

BOARD OF WATER SUPPLY

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



March 22, 2023

RICK BLANGIARDI, MAYOR

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

DAWN B. SZEWCZYK, P.E., Ex-Officio
EDWIN H. SNIFFEN, Ex-Officio

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

ERWIN M. KAWATA
Deputy Manager

NOTICE

The Board of Water Supply, City and County of Honolulu, Regular Meeting will be held on Tuesday, March 28, 2023, at 2:00 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 Tuesday, March 28, 2023, at noon. Submit written testimony by:
 - Email to board@hbws.org
 - Online at boardofwatersupply.com/testimony
 - Mail to Board of Water Supply, 630 S. Beretania St., Honolulu, HI 96843
 - Fax to (808) 748-5079

- Oral testimony will be accepted remotely and in person during the meeting. Pre-registration is encouraged to facilitate as much remote and in-person testimony as reasonably possible during the time allotted. Testifiers should also consider submitting a written version of their oral testimony.

- To testify remotely by phone or video using the Zoom videoconferencing platform, please submit your request by:

- Email to board@hbws.org
- Online at boardofwatersupply.com/testimony

Zoom registration instructions, as well as participant guidelines, will be sent to the contact information provided. Once confirmed as registered, testifiers will receive an email containing the links and instructions to join the Zoom session. Submit your request to testify remotely by Friday, March 24, 2023, at noon.

- To testify in person at the Board of Water Supply, Public Service Building, 630 S. Beretania St., Honolulu, HI 96843, please pre-register by submitting your request by Tuesday, March 28, 2023:

- Email to board@hbws.org
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In-person testifiers should check-in with building security and then with testimony staff located in the lobby. Testifiers will be escorted to and from the Board Room. On-site registration will be available for walk-in requests.

Testimony is limited to two (2) minutes and shall be presented by the registered speaker only. Testimony submitted in writing or orally, electronically or in person, for use in the meeting process is public information. All testimony will be included as part of the approved meeting minutes at boardofwatersupply.com/boardmeetings.

MATERIALS AVAILABLE FOR INSPECTION

Meeting materials ("board packet" under HRS Section 92-7.5) are accessible at www.boardofwatersupply.com/boardmeetings.

VIEWING THE MEETING

The meeting will be viewable via live streaming on the BWS website: www.boardofwatersupply.com/live. Video will appear on screen. You may have to click the arrow on video to start it. You may have to unmute audio as muted audio tends to be the default setting.

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 March 28, 2023, Regular Meeting of the Board of Water Supply is as follows:

ITEMS REQUIRING BOARD ACTION

1. Approval of the Minutes of the Regular Meeting Held on February 27, 2023
2. Authorizing a Public Hearing to Consider a Proposed Amendment to the Schedule of Rates and Charges for the Furnishing of Water and Water Service for Fiscal Years 2019-2023, Effective September 10, 2018 through June 30, 2023 for the Board of Water Supply to Remain in Effect Until Superseded

ITEMS FOR INFORMATION

1. Update on the Board of Water Supply's Response to the Potential Impacts of the Red Hill Fuel Contamination
2. Results of the Sale of Board of Water Supply Water System Revenue Bonds, Series 2023
3. Status Update of Groundwater Levels at All Index Stations
4. Water Main Repair Report for February 2023

EXECUTIVE SESSION

1. Approval of the Minutes of the Executive Session Held on February 27, 2023
2. To Consider the Evaluation of the Manager and Chief Engineer, Where Consideration of Matters Affecting Privacy Will be Involved [HRS §92-5(a)(2)]

MINUTES

THE REGULAR MEETING OF THE BOARD OF WATER SUPPLY

March 28, 2023

At 2:01 PM on March 28, 2023, 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
Kapua Sproat, Vice Chair via Zoom
Max J. Sword, Board Member
Na'alehu Anthony, Board Member
Jonathan Kaneshiro, Board Member
Dawn B. Szewczyk., Board Member, Ex- Officio

Also Present: Ernest Lau, Manager and Chief Engineer
Erwin Kawata, Deputy Manager
Jadine Urasaki, Assistant Program Administrator,
Capital Projects Division via Vimeo
Jennifer Elflein, Program Administrator,
Customer Care Division via Zoom
Kathleen Elliott-Pahinui, Information Officer,
Communications Office via Vimeo
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
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 via Zoom
Kevin Ihu, Program Administrator,
Water System Operations Division
via Vimeo
Joyce Lin, Civil Engineer IV,
Office of the Manager and Chief
Engineer via In-person and Vimeo
Kathy Mitchell, Administrative Services Officer
via Vimeo
Kimberly Kuwaye, 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: Edwin H. Sniffen, Board Member, Ex-Officio

Chair Bryan Andaya welcomed everyone to the March 28, 2023, Regular Meeting of the Board of Water Supply (BWS).

Before beginning the meeting, Chair Andaya reviewed 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 during roll call that Board Members participating remotely must disclose their location and anyone that may be present at their location.

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

Chair Andaya asked those participating remotely to keep their cameras on during the meeting to comply with quorum guidelines. Chair Andaya asked each Board Member to respond verbally and state who is present in the room if participating remotely when their names are called. He requested Board Secretary Joy Cruz-Achui to conduct roll call: Vice Chair Kapua Sproat, aye and alone at her current location; Board Member Max Sword, aye and present in the Board room; and Board Member Jonathan Kaneshiro, aye and present in the Board room. Chair Bryan Andaya was present in the Board room.

At 2:02 PM Board Member Na'alehu Anthony joined the Board meeting in person.

Chair Andaya asked all attendees calling in or video conferencing to 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-Achui, Manager Secretary Kimberly Kuwaye, and Information Specialist II Steven Norstrom. Joining via Zoom from the City and County Corporation Counsel were Deputy Jeff Lau and Deputy Jessica Wong, and Information Specialist II Wayne Maria.

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 Tuesday, March 28, 2023, 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, March 24, 2023. 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 February 27, 2023.

MOTION TO APPROVE

Na'alehu Anthony and Max Sword motioned and seconded, respectively, to approve the Minutes of the Regular Meeting Held on February 27, 2023.

In lieu of a roll call vote, Chair Andaya requested a voice vote on the motion and requested that Board Members in favor of the motion say "Aye." The Board members present responded with a verbal "Aye." Chair Andaya then inquired if any Board Members would like to object or vote "Nay" on the motion. Board Member Dawn Szewczyk and Board Member Edwin Sniffen was absent. There were no objections or "Nay" votes. Chair Andaya announced that the motion was unanimously carried.

THE MINUTES OF THE REGULAR MEETING HELD ON FEBRUARY 27, 2023, WERE APPROVED AT THE MARCH 28, 2023, BOARD MEETING			
	AYE	NO	COMMENT
BRYAN P. ANDAYA	X		
KAPUA SPROAT	X		
MAX J. SWORD	X		
NA'ALEHU ANTHONY	X		
JONATHAN KANESHIRO	X		
DAWN B. SZEWCZYK			ABSENT
EDWIN H. SNIFFEN			ABSENT

AUTHORIZING A PUBLIC HEARING TO CONSIDER A PROPOSED AMENDMENT TO THE SCHEDULE OF RATES AND CHARGES FOR THE FURNISHING OF WATER AND WATER SERVICE FOR FISCAL YEARS 2019-2023, EFFECTIVE SEPTEMBER 10, 2018, THROUGH JUNE 30, 2023 FOR THE BOARD OF WATER SUPPLY TO REMAIN IN EFFECT UNTIL SUPERSEDED

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

Chair and Members:

Subject: Authorizing a Public Hearing to Consider a Proposed Amendment to the Schedule of Rates and Charges for the Furnishing of Water and Water Service for Fiscal Years 2019-2023, Effective September 10, 2018, through June 30, 2023 for the Board of Water Supply to Remain in Effect Until Superseded

We recommend that the Board authorize a public hearing to be held at 2:00 p.m. on Monday, April 24, 2023, to consider the resolution to adopt a proposed amendment which provides that the Schedule of Rates and Charges for the Furnishing of Water and Water Service for Fiscal Years 2019-2023 (“Schedule”), which became effective September 10, 2018, shall remain in effect until superseded by a revision to the Schedule of Rates and Charges.

Charges that became effective on July 1, 2022 and certain cost adjustments are currently scheduled to end on June 30, 2023. Likewise, waiver provisions for (i) qualified affordable and homeless dwelling units and (ii) residential fire sprinkler retrofits are set to expire on June 30, 2023.

Therefore, the Department proposes to extend the following Schedule components, which will remain in effect until superseded by a revision to the Schedule:

- Charges that became effective on July 1, 2022
 - Customer Charge. There is a customer charge each month service is provided based on the meter size effective as follows:

Meter Size	Effective July 1, 2022, until superseded
5/8" or 3/4"	\$12.09
1"	\$15.28
1.5"	\$17.41
2"	\$43.45
3"	\$53.55
4"	\$101.92
6"	\$181.64
8"	\$276.78
12"	\$598.53

- o Quantity Charge. In addition to the Customer Charge, there is a charge for all water used, rounded down to the nearest 1,000 gallons (k-gal), effective as follows:

Single-Family Residential (Monthly per dwelling unit)	Effective July 1, 2022, until superseded
Tier 1: Essential Needs First 2,000 gallons	\$4.46
Tier 2 2,001 – 6,000 gallons	\$5.25
Tier 3 6,001 – 30,000 gallons	\$5.85
Tier 4 Over 30,000 gallons	\$9.25
Multi-Unit Residential (Monthly per dwelling unit)	Effective July 1, 2022, until superseded
Tier 1: Essential Needs First 2,000 gallons	\$3.77
Tier 2 2,001 – 4,000 gallons	\$4.43
Tier 3 4,001 – 10,000 gallons	\$5.03
Tier 4 Over 10,000 gallons	\$5.98
Non-Residential	Effective July 1, 2022, until superseded
All Usage	\$5.27

Agricultural (Monthly per account)	Effective July 1, 2022, until superseded
Tier 1: Essential Needs First 2,000 gallons	\$4.46
Tier 2 2,001 – 6,000 gallons	\$5.25
Tier 3 Over 6,000 gallons	\$2.12

Non-Potable/Brackish	Effective July 1, 2022, until superseded
All Usage	\$2.90

Recycled Water	Effective July 1, 2022, until superseded
R-1 Golf	\$0.65
R-1 Other	\$1.96
Reverse Osmosis (RO)	\$6.36

- Fire Meter Standby Charge. For those receiving private fire service, there is an additional fire meter standby charge billed monthly based on the size of the fire meter effective as follows:

Fire Meter Size	Effective July 1, 2022, until superseded
2" and smaller	\$7.99
3"	\$10.29
4"	\$14.23
6"	\$28.44
8"	\$52.94

- Waivers that became effective on September 15, 2018
 - **Waiver of Water System Facilities Charge for Qualified Affordable and Homeless Dwelling Units**
 - The Board of Water Supply may waive the Water Systems Facilities Charges and new meter cost for qualified on- site affordable and homeless dwelling units, up to 500 dwelling units per year. The waivers will be granted when the building permit is submitted for approval. To qualify, the dwelling units must be certified as either affordable or homeless dwelling units by the appropriate agency of the City and County of Honolulu. Waiver of the Water System Facilities Charge will apply only to fixture units associated with the certified dwelling units. The amount of the meter waiver shall be calculated as a percentage of the number of certified dwelling units to the total number of dwelling units in the project. If the annual cap of 500 dwelling units has not been reached and a project is proposed that would qualify for more than the remaining number of dwelling units in that year, the Manager and Chief Engineer has the discretion to increase that year's limit.
 - **Waiver of Meter Charges for Residential Fire Sprinkler Retrofits**
 - The Board of Water Supply may waive the new meter charges for high rise multi-unit residential fire sprinkler retrofits.
- Cost Adjustments that became effective on September 15, 2018
 - **Power Cost Adjustment:** When total power, or electricity, costs to the Board of Water Supply exceed the amount used in calculating the annual Schedule of Rates and Charges, then the Quantity Charge may be increased \$0.01 per 1,000 gallons for every \$500,000 incremental power cost overage in the following fiscal year.

- **Environmental Regulations Compliance Fee Cost Adjustment:** The Quantity Charge may be increased \$0.01 per 1,000 gallons for each \$500,000 of additional costs that the Board of Water Supply is required to incur in order to comply with any Federal or State environmental law or regulation.

Attached is the draft of the "Notice of Public Hearing" to be published prior to the hearing date.

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.

Chair Andaya explained that the Public Hearing is to announce the extension of the current rates until further notice. He shared that the BWS will conduct a rate study that will help determine the new rates. Otherwise, the rates will expire on June 30, 2023.

Board Member Na'alehu Anthony inquired to confirm an announcement is required to hold a Public Hearing to carry the same rates past the expiration date of June 30, 2023.

Chair Andaya confirmed that the notice to the public to hold a Public Hearing is required to share that current rates will be extended.

Board Member Max Sword asked if an expiration date is set when new rates are set.

Manager Ernest Lau responded that the current rates were adopted in 2018. He explained that normally the rates would carry over until superseded. However, the language used at the time of the rate adoption states that the rates would expire on June 30, 2023. Therefore, Manager Lau stated that there would be no water rate increase at this time; rates will remain the same as they will take effect on July 1, 2023, until superseded.

MOTION
TO APPROVE

Max Sword and Na'alehu Anthony motioned and seconded, respectively, to Authorize a Public Hearing to Consider a Proposed Amendment to Extend the Schedule of Rates and Charges for the Furnishing of Water and Water Service Fiscal years 2019-2023, Effective September 10, 2018, through June 30, 2023, for the Board of Water Supply

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

Ms. Cruz-Achiu conducted a roll call vote: Vice Chair Kapua Sproat, aye; Board Member Max Sword, aye; Board Member Na'alehu Anthony, aye; Board Member Jonathan Kaneshiro, aye; and Chair Bryan Andaya, aye. Board Member Dawn Szewczyk and Board Member Edwin Sniffen were absent

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

AUTHORIZING A PUBLIC HEARING TO CONSIDER A PROPOSED AMENDMENT TO THE SCHEDULE OF RATES AND CHARGES FOR THE FURNISHING OF WATER AND WATER SERVICE FOR FISCAL YEARS 2019-2023, EFFECTIVE SEPTEMBER 10, 2018, THROUGH JUNE 30, 2023, FOR THE BOARD OF WATER SUPPLY TO REMAIN IN EFFECT UNTIL SUPERSEDED WAS APPROVED ON MARCH 28, 2023			
	AYE	NO	COMMENT
BRYAN P. ANDAYA	X		
KAPUA SPROAT	X		
MAX J. SWORD	X		
NA'ALEHU ANTHONY	X		
JONATHAN KANESHIRO	X		
DAWN B. SZEWCZYK			ABSENT
EDWIN H. SNIFFEN			ABSENT

NOTICE OF PUBLIC HEARING

NOTICE IS HEREBY GIVEN that the BOARD OF WATER SUPPLY, CITY AND COUNTY OF HONOLULU, will hold a PUBLIC HEARING in the Board Room, Public Service Building, 630 South Beretania Street, on MONDAY, APRIL 24, 2023, at 2:00 p.m., or soon thereafter, where all interested persons shall be afforded the opportunity of being heard on the adoption of the Proposed Amendment to the Schedule of Rates and Charges of the Board of Water Supply for the Fiscal Years (FY) 2019 through 2023, Effective September 10, 2018 through June 30, 2023 to Remain in Effect Until Superseded by a Revision to the Schedule of Rates and Charges. The Proposed Amendment provides that the Charges: Customer, Quantity & Fire Meter Standby, that became effective on July 1, 2022, and the Waivers: Waiver of Water System Facilities Charge for Qualified Affordable and Homeless Dwelling Units & Waiver of Meter Charges for Residential Fire Sprinkler Retrofits, and Adjustments: Power Cost & Environmental Regulations Compliance Fee, that became effective on September 15, 2018, shall remain in effect until superseded by a revision to the Schedule of Rates and Charges.

Limited seating will be available for in-person testifiers in the Board Room. 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.

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Testimony is limited to two (2) minutes and shall be presented by the registered speaker only. Testimony submitted in writing or orally, electronically or in person, for use in the meeting process is public information. All testimony will be included as part of the approved meeting minutes at boardofwatersupply.com/boardmeetings.

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BOARD OF WATER SUPPLY, CITY AND COUNTY OF HONOLULU

**AMENDMENT TO THE SCHEDULE OF RATES AND CHARGES
FOR THE FURNISHING OF WATER AND WATER SERVICE**

SCHEDULE TO REMAIN IN EFFECT UNTIL SUPERSEDED

Customer Charge: There is a customer charge each month service is provided based on the meter size, effective as follows:

Meter Size	Effective 7/1/2022, until superseded
5/8" or 3/4"	\$12.09
1"	\$15.28
1.5"	\$17.41
2"	\$43.45
3"	\$53.55
4"	\$101.92
6"	\$181.64
8"	\$276.78
12"	\$598.53

Quantity Charge: In addition to the Customer Charge, there is a charge for all water used, rounded down to the nearest 1,000 gallons (k-gal), effective as follows:

Single-Family Residential (Monthly per dwelling unit)	Effective 7/1/2022, until superseded
Tier 1 Essential Needs: First 2,000 gallons	\$4.46
Tier 2 2,001 – 6,000 gallons	\$5.25
Tier 3 6,001 – 30,000 gallons	\$5.85
Tier 4 Over 30,000 gallons	\$9.25

Multi-Unit Residential (Monthly per dwelling unit)	Effective 7/1/2022, until superseded
Tier 1 Essential Needs: First 2,000 gallons	\$3.77
Tier 2 2,001 – 4,000 gallons	\$4.43
Tier 3 4,001 – 10,000 gallons	\$5.03
Tier 4 Over 10,000 gallons	\$5.98

Continued in the next column...

Customer Class Definitions remain unchanged and are available here: <https://www.boardofwatersupply.com/bws/media/files/water-rate-schedule-2018-2023-2018-09-15.pdf>

Power Cost Adjustment: When total power, or electricity, costs to the Board of Water Supply exceed the amount used in calculating the annual Schedule of Rates and Charges, then the Quantity Charge may be increased \$0.01 per 1,000 gallons for every \$500,000 incremental power cost overage in the following fiscal year.

Environmental Regulations Compliance Fee Cost Adjustment: The Quantity Charge may be increased \$0.01 per 1,000 gallons for each \$500,000 of additional costs that the Board of Water Supply is required to incur in order to comply with any Federal or State environmental law or regulation.

Waiver of Water System Facilities Charge for Qualified Affordable and Homeless Dwelling Units: The Board of Water Supply may waive the Water Systems Facilities Charges and new meter cost for qualified on-site affordable and homeless dwelling units, up to 500 dwelling units per year. The waivers will be granted when the building permit is submitted for approval. To qualify, the dwelling units must be certified as either affordable or homeless dwelling units by the appropriate agency of the City and County of Honolulu. Waiver of the Water System Facilities Charge will apply only to fixture units associated with the certified dwelling units. The amount of the meter waiver shall be calculated as a percentage of the number of certified dwelling units to the total number of dwelling units in the project. If the annual cap of 500 dwelling units has not been reached and a project is proposed that would qualify for more than the remaining number of dwelling units in that year, the Manager and Chief Engineer has the discretion to increase that year's limit.

Waiver of Meter Charges for Residential Fire Sprinkler Retrofits: The Board of Water Supply may waive the new meter charges for high rise multi-unit residential fire sprinkler retrofits.

Non-Residential	Effective 7/1/2022, until superseded
All Usage	\$5.27
Agricultural (Monthly per account)	Effective 7/1/2022, until superseded
Tier 1 Essential Needs: First 2,000 gallons	\$4.46
Tier 2 2,001 – 6,000 gallons	\$5.25
Tier 3 Over 6,000 gallons	\$2.12
Non-Potable/Brackish	Effective 7/1/2022, until superseded
All Usage	\$2.90
Recycled Water R-1 Golf	Effective 7/1/2022, until superseded
All Usage	\$0.65
Recycled Water R-1 Other	Effective 7/1/2022, until superseded
All Usage	\$1.96
Reverse Osmosis (RO)	Effective 7/1/2022, until superseded
All Usage	\$6.36

Fire Meter Standby Charge: For those receiving private fire service, there is an additional fire meter standby charge billed monthly based on the size of the fire meter effective as follows:

Fire Meter Size	Effective 7/1/2022, until superseded
2" and smaller	\$7.99
3"	\$10.29
4"	\$14.23
6"	\$28.44
8"	\$52.94



Honolulu Board of Water Supply
 630 S. Beretania St. • Honolulu, HI 96843
 (808) 748-5041 • contactus@hbws.org
www.boardofwatersupply.com/

ITEM FOR INFORMATION NO. 1

"March 28, 2023

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

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

Joyce Lin, Civil Engineer IV, Office of the Manager and Chief Engineer; will give an Update on the 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:

Joyce Lin, Civil Engineer IV, Office of the Manager and Chief Engineer, gave the report.

Board Member Sword asked if the issues on Polyfluoroalkyl Substances (PFAS) and the fuel contamination are handled by one or different admirals.

Manager Lau responded that three different admirals are involved in Red Hill: Vice Admiral John Wade, Commander of Joint Task Force Red Hill, is responsible for the defueling of the Red Hill Facility; Rear Admiral Stephen Barnett, Commander of Navy Region Hawaii, is responsible for permanent closure of the Red Hill facility; and Rear Admiral Jeffrey Kilian, Commander, Naval Facilities Engineering Systems Command Pacific (Navfac), is responsible for the remediation of the aquifer.

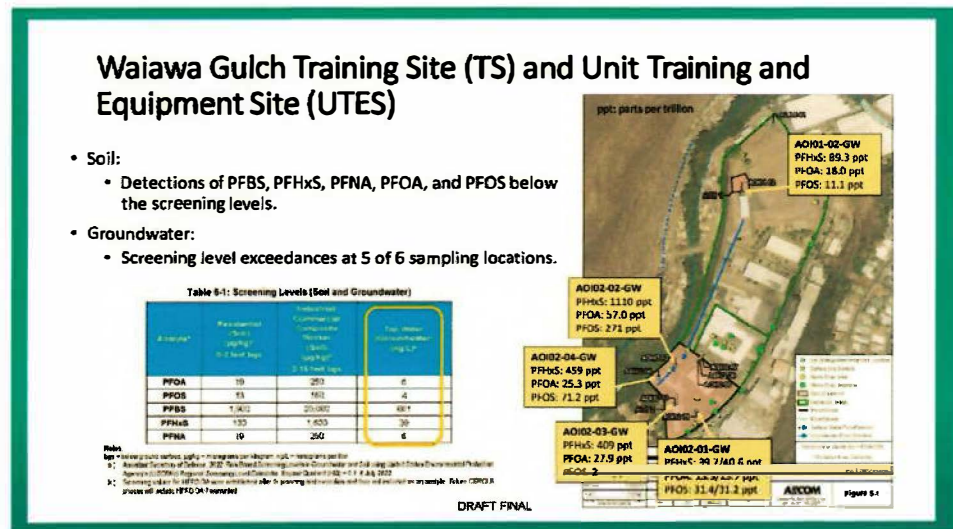
Board Member Sword shared his concern regarding the change order in the military, where individuals are often transferred to different locations due to time limitations and/or promotions. He asked how the progress in the Red Hill situation could be safeguarded and shared with the next in command.

Manager Lau stated the turnover in military leadership had been a challenge he has encountered over the past nine years. However, he hopes that in the future change orders, the information and knowledge will be passed on to the successor.

Board Member Sword commented that he didn't want all the Red Hill progress lost.

Manager Lau shared that there are three essential components in continuing the Red Hill progress. First, the community stays informed; second, the BWS continues to transition and sustain its efforts into the future; and third, the Department of Health (DOH) and the Environmental Protection Agency (EPA) plan for continuity and succession on the Red Hill efforts and protection of Hawaii's water resources. Finally, he expressed his appreciation to the community, Kanaka Maoli, and the Sierra Club for sharing their knowledge and willingness to educate others.

Board Member Jonathan Kaneshiro referred to the Waiawa Gulch Training Site (TS) and Unit Training Equipment Site (UTES) slide and commented that the groundwater screening levels exceeded the environmental action levels (EALs). He inquired, since the BWS has wells located downgradient of the Waiawa Gulch, is there a plan if the contaminants affected the BWS Manana Wells?



Manager Lau stated that the military had used Aqueous Film Forming Foam (AFFF) for numerous years, which stopped in early 2008 – AFFF is no longer being used but part of the environment. The concern is where the PFAS is migrating. He shared that after learning of AFFF detection at Waiawa Gulch in February 2023, the BWS began weekly testing at surrounding wells where a low detection of PFAS was found at the Waipio Heights Wells. Manager Lau shared that he believes the military's test results are from shallow groundwater, where deposits of PFAS may have been left behind by flowing water, not basal aquifer water, where water is pumped from. He also mentioned that the investigation focused on National Guard property. The BWS continues to test, monitor, and track the migration of the contamination to determine whether a treatment system is an option or if water must be brought from another water source.

Board Member Sword asked if the BWS currently has monitoring wells between the military's Waiawa Gulch and the BWS Manana Wells.

Manager Lau responded that the BWS is currently monitoring its wells in the area. He stated that when the BWS was notified of the PFAS detection at the military's Waiawa facility, the BWS began weekly PFAS testing of its six closest wells. However, it takes three to four weeks to receive the test results. Manager Lau referred to the map that indicated the various military facilities in the Pearl Harbor, Central Oahu area and commented that the Department of Defense's (DOD) findings and investigations are crucial information to the BWS as they can be used to understand future challenges.



Board Member Kaneshiro asked, since the Environmental Protection Agency (EPA) started regulating, has remediation work begun on the various sites.

Manager Lau replied that he hopes cleanup is a priority and how the impacted community and wells are treated. He shared that the BWS will retain a consultant to assist the BWS in understanding the scope and magnitude of the situation and consider the different options with the challenges ahead. Manager Lau also mentioned that a permanent drinking water regulation is targeted to be released by the EPA at the end of the year.

Board Member Anthony asked Manager Lau if he was satisfied with just testing BWS wells or would also prefer to see testing done at the military's surrounding wells to get a better sense of what the BWS would see at its Manana or Pearl City wells. Will the BWS be requesting the DOD to implement it?

Manager Lau responded that the BWS has requested that the military test the basal aquifer, which is deeper than the shallow groundwater. It would require installing monitoring wells within the affected area to characterize

the nature and extent of the contamination, how the contamination is spreading, and the direction the contamination is moving. He stated that there are a lot of private wells, agriculture, kalo cultivation, and a community that depends on the water for drinking; therefore, the quicker information is available, the better.

Board Member Anthony inquired how many million gallons per day (mgd) are pumped from Manana Wells and Pearl City Shaft.

Deputy Manager Erwin Kawata replied three mgd.

Manager Lau shared that the Navy's most significant well and only water source for Joint Base Pearl Harbor Hickam (JBPHH) is the Waiawa Shaft pumping 15 mgd.

Board Member Sword asked for confirmation on the turnaround time for the BWS to receive test results from the mainland.

Manager Lau responded it takes up to three to four weeks.

Deputy Manager Kawata also replied that the BWS takes 21 to 30 days to receive the test results.

Manager Lau added that the Army Guard indicated that the lab they're using takes 12 to 14 weeks.

Vice Chair Kapua Sproat commented that in the previous modeling, contamination could also move the upgradient of the wells. Therefore, if Waiawa Shaft is pumping 14 to 15 mgd, is PFAS being drawn closer to BWS wells? She also expressed concern about the leaching into the nearshore marine area, groundwater seeping from coastal springs, and the people who rely on the water for food.

Manager Lau stated that the BWS does not know how the gradient will flow. Typically, water will flow from mauka to makai. However, a large amount of water drawn from Waiawa could influence the flow direction. He replied that it's too early to determine how the water would be affected.

Deputy Manager Kawata added that PFAS is very soluble in water. Therefore, PFAS will go into the water as a completely homogeneous solution and will not sink or float but travel with water which doesn't degrade very fast or easily.

Vice Chair Sproat asked is that why PFAS is known as the "Forever Chemical"?

Deputy Manager Kawata replied that Vice Chair Sproat was correct.

Manager Lau added that PFAS had been used in household and other applicator products for a long time.

Deputy Manager Kawata further explained that PFAS was developed in the 1950s and was used in various consumer products such as firefighting foams. Therefore, PFAS has been around for a long time and has been found in landfill, soil, surface water, and many different areas of the environment.

Board Member Anthony referred to Board Member Sword's comments about the military and how the BWS deals with turnover. He suggested that the BWS asks the federal delegation to provide documentation to the Navy that outlines the rules and instructions for the remediation of Red Hill and the contamination each time a change order takes place.

Manager Lau added that permanent governance should be issued since the military is one of the biggest users of Perfluorooctanoic Acid (PFOA) and AFFF with PFAS. He stated that Oahu is just an island; if the island's water resources become completely contaminated, the people will only have the ocean to rely on.

Chair Andaya announced that he would be taking testimony.

There was one in-person testifier:

Susan Pcola-Davis	<i>Commented on the Hawaii Department of Health's 03/11/2022 Medical Advisory regarding chemical screening (aka biological monitoring) for exposure to petroleum hydrocarbons in drinking water. She provided a 15-page attachment and handed out an additional seven pages during the meeting.</i>
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At 3:00 PM Board Member Dawn Szewczyk joined the Board meeting in person.

There were two remote testifiers:

Meredith Wilson	<i>Had 4 "questions regarding to the 'recent' coverage of the antifreeze additive to the jet fuel being posed as 'the most significant health risk' to our exposure". She also provided written testimony.</i>
------------------------	--

Due to technical difficulties with Ms. Jamie Simic's audio, Chair Andaya announced that he would continue accepting any questions or comment from the Board Members and continue with the agenda until Ms. Simic could connect to give her testimony.

Board Member Anthony inquired if anti-freeze was brought up when the EPA and DOH were invited to the BWS.

Manager Lau responded that in reviewing the January minutes, Mr. Roger Brewer stated that he obtained samples of Jet Propellant 5 (JP-5), which he would test on his own due to the restricted information on some additives and possibly get results by April 2023.

Board Member Anthony agreed to a comment made by Ms. Meredith Wilson's testimony regarding testing for anti-freeze in water since it was not expected.

Manager Lau also replied on another comment in Ms. Wilson's testimony regarding contaminants of potential concern (COPC). He stated that the BWS got involved with Red Hill nine years ago when the Navy was testing for 60 plus different chemicals. Over the years, the DOH and EPA approved reducing the testing of various chemicals to only 12. The BWS continues to advocate testing 60 plus chemicals.

Board Member Anthony asked if cost or time was the reason for reducing the testing on different chemicals.

Manager Lau recalls the explanation for reducing the extensive chemical testing is because the Navy was not finding anything. The BWS felt that having a consistent historical record of test data over the years would have provided a trend and shown any increasing levels for the different chemicals.

Ms. Susan Pcola-Davis shared that after reviewing public information on military standards, she found that JP-5 included the ingredient anti-freeze.



MARCH 2023 RED HILL UPDATES

March 28, 2023
boardofwatersupply.com

EPA PROPOSED NATIONAL PRIMARY DRINKING WATER REGULATIONS ON PFAS –MARCH 14, 2023

- Informational webinars:

- March 16, 2023: General Overview
- March 29, 2023: Technical Overview

<https://www.eventbrite.com/e/drinking-water-professional-community-webinar-on-epas-proposed-pfas-mpdwr-tickets-551527432397>

- Online Public Hearing –May 4, 2023

- <https://www.eventbrite.com/e/proposed-pfas-mpdwr-public-hearing-tickets-549335536377>
- Register by April 28, 2023 to speak at the hearing.

- Regulation to be finalized tentatively end of 2023



PFAS – CONT.

[HTTPS://WWW.EPA.GOV/SDWA/AND-POLYFLUOROALKYL-SUBSTANCES-PFAS](https://www.epa.gov/sdwa/and-polyfluoroalkyl-substances-pfas)

Compound	Proposed MCLG	Proposed MCL (enforceable levels)
PFOA	Zero	4.0 parts per trillion (also expressed as ng/L)
PFOS	Zero	4.0 ppt
PFNA	1.0 (unitless) Hazard Index	1.0 (unitless) Hazard Index
PFHxS		
PFBS		
HFPO-DA (commonly referred to as GenX Chemicals)		

Hazard Index Calculation:

(e.g. PFBS=1.7 ppt) Hazard Index = $\frac{GenX_{water}}{10 \text{ ppt}} + \frac{PFBS_{water}}{2000 \text{ ppt}} + \frac{PFNA_{water}}{10 \text{ ppt}} + \frac{PFHxS_{water}}{9.0 \text{ ppt}} = 0.00085 = <1.0$ and in compliance

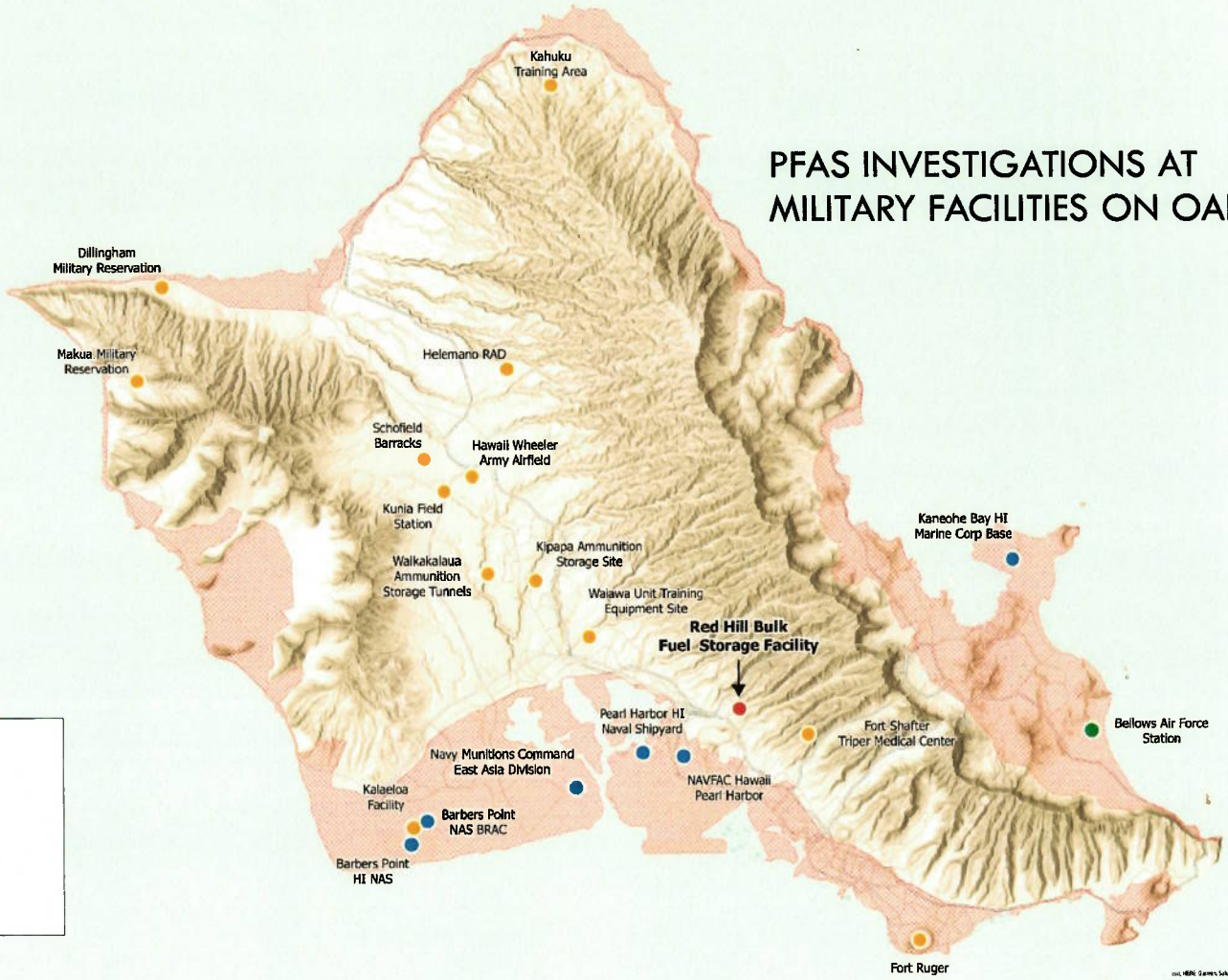


PROGRESS AT THE 700 INSTALLATIONS BEING ASSESSED FOR PFAS USE OR POTENTIAL RELEASE

DOD COMPONENT	STATE/TERRITORY	INSTALLATION NAME	INSTALLATION TYPE	CLEANUP STATUS AS OF MARCH 31, 2022
Air Force	Georgia	Savannah International Airport	National Guard	PA/SI Completed - RI Planned
Air Force	Hawaii	Bellows Air Force Station	Active	PA/SI Completed - No Further Action
Army	Hawaii	Fort Ruger	National Guard	PA/SI Completed - No Further Action
Army	Hawaii	Hilo AASF #2	National Guard	PA/SI Completed - No Further Action
Army	Hawaii	Kalaoloa Facility (Former Barbers Point-NAS)	National Guard	PA/SI Underway
Army	Hawaii	USAG HI - Dillingham Military Reservation	Active	PA/SI Completed - No Further Action
Army	Hawaii	USAG HI - Fort Shafter/Tripler Army Medical Center	Active	PA/SI Underway
Army	Hawaii	USAG HI - Hawaii - Wheeler Army Airfield	Active	PA/SI Underway
Army	Hawaii	USAG HI - Helemano RAD REC Station	Active	PA/SI Underway
Army	Hawaii	USAG HI - Kahuku Training Area	Active	PA/SI Completed - No Further Action
Army	Hawaii	USAG HI - Kilauea Military Reservation	Active	PA/SI Underway
Army	Hawaii	USAG HI - Kipapa Ammunition Storage Site	Active	PA/SI Completed - No Further Action
Army	Hawaii	USAG HI - Kunia Field Station	Active	PA/SI Completed - No Further Action
Army	Hawaii	USAG HI - Makua Military Reservation	Active	PA/SI Completed - No Further Action
Army	Hawaii	USAG HI - Oahu - Schofield Barracks	Active	PA/SI Underway
Army	Hawaii	USAG HI - Pohakuloa Training Center	Active	PA/SI Underway
Army	Hawaii	USAG HI - Waikakalaua Ammunition Storage Tunnels	Active	PA/SI Completed - No Further Action
Army	Hawaii	Walawa Unit Training Equipment Site (UTES)	National Guard	PA/SI Underway
Navy	Hawaii	BARBERS POINT HI NAS	Active	PA/SI Underway
Navy	Hawaii	Barbers Point NAS	BRAC	PA/SI Underway
Navy	Hawaii	BARKING SANDS HI PMRF	Active	PA/SI Underway
Navy	Hawaii	JBPHH PEARL HARBOR HI	Active	PA/SI Underway
Navy	Hawaii	KANEOHE BAY HI MCB	Active	PA/SI Underway
Navy	Hawaii	NAVFAC HAWAII P HARBOR	Active	PA/SI and RI Underway
Navy	Hawaii	NMC EAD DET PEARL HARBOR	Active	PA/SI Underway
Navy	Hawaii	PEARL HARBOR HI FISC	Active	PA/SI and RI Underway
Navy	Hawaii	PEARL HARBOR HI NSY	Active	PA/SI Underway



PFAS INVESTIGATIONS AT MILITARY FACILITIES ON OAHU



Legend

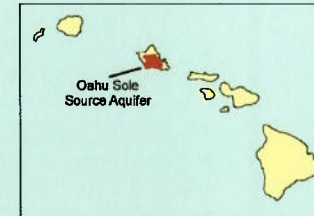
- Pass
- Air Force
- Army
- Navy
- Red Hill

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Oahu Sole Source Aquifer Designated Area

Hawaiian Islands



Notes and Explanation:

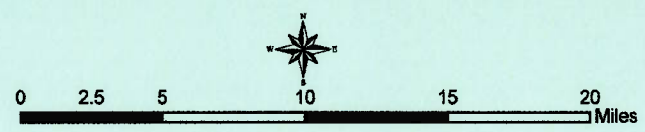
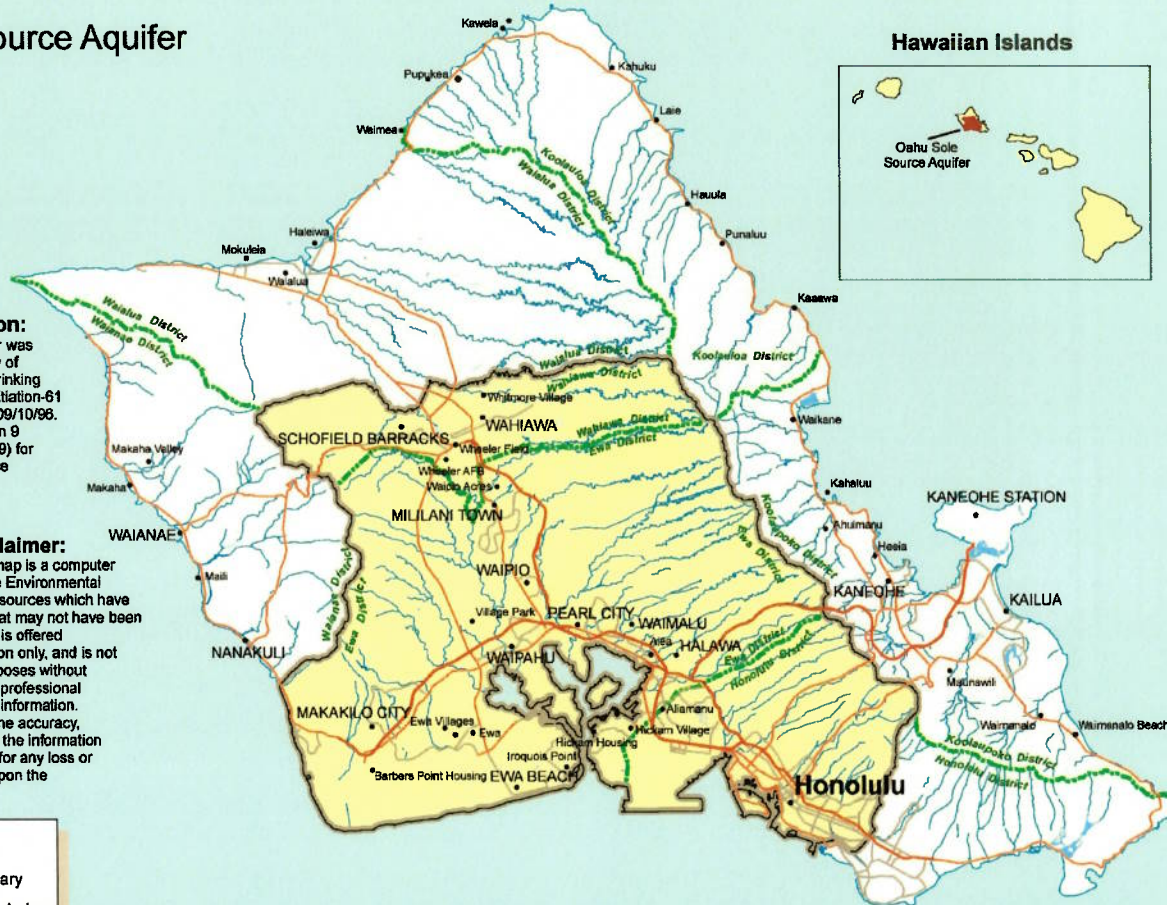
The Oahu Sole Source Aquifer was designated under the authority of Section 1424(e) of the Safe Drinking Water Act, Federal Register Citation-61 FR 47752, Publication Date - 09/10/96. Please contact US EPA Region 9 (Jameilya Curtis, 415-972-3529) for assistance in determining place locations with respect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

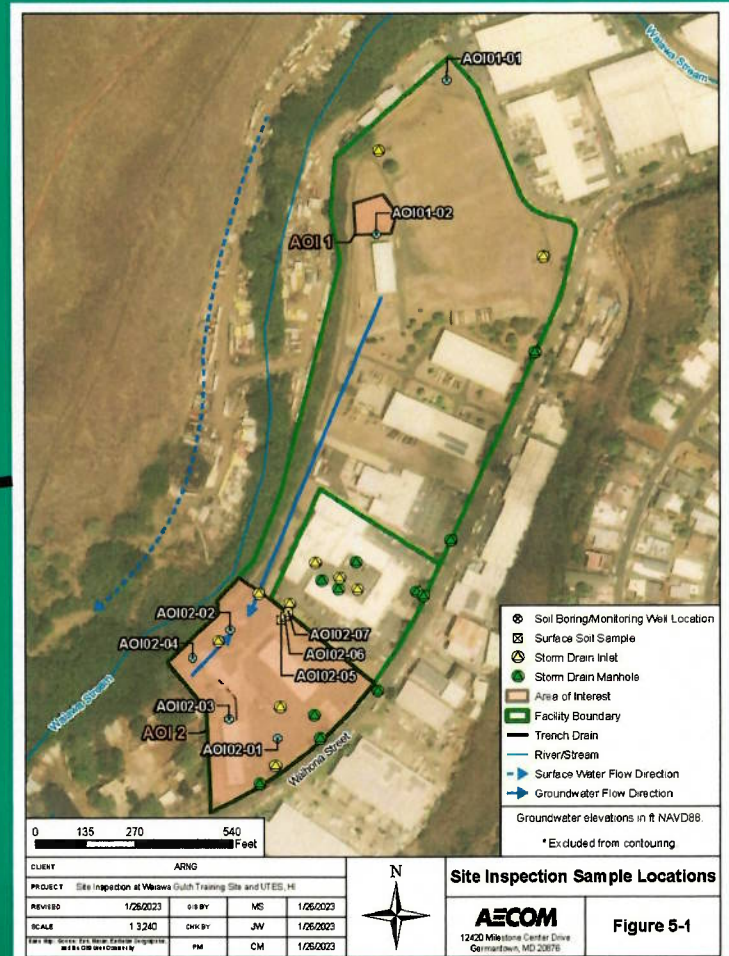
Map Status and Disclaimer:

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





HIARNG Waiawa UTES facility located north of Pearl Harbor that comprises approximately 20 acres, 0.75 miles northeast of the H-1-H-2 merge. Waiawa UTES is a HIARNG training and maintenance facility.



Waiawa Gulch Training Site (TS) and Unit Training and Equipment Site (UTES)

- Soil:
 - Detections of PFBS, PFHxS, PFNA, PFOA, and PFOS below the screening levels.
- Groundwater:
 - Screening level exceedances at 5 of 6 sampling locations.

Table 6-1: Screening Levels (Soil and Groundwater)

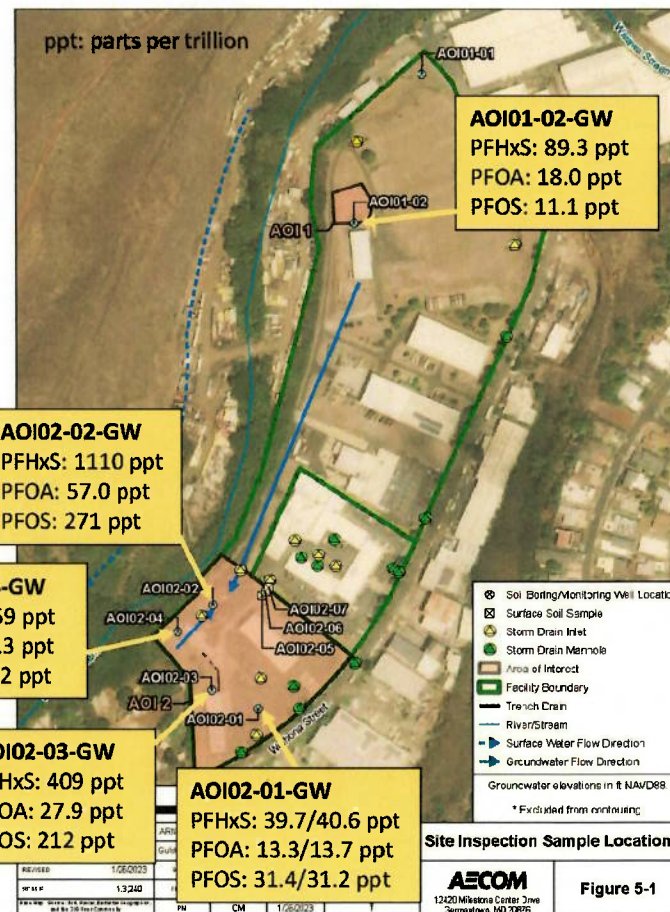
Analyte ^a	Residential (Soil) (µg/kg) ^a 0-2 feet bgs	Industrial/Commercial Composite Worker (Soil) (µg/kg) ^a 2-15 feet bgs	Tap Water (Groundwater) (ng/L) ^a
PFOA	19	250	6
PFOS	13	160	4
PFBS	1,900	25,000	601
PFHxS	130	1,600	39
PFNA	19	250	6

Notes:

bgs = below ground surface; µg/kg = micrograms per kilogram; ng/L = nanograms per liter

a) Assistant Secretary of Defense, 2022. Risk Based Screening Levels in Groundwater and Soil using United States Environmental Protection Agency's (USEPA's) Regional Screening Level Calculator. Hazard Quotient (HQ) = 0.1. 6 July 2022.

b) Screening values for HFPO-DA were established after SI planning and execution and thus not included as an analyte. Future CERCLA phases will include HFPO-DA if warranted.



DRAFT FINAL



Honolulu Board of Water Supply

News Release

Contact: Kathleen Elliott- Pahimui
Telephone: (808) 748-5319

March 17, 2023

BOARD OF WATER SUPPLY CONFIRMS LOW LEVEL DETECTION OF PFAS IN WAIPIO PUMPS

The Board of Water Supply (BWS) has confirmed the low-level detection of various perfluoroalkyl substances (PFAS) at its Waipio Heights Wells Pumping Station. The type of PFAS and level detected is shown below based on samples collected in February 2023. The BWS reported the findings to the Hawaii Department of Health on 3/17/23 in accordance with Hawaii State Law.

		Sample Date			
Sample location	Analyte	2/8/23	2/23/23	Units	Test Method
Waipio Heights Wells Pump 1	Perfluorohexanoic acid (PFHxA)	2.1	1.9	ng/L	EPA 533
	Perfluorooctanesulfonic acid (PFOS)	2.2	2.2	ng/L	EPA 533
	Perfluoropentanoic acid (PFPeA)	2.5	3.0	ng/L	EPA 533
	Perfluorobutanesulfonic acid (PFBS)	ND	1.7	ng/L	EPA 533
	Perfluorohexanoic acid (PFHxA)	2.1	2.0	ng/L	EPA 537.1
	Perfluorooctanesulfonic acid (PFOS)	2.1	1.8	ng/L	EPA 537.1
		Sample Date			
Sample location	Analyte	2/9/23	2/28/23	Units	Method
Waipio Heights Wells Pump 2	Perfluorooctanesulfonic acid (PFOS)	2.3	2.8	ng/L	EPA 533
	Perfluoropentanoic acid (PFPeA)	ND	1.9	ng/L	EPA 533
	Perfluorooctanesulfonic acid (PFOS)	2.3	2.3	ng/L	EPA 537.1

Abbreviations:

ng/L = nanogram per liter = parts per trillion (ppt)

ND = not detected

BWS detected these chemicals as part of its PFAS testing program. Multiple samples were tested to confirm the finding and improvements in test methods and technology enables the

(More)

detection of these very low levels. The Waipio Heights Wells Pumping Station serves water to the Waipio Crestview area between Lumikula Street to Lumi Street

PFAS are fluorinated organic chemicals that have been used extensively in consumer products such as carpets, clothing, fabrics for furniture, paper packaging for food, and other materials (e.g., cookware) designed to be waterproof, stain-resistant or non-stick. They also have been used in fire-retarding foam.

Based on existing DOH environmental action levels and drinking water standards for PFOS proposed by the U.S. Environmental Protection Agency, the levels at Waipio Heights Wells pose no significant health concerns.

Manager and Chief Engineer Ernest Lau stated, "We take our kuleana to provide safe drinking water to our community seriously and will continue to monitor for PFAS chemicals. While the current levels do not pose a health issue, we will continue to regularly test to monitor for any changes."

###

About the Board of Water Supply

The Board of Water Supply (BWS), a semi-autonomous agency of the City and County of Honolulu, manages Oahu's municipal water resources and distribution system. As the largest water utility in the State, the BWS serves approximately one million customers on Oahu. The BWS embraces its mission of "Water for Life - *Ka Wai Ola*"—to provide a safe, dependable, and affordable water supply, now and into the future. *Uwē ka lani, ola ka honua* — "When the heavens weep, the earth lives." For more information about the BWS, visit www.boardofwatersupply.com, follow @BWSHonolulu or like the BWS's Facebook page at <http://www.facebook.com/BWSHonolulu>.

###



PFAS AT RED HILL

- Dec. 7, 2019: Approximately **1,500 gallons** of concentrated firefighting suppressant spilled at the Navy's Red Hill underground fuel facility. Apparently caused by a "system malfunction in building 1721" and that "response/repair actions" were completed.
- Sept. 29, 2022: A spill of approximately **5,000 gallons** of fuel-impacted water was released in an underground pump house. Water had been discharged through piping that previously held AFFF and the liquid had been captured and placed in tanks.
- Nov. 29, 2022, **1,300 gallons** of AFFF concentrate had spilled at Red Hill.
- Concern that the PFAS will make their way into the groundwater.

Source: Star Advertiser, March 17, 2023



EVENTS AND COMMUNICATIONS UPDATE

- Hawaii Army National Guard Waiawa Unit Training and Equipment Station PFAS Site Investigation Public Meeting –February 24, 2023
- BWS continues to provide informational briefings to community groups and elected officials on Red Hill as requested
- Regular In-person meetings with the three Navy Admirals
- Meetings with Department of Health (DOH)
- Red Hill Remediation Roundtable – quarterly with EPA, Navy, DOH, and USGS
- Defueling Information Sharing Forum





Mahalo!

BOARD OF WATER SUPPLY

March 2023 Red Hill Updates

March 28, 2023

Providing safe, dependable, and affordable
drinking water, now and into the future.

SUSAN PCOLA-DAVIS - 1

BOARD OF WATER SUPPLY

MARCH 28, 2023

SUSAN PCOLA-DAVIS

What is water main flushing?

The Navy actually started the flushing on November 21, 2021 the day after the leak. Notification had not been given to state entities

Water main flushing moves water systematically through sections of a drinking water distribution system, creating a scouring action to clean the line. The increased flow rate scours the water pipe's inner walls and helps to remove build-up of naturally occurring debris and sediment.

The water is discharged through select fire hydrants onto local roads or other surface areas.

- *The process is critical to the overall maintenance of a distribution system and is one of the most important practices carried out by public drinking water systems to maintain high water quality, improve the carrying capacity of pipes, and ensure proper operation of distribution system components, such as hydrants and valves.*
- *Flushing the water main lines also ensures that fire hydrants are operational and allows the operator to assess the available water pressure and flow rate for firefighting purposes. Flushing at lower velocities can also be used to bring fresh water into a part of the distribution system where the water main ends or dead ends.*

Water main flushing is typically carried out through either conventional or unidirectional flushing (UDF). The type of flushing performed is based on the specific goals to be achieved within the distribution system.

o **Conventional flushing** consists of opening hydrants in targeted areas and discharging the water until any accumulations are removed and the water becomes clear. The water moves freely from all directions to an open hydrant. Since there is less flow in a given pipe, velocities may be too low to adequately clean, or scour, the pipes.

o **UDF** means that water mains are flushed systematically from areas closest to the source water to the outer edges of the water system. Certain valves are closed during UDF operations to minimize disturbance.

- *Flushing may be done as an important part in maintaining adequate chlorine residuals in outer areas of a water distribution system*

Source: 5830; SerN09/22U 100552/13 Jun 22

FINAL ENDORSEMENT on RDML Christopher J. Cavanaugh, USN Itr5830 of 14 Jan 22

From: Vice Chief of Naval Operations

To: File

Subj: COMMAND INVESTIGATION INTO THE 6 MAY 2021 AND 20 NOVEMBER 2021 INCIDENTS AT RED HILL BULK FUEL STORAGE FACILITY

Encl: (1) RADM James Waters, USN, Itr 5830 of 14 Apr 22

(2) Commander, U.S. Pacific Fleet Task Order of 2622 I5ZAPR22

29 November 2021

JBPHH stood up their Emergency Operations Center (EOC) in response to the complaints.

CNRH established the JBPHH Water Quality Crisis Action Team (CAT). CNRH began "heat mapping" phone calls.

The results from screening level TOC samples collected by NAVFAC on the evening of 28 November were negative and were provided to DOH on Monday, 29 November.

DOH was provided with water from these samples for their own screening tests.

29 November 2021

JBPHH Public Works began a drinking water system flush in Eastern Housing, Ohana Nui, and Hickam via 12 fire hydrants.

The locations were chosen by the Utilities Division based on system location and the proximity to empty space for the flushed water. Flushing secured at 1830 and re-commenced on 30 November, the next day.

Throughout the day, resident social media posts regarding smells of fuel in the water increased in number.

Fed Fire responded to a Pearl Harbor Child Development Center (CDC) following a report of a fuel smell in the water. Pierside CDC, Ford Island CDC, and Peltier CDC were all sampled in the week following 28 November.

PACFLT COM briefed his staff at the Monday staff sync regarding the possibility of water contamination. Under his authority as Senior Officer Present in Hawaii, PACFLT COM assigned PACFLT DCOM to lead the PACFLT CAT for Red Hill. PACFLT COM's priorities for the task force were

- 1) take care of people, get the word out, and bound the problem;
- 2) clean up the drinking water; and
- 3) fix the well.

The PACFLT Surgeon was part of the CAT as head of the Medical Working Group.

PACFLT Surgeon contacted Navy and Marine Corps Public Health Center (NMCPHC) CO for assistance and expertise. He also reached out to the Navy Environmental Preventive Medicine Unit 6 on island, which falls under NMCPHC.

CNRH PA took the lead on communications with civilian media supported by JBPHH PA, PACFLT PA, and FLC PH PA.

On 29 November, NAVFAC HI environmental staff responded to the 23 November email from Army Public Works environmental staff inquiring about the status of the monitoring and water quality. In the reply, NAVFAC HI environmental staff advised that the spill was stopped and the water/fuel mixture was placed into an above ground storage tank.

Additionally, the Navy was coordinating with DOH and EPA and that samples of the drinking water were being taken weekly. There were no impacts to the soil and the drinking water remained safe. CNRH PA, as well as FLC PH and NAVFAC HI reviewed and approved the response on 24 November.

CNRH Environmental staff and PWO staff developed a sampling plan and began sending daily expedited samples to the mainland to be analyzed using the 8015/BTEX method. These tests allow a more sensitive detection of total petroleum hydrocarbons.

At 1100 CNRH PA completed the JBPHH Water Quality Communication Plan working document. The communication plan was to be updated daily and coordinated with PACFLT, CNIC and CHINFO. The communication goals were to keep residents, families, base workers and anyone drinking Navy water informed on all actions and efforts to protect the water and individuals while reinforcing transparency of process and efforts. Themes, messages, audiences, timeline and tactics are included in the plan.

Deputy Director for Environmental Health at DOH, reported to CNRH that DOH was receiving complaints of a fuel / chemical smell in the water in Army housing at the Aliamanu Military Reservation (AMR).

[Redacted] was unable to provide the number of calls received and said that DOH was going to recommend shutting down the entire Navy water system. [Redacted] did not provide an analytical basis for shutting down the entire Navy water system, vice specific portions. Following the discussion with CNRH COM was concerned that they could not provide water to approximately 9,000 families if the recommendation from Hawaii DOH was adopted, so CNRH COM called JBPHH CO and directed him to begin finding drinking water sources and to prepare to contract for water services.

PACFLT DCOM spoke with regarding the situation at around 1200, reiterated the same concerns and DOH's prospective recommendation. PACFLT DCOM told her that they had bounded the locations and suggested figuring out what those neighborhoods are and putting out guidance focused on the problem areas. [Redacted] agreed that that made sense and acknowledged that she did not have the Navy's data. PACFLT DCOM offered to provide the Navy's data and requested data from [Redacted] She said that she did not have data available; DOH was just getting calls. PACFLT DCOM then told CNRH COM that he needed CNRH people to work with DOH to get whatever data they had.

Once it was known that the Army was receiving complaints, they requested the Army's data as well. PACFLT DCOM spoke with a couple of additional times during the afternoon in an attempt to reach alignment between DOH and Navy regarding the way forward and to send a joint press release on the situation.

At 1204, State Representative Aaron Johanson emailed NAVFAC HI PMO and reporting complaints from a constituent in Navy housing that there was jet fuel in her water and that she was able to set her drinking water on fire. NAVFAC HI PMO responded that the Navy was aware of the problems with water quality in housing and were collecting additional samples for analysis. and of DOH were also on the email, and was copied.

At 1250 the JBPHH CO released a statement to base housing residents reinforcing his team's commitment to the health and safety of the residents, that there **were no immediate indications** that the water was not safe, and **that he and his staff were drinking the base water.**

The statement was coordinated through CNRH PA and PACFLT, at least up through PACFLT PA, as well as through CNRH COM and CNRH COS. The statement was initially disseminated via an e-mail to the Project Directors at Ohana Military Communities and Hickam Communities to post on their resident portals.

At approximately 1900 on 29 November, DOH issued a press release recommending all Navy water system users avoid using the water for drinking, cooking, or oral hygiene. Navy water system users who detect a fuel odor from their water should avoid using the water for drinking, cooking, bathing, dishwashing, laundry or oral hygiene (brushing teeth, etc.).

Following the DOH press release, at 2026 CNRH issued a press release saying that the Navy was working with DOH to resolve reports of a chemical odor in military housing, recommended that residents avoid ingestion as a cautionary measure if chemical or petroleum odors are present and that samples have not detected petroleum in initial testing. The Navy was moving forward to provide sources of drinking water to affected residents and to sample affected locations.

30 November

By 30 November, CNRH had received over 200 trouble calls to the EOC, with the areas of concern centering in six PPV neighborhoods: Radford Terrace, Halsey Terrace, Catlin Park, Doris Miller, Moanalua Terrace and Ohana Nui.

At 0901, a message was posted to the JBPHH Facebook page saying that the EOC had stood up an information cell to receive calls from residents in military housing who have concerns about their water. The same message was also posted to the CNRH Facebook page.

At 1414, an update was provided via press release advising that the primary water distribution mains associated with the housing areas affected by possible potable water contamination had been flushed twice and the third flush was ongoing. Residents were asked to run water in their homes to flush the individual lines to each residence. The public was also notified that no petroleum or contaminants had been detected in testing at affected sites or at wells and tanks; however, there remained a concern that residual contamination may exist in some of the water lines based on continued reports from residents.

In early December, CNRH Environmental negotiated with DOH to allow flushing of hydrants **if the hydrants were monitored during the flush, sampled for TPH pre- and post-flushing, and the water ran onto land and not into the streets.** JBPHH Public Works personnel **failed to comply with these requirements by allowing the water to run into the street, resulting in a cease and desist order** from DOH received on **3 December**. This was followed by the requirement to use the 1 million gallon per day (MGD) granular activated carbon (GAC) units for flushing which began in mid-December.

On 3 or 4 December

CNRH engineer while looking at drawings of the Red Hill facility from the original construction, discovered the hume drain feeding into the groundwater sump that was impacted by the 20 November spill. This provided a path for fuel entering the sump to then travel under the tunnel floor and into the soil and rock below. This was the first indication of the most likely path from the fuel spill to the well.

Other info from this report:

The AFFF retention line is designed to transport an AFFF foam/fuel solution following AFFF system activation for fire suppression from the area of the lower access tunnel under the bulk fuel storage tanks to the AFFF retention tank outside adit 3. **Although not designed to be a dedicated fuel transportation system, the AFFF retention line was also designed to be an emergent fuel transmission line in the event of a catastrophic leak.**

The Military Specification for AFFF was revised in 2017 to **require significantly reduced PFOS and PFOA**. Due to the age of the Red Hill AFFF system, it has only ever contained this new formulation.

Source: [jbphh_010780.pdf \(hawaii.gov\)](#)



**Documentation to Amend Drinking Water
Health Advisory in Zone H1
Joint Base Pearl Harbor Hickam (JBPHH)
O'ahu, Hawai'i**

**Interagency Drinking Water System Team
Zone H1 Removal Action Report
February 2022**

Section 2a.1 - Memorandum for Record February 22, 2022. SUBJECT: Army Flushing Report for Zone H1 other contaminants from the pipe segment.



DEPARTMENT OF THE ARMY
HEADQUARTERS, UNITED STATES ARMY GARRISON, HAWAII
DIRECTORATE OF PUBLIC WORKS
947 WRIGHT AVENUE, WHEELER ARMY AIRFIELD
SCHOFIELD BARRACKS, HAWAII 96857-5013

AMIM-HWP

22 February 2022

MEMORANDUM FOR Interagency Drinking Water System Team (IDSWT) Building C27,
Nanumea Road, Naval Station Pearl Harbor, Joint Base Pearl Harbor-Hickam, Hawaii 96818

SUBJECT: Army Flushing Report for Zone H1
ENCL: (1) Water Storage Facilities & Water Source for one H1

1. **OBJECTIVE.** This addendum provides additional technical information to document the system flushing methodology and engineering approach used to restore Flushing Zone H1 (Alimananu Military Reservation Housing) to service as requested by the State of Hawaii Department of Health (HI DoH). This memorandum and associated technical document (see Hydraulic Model (Zone H1) fully support the Drinking Water Distribution System Recovery Plan (DWDSRP) which was signed by the Interagency Working Group (IDWST) on 17 December 2021.

2. **BACKGROUND.**

2.1. Portions of the water distribution system serving Joint Base Pearl Harbor Hickam (JBPHH) and surrounding areas were exposed to low levels of fuel contamination with initial indications in the form of smell reports occurring on or about 28 November 2021.

On the 20th of November, a spill of jet fuel, specifically JP-5 jet fuel, occurred at the Red Hill Bulk Fuel Storage Facility in an access tunnel that provides fire suppression and service lines for the facility. The fuel spill was cleaned up.

On December 6, 2021 HDOH issued an emergency order to suspend operations at the Red Hill facility, including fuel transfers. On the 8th of December, 2021, HDOH issued Direction One which provided requirements for flushing of the Navy Water System. The Navy began working with HDOH and the U.S. Environmental Protection Agency (EPA) to meet the requirements of this directive and **resume flushing of the potable water system**

On the 17th of December, 2021, HDOH, the U.S. Navy, the U.S. Army and EPA established an Interagency Drinking Water System (IDWS) Team to restore safe drinking water to affected JBPHH housing communities.

The working group was established to ensure that the agencies were coordinated in actions to restore safe drinking water to Navy water system users and that they had a clear, coordinated source of information as work continued to restore safe drinking water.

On the same day, the U.S. Navy, U.S. Army, HDOH, and the EPA jointly signed the Water Distribution System Recovery Plan agreement.

The flushing of the water distribution lines resumed on the 20th of December, 2021. Residential and non-residential facilities were flushed and sampled after the completion of flushing and testing of the distribution system of a specific Zone.

4. CONSTRAINTS. The following constraints were considered during development of the plan:

4.1. Waiawa Shaft pumps are capable of pumping 19 million gallons day (MGD) with 2 pumps. There are 4 pumps at Waiawa Shaft, 2 are operational, one is standby, and one is down for maintenance. Average daily demand at JBPHH since the incident, and after water conservation measures were implemented, has ranged from 12 to 17 MGD. Maximum potable water system flushing flows were limited to 5 MGD to avoid excessive drawdown of the S1/S2 tanks and stay within the capacity of Waiawa Shaft pumps.

4.2. The two 6 million gallon (each) tanks, S1 and S2 could not be drawn down below the 28-foot level. This constraint was imposed by the water system operators who wanted to avoid low water system pressures that would be caused by S1/S2 drawdown below 28-feet.

4.3. Water service was required to be maintained for residents. Many families have remained in their homes and mission essential Government activities require continuous water service.

4.4. JBPHH and USAG-HI did not have an established unidirectional flushing plan developed prior to the incident. Unidirectional flushing typically involves inducing one-way flow through each pipe segment in a water distribution system by closing mainline isolation valves and opening hydrants for a short period of time. The number of hydrants required would be determined by the pipe size and the minimum water velocity required to flush sediments and

Section 2a.1 - Memorandum for Record

True unidirectional flushing of the system was determined not to be a feasible method for flushing the potable water system for the following reasons:

4.4.1. The distribution system was to be recovered with critical urgency. Additionally, SMEs advised that the longer contaminants remained in the system, the more likely it was that they would migrate into plastics, gaskets, sediments, etc. **(Regardless of a plan, the contaminants had already had an unplanned flush)**

A unidirectional flushing program would take several months to develop and implement and the timeline was not considered feasible for a return to service.

4.4.2. **Water system operators indicated that many mainline isolation valves would not properly close and could not be relied upon to isolate pipe segments.**

4.4.3. A single short duration flush of higher velocity flow through each pipe segment may be effective at removal of sediments from a single pipe segment. **However, the method was considered to be less effective at system-wide removal of aqueous phase fuel contaminants than other options.**

4.5. Flushing zones with higher risk of contamination were identified and prioritized using water user complaint history, testing results, the hydraulic model, and the hydraulic proximity to Red Hill Shaft. A factor of safety was applied to the highest priority zones by specifying a minimum of five (5) volumetric turnovers. All Army Zones were flushed with this safety factor.

5. Flushing Operations. **All flushing plans are designed with a directional flush of the distribution system starting from the clean water source and moving systematically through the entire system.**

The limited water source capacity at Waiawa Shaft and disposal constraints required that the system be broken down into smaller flush zones. **4 total zones were established** that could be independently flushed without adverse hydraulic or water quality impacts to previously flushed zones. See section 2a.3 (hydraulic model) for more information on flushing. (Actually 19 zones)

Safe Water
Joint Base Pearl Harbor-Hickam

HOME
SYSTEM MAP
ZONES
PUBLIC NOTICES
IOWWS

Flushing Zones

Zone	Community	No. of Residents	Estimated Flushing Date/Availability
A1	Pearl City Peninsula	688	20 - 24 Feb
D1	Hale Moku Haleakala	678 160	01 - 08 Mar
C2	Hikiano Hale Hale Koa Officer Field Area Oahu's Village	781 888 488	10 - 16 Mar
F1	NEA Waiwale Terrace	783	11 - 18 Mar
A2	Ford Island	411	01 - 08 Mar
D8	Barbers Village	813	16 - 20 Mar
B1	McOver Halekani	781 88	08 - 09 Mar
F2	Castle Park Makua Oahu's Millar Halekani Terrace Aloha's Terrace	818 21 314 477 402	11 - 18 Mar (Due to X)
G1	Camp Green	16	03 - 06 Mar
H1	Ala Moana Military Reservation (AMRF)	813	12 - 16 Mar
H2	Ala Moana Military Reservation (AMRF)	358	12 - 16 Mar
H3	Ala Moana Military Reservation (AMRF)	370	12 - 16 Mar
C1	SUB BASE	N/A	N/A
C3	Hale Aili Waiwale Hospital Point	74 6 18	18 - 20 Mar
C2	Halekani Hospital Point	6	18 - 20 Mar
D4	Halekani Hospital Point	N/A	N/A
B2	Barbers	88	08 - 10 Mar
A3	Iroquois Point	1488	16 - 17 Mar

Amended Health Advisory for 0714 of 0716 Hawaii

Note 1. Data are only a estimates and do not represent case scenarios. Advisory amendments are at the discretion of Hawaii Dept of Health. Data range includes all hour information to residents following Amended health advisory.

Note 2. Ala Moana Middle and Elementary Schools are not served by the Navy's public water system.

Green text reflects a date change to the left, red to the right.

IOWWS = Interagency Drinking Water System Team

Last Updated: 18 March 2022

How to use
 To access information specific to a zone, hover over the location on the table and click on it. Once clicked, you will be redirected to that specific zone page with current information. Alternatively, hover over the "Zones" tab and click on a zone from the drop down menu.

Status Legend

	Amended Health Advisory Issued
	Hawaii DPH Review
	IOWWS Review
	Lab/Consultant Analysis & Preparation

SUSAN PCOLA-DAVIS - 9

From: Whelton, Andrew J

Sent: Saturday, January 8, 2022 4:58 AM

To: Lee, Andre K (NAVFAC HI BD) CIV USN NAVFAC HAWAII PEARL (USA)

Cc: Isaacson, Kristofer P ; Proctor, Caitlin Rose Subject: [URL Verdict: Neutral][Non-DoD Source]

RE: Cross Connection Control Plan and Flushing Plan documentation requirements for DoH

LCDR Daly, I am free to talk later this afternoon today if you want. I'm Mountain Standard Time. Below is some information. Andy

FEEDBACK

1. You applied unidirectional flushing and if you opened hydrants fully you likely maximized velocity in the pipes you were flushing. The issue they (HDOH) seem to be getting at is scouring velocity which you identify. This is used for removing sediment (typical cleaning of water pipes) as you know. There is no SOP for water contamination response and recovery, so you applied standard water distribution system maintenance practice of unidirectional flushing. This is good. The state (HDOH) I think invoked water main disinfection standard which, to my knowledge isn't applicable here unless you conducted shock disinfection.

a. For perspective, per a Water Research Foundation study: Microbial Control Strategies for Main Breaks and Depressurization, Project 4307. Published 2014. Denver, Colorado.

1. Scouring velocity helps remove sediment from water mains/pipes. To achieve 2.5 to 3 log removal of sand particles for 4-to-16-inch diameter PVC pipes, 3 ft/s is needed.

2. In that report, to achieve this removal for a 6-inch diameter PVC pipe, Q was 308 GPM

3. In that report, to achieve this removal for 4-inch diameter PVC pipe, Q was 137 GPM

b. We recommended starting flushing from the clean water source and moving systematically through the entire system in a unidirectional way. If you all did this, be sure to explain that. That helps minimize the change residual "old" water gets untouched or is left in the system.

c. You could calculate scouring velocities in each of the areas. If any are lower than desired you can go back and just keep repeat flushing giving an added level of safety.

d. The state's interest in scouring velocity may be of concern that (JP-5?) free product adsorbed to sediment/scales and they want to be certain it got scoured out. If it didn't, it could dissolve it's constituents into water over time.

e. **Dead-ends are really important.** You need to specifically address how you will get that water out. In West Virginia, many weeks after the spill and utility had flushed out the black-licorice smelling contaminated water, someone in a distal part of the system complained about odor. To my recollection the utility thought it was psychological, but it turned out there was a dead-end

they didn't flush. Somehow that contaminated water got drawn into a nearby home and someone was exposed.

f. Question: How long was each hydrant open typically?

g. I think we mentioned **flushing 3 times the pipe volume**. Rules of three is what I often recommend. Flushing velocity is certainly important. I vaguely remember NAVFAC had contracted a consultant to create the flushing plan.

2. JP-5 isn't a single contaminant which we've talked about before. It's a mixture of 100s-1000s of individual chemicals. **Even if JP-5 itself is hydrophobic and primarily found in emulsions or floating on the surface, some of these constituents will still diffuse into the water itself.** The question they are likely after is **how do you know you removed all parts of JP-5 that may have gotten entrained in the water system?** This goes back to what chemicals you are testing for in the water distribution system. JP-5 constituents have different water solubility and octanol- water partitioning coefficients (Log Kow = How much they like to be in biofilm and plastics, not water). Additionally, the different materials (Metal vs PVC vs HDPE vs. gaskets) may be more prone to soaking up some JP-5 contaminants and not others depending on their characteristics. For example, PVC has been shown to be less susceptible to soaking up some crude oil-based contaminants than HDPE pipes (Huang et al. study with Whelton). **Ultimately, the fate of the chemicals in the drinking water system will not be the same for all JP-5 constituents.** Remember the drawing I drew on the whiteboard when meeting with CDR Chase, NAVFAC, COE, and Army? **It showed different constituents may be in different parts of the water system.** That's what DOH is likely after. Question to you: What wide screen testing have you done in the water distribution system since December 22? This can help you hunt down that the contaminants are present or gone.

3. Escalation should be based on how much flushing you are okay with trying. If you want to remove and replace infrastructure (that has sometimes happened after other contamination events on the mainland and overseas), it's a viable but laborious option. **As an extreme example, following the Camp Fire it was estimated it would take over a year of continuous flushing to return some contaminated pipes to safe use, so for some conditions they removed and replaced pipes.** However, this flushing timeline will vary significantly depending on the water distribution systems and water testing results – AND chemicals or individual JP-5 constituents present. **If I knew what the chemicals were still being found and what was done to try to get rid of them, I could give a more informed opinion.** Food grade surfactants were used in Israel after a drinking water contamination incident...BUT using surfactants is not trivial and can cause all sorts of damage to water system components and leave residual. This probably isn't an email, but more discussion. Happy to talk. **If you decide you want to go this way we should be more engaged technically in what this means.** It's not likely an email response/effort, but more involved.

Source: [Water Main Flushing - Fact Sheet - FAQ for Consumers \(mass.gov\)](#)

Why is a flushing program important?

- Maintains proper distribution system operation- Flushing requires the opening and closing of hydrants and valves to ensure that water moves through pipe segments for effective cleaning. This operational practice also provides water operators with the opportunity to identify broken or inoperable valves and hydrants which is important to ensure that they will work properly in an emergency.

How will you know when your local water supplier will be flushing in your area?

Your Public Water Supplier (PWS) should notify you of the location (streets), date and time of flushing.

What should you do when your public water supply informs you that they will be flushing your water distribution lines?

- Prior to the designated flushing period: consider collecting water for drinking, cooking and other human consumption purpose. Fill a pitcher or pot.
- During the designated flushing period in your area, you may experience water discoloration or sediment.
 - o Do not use the water in your home, as the water quality may be temporarily reduced at this time and you do not want to draw the water being flushed from the mains into your home piping. Using the water during flushing may result in staining or sediment in laundry, ice machines, dishwasher, bathtubs, or hot water tanks.
- If your water appears dirty after the designated flushing period:
 - o Run a cold water tap closest to your meter (usually found in the basement or a first floor sink) for a few minutes up to 15 minutes.
 - o Keep the tap open until the water runs clear. If you have trouble seeing if the water is clear, fill a light or white colored cup or container to view the water. If the water coming from the tap is not clear after running for 15 minutes, wait 15-30 minutes and try again.
 - o Do not run a tap that has a water filter connected to it or the sediment may clog your filter.
 - o Avoid running a hot water tap because it could draw sediment into your hot water tank.
 - o If you inadvertently drew discolored water into your home and the staining of clothes or fixtures does occur, rust removal products are available at most home products stores and may be available from your water supplier.

When (time of day) is flushing normally conducted?

Daylight also provides better visibility to see discolored water being flushed out of the system and when water is running clear.

Customers should understand that the schedule for flushing may change (perhaps with little to no notice) based on the progress of the crews.

How will you be affected?

There may be a slight drop in pressure or noticeable discoloration of the water from the minerals and sediments that are being flushed out.

During the flushing operation in your neighborhood, you will be able to see crews flushing the water mains through fire hydrants and ends of water main pipes commonly called blow-offs.

Crews will usually direct the water being flushed into appropriate areas to avoid sediment erosion or localized pooling of water, but you may notice water on the street or roadway. I

n some communities, the fire department may be the crew operating the fire hydrants during the flushing operation. There may also be traffic and parking changes because specific hydrants will be used to discharge water.

What about water pressure and safety?

Flushing may cause short-term pressure fluctuations; however, specific water pressure is required to be maintained within the system.

How long does it typically take to clean the water mains on each street?

Typically, it takes 30 minutes to 60 minutes to flush the water mains on each street.

What should I do if my water is discolored after flushing of water mains?

Water is often discolored after water main flushing, but this should not last long. In the event customers draw discolored water into the home, flush a cold tap for a few minutes, up to 15 minutes. As a precaution, prior to using hot water run the cold water tap to ensure discolored water is not drawn into the hot water tank.

What should I do if the water is still discolored after three to four hours?

Contact your local water supplier.

What if you notice a chlorine smell?

It is normal for there to be an increased amount of chlorine in the water during flushing, because the velocity the water is moving through the pipes shortens the travel time from the treatment plant. Systems that normally do not use chlorine may add it during flushing. Customers can easily remove the chlorine taste and smell by filling an open container with water and keeping it in the fridge for drinking as chlorine will dissipate.

Is water main cleaning a waste of water?

No, this is a normal and necessary part of maintaining a safe and reliable drinking water supply, and in some instances the water is returned to the aquifer, rivers or streams from which it was withdrawn as groundwater recharge or surface water runoff.

Is it possible to capture and reuse the water being flushed?

In most cases, it is not feasible to capture and reuse the water being flushed due to the high velocities and volume of water being released. If you are running water to clear out your own pipes after flushing, you can capture that water and use it for watering plants.

What if discolored water gets into the hot water tank?

If you are sure that sediment got into your hot water tank, **use the clean out tap at the bottom of the tank to remove any settled material.** Follow the instructions which came with the tank to drain the tank and be careful of the hot water.

What if you don't have a hot water tank – you have an on-demand water heater?

The hot water should run clear when the cold water is clear.

Do most public water suppliers have similar water main cleaning programs?

All public water suppliers should have a routine flushing program. These programs are considered the best way to improve water quality and increase the reliability of the water distribution system.

Are there particular situations when the department of health requires a public water system to implement a flushing program or flush certain segments of a system?

After a public health order has been issued for bacteria or some other contaminant of concern, the health department may require a water supplier to implement a flushing program to remove the contaminant and to notify its consumers to flush their household and building lines.

General precautions during a boil order

Below are general precautions MassDEP recommends when a public health order is in effect. Please check with your local water department for specific instructions.

- DISCARD any ice, juice, formula, stored water and uncooked foods prepared with tap water during the period of concern.
- USE BOILED OR BOTTLED WATER for
 - drinking
 - food preparation
 - mixing baby formula
 - making ice
 - washing food
 - manual utensil and equipment washing, rinsing and sanitizing

- brushing teeth
- any other activity involving the consumption of water.
- CHILD CARE CENTERS AND SCHOOLS should use only bottled or boiled water for
 - mixing infant formula
 - hand washing
 - mixing sanitizing solutions for diapering areas and surfaces such as tabletops and toys.

Adult employees should use a hand sanitizer after washing hands with tap water and soap. Do not use drinking fountains and discontinue the use of water play tables. Follow all guidance provided by the Massachusetts Department of Education (DOE) and/or the Massachusetts Department of Early Education and Care (DEEC).

- RETAIL FOOD ESTABLISHMENTS must follow the guidance of the local board of health and the Massachusetts Department of Public Health (MassDPH). Wholesale food manufacturers must follow the guidance of MassDPH. Meat processing plants must follow the guidance of MassDPH and the United States Department of Agriculture.
- SWIMMING POOLS, HOT TUBS, AND SPAS that are operated properly, including routine monitoring for adequate disinfection levels, may continue to operate.
- SHARE THIS INFORMATION with all others who drink this water, especially those who may not have received this notice, such as visitors. You can do this by posting this notice in a public place or distributing copies by hand or mail.
- TRANSLATE THE PRECAUTIONS for anyone who does not understand English.

General precautions during a boil order

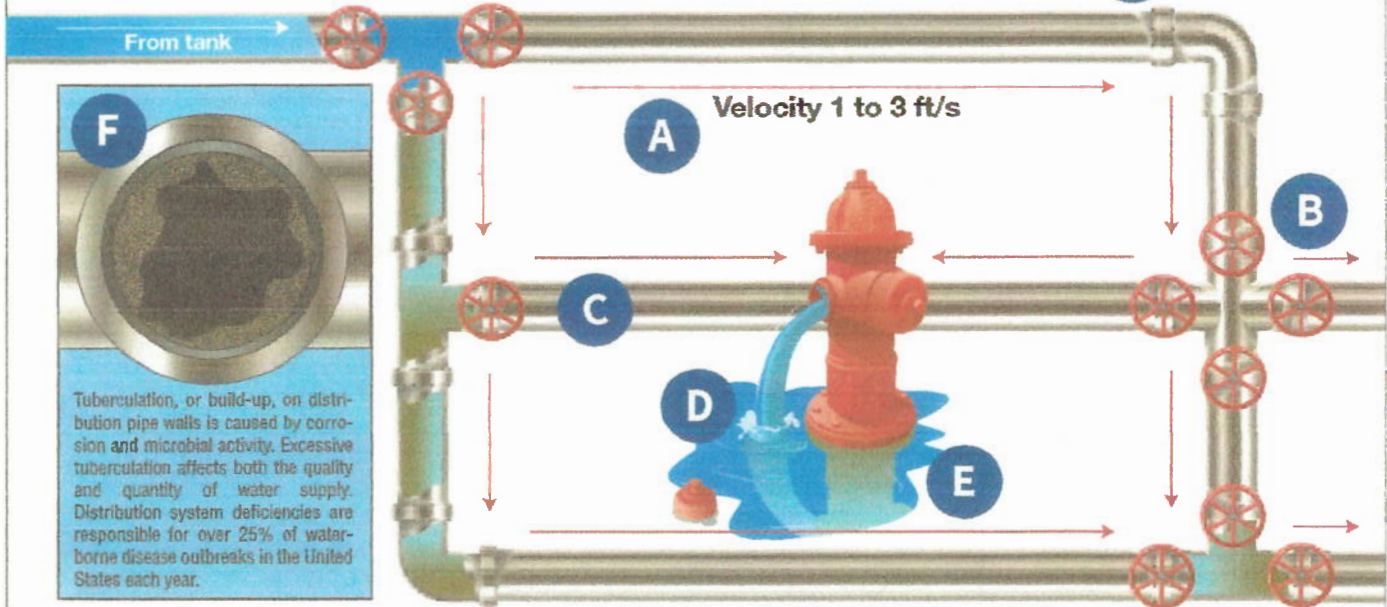
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- mixing baby formula
- making ice
- washing food
- manual utensil and equipment washing, rinsing and sanitizing
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- any other activity involving the consumption of water.
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 - mixing infant formula
 - hand washing
 - mixing sanitizing solutions for diapering areas and surfaces such as tabletops and toys.
- Adult employees should use a hand sanitizer after washing hands with tap water and soap. **Do not use drinking fountains** and discontinue the use of water play tables. Follow all guidance provided by the local board of health.
- RETAIL FOOD ESTABLISHMENTS must follow the guidance of the local board of health. WHOLESALE FOOD MANUFACTURERS must follow the guidance of the local board of health.
- SWIMMING POOLS, HOT TUBS, AND SPAS that are operated properly, including routine monitoring for adequate disinfection levels, may continue to operate.
- SHARE THIS INFORMATION with all others who drink this water, especially those who may not have received this notice, such as visitors. You can do this by posting this notice in a public place or distributing copies by hand or mail.
- TRANSLATE THE PRECAUTIONS for anyone who does not understand English.

The Benefits of Unidirectional Flushing

Conventional Flushing



F

Tuberculation, or build-up, on distribution pipe walls is caused by corrosion and microbial activity. Excessive tuberculation affects both the quality and quantity of water supply. Distribution system deficiencies are responsible for over 25% of water-borne disease outbreaks in the United States each year.

A Velocity of water is significantly higher in UDF than in traditional flushing, providing far better pipe scouring.

B Valves are opened and closed during UDF, enabling water systems to locate broken or closed valves and to learn critical information about the system. Exercising hydrants and valves in this way also prolongs their useful life.

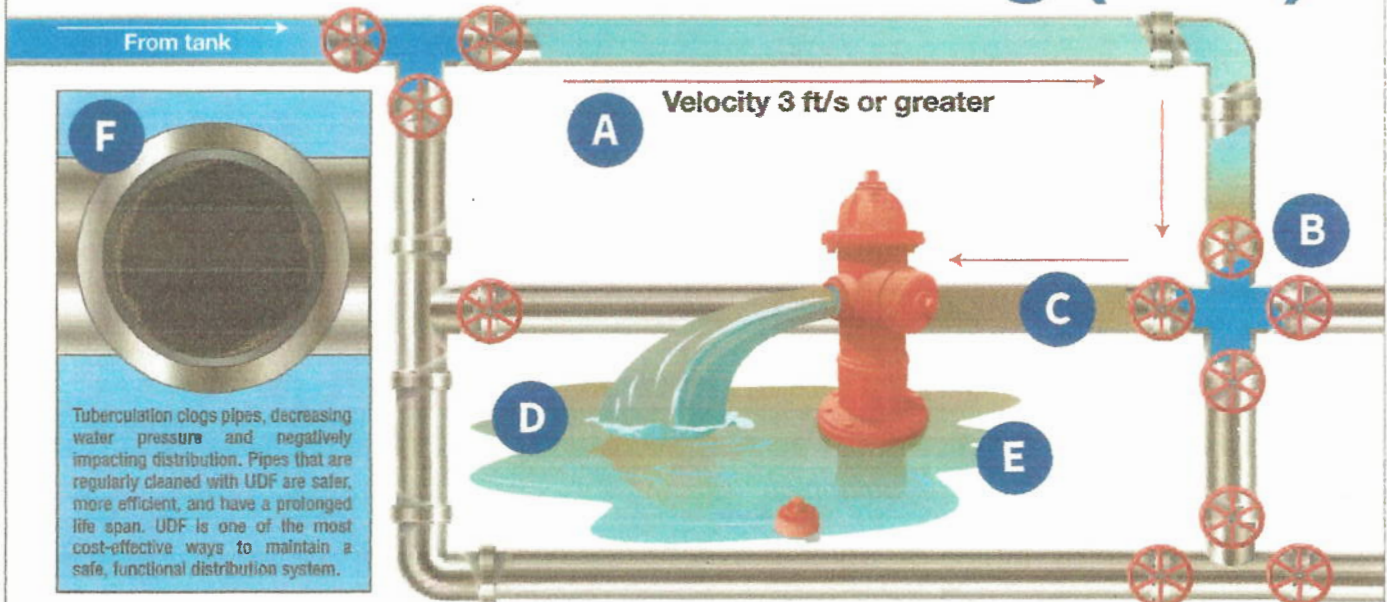
C During conventional flushing, dirty water is recirculated throughout the system, whereas UDF forces water in one direction, from a clean source through a dirty pipe, providing for superior pipe wall cleaning.

D Sediment, corrosion, and biofilm are forcefully flushed out during UDF, whereas they remain circulating in the system in conventional flushing.

E UDF actually uses up to 40% less water than conventional flushing.

F Conventional flushing does not produce a high enough velocity to adequately scour pipe walls, whereas the increased velocity in UDF removes a significant amount of tuberculation from pipe walls. Regularly scheduled UDF is an invaluable part of a system's asset management program.

Unidirectional Flushing (UDF)



F

Tuberculation clogs pipes, decreasing water pressure and negatively impacting distribution. Pipes that are regularly cleaned with UDF are safer, more efficient, and have a prolonged life span. UDF is one of the most cost-effective ways to maintain a safe, functional distribution system.



**DEPARTMENT OF THE NAVY
VICE CHIEF OF NAVAL OPERATIONS
2000 NAVY PENTAGON
WASHINGTON DC 20350-2000**

5830
Ser N09/22U100552
13 Jun 22

FINAL ENDORSEMENT on RDML Christopher J. Cavanaugh, USN ltr 5830 of 14 Jan 22

**From: Vice Chief of Naval Operations
To: File**

**Subj: COMMAND INVESTIGATION INTO THE 6 MAY 2021 AND 20 NOVEMBER 2021
INCIDENTS AT RED HILL BULK FUEL STORAGE FACILITY**

**Encl: (1) RADM James Waters, USN, ltr 5830 of 14 Apr 22
(2) Commander, U.S. Pacific Fleet Task Order of 262215ZAPR22**

1. I reviewed the subject investigation (Cavanaugh report) as supplemented by Enclosure (1) along with the first endorsement and related comments. The contamination of drinking water from the Red Hill Shaft was the result of the Navy's ineffective immediate responses to the 6 May and 20 November 2021 fuel releases at the Red Hill Bulk Fuel Storage Facility (Red Hill), and failure to resolve with urgency deficiencies in system design and construction, system knowledge, and incident response training. These deficiencies endured due to seams in accountability and a failure to learn from prior incidents that falls unacceptably short of Navy standards for leadership, ownership, and the safeguarding of our communities.

2. This investigation characterizes the primary and proximate factors that caused the 2021 events, providing the foundation for a comprehensive approach to safeguarding the environment and executing the Secretary of Defense's decision to defuel Red Hill. I approve the findings of fact, opinions, and recommendations of both investigating officers as modified by the first endorsement and the following:

a. Opinion 18 is modified to delete the phrase "as a formal release notice" from the second sentence of the opinion.

b. Recommendations 35, 43 and 49 of the Cavanaugh report are modified to read: "Review the expired DLA-NAVSUP, NAVSUP-CNIC, NAVSUP-NAVFAC, and DLA-NAVFAC MOAs and establish a comprehensive five-party MOA between DLA-Energy, NAVSUP, NAVFAC, CNIC and U.S. Army Corps of Engineers regarding roles and responsibilities, including the assignment of Engineering Agents and appropriate Programmatic Authority informed by the Deputy Chief of Naval Operations for Fleet Readiness and Logistics' review of Shore command and control."

c. The following Cavanaugh report enclosures are updated:

APPENDIX D: Timeline of Engagements (20 Nov - 7 Dec)

Day	Time (if available)	Intended Audience	Information Provided and Who Provided It
	~1650L		November Spill
20-Nov	2345L	Regulators	The acting CNRH Environmental Director called DOH to report fuel/water spill [Encls (159), (173), (174)]
		Government Leaders	CNRH COS made notification to CODEL, staff, Governor, LT Governor, and other state representatives regarding spill and actions taken. Done at the request of PACFLT GA who was on leave on the mainland [Encls (108), (175), (178)]
21-Nov	1618L	General Public	CNRH Media Release: Water and fuel mixture release from fire suppression drain line at Red Hill. No signs or indication of any release to the environment and the drinking water remains safe to drink [Encls (34), (74), (182)]
	1645L	HHQ	FLC PH OPREP-3 Navy Blue: Reports spill. All released fluid was contained in the lower tunnel. No known fluid was released to the environment. No impact to mission [Encl (183)]
	Morning	Government Leaders	CNRH provided an in-person brief to Rep Kabele and Rep Case, along with their staffs, regarding the spill and also provided a tour of Red Hill [Encl (187)]
22-Nov	1330L - 1530L	Regulators	FLC PH staff confirmed to DOH that there was no sheen on the Halawa stream and NAVFAC HI confirmed no fuel in the well pump room during DOH site visit to Red Hill [Encl (189)]
	1601L	General Public	CNRH Media Release: Red Hill Fuel tanks and main fuel pipelines are secure. There are no signs or indication of any releases to the environment and the drinking water remains safe [Encl (190)]
23-Nov		Government Leaders	PACFLT COM called Sen Hiroto to brief her on the spill at Red Hill and advised that he directed an investigation [Encl (196)]
24-Nov		Regulators	CNRH received from DOH a Notice of Interest (NOI) in a Release or Threatened Release of Hazardous Substances for the 20 November spill. The NOI included requirements for additional sampling and development of work plans to remediate the area, among other items [Encls (199), (200)]
27-Nov	1830L	Military Housing Residents	JBPHH PWD help desk received the first phone call from a resident of Moanalua Terrace complaining of a chemical smell in their water. There is no indication that action was taken beyond logging it. This is the earliest report of the issue [Encls (194), (202), (203)]
	0749L	Military Housing Residents	JBPHH PWD help desk started receiving phone calls from JBPHH housing residents complaining of a chemical/fuel smell in their water. These continued throughout the day for a total of 37 calls [Encls (10), (194), (202), (206), (207)]
	1930L		Red Hill Well Secured
28-Nov	2133L	General Public	CNRH Media Release: Navy investigating reports of a chemical smell in drinking water from some residences. There was no immediate indication that the water was not safe. Navy continuing to test water, visit homes, and investigate the drinking wells [Encl (212)]
	2138L	Military Housing Residents	JBPHH FB Post: Navy is investigating reports of a chemical smell in drinking water at several homes in some of the military housing areas for JBPHH Sunday evening. There is no immediate indication that the water is not safe. Navy continues to investigate reports and is testing the water [Encl (223)]
		Regulators	CNRH discussed reports of fuel/chemical smell in Army housing with DOH Deputy Director. DOH notifies CNRH of intent to advise all Navy water system users to avoid using the water for drinking, cooking, or oral hygiene [Encl (175)]
		Regulators	CNRH e-mailed a sampling plan to DOH in response to the 24 Nov DOH Notice of Interest [Encls (199), (200)]
		Regulators	NAVFAC shared negative water test results with DOH for samples taken on 28 Nov. NAVFAC also provided water from those same samples [Encls (44), (124), (213)]
		Military Housing Residents	Throughout the day, resident social media posts regarding smells of fuel in the water increased [Encl (175)]
			CNRH PA took the lead for Navy communications with media [Encls (34), (191), (217)]
29-Nov	1200L	Regulators	PACFLT DCOM called DOH Deputy Director to provide information on the situation and offered to provide Navy data and requested data regarding Army housing complaints from DOH. DCOM attempted, unsuccessfully, to coordinate a joint press release through the afternoon [Encl (11)]
	1204L	Government Leaders	Acting CNRH Environmental Director responded to e-mail from State Rep Johansen that the Navy is aware of the base housing water quality issue and is taking samples for analysis [Encl (219)]
	1250L	Military Housing Residents	JBPHH CO released a statement via PPV housing portal that there are no immediate indications that the water is not safe, and that he and his staff are drinking the base water [Encl (35), (220)]
	1408L	General Public	PACFLT Media Release: Reports that on 22 Nov 21, PACFLT COM ordered an investigation into the spills at Red Hill [Encl (408)]
	1900L		DOH press release recommending all Navy water system users avoid using the water for drinking, cooking, or oral hygiene [Encl (190)]

	2026L	General Public	CNRH Media Release: The Navy is working with HI DOH to resolve reports of chemical odors in the water at affected military housing at JBPHH. Recommends avoiding ingestion if odors are present [Encl (222)]
	2031L	Military Housing Residents	JBPHH FB Post: DOH and Navy tested water -- no measurable quantities of fuel found. Navy pursuing additional, stringent testing. [Encl (223)]
	0901L/0902L	Military Housing Residents	JBPHH/CNRH FB Posts: Joint Base Pearl Harbor-Hickam Emergency Operations Center has stood up an information cell to receive calls from residents in military housing who have concerns about their water. [Encl (223)]
	Morning	Government Leaders	CNRH conducted a phone call with Hawaii Lieutenant Governor Josh Green, updating him on actions being taken. Dr. Green expressed his support and offered assistance if needed. [Encls (175), (224)]
		Government Leaders	CNRH provided updates to Representative Kabele and Honolulu Mayor Blangiardi. [Encls (175), (224)]
	1414L	General Public	CNRH Media Release: JBPHH housing residents are asked to flush their water systems as the Navy continues to test water samples. No detection of petroleum constituents in initial test sampling, residual contamination may exist. [Encls (226), (227)]
	1448L	Military Housing Residents	CNRH update emailed to housing portal reps and ombudsmen on the flushing of the water distribution mains and request for residents to flush their individual household lines. No detection of petroleum constituents in initial sampling. [Encls (226), (227)]
	1448L/1449L	Military Housing Residents	CNRH/JBPHH FB Posts: Primary water distribution mains associated with the housing areas affected by possible potable water contamination have been flushed twice and the third flush is ongoing. No petroleum detected, residual contamination remains concern. [Encls (226), (227)]
		Regulators	Acting CNRH Environmental Director sent DOH the water system map, emergency action plan, and groundwater protection plan. [Encl (229)]
	1615L	General Public	CNRH Media Release: Town halls are scheduled at Hickam Theater, Moanalu Terrace Community Center and Halsey Terrace Community Center for affected housing communities on JBPHH. [Encls (175), (224), (230)]
	1621L/1624L	Military Housing Residents	CNRH/JBPHH FB Posts: Navy is holding four town hall meetings at 1900 30 Nov, with affected housing communities to provide up-to-date information and answer questions regarding the ongoing water issue identified at several military housing areas. [Encl (223)]
30-Nov	1800L	Military Housing Residents	Town hall for Ombudsmen/Key Spouses at Hickam Theater. JBPHH Deputy (USAF Col) participates. Communicate what the Navy knew about the water problems and what actions were being taken. Listen to concerns and answer questions. [Encls (175), (224), (230)]
	1900L	Military Housing Residents	Town hall for Hickam Housing Community at Hickam Theater. JBPHH Deputy (USAF Col) participates. Communicate what the Navy knew about the water problems and what actions were being taken. Listen to concerns and answer questions. [Encls (175), (224), (230)]
	1900L	Military Housing Residents	Town hall for Halsey Terrace, Radford, Catlin Housing Community residents at Halsey Terrace Community Center. PACFLT DCOM and JBPHH CO participate. Communicate what the Navy knew about the water problems and what actions were being taken. Listen to concerns and answer questions. [Encls (175), (224), (230)]
	1900L	Military Housing Residents	Town hall for Moanalu Terrace Housing Community residents at Moanalu Terrace Community Center. CNRH and NAVFAC HI CO participate. Communicate what the Navy knew about the water problems and what actions were being taken. Listen to concerns and answer questions. [Encls (175), (224), (230)]
	1915L	Military Housing Residents	JBPHH FB Post: Moanalu Terrace Community town hall FB livestream and recording of town hall. [Encl (223)]
	2200L	General Public	CNRH Media Release: Water distribution plan set for December 1st at affected base housing. [Encls (175), (224), (228)]
	2246L	Military Housing Residents	CNRH FB Post: Navy is providing sources of clean water for the communities in need. The Navy will continue to set up several water distribution sites for residents of base housing. [Encls (175), (223), (228)]
	2345L	Military Housing Residents	CNRH listing of available shower locations and times on JBPHH. [Encl (237)]
	2345L	Military Housing Residents	JBPHH FB Post: Showers are available at JBPHH for those at affected military housing who have concerns with the water quality at their residences. Locations and times included. [Encl (223)]
		Regulators	DOH and EPA representatives join the PACFLT CAT. [Encls (210), (214), (239)]
	0748L	Military Housing Residents	JBPHH FB Post: JBPHH Emergency Operations Center has established an information cell to receive calls from residents in military housing who have concerns about their water. Numbers provided. [Encl (223)]
	1334L	Military Housing Residents	CNRH PA launched the JBPHH Water Resources and Updates webpage, which was available through both CNRH and JBPHH web sites. [Encl (235)]
	1556L	General Public	CNRH Media Release: Provided information regarding an upcoming Army town hall, the JBPHH EOC phone numbers, a new information web page, and availability of potable water trucks. [Encl (236)]
	1603L	Military Housing Residents	CNRH FB Post: Showers are available at JBPHH for those in affected military housing who have concerns with the water quality at their residences have been expanded. Updated available locations and times included in post. [Encl (223)]

1-Dec	1603L	Military Housing Residents	CNRH updated listing of available shower locations and times on JBPHH [Encl (236)]
	1610L	Military Housing Residents	JBPHH FB Post: Army is hosting a town hall meeting for residents of the Aliamanu Military Reservation (AMR) housing at the AMR Chapel and has already notified residents [Encl (223)]
	1613L	Military Housing Residents	CNRH FB Post: Potable water trucks will be available for water at various locations for individuals in impacted communities Locations provided in post [Encl (223)]
	1800L	Military Housing Residents	CNRH/JBPHH FB Posts: Navy has built a new web page with information, resources and updates It will be updated continuously with new information It can be accessed from either the Navy Region Hawaii or Joint Base Pearl Harbor-Hickam pages [Encls (223), (235)]
	1808L	Military Housing Residents	JBPHH FB Post: Shower availability on Fort Shafter, Helemano Military Reservation, Schofield Barracks and Tripler Army Medical Center for anyone concerned with water quality [Encl (223)]
	1900L	Military Housing Residents	Town hall for AMR housing residents at AMR chapel A/ASN (E, I & E), PACFLT COM, PACFLT DCOM, CNRH and JBPHH CO and the Army Garrison Co-mander participate Communicate what the Navy knew about the water problems and what actions were being taken Listen to concerns and answer questions [Encl (239)]
2-Dec			Army issues evacuation order for Army personnel in affected housing [Encls (175), (241)]
		Government Leaders	During a HASC hearing, VADM Williamson (OPNAV N4) briefed Rep. Kahele and answered questions regarding the Navy's response at Red Hill [Encl (245)]
		Government Leaders	PACFLT COM contacted Mayor Blangiardi and updated him on the situation [Encl (241)]
	1505L/1527L	Military Housing Residents	JBPHH/CNRH FB Posts: Military & Family Support Center has established Emergency Family Assistance Center to assist any affected personnel who need help to include medical assistance Phone number and location provided [Encl (223)]
	1656L	Military Housing Residents	JBPHH FB Post: Virtual town hall will begin shortly [Encl (223)]
	1735	Military Housing Residents	JBPHH FB Post: CNRH virtual town hall scheduled on JBPHH Facebook page at 1900 [Encl (223)]
	1814L	General Public	CNRH Media Advisory: Virtual town hall scheduled on JBPHH Facebook page at 1900 [Encl (246)]
	1900L	Military Housing Residents	Virtual town hall via Facebook Live PACFLT DCOM, NAVFAC PAC, CHRH, PACFLT Surgeon and NAVFAC HI CO participate Communicate what the Navy knew about the water problems and what actions were being taken Listen to concerns and answer questions (https://www.PACFLT.navy.mil/JBPHH-Water-Updates/Town-Halls-Daily-Updates/)
	1902L	Military Housing Residents	JBPHH FB Post: Virtual Town Hall recording [Encl (223)]
	2204L	General Public	CNRH Media Release: Petroleum products detected in Red Hill well, below DOH action levels The well was isolated since 28 Nov 21 Waiawa well's water quality remains safe [Encl (247)]
3-Dec	2215L/2226L	Military Housing Residents	JBPHH/CNRH FB Posts: Petroleum products detected in Red Hill well, below DOH action levels The well was isolated since 11/28/2021 Waiawa well's water quality remains safe [Encl (223)]
	1002L/1008L	Military Housing Residents	JBPHH/CNRH FB Posts: TriCare beneficiaries can call the TriCare Nurse Advice line, send a message to their provider via the MHS Genesis Patient Portal or go to any ER in the event of an emergency Family members can be seen at any urgent care without a referral if the clinic accepts TriCare Advice line number provided [Encl (223)]
		Regulators	CNRH provided a letter to DOH confirming the release of approximately 14,000 gallons of a mix of water and fuel at Red Hill BFSF on 20 Nov 2021 [Encl (248)]
		Regulators	DOH ordered that diving and flushing at the Red Hill well stop [Encls (47), (257)]
		Government Leaders	PACFLT COM provided in-person brief to Rep. Case and phone updates to HI Governor, Sen. Hirono, Sen. Schatz, Rep. Kahele, and Sen. Couchee [Encl (210)]
		Government Leaders	PACFLT COM provided an e-mail update to the Governor, to include water test sampling results [Encl (241)]
	1359L/1400L	Military Housing Residents	JBPHH/CNRH FB Posts: Navy will be hosting town hall tonight at 7-8 p.m. at the Hickam Theater to provide up-to-date info about ongoing water issue The town hall will be shared on JBPHH FB page [Encl (223)]
	1636L	General Public	CNRH Media Advisory: Town hall scheduled for 1900 at Hickam Theater [Encl (250)]
	1700L	Military Housing Residents	JBPHH/CNRH FB Posts: CNRH has determined TLA is necessary for service members and their dependents, and civilians living in housing affected by the current water-related health or safety concerns The date range is 3-12 Dec and communities are listed in post [Encl (223)]
	1701L	Military Housing Residents	JBPHH webpage updated to reflect CNRH order to use TLA funding for affected service member and dependent residents Affected DoD civilian employees and their dependents will be provided separate travel orders [Encls (175), (252), (254), (255), (256)]
~1900	Military Housing Residents	PACFLT launched the JBPHH Water updates web page that replaced the Region webpage for sharing information	

	1900L	Military Housing Residents	Town hall at Hickam Theater PACFLT DCOM, CNRH, JBPHH CO, PACFLT Surgeon and NAVFAC HI CO participate Intended to provide latest updates and answer questions [Encl (250)]
	1901L	Military Housing Residents	JBPHH FB Post: Hickam Theater town hall FB live stream and recording to provide latest updates and answer questions [Encl (223)]
4-Dec	2130L & 2131L	Military Housing Residents	JBPHH/CNRH FB Posts: Navy will be hosting a virtual town hall meeting on the JBPHH Facebook page tomorrow, Dec 4, from 11 a.m. to noon to provide up-to-date information about the ongoing water issue. Please email questions to cnrhpa0@gmail.com [Encl (223)]
	0753L	Military Housing Residents	JBPHH FB Post: Navy will be hosting a virtual town hall meeting on the JBPHH FB page from 11 a.m. to noon today to provide up-to-date information about the ongoing water issue. Please email questions to cnrhpa0@gmail.com [Encl (223)]
	0800L	General Public	CNRH Media Advisory: Virtual town hall scheduled on JBPHH Facebook page at 1100 [Encl (259)]
		Regulators	CNRH received a formal Request for Records from DOH requesting sampling plans, data, methodology, and analytical reports. The request applied to future records generated as well [Encls (261), (262)]
	1025L	Military Housing Residents	JBPHH FB Post: Additional shower and laundry facilities are available at Halsey Terrace for those who have concerns with the water quality in their residence [Encl (223)]
	1049L	Military Housing Residents	JBPHH FB Post: Virtual town hall FB Live feed begins in order to provide latest updates and answer questions [Encl (223)]
	1100L	Military Housing Residents	Virtual town hall on JBPHH Facebook Live PACFLT DCOM, CNRH, PACFLT Surgeon and NAVFAC HI CO participate Provides the latest updates on the water crisis [Encl (223)]
	1850L	Military Housing Residents	JBPHH FB Post: CNRH has determined lodging procurement is necessary for active duty service members, their dependents, Federal civilian employees and their authorized dependents and all other privatized housing residents affected by the current water-related health and safety concerns. Web page with info on lodging assistance and TLA info included in post (https://www.PACFLT.navy.mil/JBPHH-Water-Updates/) [Encl (223)]
	1859L	General Public	CNRH Media Advisory: Town hall scheduled for 5 Dec at 1500 at Moanalua Terrace Community Center [Encl (223)]
	2001L	Military Housing Residents	CNRH FB Post: CNRH released updated lodging procurement guidance for all privatized housing residents affected by current water-related health and safety concerns [Encl (223)]
	2008L	Military Housing Residents	CNRH FB Post: Additional shower and laundry facilities are available at Halsey Terrace for those who have concerns with the water quality in their residence [Encl (223)]
	2016L	Military Housing Residents	JBPHH FB Post: Town hall location updated to Hokuani Community Center for 5 Dec at 1500 Town Hall [Encl (223)]
			Governor Ige and Hawaii's Congressional Delegation call for suspension of Red Hill operations [Encls (263), (264)]
	Government Leaders	SECNAV met with Representatives Courtney, Garamendi, and Kabele regarding the contamination of the water from Red Hill [Encl (210)]	
	Government Leaders	CNRH PAO provided information to Representative Johanson via e-mail regarding how to best advise citizens seeking immediate relief/recourse at his request (TLA, temporary duty orders and government contracted lodging information) [Encl (265)]	
	Government Leaders	Senator Glenn Wakai requested from the CNRH PAO a graphic of Red Hill BFSF showing how fuel is moved from the facility. NAVFAC HI Red Hill PMO was tasked to provide [Encl (265)]	
	Regulators	CNRH sent a letter to DOH acknowledging receipt of the 24 November Notice of Interest and expressing the intent to continue communication and coordination with DOH [Encl (281)]	
	General Public	CNRH Media Advisory: Town hall scheduled for 05 December at 1500 updated location to Hokuani Community Center [Encl (266)]	
5-Dec	1119L/1129L	Military Housing Residents	JBPHH/CNRH FB Posts: Navy will host an in person Town Hall meeting today from 3-4 p.m. at the Hokuani Community Center to provide up-to-date information about the ongoing water issue to those who have been impacted. Location updated in post [Encl (223)]
	1448L	Military Housing Residents	JBPHH FB Post: JBPHH CO apologized for the comments he made in his 19 November assurance to families that the drinking water was safe [Encl (223)]
	1450L	Military Housing Residents	JBPHH FB Post: Hokuani Community Center Town Hall FB Live feed begins in order to provide latest updates and answer questions [Encl (223)]
	1500L - 2000L	Military Housing Residents	Town hall at Hokuani Community Center SECNAV, CNO, PACFLT DCOM, CNRH, PACFLT Surgeon and NAVFAC HI CO participate. Provide updates, answer questions and engage with residents. Lasts ~5 hours [Encls (175), (266)]
		Military Housing Residents	Throughout the week of 29 November housing residents provided comments on the JBPHH Facebook page and made comments at the town halls reflecting concerns and frustrations with the water situation and response [Encl (270)]
		Regulators	CNRH received approval from DOH for divers to enter the Red Hill well. DOH subsequently ordered that diving stop on 8 December until a recovery plan was renegotiated. Permission was granted to continue on 9 December [Encls (46), (47), (267)]
		Regulators	The Interagency Drinking Water System Team (IDWST) stood up and included representatives from DOH and EPA [Encl (46)]

	1913L/1918L	Military Housing Residents	JBPHH/CHRH FB Posts: JBPHH MWR to provide free Grab-and-Go Lunch, Family Activities for service members and their dependents. DoD civilian employees and retirees living in military housing impacted by the water issue. Locations and weekday and weekend hours included in post [Encl (223)]	
	1947L	Government Leaders	CNRH engaged with Rep. McDermott, who raised the concern that qualified civilians who live in some affected off base housing have no point of contact for temporary lodging and assistance. CNRH advised that they were working to resolve the issue [Encl (268)]	
	1957L/1958L	Military Housing Residents	JBPHH/CNRH FB Posts: JBPHH Military and Family Support Center have licensed clinical counselors and chaplains available at the Emergency Family Assistance Center to assist anyone in need. Location, hours and phone number in post [Encl (223)]	
6-Dec	2004L	General Public	CNRH Media Advisory: SECNAV and CNO Media engagement scheduled for 06 December at 1330. Both leaders are in Pearl Harbor to see Red Hill first hand and meet with affected residents as well as local officials [Encl (282)]	
	2209L	Military Housing Residents	JBPHH FB Post: Government procured quarters still available for all those residing in JBPHH PPV communities regardless of affiliation who are seeking lodging due to water quality supply issues. Website and email address for Hotel and Data request form options included in post [Encl (223)]	
	1227L/1229L	Military Housing Residents	JBPHH/CNRH FB Posts: No scheduled Town Hall meetings today for JBPHH and CNRH. Dates and times of additional meetings will be posted as they become available. The USAF leadership on JBPHH will have a Town Hall today at 4 p.m. at Hickam Theater to answer USAF specific questions and will be streamed live on the 15th Wing FB page [Encl (223)]	
		Government Leaders	SECNAV toured Red Hill with Navy leaders and had lunch and discussions with Governor Ige [Encls (210), (283)]	
	1330L	General Public	SECNAV, CNO and PACFLT DCOM conduct press engagement at PACFLT HQ [Encls (282), (283)]	
		Government Leaders	SECNAV participated in a teleconference with the HI Congressional delegation [Encls (210), (283)]	
		Government Leaders/Regulators	PACFLT COM and DCOM met with Governor Ige, DOH Director and DOH Deputy Director [Encls (210), (283)]	
		Regulators	CNRH Deputy Environmental Director emailed revised sampling plan to DOH [Encl (277)]	
		Regulators	DOH requested via email to collect samples at Navy facilities. CNRH Environmental Director agreed and requested that the Navy be allowed to conduct split sampling by taking two or more representative portions from one sample. This was done on 7 Dec [Encls (274-276)]	
		1705L/1715L	Military Housing Residents	JBPHH/CNRH FB Posts: The Navy and USAF have authorized partial TLA for active members living in the currently designated housing areas, if they decide to stay in their housing. Navy continues to work on authorization for all other categories of individuals who decide to stay in their homes [Encl (223)]
		1746L/1837L	Military Housing Residents	JBPHH/CNRH FB Posts: Additional laundry services with one-week turn around have been made available at four locations. Addresses and hours included in post [Encl (223)]
		1758L/1759L	Military Housing Residents	CNRH/JBPHH FB Posts: SECNAV, CNO, PACFLT DCOM hold press conference at PACFLT HQ to discuss ongoing water issue earlier today. Press conference recorded video posted [Encl (223)]
				DOH order to suspend operations at Red Hill, treat contaminated water, and remove fuel [Encls (216), (284)]
	1917L	Military Housing Residents	JBPHH FB Post: Laundry services are available at four locations. Hours and addresses included [Encl (223)]	
7-Dec	1956L	Military Housing Residents	JBPHH FB Post: Due to weather conditions all water distribution locations and Halsey Terrace shower and laundry facilities will cease operations. Update on resumption of ops will be posted [Encl (223)]	
	2158L	Military Housing Residents	JBPHH FB Post: NAVFAC HI posted photos of Scabees delivering water to affected schools and also provided locations of water distribution sites in post [Encl (223)]	
	1034L	Military Housing Residents	JBPHH FB Post: Emergency Family Assistance Center (EFAC) is located at the Military & Family Assistance Center (MFAC). The EFAC serves as a consolidated staging area to coordinate care, and services from various orgs for personnel who need it. Phone number and hours provided in post, no appointments necessary [Encl (223)]	
	1203L	Military Housing Residents	JBPHH FB Post: Phones at Navy Marine Corps Relief Society are currently down due to the weather. Updates will be made as soon as available [Encl (223)]	
		Regulators	CNRH responded to the 4 December formal Request for Records from DOH with sampling plans, sampling procedures, laboratory data, and initial sampling results [Encl (287)]	
	2027L	Military Housing Residents	JBPHH FB Post: Phone lines at the EOC have been affected by the current inclement weather conditions. Anyone having issues reaching EOC numbers should try another number on the list. Numbers provided in post [Encl (223)]	
			SECNAV order to suspend Red Hill Operations [Encl (67)]	

Honolulu BWS March Board Meeting - 3/28/23

Testimony - Info 01 : Update on BWS Response to the Potential Impacts of the Red Hill Fuel Contamination

Meredith Wilson

Aloha,

My name is Meredith Wilson and I was a resident of Joint Base Pearl Harbor-Hickam military housing for 5 years. No matter how many thousands of miles away I am, I continue to deal with a persisting physical & emotional fallout from what happened to us in 2021.

You all are such a scrappy and creative bunch for how you've handled this by seeking out every grant and fund imaginable to combat passing the buck to your customers to cover the, what I'm sure is an insane, amount of testing and monitoring—all due to an irresponsible neighbor.

I understand that the Hawaii Department of Health is your regulator, but they are also your partner in serving the public. I have several questions regarding the “recent” coverage of the antifreeze additive to the jet fuel being posed as “the most significant health risk” to our exposure:

- DOH stated that the Navy alerted them about the additive “soon after the spill” — when was BWS notified?
- 2-[2-methoxyethoxy]ethanol (also known as antifreeze) is listed on the 2016 AOC-required Contaminants of Potential Concern (COPC) list, but interestingly enough, it's in a section the Navy requested to be REMOVED from having to test for.
**Does BWS test for this or any other version of antifreeze in their wells?
- The Feb 2, 2023 Dr. Brewer memo written to State Toxicologist Diana Felton & Chief of the Safe Drinking Water Branch Dennis Lopez is difficult to find on the DOH website nowhere near the home page/Red Hill page within a section titled “Aquifer Monitoring & Recovery”
**Do you think that something we now know posed “the most significant health risk” should've taken a month to report in the news on March 20th? Especially if the sample was known about as far back as December 21st, 2021? Why haven't the recipients of this memo responded directly instead of through a spokesperson?
- This may be specifically for Mr. Erwin Kawata: Based off of the new information from the Newfields lab breakdown of JP-5, we now know that there is a decrease in xylenes & methylnaphthalenes as well as an increase in C8-C18 aliphatics from Dr. Brewer's Fed 2022 memo. He notes that this would lead to the overall toxicity of degraded fuel in tap water to be HIGHER for TPH. (i.e. the EAL should be LOWER based off of the actual composition of the fuel)
**Do you think that with this new data, when can we expect a newly developed TPH EAL from DOH? What do you think it should be (again)? The Feb 2nd memo says it WILL be updated based on further testing, but what are we waiting for?

Lastly, I know you all have a lot on your plate: Red Hill, water conservation, PFAS, regular main breaks, the average customer upset with their bill, so much. But you are not alone, we're all here with you. #OlaKaWai Mahalo

ITEM FOR INFORMATION NO. 2

"March 28, 2023

RESULTS OF THE SALE OF BOARD OF WATER SUPPLY WATER SYSTEM REVENUE BONDS, SERIES 2023
Chair and Members
Board of Water Supply
City and County of Honolulu
Honolulu, Hawaii 96843
Chair and Members:

Subject: Results of the Sale of Board of Water Supply Water System Revenue Bonds, Series 2023

Pursuant to Board of Water Supply Resolution No. 962, 2023, authorizing the issuance of water system revenue bonds, the Board issued a total of \$17,425,000 principal amount of Board of Water Supply Water System Revenue Bonds, Series 2023, dated March 23, 2023.

The proceeds of the Series 2023 bonds will be used: (1) to pay the cost of improvements authorized in the capital budget of the Board and (2) to pay the costs of issuance of the Series 2023 bonds.

The bonds were assigned the underlying rating of AAA, stable outlook, from both S & P Global Ratings and Fitch Ratings. The Series 2023 bonds were sold on March 23, 2023, at a true interest cost of 4.34 percent. The bonds were issued at a total premium of \$1,916,609.65.

Net proceeds for the bonds of \$19,000,000 was deposited into the BWS Improvement Fund. The cost of issuance is \$194,975.

Bank of America Securities, Inc. served as the underwriter, and Orrick, Herrington & Sutcliffe LLP served as bond counsel to the Board.

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 expressed his appreciation to Mr. Cooper for keeping the BWS's rating polished.

Mr. Joseph Cooper replied that it's a group effort; it reflects the BWS's management and the BWS as a whole.

Chair Andaya inquired if the BWS is the only public agency in the state to have a triple-A rating from S&P Global Ratings and Fitch Ratings.

Mr. Cooper responded that the BWS is the only agency that has a triple-A rating, a testament to the BWS's strength.

Chair Andaya asked Mr. Cooper to explain the oversubscribed for 2023 bonds issuance compared to previous years.

Mr. Cooper shared that in 2022 the BWS was oversubscribed 2.7 times, and before that, the BWS was six times oversubscribed. He explained that those bond issues were for larger dollar amounts that draw more attention. Since the BWS only issued \$19M (\$17M at par), larger companies, such as pension and insurance funds, don't bother because their investments are much greater.

Chair Andaya asked if the instability in the rate market mattered.

Mr. Cooper responded that despite the instability in the rate market, the larger companies would not look at this BWS issues.

Manager Ernest Lau expressed his appreciation to the Board for laying the groundwork for this effort.

ITEM FOR INFORMATION NO. 3

"March 28, 2023

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 February 2023. Kaimuki, Pearl City, Kaluanui, and Waialua are in Caution Status. Punaluu is in Alert Status. The monthly production average for February 2023 was 121.49 million gallons per day.

The Board of Water Supply rainfall index for the month of February 2023 was 170 percent of normal, with a 5-month moving average of 94 percent. As of March 7, 2023, the Hawaii Drought Monitor shows zero drought conditions across Oahu. The National Weather Service is forecasting above-normal precipitation through April 2023.

Most monitoring wells exhibited relatively stable head levels for the month of February 2023, likely reflecting the lower overall groundwater production, recent relatively high rainfall, and the gradual recovery from prior months of relatively low rainfall. Average monthly production for February 2023 was lower than in February 2022 and lower than the 5-year monthly average.

Respectfully Submitted,

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

Attachment"

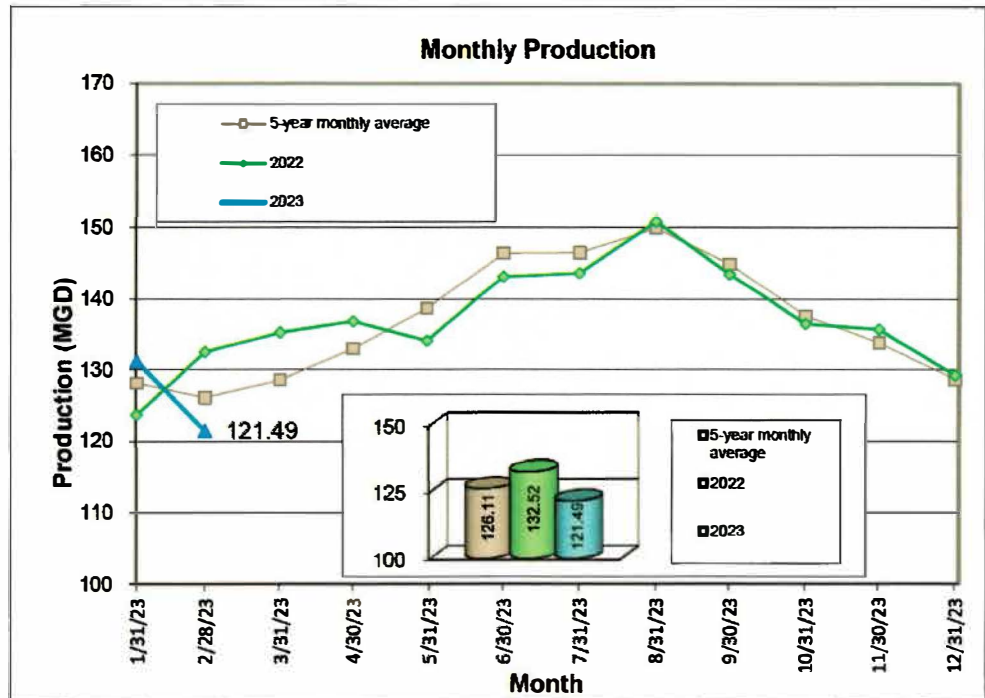
The foregoing was for information only.

DISCUSSION: Barry Usagawa, Program Administrator, Water Resources Division, gave the report.

Vice Chair Sproat commented that the monthly production of 122 mgd is low. She asked what the lowest monthly pumpage for the BWS is.

Mr. Barry Usagawa responded that he hadn't seen it go below 120 mgd in recent times. He recalls in 1970, the BWS was pumping nearly 112 mgd and peaked in 1990 at 157 mgd.

Manager Lau agreed with Vice Chair Kapua’s observation and referred to the monthly production graph indicating that 2023 production was indeed low. He commented that February’s report is positive, and that conservation is important. Manager Lau commended the Water Resources Division and the Communications office for their efforts.



Chair Andaya announced that Ms. Simic was ready to give her testimony via Zoom for information item #1: Update on the Board of Water Supply’s Response to the Potential Impacts of the Red Hill Fuel Contamination via Zoom.

<p>Jamie Simic</p>	<p><i>Shared an update on her family's health and the different medical appointments since being affected by the Red Hill contamination. She encouraged the BWS and the community to keep fighting.</i></p>
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**PRODUCTION, HEAD AND RAINFALL REPORT
MONTH OF FEBRUARY 2023**

POTABLE

STATION	MGD
HONOLULU (1)	
KULIOUOU	0.00
WAILUPE	0.12
AINA KOA	0.00
AINA KOA II	0.52
MANOA II	0.83
PALOLO	1.02
KAIMUKI HIGH	1.59
KAIMUKI LOW	1.34
WILDER	8.83
BERETANIA HIGH	2.79
BERETANIA LOW	1.78
KALIHI HIGH	0.00
KALIHI LOW	4.44
KAPALAMA	1.25
KALIHI SHAFT	6.98
MOANALUA	0.64
HALAWA SHAFT	0.00
KAAMILO	0.56
KALAUAO	8.85
PUNANANI	12.26
KAAHUMANU	0.27
HECO WAIU	0.00
MANANA	0.27
WAIALAE IKI	0.45
WELLS SUBTOTAL:	54.79
MANOA TUNNEL	0.17
PALOLO TUNNEL	0.00
GRAVITY SUBTOTAL:	0.17
HONO. SUBTOTAL:	54.96

STATION	MGD
WINDWARD (2)	
WAIMANALO II	0.12
WAIMANALO III	0.00
KUOU I	0.35
KUOU II	0.17
KUOU III	0.59
LULUKU	0.78
HAIKU	0.32
IOLEKAA	0.00
KAHALUU	0.65
KAHANA	0.97
PUNALUU I	0.00
PUNALUU II	1.81
PUNALUU III	0.00
KALUANUI	1.80
MAAKUA	0.31
HAUULA	0.26
WELLS SUBTOTAL:	8.14
WAIM. TUNNELS I & II	0.00
WAIM. TUNNELS III&IV	0.19
WAIHEE INCL. WELLS	0.66
WAIHEE TUNNEL	3.72
LULUKU TUNNEL	0.18
HAIKU TUNNEL	0.27
KAHALUU TUNNEL	1.50
GRAVITY SUBTOTAL:	6.53
WIND. SUBTOTAL:	14.66

STATION	MGD
NORTH SHORE (3)	
KAHUKU	0.33
OPANA	0.95
WAIALEE I	0.13
WAIALEE II	0.04
HALEIWA	0.00
WAIALUA	1.45
N.SHORE SUBTOTAL:	2.89

STATION	MGD
MILILANI (4)	
MILILANI I	1.02
MILILANI II	0.00
MILILANI III	0.45
MILILANI IV	2.22
MILILANI SUBTOTAL:	3.70

STATION	MGD
WAHIAWA (5)	
WAHIAWA	1.16
WAHIAWA II	1.45
WAHIAWA SUBTOTAL:	2.60

STATION	MGD
PEARL CITY-HALAWA (6)	
HALAWA 277	0.00
HALAWA 550	0.00
AIEA	0.00
AIEA GULCH 497	0.00
AIEA GULCH 550	0.19
KAONOHI I	1.64
WAIMALU I	0.00
NEWTOWN	1.61
WAIU	1.82
PEARL CITY I	0.87
PEARL CITY II	1.00
PEARL CITY III	0.23
PEARL CITY SHAFT	0.81
PEARL CITY-HALAWA SUBTOTAL:	8.15

STATION	MGD
WAIPAHU-EWA (7)	
WAIPIO HTS.	1.33
WAIPIO HTS. I	0.00
WAIPIO HTS. II	0.26
WAIPIO HTS. III	1.25
WAIPAHU	5.97
WAIPAHU II	1.87
WAIPAHU III	4.42
WAIPAHU IV	2.20
KUNIA I	2.38
KUNIA II	1.72
KUNIA III	0.00
HOAEAE	5.22
HONOULIULI I	0.55
HONOULIULI II	3.33
MAKAKILO	0.11
WAIPAHU-EWA SUBTOTAL:	30.60

STATION	MGD
WAIANAE (8)	
MAKAHA I	0.33
MAKAHA II	0.00
MAKAHA III	0.28
MAKAHA V	0.38
MAKAHA VI	0.00
MAKAHA SHAFT	0.00
KAMAILE	0.00
WAIANAE I	0.27
WAIANAE II	0.22
WAIANAE III	0.79
WELLS SUBTOTAL:	2.27
WAI. C&C TUNNEL	1.40
WAI. PLANT. TUNNELS	0.26
GRAVITY SUBTOTAL:	1.66
WAIANAE SUBTOTAL:	3.93

NONPOTABLE

NONPOTABLE	MGD
KALAUAO SPRINGS	0.45
BARBERS POINT WELL	0.85
GLOVER TUNNEL NP	0.29
NONPOTABLE TOTAL:	1.59

RECYCLED WATER (JANUARY 2023)

RECYCLED WATER	MGD
HONOULIULI WRF R-1	5.28
HONOULIULI WRF RO	1.38
RECYCLED TOTAL:	6.66

**PRODUCTION, HEAD AND RAINFALL REPORT
MONTH OF FEBRUARY 2023**

PRODUCTION SUMMARIES

TOTAL WATER	MGD
PUMPAGE	113.13
GRAVITY	8.36
POTABLE TOTAL:	121.49
NONPOTABLE	1.59
RECYCLED WATER	6.66
TOTAL WATER:	129.74

CWRM PERMITTED USE AND BWS ASSESSED YIELDS FOR BWS POTABLE SOURCES				
WATER USE DISTRICTS		A	B	C
		PERMITTED USE/ BWS YLDS	FEB 2022	DIFF. A-B
1	HONOLULU	83.32	54.79	28.53
2	WINDWARD	25.02	14.66	10.36
3	NORTH SHORE	4.70	2.89	1.81
4	MILILANI	7.53	3.70	3.83
5	WAHIAWA	4.27	2.60	1.67
6	PEARL CITY-HALAWA	12.25	8.15	4.10
7	WAIPAHAU-EWA	50.63	30.60	20.03
8	WAIANAЕ	4.34	3.93	0.41
TOTAL:		192.06	121.32	70.73

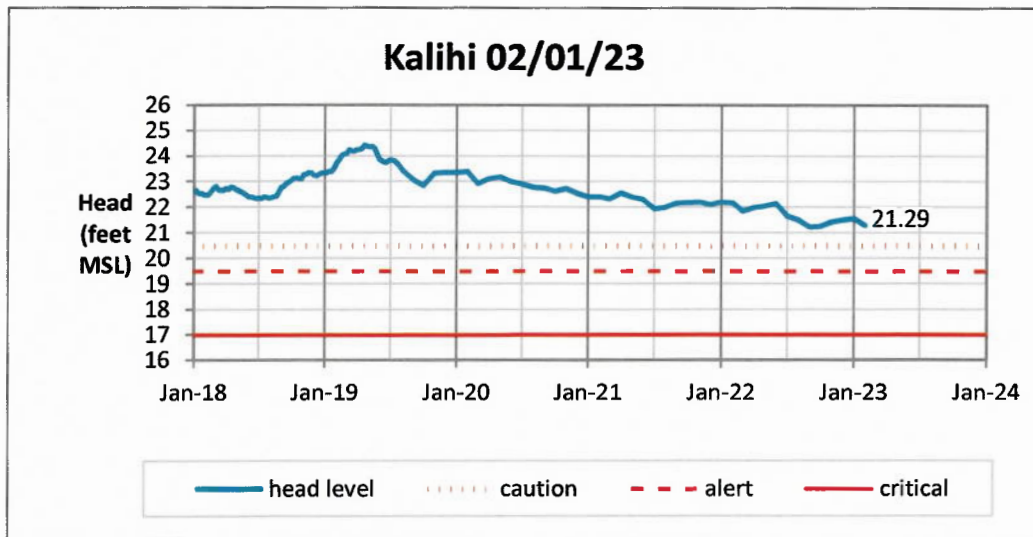
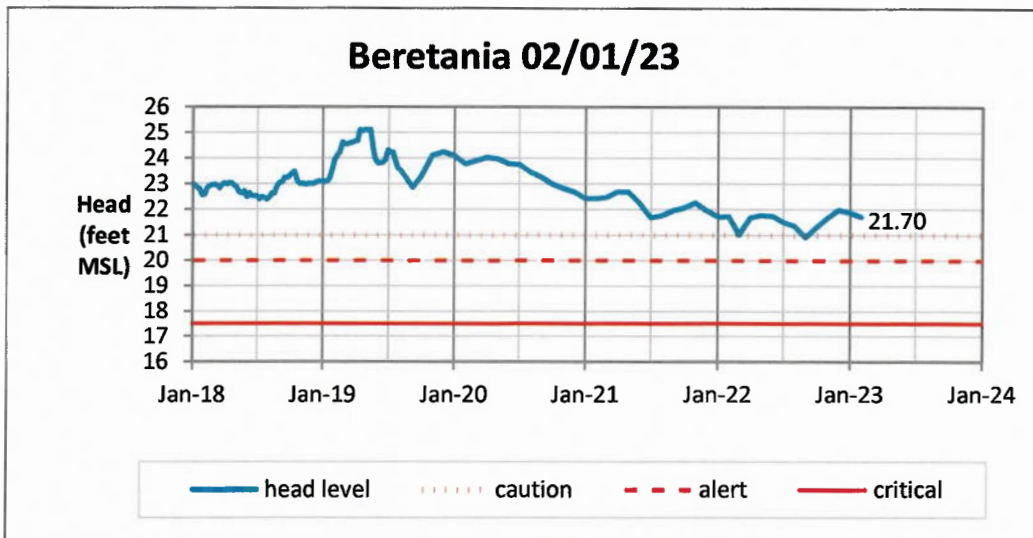
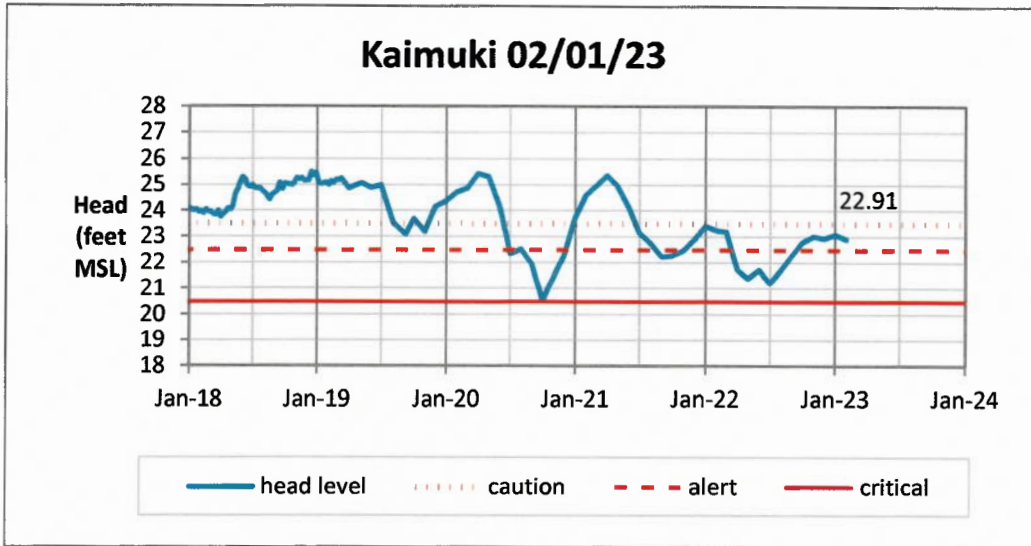
CWRM PERMITTED USE FOR BWS NONPOTABLE SOURCES				
WATER USE DISTRICTS		A	B	C
		PERMITTED USE	FEB 2022	DIFF. A-B
7	WAIPAHAU-EWA (BARBERS POINT WELL)	1.00	0.85	0.15
TOTAL:		1.00	0.85	0.15

EFFECTIVE WATER DEMAND PER DISTRICT

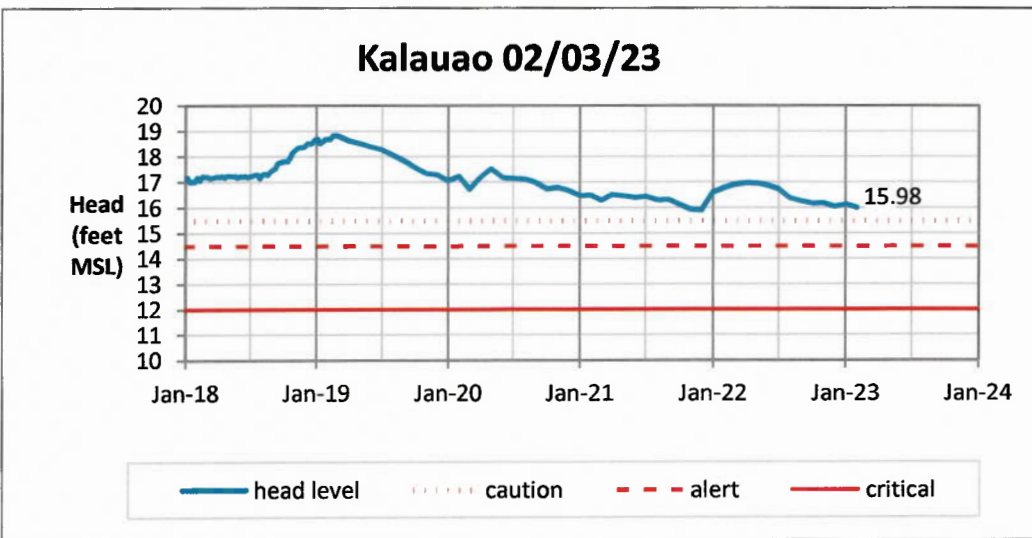
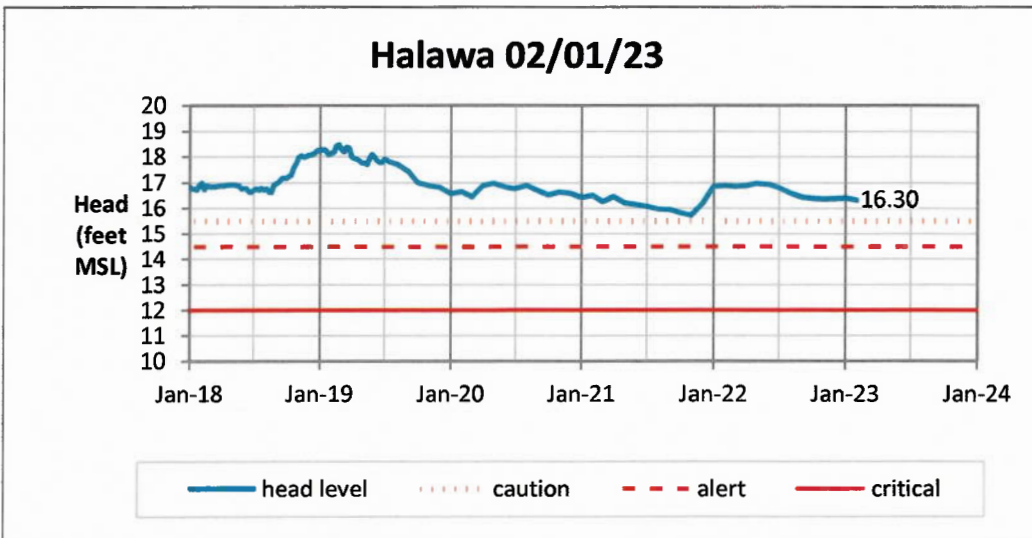
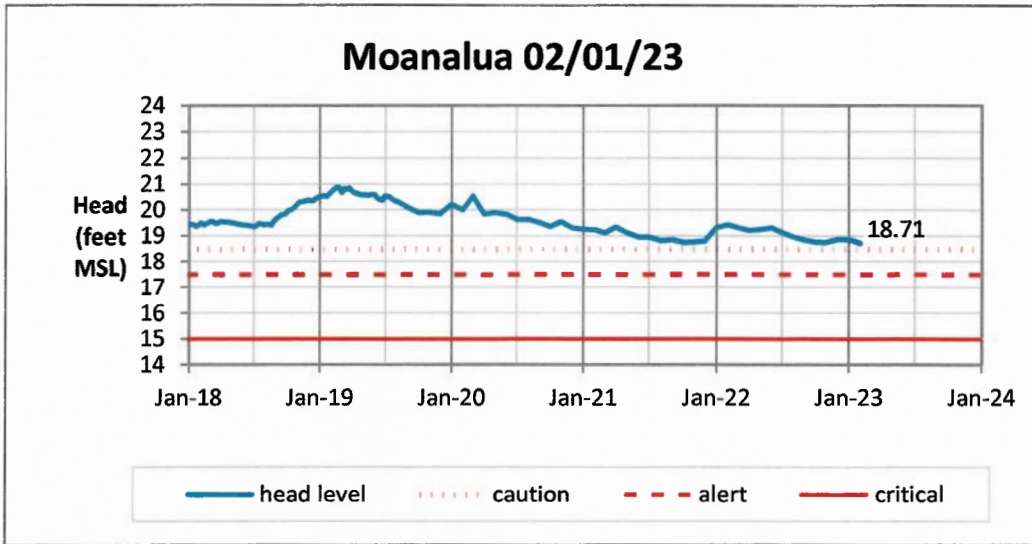
IMPORT/EXPORT BETWEEN WATER USE DISTRICTS			
FROM	TO		MGD
2	1	WINDWARD EXPORT	0.02
7	8	BARBERS PT LB	4.08

WATER USE DISTRICTS		SUBTOTAL	IMPORT	EXPORT	EFFECTIVE WATER DEMAND
1	HONOLULU	54.96	0.02	-	54.98
2	WINDWARD	14.66	-	0.02	14.64
3	NORTH SHORE	2.89	-	-	2.89
4	MILILANI	3.70	-	-	3.70
5	WAHIAWA	2.60	-	-	2.60
6	PEARL CITY-HALAWA	8.15	-	-	8.15
7	WAIPAHAU-EWA	30.60	-	4.08	26.52
8	WAIANAЕ	3.93	4.08	-	8.01
TOTAL:		121.49	4.10	4.10	121.49

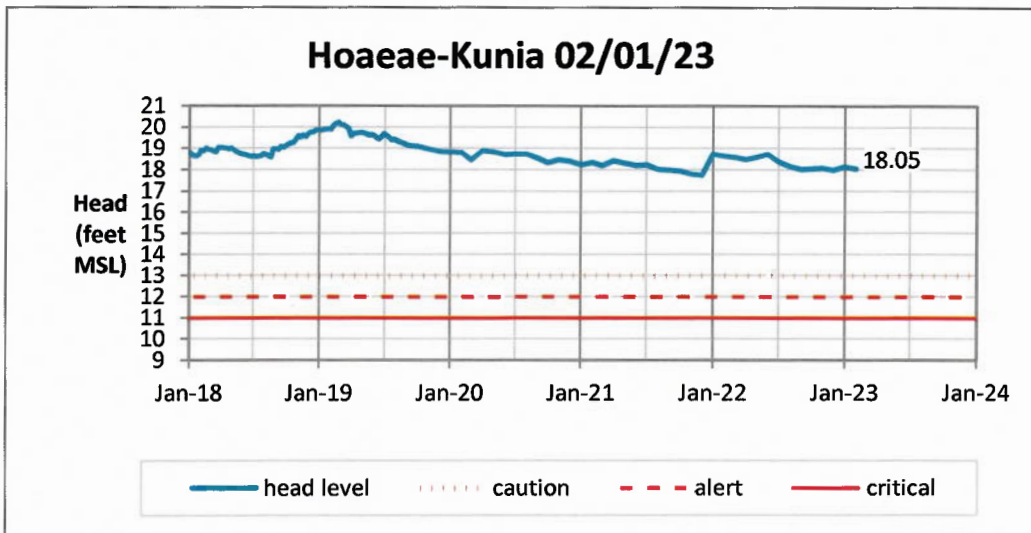
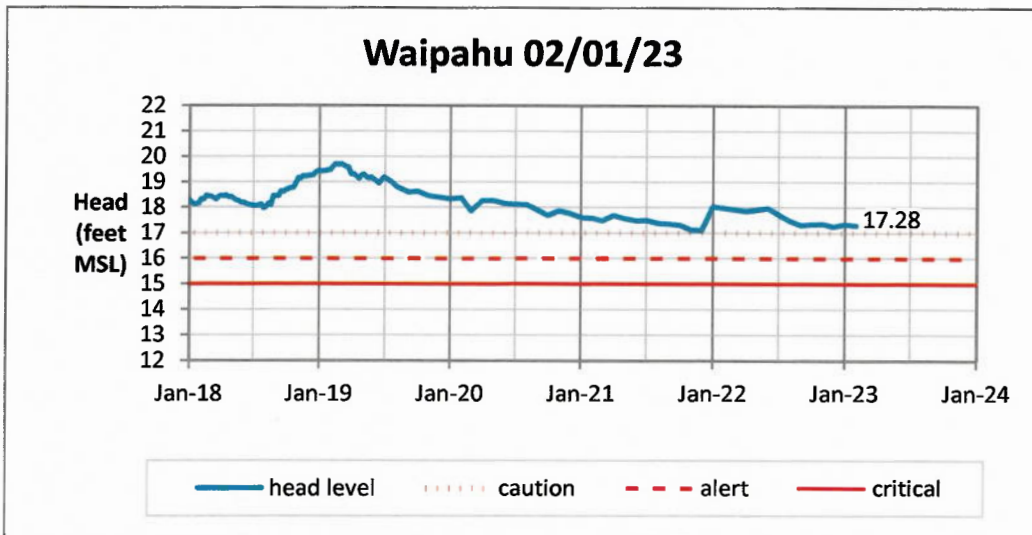
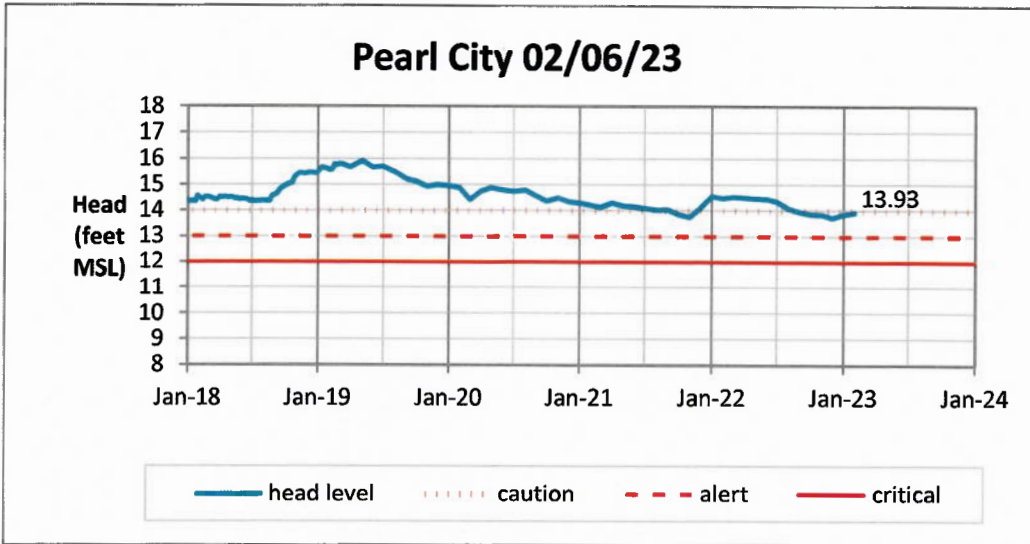
Head Report



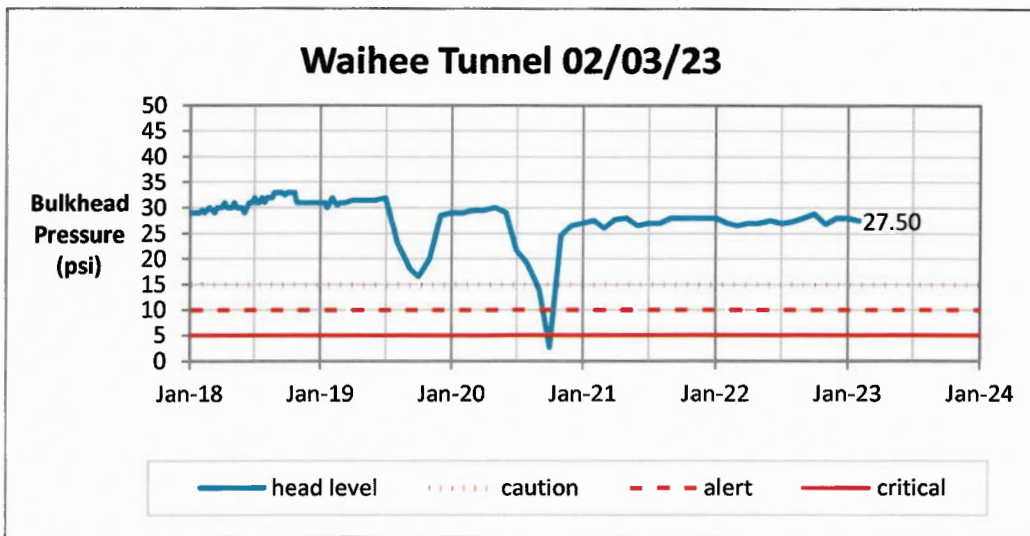
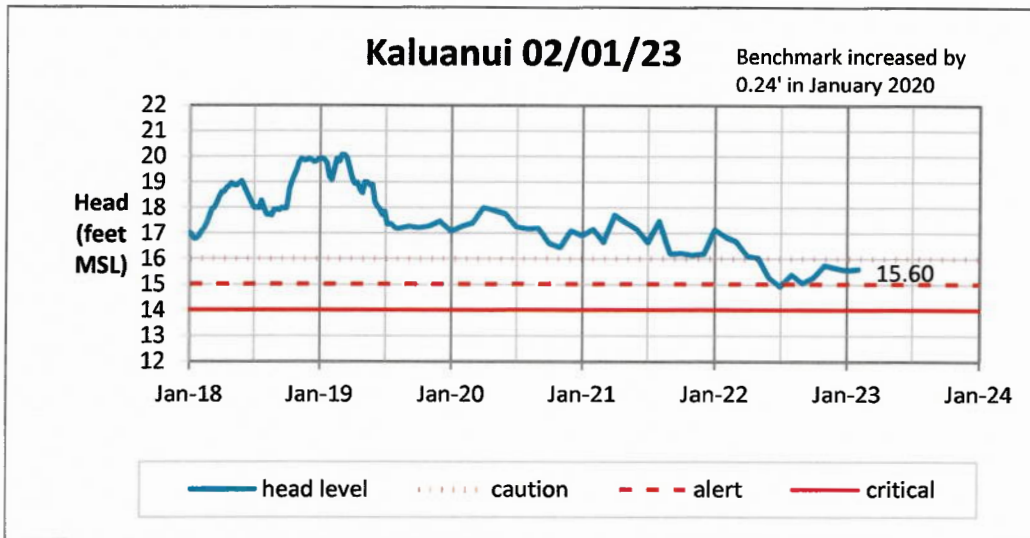
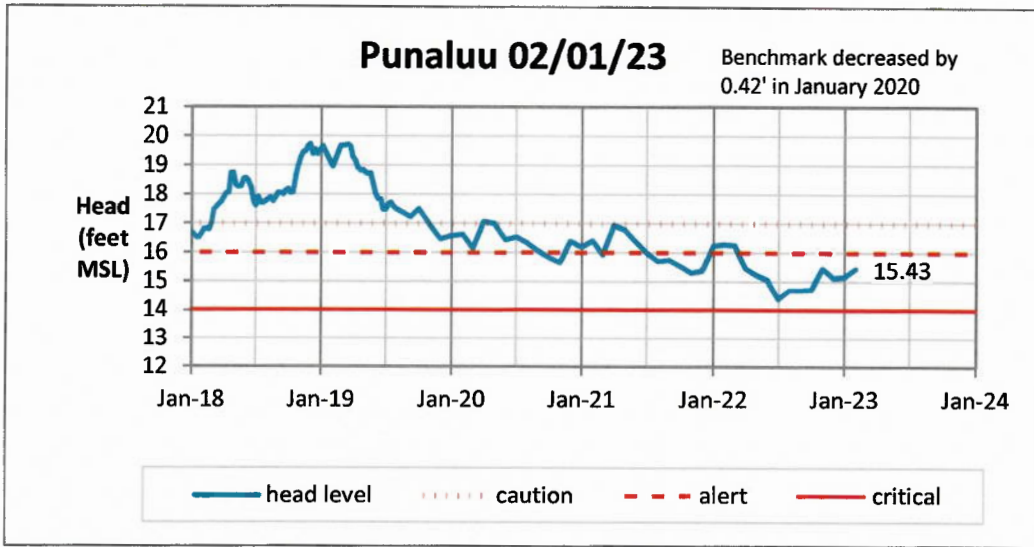
Head Report



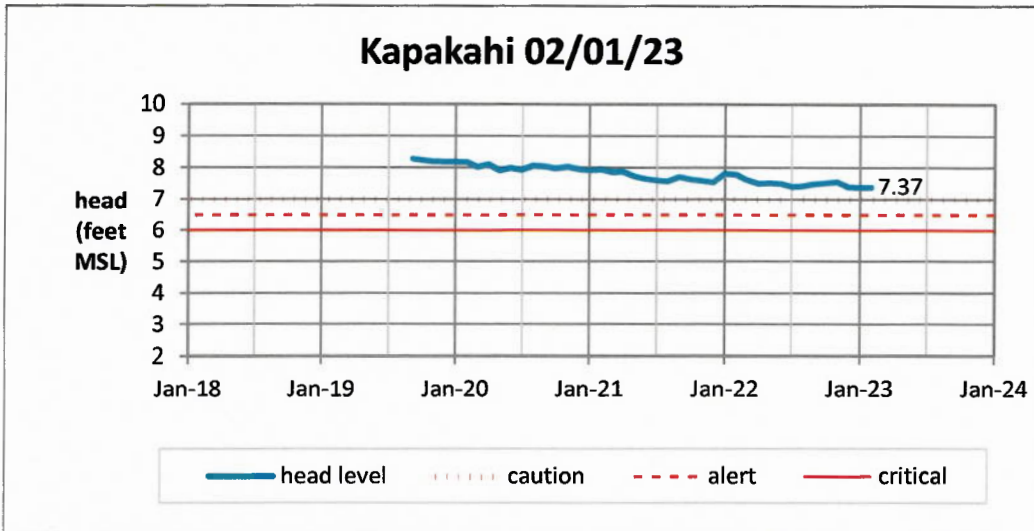
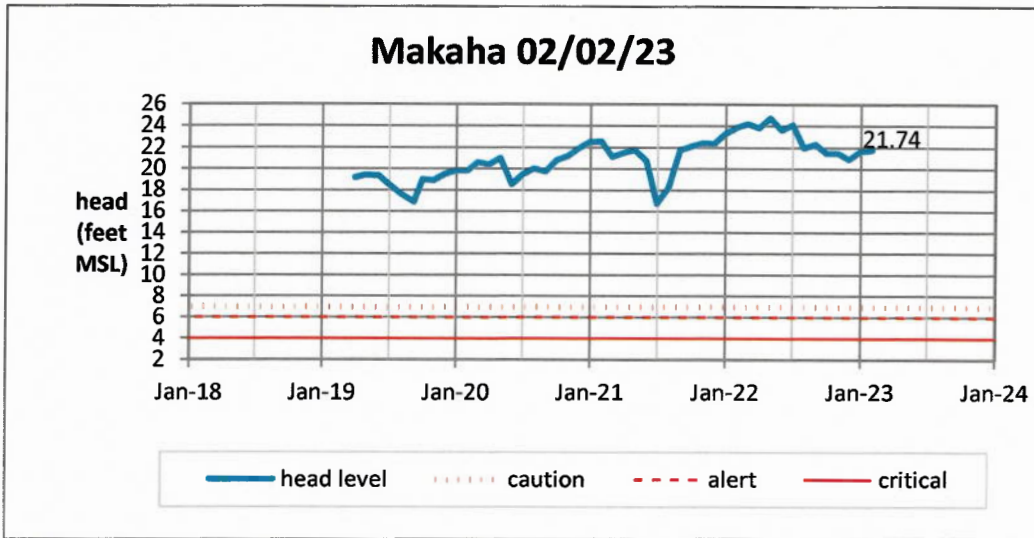
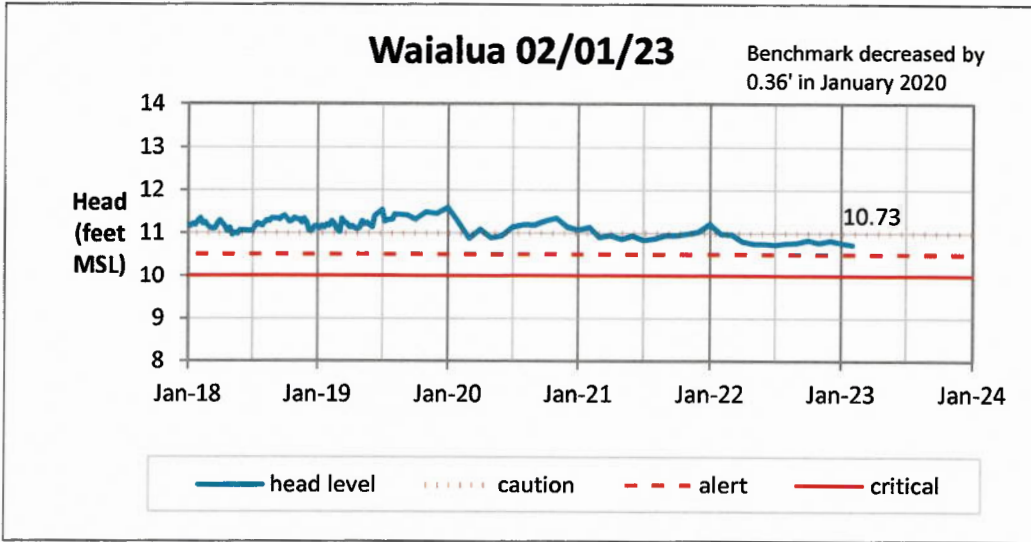
Head Report

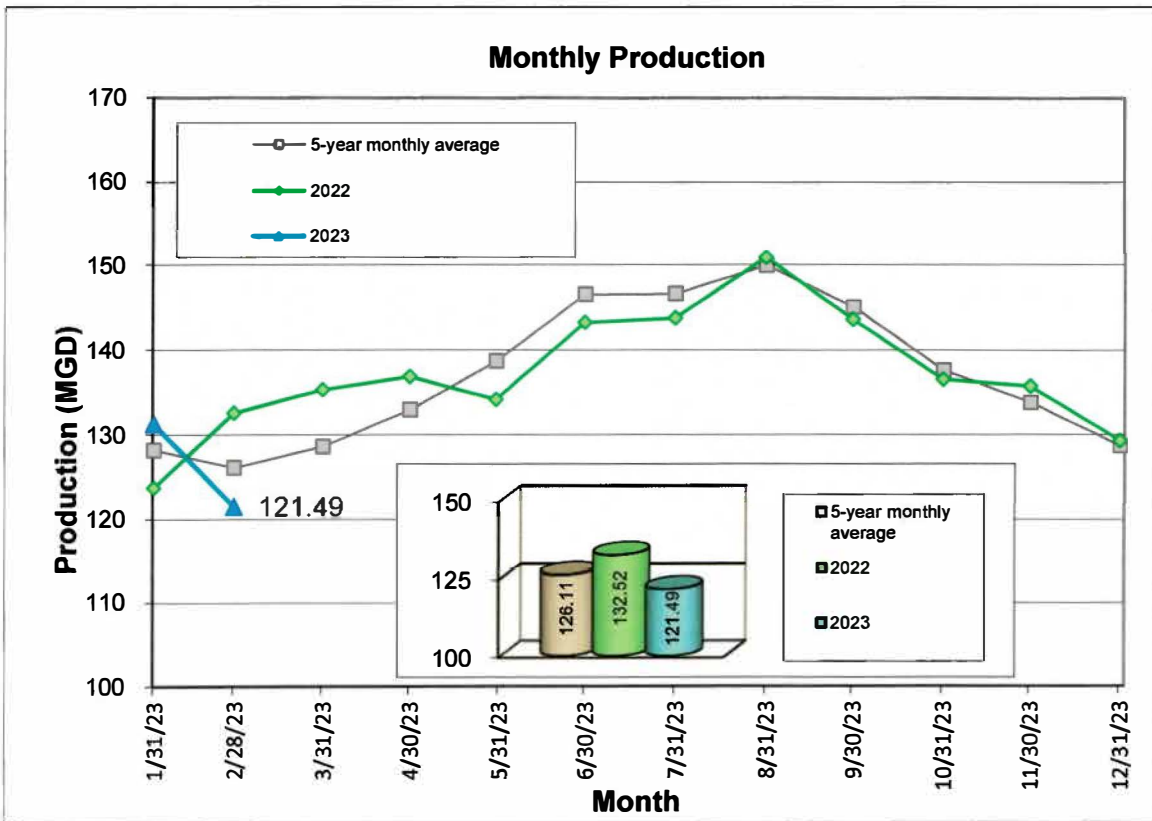
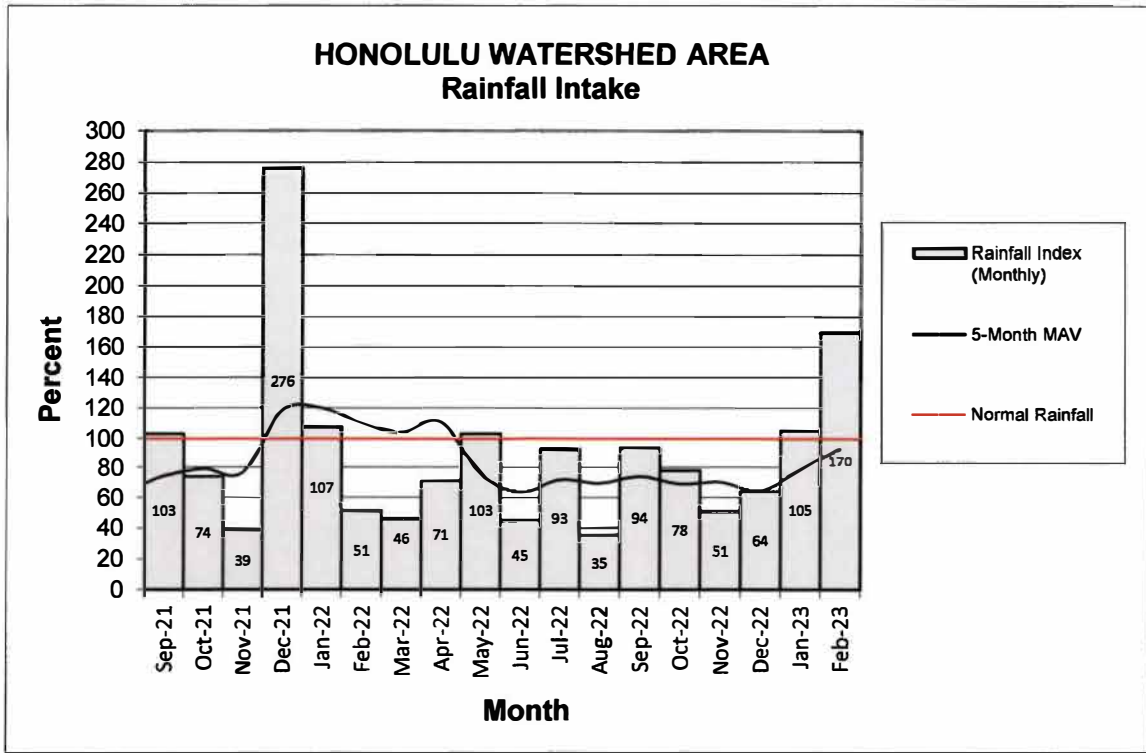


Head Report



Head Report





ITEM FOR INFORMATION NO. 4

"March 28, 2023

WATER MAIN
REPAIR
REPORT FOR
FEBRUARY
2023

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

Subject: Water Main Repair Report for February 2023

Jason Nikaido, Program Administrator, Field Operations Division, will report on water main repair work for the month of February 2023.

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 were no comments or discussion on the Water Main Repair Report. However, Chair had a special announcement.

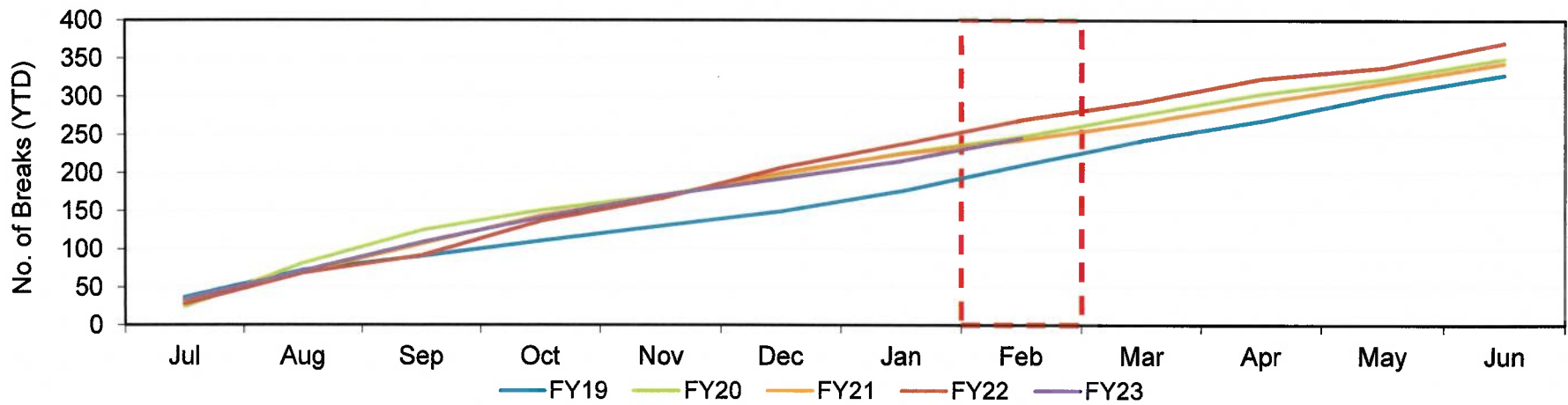
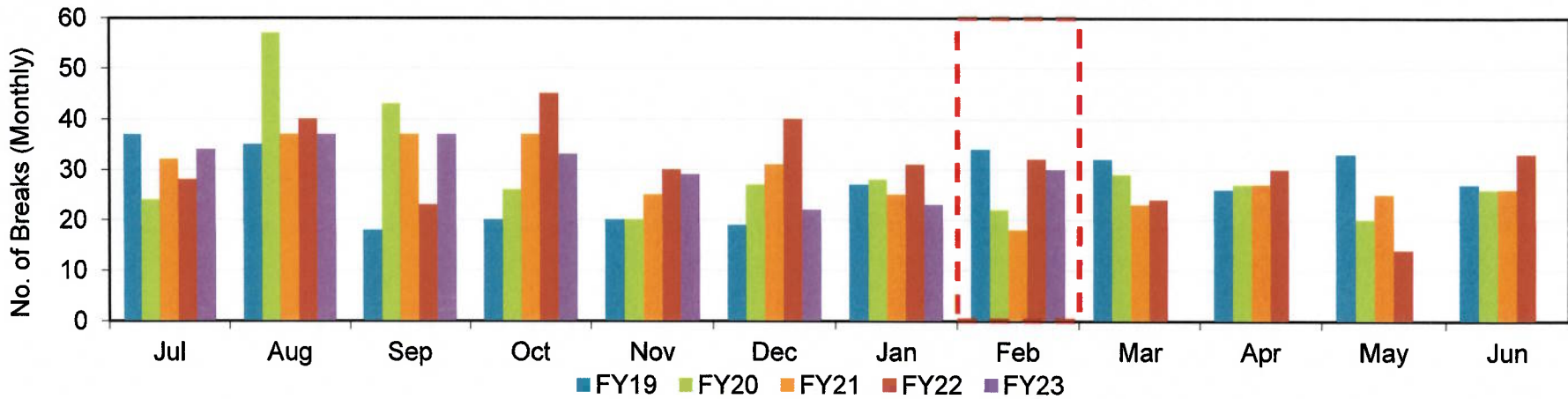
Chair Andaya recognized Ex-Officio Board Member Dawn Szewczyk and announced that the March 28, 2023, Board meeting would be her last as she moves on.

Board Member Dawn Szewczyk stated that it had been an honor to have had the opportunity to serve on the BWS Board.

WATER MAIN REPAIR REPORT
for February 2023

Monthly Main Breaks

FY	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
2023	34	37	37	33	29	22	23	30					245
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

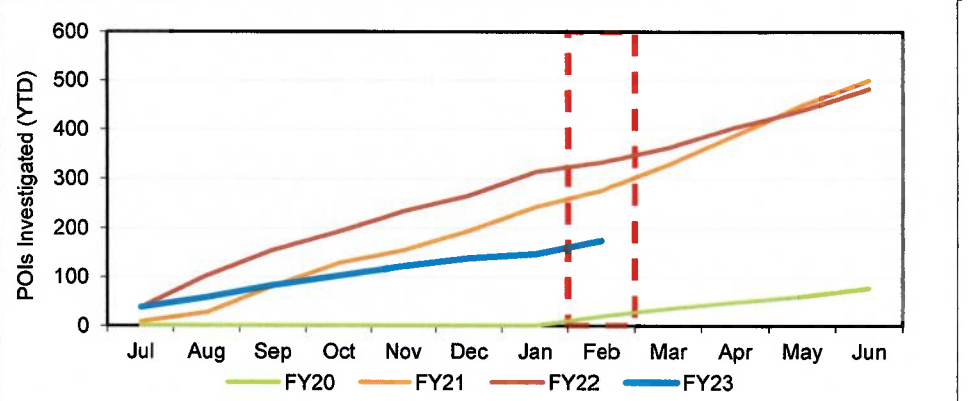
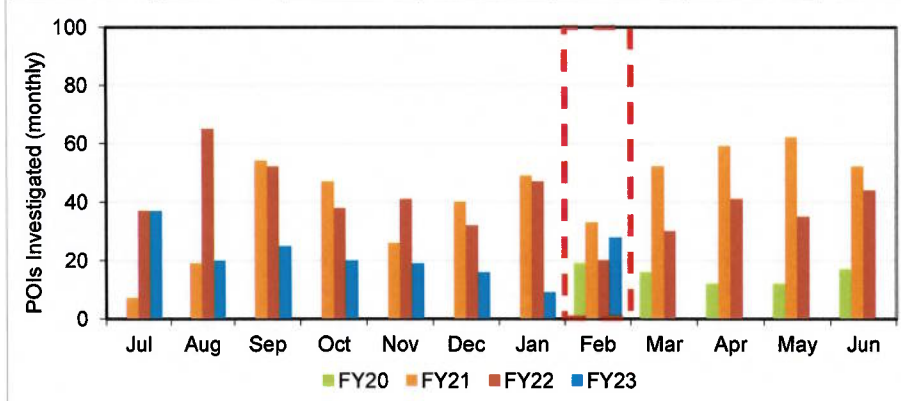


Date	Address	Size (In)	Pipe Type
2/1/2023	59-470 Aukauka Rd, Haleiwa	8	CI
2/1/2023	86-19 Hoaha St, Waianae	8	AC
2/2/2021	94-381 Peke Pl, Waipahu	8	CI
2/2/2023	98-147 Kamehameha Hwy, Waimalu	12	CI
2/3/2023	1300 Makaloa St, Honolulu	8	CI
2/4/2023	61-523 Pohaku Loa Way, Haleiwa	6	CI
2/6/2023	98-1681 Apala Loop, Aiea	8	CI
2/10/2023	1179 Waimano Home Rd, Pearl City	12	CI
2/10/2023	1942 Piimauna Pl, Honolulu	8	DI
2/11/2023	1169 Waimano Home Rd, Pearl City	12	CI
2/13/2023	1090 Wainiha St, Honolulu	8	CI
2/13/2023	84-924 Farrington Hwy, Waianae	8	PVC
2/14/2023	91-120 Olai St, Kapolei	12	PVC
2/14/2023	325 N Nimitz Hwy, Honolulu	16	DI
2/15/2023	91-799 Makule Rd, Ewa Beach	8	CI
2/15/2023	2326 Metcalf St, Honolulu	8	PVC
2/16/2023	94-207 Waipahu St, Waipahu	4	CI
2/16/2023	56-505 Kamehameha Hwy, Kahuku	8	PVC
2/16/2023	45-037 Malulani St, Kaneohe	8	CI
2/17/2023	45-033 Malulani St, Kaneohe	8	CI
2/17/2023	94-282 Kahuawai St, Waipahu	8	CI
2/17/2023	91-603 Kilipoe St, Ewa Beach	8	CI
2/17/2023	91-882 Waiapo Pl, Ewa Beach	8	DI
2/18/2023	2561 Halekoa Dr, Honolulu	8	CI
2/18/2023	1077 Mokulua Dr, Kailua	8	PVC
2/20/2023	1317 Moelola Pl, Honolulu	8	CI
2/21/2023	85-1512 Waianae Valley Rd, Waianae	4	GALV
2/21/2023	1812 Houghtailing St, Honolulu	12	CI
2/23/2023	2722 Kilihau St, Honolulu	12	CI
2/27/2023	758 16th Ave, Honolulu	6	CI

**LEAK DETECTION
for February 2023**

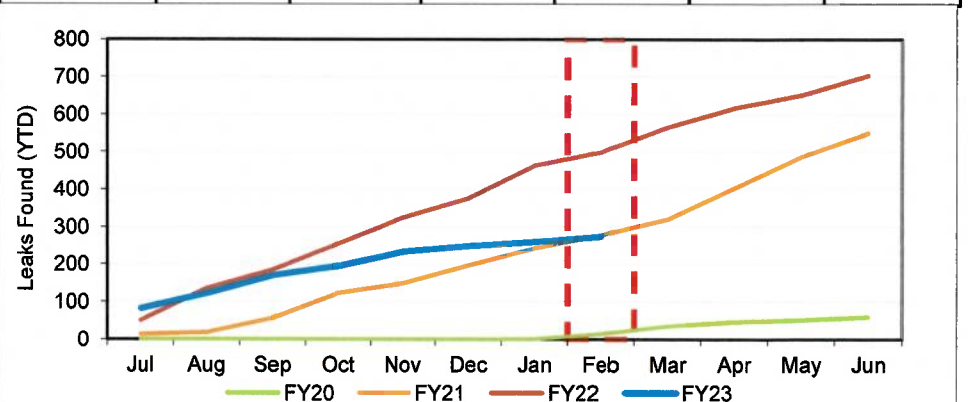
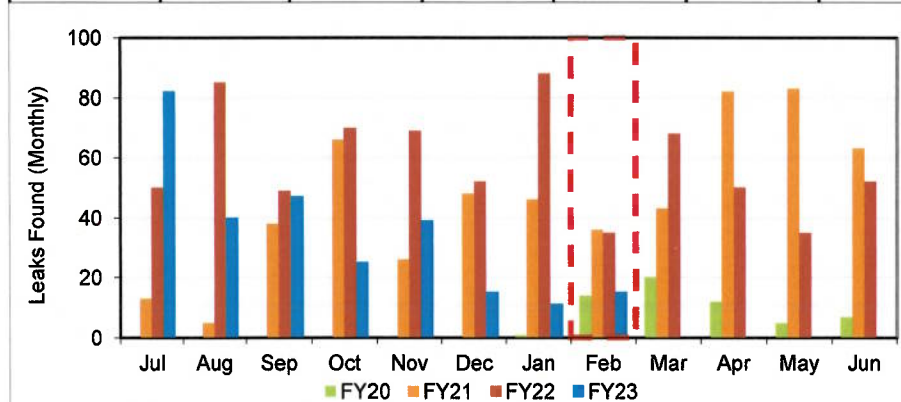
POIs Investigated

FY	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
2023	37	20	25	20	19	16	9	28					174
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								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	39	15	11	15					274
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



**MOTION TO
RECESS INTO
EXECUTIVE
SESSION**

There being no further business Chair Andaya at 3:41 PM, called for a motion to adjourn the Open Session. Max Sword so moved; seconded by Dawn Szewczyk and unanimously carried.

Upon unanimous approved motion, the Board recessed into Executive Session Pursuant to [HRS § 92-5 (a)(4)] at 3:42 PM to Consider Issues Pertaining to Matters Posted for Discussion at an Executive Session.

**OPEN
SESSION**

The Board reconvened in Open Session at 4:31 PM.

**MOTION TO
ADJOURN**

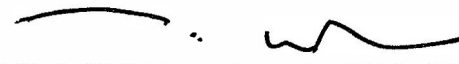
There being no further business Chair Andaya at 4:32 PM, called for a motion to adjourn the Regular Session. Dawn Szewczyk so moved, seconded by Na'alehu Anthony, and unanimously carried.

The minutes of the Regular Meeting held on March 28, 2023, are respectfully submitted,


JOY CRUZ-ACHIU

THE MINUTES OF THE REGULAR MEETING HELD ON MARCH 28, 2023, WERE APPROVED AT THE APRIL 24, 2023, BOARD MEETING			
	AYE	NO	COMMENT
BRYAN P. ANDAYA	X		
KAPUA SPROAT	X		
MAX J. SWORD	X		
NA'ALEHU ANTHONY	X		
JONATHAN KANESHIRO	X		
EDWIN H. SNIFFEN	X		

APPROVED:


BRYAN P. ANDAYA
Chair of the Board
APR 24 2023

Date