Appendix H	OMCE
Stable Condition Operation Guidance	▪ Update water shortage operational guidance: o Update the stable condition pumping recommendations (see Appendix A) for previously analyzed sources: Beretania PS, Kalihi PS, Kaimuki PS, Halawa Shaft, Punanani Wells, Kalauao Wells ▪ Analyze and determine stable pumping recommendations for additional wells/aquifers. o Recommended sites in Appendix A	Water Resources, Water Systems Operations, Water Quality
Public Outreach and Education	▪ Expand the rainwater barrel and catchment program ▪ Implement end user leak detection programs and expand current leak detection outreach: o Conduct outreach activities	Water Resources, Communications

	○ Implement a leak and minor plumbing repair program for low-income households ○ Offer free inspections to identify leaking toilets and plumbing fixtures ○ Implement irrigation inspections for automatic sprinkler and irrigation systems	
	▪ Hire a water conservation education specialist to give classes to local K-12 students ○ Funding may be provided, fully or in part, by the County and BWS	OMCE, HRO, ESO
Public Communication	▪ Use social media and traditional media and newsletters to disseminate water shortage information and conservation goals and tips ▪ Keep messages clear, simple, and consistent; collaborate with other utilities and agencies to share the same message ○ Include easily accessible and useful info on BWS website related to the water shortage condition, conservation tips, and how customers can access their own water use data from meters ▪ Prepare a presentation and talking points for BWS staff to provide clear, accurate, and consistent information to customers and the community on conservation measures	Communications

Water Shortage Condition

The BWS may declare a Water Shortage Condition based on an analysis of available pumping units and run times to determine when water supply is not available to meet existing and/or future water demands due to degradation of water quality or extended disruptions to water system delivery infrastructure.

BWS will activate the Water Shortage Response Team (WSRT) to lead and coordinate the Water Shortage response and planning activities.

The WSRT shall meet regularly, with increasing frequency as the water shortage conditions worsens, as recommended in Table 5.

Table 5: Recommended Meeting Schedule per Water Shortage Condition

Water Shortage Condition	Recommended Meeting/Update Schedule
Alert	Convene and provide updates bi-weekly to the Manager and monthly to the Board and as needed to City Council and other agencies
Critical	Convene and provide updates weekly to the Manager and monthly to the Board and as needed to City Council and other agencies

Water Shortage Procedures

Table 6 presents the tactics and procedures that the Water Shortage Response Team may recommend during Water Shortage Conditions, along with the responsible BWS Divisions. The procedures are increasingly restrictive as the situation moves to an Alert Condition and to a Critical Condition.

Table 6: Procedures in Response to Water Shortage Conditions

Tactic	Pre-Declaration Procedures (prior to summer)	Alert Condition Procedures	Critical Condition Procedures	Responsible Party
Data Collection	Customer Care collect reports from the public of observed wasteful water usage and forward to Water Resources Division	▪ Customer Care forwards data on non-compliance with voluntary conservation program to Water Resources Division ▪ Customer Care Division prepares and mails letters requesting voluntary reductions of water use to identified customers	▪ Customer Care initiates patrolling program to identify violators of the mandatory water use irrigation restrictions and allotments. ▪ Water Resources assists as needed	▪ Customer Care ▪ Water Resources ▪ Finance
	Increase chloride content data collection to monthly for wells near affected index wells		Increase chloride content data collection to weekly for wells near affected index wells	Water Resources
	Request and/or assist CWRM with increasing deep monitor well monitoring frequency			Water Resources
	Implement the following if CWRM mandates pumpage reductions if water resources are being impacted: ▪ Finance conducts a financial impact analysis of lost revenue due to CWRM's mandated pumpage reduction at varying durations. o Evaluate financial reserve, projected spending, and identify if mitigation measures are needed. ▪ Water Resources increases sampling of source water to continuously monitor water quality ▪ WSRT coordinates with CWRM on their planned spot checks of BWS deep monitor wells and pumpage.			▪ Water Shortage Response Team ▪ Water Resources ▪ Finance
Improve System Efficiency	▪ Identify and prioritize non-essential uses such as outdoor landscaping, decorative pools, swimming pool refilling, and irrigation or recreational facilities. Determine which uses can be reduced or eliminated during certain water shortage stages ▪ Install centralized weather-based irrigation controls in large landscaped areas to adjust irrigation rates depending on rainfall.			Water Shortage Response Team
	Increase frequency of water loss audits – determine areas of improvement to minimize potential water loss. Adjust AMR meters to hourly reads for large users and install meter masters on high off-hour (usually early morning) water use.			Water Resources, Field Operations
Triage Water Supply Sources	Kalihi, Beretania and Kaimuki wells ("in-town" wells) are utilized extensively during high demand periods. To manage average annual production from these wells, prioritize production from Pearl City and Ewa areas wells as much as feasible during the fall, winter and spring season in anticipation of exceeding the average annual production rates from "in-town" wells.			Water Resources Operations

Tactic	Pre-Declaration Procedures (prior to summer)	Alert Condition Procedures	Critical Condition Procedures	Responsible Party
Inter-Agency Coordination	▪ Ensure City properties comply with all BWS demand reduction measures ▪ Meet with CWRM, private well users, and other stakeholders (as needed) to discuss anticipated water shortages o Exchange ideas, advocate for joint solutions, and share media and public information messaging and costs o Coordinate water shortage response activities, apply for funding, share resources, and work through regulatory issues ▪ Discuss communication plans with CWRM, DOE, DOT, DPR, DES, etc. ▪ Water Resources to stay apprised of water levels and water quality and provide information to Water Shortage Response Team ▪ Communications to lead communications with public and private agencies			▪ Water Shortage Response Team ▪ Water Resources ▪ Communications
Voluntary Conservation Measures for Alert Water Shortage Conditions	▪ Request military, commercial, industrial, and agricultural users and government agencies reduce their usage by 10% ▪ Include some water conservation strategies and current usage in communication	Request the following of all customers: ▪ Use automatic shut-off nozzles on all hoses. ▪ Only wash cars, boats, trailers, or other vehicles with automatic shut-off nozzle hoses and buckets ▪ Do not hose or wash sidewalks, walkways, driveways, parking lots, or other hard surfaces ▪ Require customers to make a reasonable effort to repair water leaks in toilets, plumbing fixtures, and customer-side water lines within 24 hours		Water Shortage Response Team
Mandatory Conservation Measures for Critical Water Shortage Conditions		Require the following of applicable customers: ▪ Do not fill swimming pools and other types of pools and ponds. Close public pools, outdoor fountains and other water features ▪ Serve water in restaurants only when requested by the customer, provide a notice of water shortage on each table ▪ Post a notice of water shortage and tips for water conservation in each hotel and motel room ▪ Use re-circulating water only in ornamental fountains and post signage nearby that states that re-circulated water is being used ▪ Limit use of potable water for recreational purposes ▪ Coordinate with commercial water recreational facilities (such as water parks) on restrictions to minimize impact to businesses ▪ Eliminate use of decorative water features and outdoor misting systems		▪ Water Shortage Response Team ▪ Communications

Tactic	Pre-Declaration Procedures (prior to summer)	Alert Condition Procedures	Critical Condition Procedures	Responsible Party
Mandatory Conservation Measures for Critical Water Shortage Conditions			Implement mandatory BWS construction restrictions: ▪ Halt all approvals of temporary water meters ▪ Halt all approvals of new permanent water meters ▪ Halt all approvals of pipeline chlorination or disinfection using potable water	▪ Capital Projects
	Implement mandatory restrictions for City agencies: ▪ Restrict turf watering/landscaping irrigation at City facilities other than parks and right-of-way ▪ Inspect automatic sprinkler and irrigation systems		▪ Partner with HFD to reduce non-essential training ▪ Increase use of reclaimed water for irrigation, construction activities, fire-fighting storage, agriculture, or other non-potable uses	Water Shortage Response Team
Water Allotments & Flow Restrictors (Only applies to Critical Condition)		Establish water allotments and flow restrictors: For commercial, residential, industrial, military, governmental, and agricultural consumers ▪ At no less than 90% of user's previous 12-month average billed consumption ▪ At no less than 350 gals/day for SFD and duplex residences ▪ At no less than 270 gals/day/unit for Multi Family low rise and 180 gals/day/unit for High Rise Apts.	Establish water allotments and flow restrictors: For commercial, residential, industrial, military, governmental, and agricultural consumers: ▪ At no less than 70% of user's previous 12-month average billed consumption ▪ At no less than 300 gallons/day for SFD and duplex residences ▪ At no less than 210 gals/day/unit for Multi Family low rise and 140 gals/day/unit for High Rise Apts. ▪ At different times and different levels for the various classes of consumers	▪ Water Shortage Response Team
		▪ Customer Care Division notifies each customer of billing period water use allotment by printing such amount on their bill or by direct mail to them ▪ Customer Care Division requests flow restrictors installed by Field Operations Division.		▪ Customer Care ▪ Field Operations
		Process all written applications for exceptions to the customer allotment and appeals to any adverse action and notify all Divisions of any exceptions that are granted appeals to any adverse action.		Customer Care

Tactic	Pre-Declaration Procedures (prior to summer)	Alert Condition Procedures	Critical Condition Procedures	Responsible Party
Non-Residential Conservation Targets	Government agencies; military and commercial, industrial, and agricultural users reduce their usage by 10% during Alert Water Shortage Conditions and 30% during Critical Water Shortage Conditions. Include applicable strategies and/or tactics and current usage in communication			Water Shortage Response Team
Irrigation Schedule	Implement the voluntary irrigation schedule ▪ Goal: Overall reduction of 25% in irrigation ▪ No watering during rain or within 48 hours following rain. ▪ Parks, highways, cemeteries, schools o Between the hours of 7 AM and 9 AM o Irrigation days for odd digit address: Tuesday, Thursday and Saturday o Irrigation days for even digit address: Wednesday, Friday, Sunday ▪ Domestic: Between the hours of 5 PM and 7 PM ▪ Military and golf courses: Between the hours of 12 AM and 5 AM			Water Shortage Response Team
		Implement the mandatory irrigation schedule ▪ Goal: Overall reduction of 50% in irrigation ▪ No watering during rain or within 48 hours following rain. ▪ Parks, highways, cemeteries, schools o Between the hours of 7 AM and 11 AM o Irrigation days for odd digit address: Tuesday, Thursday and Saturday o Irrigation days for even digit address: Wednesday, Friday, Sunday ▪ Domestic: Between the hours of 5 PM and 7 PM ▪ Military and golf courses: Between the hours of 12 AM and 5 AM ▪ Turf replacement rebate / xeriscape incentives $3.65/sf cost to remove turf only (CA)		Water Shortage Response Team
Stable Condition Operation Guidance	Update and follow the Low Groundwater operational guidance (see Appendix A): ▪ Update chloride level, transition zone mid-point, and pumpage data ▪ Identify the stable condition operation limits for previously analyzed sources: Beretania PS, Kalihi PS, Kaimuki PS, Halawa Shaft, Punanani Wells, Kalauao Wells ▪ Analyze and determine stable pumping recommendations for additional wells in the Water Management Areas of concern o Recommended sites in Appendix A			Water Resources
Engage Critical Customers		▪ Collaborate with major water users to identify water-saving measures that would not harm their business		▪ Water Resources ▪ Communications

Tactic	Pre-Declaration Procedures (prior to summer)	Alert Condition Procedures	Critical Condition Procedures	Responsible Party
	▪ Engage with stakeholders (especially industrial users) of any expected changes in water quality and/or water supply reliability due to the water shortage.			Water Shortage Response Team
Public Outreach and Education	▪ Partner with private sector and volunteer organizations that share common interests or special expertise, such as water-efficient landscaping o Reach out to local community partners, other utilities, and agencies to share ideas and potential ways to save water ▪ Implement or enhance the following end user leak detection programs: o A leak and minor plumbing repair program for low income households o Free inspections to identify leaking toilets and plumbing fixtures o Incentive programs or tax credits for installing water saving fixtures o Irrigation inspections for automatic sprinkler and irrigation systems			Water Shortage Response Team
	▪ Implement incentive programs such as: o Incentives to follow through with voluntary measures o Incentives or tax credits to install water saving fixtures ▪ Hire a water conservation education specialist who gives classes to local elementary and high school students o Seek funding assistance through the ODC and SDC			▪ Water Shortage Response Team Finance
	Consider meeting with business who may be affected by mandatory water restrictions, including but not limited to: car washes, golf courses, water parks or other commercial water recreational facilities, resorts, hotels			Water Shortage Response Team
Public Communication	▪ Use social media, traditional media, and bill inserts ▪ Keep messages clear, simple, and consistent. Collaborate with other utilities and agencies to share the same message o Include easily accessible and useful info on BWS website related to the current water shortage condition, conservation tips, and how customers can access their own water use data from meters ▪ Conservation messaging templates should: o Use simple messages, short sentences, and provide one to three recommendations o Have specific conservation measures or restrictions per customer type in bill inserts ▪ Provide a telephone hotline or website for customers to report leaks, with resources tied to field crew work orders to prioritize leak repairs			▪ Communications
	▪ Establish a schedule for frequent, frank communication using all available methods for customers to understand the severity of the water shortage and encourage reduced water use ▪ Engage major employers, local businesses, and county officials to help spread water shortage-related messages and act as water conservation "models" within the community ▪ Ask school and religious leaders, youth groups, and service organizations to promote conservation to their students, congregations, and members			▪ Communications ▪ Water Shortage Response Team

Tactic	Pre-Declaration Procedures (prior to summer)	Alert Condition Procedures	Critical Condition Procedures	Responsible Party
Public Communication	▪ Prepare information on the status of the water supply sources, the need for conservation, and suggestions on how to conserve water, and disseminate the information to the public through the mass media ▪ Prepare focused letters to government leaders requesting support of these conservation efforts ▪ Prepare a presentation and talking points for BWS staff to provide clear, accurate, and consistent information to customers and the community on conservation measures ▪ Develop a FAQ template with answers that change as different low groundwater conditions occur, thus forming a consistent message for communications, Neighborhood Board reps, and other staff who engage customers		▪ Provide weekly updates to media and public on: o Water supply conditions o Status of community demand reduction response o Recommended conservation measures enforcement information, including fines and reporting procedures ▪ Require all commercial customers to prominently display "save water" signage and develop conservation plans	▪ Communications ▪ Water Resources

Surcharges, Exceptions, Appeals and Penalties

Special rates and charges during mandatory water shortage conditions

During a mandatory water shortage condition, a surcharge schedule for excess water use shall be established for customers whose monthly consumption is in excess of their water allotment, in accordance with the following:

- Maximum allowable exceedance of water allotments:
- Residential (single family and duplex): 5,000 gallons per monthly billing period
- Resort, commercial, multi-family, industrial, agricultural, military, and government: Difference between allotment and previous 12-month monthly average

Table 7: Surcharges for Exceedance of Water Allotment by Percentage and Meter Size

Gallons in Excess of Allotment for Meter Sizes 2" and Larger*	Gallons in excess of Allotment for Meter Sizes 5/8" to 1-1/2" (Monthly Billing)	Gallons in excess of Allotment for Meter Sizes 5/8" to 1-1/2" (Bi-Monthly Billing)	Surcharge
25% or less	3,000 or less	6,000 or less	2 Times Existing Water Rate
26% - 50%	3,001 – 6,000	6,001 - 12,000	3 Times Existing Water Rate
51% - 75%	6,001 – 9,000	12,001 - 18,000	4 Times Existing Water Rate
76% - 100%	9,001 – 12,000	18,001 - 24,000	12 Times Existing Water Rate
Over 100%	Over 12,000	Over 24,000	20 Times Existing Water Rate

*Surcharge for 2" and larger meters are the same for either monthly or bi-monthly billing

- For residential consumers, the surcharge will be charged at the block rate that the allotment falls in. Surcharges will be assessed for each consumer after receipt of the first water bill following the establishment of allotments by the BWS Board. Upon termination of allotments by the Board, surcharges shall cease.

Exceptions and Appeals

Sec. 3-322(5) Procedures for Control of Water Use During Low Groundwater Level Condition provides a process to consider exceptions:

Consideration of written applications for exceptions regarding the allotment system or regulations and restrictions on water use set forth in this Chapter shall be as follows:

a. Written applications for exceptions shall be accepted, and may be granted, by the Manager.

b. Grounds for granting such exceptions are:

(1) Failure to do so would cause an unnecessary and undue hardship to the Applicant, including but not limited to adverse economic impacts such as loss of production or jobs;

(2) Failure to do so would cause an emergency condition affecting the health, sanitation, fire protection, or safety of the Applicant or the public;

(3) For single family residences with more than four persons permanently residing in the home, if a written application for an exception is granted as provided herein, the applicable allotment shall be increased by 40 gallons per person per day for each person permanently residing in the home in excess of four persons;

(4) For multiple residential units with more than two dwelling units where the allotment is less than 280 gallons per day per dwelling unit, if a written application for an exception is granted as provided herein, the applicable allotment shall be 280 gallons for each unit;

(5) Denial of an application for exception may be appealed in writing to the Board.

Penalties:

Sec. 3-321 Penalties, provides the following:

1. Any violation by any person of the restrictions declared by the Board under Sections 3-319 and 3-320 of this Chapter shall be punishable according to Chapter II, Section 2-205 and Chapter V, Section 5-501 of these Rules and Regulations.

2. Any consumer who violates the restrictions declared by the Board under Sections 3-319 and 3-320 of this Chapter or who consumes water in excess of the amount designated below for their class shall be subject to the installation of a flow restriction device by the Department and punishable according to Chapter V, Section 5-501, (charged with a misdemeanor, pursuant to Chapter 1, Article 3, Section 1-3.1, ROH). An offender shall pay $50.00 for the installation and removal of a flow restriction device by the Department. Water service may be discontinued for an offense committed after the installation of a flow restrictor in accordance to Chapter II, Section 2-205.

BWS can implement penalties for customers whose monthly consumption is in excess of their water allotment, in accordance with the following:

Maximum allowable exceedance of water allotments:

Residential (single family and duplex): 5,000 gallons per monthly billing period, 10,000 gallons per bi-monthly billing period

Resort, commercial, multi-family, industrial, agricultural, military, and government: Difference between allotment and previous 12-month monthly average

First two offenses if the excessive use does not exceed the maximum allowable as specified above and in Section 3-321 of the BWS Rules and Regulations.

A warning letter will be issued after the first offense

A flow restrictor may be installed after the second offense

Declaration and Termination of Water Shortage Condition

The Manager shall inform the public and the Department's consumers of the declaration and termination of an alert or critical water shortage condition by publishing such declaration and termination in a newspaper of general circulation on the island of Oahu at least once a day for three consecutive days. The alert or critical water shortage condition and all restrictions and allotments associated therewith shall terminate at midnight on the first day of a publication terminating such condition. Flow restrictors will be removed.

Recovery Phase

If the Water Shortage included the trigger and declaration of a Water Shortage Condition, a recovery phase will be needed for over-pumped sources. The recovery phase of the Water Shortage Response & Recovery Plan is crucial, as rolling back voluntary and/or mandatory conservation measures and operational restrictions may slow or even reverse the recovery.

The Water Shortage Response Team will determine when it is appropriate to reduce the severity of the Water Shortage Condition, based on the restoration of available pumping units, water level and chloride data from ongoing monitoring of supply wells and customer conservation implementation. This water shortage recovery process will be undertaken conservatively and may take a minimum of three months. Figure 4 presents an example of a water shortage recovery process from the Critical Water Shortage Condition and the potential triggers for stepping down to each lower condition.

The water shortage conditions should be characterized to understand the applicable length of time of the declaration and whether it extends annually or only through the summer seasons.

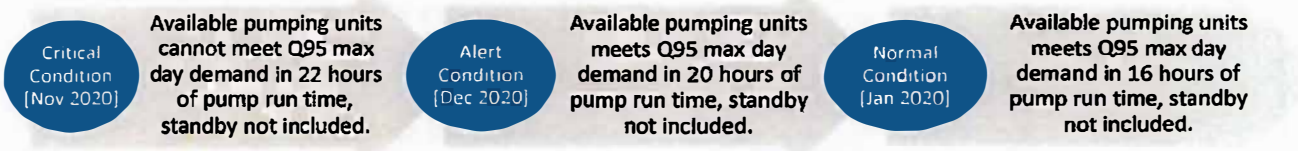


Figure 4: Example of Recovery from a BWS Water Shortage Critical Condition

During the Recovery Phase, procedures are split between WSRT procedures which mainly deal with decision-making on when to rollback voluntary/mandatory conservation measures and agency

coordination. BWS Divisions and Sections will also have operational procedures. These procedures are shown in the next sections.

Recovery Procedures

The WSRT will still be needed to monitor the effectiveness of the water shortage response and as long as a Water Shortage Condition is active, even while improving, the WSRT remains the group in charge of water shortage actions and other BWS Divisions will continue certain Water Shortage Condition procedures through recovery. The BWS should implement the organizational procedures listed in Table 8 to ensure recovery from a Water Shortage Condition, depending upon the severity.

Table 8: Recovery Procedures

Procedures	Responsible Division
▪ Write an after-action report that describes effective water shortage response actions and areas that could be improved o The after-action report will be submitted to the Water Shortage Response Team and the Manager for inclusion in the County after-action report	Water Shortage Response Team
Identify new standard operating procedures for future Water Shortage Conditions and for routine operations	Water Shortage Response Team
▪ Revise the BWS Water Shortage Response and Recovery Plan based on lessons learned o Did the Initial Response procedures, Low Groundwater Condition triggers and procedures achieve the anticipated results? o Were the demand reduction measures too prescriptive, or did they not provide enough direction to customers?	Water Shortage Response Team
▪ Conduct a debrief with BWS staff and stakeholders shortly after the water shortage event to discuss the effectiveness of or improvements to response activities. o Continue to engage the public by providing tips to use water efficiently throughout public and private facilities, such as installing low-flow fixtures, retrofitting landscapes, and replacing inefficient irrigation systems o Engage with large water users and local businesses to help them prepare for the next water shortage	Water Shortage Response Team
▪ Document how water demand in the system changed during water shortage response o Use production and consumption data to estimate the lag time between different public announcements and voluntary and/or mandatory measures o This information can help revise trigger levels for when procedures are implemented o Pre-Water shortage information can be found in Appendix G	Water Shortage Response Team
▪ Document how the aquifers and wells reacted to the water shortage condition, (chlorides and heads) o How did the Sources of concern react to the water shortage condition? o What emergency operations were put in place due to restricted pumping in certain wells or aquifers? o Where there any damages to the system incurred as a result of the water shortage condition? o Did a CWRM Water Shortage Warning Stage occur and if so, how did the BWS respond? Was the 15% mandated cutback in pumpage met? o Did the trigger index wells recover to pre-Water shortage conditions?	Water Shortage Response Team
▪ Keep the Water Shortage Response Team active by conducting water shortage preparedness activities o Once BWS and the aquifers have recovered from the water shortage, the WSRT should meet annually and conduct water shortage planning and exercises	Water Shortage Response Team

Work with County, State, and Federal officials to secure funding and technical assistance to implement large projects to build longer-term water shortage resilience, such as new groundwater wells, resilient water sources, and interconnections	OMCE
Develop a plan to implement projects that address long-term needs to make BWS more resilient to future water shortage	Water Resources
Continue the water loss program to conduct annual water loss audits and provide recommended improvements	Water Resources
Continue or increase monitoring activities to maintain a full awareness of water supply conditions	Water Resources
Continue to implement leak detection and repair programs that ensure a prompt response mechanism for staff to make repairs	Water Resources
Keep communicating frequently and frankly with all customers about the water shortage recovery progress	Communications Water Resources
Reframe messages to a focus on long-term water supply reliability; continue to stress the importance of conserving water, actions BWS is taking, and actions the public can take	Communications

"November 28, 2022

ADOPTION OF RESOLUTION NO. 956, 2022, AUTHORIZING THE SUBMITTAL OF A FUNDING REQUEST TO THE CITY AND COUNTY OF HONOLULU'S CORONAVIRUS STATE AND LOCAL FISCAL RECOVERY FUNDS (SLFRF) PROGRAM, FOR THE PLANNING, DESIGN, CONSTRUCTION, OPERATION, AND MAINTENANCE OF THE PROPOSED KALAELOA SEAWATER DESALINATION FACILITY, AND AUTHORIZING THE MANAGER AND CHIEF ENGINEER, BOARD OF WATER SUPPLY TO ACCEPT FUNDS FOR THE PROJECT

Chair and Members
Board of Water Supply
City and County of Honolulu
Honolulu, Hawaii 96843

Chair and Members:

Subject: Adoption of Resolution No. 956, 2022, Authorizing the Submittal of a Funding Request to the City and County of Honolulu's Coronavirus State and Local Fiscal Recovery Funds (SLFRF) program, for the Planning, Design, Construction, Operation, and Maintenance of the Proposed Kalaeloa Seawater Desalination Facility, and Authorizing the Manager and Chief Engineer, Board of Water Supply to Accept Funds for the Project

We recommend approval of Resolution No. 956, 2022, authorizing the submittal of a funding request to the City and County of Honolulu's SLFRF Program for the planning, design, construction, operation, and maintenance of the proposed Kalaeloa Seawater Desalination Facility and authorizing the Manager and Chief Engineer to enter into an agreement to accept those funds.

On March 11, 2021, the American Rescue Plan Act of 2021 ("ARPA") was signed into law, which provides $350 billion in funding for state and local governments. The City and County of Honolulu received approximately $386 million from ARPA in two installments of State and Local Capital Budget and Program for the Fiscal Year July 1, 2022, to June 30, 2023, appropriated the second installment of funding, and specifically identified $25 million as a "provision of funds to the Honolulu Board of Water Supply". This was separate, and additional to, the ARPA SLFRF funding the BWS received from the City's first installment, which was reflected in our Fiscal Year 2023 Budget, adopted previously by the Board.

With this additional allocation of funding from the City and County of Honolulu's ARPA SLFRF, the Board of Water Supply has again reviewed the ARPA and SLFRF requirements and finds with the additional provision of funding, that the Kalaeloa Seawater Desalination project is eligible for SLFRF funding, and wishes to pursue obtaining SLFRF funds from the City's second installment.

BWS intends to build the 1.7 MGD Kalaeloa seawater reverse osmosis desalination facility in Campbell Industrial Park to provide a sustainable, drought-proof, source of high-quality potable water to enhance water resilience to climate change and reduce water transfers from Central Oahu. The reduction of water transfers is critically important as we carefully manage our interconnected and integrated water system in the face of the Red Hill contamination. Seawater desalination will increase system resilience during this Red Hill fuel contamination crisis, as well as during periods of intense drought as a result of climate change.

Obtaining financial assistance for this beneficial project will allow BWS to continue to provide a safe, dependable, and affordable water supply for Oahu.

Respectfully Submitted,

/s/ ERNEST Y. W. LAU, P.E
Manager and Chief Engineer

Attachment"

DISCUSSION: Raelynn Nakabayashi, Executive Assistant I, Executive Support Office, gave the report.

There was a total of one testimony via in-person, Zoom, and written. The list below is the names of each person that shared their testimony with the Chair, Board members, and the BWS.

REMOTE TESTIMONY

Submitter's Name	POSITION
Choon James	Appreciates the BWS for securing SLFRF funding. She states that desalination facilities can be very costly, which will raise the cost of water for Oahu residents.

WRITTEN TESTIMONY

Submitter's Name	POSITION
CHOON JAMES	Provided a written copy of her remote testimony.

Board Member Dawn Szewczyk commends the BWS for looking into different innovative ways to find new water resources and leveraging American Rescue Plan Act (ARPA) funding.

Board Member Na'alehu Anthony asked Manager Lau his thoughts on desalination, with all the challenges of cost, yield, and the removal of brine and other impurities that come with desalination.

Manager Ernest Lau responded that desalination is complicated and agreed with testifier Ms. Choon James that it is very expensive. However, the worst time to explore desalination is amid a multi-year drought or during a water shortage emergency. He commented that with the funding from ARPA; the Department of Interior, the US Bureau of Reclamation Funds; and the late Senator Daniel Inouye, which provides the BWS of up to 20 million (M) federal funding that doesn't need to be repaid, it's the

perfect opportunity to help the BWS reduce the cost to develop a seawater desalination plant.

Board Member Kapua Sproat expressed her appreciation to the BWS for leveraging additional funding. She stated that although the cost to develop a desalination plant has lowered and technology has improved, she still has concerns and reservations. Board Member Sproat asked if the BWS had a sense of what it would cost per thousand gallons to produce drinking water from seawater.

Manager Lau replied that he doesn't have a total cost for desalination since it is still in the procurement process but shared that it would be substantially higher to produce drinking water from seawater. He stated that using groundwater is the cheaper option. Manager Lau also shared the cost would depend on the size of the desalination plant which would drive the cost lower or higher. The BWS is looking into a desalination plant that's expandable up to five million gallons per day (mgd), using an injection well to decrease brine disposal impact on the nearshore environment. The BWS continues to explore the different desalination options and cost drivers without compromising the water quality provided to customers.

Board Member Sproat commented that considering the implications at Red Hill it's important to move forward and develop alternatives.

Manager Lau responded that the BWS will continue to protect our precious water resources, look into additional groundwater developments, water conservation, and manage watersheds.

Board Member Jonathan Kaneshiro inquired if the BWS has considered sewer treatment.

Manager Lau replied that the BWS has been operating a wastewater treatment plant that reuses 10 mgd for non-potable use: irrigation of golf courses, landscaping, and agriculture for approximately 20 years. He shared that Mr. Barry Usagawa, Water Resources Division is responsible to operate the Honouliuli Recycling facility. The Ewa Plains area was required to be developed with a dual water system, therefore, making it the perfect location for a desalination plant with no harm to the drinking water aquifer.

Chair Andaya commented that he appreciates that the BWS is pursuing new technology alternatives but asked if the BWS's commitment to protecting groundwater resources will change while seeking other water sources.

Manager Lau affirmed that the BWS's mission and responsibility as a public trust will not change, the BWS's primary duty is to protect our freshwater resources for the community. He stated that the BWS is faced with multiple challenges but will pursue each one to find a solution.

MOTION
TO APPROVE

Jade Butay and Dawn Szewczyk motioned and seconded, respectively, to approve the Adoption of Resolution No. 956, 2022, Authorizing the Submittal of a Funding Request to the City and County of Honolulu's Coronavirus State and Local Fiscal Recovery Funds (SLFRF) program, for the Planning, Design, Construction, Operation, and Maintenance of the Proposed Kalaeloa Seawater Desalination Facility, and Authorizing the Manager and Chief Engineer, Board of Water Supply to Accept Funds for the Project.

Chair Andaya requested Board Secretary, Ms. Joy Cruz-Achiu to conduct the roll call vote.

Ms. Cruz-Achiu conducted a roll call vote: Vice Chair Kapua Sproat, aye; Board Member Na'alehu Anthony, aye; Board Member Jonathan Kaneshiro, aye; Board Member Jade Butay, aye; Board Member Dawn Szewczyk, aye; and Chair Bryan Andaya, aye.

Ms. Cruz-Achiu announced that the motion passed with six ayes.

ADOPTION OF RESOLUTION NO. 956, 2022, AUTHORIZING THE SUBMITTAL OF A FUNDING REQUEST TO THE CITY AND COUNTY OF HONOLULU'S CORONAVIRUS STATE AND LOCAL FISCAL RECOVERY FUNDS (SLFRF) PROGRAM, FOR THE PLANNING, DESIGN, CONSTRUCTION, OPERATION, MAINTENANCE OF THE PROPOSED KALAELOA SEAWATER DESALINATION FACILITY, AND AUTHORIZING THE MANAGER AND CHIEF ENGINEER, BOARD OF WATER SUPPLY TO ACCEPT FUNDS FOR THE PROJECT WAS ADOPTED ON NOVEMBER 28, 2022

	AYE	NO	COMMENT
BRYAN P. ANDAYA	X		
KAPUA SPROAT	X		
MAX J. SWORD			ABSENT
NA'ALEHU ANTHONY	X		
JONATHAN KANESHIRO	X		
JADE T. BUTAY	X		
DAWN B. SZEWCZYK	X		

BOARD OF WATER SUPPLY
CITY AND COUNTY OF HONOLULU

RESOLUTION NO. 956, 2022

AUTHORIZING THE SUBMITTAL OF A FUNDING REQUEST TO THE CITY AND COUNTY OF HONOLULU'S CORONAVIRUS STATE AND LOCAL FISCAL RECOVERY FUNDS (SLFRF) PROGRAM FOR THE PLANNING, DESIGN, CONSTRUCTION, OPERATION, AND MAINTENANCE OF THE PROPOSED KALAELOA SEAWATER DESALINATION FACILITY, AND AUTHORIZING THE MANAGER AND CHIEF ENGINEER, BOARD OF WATER SUPPLY TO ACCEPT FUNDS FOR THE PROJECT

WHEREAS, on March 11, 2021, the American Rescue Plan Act of 2021 ("ARPA") was signed into law, which provided $350 billion in funding for state and local governments. The City and County of Honolulu received approximately $386 million in State and Local Fiscal Recovery Funds (SLFRF) from the United States Department of the Treasury, in two installments; and

WHEREAS, the City and County of Honolulu, in appropriating the second installment of SLFRF via Bill 15 (2022) CD2 FD1, which became Ordinance No. 22-14 on June 20, 2022, specifically identified $25 million as a "Provision of funds to the Honolulu Board of Water Supply for water security initiatives to continue providing clean water after aquifer contamination from the Red Hill Bulk Fuel Storage Facility"; and

WHEREAS, the BWS's integrated water system interconnects the Pearl Harbor aquifer sector sources, East to Honolulu, and West to Ewa-Waianae. This integrated water system provides flexibility to transfer water from areas of supply to Honolulu and Ewa; and

WHEREAS, in late 2021 the Board of Water Supply ceased pumping operations of groundwater from the Halawa Shaft, Halawa Wells, and Aiea Wells as a precautionary measure to protect the sources, and to slow the migration of the contaminant plume across Halawa Valley; and

WHEREAS, the Halawa Shaft, Halawa Wells, and Aiea Wells were the source of drinking water to approximately 20% of Metro Honolulu and the shutdown forced the Board of Water Supply to draw more heavily on other sources to maintain services; and

WHEREAS, the objective of the Kalaeloa Seawater Desalination Facility in Campbell Industrial Park is to develop a sustainable seawater desalination facility that supports the Ewa Development Plans directed growth policies with a drought-proof, high quality local water supply that enhances water resilience to climate change and reduces water transfers from the Pearl Harbor aquifer sector; and

WHEREAS, due to the contamination caused by the Red Hill Bulk Fuel Storage Facility, providing a local source water in Ewa is critically important in reducing water transfers West from Pearl Harbor aquifer sector. The Kalaeloa Seawater Desalination Facility will provide local source to the Campbell Industrial Park, which will replace source being transferred West, from Kunia and Waipahu. This frees up these sources to be transferred East, to Honolulu; and

WHEREAS, the Kalaeloa Seawater Desalination Facility Project is eligible to receive SLFRF financial assistance under [31 CFR Part 35 RIN 1505-AC77] Final Rule Section II. Eligible Uses, as the U.S. Treasury aligned eligible uses of the SLFRF with projects that would be eligible to receive financial assistance through the Drinking Water State Revolving Fund (DWSRF) administered by the Environmental Protection Agency (EPA); and

WHEREAS, as a semi-autonomous agency of the City and County of Honolulu, the City has requested an official resolution be adopted by the board of directors to authorize that the BWS commit to the financial and legal obligations associated with receipt of SLFRF funding; and

WHEREAS, the Chair of the Board of Water Supply and the Manager and Chief Engineer support the funding request; and

WHEREAS, the Board of Water Supply has the legal authority and financial capability to provide the additional project funding, not covered by this funding request, pursuant to Chapter 54 Water Systems, Hawaii Revised Statutes, and Article VII, Revised Charter of the City and County of Honolulu which establishes powers and duties of the Board of Water Supply to manage, control, and operate the waterworks of the county and all property thereof, for the purpose of supplying water to the public in the county, and shall collect, receive, expend, and account for all sums of money derived from the operation thereof and all other moneys provided for the use or benefit of the waterworks and all property used for or held in connection therewith; and

WHEREAS, the Board of Water Supply may receive monies which use is specified or otherwise limited by the monies' source from any government or quasi-governmental agency. These monies include Coronavirus State and Local Fiscal Recovery Fund funds from the American Rescue Plan Act of 2021 (Pub. L. 117-2). When such funds are received, in amounts that may be necessary to finance projects listed in the Board of Water Supply Capital Improvement Program Budget and designated to be financed from the Extramural Fund, the Board of Water Supply shall maintain accounts showing the monies so received and specifying the purposes for which they have been received and held.

BE IT RESOLVED, by the Members of the Board Of Water Supply, City and County of Honolulu, in accordance with Hawaii Revised Statutes and Revised Charter of the City and County of Honolulu, that the Manager and Chief Engineer is authorized to submit a SLFRF funding request to the City and County of Honolulu for the Kalaeloa Seawater Desalination Facility Project.

ADOPTED:

Bryan P. Andaya
Chair

Honolulu, Hawaii
November 28, 2022

ADOPTION OF RESOLUTION NO. 956, 2022, AUTHORIZING THE SUBMITTAL OF A FUNDING REQUEST TO THE CITY AND COUNTY OF HONOLULU'S CORONAVIRUS STATE AND LOCAL FISCAL RECOVERY FUNDS (SLFRF) PROGRAM, FOR THE PLANNING, DESIGN, CONSTRUCTION, OPERATION, MAINTENANCE OF THE PROPOSED KALAELOA SEAWATER DESALINATION FACILITY, AND AUTHORIZING THE MANAGER AND CHIEF ENGINEER, BOARD OF WATER SUPPLY TO ACCEPT FUNDS FOR THE PROJECT WAS ADOPTED ON NOVEMBER 28, 2022

	AYE	NO	COMMENT
BRYAN P. ANDAYA	X		
KAPUA SPROAT	X		
MAX J. SWORD			ABSENT
NA'ALEHU ANTHONY	X		
JONATHAN KANESHIRO	X		
JADE T. BUTAY	X		
DAWN B. SZEWCZYK	X		

ADOPTION OF RESOLUTION NO. 957, 2022, AFTER-THE-FACT ACCEPTANCE OF GIFTS TO THE BOARD OF WATER FROM HAWAII COMPANIES AS PRIZES FOR HALLOWEEN CONTEST PROMOTING HEALTHY WATERSHEDS

Chair and Members
Board of Water Supply
City and County of Honolulu
Honolulu, Hawaii 96843

Chair and Members:

Subject: Adoption of Resolution No. 957, 2022, After-the-Fact Acceptance of Gifts to the Board of Water Supply from Hawaii Companies as Prizes for Halloween Contest Promoting Healthy Watersheds

We recommend the adoption of the attached Resolution No. 957, 2022, to accept, after-the-fact gifts to the Board of Water Supply (BWS), City and County of Honolulu as prizes for a Halloween costume contest organized by the following federal, state, and city agencies to celebrate conservation and promote healthy watersheds in a fun and creative way. Partners for this event were:

- Board of Water Supply
- Hawaii State Dept of Forestry and Wildlife
- Hui o Ko'olaupoko
- Ko'olau Mountains Watershed Partnership
- O'ahu Army Natural Reserve Program
- O'ahu Invasive Species Committee
- University of Hawaii and Hawaii Wildfire Management Organization
- Wai'anae Mountains Watershed Partnership

The gifts given were:

Organization	Price x Number donated	Total approximate value	Description
Bess Press	5 book bundles, 10% discount for all	$500	Book bundles, discount
Bishop Museum	$15 x 4	$60	Day passes
DOFAW (Dept of Fish & Wildlife)	$20 x 4	$80	Reusable cloth bags with special Hawaiian species
HoMA (Honolulu Museum of Art)	$120 x 1	$120	Annual membership
HOK (Hui o Ko'olaupoko)	$40 x 4	$160	Hydroflasks
Kumu Kahua	$25 x 8	$200	Play tickets
Mānoa Heritage Center	$25 x 2	$50	Workshop tickets
OANRP (O'ahu Army Natural Reserve Program)	Miscellaneous	$60	Branded items
OISC (O'ahu Invasive Species Committee)	Miscellaneous	$60	Branded items

The total value of the gifts is $1,290.

Respectfully Submitted,

/s/ ERNEST Y. W. LAU, P.E
Manager and Chief Engineer

Attachment"

DISCUSSION: Kathleen Elliott-Pahinui, Information Officer, Communications Office, gave the report.

MOTION TO APPROVE: Jonathan Kaneshiro and Jade Butay motioned and seconded, respectively, to approve the Adoption of Resolution No. 957, 2022, After-the-Fact Acceptance of Gifts to the Board of Water Supply from Hawaii Companies as Prizes for Halloween Contest Promoting Healthy Watersheds.

Chair Andaya requested Board Secretary, Ms. Joy Cruz-Achiu to conduct the roll call vote.

Ms. Cruz-Achiu conducted a roll call vote: Vice Chair Kapua Sproat, aye; Board Member Na'alehu Anthony, aye; Board Member Jonathan Kaneshiro, aye; Board Member Jade Butay, aye; Board Member Dawn Szewczyk, aye; and Chair Bryan Andaya, aye.

Ms. Cruz-Achiu announced that the motion passed with six ayes.

ADOPTION OF RESOLUTION NO. 957, 2022, AFTER-THE-FACT ACCEPTANCE OF GIFTS TO BOARD OF WATER SUPPLY FROM HAWAII COMPANIES AS PRIZES FOR HALLOWEEN CONTEST PROMOTING HEALTHY WATERSHEDS WAS ADOPTED ON NOVEMBER 28, 2022			
	AYE	NO	COMMENT
BRYAN P. ANDAYA	X		
KAPUA SPROAT	X		
MAX J. SWORD			ABSENT
NA'ALEHU ANTHONY	X		
JONATHAN KANESHIRO	X		
JADE T. BUTAY	X		
DAWN B. SZEWCZYK	X		

BOARD OF WATER SUPPLY
CITY AND COUNTY OF HONOLULU

RESOLUTION NO. 957, 2022

ADOPTION OF RESOLUTION NO. 957, 2022, AFTER-THE-FACT ACCEPTANCE OF GIFTS TO THE BOARD OF WATER SUPPLY FROM HAWAII COMPANIES AS PRIZES FOR HALLOWEEN CONTEST PROMOTING HEALTHY WATERSHEDS

WHEREAS, healthy watersheds are of vital importance to the water supply on Oahu; and protecting these watersheds is a cornerstone of the Board of Water Supply's conservation program; and the Board of Water Supply supports programs for watershed management; and

WHEREAS, the Board of Water Supply works with businesses, government agencies and the community to develop and support programs supporting healthy watersheds; and that the Board of Water Supply coordinated with other government agencies to have a Halloween Contest organized to promote healthy watersheds; and businesses and government agencies donated prizes for this contest; and

WHEREAS, prizes donated had a value of $1,290.00; and

WHEREAS, the BWS may accept gifts to the Department as long as it does not provide special consideration, treatment, advantage, privilege, or exemption for or coerces a potential donor; and

BE IT RESOLVED that the Board of Water Supply hereby accepts the prizes valued at $1,290.00 from Bess Press, Bishop Museum, Hawaii State Department of Forest and Wildlife, Honolulu Museum of Art, Hui O Ko'olaupoko, Kumu Kahua, Mānoa Heritage Center, O'ahu Army Natural Reserve Program, and the O'ahu Invasive Species Committee and directs the Manager and Chief Engineer, or his delegate, to accept and thank the donors for their support.

ADOPTED:

BRYAN P. ANDAYA
Chair

Honolulu, Hawaii
November 28, 2022

ADOPTION OF RESOLUTION NO. 957, 2022, AFTER-THE-FACT ACCEPTANCE OF GIFTS TO BOARD OF WATER SUPPLY FROM HAWAII COMPANIES AS PRIZES FOR HALLOWEEN CONTEST PROMOTING HEALTHY WATERSHEDS WAS ADOPTED ON NOVEMBER 28, 2022			
	AYE	NO	COMMENT
BRYAN P. ANDAYA	X		
KAPUA SPROAT	X		
MAX J. SWORD			ABSENT
NA'ALEHU ANTHONY	X		
JONATHAN KANESHIRO	X		
JADE T. BUTAY	X		
DAWN B. SZEWCZYK	X		

"November 28, 2022

ADOPTION OF RESOLUTION NO. 958, 2022, RESOLUTION OF APPRECIATION FOR EX-OFFICIO BOARD MEMBER JADE T. BUTAY

Chair and Members
Board of Water Supply
City and County of Honolulu
Honolulu, Hawaii 96843

Chair and Members:

Subject: Adoption of Resolution No. 958, 2022, Resolution of Appreciation for Ex-Officio Board Member Jade T. Butay

Ex-Officio Board member Jade T. Butay has notified this Board of Directors that he has resigned from his position as a director.

We recommend the adoption of Resolution No. 958, 2022, to recognize and thank Mr. Butay for his service, contributions, and dedication to the Board of Water Supply.

Respectfully Submitted,

/s/ ERNEST Y. W. LAU, P.E
Manager and Chief Engineer

Attachment"

DISCUSSION:

Ernest Lau, Manager and Chief Engineer, gave the report.

Manager Lau stated that since 2017 Mr. Jade Butay served as the BWS Ex-Officio Board Member when he joined the Department of Transportation. As an Ex-Officio Board Member of the BWS, the BWS has greatly benefited from Mr. Butay's experience and insight. Manager Lau expressed his sincere appreciation for Ex-Officio Board Member Jade Butay.

Chair Andaya echoed Manager Lau's comment and expressed his gratitude in Filipino, Maraming Salamat Po.

Vice Chair Sproat echoed both Manager Lau's and Chair Andaya's comments and expressed her gratitude in Hawaiian, Mahalo Piha, and Ke Aloha Nui.

Ex-Officio Board Member Jade Butay appreciated everyone's kind words. He replied that it has been an honor to serve on the Board at the BWS. He stated that the BWS faces many challenges but through collaboration and partnership, we moved forward. Ex-Officio Board Member Butay thanked the Board and the BWS for the lessons learned and the memories, "Teamwork, collegiality, and friendship".

MOTION TO APPROVE

Dawn Szewczyk and Kapua Sproat motioned and seconded, respectively, to approve the Adoption of Resolution No. 958, 2022, Resolution of Appreciation for Ex-Officio Board Member Jade T. Butay.

Chair Andaya requested Board Secretary, Ms. Joy Cruz-Achiu to conduct the roll call vote.

Ms. Cruz-Achiu conducted a roll call vote: Vice Chair Kapua Sproat, aye; Board Member Na'alehu Anthony, aye; Board Member Jonathan Kaneshiro; Board Member Jade Butay, abstain; Board Member Dawn Szewczyk, aye; and Chair Bryan Andaya, aye.

Ms. Cruz-Achiu announced that the motion passed with five ayes and one abstention.

ADOPTION OF RESOLUTION NO. 958, 2022, RESOLUTION OF APPRECIATION FOR EX-OFFICIO BOARD MEMBER JADE T. BUTAY WAS ADOPTED ON NOVEMBER 28, 2022			
	AYE	NO	COMMENT
BRYAN P. ANDAYA	X		
KAPUA SPROAT	X		
MAX J. SWORD			ABSENT
NA'ALEHU ANTHONY	X		
JONATHAN KANESHIRO	X		
JADE T. BUTAY			ABSTAIN
DAWN B. SZEWCZYK	X		

BOARD OF WATER SUPPLY
CITY AND COUNTY OF HONOLULU

RESOLUTION NO. 958, 2022

JADE T. BUTAY

IN APPRECIATION FOR SERVING AS AN EX-OFFICIO MEMBER OF THE BOARD OF WATER SUPPLY

WHEREAS, JADE T. BUTAY has ably served as an Ex-Officio Member of the Board of Water Supply, City and County of Honolulu, since November 2017 and he has recently notified the Board of his resignation as the Director of the State of Hawaii Department of Transportation (HIDOT); and

WHEREAS, JADE BUTAY'S work and reputation in government and the business community as Director of HIDOT and his previous management positions as HIDOT Deputy Director of Administration and as Deputy Director at the State Department of Labor and Industrial Relations, coupled with the esteem of his colleagues, has resulted in additional recognition and respect for the Board; and

WHEREAS, the Board of Water Supply has greatly benefitted from MR. BUTAY'S experience and insight into operational and administrative matters gained from managing a state department, which has made him a helpful resource and strengthened his credibility in Board discourses and proceedings, especially on topics such as budget, personnel administration, environmental compliance, and business and emergency management; and

WHEREAS, as a Board Member, JADE BUTAY has supported initiatives for programs that have increased efficiencies in overall Departmental operations and has volunteered his time and expertise to help effect business and policy decisions for the Board that will impact the direction and operations of this Department for many years to come; and

WHEREAS, MR. BUTAY'S service is a testament to his commitment to maintaining a municipal water system worthy of trust from the public it serves; now, therefore,

BE IT RESOLVED by the Members of the Board of Water Supply, City and County of Honolulu, that we do hereby express to JADE T. BUTAY our deep appreciation and gratitude for his committed service to this Board and Department; and

BE IT FURTHER RESOLVED that the Members of this Board extend to JADE T. BUTAY our sincere aloha and best wishes for continued success in all his future endeavors; and

BE IT FINALLY RESOLVED that this Resolution be presented to JADE T. BUTAY.

Adopted this 28th day of November 2022
Board of Water Supply, Honolulu, Hawaii

BRYAN P. ANDAYA
Chair of the Board

"November 28, 2022

ABOLISHMENT OF POSITIONS AS A PART OF A REORGANIZATION OF THE FIELD OPERATIONS DIVISION

Chair and Members
Board of Water Supply
City and County of Honolulu
Honolulu, Hawaii 96843

Chair and Members:

Subject: Abolishment of Positions as a Part of a Reorganization of the Field Operations Division

In 2018, the Board of Water Supply (BWS) finalized a reorganization in the Field Operations Division which, among other actions, formally established the "Small Meter Test and Repair" sub-section, within the Meter Maintenance Section, of the Technical and Operational Support Branch. The Meter Maintenance Section tests and repairs meters; ensures the accuracy of incoming meters; and repairs the automated meter reading (AMR) components for meters.

We recommend the abolishment of the six (6) vacant full time equivalent (FTE) permanent positions listed below. This action will allow the creation of six (6) permanent FTE Trades Helper (AMR) positions within the "Small Meter Test and Repair" sub-section, while staying within the BWS's Board approved position count ceiling of 741 FTE. There will be no change in overall Division or Department head count.

POSITIONS TO BE ABOLISHED		
Position	Position Title	Section
BW171	Chemical Treatment Worker II	5522 Grounds - Suburban
BW694	Chemical Treatment Worker II	5522 Grounds - Metro
BW390	Assistant Storekeeper	5585 Storeroom
BW586	Assistant Storekeeper	5585 Storeroom
BW784	Mason – Multi-Skilled Worker III	5535 Metropolitan Field
BW551	Grounds Keeper – Multi-Skilled Worker III	5535 Metropolitan Field

The BWS has determined the above vacant positions, as currently described, and placed, are no longer necessary and requests the abolishment of the positions so that new positions may be created where additional staff support is required. The Small Meter Test and Repair sub-section currently has only three (3) permanent Trades Helper (AMR) positions and has been required to supplement this with six (6) staff on Personal Services Contract. The BWS has determined there is sufficient workload to require nine (9) permanent Trades Helper (AMR) positions. The abolishment of the above positions and creation of six (6) permanent FTE Trades Helper (AMR) positions is consistent with and supports the Field Operations Division's current operating needs and practices.

POSITIONS TO BE CREATED		
Position	Position Title	Section
TBD	Trades Helper (AMR)	5552 Meter Maintenance Section
TBD	Trades Helper (AMR)	5552 Meter Maintenance Section
TBD	Trades Helper (AMR)	5552 Meter Maintenance Section
TBD	Trades Helper (AMR)	5552 Meter Maintenance Section
TBD	Trades Helper (AMR)	5552 Meter Maintenance Section
TBD	Trades Helper (AMR)	5552 Meter Maintenance Section

Pursuant to Section 7-105(c) of the Revised Charter of the City and County of Honolulu, relating to the Powers, Duties, and Functions of the Board of Water Supply, the Board of Water Supply shall, "Have the authority to create and abolish positions."

Respectfully Submitted,

/s/ ERNEST Y. W. LAU, P.E
Manager and Chief Engineer

ACTION:
Approve the abolishment of positions numbered: BW171, BW694, BW390, BW586, BW784 & BW551 and the creation of six Trades Helper (AMR) positions.

DISCUSSION: Raelynn Nakabayashi, Executive Assistant I, Executive Support Office, gave the report.

Chair Andaya inquired if all appropriate labor representatives were consulted on the reorganization of Field Operations Division (FO) positions.

Ms. Raelynn Nakabayashi explained that in 2018 consultation was provided and the appropriate steps were taken in the reorganization of the Field Operations (FO) Division. This is the final formal step.

Ms. Michele Thomas, Executive Assistant I, Human Resource Office, confirmed Ms. Nakabayashi's explanation, stating that there were a lot of phases before finalization. She explained that in moving forward with the new reorganized FO Division the goal is to establish a multi-skilled worker program. Ms. Thomas stated that the BWS continues to consult with United Public Workers (UPW) and Hawaii Government Employee Association (HGEA) as the BWS continues to grow and go through division reorganization.

MOTION TO APPROVE: Na'alehu Anthony and Jonathan Kaneshiro motioned and seconded, respectively, to Authorize the Abolishment of Positions as a Part of a Reorganization of the Field Operations Division.

Chair Andaya requested Board Secretary, Ms. Joy Cruz-Achiu to conduct the roll call vote.

Ms. Cruz-Achiu conducted a roll call vote: Vice Chair Kapua Sproat, aye; Board Member Na'alehu Anthony, aye; Board Member Jonathan Kaneshiro, aye; Board Member Jade Butay, aye; Board Member Dawn Szewczyk, aye; and Chair Bryan Andaya, aye.

Ms. Cruz-Achiu announced that the motion passed with six ayes.

ABOLISHMENT OF POSITIONS AS A PART OF A REORGANIZATION OF THE FIELD OPERATIONS DIVISION WAS APPROVED ON NOVEMBER 28, 2022			
	AYE	NO	COMMENT
BRYAN P. ANDAYA	X		
KAPUA SPROAT	X		
MAX J. SWORD			ABSENT
NA'ALEHU ANTHONY	X		
JONATHAN KANESHIRO	X		
JADE T. BUTAY	X		
DAWN B. SZEWCZYK	X		

ITEM FOR INFORMATION NO. 1

"November 28, 2022

UPDATE ON THE BOARD OF WATER SUPPLY'S RESPONSE TO THE POTENTIAL IMPACTS OF RED HILL FUEL CONTAMINATION

Chair and Members
Board of Water Supply
City and County of Honolulu
Honolulu, Hawaii 96843
Chair and Members:

Subject: Update on the Board of Water Supply's Response to the Potential Impacts of the Red Hill Fuel Contamination

Ernest Lau, Manager & Chief Engineer, will give an Update on Board of Water Supply's Response to the Potential Impacts of the Red Hill Fuel Contamination

Respectfully Submitted,

/s/ ERNEST Y. W. LAU, P.E
Manager and Chief Engineer

Attachment"

The foregoing was for information only.

DISCUSSION: Ernest Lau, Manager & Chief Engineer, gave the report.

At 5:14 PM Ella Foley Gannon and David Brown of Morgan, Lewis, & Bockius, LLP, and Joseph Tracy of INTERA, Inc. joined the meeting in person.

Manager Lau announced that the United States Environmental Protection Agency and the Department of Health would be joining the BWS Board meeting in December to discuss environmental action levels (EAL) and answer questions.

There was a total of three testimonies via in-person, Zoom, and written. The list below is the names of each person that shared their testimony with the Chair, Board members, and the BWS.

IN-PERSON TESTIMONY

Submitter's Name	POSITION
Susan Pcola-Davis	She commented regarding the 4 alternatives mentioned at the FTAC November 9, 2022, meeting. She is most comfortable with alternative #4 because it eliminates the chance of fuel returning to this facility.

REMOTE TESTIMONY

Submitter's Name	POSITION
MEREDITH WILSON	Asked three questions: 1. How many types of Polyfluoroalkyl substances (PFAS) does the BWS test for? 2. Why is the BWS not included in the Red Hill remediation discussions? Can the BWS confirm what a DOH member stated during the FTAC meeting, that there are no TPH during long-term monitoring?
CHOON JAMES	She commented that it is unfortunate that prevention was not implemented before the Red Hill leak, a very expensive and dangerous lesson.

Deputy Manager Erwin Kawata responded to Ms. Meredith Wilson's question #1, the BWS has tested 29 different types of poly-fluoroalkyl substances (PFAS) in all BWS water sources. He shared that the US Environmental Protection Agency (EPA) has scheduled a new rule starting next year that requires testing for PFAS. The BWS started testing two years ago to get a better understanding of any impacts on our sources. Since testing, the BWS has detected PFAS in two sources and the results were disclosed publicly.

Manager Lau responded to Ms. Wilson's question #2, the BWS has been invited to the Red Hill remediation discussion with the EPA, DOH, and Navy. The BWS attended two meetings, in the second meeting the Navy was not in attendance, and the third meeting was canceled. He commented that it is important that the Navy is part of all discussions.

Deputy Manager Kawata responded to Ms. Wilson's question #3, the Navy's detection is based on their lowest minimum reporting limit. He explained that if the reporting limit is set at a high minimum, the test might show nothing is being detected. However, if the reporting limit were to be set at a lower level, then the test can detect lower amounts. He commented that testing is about trying to get an analysis to the point where one can measure its lowest levels possible, which is how the BWS traditionally conducts our analysis. The BWS continues to urge the Navy and DOH to do the same.

Manager Lau stated that the BWS has raised the issues with the DOH and EPA about testing at the lowest level and not to the EAL to shed more information that could be of much more value.

Ms. Wilson agreed with Manager Lau stating that the reports from the Navy and the DOH are not clear.

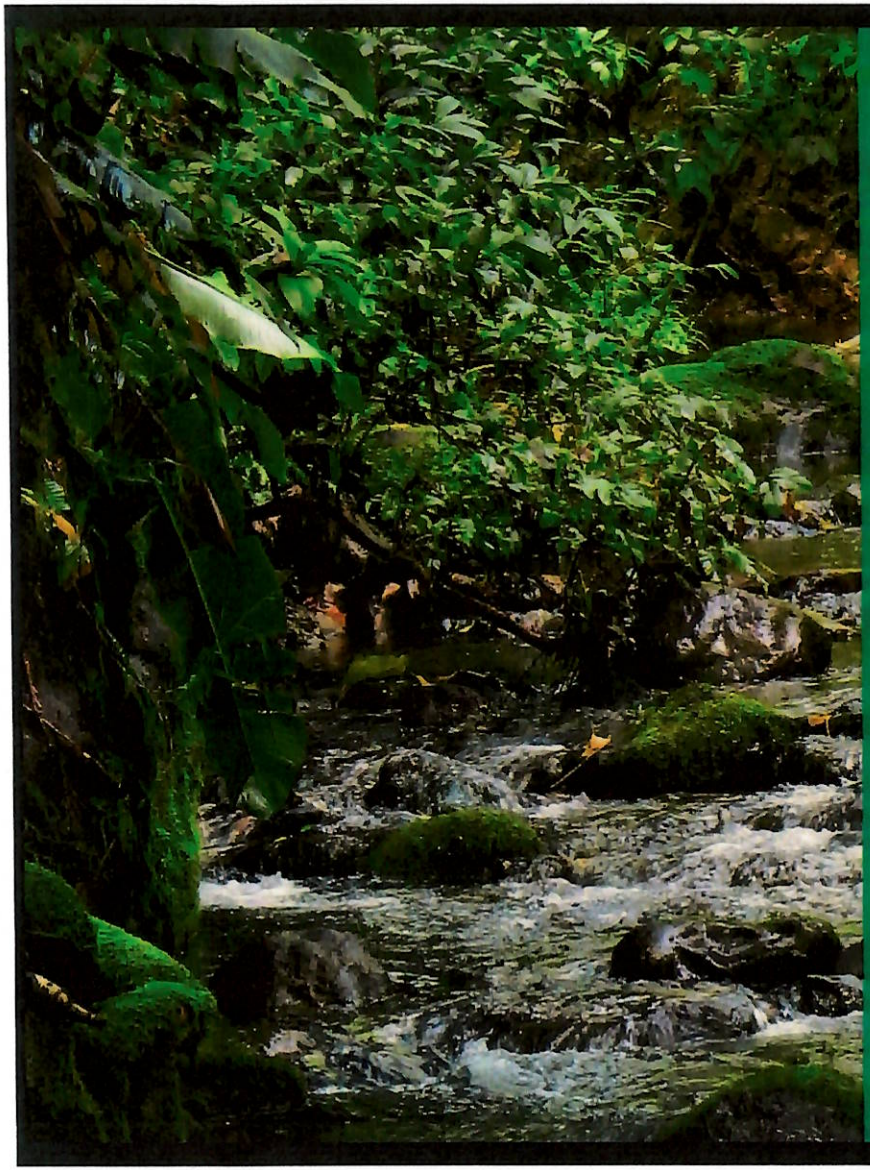
Vice Chair Sproat expressed her appreciation to the testifiers for taking the time to share their manao, and for Manager Lau's and Deputy Manager Kawata's involvement.

Board Member Anthony echoed Vice Chair Sproat. He stated that the public's involvement is very important to help maintain the momentum of the Red Hill issue.

WRITTEN TESTIMONY

Submitter's Name	**POSITION**
SUSAN PCOLA-DAVIS	Provided written testimony in addition to her in-person Testimony.
MEREDITH WILSON	Provided a written copy of her remote testimony
CHOON JAMES	Provided a written copy of her remote testimony.

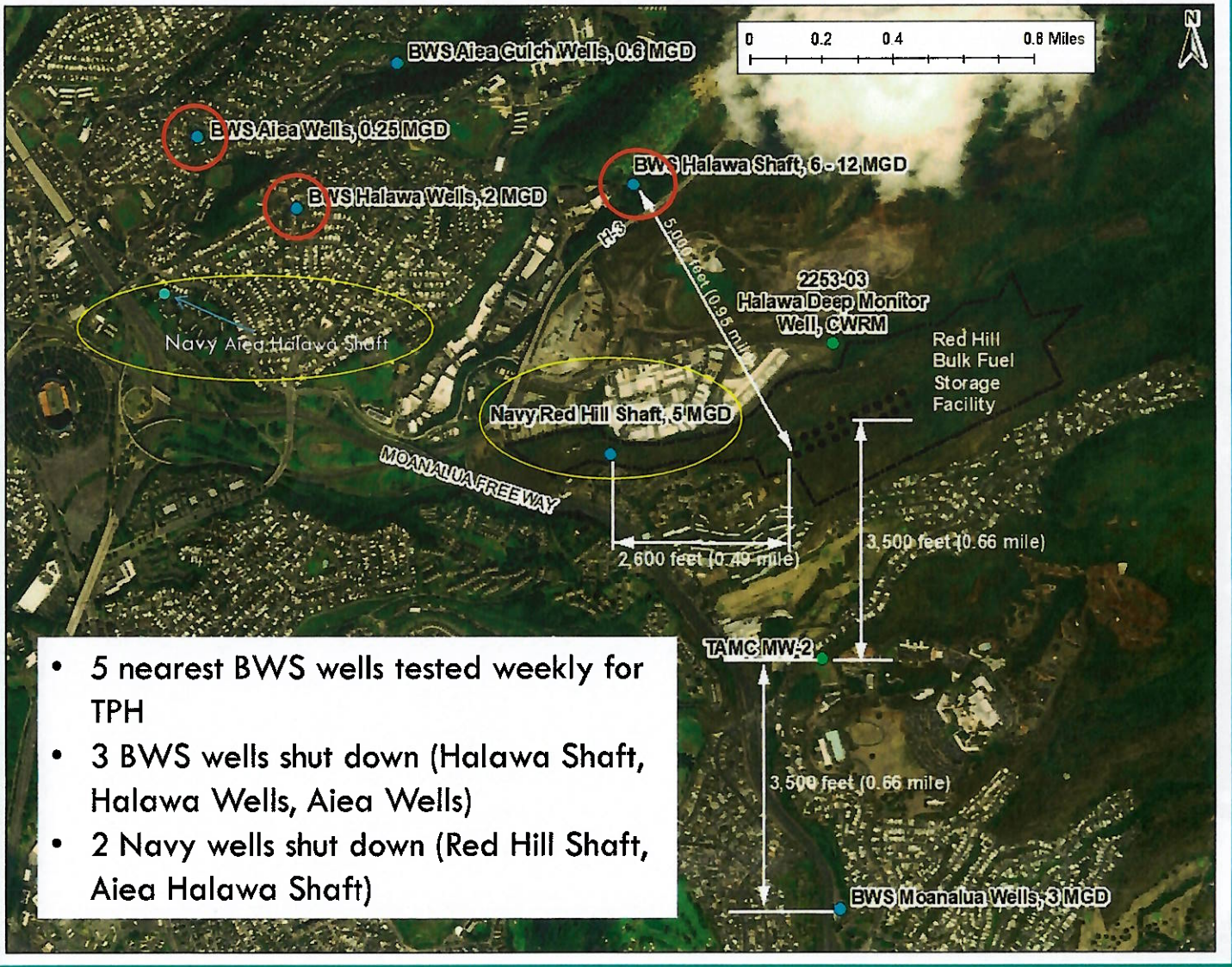
At 5:59 PM Ms. Foley Gannon, Mr. Brown, and Mr. Tracey excused themselves from the Board room.



Red Hill Crisis Update

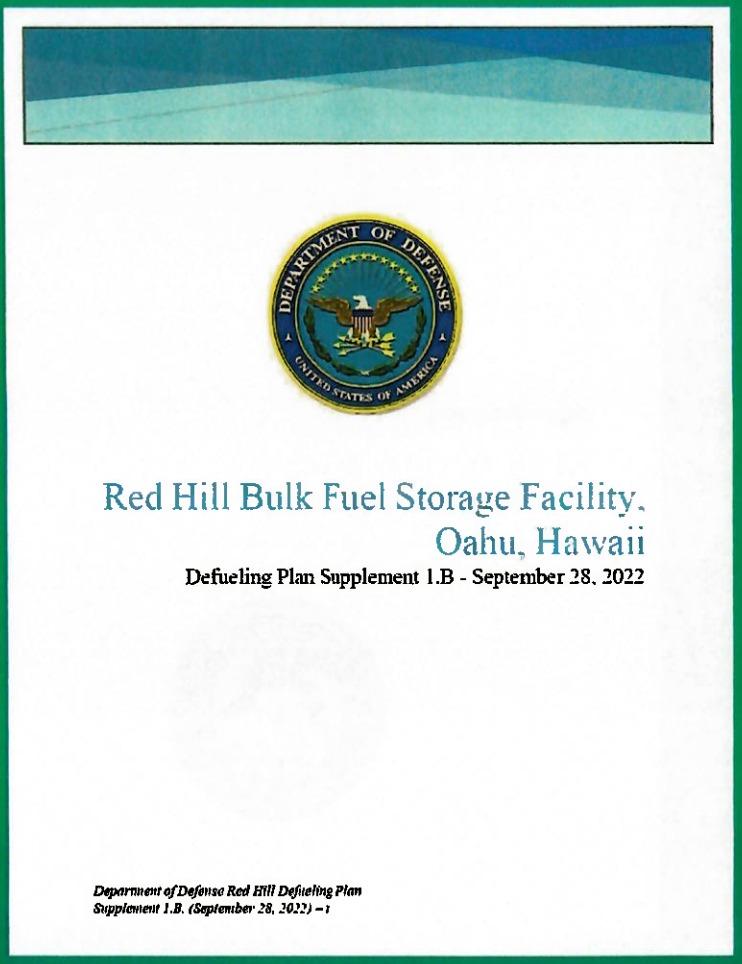
November 14, 2022

boardofwatersupply.com



- 5 nearest BWS wells tested weekly for TPH
- 3 BWS wells shut down (Halawa Shaft, Halawa Wells, Aiea Wells)
- 2 Navy wells shut down (Red Hill Shaft, Aiea Halawa Shaft)

- SEPT. 28 – DOD SUBMITTED DEFUELING PLAN SUPPLEMENT 1.B
- OCT. 4, 2022 – UNPACKING PLAN CONDITIONAL APPROVAL BY DOH
- NAVY COMPLETED UNPACKING PIPES (1 MG)
- ESTIMATED DEFUELING BY MID-2024

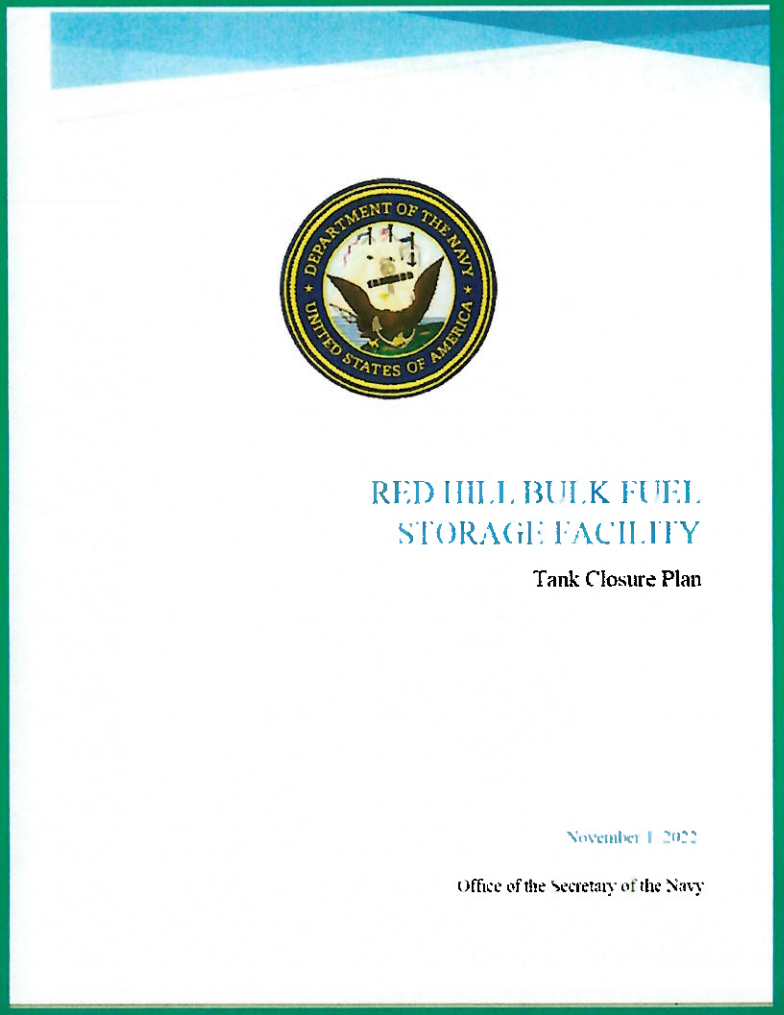


Red Hill Bulk Fuel Storage Facility, Oahu, Hawaii

Defueling Plan Supplement 1.B - September 28, 2022

Department of Defense Red Hill Defueling Plan Supplement 1.B. (September 28, 2022) – i

- SUBMITTED TO THE DOH ON NOVEMBER 1, 2022
- WILL BEGIN AFTER THE DEFUELING PHASE IS COMPLETED
- PERMANENT TANK CLOSURE ALTERNATIVES
  - ALT 1: CLOSURE IN PLACE (2-3 YEARS)
  - ALT 2: CLOSURE IN PLACE FOR POTENTIAL NON-FUEL REUSE OF TANKS (3-4 YEARS)
  - ALT 3: CLOSURE WITH FILL (5 YEARS, WITH INERT MATERIAL)
  - ALT 4: REMOVE TANK STEEL LINER, AND FILL (7 YEARS, WITH INERT MATERIAL)

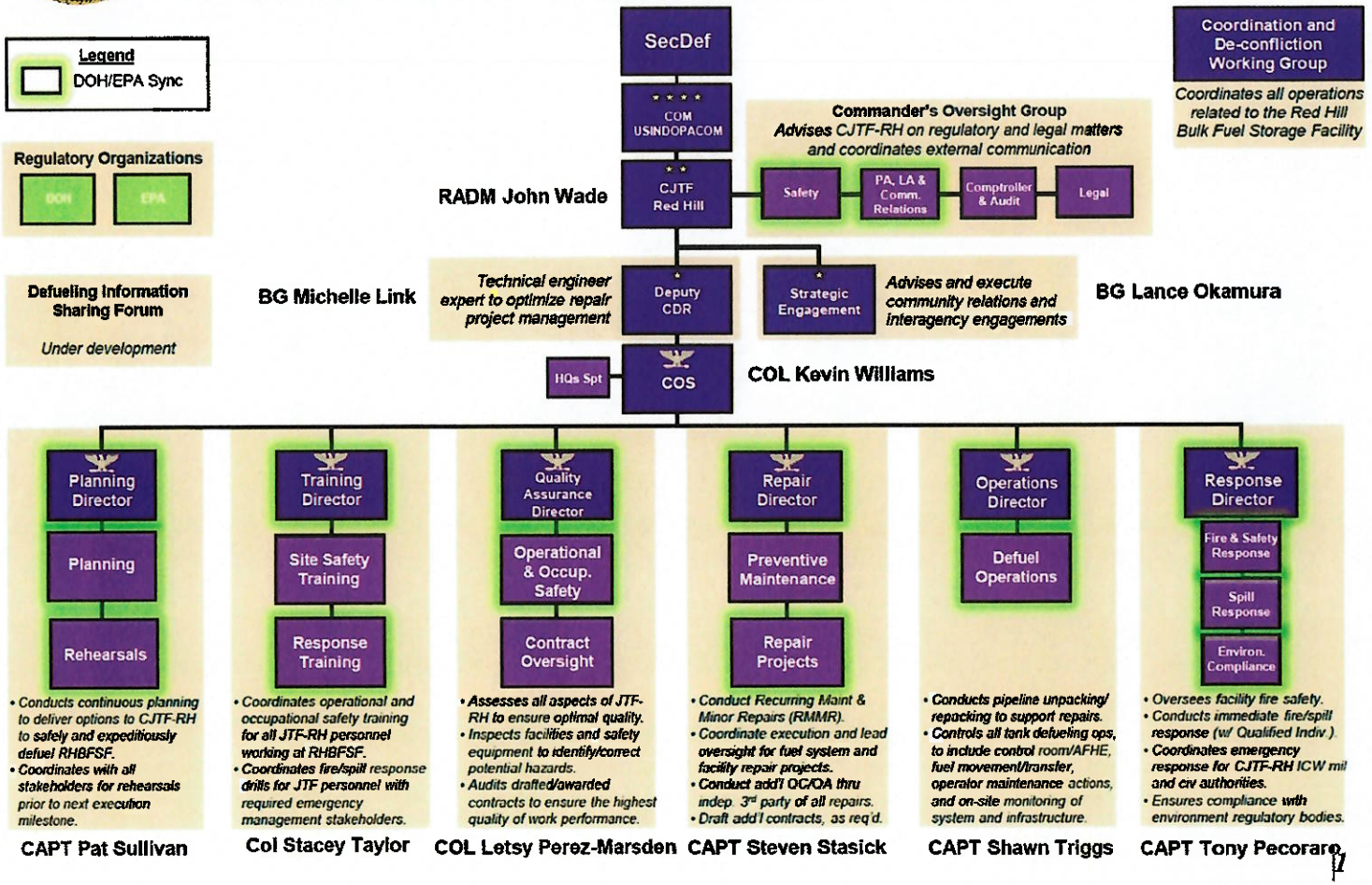


NAVY RESPONSE IS LED BY THREE REAR ADMIRALS

- REAR ADMIRAL STEPHEN BARNETT, COMMANDER, NAVY REGION HAWAII
- REAR ADMIRAL JEFFREY KILIAN, P.E., COMMANDER, NAVFAC PACIFIC
- REAR ADMIRAL JOHN WADE, COMMANDER, JOINT TASK FORCE – RED HILL (JTF-Red Hill)
  - Defueling Information Sharing Forum

Contact JTF-RH at https://www.pacom.mil/JTF-Red-Hill/Joint-Task-Force-Red-Hill/

JTF-Red Hill Organizational Structure

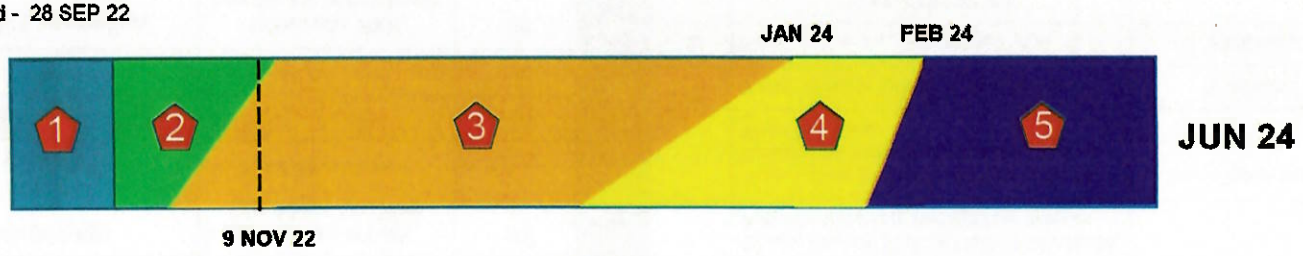


Defueling Schedule

Pre-decisional – awaiting DOH approval

Supplement 1.B

Submitted - 28 SEP 22



Legend

1. Assessment
2. Planning
3. Initial Preparation for Defueling
4. Final Preparation for Defueling
5. Defuel and Relocate Fuel

Intend to work in partnership with DOH, EPA, and other Stakeholders to reduce the defueling timeline safely and in accordance with applicable regulations

AGENDA

FUEL TANK ADVISORY COMMITTEE
WEDNESDAY, NOVEMBER 9, 2022
9:00 A.M. to 2:00 P.M. (HST)

No.	Item	Presenter	Time
1	Opening Remarks	Deputy Director for Environmental Health, Kathleen Ho	**9:00** :05
2	Review of Fuel Tank Advisory Committee (FTAC) Duties Introduction of Members		:05
3	Meeting Agenda & Format Rules of Engagement	Facilitator, Peter Adler	:05
4	**Joint Task Force and Red Hill Defueling Plan**		**9:15**
	Joint Task Force – Red Hill (JTF-RH) Introductions -Defueling Plan	Commander JTF-RH, Rear Admiral John Wade Navy Representative	:15
	FTAC Member Questions		**:10**
	Red Hill Closure Plan		**9:40**
	Navy Region Hawaii (NRH) Introductions -Closure Plan	Commander NRH, Rear Admiral Stephen Barnett Navy Representative	:10
	DOH & EPA Oversight	DOH & EPA Representatives	:10
	FTAC Member Questions		:10
5	**Red Hill Contamination Investigation and Remediation Status**		**10:10**
	Red Hill Contamination Investigation and Remediation Status	Navy Representative	:15
	Regulatory Agencies' Updates	DOH & EPA Representatives	:15

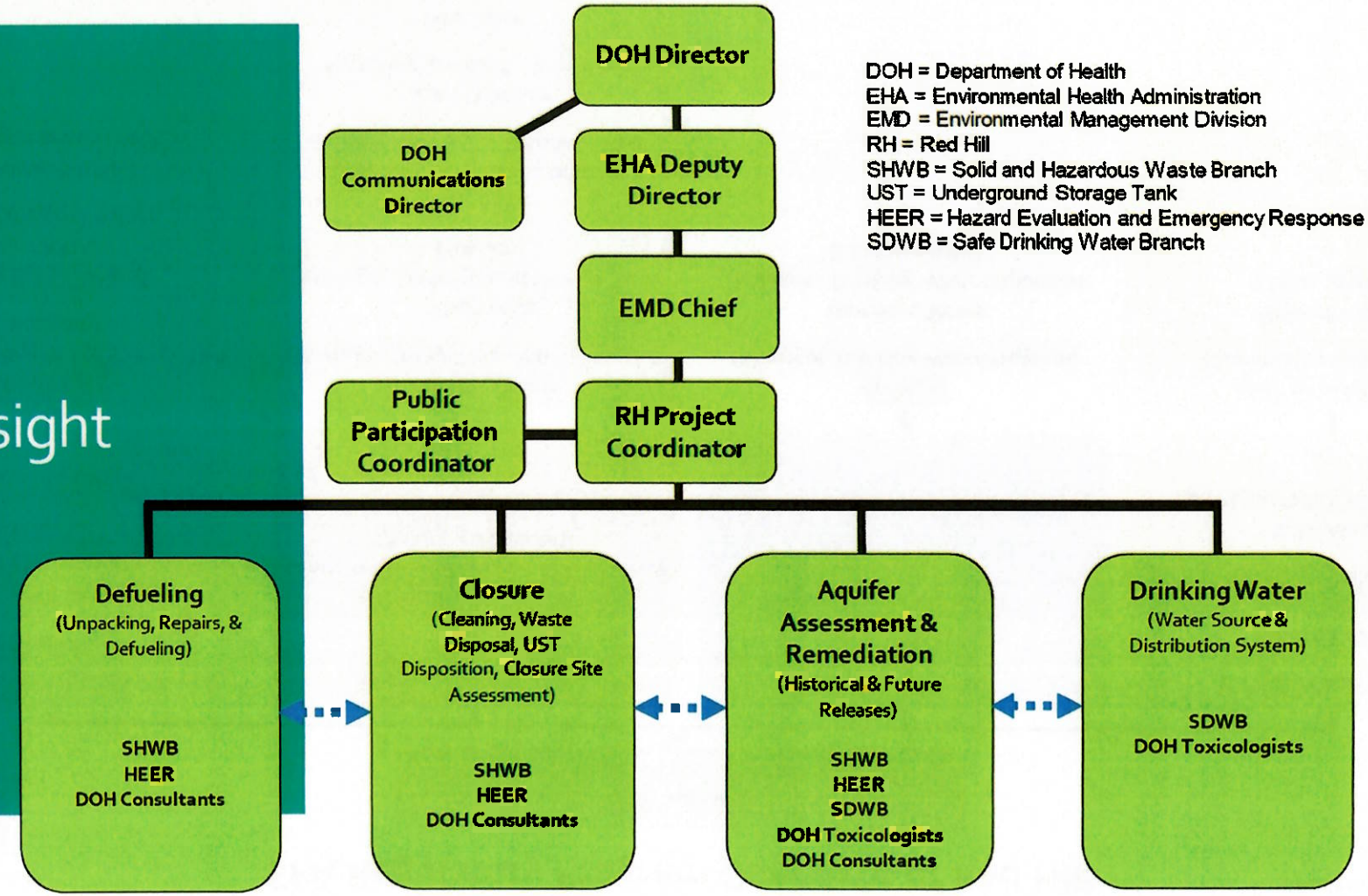
AGENDA

FUEL TANK ADVISORY COMMITTEE
WEDNESDAY, NOVEMBER 9, 2022
9:00 A.M. to 2:00 P.M. (HST)

	FTAC Member Questions		:10
6	**Drinking Water System Assessment and Remediation**		**10:50**
	Drinking Water Long-Term Monitoring Plan	DOH Representative	:05
	Drinking Water System Assessment and Remediation	Navy Representative	:10
	Centers for Disease Control and Prevention/Agency for Toxic Substances and Disease Registry (CDC/ATSDR) Public Health Activities Related to Red Hill Fuel Releases	CDC/ATSDR Representatives	:20
	Navy Actions Underway on Ongoing Health Concerns Associated with Red Hill Drinking Water Exposures	Navy Representative	:10
7	**FTAC Member Questions and Answers**	**Facilitator**	**11:35**
8	**FTAC Committee Discussion**	**Facilitator**	**11:55**
	30 MINUTE BREAK		12:10-12:40
9	**Public Questions and Comments**	**Facilitator**	**12:40**
10	Next Meeting	DOH Representative	
11	Adjourn	Facilitator	TBA

health.hawaii.gov/ust/ust-home-test/ust-red-hill-project-main/red-hill-task-force-meeting/

DOH Oversight



DOH = Department of Health
EHA = Environmental Health Administration
EMD = Environmental Management Division
RH = Red Hill
SHWB = Solid and Hazardous Waste Branch
UST = Underground Storage Tank
HEER = Hazard Evaluation and Emergency Response Office
SDWB = Safe Drinking Water Branch

EPA Regulatory Program Oversight of Red Hill

*Based in Honolulu at EPA Region 9's Pacific Islands Contact Office

EPA Region 9
Martha Guzman (Regional Administrator)

	Environmental Investigation & Remediation	Unpacking, Defuel & Closure	Drinking Water	Public Involvement
Senior Leadership	**Jeff Scott** (Director, Land, Chemicals, and Redevelopment Division) **Nicole Moutoux** (Assistant Director, RCRA Branch)	**Amy Miller** (Director, Enforcement and Compliance Assurance Division)	**Tomas Torres** (Director, Water Division)	**Laura Ebbert** (Director, Tribal, Intergovernmental and Policy Division) **Mike Alpern** (Director, Public Affairs Office)
Main Program Contacts	**Alison Fong** (Manager, Underground Storage Tanks Program) **Gabriela Carvalho*** (Red Hill AOC Project Coordinator) **Wayne Praskins** (Environmental Lead)	**Jamie Marincola** (Manager, Oil Spill Prevention Program) **Alison Fong** (Manager, Underground Storage Tanks Program) **Pete Guria** (Assistant Director, Emergency Response & Facility Response Plan) **Evan Osborne** (Unpacking, Defuel & Closure Lead) **Pete Reich*** (Inspector, Oil Spill Prevention Program)	**Corine Li** (Manager, Drinking Water Program) **Lawrence Torres** (Manager, Drinking Water Inspection & Enforcement)	**Dominique Smith*** (Community Engagement) **Alejandro Diaz*** (Media Inquiries)

ATSDR Public Health Activities Related to Red Hill Fuel Releases

Ben Gerhardstein, MPH
Environmental Health Scientist
ATSDR Region 9

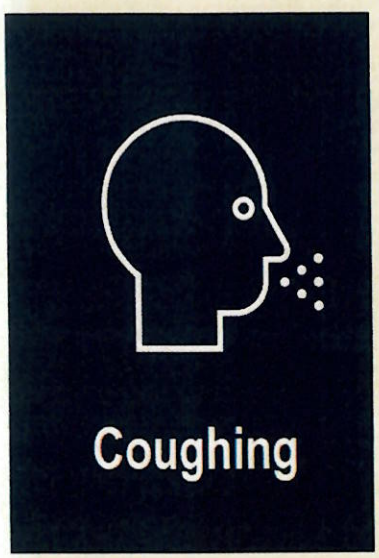
Daniel Nguyen, PhD, MSPH
Epidemic Intelligence Service Officer,
CDC/ATSDR
Assigned with Hawai'i State Department of Health

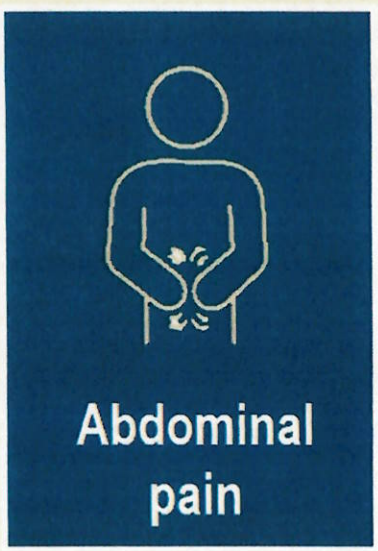
Red Hill Fuel Tank Advisory Committee
November 9, 2022

ATSDR's two work streams at Red Hill

- **Health survey**
  - Better understand health symptoms people have experienced after the November 2021 Red Hill fuel release
- **Public health assessment activities**
  - Evaluate exposures and health risks related to Red Hill fuel releases since 2005

Previous studies suggest exposure to jet fuel may impact the respiratory system, gastrointestinal tract, and nervous system





~9,700

households potentially exposed to jet fuel in their tap water

Image Source: Getty Images

Initial ACE Investigation

January 2022

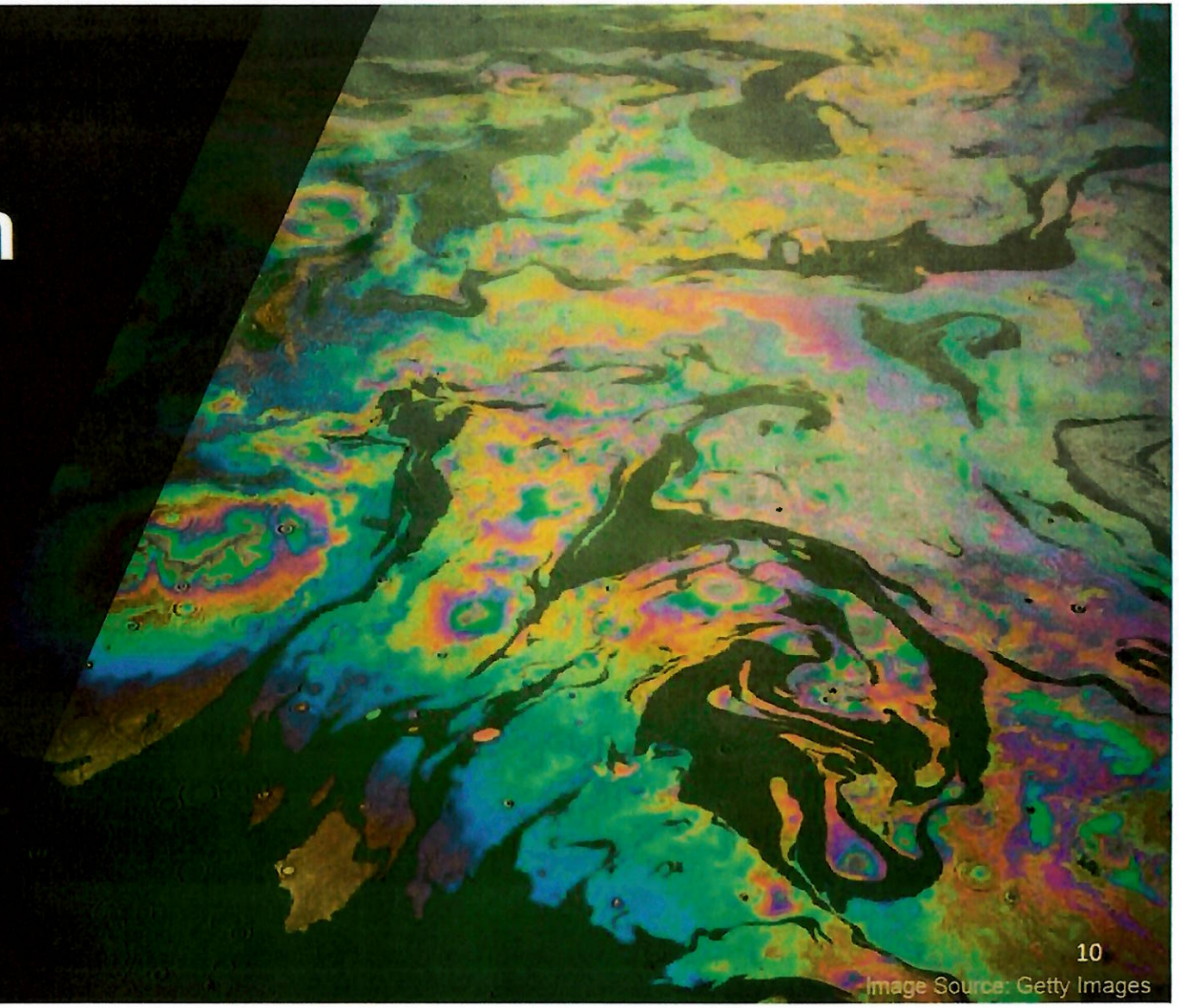
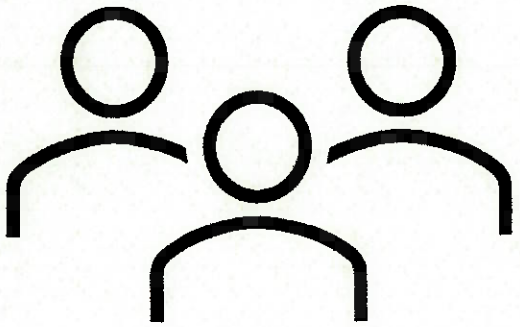
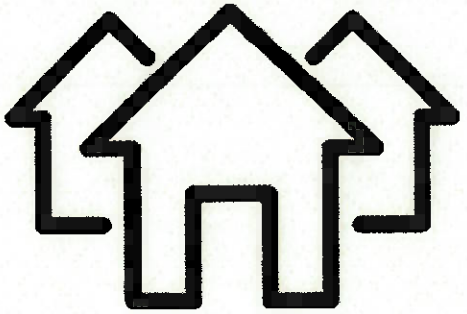


Image Source: Getty Images



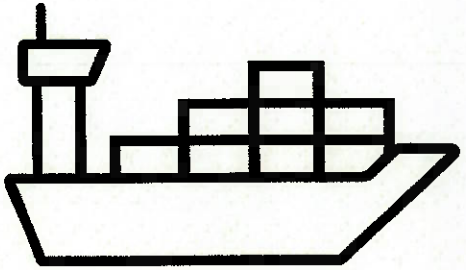
2,289

participants submitted surveys electronically



14%

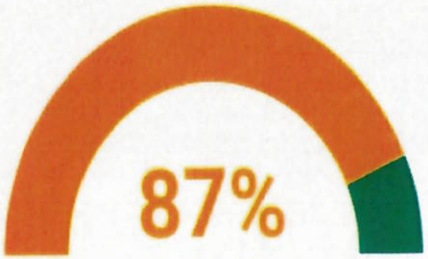
of affected households were represented



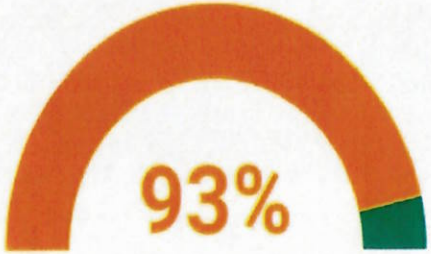
88%

were affiliated with the military

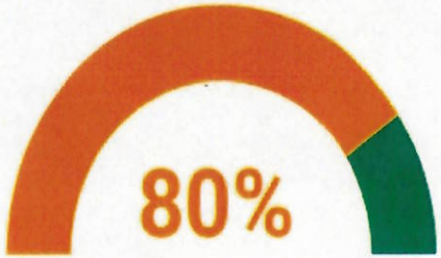
Initial ACE investigation key findings



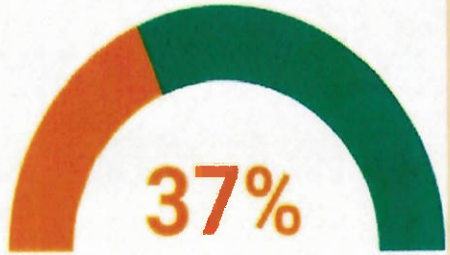
reported at least one new or worsening health symptom



switched to an alternate water source



of people with symptoms saw improvement after switching to an alternate water source



sought medical care. 17 people were hospitalized overnight

https://health.hawaii.gov/about/files/2022/05/JBPHH-Water-Contamination-Survey-Results.pdf

Follow-up ACE Investigation

September 2022

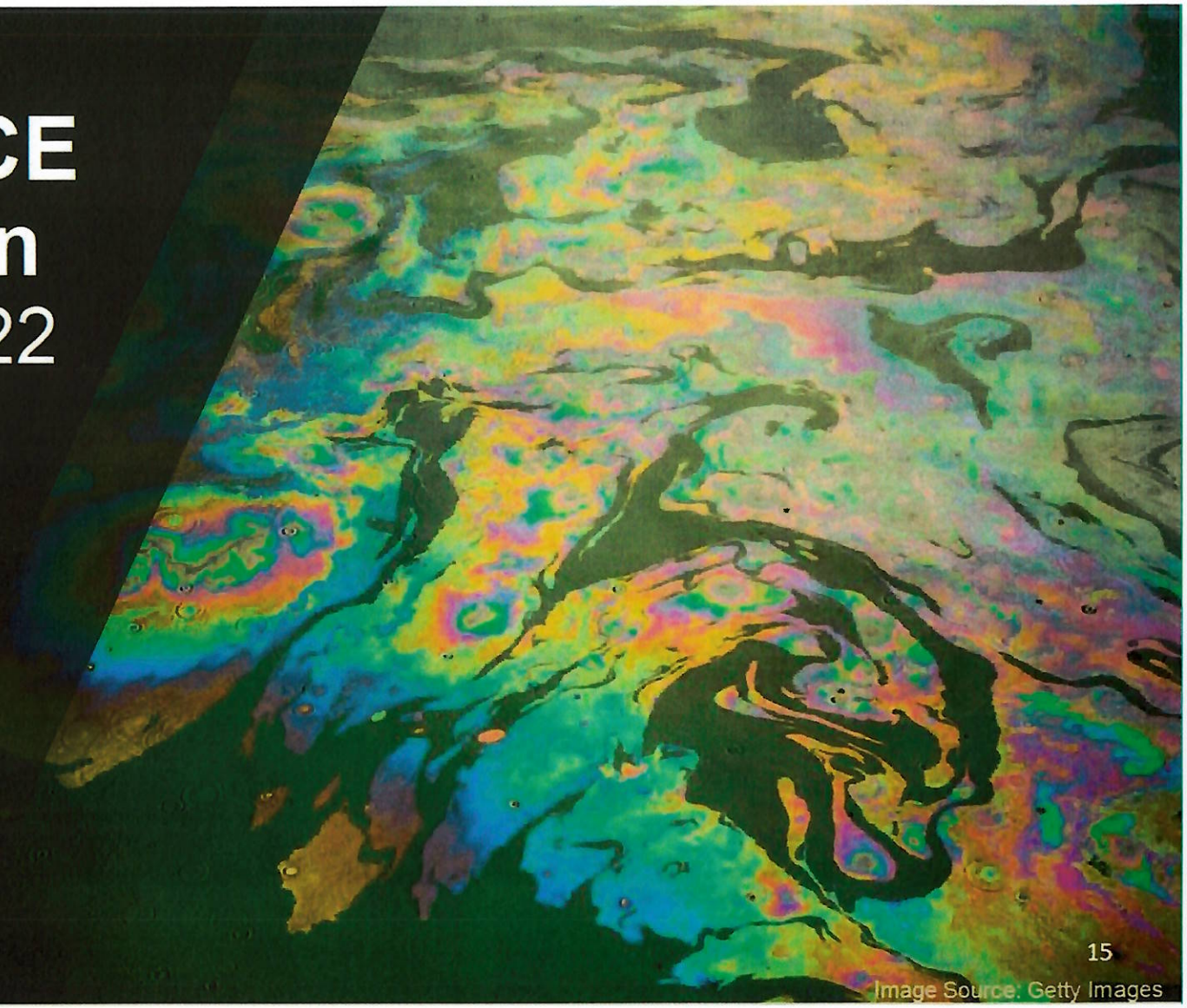
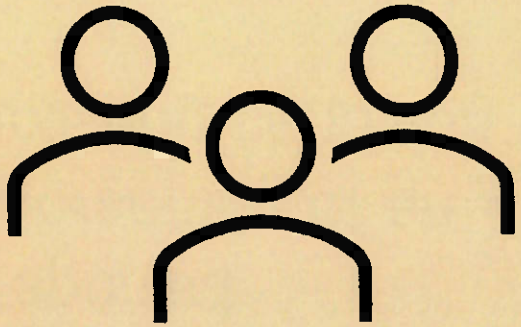
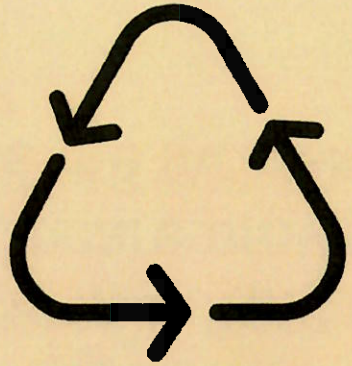


Image Source: Getty Images



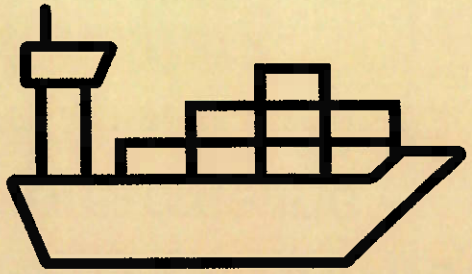
986

participants submitted surveys electronically
representing 8% of affected households



61%

returning participants



90%

were affiliated with the military

Many participants report worse health after the incident

41%

of all participants reported worsening of an existing condition

31%

reported a **new diagnosis** from a healthcare provider since the incident

25%

of those with new diagnoses had no pre-existing conditions prior to the incident

Many participants report worse health after the incident

55%

reported worse physical health after the incident when compared to before

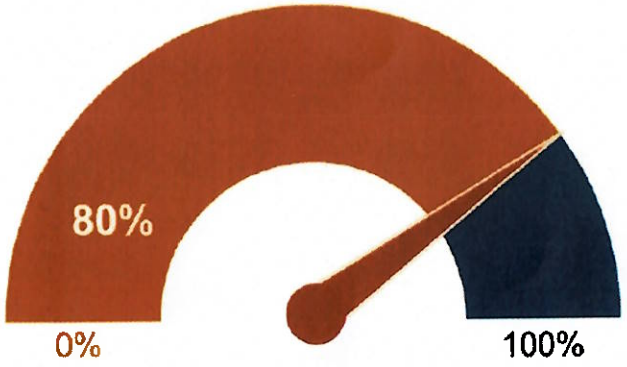
50%

reported worse mental health after the incident when compared to before

21%

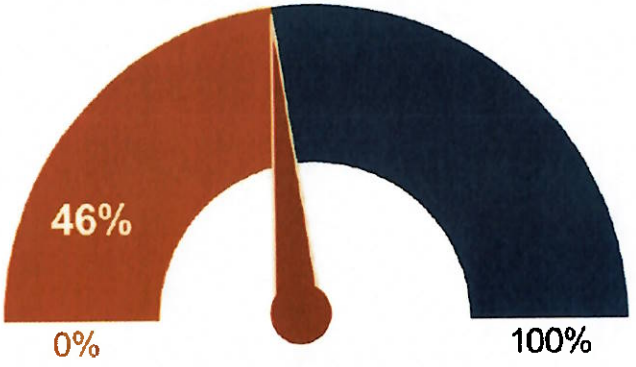
kept from usual activities for 14+ of the past 30 days due to poor health

Follow-up ACE investigation: key findings



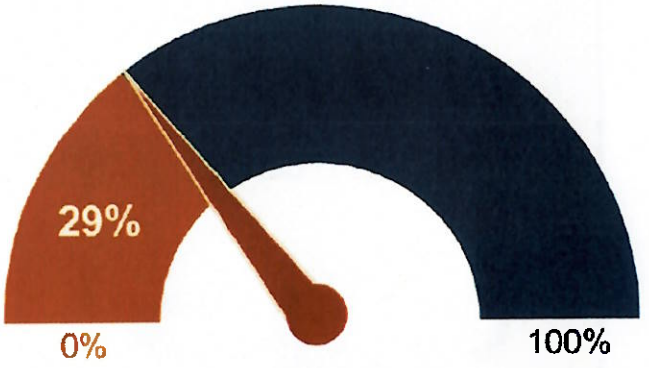
80%

reported **symptoms** in the past 30 days



46%

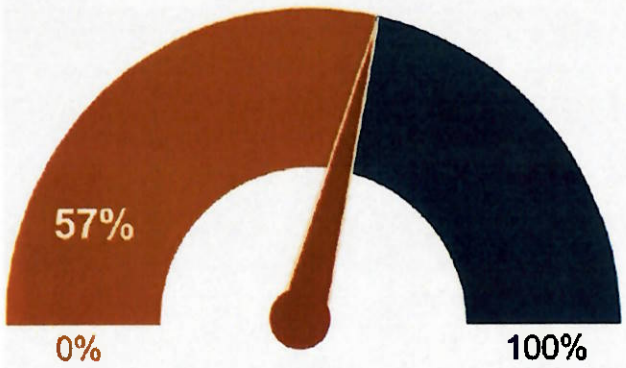
very concerned about tap water



29%

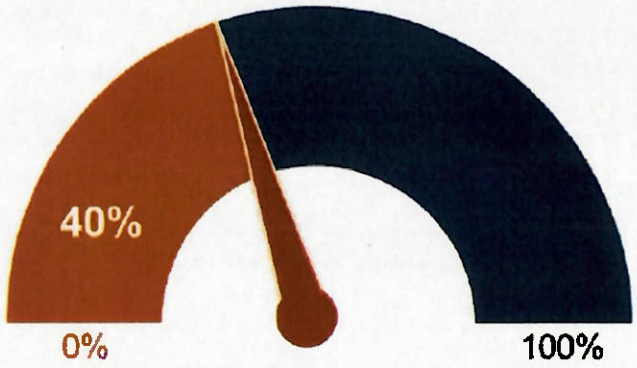
smell or taste petroleum or see a **sheen** in tap water

Follow-up ACE investigation: key findings



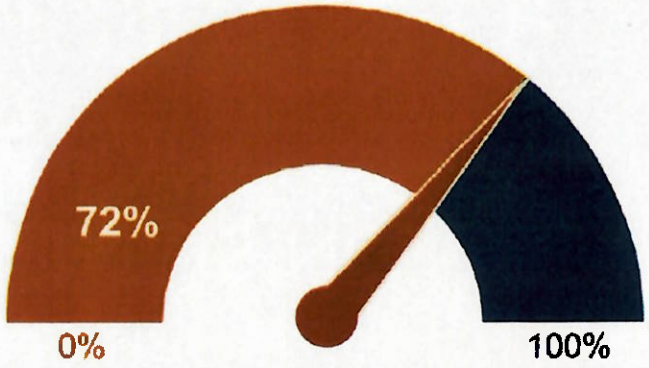
57%

think about the incident **every day**



40%

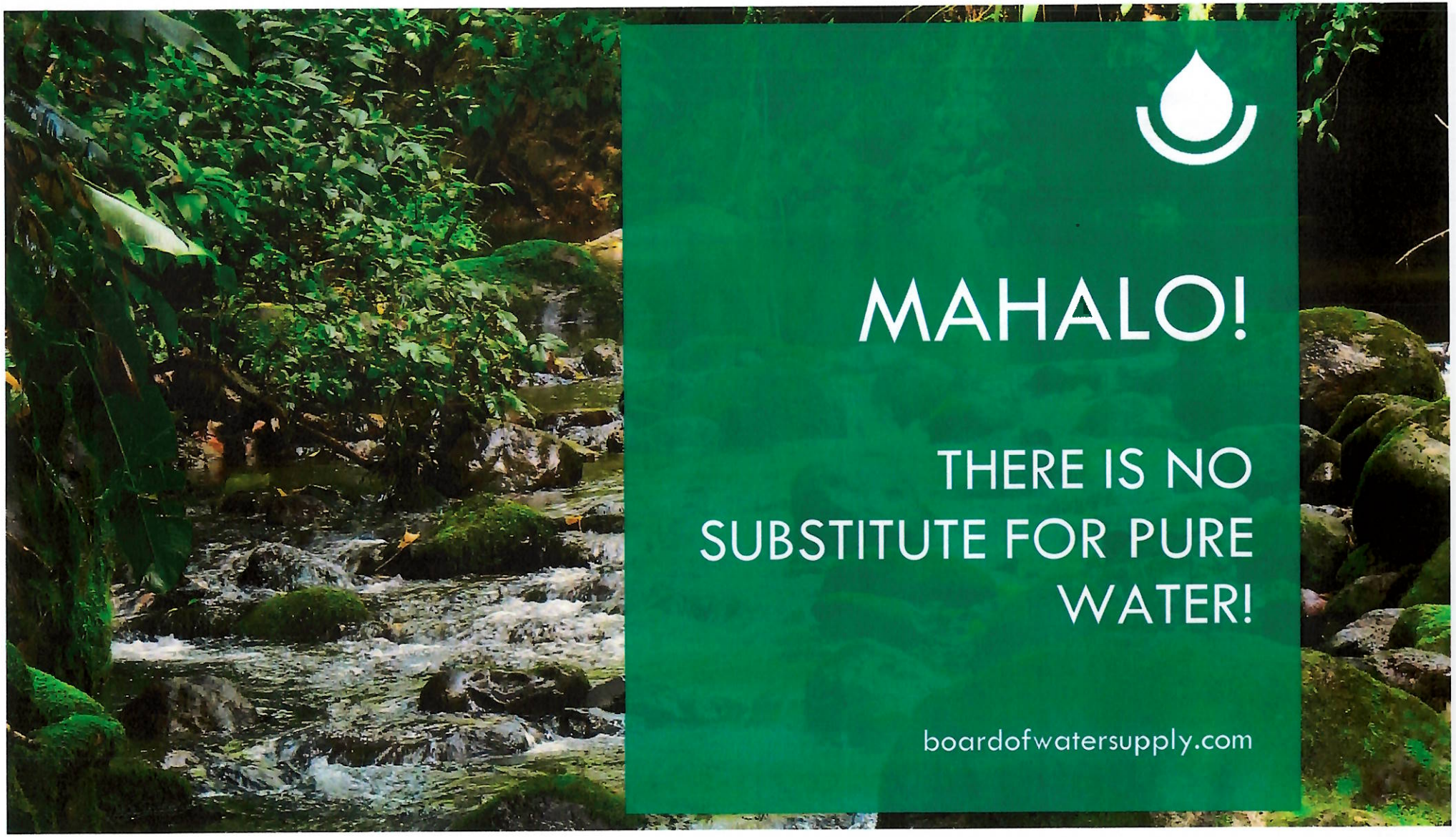
reported **anxiety**



72%

who were pregnant (n=47) since the incident reported a **complication**

Note: small numbers, limited in drawing conclusions from these data


MAHALO!
THERE IS NO SUBSTITUTE FOR PURE WATER!
boardofwatersupply.com

ITEM FOR INFORMATION NO. 2

"November 28, 2022

FINANCIAL UPDATE FOR THE QUARTER ENDED SEPTEMBER 30, 2022

Chair and Members
Board of Water Supply
City and County of Honolulu
Honolulu, Hawaii 96843

Chair and Members:

Subject: Financial Update for the Quarter Ended September 30, 2022

The following Board of Water Supply's financial reports and graphs are attached:

- Budget vs Actual Revenue and Expense Totals
- Statement of Revenues, Expenses and Change in Net Assets
- Balance Sheet
- Budget vs Actual Appropriation Budget – Total BWS Summary
- Graph Representing Operating Expenditures by Category
- Graphs of Total Budgeted Operating Expenditures and Total Budgeted Operating Revenues

Respectfully Submitted,

/s/ ERNEST Y. W. LAU, P.E
Manager and Chief Engineer

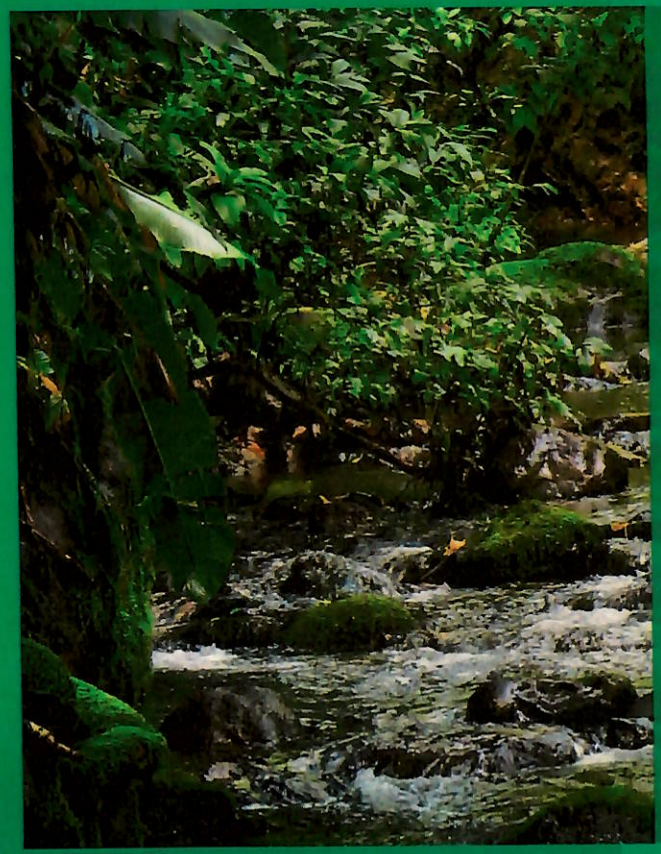
Attachment"

The foregoing was for information only.

DISCUSSION: Joseph Cooper, Waterworks Controller, Finance Division, gave the report.

Board Member Anthony inquired how the BWS is balancing the increase in goods and services due to inflation and how extended projects are being affected.

Mr. Joseph Cooper replied that it is a struggle to find balance. However, the BWS is currently in a cost of service study, which is done every five years, to estimate the annual cost of the BWS's Operating Cost and Capital Improvement Project (CIP) for the next five to six years. During the cost of study, the BWS estimates and incorporates the different factors which include inflation to form a rate structure. The BWS will report to the Board in January 2023 on the cost of service study conclusion.



FINANCIAL PERFORMANCE JULY 2022–SEPT 2022

Joe Cooper

November 28, 2022

boardofwatersupply.com

BUDGET TO ACTUAL
JULY 2022 – SEPT 2022

- Actual Revenue $69.3 million vs.
- Budgeted Revenue $64.6 million

- Operating costs are $67.9 million vs.
- Budgeted costs of $65.6 million

- Actual Net Revenue $1.4 million vs.
- Budgeted Net Expenditures $1.0 million

COST DRIVERS

Year to Date Sept 2022

	Actual (millions)	Budget (millions)
• Personnel	$10.7	$12.8
• Material, Supplies & Services	$28.4	$27.9
• Equipment	$ 0.3	$ 0.3
• Debt Service	$ 9.9	$ 9.6
• Utilities	$ 9.2	$ 6.8

OPERATING BUDGET VS ACTUAL

FY2023 1ST QUARTER - YEAR TO DATE: JUL 22 – SEP 22

BUDGETED EXPENDITURES ARE $65.6M VS. ACTUAL EXPENDITURES OF $67.3M

OF THE ($1.7M) VARIANCE...

Finance - $3.1M Over Budget

- Misc. Financial Expenses ($3.1M Over)

Water Quality - $2.3M Over Budget

- Professional Services ($2.5M Over)

Water System Operations - $522K Over Budget

- Other Material and Supplies ($414K Over)
- General Equipment Over $5,000 ($269K Over)

Water Resources - $204K Over Budget

- Other Contractual Services ($959K Over)
- Professional Services ($556K Over)
- Repair, Maintenance, Photovoltaic ($291K Over)

Field Operations - $2.5M Under Budget

- Salaries and Wages ($952K Under)
- Meters Storeroom ($594K Under)

Information Technology - $801K Under Budget

- Other Contractual Services ($648K Under)
- General Equipment over $5,000 ($103K Under)

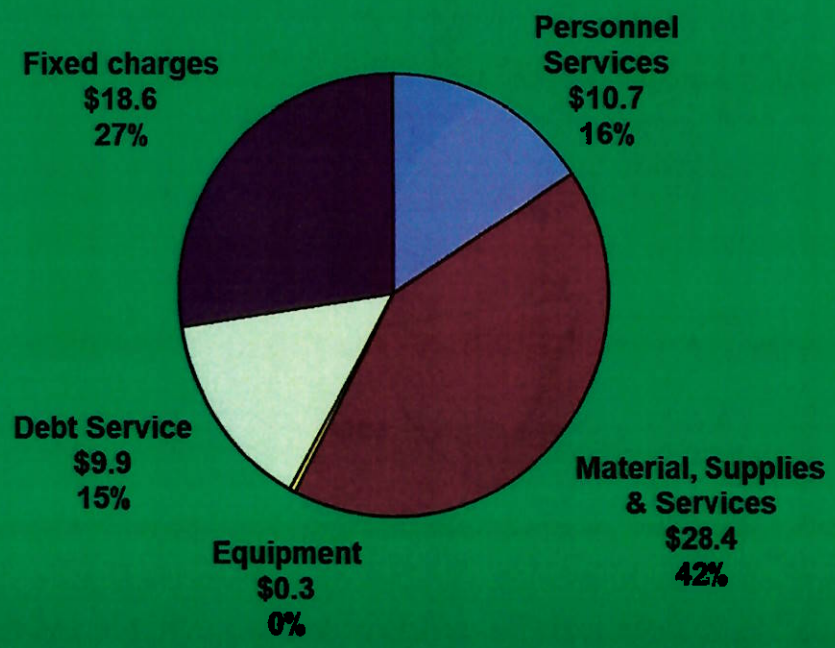
Capital Projects- $548K Under Budget

- Salaries & Wages ($289K Under)
- General Equipment over $5,000 ($125K Under)

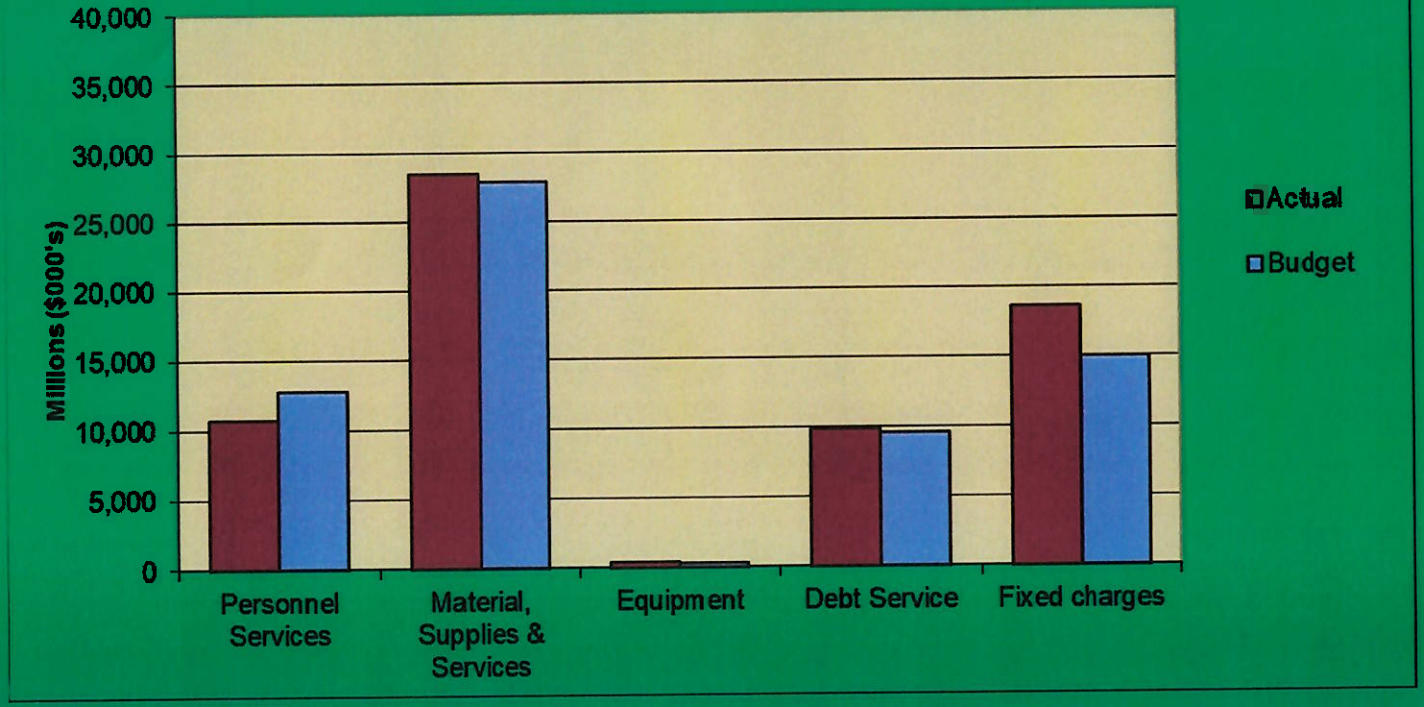
Executive Support - $375K Under Budget

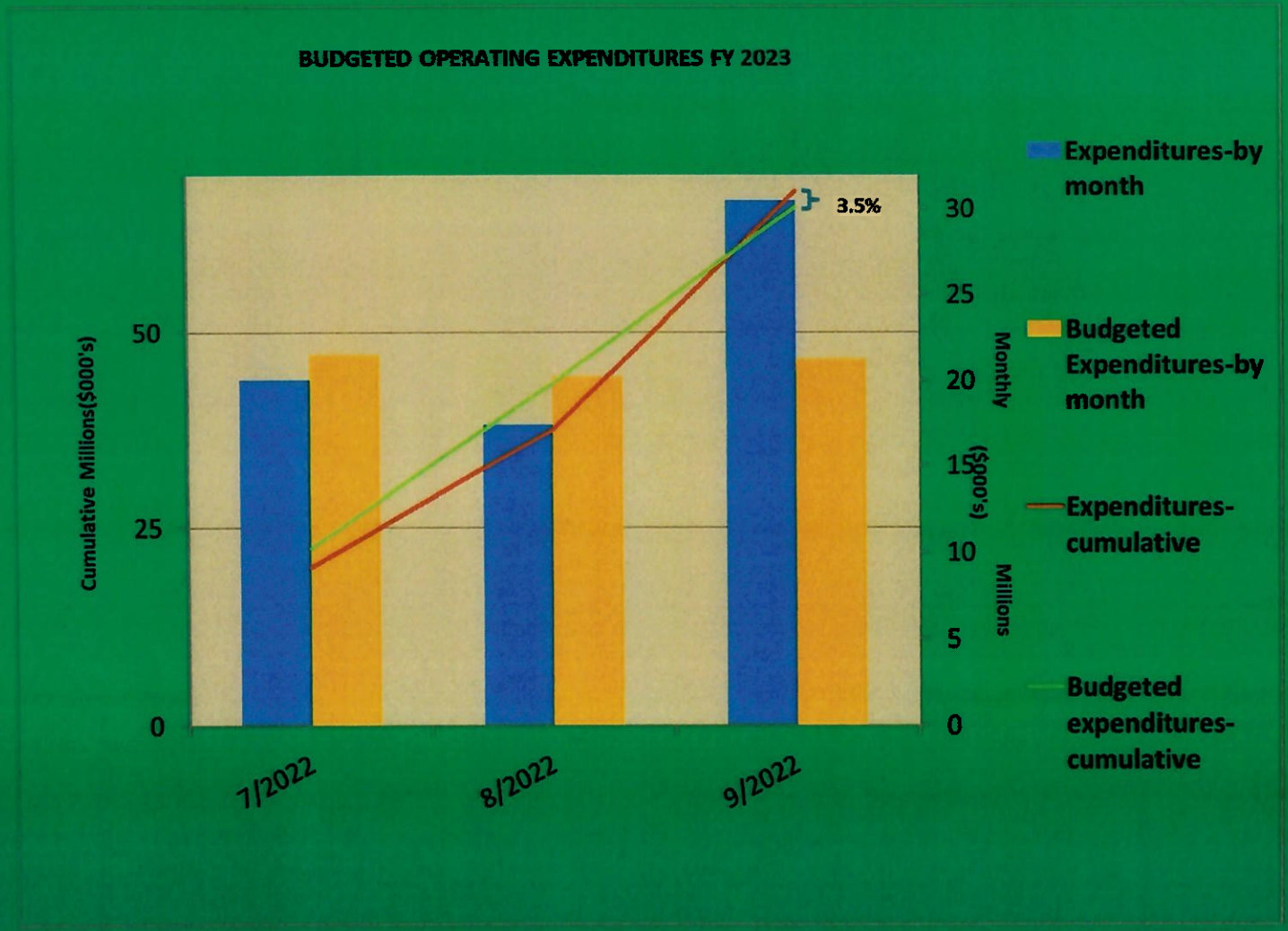
- Professional Services ($301K Under)
- Claims Personal Inj. Prop. Damage ($93K Under)

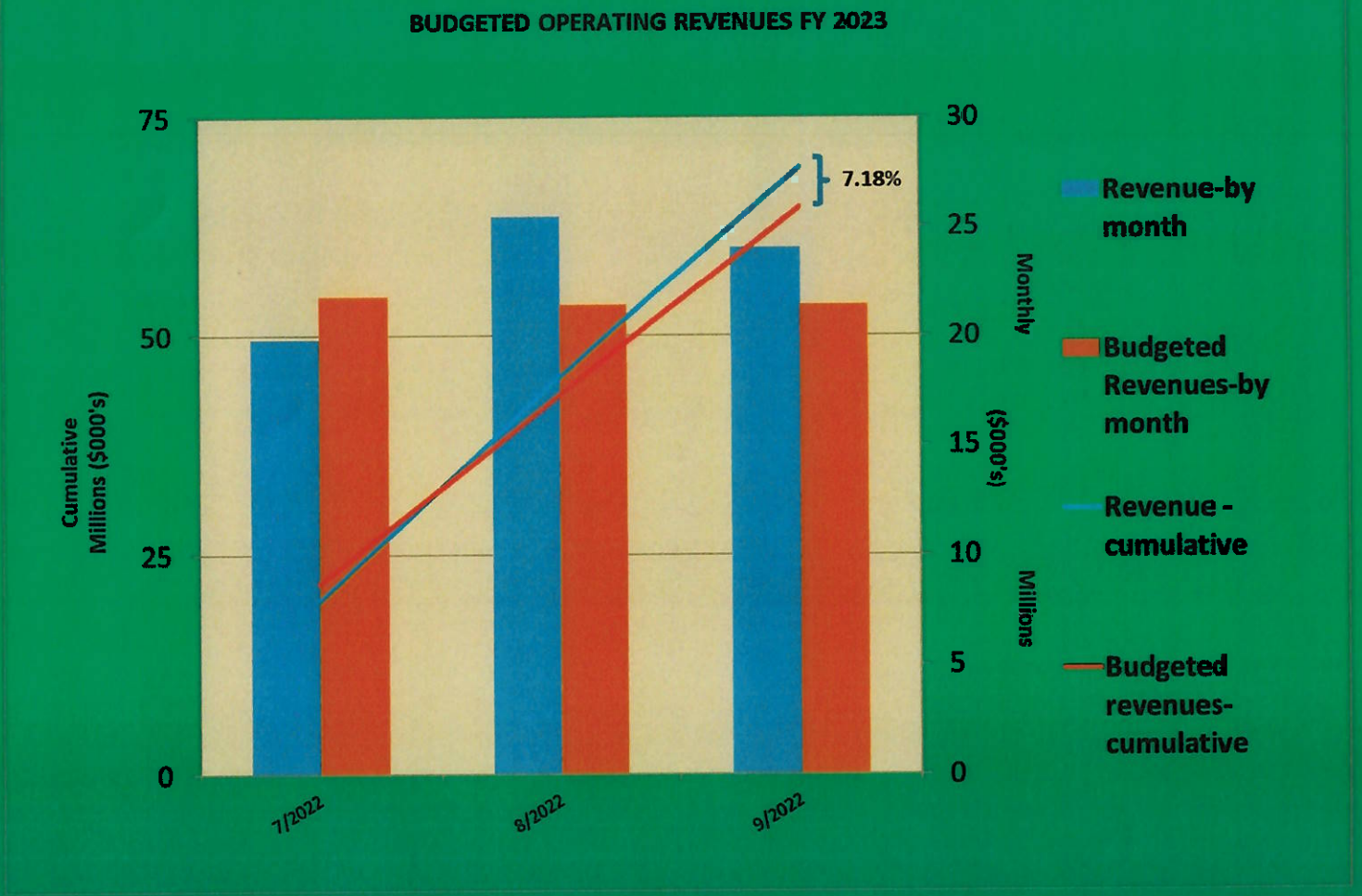
Total Operating Expenditures - $67.9
As of September 30, 2022
(millions of dollars)



Operating Expenditures by Category (Budget vs. Actual)
As of September 30, 2022




BUDGETED OPERATING EXPENDITURES FY 2023
Cumulative Millions($000's)
50
25
0
30
25
20
15
10
5
0
Monthly ($000's) Millions
3.5%
7/2022
8/2022
9/2022
Expenditures-by month
Budgeted Expenditures-by month
Expenditures-cumulative
Budgeted expenditures-cumulative


BUDGETED OPERATING REVENUES FY 2023
75
50
25
0
Cumulative Millions ($000's)
30
25
20
15
10
5
0
Monthly ($000's) Millions
7.18%
7/2022
8/2022
9/2022
Revenue-by month
Budgeted Revenues-by month
Revenue - cumulative
Budgeted revenues-cumulative

Mahalo!

BOARD OF WATER SUPPLY

WWW.BOARDOFWATERSUPPLY.COM

Budget vs. Actual
Revenue and Expense Totals
As of September 30, 2022

	YTD Actuals	YTD Budget	Favorable/ (Unfavorable) Variance
Revenues	69,280	64,639	4,641
Operating Expenses	(67,879)	(65,605)	(2,274)
Net Revenues (expenditures)	1,401	(966)	2,367

Board Of Water Supply
Statement of Revenues, Expenses And Change In Net Assets
As of September 30, 2022

Current Month Actual	% Revenue	Last Year Actual	% Revenue	Description	Year to Date Actual	% Revenue	Last Year to Date Actual	% Revenue	% Change
				REVENUE					
23,561,738.70	100.00	22,374,227.72	100.00	OPERATING REVENUE	67,742,311.52	100.00	67,061,245.28	100.00	1.02
23,561,738.70	100.00	22,374,227.72	100.00	REVENUE	67,742,311.52	100.00	67,061,245.28	100.00	1.02
				OPERATING EXPENSES					
3,190,573.08-	13.54	3,320,897.90-	14.84	LABOR COSTS	9,961,656.15-	14.71	9,779,152.17-	14.58	1.87
3,585,314.93-	15.22	3,372,341.56-	15.07	SERVICES	8,474,371.92-	12.51	6,468,864.59-	9.65	31.00
790,026.36-	3.35	260,553.54-	1.16	SUPPLIES	1,606,616.03-	2.37	996,309.14-	1.49	61.26
1,002.39-		6,234.38-	.03	EDUCATION & TRAINING	11,874.28-	.02	7,283.61-	.01	63.03
2,247,649.18-	9.54	2,857,306.20-	12.77	UTILITIES	5,419,312.94-	8.00	4,437,957.14-	6.62	22.11
15,542.31	.07	156,986.73-	.70	REPAIR AND MAINTENANCE	342,847.32-	.51	486,634.96-	.73	29.55-
477,836.46	2.03	1,955,232.98-	8.74	MISC	5,473,269.54-	8.08	4,858,351.45-	7.24	12.66
2,026,635.01-	8.60	2,171,750.88-	9.71	RETIREMENT SYSTEM CONTRIBUTIO	6,205,514.40-	9.16	6,452,435.32-	9.62	3.83-
44,105.19	.19	357,436.26-	1.60	MISC EMPLOYEES' BENEFITS	125,180.74	.18	900,630.40-	1.34	113.90-
11,303,716.99-	47.97	14,458,740.43-	64.62	OPERATING EXPENSES	37,370,281.84-	55.17	34,387,618.78-	51.28	8.67
5,745,681.97-	24.39	1,170,297.75-	5.23	NON OPERATING REVENUE AND EXPE	4,799,797.50-	7.09	1,233,011.25-	1.84	289.27
829,173.21	3.52	1,523,496.73	6.81	CONTRIBUTION IN AID	3,487,337.67	5.15	3,564,208.69	5.31	2.16-
9,898.43-	.04			LEASE	32,388.45-	.05			
3,756,540.94-	15.94	3,381,370.37-	15.11	OTHER EXPENSES	12,466,096.29-	18.40	11,979,231.12-	17.86	4.06
3,575,073.58	15.17	4,887,315.90	21.84	Change In Net Assets	16,561,085.11	24.45	23,025,592.82	34.34	28.08-

Board Of Water Supply
Balance Sheet
As of SEPTEMBER 30, 2022

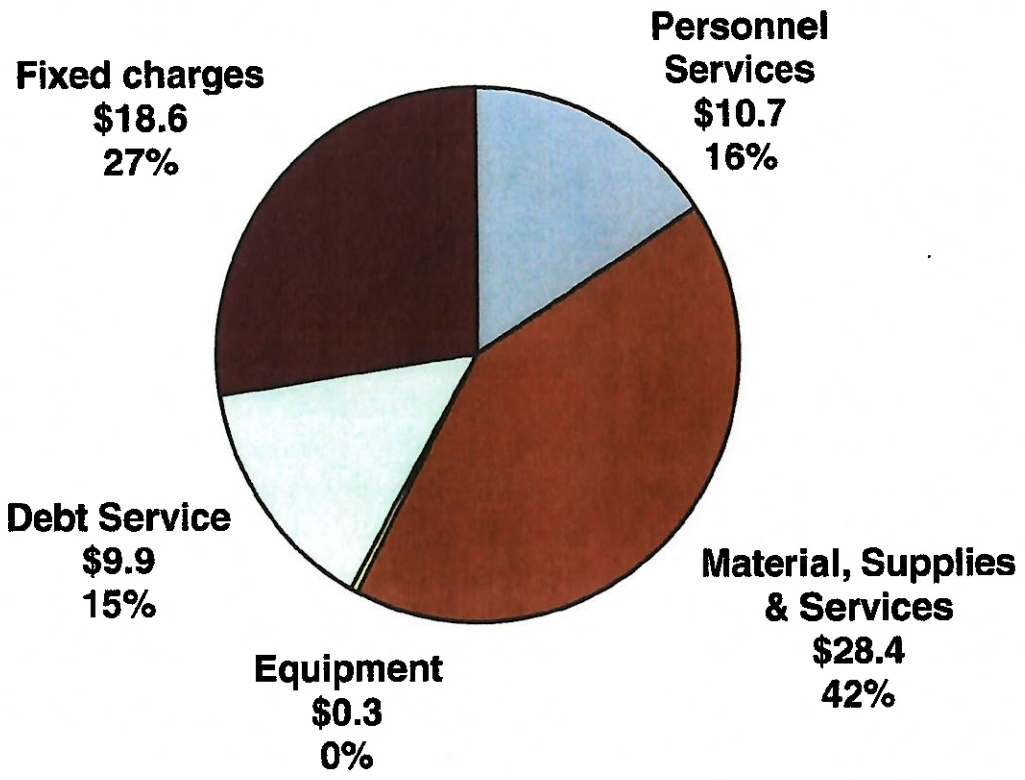
Description	Amounts Current	Last Month End	Last Year End	Change This Month	This Year
ASSETS					
CURRENT ASSETS	62,996,293.65	66,141,681.48	63,371,943.76	(3,145,387.83)	(375,650.11)
RESTRICTED ASSETS	19,672,981.71	19,992,536.19	34,274,722.17	(319,554.48)	(14,601,740.46)
INVESTMENTS	603,060,431.47	609,262,434.70	607,931,879.15	(6,202,003.23)	(4,871,447.68)
OTHER ASSETS	14,102,438.02	14,426,452.16	15,295,235.44	(324,014.14)	(1,192,797.42)
PROPERTY / PLANT	1,331,719,420.70	1,330,938,646.14	1,334,940,800.90	780,774.56	(3,221,380.20)
DEFERRED OUTFLOWS OF RESOURCE	10,004,443.00	10,004,443.00	10,004,443.00	-	-
DEFERRED OUTFLOWS OF RESOURCE	25,146,762.00	25,146,762.00	25,146,762.00	-	-
ASSETS	2,066,702,770.55	2,075,912,955.67	2,090,965,786.42	(9,210,185.12)	(24,263,015.87)
LIABILITIES					
CURRENT LIABILITIES	17,089,922.68	26,441,227.54	51,303,295.16	(9,351,304.86)	(34,213,372.48)
OTHER LIABILITIES	49,170,333.55	49,354,956.18	49,782,654.63	(184,622.63)	(612,321.08)
BONDS PAYABLE, NONCURRENT	482,784,026.97	485,998,983.81	488,676,813.88	(3,214,956.84)	(5,892,786.91)
LEASE LIABILITY	1,343,109.67	1,377,484.04	1,448,730.18	(34,374.37)	(105,620.51)
NET PENSION LIABILITY	106,763,854.00	106,763,854.00	106,763,854.00	-	-
NET OPEB LIABILITY	65,177,682.00	65,177,682.00	65,177,682.00	-	-
DEFERRED INFLOWS OF RESOURCES	28,840,810.00	28,840,810.00	28,840,810.00	-	-
LIABILITIES	751,169,738.87	763,954,997.57	791,993,839.85	(12,785,258.70)	(40,824,100.98)
NET ASSETS					
RETAINED EARNINGS	276,203,407.68	280,693,142.68	271,321,393.57	-	-
FUND BALANCE	594,633,831.66	594,633,831.66	594,633,831.66	-	-
RESERVE FOR ENCUMBRANCES	428,134,707.23	423,644,972.23	433,016,721.34	-	
CURRENT YEAR CHANGES TO FU	16,561,085.11	12,986,011.53		3,575,073.58	16,561,085.11
NET ASSETS	1,315,533,031.68	1,311,957,958.10	1,298,971,946.57	3,575,073.58	16,561,085.11
TOTAL LIABILITIES AND NET ASSETS	2,066,702,770.55	2,075,912,955.67	2,090,965,786.42	(9,210,185.12)	(24,263,015.87)

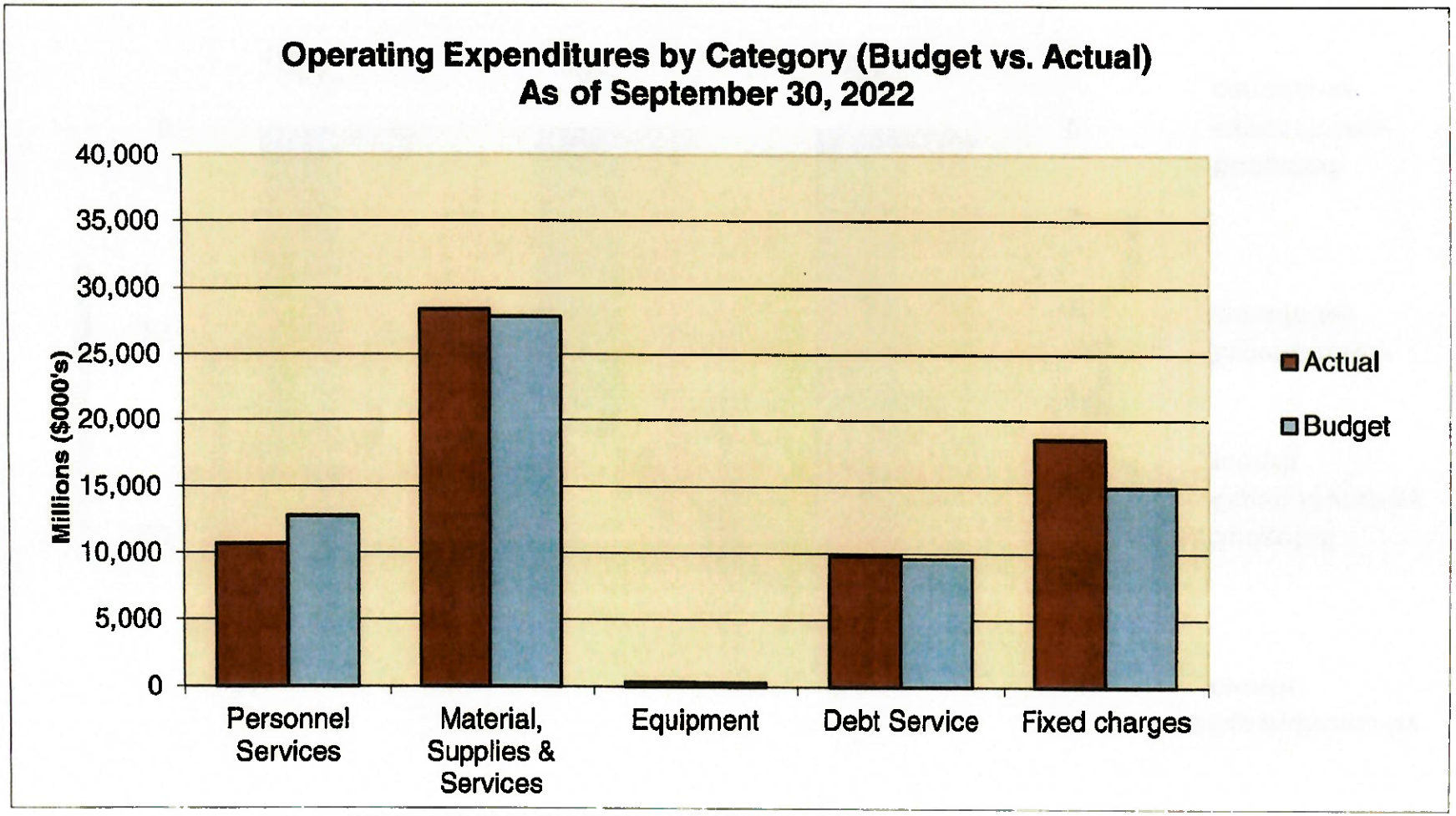
OPER UNIT ALL
BUSINESS UNIT ALL

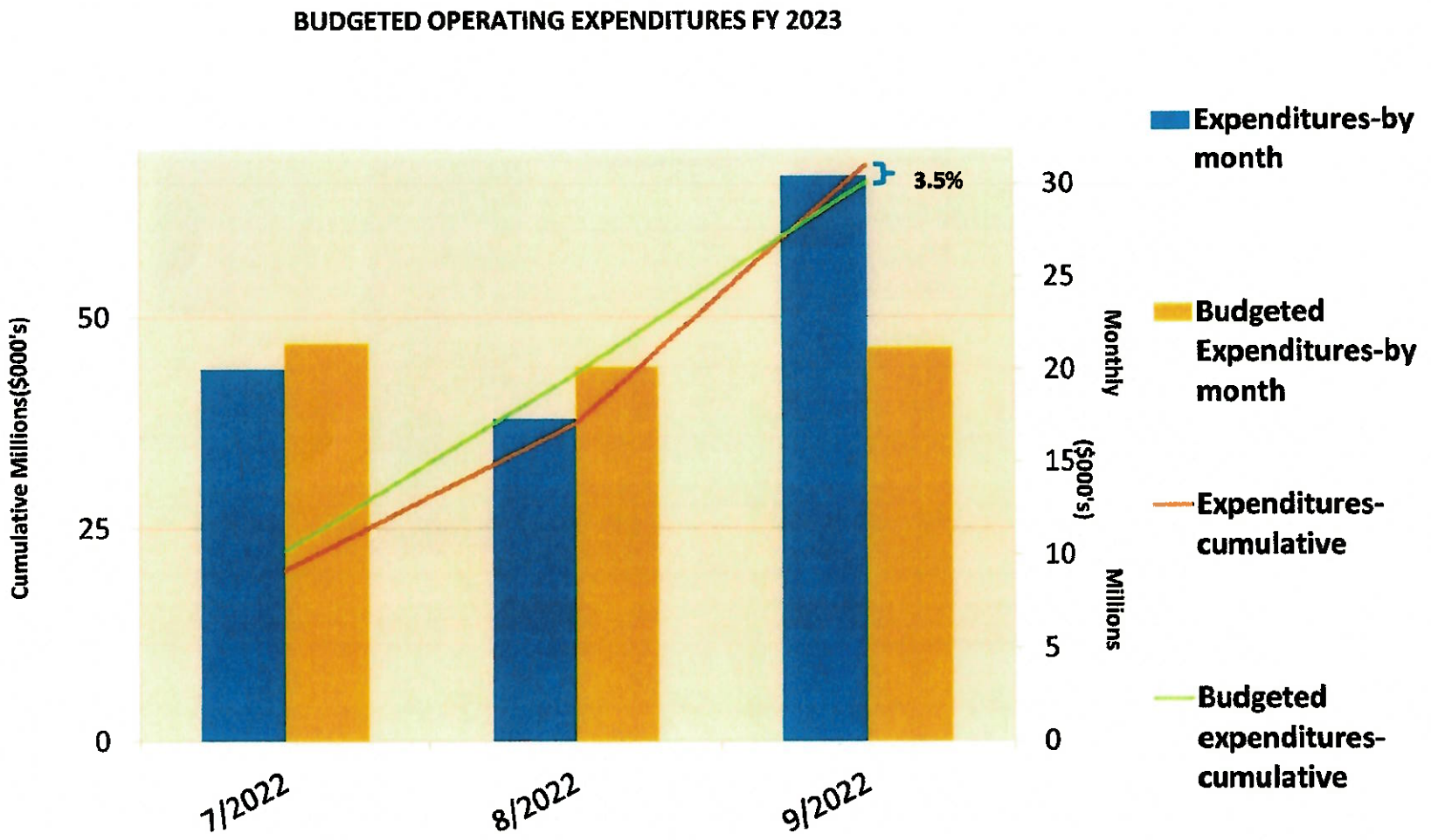
CIFIS 23820-3021
AS OF 9/30/2022

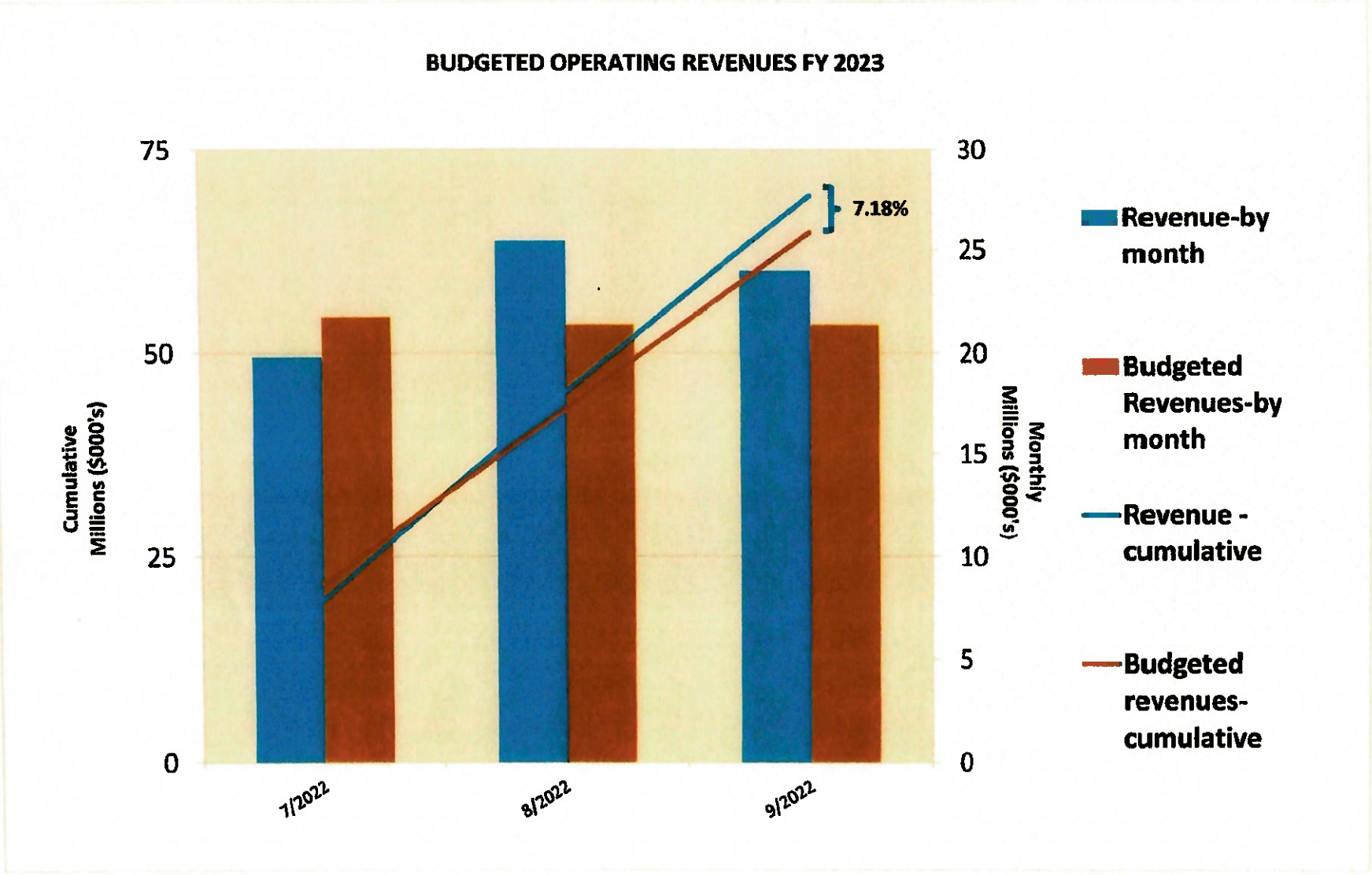
YTD-TO-DATE					FOR THE FISCAL YEAR				
YTD Actuals	YTD Budget	Avail/ (Over)	%	Object Description	Revenues/ Expend	Open Encumb	Annual Budget	Avail/ (Over)	%
69,280	64,639	(4,641)	7.18-	REVENUE	69,280		258,560	189,280	73.21
				OPERATING EXPENSES:					
10,696	12,830	2,134	16.63	Personnel Services	10,696		51,446	40,750	79.21
				MATERIALS AND SUPPLIES					
~~21,836~~ 18,733	19,056	~~(2,780)~~ 323	~~14.59-~~ 1.70	Services	4,434	17,402	51,607	29,771	57.69
2,657	3,380	723	21.39	Supplies	2,257	400	16,154	13,497	83.55
19	89	70	78.65	Education & Training	9	10	428	409	95.56
	3	3	100.00	Utilities			12	12	100.00
435	435			Repairs & Maint	176	259	2,785	2,350	84.38
6,566	4,924	(1,642)	33.35-	Misc	6,104	462	15,233	8,667	56.90
336	301	(35)	11.63-	Equipment	2	334	5,087	4,751	93.39
~~6,753~~ 9,856	~~6,854~~ 9,609	~~101~~ (247)	~~1.47~~ 2.57-	Debt Service	~~6,753~~ 9,856		~~27,417~~ 34,511	~~20,664~~ 24,655	~~75.37~~ 71.44
				FIXED CHARGES:					
9,156	6,830	(2,326)	34.06-	Utilities	9,156		27,320	18,164	66.49
825	825			Case Fees	825		3,300	2,475	75.00
4,636	3,850	(786)	20.42-	Retirement System Contribution	4,636		15,400	10,764	69.90
3,964	3,473	(491)	14.14-	Misc Employees' Benefits	3,436	528	13,960	9,996	71.60
67,879	~~62,850~~ 65,605	~~(5,029)~~ (2,274)	~~8.00-~~ 3.47-	TOTAL OPERATING EXPENDITURES	48,484	19,395	~~230,149~~ 237,243	~~162,270~~ 169,364	70.51 71.39
1,401	~~1,789~~ (966)	~~388~~ (2,367)		NET REVENUES (EXPENDITURES)	20,796	(19,395)	~~28,411~~ 21,317	~~27,010~~ 19,916	

Total Operating Expenditures - $67.9
As of September 30, 2022
(millions of dollars)




Operating Expenditures by Category (Budget vs. Actual)
As of September 30, 2022
Millions ($000's)
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
Personnel Services
Material, Supplies & Services
Equipment
Debt Service
Fixed charges
Actual
Budget


BUDGETED OPERATING EXPENDITURES FY 2023
Cumulative Millions($000's)
50
25
0
30
25
20
15
10
5
0
Monthly ($000's) Millions
3.5%
7/2022
8/2022
9/2022
Expenditures-by month
Budgeted Expenditures-by month
Expenditures-cumulative
Budgeted expenditures-cumulative


BUDGETED OPERATING REVENUES FY 2023
Cumulative Millions ($000's)
Monthly Millions ($000's)
75
50
25
0
30
25
20
15
10
5
0
7.18%
7/2022
8/2022
9/2022
Revenue-by month
Budgeted Revenues-by month
Revenue - cumulative
Budgeted revenues-cumulative

ITEM FOR INFORMATION NO. 3

"November 28, 2022

CAPITAL IMPROVEMENT PROGRAM QUARTERLY UPDATE

Chair and Members
Board of Water Supply
City and County of Honolulu
Honolulu, Hawaii 96843
Chair and Members:

Subject: Capital Improvement Program Quarterly Update

Jason Takaki, Program Administrator, Capital Projects Division, will provide an update on the Capital Improvement Program.

Respectfully Submitted,

/s/ ERNEST Y. W. LAU, P.E
Manager and Chief Engineer

Attachment"

The foregoing was for information only.

DISCUSSION:

Jason Takaki, Program Administrator, Capital Projects Division, gave the report.

Manager Lau announced that Mr. Jason Takaki was retiring. He expressed his appreciation for Mr. Takaki's hard work in building the Capital Projects (CP) Division in delivering projects in a disciplined and organized fashion.

Mr. Jason Takaki thanked Manger Lau. He shared that when he began as Program Administrator of the CP Division the CIP was at $40 million (M). This fiscal year the CIP is just under $145 M. He stated that managing the CIP budget is a challenge, however, the staff has been able to execute the budget and produce quality work. Mr. Takaki expressed his gratitude for the Board's support of the CP Division and asked for continued support for his Assistant Program Administrator, Ms. Jadine Urasaki, who will serve as Acting Program Administrator.

Manager Lau and Chair Andaya wished Mr. Takaki the best in his retirement.

Quarterly Capital Improvement Program Status Report
All Divisions
as of September 30, 2022

Quarter Awarded	JUL - SEP		OCT - DEC		JAN - MAR		APR - JUN		Awarded to Date	Total Budgeted
Design Contracts Awarded (#/$)	0	$0.00	0	$0.00	0	$0.00	0	$0.00	$0.00	$23,554,000.00
Construction Contracts Awarded (#/$)	2	937,349.00	0	0.00	0	0.00	0	0.00	937,349.00	120,845,500.00
Land Purchases (#/$)	0	0.00	0	0.00	0	0.00	0	0.00	0.00	100,000.00
Project Totals	2	$937,349.00	0	$0.00	0	$0.00	0	$0.00	$937,349.00	$144,499,500.00

Quarter Completed	JUL - SEP		OCT - DEC		JAN - MAR		APR - JUN		Totals
Design Contracts Completed (#/$)	0	$0.00	0	$0.00	0	$0.00	0	$0.00	$0.00
Construction Contracts Completed (#/$)	1	1,467,700.00	0	0.00	0	0.00	0	0.00	1,467,700.00
Totals	1	$1,467,700.00	0	$0.00	0	$0.00	0	$0.00	$1,467,700.00

Ongoing Projects	
Ongoing Design Projects (#)	248
Ongoing Design Projects ($)	$110,768,375.44
Ongoing Construction Projects (#)	156
Ongoing Construction Projects ($)	$352,169,535.66

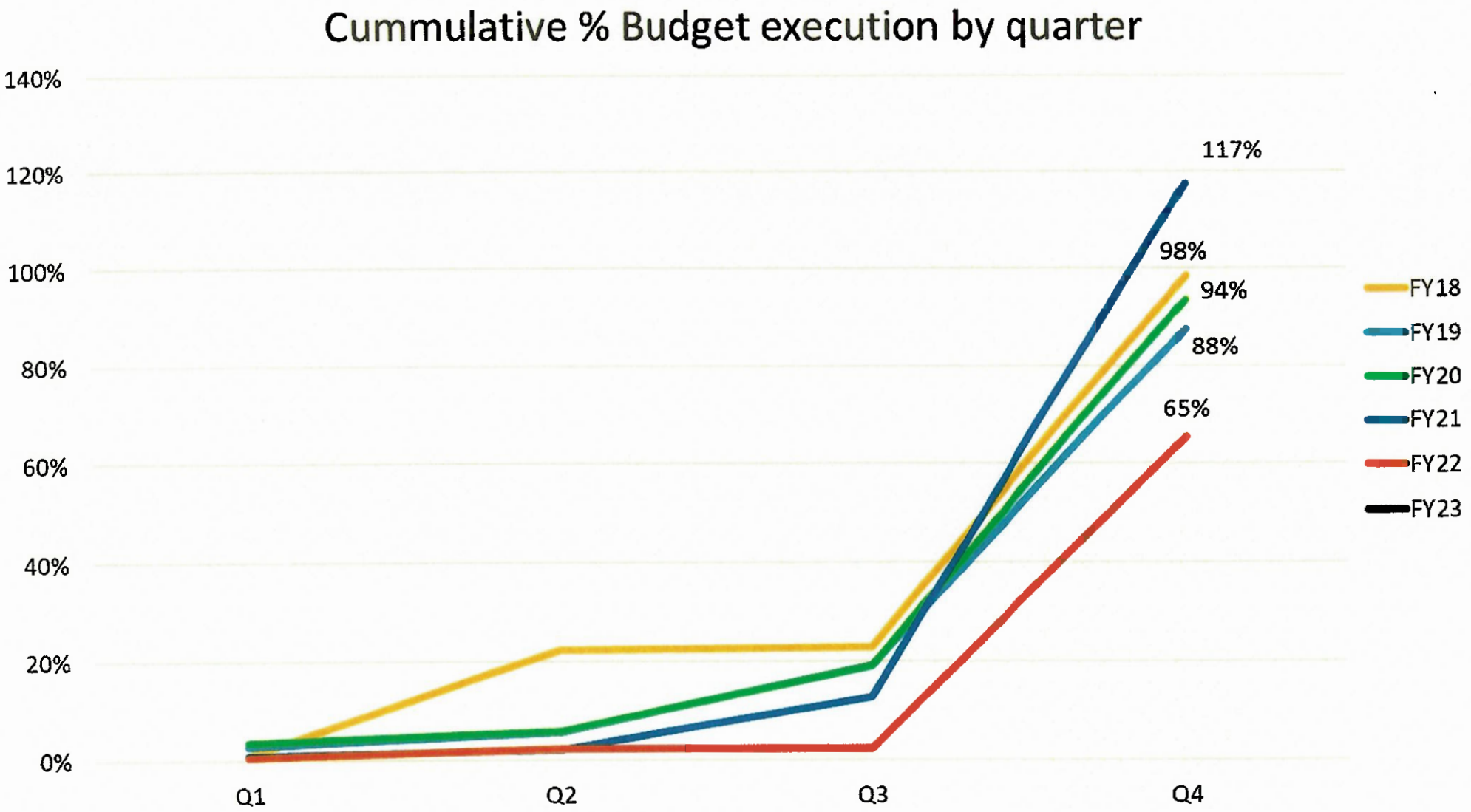
Quarterly Capital Improvement Program Status Report
All Divisions

DESIGN AND CONSTRUCTION PROJECTS AWARDED - FIRST QUARTER FY 2023

Item #	Project Title	Expend Type	Budget Amount	Awarded
23-010E	Waipio Heights Wells I: Replacement of Pumps No. 1 and 2	CONST	$483,751.00	$483,751.00
23-010B	Kunia Wells II Replacement of Pumps No. 1	CONST	453,598.00	453,598.00
	1st Quarter totals		**$937,349.00**	**$937,349.00**

DESIGN AND CONSTRUCTION PROJECTS COMPLETED - FIRST QUARTER FY 2023

Job #	Project Title	Completion Date	Contract Amount
20-016	Akanoho Place 8-Inch Main	07/11/2022	$1,467,700.00
	1st Quarter totals		**$1,467,700.00**


Cummulative % Budget execution by quarter
140%
120%
100%
80%
60%
40%
20%
0%
Q1
Q2
Q3
Q4
117%
98%
94%
88%
65%
FY18
FY19
FY20
FY21
FY22
FY23

ITEM FOR INFORMATION NO. 4

"November 28, 2022

SCHEDULE OF MONTHLY BOARD MEETINGS FOR CALENDAR YEAR 2023

Chair and Members
Board of Water Supply
City and County of Honolulu
Honolulu, Hawaii 96843

Chair and Members:

Subject: Schedule of Monthly Board Meetings for Calendar Year 2023

Attached for your information is the schedule of Board Meetings for the calendar year 2023.

Respectfully Submitted,

/s/ ERNEST Y. W. LAU, P.E
Manager and Chief Engineer

Attachment"

The foregoing was for information only.

DISCUSSION: Ernest Lau, Manager and Chief Manager, gave the report. There were no comments or discussion.

BOARD OF WATER SUPPLY
CITY AND COUNTY OF HONOLULU

2023 BOARD MEETING SCHEDULE

Board Meetings are scheduled for the fourth Monday of each month at 2:00 p.m., in the Public Service Building (PSB) Board Room, unless otherwise noted.

January 23

February 27

March 28

April 24

May 8 – Annual Budget Workshop

May 22

June 26

July 24

August 28

September 25

October 23

November 27

December 18

ITEM FOR INFORMATION NO. 5

"November 28, 2022

STATUS UPDATE OF GROUNDWATER LEVELS AT ALL INDEX STATIONS

Chair and Members
Board of Water Supply
City and County of Honolulu
Honolulu, Hawaii 96843

Chair and Members:

Subject: Status Update of Groundwater Levels at All Index Stations

Five aquifer index stations were in low groundwater condition for the production month of October 2022. Kaimuki, Pearl City, Kaluanui, and Waialua are in Caution Status. Punaluu is in Alert Status. The monthly production average for October 2022 was 136.48 million gallons per day.

The Board of Water Supply rainfall index for the month of October 2022 was 78 percent of normal, with a 5-month moving average of 69 percent. As of November 8, 2022, the Hawaii Drought Monitor shows zero drought to moderate drought conditions moving roughly southwest and northwest across Oahu. The National Weather Service is forecasting above-normal precipitation from November 2022 through February 2023.

Most monitoring wells exhibited stable to slightly decreasing head levels for the month of October, likely reflecting the lower overall groundwater production, combined with the slightly lower rainfall compared to the prior month. Average monthly production for October 2022 was lower than in October 2021 but similar to the 5-year monthly average.

Respectfully Submitted,

/s/ ERNEST Y. W. LAU, P.E
Manager and Chief Engineer

Attachment"

The foregoing was for information only.

DISCUSSION: Barry Usagawa, Program Administrator, Water Resources Division, gave the report. There were no comments or discussion.

PRODUCTION, HEAD AND RAINFALL REPORT
MONTH OF OCTOBER 2022

POTABLE

STATION	MGD
HONOLULU (1)	
KULIOUOU	0.00
WAILUPE	0.14
AINA KOA	0.00
AINA KOA II	0.71
MANOA II	0.95
PALOLO	1.12
KAIMUKI HIGH	2.37
KAIMUKI LOW	0.94
WILDER	8.97
BERETANIA HIGH	2.72
BERETANIA LOW	1.68
KALIHI HIGH	0.00
KALIHI LOW	5.02
KAPALAMA	1.46
KALIHI SHAFT	8.45
MOANALUA	0.87
HALAWA SHAFT	0.00
KAAMILO	0.57
KALAUAO	9.24
PUNANANI	12.22
KAAHUMANU	0.24
HECO WAIAU	2.37
MANANA	0.20
WAIALAE IKI	0.00
WELLS SUBTOTAL:	60.25
MANOA TUNNEL	0.17
PALOLO TUNNEL	0.00
GRAVITY SUBTOTAL:	0.17
HONO. SUBTOTAL:	60.42

STATION	MGD
WINDWARD (2)	
WAIMANALO II	0.65
WAIMANALO III	0.00
KUOU I	0.45
KUOU II	0.37
KUOU III	0.60
LULUKU	0.82
HAIKU	0.35
IOLEKAA	0.00
KAHALUU	0.69
KAHANA	0.98
PUNALUU I	0.00
PUNALUU II	3.39
PUNALUU III	0.00
KALUANUI	1.32
MAAKUA	0.29
HAUULA	0.26
WELLS SUBTOTAL:	10.17
WAIM. TUNNELS I & II	0.00
WAIM. TUNNELS III&IV	0.19
WAIHEE INCL. WELLS	0.29
WAIHEE TUNNEL	3.89
LULUKU TUNNEL	0.16
HAIKU TUNNEL	0.29
KAHALUU TUNNEL	1.15
GRAVITY SUBTOTAL:	5.97
WIND. SUBTOTAL:	16.14

STATION	MGD
NORTH SHORE (3)	
KAHUKU	0.35
OPANA	0.97
WAIALEE I	0.32
WAIALEE II	0.07
HALEIWA	0.00
WAIALUA	1.92
N.SHORE SUBTOTAL:	3.63

MILILANI (4)	
MILILANI I	1.25
MILILANI II	0.00
MILILANI III	0.64
MILILANI IV	2.44
MILILANI SUBTOTAL:	4.33

WAHIAWA (5)	
WAHIAWA	1.24
WAHIAWA II	1.64
WAHIAWA SUBTOTAL:	2.88

PEARL CITY-HALAWA (6)	
HALAWA 277	0.00
HALAWA 550	0.00
AIEA	0.00
AIEA GULCH 497	0.01
AIEA GULCH 550	0.21
KAONOHI I	2.00
WAIMALU I	0.00
NEWTOWN	1.83
WAIAU	1.89
PEARL CITY I	0.83
PEARL CITY II	1.05
PEARL CITY III	0.25
PEARL CITY SHAFT	0.92
PEARL CITY-HALAWA SUBTOTAL:	8.98

STATION	MGD
WAIPAHU-EWA (7)	
WAIPIO HTS.	1.45
WAIPIO HTS. I	0.00
WAIPIO HTS. II	0.36
WAIPIO HTS. III	1.18
WAIPAHU	6.64
WAIPAHU II	1.85
WAIPAHU III	3.72
WAIPAHU IV	1.73
KUNIA I	4.14
KUNIA II	1.94
KUNIA III	1.36
HOAEAE	3.55
HONOULIULI I	0.00
HONOULIULI II	8.23
MAKAKILO	0.13
WAIPAHU-EWA SUBTOTAL:	36.28

WAIANAE (8)	
MAKAHA I	0.48
MAKAHA II	0.00
MAKAHA III	0.12
MAKAHA V	0.23
MAKAHA VI	0.00
MAKAHA SHAFT	0.00
KAMAILE	0.07
WAIANAE I	0.30
WAIANAE II	0.35
WAIANAE III	0.74
WELLS SUBTOTAL:	2.28
WAIA. C&C TUNNEL	1.40
WAIA. PLANT. TUNNELS	0.14
GRAVITY SUBTOTAL:	1.54
WAIANAE SUBTOTAL:	3.82

NONPOTABLE

NONPOTABLE	MGD
KALAUAO SPRINGS	0.59
BARBERS POINT WELL	1.11
GLOVER TUNNEL NP	0.30
NONPOTABLE TOTAL:	2.00

RECYCLED WATER (SEPTEMBER 2022)

RECYCLED WATER	MGD
HONOULIULI WRF R-1	6.76
HONOULIULI WRF RO	1.46
RECYCLED TOTAL:	8.22

PRODUCTION, HEAD AND RAINFALL REPORT
MONTH OF OCTOBER 2022

PRODUCTION SUMMARIES

TOTAL WATER	MGD
PUMPAGE	128.80
GRAVITY	7.68
POTABLE TOTAL:	136.48
NONPOTABLE	2.00
RECYCLED WATER	8.22
TOTAL WATER:	146.69

CWRM PERMITTED USE AND BWS ASSESSED YIELDS FOR BWS POTABLE SOURCES

	WATER USE DISTRICTS	A PERMITTED USE/ BWS YLDS	B OCT 2022	C DIFF. A-B
1	HONOLULU	83.32	60.25	23.07
2	WINDWARD	25.02	16.14	8.88
3	NORTH SHORE	4.70	3.63	1.07
4	MILILANI	7.53	4.33	3.20
5	WAHIAWA	4.27	2.88	1.39
6	PEARL CITY-HALAWA	12.25	8.98	3.27
7	WAIPAHU-EWA	50.63	36.28	14.35
8	WAIANAE	4.34	3.82	0.52
TOTAL:		192.06	136.31	55.75

CWRM PERMITTED USE FOR BWS NONPOTABLE SOURCES

	WATER USE DISTRICTS	A PERMITTED USE	B OCT 2022	C DIFF. A-B
7	WAIPAHU-EWA (BARBERS POINT WELL)	1.00	1.11	-0.11
TOTAL:		1.00	1.11	-0.11

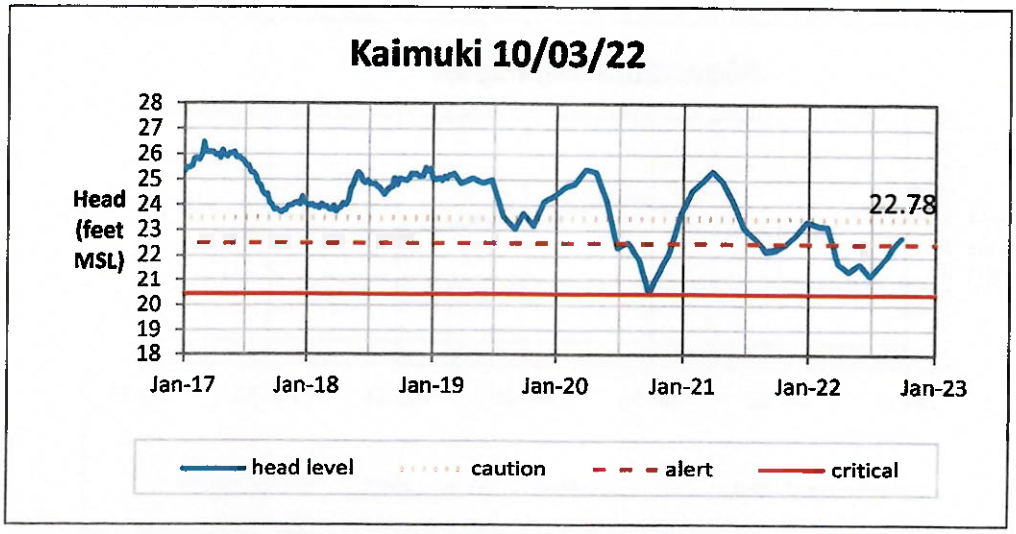
EFFECTIVE WATER DEMAND PER DISTRICT

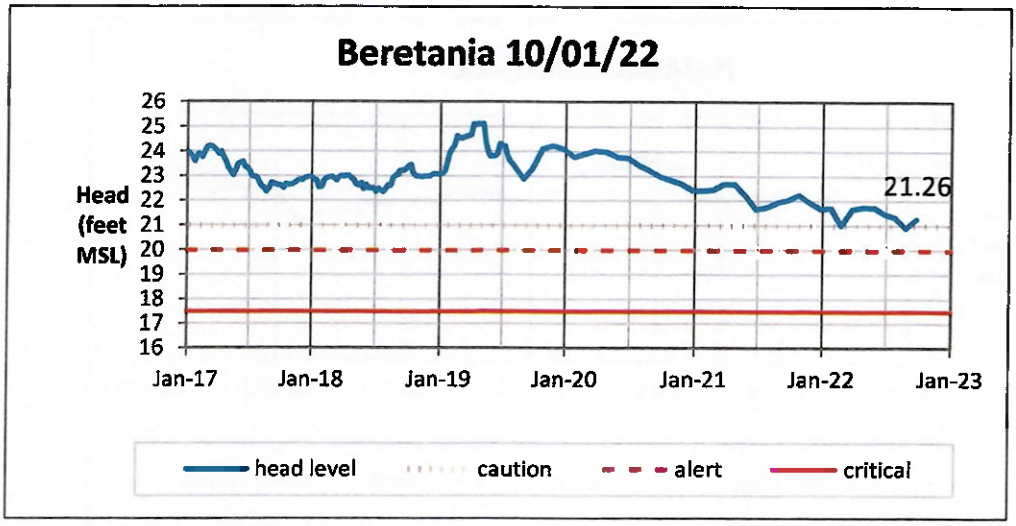
IMPORT/EXPORT BETWEEN WATER USE DISTRICTS

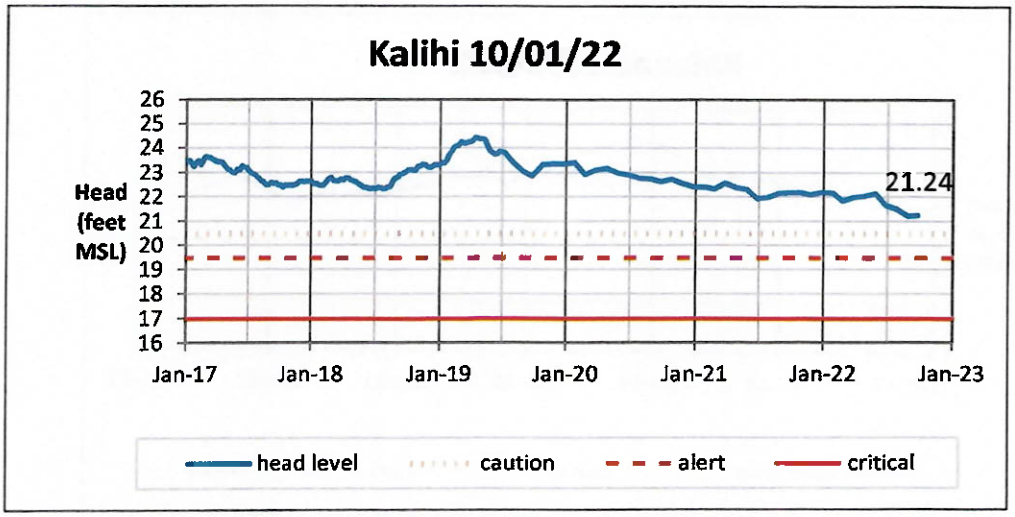
FROM	TO		MGD
2	1	WINDWARD EXPORT	1.08
7	8	BARBERS PT LB	5.14

	WATER USE DISTRICTS	SUBTOTAL	IMPORT	EXPORT	EFFECTIVE WATER DEMAND
1	HONOLULU	60.42	1.08	-	61.50
2	WINDWARD	16.14	-	1.08	15.06
3	NORTH SHORE	3.63	-	-	3.63
4	MILILANI	4.33	-	-	4.33
5	WAHIAWA	2.88	-	-	2.88
6	PEARL CITY-HALAWA	8.98	-	-	8.98
7	WAIPAHU-EWA	36.28	-	5.14	31.14
8	WAIANAE	3.82	5.14	-	8.96
TOTAL:		136.48	6.22	6.22	136.48

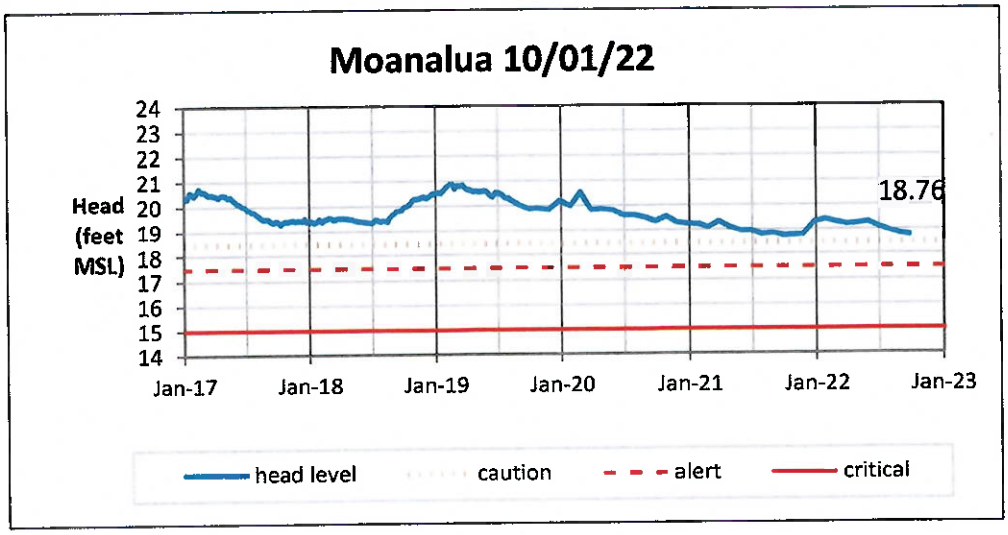
Head Report

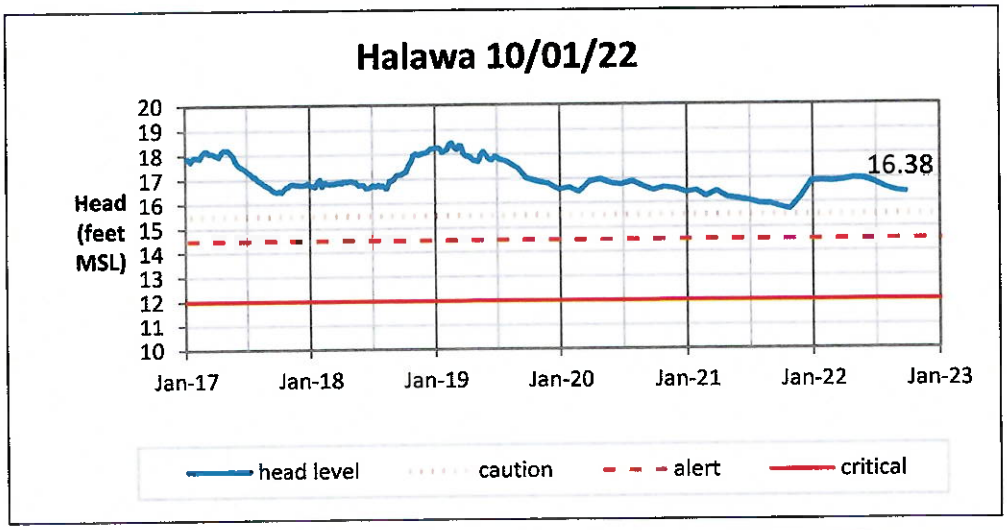

Kaimuki 10/03/22
Head (feet MSL)
28
27
26
25
24
23
22
21
20
19
18
22.78
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
head level
caution
alert
critical

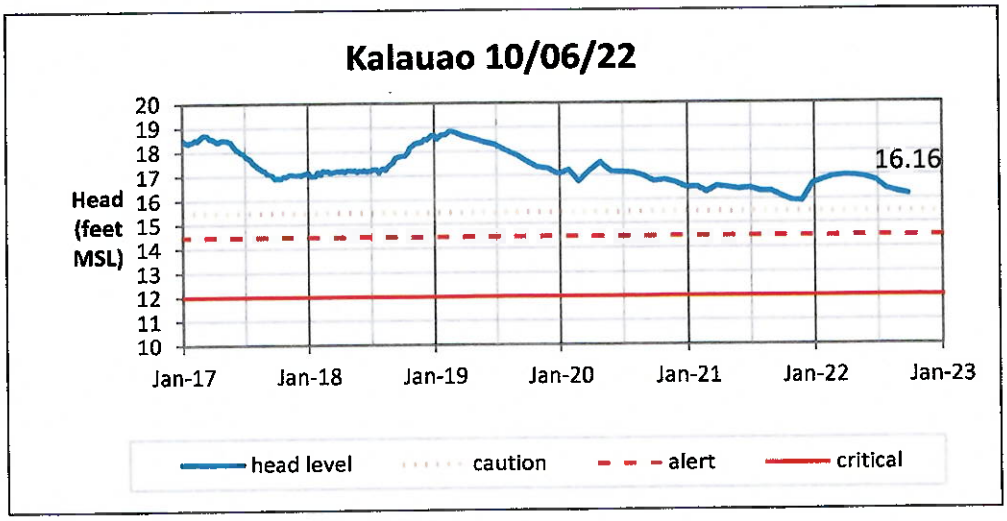

Beretania 10/01/22
Head (feet MSL)
26
25
24
23
22
21
20
19
18
17
16
21.26
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
head level
caution
alert
critical


Kalihi 10/01/22
Head (feet MSL)
26
25
24
23
22
21
20
19
18
17
16
21.24
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
head level
caution
alert
critical

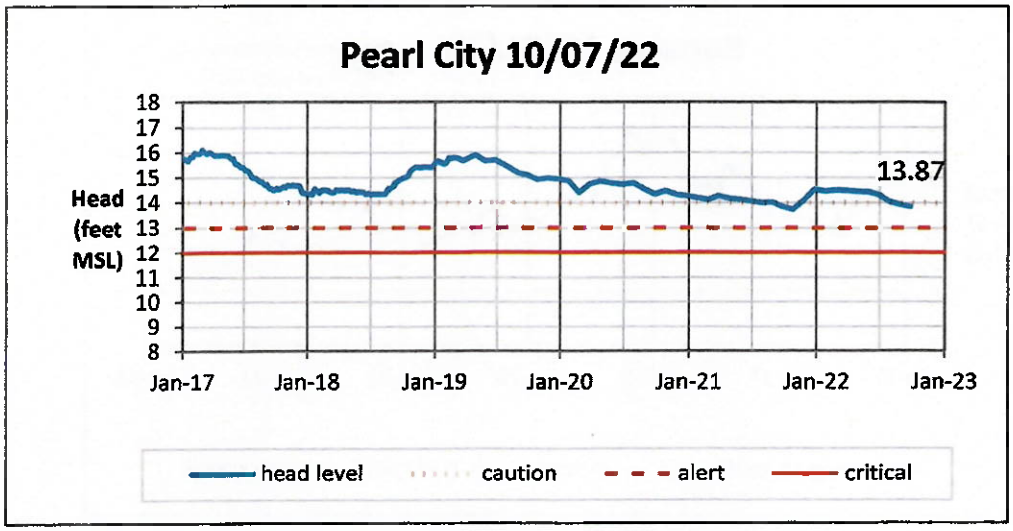
Head Report

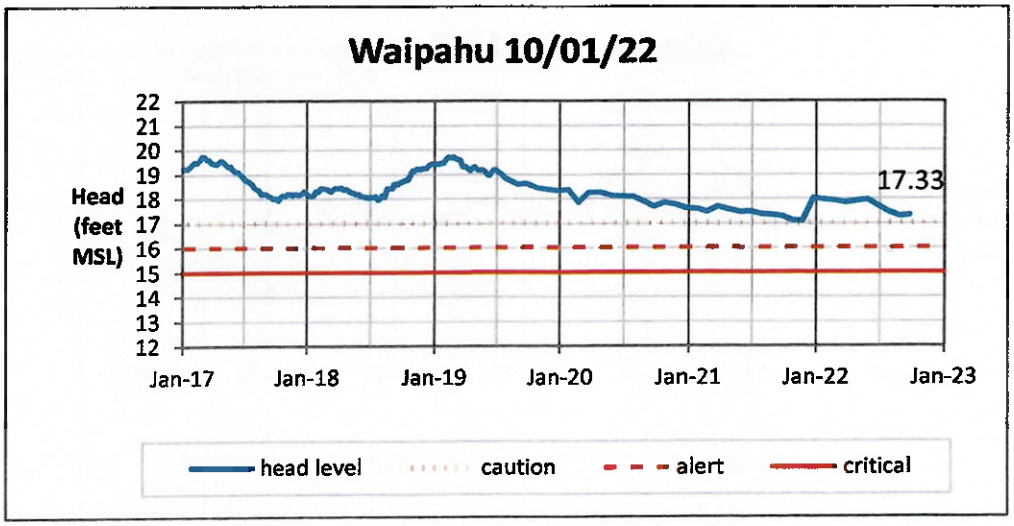

Moanalua 10/01/22
Head (feet MSL)
24
23
22
21
20
19
18
17
16
15
14
18.76
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
head level
caution
alert
critical

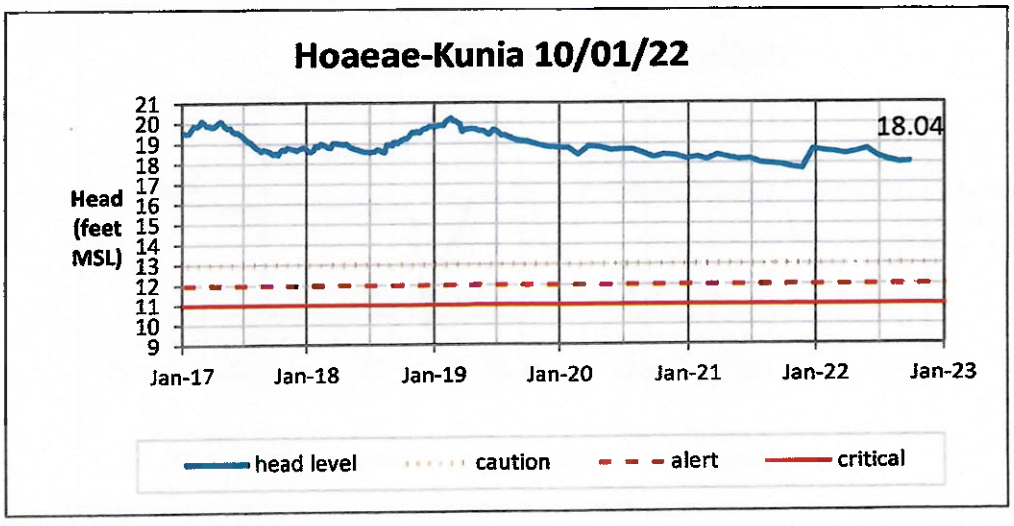

Halawa 10/01/22
Head (feet MSL)
20
19
18
17
16
15
14
13
12
11
10
16.38
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
head level
caution
alert
critical


Kalauao 10/06/22
Head (feet MSL)
20
19
18
17
16
15
14
13
12
11
10
16.16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
head level
caution
alert
critical

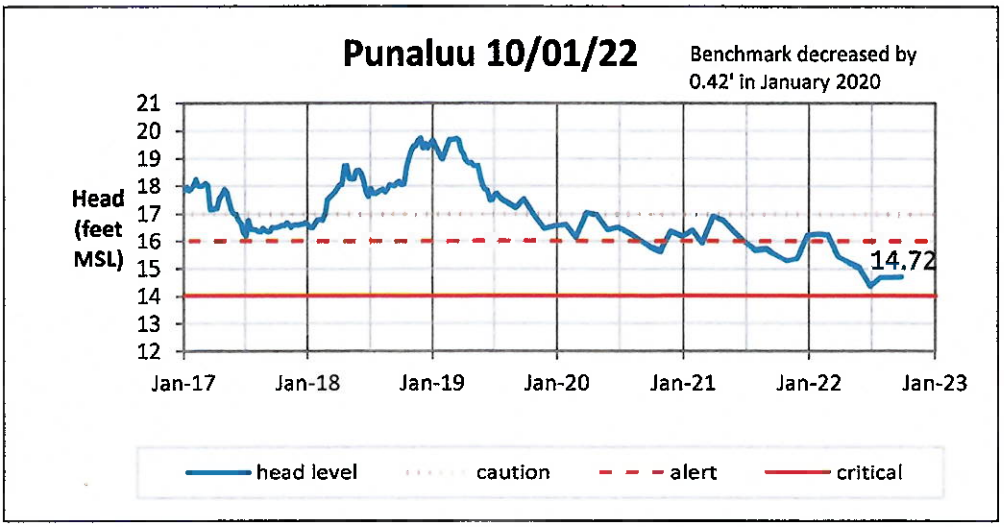
Head Report

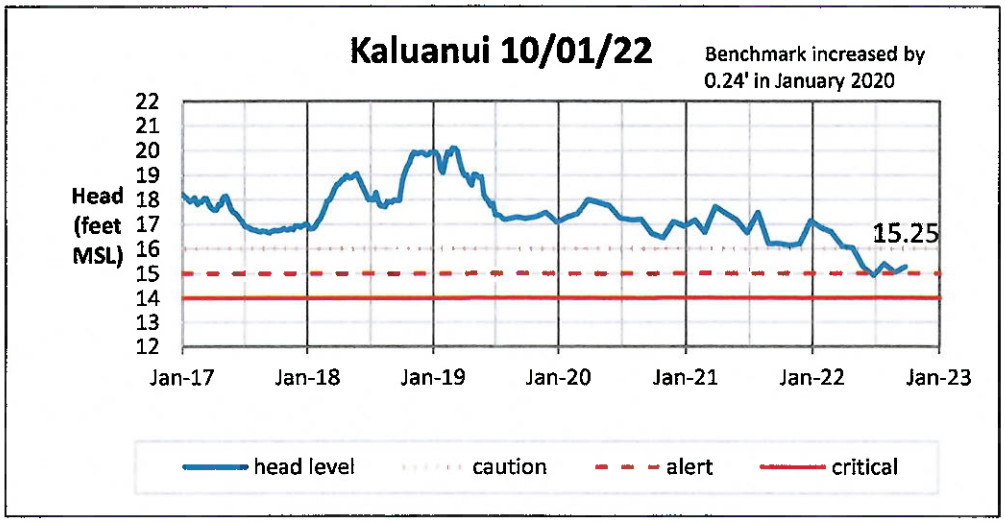

Pearl City 10/07/22
Head (feet MSL)
18
17
16
15
14
13
12
11
10
9
8
13.87
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
head level
caution
alert
critical

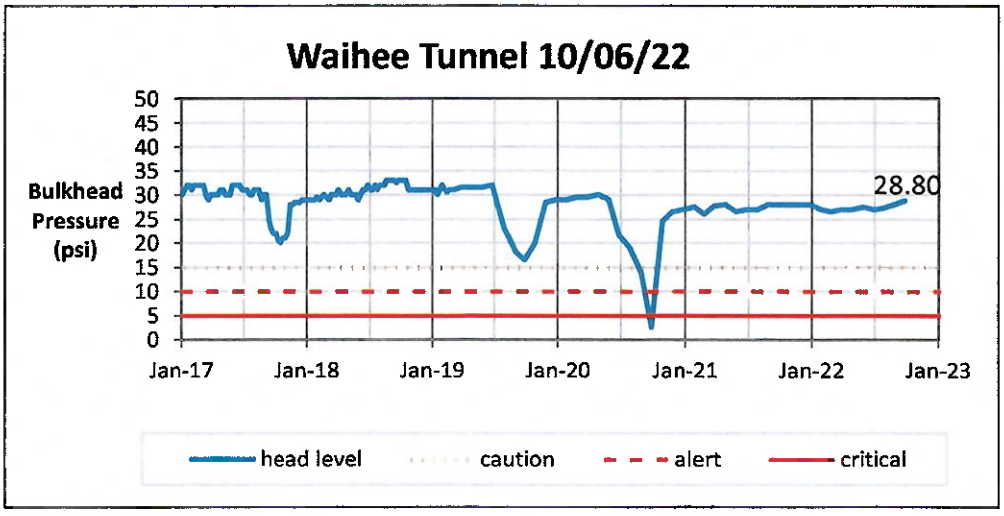

Waipahu 10/01/22
Head (feet MSL)
22
21
20
19
18
17
16
15
14
13
12
17.33
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
head level
caution
alert
critical


Hoaeae-Kunia 10/01/22
Head (feet MSL)
21
20
19
18
17
16
15
14
13
12
11
10
9
18.04
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
head level
caution
alert
critical

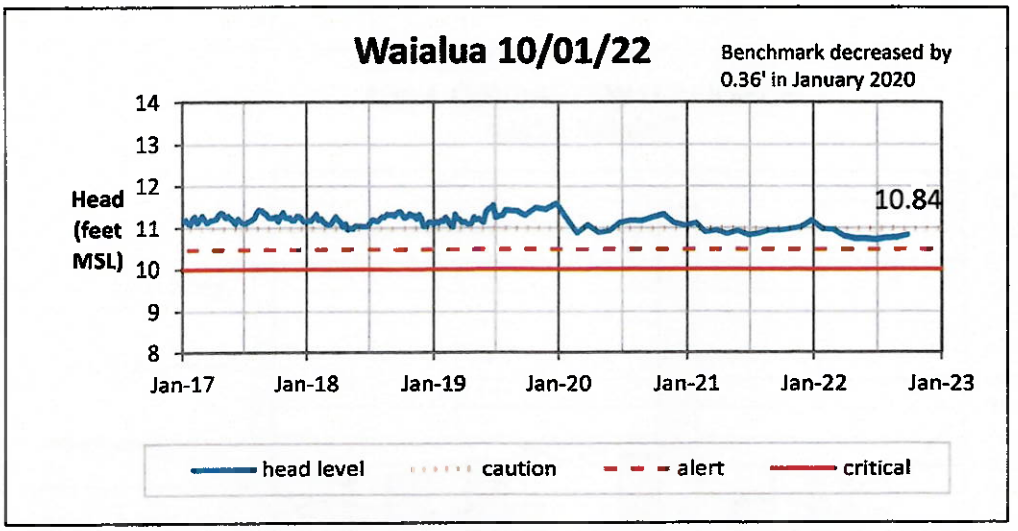
Head Report

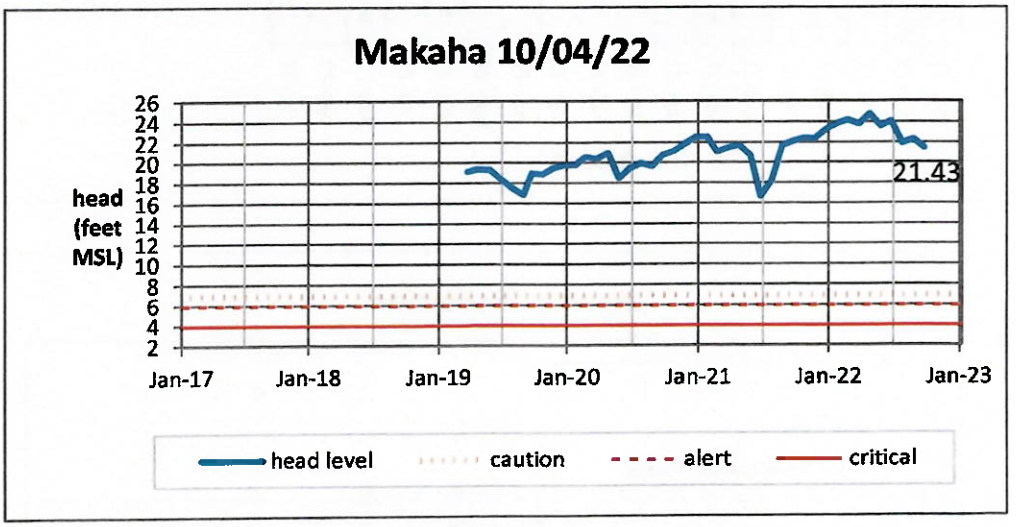

Punaluu 10/01/22
Benchmark decreased by 0.42' in January 2020
Head (feet MSL)
21
20
19
18
17
16
15
14
13
12
14.72
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
head level
caution
alert
critical

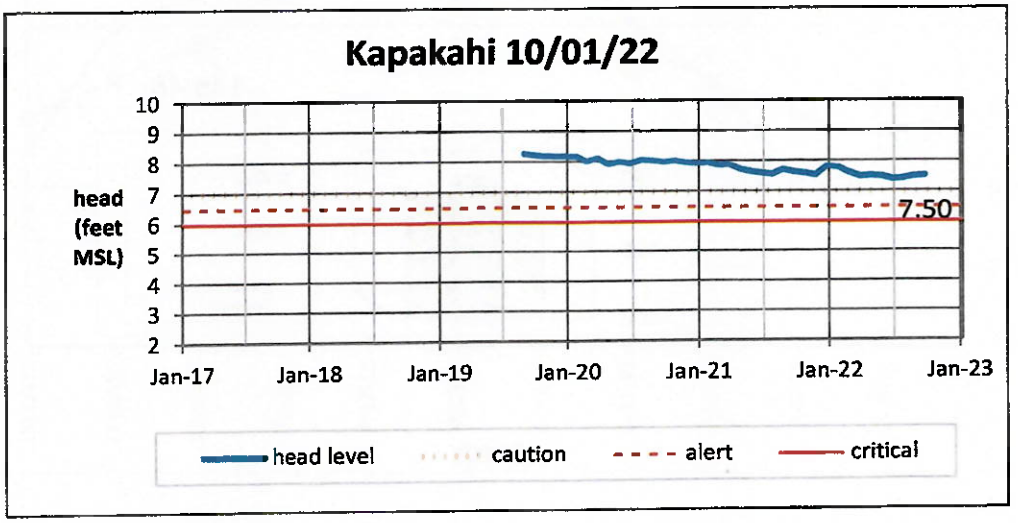

Kaluanui 10/01/22
Benchmark increased by 0.24' in January 2020
Head (feet MSL)
22
21
20
19
18
17
16
15
14
13
12
15.25
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
head level
caution
alert
critical

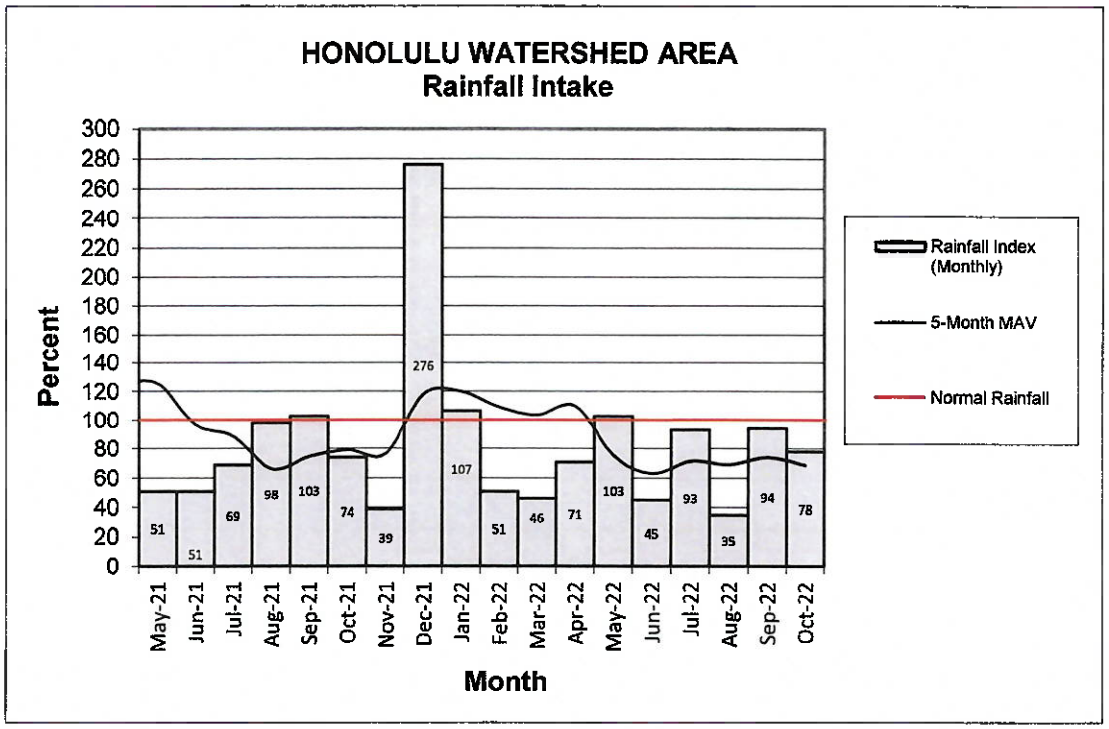

Waihee Tunnel 10/06/22
Bulkhead Pressure (psi)
50
45
40
35
30
25
20
15
10
5
0
28.80
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
head level
caution
alert
critical

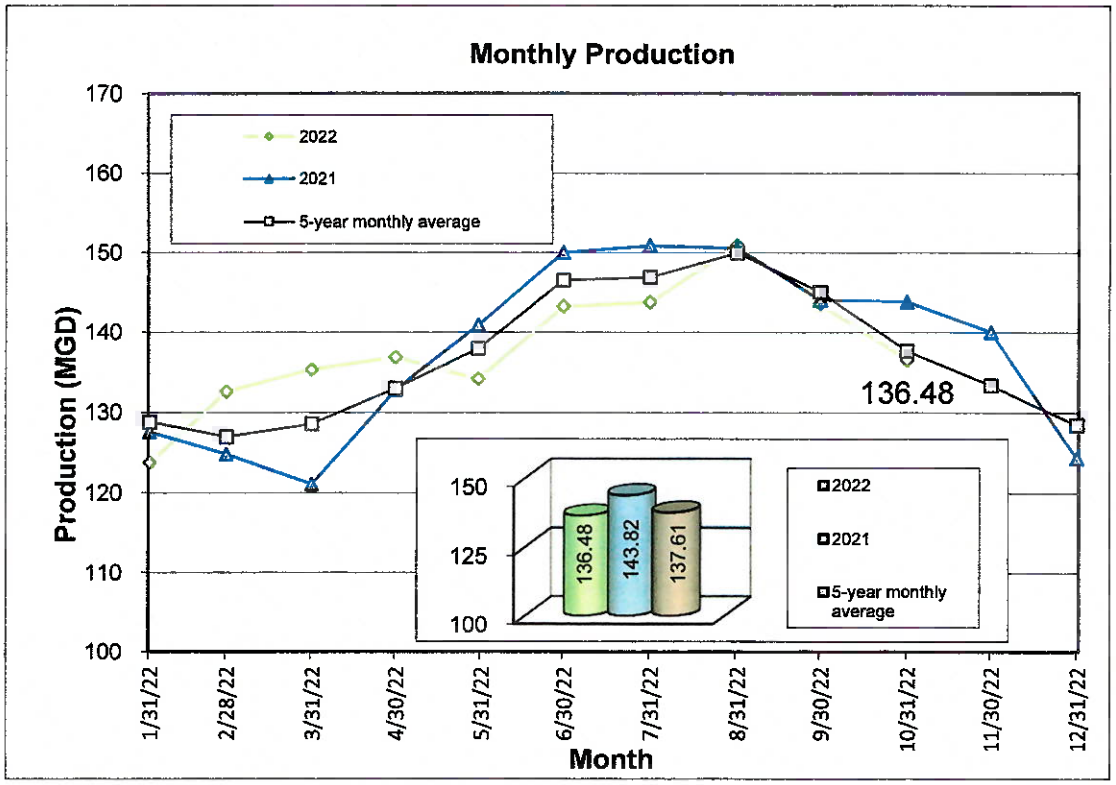
Head Report


Waialua 10/01/22
Benchmark decreased by 0.36' in January 2020
Head (feet MSL)
14
13
12
11
10
9
8
10.84
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
head level
caution
alert
critical


Makaha 10/04/22
head (feet MSL)
26
24
22
20
18
16
14
12
10
8
6
4
2
21.43
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
head level
caution
alert
critical


Kapakahi 10/01/22
head (feet MSL)
10
9
8
7
6
5
4
3
2
7.50
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
head level
caution
alert
critical


HONOLULU WATERSHED AREA
Rainfall Intake
Percent
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
51
51
69
98
103
74
39
276
107
51
46
71
103
45
93
35
94
78
May-21
Jun-21
Jul-21
Aug-21
Sep-21
Oct-21
Nov-21
Dec-21
Jan-22
Feb-22
Mar-22
Apr-22
May-22
Jun-22
Jul-22
Aug-22
Sep-22
Oct-22
Month
Rainfall Index (Monthly)
5-Month MAV
Normal Rainfall


Monthly Production
Production (MGD)
170
160
150
140
130
120
110
100
2022
2021
5-year monthly average
136.48
150
125
100
136.48
143.82
137.61
2022
2021
5-year monthly average
1/31/22
2/28/22
3/31/22
4/30/22
5/31/22
6/30/22
7/31/22
8/31/22
9/30/22
10/31/22
11/30/22
12/31/22
Month

ITEM FOR INFORMATION NO. 6

"November 28, 2022

WATER MAIN REPAIR REPORT FOR OCTOBER 2022

Chair and Members
Board of Water Supply
City and County of Honolulu
Honolulu, Hawaii 96843

Chair and Members:

Subject: Water Main Repair Report for October 2022

Jason Nikaido, Program Administrator, Field Operations Division, will report on water main repair work for the month of October 2022.

Respectfully submitted,

/s/ ERNEST Y. W. LAU, P.E
Manager and Chief Engineer

Attachment"

The foregoing was for information only.

DISCUSSION: Jason Nikaido, Program Administrator, Field Operations Division, gave the report.

There was a total of one testimony via in-person, Zoom, and written. The list below is the names of each person that shared their testimony with the Chair, Board members, and the BWS.

REMOTE TESTIMONY

Submitter's Name	POSITION
CHOON JAMES	She commended the BWS for its management and communication with the public. She commented that major developers should be an integral part of Oahu's infrastructure needs.

WRITTEN TESTIMONY

Submitter's Name	POSITION
CHOON JAMES	Provided a written copy of her remote testimony.

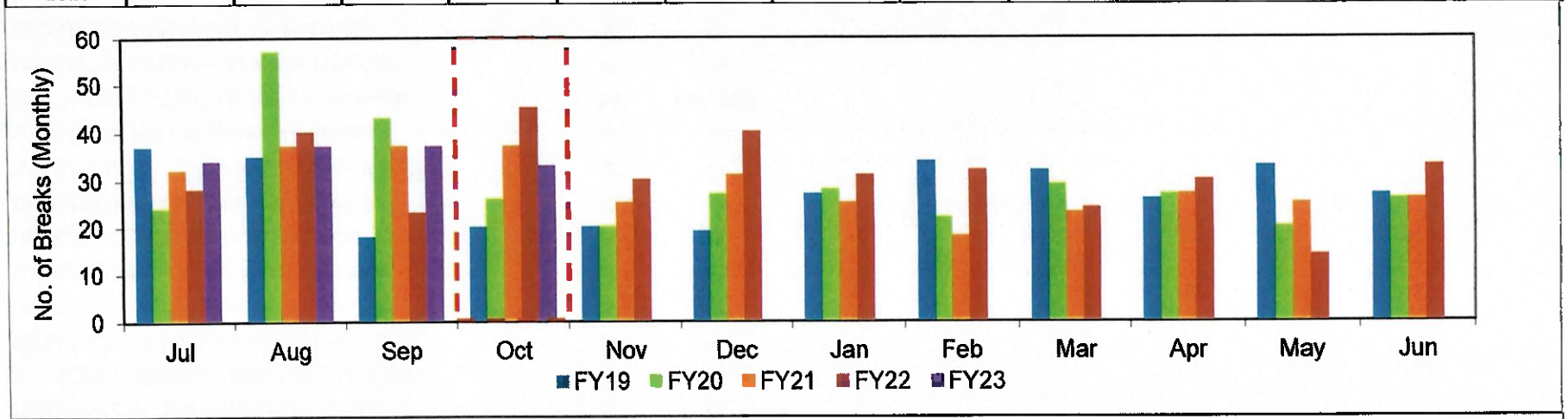
Manager Lau responded to Ms. James's testimony and shared that the BWS has a Water Master Plan (WMP). He explained that the WMP was

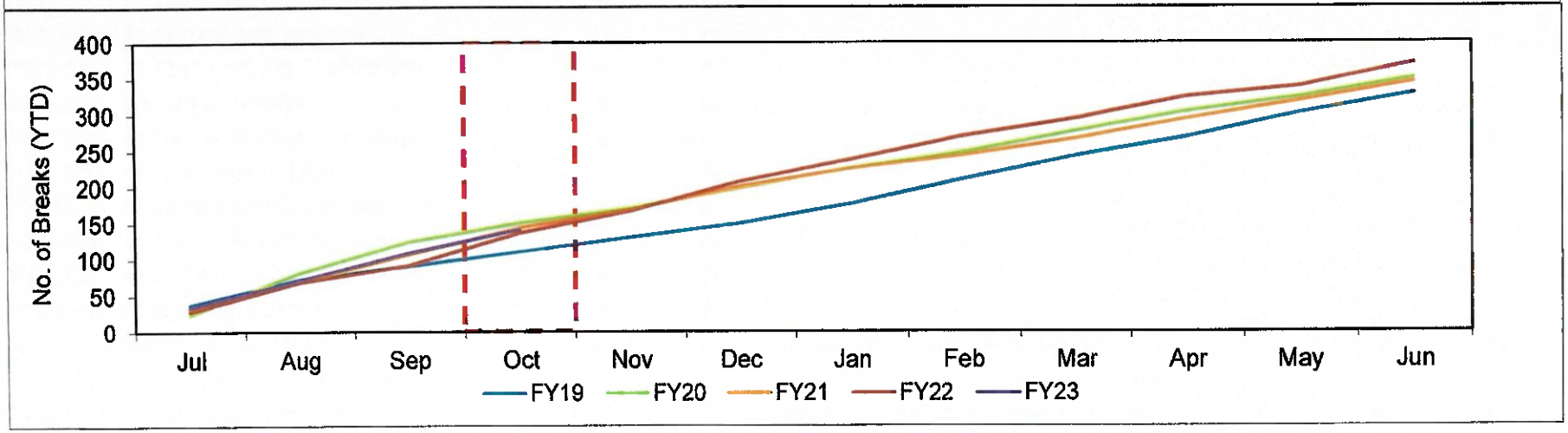
adopted in 2016 and plans 30 years into the future. The WMP considers the condition of the BWS infrastructure and identifies the necessary projects that must be invested in. The WMP also includes the need to work toward replacing 1% of the BWS's 2100 miles, or about 21 miles of pipeline every year. Unfortunately, pipeline replacement was halted due to the circumstances at Red Hill, which caused some of CIP to be redirected toward new source developments and the installation of new monitoring wells. Manager Lau is hopeful that the unforeseen costs relating to Red Hill will be recovered from the Navy and Federal government. He asked and encouraged developers to build the necessary infrastructures for their new developments.

WATER MAIN REPAIR REPORT
for October 2022

Monthly Main Breaks

FY	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
2023	34	37	37	**33**									**141**
2022	28	40	23	45	30	40	31	32	24	30	14	33	**370**
2021	32	37	37	37	25	31	25	18	23	27	25	26	**343**
2020	24	57	43	26	20	27	28	22	29	27	20	26	**349**
2019	37	35	18	20	20	19	27	34	32	26	33	27	**328**



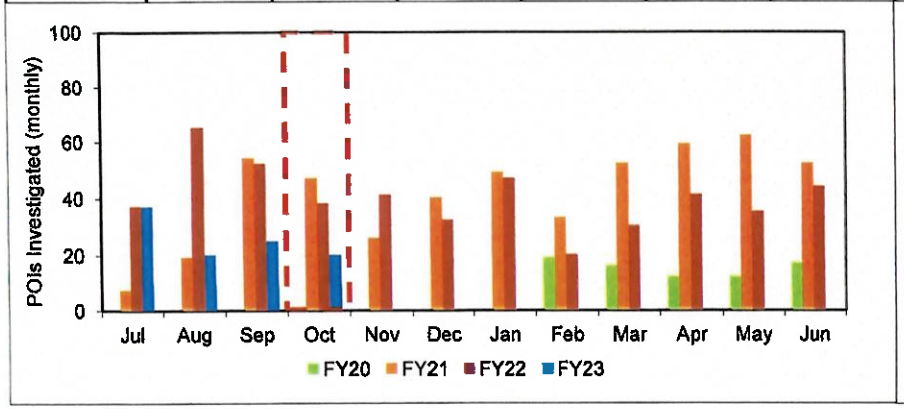


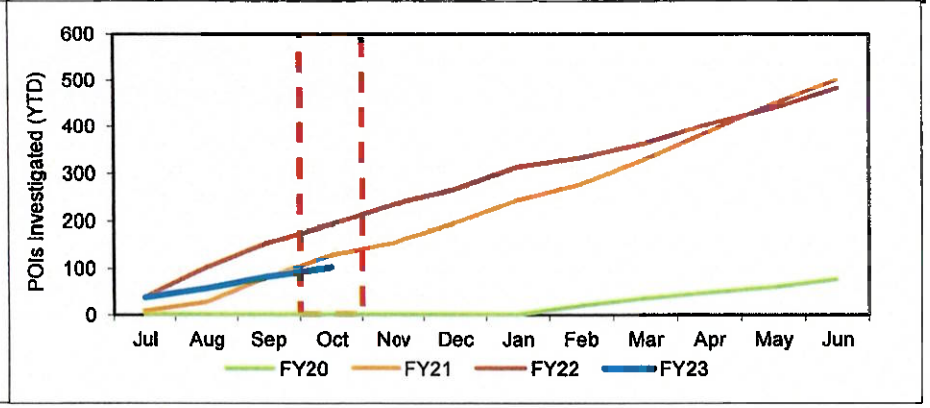
Date	Address	Size (In)	Pipe Type
10/1/2022	141 Meleana Pl, Honolulu	4	CI
10/1/2022	1502 Queen Emma St, Honolulu	6	CI
10/2/2022	1058 17th Ave, Honolulu	6	CI
10/3/2022	1134 Mowai St, Kailua	8	PVC
10/4/2022	44-256 Mikiola Dr, Kaneohe	6	CI
10/4/2022	44-256 Mikiola Dr, Kaneohe	6	CI
10/5/2022	61-156 Punalau Pl, Haleiwa	4	AC
10/7/2022	615 Hamakua Pl, Kailua	8	PVC
10/7/2022	46-402 Holoanai Way, Kaneohe	4	CI
10/7/2022	600 Pila Pl, Honolulu	4	DI
10/12/2022	94-1241 Waipahu St, Waipahu	6	CI
10/12/2022	27 Goodale Ave, Waialua,	8	CI
10/13/2022	45-164 Neepapa Pl, Kaneohe	4	CI
10/14/2022	2664 East Manoa Rd, Honolulu	8	CI
10/14/2022	94-1055 Awanani St, Waipahu	8	CI
10/17/2022	45-074 Malulani St, Kaneohe	4	CI
10/18/2022	67-319 Kupahu St, Waialua	6	CI
10/18/2022	1028 Auahi St, Honolulu	8	CI
10/18/2022	723 Kealahou St, Honolulu	12	CI
10/19/2022	67-339 Farrington Hwy, Waialua	8	CI
10/21/2022	231 Elelupe Rd, Honolulu	8	CI
10/21/2022	91-1601 Malio St, Ewa Beach	20	PVC (R1)
10/21/2022	1913 Lanakila Ave, Honolulu	6	CI
10/24/2022	1422 Miloiki St, Honolulu	8	DI
10/24/2022	720 Kuahao Pl, Pearl City	12	CI
10/25/2022	67-335 Kiapoko Pl, Waialua	12	CI
10/25/2022	2666 East Manoa Rd, Honolulu	8	CI
10/25/2022	3676 Waokanaka St, Honolulu	6	CI
10/26/2022	64-210 Kamehameha Hwy, Haleiwa	16	AC
10/27/2022	94-1223 Awalai St, Waipahu	8	CI
10/29/2022	67-224 Kahaone Loop, Waialua	8	CI
10/30/2022	86-36 Ala Poko St, Waianae	8	PVC
10/31/2022	720 Kunawai Ln, Honolulu	6	CI

LEAK DETECTION
for October 2022

POIs Investigated

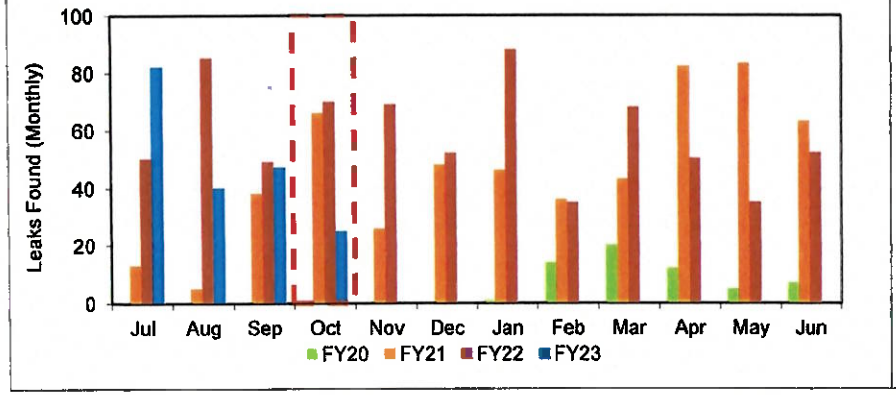
FY	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
2023	37	20	25	**20**									102
2022	37	65	52	38	41	32	47	20	30	41	35	44	482
2021	7	19	54	47	26	40	49	33	52	59	62	52	500
2020							0	19	16	12	12	17	76

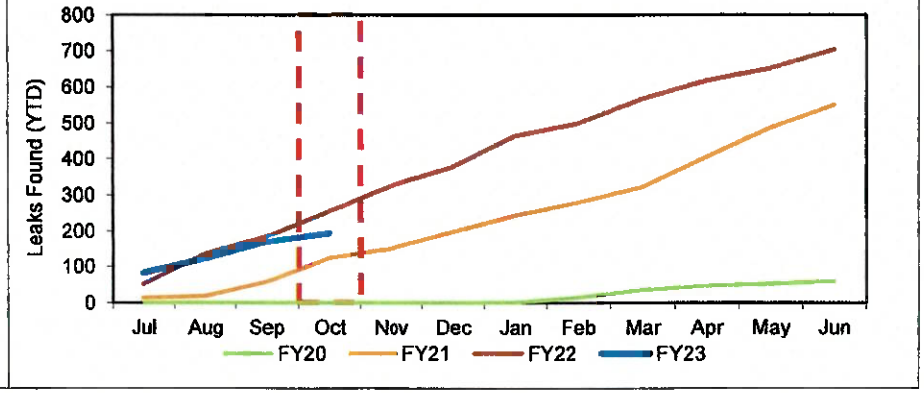




Leaks Found

FY	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
2023	82	40	47	**25**									**194**
2022	50	85	49	70	69	52	88	35	68	50	35	52	703
2021	13	5	38	66	26	48	46	36	43	82	83	63	549
2020							1	14	20	12	5	7	59





ITEM FOR INFORMATION NO. 7

"November 28, 2022

BRIEFING OF LANDFILL SITE AND WATER RESOURCES

Chair and Members
Board of Water Supply
City and County of Honolulu
Honolulu, Hawaii 96843

Chair and Members:

Subject: Briefing of Landfill Site and Water Resources

Barry Usagawa, Program Administrator, Water Resources Division, Ernest Lau, Manager & Chief Engineer, and Erwin Kawata, Deputy Manager, will give a Briefing of Landfill Site and Water Resources.

Respectfully Submitted,

/s/ ERNEST Y. W. LAU, P.E
Manager and Chief Engineer

Attachment"

The foregoing was for information only.

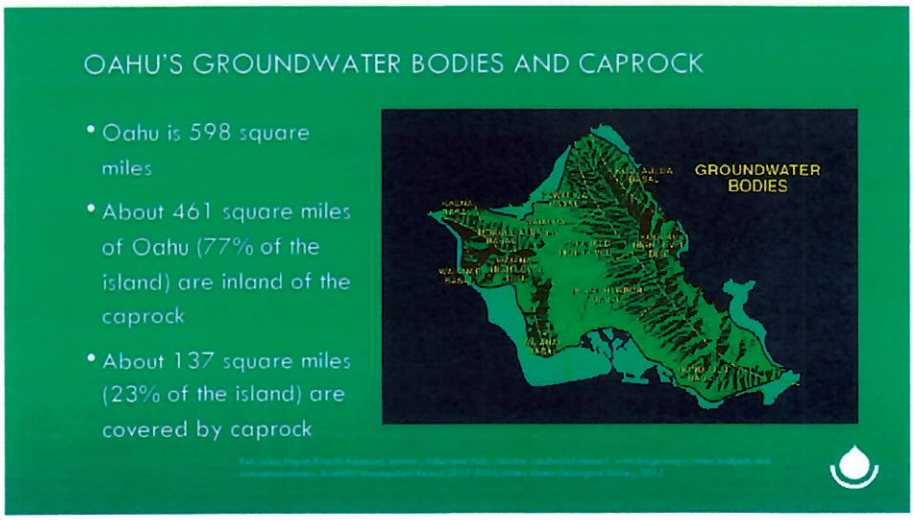
DISCUSSION:

Erwin Kawata, Deputy Manager, Barry Usagawa, Program Administrator, Water Resources Division, and Ernest Lau, Manager & Chief Engineer, gave the report.

Before any discussion or testimony took place Board Member Jonathan Kaneshiro recused himself from the Landfill Site and Water Resources matter to avoid any potential conflict of interest.

Board Member Na'alehu agreed that Manager Lau's reasoning for the decision to not approve any of the six sites that the Department of Environmental Services (ENV) indicated as potential new sites are sound. He asked if there is a compromise that the BWS and the ENV can agree upon to find a solution.

Manager Lau responded stating that the BWS sent a letter to the ENV. He asked for the map showing the caprock and square miles on Oahu to be displayed. He stated that there are 137 square miles on Oahu which are covered with caprock and might be a better option for a future landfill.



Chair Andaya shared with the Board Members that the BWS rules and regulations, the City and County of Honolulu (C&C), or the ENV can request for reconsideration after the Manager makes a decision and can then appeal to the BWS Board.

Chair Andaya and Manager Lau discussed the map for a better understanding of the "No Pass Zone". The light blue area around the shorelines are areas that do have caprock. The "No Pass Zone" are the areas in green. However, between the light blue and green areas lies the upper edge of the caprock, inland of the caprock are the Pearl Harbor, Honolulu, Waianae, Schofield High Water, Waialua/Mokoleia, Kawailoa, Koolauloa, and Kaena Basal which are all part of aquifer systems and are potential water supply. The compromise would be somewhere outside the green but in the light blue area and not too close to the shoreline.

Vice Chair Sproat applauded Mr. Kawata, Mr. Usagawa, and Manager Lau for their willingness to make a decision, as done with Red Hill, regardless of the backlash, the BWS continued to advocate for water resources. She stated the BWS has a constitutional public trust in Hawaii, a sacred trust to protect the freshwater resources for the present and future generations.

There was a total of two testimonies via in-person, Zoom, and written. The list below is the names of each person that shared their testimony with the Chair, Board members, and the BWS.

IN-PERSON TESTIMONY

Submitter's Name	POSITION
SUSAN PCOLA DAVIS	She stated that the no-pass zones need to be protected.

REMOTE TESTIMONY

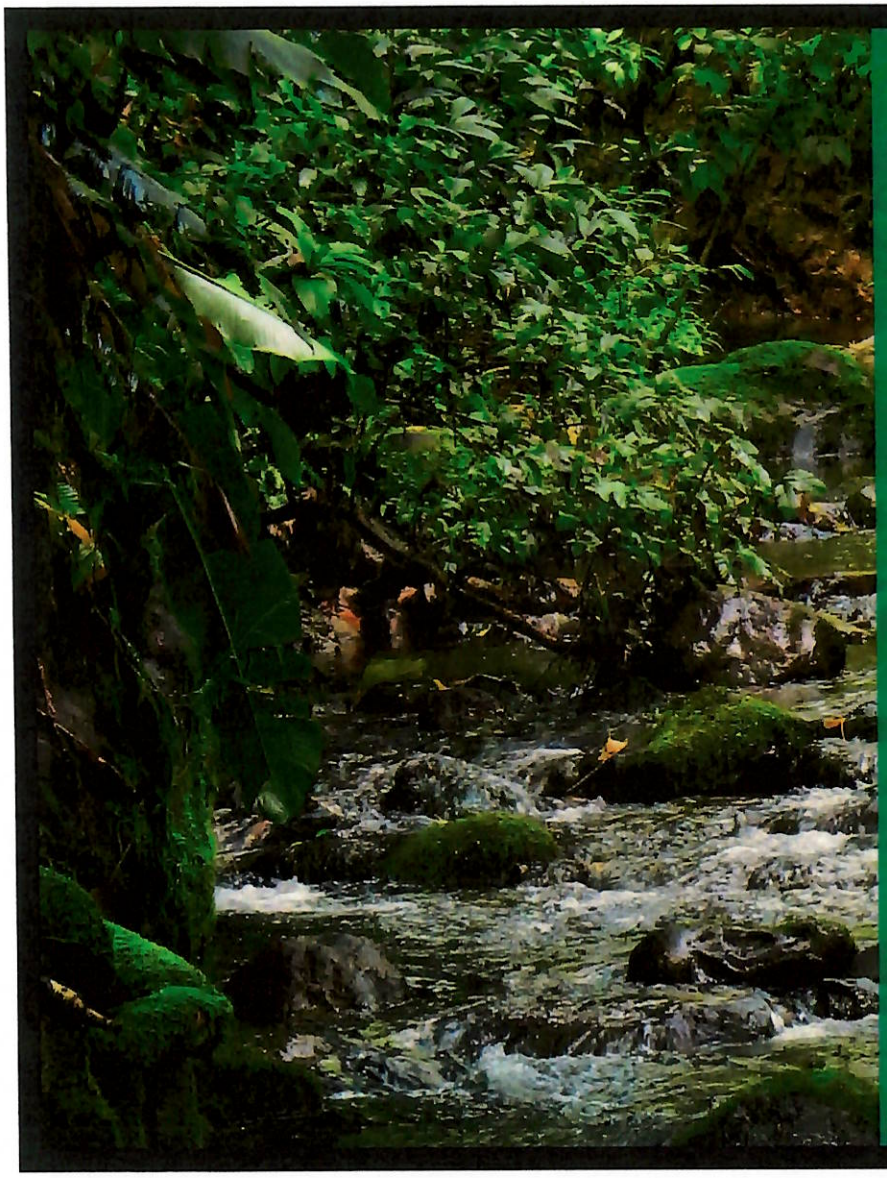
Submitter's Name	POSITION
CHOON JAMES	She commented that the welfare of Oahu residents should be the primary concern and all options must be explored. She stated we will always need clean water.

WRITTEN TESTIMONY

Submitter's Name	POSITION
SUSAN PCOLA DAVIS	Provided written testimony and additional information in PDF.
CHOON JAMES	Provided a written copy of her remote testimony.

Vice Chair Sproat expressed her appreciation for the testifiers and their support. She stated that all testimonies are taken to heart on this significant issue. Vice Chair Sproat stated that the C&C has other options, one option would be to file for a District Boundary Amendment, which would allow for temporary use of Waimanalo Gulch until a solution is found.

Board Member Jade commented that there is a fine line that can be crossed when protecting our drinking water aquifers.



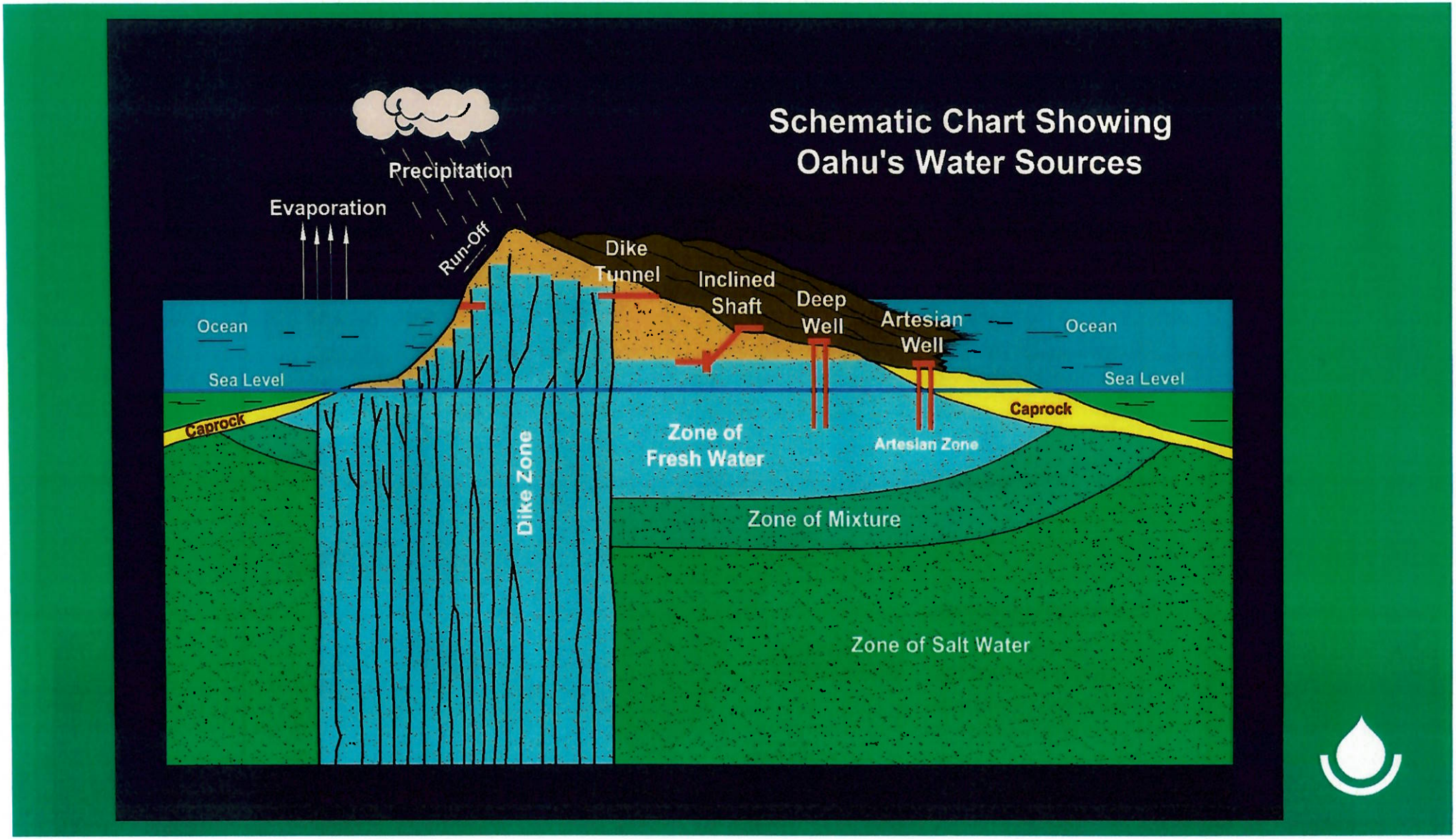
OAHU'S GROUNDWATER AQUIFER AND SITING NEW LANDFILL

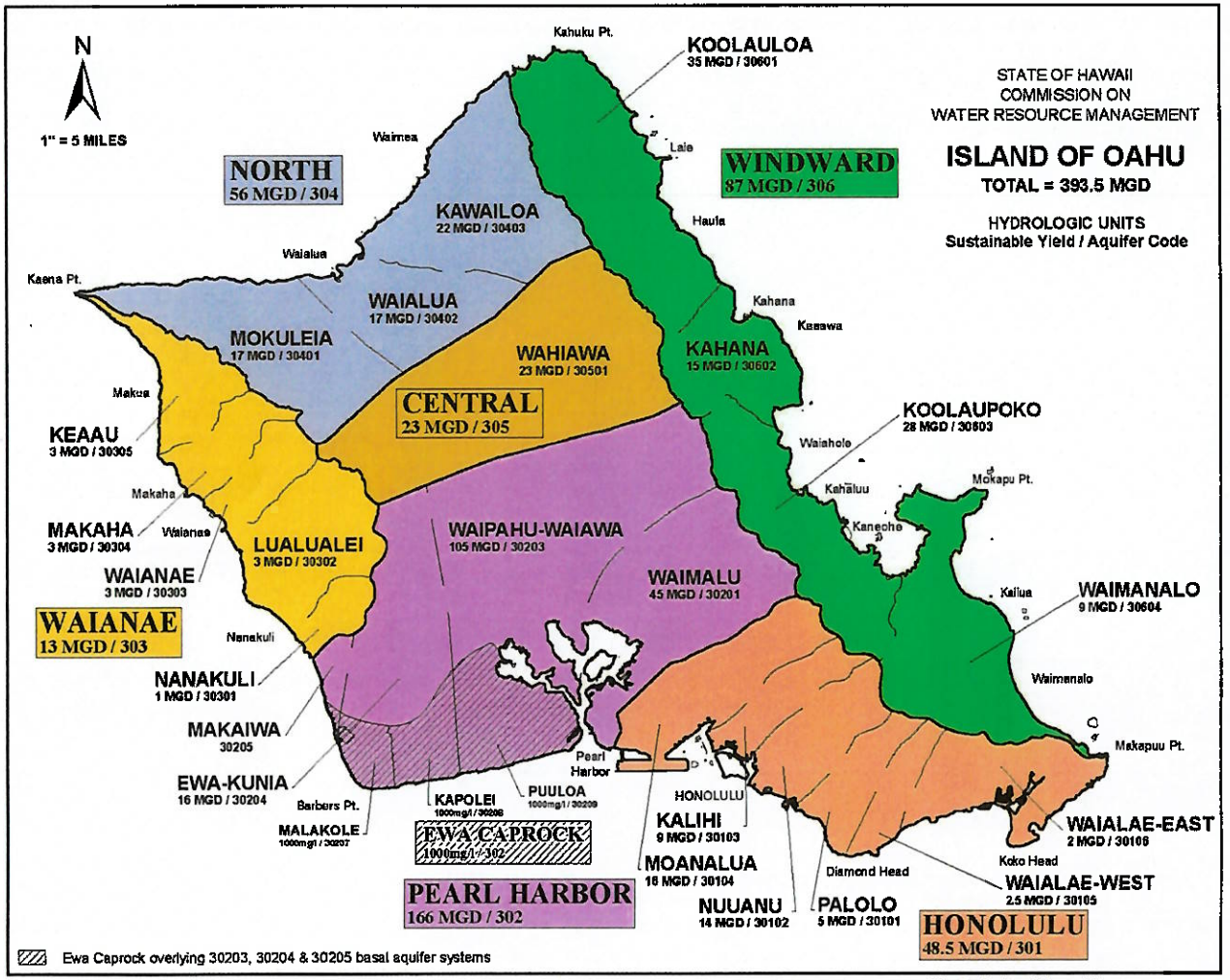
November 28, 2022

boardofwatersupply.com

TODAY'S DISCUSSION

- Oahu's groundwater resource basics
- Siting the new Oahu landfill
- Landfill leachates and constituents
- BWS No-Pass Zone
- City request for BWS position on landfill sites


Schematic Chart Showing
Oahu's Water Sources
Precipitation
Evaporation
Run-Off
Dike
Tunnel
Inclined
Shaft
Deep
Well
Artesian
Well
Ocean
Ocean
Sea Level
Sea Level
Caprock
Caprock
Dike Zone
Zone of
Fresh Water
Artesian Zone
Zone of Mixture
Zone of Salt Water


N
1" = 5 MILES
STATE OF HAWAII
COMMISSION ON
WATER RESOURCE MANAGEMENT
ISLAND OF OAHU
TOTAL = 393.5 MGD
HYDROLOGIC UNITS
Sustainable Yield / Aquifer Code
NORTH
56 MGD / 304
KAWAILOA
22 MGD / 30403
WAIALUA
17 MGD / 30402
MOKULEIA
17 MGD / 30401
KEAAU
3 MGD / 30305
MAKAHA
3 MGD / 30304
WAIANAE
3 MGD / 30303
WAIANAE
13 MGD / 303
NANAKULI
1 MGD / 30301
MAKAIWA
30205
EWA-KUNIA
16 MGD / 30204
MALAKOLE
1000mg/l / 30207
KAPOLEI
1000mg/l / 30208
PUULOA
1000mg/l / 30209
EWA CAPROCK
1000mg/l / 302
PEARL HARBOR
166 MGD / 302
CENTRAL
23 MGD / 305
WAHIAWA
23 MGD / 30501
LUALUALEI
3 MGD / 30302
WAIPAHU-WAIAWA
105 MGD / 30203
WAIMALU
45 MGD / 30201
WINDWARD
87 MGD / 306
KOOLAULOA
35 MGD / 30601
KAHANA
15 MGD / 30602
KOOLAUPOKO
28 MGD / 30603
WAIMANALO
9 MGD / 30604
WAIALAE-EAST
2 MGD / 30106
WAIALAE-WEST
2.5 MGD / 30105
HONOLULU
48.5 MGD / 301
KALIHI
9 MGD / 30103
MOANALUA
16 MGD / 30104
NUUANU
14 MGD / 30102
PALOLO
5 MGD / 30101
Kahuku Pt.
Waimea
Laie
Hauła
Waialua
Kaena Pt.
Kahana
Kaaawa
Makua
Waiahole
Kahaluu
Mokapu Pt.
Kaneohe
Makaha
Waianae
Kailua
Nanakuli
Waimanalo
Pearl Harbor
Makapuu Pt.
HONOLULU
Barbers Pt.
Koko Head
Diamond Head
Ewa Caprock overlying 30203, 30204 & 30205 basal aquifer systems
06/20/2018
Map Projection: Universal Transverse Mercator

OAHU'S GROUNDWATER BODIES AND CAPROCK

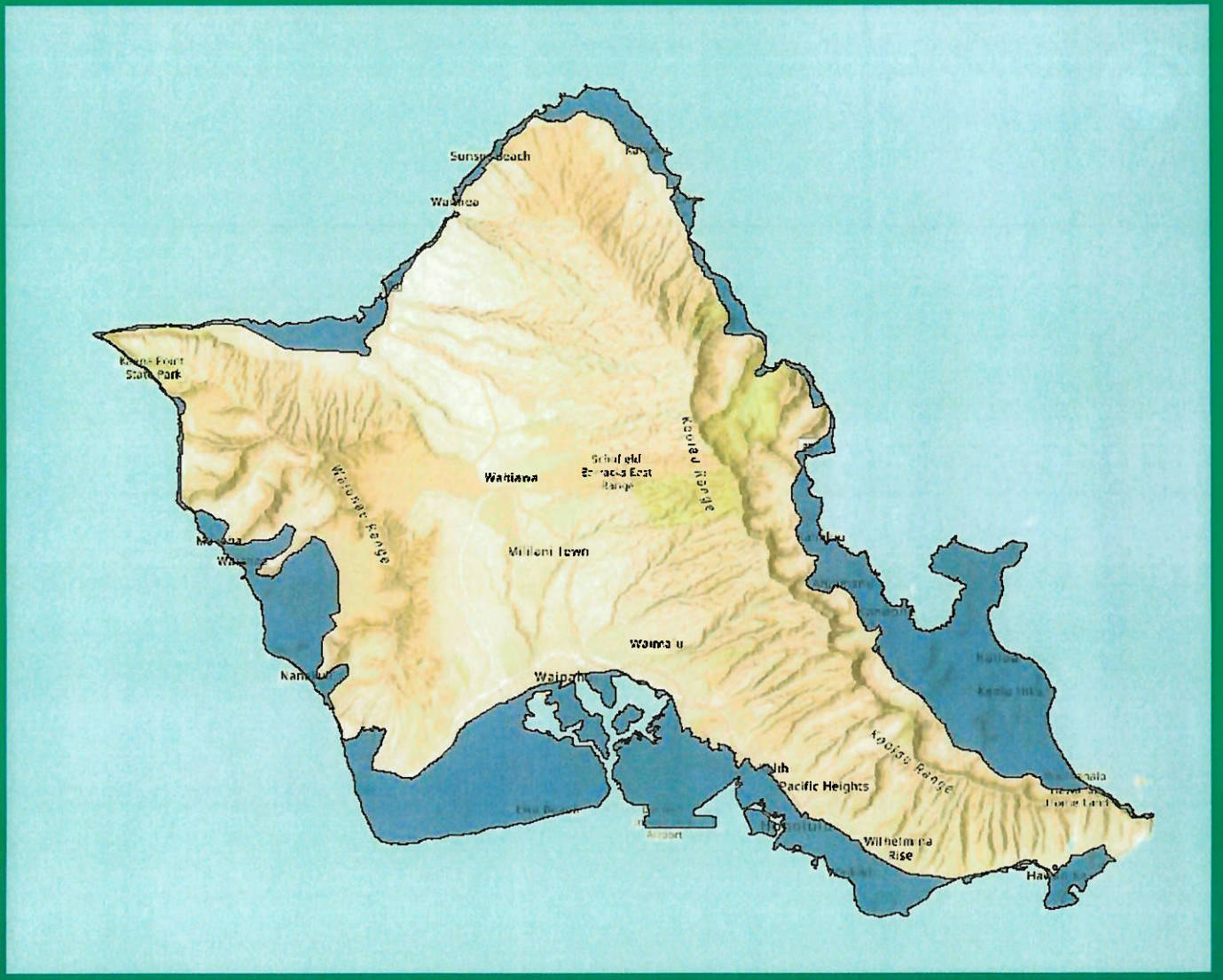
- Oahu is 598 square miles
- About 461 square miles of Oahu (77% of the island) are inland of the caprock
- About 137 square miles (23% of the island) are covered by caprock

Ref. Izuka, Engott, Rotzoll, Bassiouni, Johnson, Miller and Mair, Volcanic aquifers of Hawai'i—Hydrogeology, water budgets, and conceptual models, Scientific Investigations Report 2015-5164, United States Geological Survey, 2015

BWS "No Pass Zone"

Established December 9, 1982 (Resolution 502, 1982).

Amended BWS Rules and Regulations Section 3-301 to add definition and establishment of "No Pass Zone" and outlining an appeals procedure from decisions of the Manager relative to the "No Pass Zone"



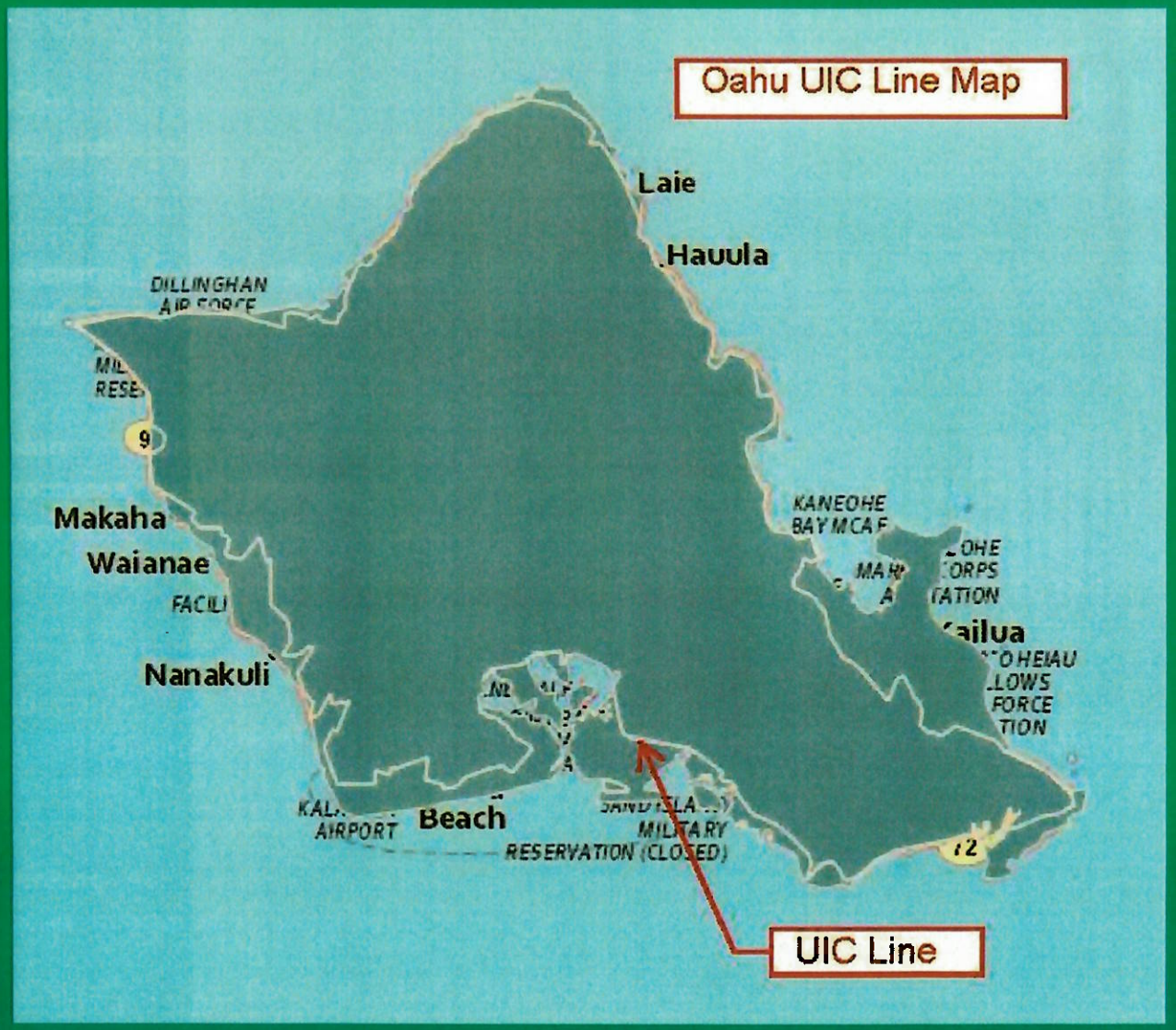
Hawaii Department of Health (DOH)
Underground Injection Control (UIC) line

Protect the quality of Hawaii's underground sources of drinking water from chemical, physical, radioactive, and biological contamination.

The boundary between non-drinking water aquifers and underground sources of drinking water is generally referred to as the "UIC Line".

Area BELOW (makai) UIC LINE - underlying aquifer not considered drinking water source

Area ABOVE (mauka) UIC LINE - underlying aquifer considered drinking water source

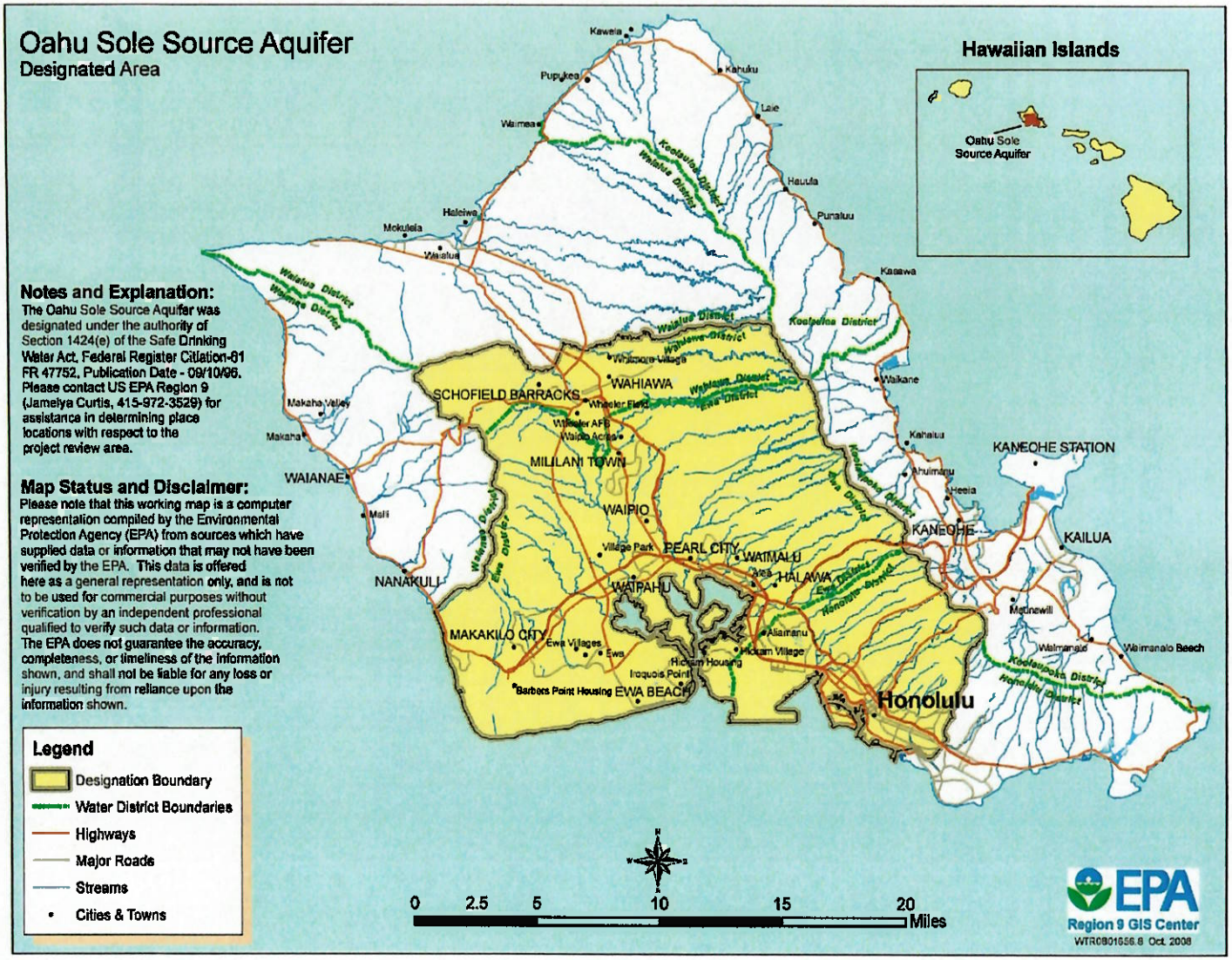


SOLE SOURCE AQUIFER DESIGNATION

- Section 1423(e) of the Safe Drinking Water Act states:
  - If the [EPA] Administrator determines that an area has an aquifer which is the sole or principal drinking water source for the area and which, if contaminated, would create a significant hazard to public health, he shall publish notice of that determination in the Federal Register.
- In 1987, EPA determined that the Southern Oahu Basal Aquifer in the Peart Harbor Area at Oahu is the "principal source of drinking water" for the island, and that "[i]f contaminated, would create a significant hazard to public health." 52 Fed. Reg. 45496, at 45497 (Nov. 30, 1987).

Oahu Sole Source Aquifer

Designated Area



Notes and Explanation:

The Oahu Sole Source Aquifer was designated under the authority of Section 1424(e) of the Safe Drinking Water Act. Federal Register Citation-61 FR 47752, Publication Date - 09/10/96. Please contact US EPA Region 9 (Jamelya Curtis, 415-972-3529) for assistance in determining place locations with respect to the project review area.

Map Status and Disclaimer:

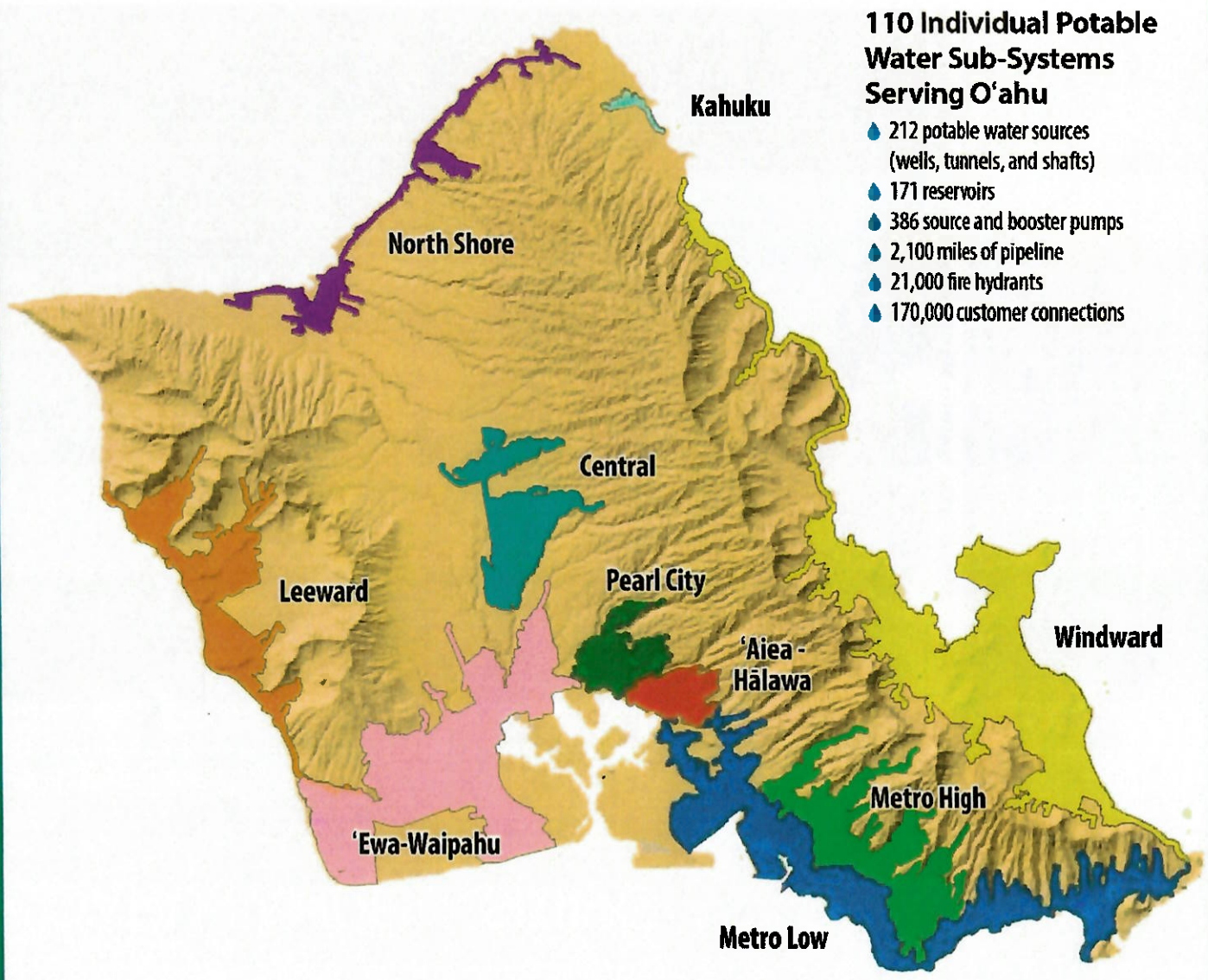
Please note that this working map is a computer representation compiled by the Environmental Protection Agency (EPA) from sources which have supplied data or information that may not have been verified by the EPA. This data is offered here as a general representation only, and is not to be used for commercial purposes without verification by an independent professional qualified to verify such data or information. The EPA does not guarantee the accuracy, completeness, or timeliness of the information shown, and shall not be liable for any loss or injury resulting from reliance upon the information shown.

Legend

- Designation Boundary
- Water District Boundaries
- Highways
- Major Roads
- Streams
- Cities & Towns

SOLE SOURCE AQUIFER DESIGNATION – CONT.

- The Southern Oahu Basal Aquifer currently serves as the "principal source" of drinking water for approximately 763,000 permanent residents within the Pearl Harbor area.
- There is no existing alternative drinking water source, or combination of sources, which provides fifty percent or more of the drinking water to the designated area, nor is there any demonstrated available alternative future source capable of supplying the area's drinking water needs.
- Although the water quality over most of the study area is satisfactory for domestic use, widespread potential exists for degradation. The main threats to the quality of the basal aquifer include salt water intrusion; recharge from excess irrigation; industrial, military and urban sources; landfills; chemical spills; poorly situated injection wells; and cesspools.

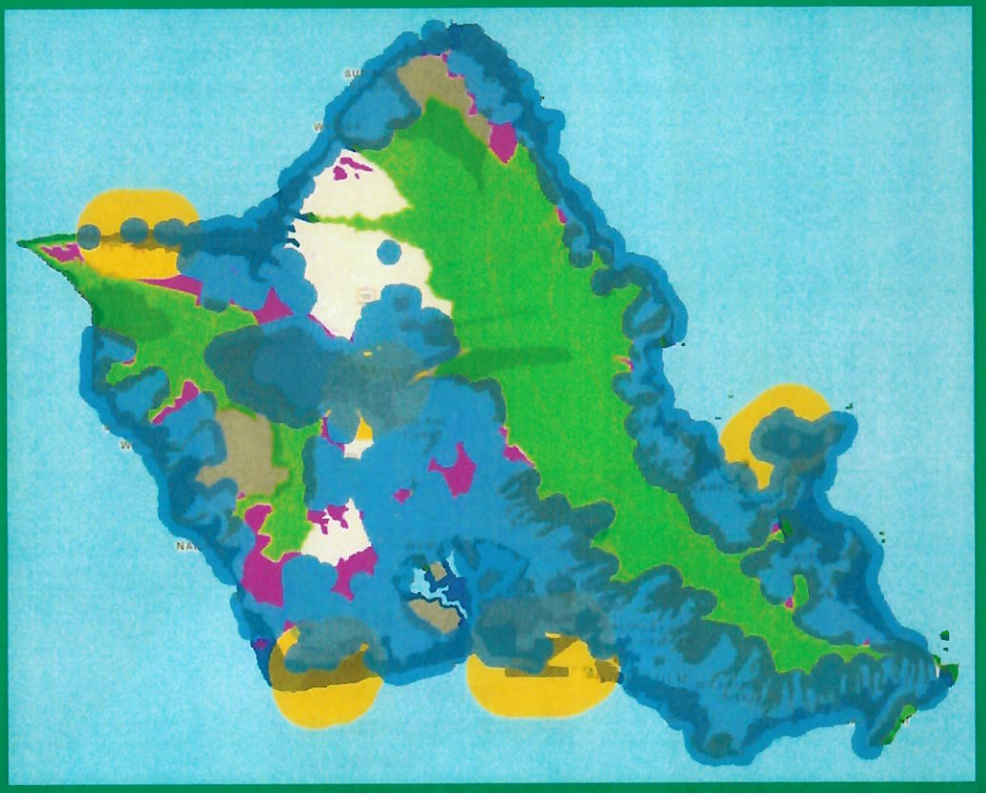


110 Individual Potable Water Sub-Systems Serving O'ahu

- 212 potable water sources (wells, tunnels, and shafts)
- 171 reservoirs
- 386 source and booster pumps
- 2,100 miles of pipeline
- 21,000 fire hydrants
- 170,000 customer connections

NEW OAHU LANDFILL SITING

- State Land Use Commission (LUC) requires the City to identify a new landfill site no later than December 31, 2022 and close Waimanalo Gulch landfill no later than March 2, 2028
- The uncolored regions show all areas within which the next landfill could be sited



BWS wells within the area the next landfill could be sited

LANDFILLS

- EPA has concluded that all landfills eventually leak into the environment (Fed. Reg. v. 53, no. 168, August 30, 1988)
- Christenson and Cozzarelli, US Geological Survey, August 2003
  - Although liners and leachate collection systems minimize leakage, liners can fail and leachate collections systems may not collect all the leachate that escapes from a landfill.
  - The fate and transport of leachate in the environment, from both old and new landfills, is a potentially serious environmental problem.
- Waimanalo Gulch Landfill generates about 3.6 MG leachate annually (9,800 GPD) * Landfills in higher rainfall areas can yield higher leachate volumes.

LANDFILL LEACHATE AND GROUNDWATER ANALYSIS

Analyte	Waimanalo Gulch Leachate Ash SMP*	Waimanalo Gulch GW MW-14*	BWS Honouliuli Wells I	BWS Beretania Low Service
pH	6.52	6.64	7.12	8.20
Aluminum	9,600 ppb	No data	ND	ND
Arsenic	9.0 ppb	No data	ND	ND
Barium	710 ppb	No data	ND	2 ppb
Calcium	3,000 ppm	87 ppm	28 ppm	12 ppm
Cadmium	1,300 ppb	No data	ND	ND
Chromium	320 ppb	No data	1.3 ppb	1.7 ppb
Chloride	22,000 ppm	920 ppm	156 ppm	73 ppm

*Ref. Waimanalo Gulch Sanitary Landfill First Semi-Annual 2021 Groundwater and Leachate Monitoring Report, August 23, 2021

No data = no test results; ND = tested and not detected

LANDFILL LEACHATE AND GROUNDWATER ANALYSIS – CONT.

Analyte	Waimanalo Gulch Leachate Ash SMP*	Waimanalo Gulch GW MW-14*	BWS Honouliuli Wells I	BWS Beretania Low Service
Copper	880 ppb	No data	13 ppb	2.8 ppb
Iron	180,000 ppb	No data	2 ppb	2 ppb
Lead	14 ppb	No data	ND	ND
Mercury	2 ppb	No data	ND	ND
Nickel	4,400 ppb	No data	ND	ND
Potassium	2,000 ppm	17 ppm	4.6 ppm	3.6 ppm
Sodium	8,400 ppm	380 ppm	63 ppm	35 ppm
Total dissolved solids	45,000 ppm	1,900 ppm	573 ppm	267 ppm

*Ref. Waimanalo Gulch Sanitary Landfill First Semi-Annual 2021 Groundwater and Leachate Monitoring Report, August 23, 2021

No data = no test results; ND = tested and not detected

LANDFILL LEACHATE AND GROUNDWATER ANALYSIS – CONT.

Analyte	Waimanalo Gulch Leachate Ash SMP*	Waimanalo Gulch GW MW-14*	BWS Honouliuli Wells I	BWS Beretania Low Service
Vanadium	160 ppb	No data	26 ppb	21 ppb
Zinc	1,900 ppb	No data	ND	ND
2-butanone (MEK)	120 ppb	No data	ND	ND
Dinoseb	2.0 ppb	No data	ND	ND
Toluene	No data	0.19 ppb	ND	ND
3-methyl phenol	770 ppb	No data	No data	No data
4-methyl phenol	770 ppb	No data	No data	No data
N-nitroso-di-n-propylamine	12 ppb	No data	No data	No data

*Ref. Waimanalo Gulch Sanitary Landfill First Semi-Annual 2021 Groundwater and Leachate Monitoring Report, August 23, 2021

No data = no test results; ND = tested and not detected

LANDFILL LEACHATE AND GROUNDWATER ANALYSIS – CONT.

Analyte	Waimanalo Gulch Leachate Ash SMP*	Waimanalo Gulch GW MW-14*	BWS Honouliuli Wells I	BWS Beretania Low Service
N-Nitrosomethylethylamine	68 ppb	No data	No data	No data
Phenol	290 ppb	No data	No data	No data

*Ref. Waimanalo Gulch Sanitary Landfill First Semi-Annual 2021 Groundwater and Leachate Monitoring Report, August 23, 2021

No data = no test results; ND = tested and not detected

Average PFAS Concentrations in Different Types of Landfill Leachate Reported in Published Studies

Landfill type	Country	Mean PFAS Range (ng/L)	References
MSW landfill	USA	BDL* – 17,710	Solo-Gabriele et al., 2020; Lang et al., 2017; Huset et al., 2011
MSW landfill	Germany	BDL* – 2,968	Busch et al., 2010
MSW landfill	Spain	BDL* – 840.5	Fuertes et al., 2017
MSW landfill	Canada	BDL* – 8,700	Benskin et al., 2012
MSW landfill	Australia	BDL* – 1,700	Gallen et al., 2017
MSW landfill	China	BDL* – 41,600	Yan et al., 2015

Landfill type	Country	Mean PFAS Range (ng/L)	References
Ash monofill	USA	BDL* – 742	Solo-Gabriele et al., 2020
C&D debris landfill	USA	BDL*– 4,630	Solo-Gabriele et al., 2020

*BDL = below detection limit; ng/L = nanograms per liter

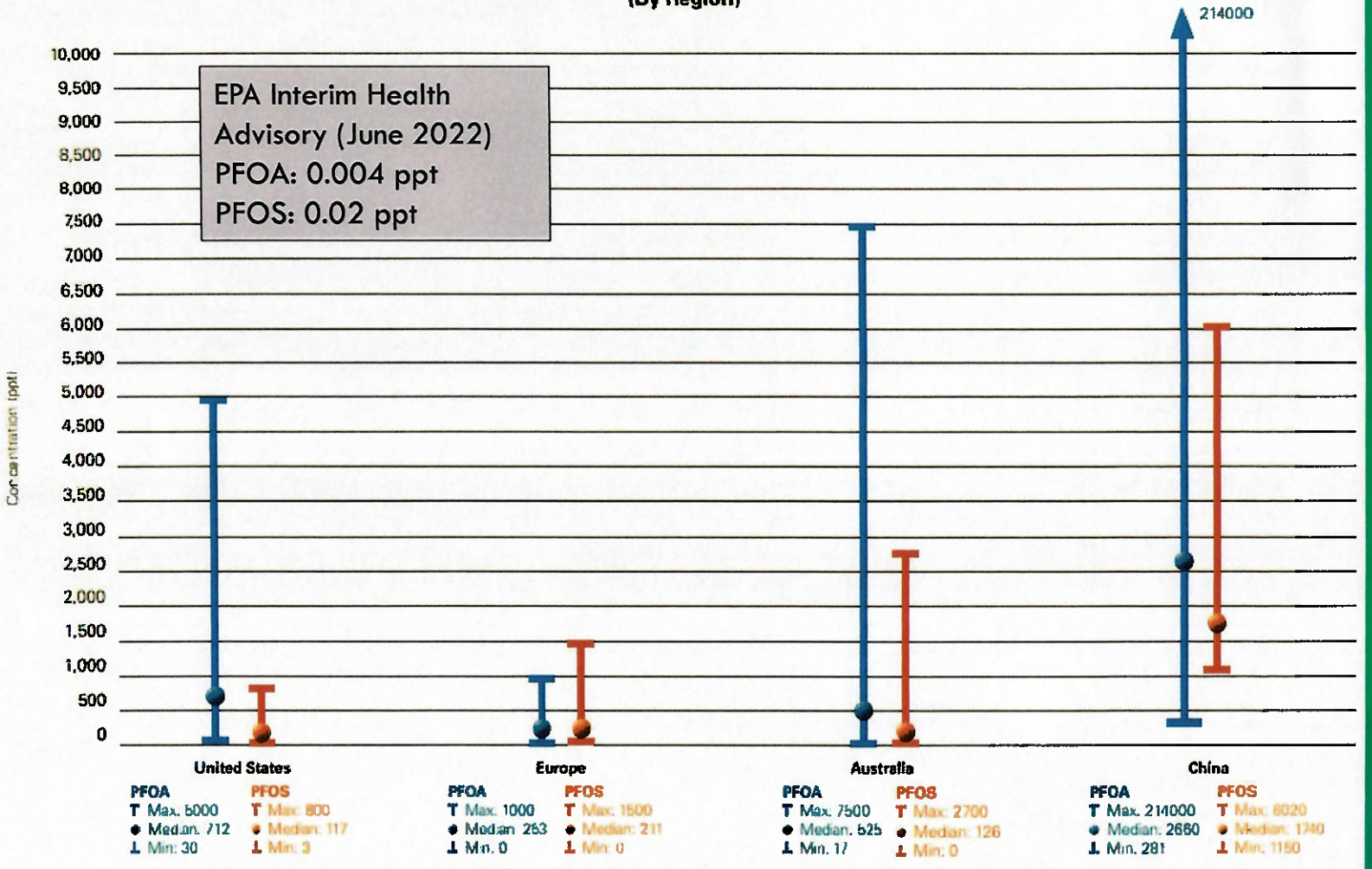
Source: EPA's 2020 Interim Guidance on the Destruction and Disposal of Perfluoroalkyl and Polyfluoroalkyl Substances and Materials Containing Perfluoroalkyl and Polyfluoroalkyl Substances (Interim Guidance for Public Comment December 18, 2020)

Table 2.2: Summary of Literature Study - PFOA & PFOS Concentrations in Landfill Leachate

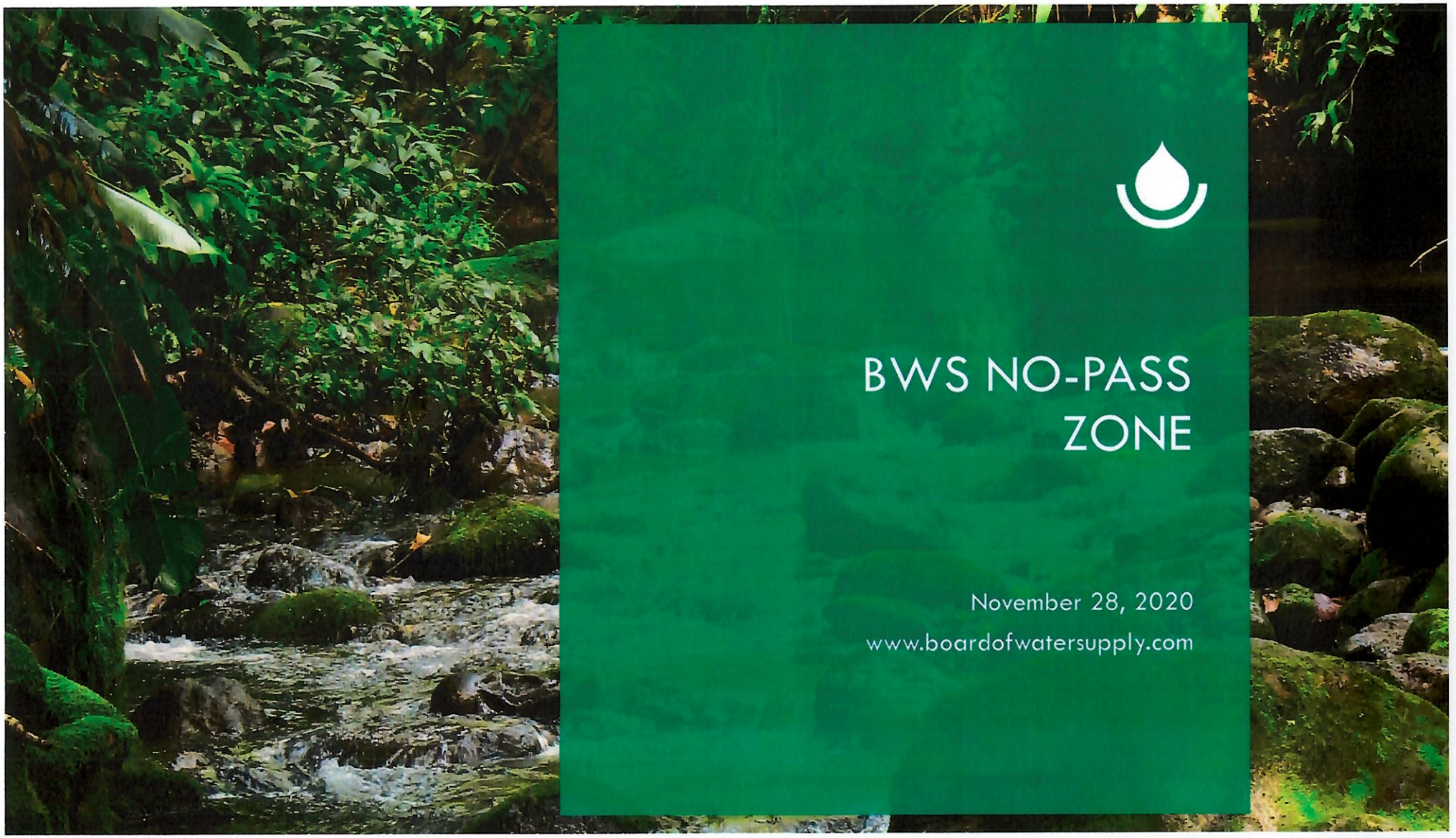
Source Cited	Location/ Region	Sample Size	PFOA EPA Interim HA (June 2022) = 0.004 ng/L			PFOS EPA Interim HA (June 2022) = 0.02 ng/L		
			Detection Frequency %	Concentration Range (ng/l)	Median (ng/l)	Detection Frequency %	Concentration Range (ng/l)	Median (ng/l)
1. Huset, et al (2011)	USA	5	100	380 - 1,000	490	100	56 -160	97
2. Allred, et al (2015)	USA	6	100	150 - 5,000	1,055	100	25 - 590	155
3. Lang, et al (2017)	USA	87	100	30 - 5,000	590	96	3-800	99
4. Benskin, et al (2012)	Canada	5	100	210 - 1,500	520	100	80 - 4,400	390
5. Kallenborn, et al (2004)	Nordic Countries	NA	NA	90-501	230	NA	30 - 190	80
6. Bossi, et al (2008)	Denmark	NA	NA	0 - 6	3	NA	0 - 4	NA
7. Woldegiorgis, et al (2008)	Sweden	NA	NA	40 - 1,000	540	NA	30 - 1,500	550
8. Busch, et al (2010)	Germany	20	95	0 - 926	57	100	0 - 235	3
9. Fuertes, et al (2017)	Spain	6	100	200 - 585	437	17	0 - 44	NA
10. Gullen, et al (2016)	Australia	17	100	19 - 2,100	450	89	0 - 100	31
11. Gullen, et al (2017)	Australia	97	64	17 - 7,500	600	65	13 - 2,700	220
12. Yan, et al (2015)	China	6	100	281 - 214,000	2,260	100	1,150 - 6,020	1,740

Source: Michigan Waste & Recycling Association Statewide Study on Landfill Leachate PFOA and PFOS Impact on Water Resource Recovery Facility Influent, Technical Report Completed in Collaboration with Michigan Department of Environmental Quality, March 1, 2019 (Second Revision March 6, 2019)

Figure 2-2
PFOA & PFOS Concentrations in Landfill Leachate (By Region)



Source: Michigan Waste & Recycling Association Statewide Study on Landfill Leachate PFOA and PFOS Impact on Water Resource Recovery Facility Influent, Technical Report Completed in Collaboration with Michigan Department of Environmental Quality, March 1, 2019 (Second Revision March 6, 2019)



BWS NO-PASS ZONE

November 28, 2020

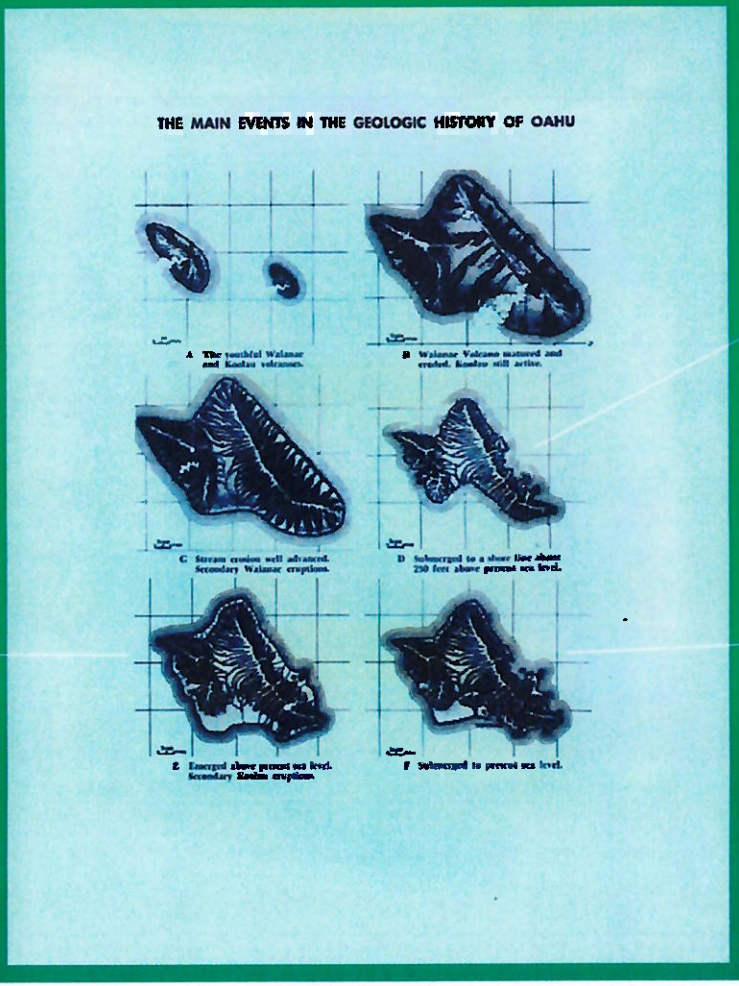
www.boardofwatersupply.com

OAHU'S GROUNDWATER BODIES AND CAPROCK

- Oahu is 598 square miles
- About 461 square miles of Oahu (77% of the island) are inland of the caprock
- About 137 square miles (23% of the island) are covered by caprock

Ref. Izuka, Engott, Rotzoll, Bassiouni, Johnson, Miller and Mair, Volcanic aquifers of Hawai'i—Hydrogeology, water budgets, and conceptual models, Scientific Investigations Report 2015-5164, United States Geological Survey, 2015

CAPROCK MARINE AND TERRESTRIAL SEDIMENTS DEPOSITED BY SEA LEVEL RISE AND FALL



Submerged to a shoreline about 250' above present sea level

Emerged above present sea level.

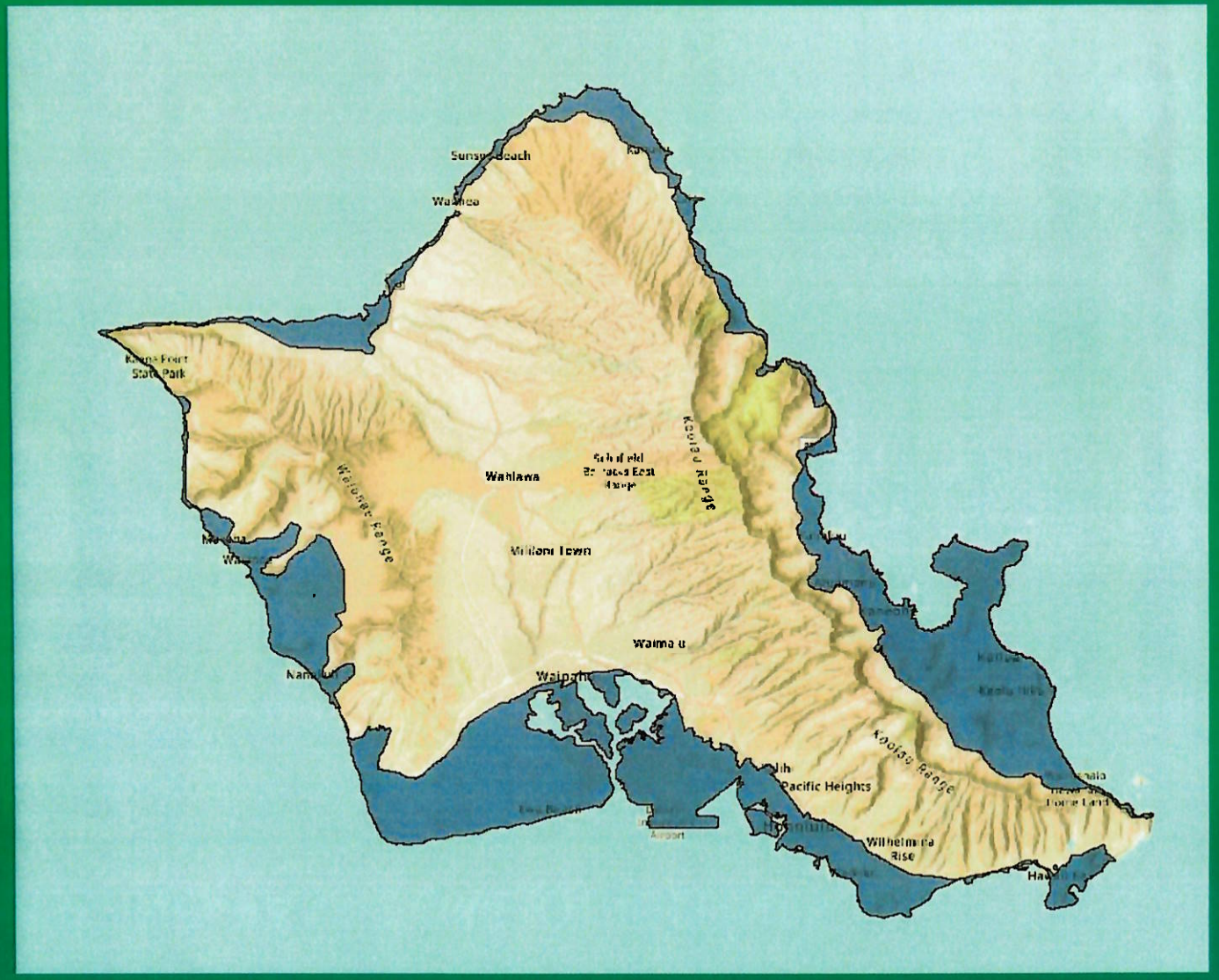
Submerged to present sea level

EL6

BWS "No Pass Zone"

Established December 9, 1982 (Resolution 502, 1982).

Amended BWS Rules and Regulations Section 3-301 to add definition and establishment of "No Pass Zone" and outlining an appeals procedure from decisions of the Manager relative to the "No Pass Zone"



BWS PASS, NO-PASS ZONE GUIDELINES

- The Pass/No-Pass Zone delineation maps are used as guidelines for Groundwater Protection in implementing Section 3-301 Waste Disposal Facilities, BWS Rules and Regulations.
- The Pass zone represents areas overlain by thick "caprock" (unconsolidated and consolidated sediments, corals and weathered volcanic rock) above the permeable volcanic rock aquifers.
- The No Pass zone represents areas over the freshwater aquifer with a smaller or nonexistent caprock.
- The Pass/No-Pass zone delineation is based upon hydrogeologic literature research and data analysis by the BWS Hydrology-Geology Branch. Requests for reconsideration of No-Pass line locations should be based on technical data including boring logs which indicate that the proposed waste disposal facility in the "No Pass Zone" would not contaminate groundwater resources used or expected to be used for domestic water supplies.

CHAPTER III: PROTECTION, DEVELOPMENT AND CONSERVATION OF WATER RESOURCES
SEC. 3-301: WASTE DISPOSAL FACILITIES

1. All plans proposing the following waste disposal facilities must have the written approval of the Manager:[1]
    1. Sewage disposal systems.
        1. (1) Cesspools.
        2. (2) Septic tank systems.
        3. (3) Individual household aerobic treatment units.
    2. Disposal wells.
    3. Sanitary landfills.
    4. Refuse disposal dumps.
    5. Sewage treatment plants.
    6. Stabilization ponds.
    7. Any other wastewater disposal facilities.

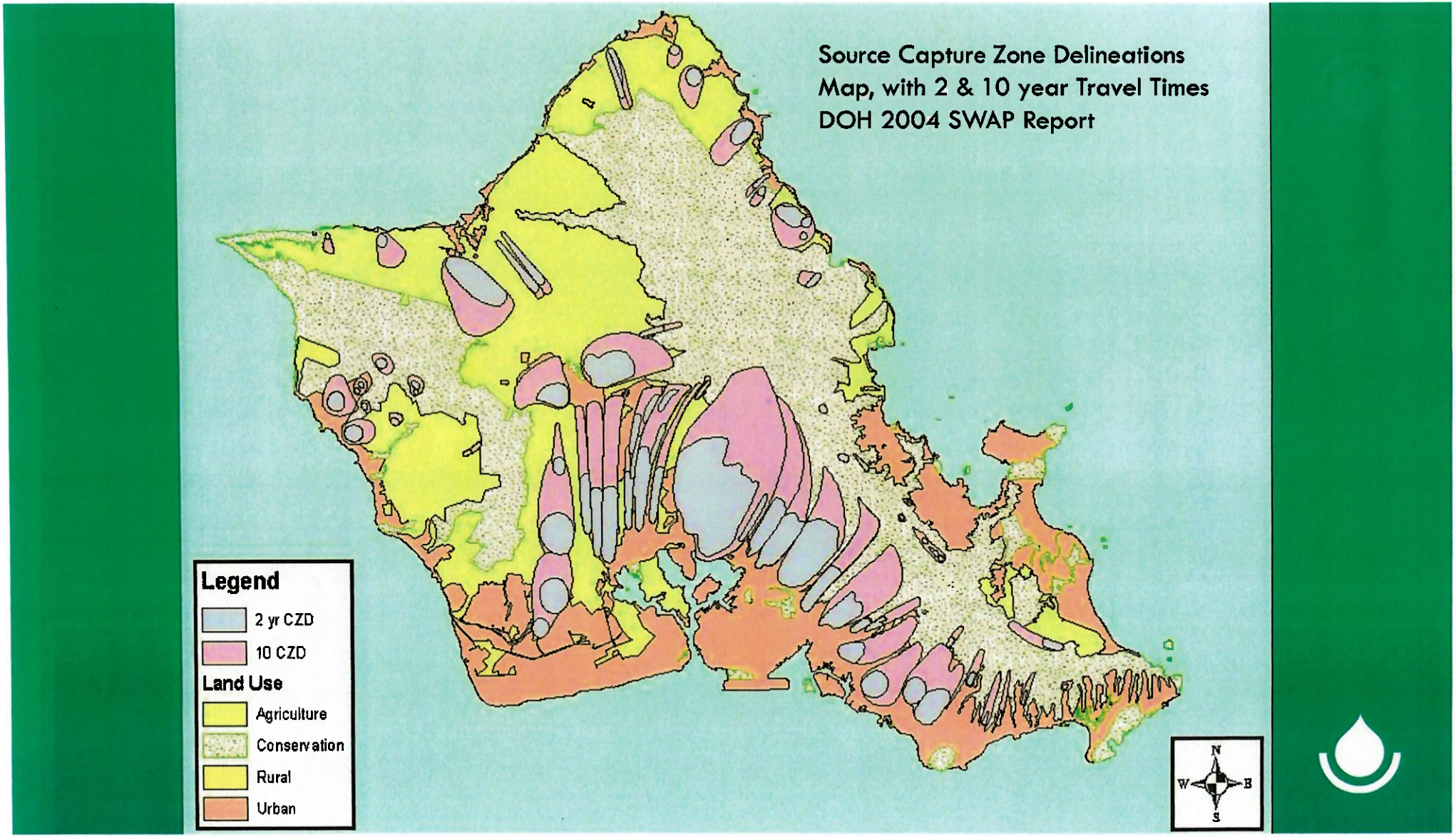
2. The Department may establish "No Pass Zones" which shall be delineated on "No Pass Zone" maps. These maps shall be used as guidelines in implementing this Section.

Footnote: [1] Per March 6, 1989 BWS-DOH Agreement to Regulate the Ground Disposal of Wastes on Oahu. DOH will APPROVE/DISAPPROVE waste disposal facilities with consideration of BWS's advice. The Agreement was in response to the DOH adoption of Ch. 11-62, and Ch. 11-23, HAR.

3. The Manager may at his discretion, withhold his approval, if there is any basis to expect that the operation of the proposed waste disposal facility and any wastewater therefrom may to any degree affect the quality and/or quantity of water resources used or expected to be used for domestic water.

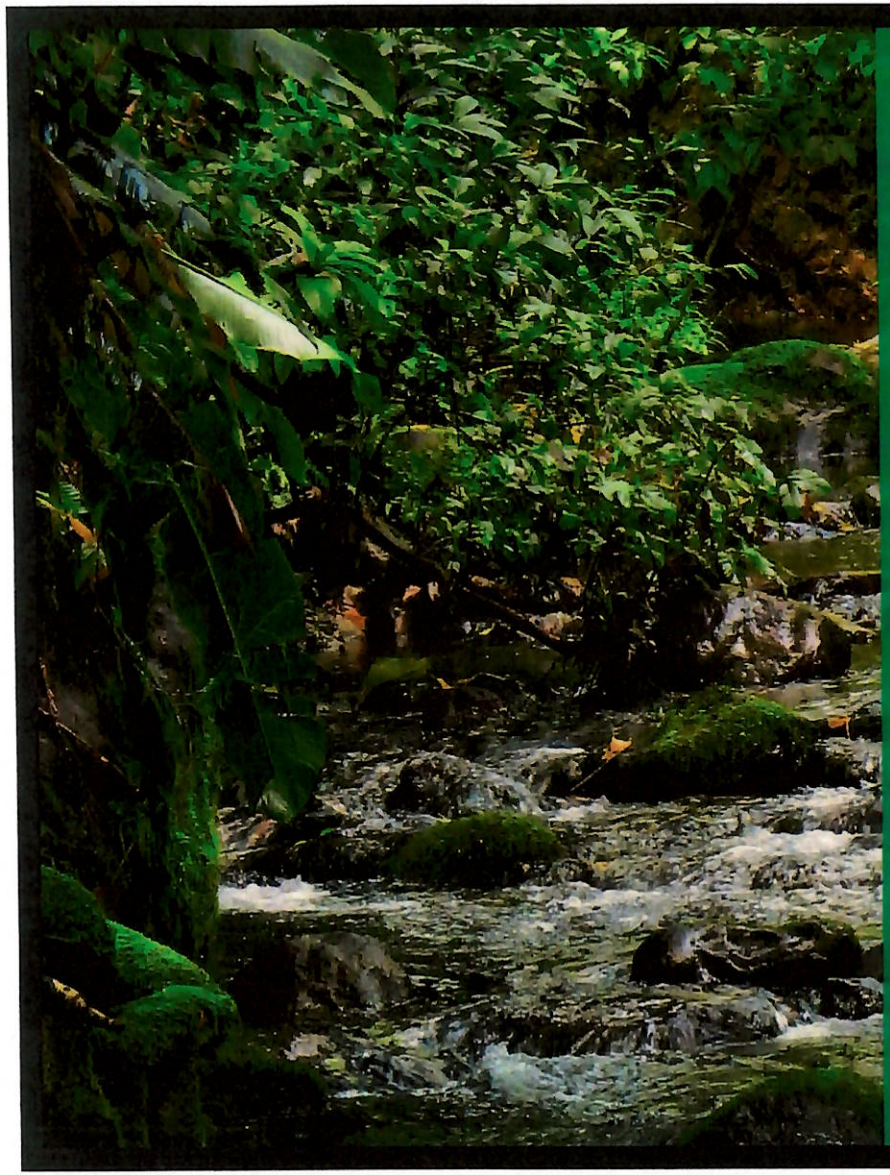
4. If the Manager disapproves a proposal, he shall inform the applicant in writing of the facts and reasons upon which his disapproval is based and afford the applicant an opportunity for an informal appeal hearing. Any applicant who is aggrieved by the Manager's decision and desires reconsideration of such decision shall petition the Manager in writing within 30 days from the date of receiving such decision. The applicant should base his request for reconsideration on pertinent technical data, including boring logs which indicate that the proposed waste disposal facility in the "No Pass Zone" would not contaminate groundwater resources used or expected to be used for domestic water supplies. If after the hearing, the request for reconsideration is disapproved by the Manager, the applicant may appeal the decision to the Board, which shall have the power to affirm, modify or reverse the decision of the Manager so appealed from. Such appeal shall be taken within 30 days after the final decision of the Manager.

[Eff 5/10/76; am, renum and comp BWS Res. No. 427, 1976; am and renum BWS Res. No. 502, 1982]


Source Capture Zone Delineations
Map, with 2 & 10 year Travel Times
DOH 2004 SWAP Report
Legend
2 yr CZD
10 CZD
Land Use
Agriculture
Conservation
Rural
Urban
N
W
E
S

DOH 2004 SOURCE WATER ASSESSMENT PROGRAM REPORT

- DOH Groundwater Protection Program is the lead management agency to develop and oversee the implementation of the State Wellhead Protection Program (WHPP) at the local level and to provide technical assistance.
- The Counties will be responsible for carrying out the State WHPP at the local level.
- Delineation of the area around a drinking water source through which contaminants may travel to the drinking water supply;
- SWAP study limitations: "the accuracy of results is limited by uncertainties inherent in groundwater models and accuracy and completeness of data"



CITY REQUEST FOR BWS POSITION ON SITING NEW LANDFILL

November 28, 2022

boardofwatersupply.com

CITY REQUEST FOR BWS POSITION ON 6 LANDFILL SITES

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU
1000 ULUOHIA STREET, SUITE 308, KAPOLEI, HAWAII 96707
TELEPHONE: (808) 768-3486 • FAX: (808) 768-3487 • WEBSITE: http://hnlhonolulu.org

RICK BLANGIARDI
MAYOR

ROGER BABCOCK, JR., Ph.D., P.E.
DIRECTOR

MICHAEL O'KEEFE
DEPUTY DIRECTOR

IN REPLY REFER TO:
DIR 22-98

November 3, 2022

SENT VIA EMAIL

Ernest Y. W. Lau, P.E
Manager and Chief Engineer
Honolulu Board of Water Supply
elau@hbws.org

Dear Ernest:

Thank you for your time and attention during the October 24, 2022, Board of Water Supply (BWS) board meeting. This letter follows up on the item for information, "Briefing by the Department of Environmental Services on their Landfill Siting" that was on that meeting's agenda.

At that meeting we briefed the board that BWS presented on groundwater and landfills to the Landfill Advisory Committee (LAC) and the LAC, based on BWS' presentation, despite evaluating and ranking six sites did not recommend any of the six sites as an alternative to the existing landfill (please see attachment A for final report).

Given this sequence of events, at the October 24 BWS board meeting, I requested clarity on BWS' legal authority over landfill siting and whether that authority was exercised, and if not exercised, when the City should seek a determination.

In order to clarify BWS' position and due to the impending deadline set by the State Land Use Commission Decision and Order for the Department of Environmental Services to "identify an alternative landfill site that may be used upon closure of WGSL [Waimanalo Gulch Sanitary Landfill]" by December 31, 2022, I am writing this letter to formally ask for BWS' official position on the six potential landfill sites (please see attachment B for details on those six sites) the LAC evaluated. Specifically, were Mayor to select any of the six ranked sites off the LAC's list, what would be BWS' official response or position?

Ernest Y.W. Lau, P.E.
November 3, 2022
Page 2

Given the timeline before us, I would appreciate a response as soon as possible. Please contact me at 768-3486 if you have any questions with respect to the foregoing.

Sincerely,

Digitally signed by O'Keefe, Michael
Date: 2022.11.03 11:33:02 -10'00'

For Roger Babcock, Jr., Ph.D., P.E.
Director

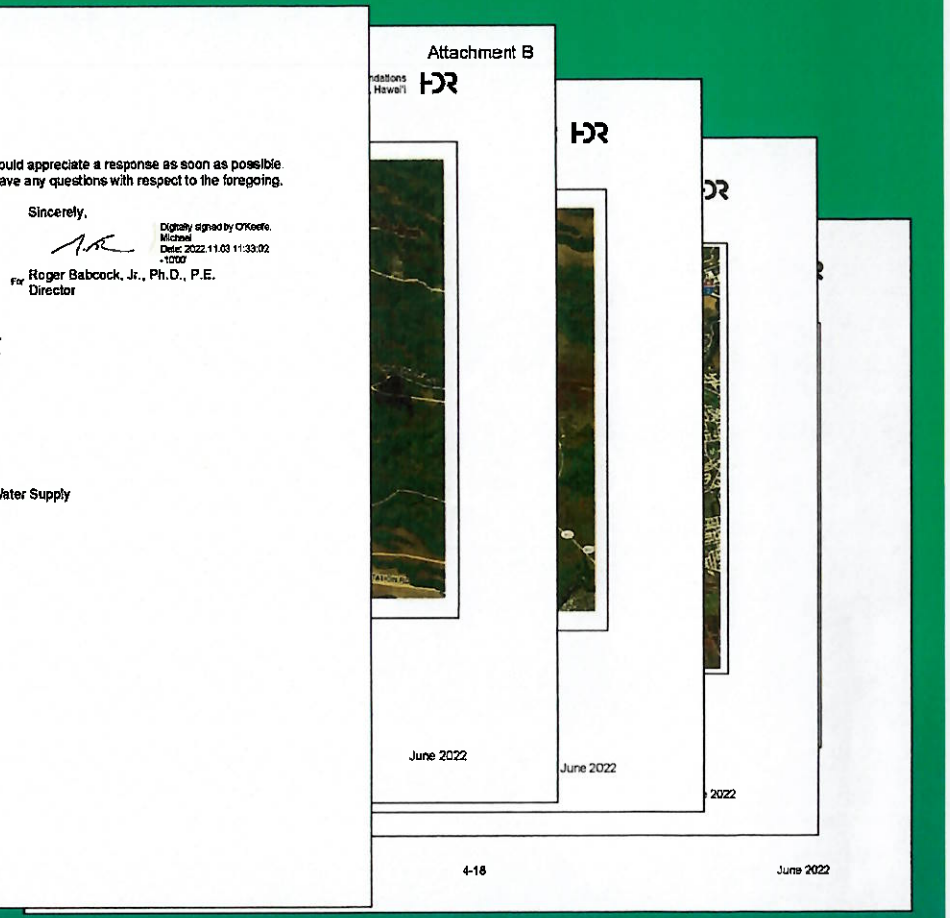
APPROVED:

Digitally signed by Formby, Michael
Date: 2022.11.03 13:59:17 -10'00'

Michael D. Formby, Managing Director
Office of the Managing Director

Attachments: A - LAC Report Here
B - Sites

cc: Rick Blangiardi, Mayor
Brian Andaya, Chair, Board of Water Supply



BWS RESPONSE DISAPPROVING THE 6 LANDFILL LOCATIONS OVER THE DRINKING WATER AQUIFER

BOARD OF WATER SUPPLY

CITY AND COUNTY OF HONOLULU
630 SOUTH BERETANIA STREET
HONOLULU, HI 96843
www.boardofwatersupply.com

November 16, 2022

RICK BLANGIARDI, MAYOR

BRYAN P. ANDAYA, Chair
KAPUA SPROAT, Vice Chair
MAX J. SWORD
NA'ALEHU ANTHONY
JONATHAN KANESHIRO

JADE T. BUTAY, Ex-Officio
DAWN B. SZEWCZYK, P.E., Ex-Officio

ERNEST Y. W. LAU, P.E.
Manager and Chief Engineer

ERWIN M. KAWATA
Deputy Manager

Roger Babcock, Jr., Ph.D., P.E.
Director
City and County of Honolulu
Department of Environmental Services

Dear Dr. Babcock,

Subject: Response to November 3, 2022 Letter Regarding the Board of Water Supply's Official Position on the Six Potential Landfill Sites

The Honolulu Board of Water Supply (BWS) is in receipt of your November 3, 2022 letter, in which the City and County of Honolulu Department of Environmental Services (ENV) "formally ask[s] for the BWS' official position on the six potential landfill sites" that were evaluated by the Landfill Advisory Committee (LAC)[1] for possible use upon the closure of the Waimanalo Gulch Sanitary Landfill and "clarity on BWS' legal authority over landfill siting."[2] For the reasons set forth below, the BWS does not approve any of the six proposed landfill sites that are located above (or mauka) the No Pass Zone and over Oahu's drinking water aquifer system.

The Board of Water Supply's Legal Authority Concerning Plans Proposing Waste Disposal Facilities

Safeguarding Oahu's water supply from sources of potential contamination is not a matter of discretion; it is constitutionally mandated. The Hawaii Constitution guarantees that "[a]ll public natural resources are held in trust for the benefit of the people" and directs the State, and by extension the BWS, "to protect, control and regulate the use of Hawaii's water resources for the benefit of its people." Haw. Const. art. XI, §§ 1, 7. As the largest municipal drinking water utility in Hawaii, the BWS has a constitutional public trust responsibility to protect the water resources it manages and to preserve the rights of present and future generations in the waters of Hawaii. *See Kauai Springs, Inc. v. Planning Comm'n of Cnty. of Kauai*, 133 Haw. 141, 171, 324 P.3d 951 (2014) (holding

'State and its subdivisions shall
mphasis in original)). Specifically,
o maintain the purity and flow of
he waters of our land are put to
nt here, drinking water is among
Water Use Permit Application, 94

ct Oahu's drinking water, the BWS
force rules and regulations having
rention of waste and pollution of
e proper conservation and
city." Revised Charter of the City
54-33). To ensure that
are protected, the BWS has
facilities, including municipal
ceive written approval from the
Regulations § 3-301(1).

Zones" which generally prohibit
ndfills, in areas that may
d to be used for domestic water
s, § 3-301(2).[5] The No Pass Zone
brings that define the areas of thick
ai) the No Pass Zone are primarily
bles the aquifer to replenish within
nt of infiltrated rainwater that fails
prevent surface contamination
above the No Pass Zone, have no
that is used for drinking water.
plans proposing certain waste
ered and the Manager and Chief
there is any basis to expect that

sibility is "unlimited by any surface-ground
ater. *In re Water Use Permit Applications,*

oward achieving the highest water quality
"shall be liberally interpreted to obtain
§ 174C-2(c).

establish 'No Pass Zones' which ... shall
waste disposal facilities. BWS Rules and
ins areas in which the installation of waste
es used or expected to be used for
(emphasis added).

y wastewater therefrom may
ources used or expected to
§ 3-301(2)-(3).

tial Landfill Sites

WS' No Pass Zone, and all
drogeologically-connected
f this groundwater aquifer
tect it been more
g with what the Hawaii
d environmental disaster"
Fuel Storage Facility that
ly and the pollution of this
s unfortunate environmental
tive in protecting all of our
s of contamination. Oahu's

to the LAC, the BWS
nges associated with finding
esign and engineering can
adversely impact the
valuated by the LAC are
directly over Oahu's drinking
(USGS), citing EPA
nto the environment and that
both old and modern
GS Fact Sheet FS-040-03

do contain a wide range of
ing concentrations—such as
nd per- and polyfluorinated
have the potential to

nated sole-source groundwater
77 percent of the total island-
Agency (EPA) determined that
ding water" for the island, and that
outhern Oahu Basal Aquifer in the
Fed. Reg. 45496, at 45497 (Nov.

Waimanalo Gulch Sanitary
annually that contains
al dissolved solids
rinking water maximum
dfill leachate
n Oahu in December
leachate at the
charges of municipal
Gulch stream and
roposed landfill sites
that could impact Oahu's

groundwater is always
and impact other parts of
d can move relatively
use of this, contaminant
obust monitoring well
drinking water
esult, contamination from
dwater aquifer and
it could—as was the
water supply wells in the

hat any landfill sited at
ty and/or quantity of the
. *See* BWS Rules and

Sanitary Landfill, Kapolei,
bmitted to the State of Hawaii
t
WMR_Final.pdf); United
the Destruction and Disposal
erfluoroalkyl and
er 18, 2020
527-0002_content.pdf);
Leachate PFOA and PFOS
mpleted in Collaboration with
March 8)

Haw., No 18-224 (D. Haw
h Honolulu and Waste
r.epa.gov/news/releases/epa-
ialo-gulch.

e consideration of the requisite guidelines and
disapprove all six of the proposed landfill sites above

ed to protect Oahu's drinking water from underground
WS continues to urge ENV to explore new landfill sites
including, where appropriate, requesting additional
ion to explore other siting options.

feel free to contact me at (808) 748-5061.

Very truly yours,

ERNEST Y. W. LAU, P.E.
Manager and Chief Engineer

ardi, Mayor, City and County of Honolulu
ing Director, Department of Environmental Services
Director, Department of Environmental Services

nager, BWS

ty of Honolulu agreed when it adopted Resolution 03-09, FD1
Council resolved to establish a policy "of the city that municipal
d anywhere ... within the [BWS'] groundwater protection zone, or
rces." This resolution was partially a result of the Council's
chnology that can guarantee that hazardous or other harmful
r the city's aquifer will not, over the long-term, enter the city's
o the public health and welfare of Honolulu's citizens."

Its Final Report, specifically noting the importance of the "Board
commending any of the final landfill sites. Indeed, "[a]ll LAC
the location of the proposed sites in the No Pass Zone and,
for O'ahu's drinking water resources" (LAC Final Report 1-4) and
ot support a landfill sited within the BWS No Pass Zone due to
n of groundwater resources on O'ahu" (LAC Final Report 6-4).

[1] *See O'ahu Landfill Siting Study & Landfill Advisory Committee Recommendations: Final Report* (June 2022) ("LAC Final Report").

[2] At the October 28, 2022 meeting of the BWS Board of Directors, ENV posed similar questions during an item for information before BWS Board. However, ENV's November 3, 2022 letter is directed to the BWS Manager and Chief Engineer.

SUMMARY

- Oahu is 100% dependent on its groundwater aquifer for drinking water.
- Landfills contain contaminants that can enter groundwater.
- Landfills, once constructed will be there permanently.
- Preservation and protection of our precious and pure groundwater resources are essential to ensure water security for our future for generations to come.

MOTION TO RECESS INTO EXECUTIVE SESSION	There being no further business Chair Andaya at 7:05 PM called for a motion to adjourn the Open Session. Dawn Szewczyk so moved; seconded by Jade Butay and unanimously carried. Upon unanimous approved motion, the Board recessed into Executive Session Pursuant to [HRS § 92-5 (a)(4)] at 7:06 PM to Consider Issues Pertaining to Matters Posted for Discussion at an Executive Session.
OPEN SESSION	The Board reconvened in Open Session at 7:46 PM.
MOTION TO ADJOURN	There being no further business Chair Andaya at 7:47 PM called for a motion to adjourn the Regular Session. Na'alehu Anthony so moved; seconded by Dawn Szewczyk and unanimously carried.

THE MINUTES OF THE REGULAR MEETING HELD ON NOVEMBER 28, 2022 WERE APPROVED AT THE DECEMBER 12, 2022 BOARD MEETING			
	AYE	NO	COMMENT
BRYAN P. ANDAYA	X		
KAPUA SPROAT	X		
MAX J. SWORD			ABSENT
NA'ALEHU ANTHONY	X		
JONATHAN KANESHIRO	X		
EDWIN H. SNIFFEN			ABSTAIN
DAWN B. SZEWCZYK	X		

The minutes of the Regular Meeting held on November 28, 2022, are respectfully submitted,

JOY CRUZ-ACHIU

APPROVED:

BRYAN P. ANDAYA
Chair of the Board

DEC 1 2 2022

Date