BOARD OF WATER SUPPLY

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

January 17, 2023

NOTICE

The Board of Water Supply, City and County of Honolulu, Regular Meeting will be held on Monday, January 23, 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 Monday, January 23, 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, January 20, 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 Monday, January 23, 2023:
    - Email to board@hbws.org
    - Online at boardofwatersupply.com/testimony

    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 January 23, 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 December 12, 2022

2. Adoption of Resolution No. 959, 2023, Resolution of Appreciation for Board Member Ray C. Soon

ITEMS FOR INFORMATION

1. United States Environmental Protection Agency (EPA) and Hawaii Department of Health (DOH) to discuss 1) Environmental Action Levels (EALs), 2) the Aqueous Film Forming Foam (AFFF) concentrate spill at the Red Hill Bulk Fuel Storage Facility, 3) the proposed 2023 Consent Order, 4) the plan to investigate and characterize the nature and extent of the contamination of the groundwater aquifer and how to clean it up, and 5) how to improve transparency to the public and the BWS

2. Update on the Cost of Service Study

3. Environmental Protection Agency (EPA) Water Infrastructure Finance and Innovation Act (WIFIA) Program Financing

4. Recruitment Status

5. Status Update of Groundwater Levels at All Index Stations

6. Water Main Repair Report for December 2022

EXECUTIVE SESSION

1. Approval of the Minutes of the Executive Session Held on November 28, 2022

2. To Consult with the Board's Attorney on Questions and Issues Pertaining to the Board's Powers, Duties, Privileges, Immunities, and Liabilities Pertaining to Matters Concerning the Red Hill Bulk Fuel Storage Facility [HRS §92-5(a)(4)]

3. 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

January 23, 2023

At 2:06 PM on January 23, 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
Max J. Sword, Board Member
Na'alehu Anthony, Board Member
Jonathan Kaneshiro, Board Member
Dawn B. Szewczyk., Board Member, Ex- Officio
Edwin H. Sniffen, 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 Vimeo
Kathleen Elliott-Pahinui, Information Officer, Communications Office
Raelynn Nakabayashi, Executive Assistant I, Executive Support Office via In Person and Vimeo
Jason Nikaido, Program Administrator, Field Operations Division via Vimeo
Joseph Cooper, Waterworks Controller, Finance Division via Vimeo & In Person
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
Marc Chun, Civil Engineer VII, Water Resources Division via Vimeo
Kevin Ihu, Program Administrator, Water System Operations Division via 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: Kapua Sproat, Vice Chair

Chair Bryan Andaya welcomed everyone to the January 23, 2023, Regular Board of Water Supply (BWS) meeting.

Before beginning the meeting, Chair Andaya went over a few meeting regulations required by law. Board Members attending the Board Meeting remotely must be visible to the public to be considered present and meet quorum guidelines. He also stated 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 would be allowed to attend Board Meetings at the BWS Public Service Building, 630 S. Beretania Street, Honolulu, HI 96843, via interactive conference technology.

Chair Andaya shared that there were no Board Members attending remotely. He requested a roll call from the Board Members. Board Member Max Sword, aye; Board Member Jonathan Kaneshiro, aye; Board Member Dawn Szewczyk, aye. Chair Andaya was present in the Board room.

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

Chair Andaya introduced those present in the Boardroom, Manager Ernest Lau, Deputy Manager Erwin Kawata, Board Secretary Joy L. Cruz-Achiu, Manager Secretary 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 Monday, January 23, 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, January 20, 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.

Chair Andaya stated that Board is dedicated to providing safe, dependable, and affordable supply of water now and into the future.

Chair Andaya announced that he would be taking the agenda out of order.

APPROVAL OF MINUTES	Approval of the Minutes of the Regular Meeting Held on December 12, 2022.

MOTION TO APPROVE

There was no motion. The Minutes of the Regular Meeting Held on December 12, 2022, was deferred.

"January 23, 2023

ADOPTION OF RESOLUTION NO. 959, 2023, RESOLUTION OF APPRECIATION FOR BOARD MEMBER RAY C. SOON

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

Chair and Members:

Subject: Adoption of Resolution No. 959, 2023, Resolution of Appreciation for Board Member Ray C. Soon

At-Large Board member Ray C. Soon has notified this Board of Directors that his appointed term has ended.

We recommend the adoption of Resolution No. 959, 2023, to recognize and thank Mr. Soon for his service, contributions, and dedication to the Board of Water Supply.

Respectfully Submitted,

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

Attachment"

DISCUSSION: Chair Bryan Andaya and Manager Ernest Lau gave the report.

Chair Andaya read Resolution No. 959, 2023. He wished Mr. Ray Soon best wishes and Aloha.

Manager Ernest Lau expressed gratitude for his insight and ideas on various issues. He stated that he considers Mr. Ray Soon a mentor and will remember him for his value of good planning.

Mr. Ray Soon stated that he loves serving the public. He shared his advice: not to be too anxious to make decisions; all decisions should always be in the best interest of the ratepayers and not anyone else. Mr. Soon thanked the public and the Board.

MOTION TO APPROVE

Max Sword and Dawn Szewczyk motioned and seconded, respectively, to approve the Adoption of Resolution No. 959, 2023, Resolution of Appreciation for Board Member Ray C. Soon.

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. There were no objections or "Nay" votes. Chair Andaya announced that the motion was unanimously carried. Vice Chair

Kapua Sproat, Board Member Na'alehu Anthony, and Board Member Edwin Sniffen were absent.

ADOPTION OF RESOLUTION NO. 959, 2023, RESOLUTION OF APPRECIATION FOR BOARD MEMBER RAY C. SOON WAS ADOPTED ON JANUARY 23, 2023			
	AYE	NO	COMMENT
BRYAN P. ANDAYA	X		
KAPUA SPROAT			ABSENT
MAX J. SWORD	X		
NA'ALEHU ANTHONY			ABSENT
JONATHAN KANESHIRO	X		
DAWN B. SZEWCZYK	X		
EDWIN H. SNIFFEN			ABSENT

BOARD OF WATER SUPPLY
CITY AND COUNTY OF HONOLULU

RESOLUTION NO. 959, 2023

RAY C. SOON
IN APPRECIATION FOR SERVING AS A MEMBER OF THE BOARD OF WATER SUPPLY

WHEREAS, RAY C. SOON has ably served as an at-large member of the Board of Water Supply, City and County of Honolulu, since October 2017; and

WHEREAS, as the former Chief of Staff to previous Mayor Kirk Caldwell, MR. SOON'S prominence in government brought additional recognition and respect for the Board; and

WHEREAS, RAY SOON'S knowledge and experience gained in that role and in his previous positions as the Director of the State of Hawaii Department of Hawaiian Home Lands and Vice President of Community Relations at Kamehameha Schools bolstered his credibility as the Board discussed a broad range of executive, departmental, and community matters; and

WHEREAS, his memberships on other boards and commissions, such as the Historic Hawaii Foundation, the Council for Native Hawaiian Advancement, the Native Hawaiian Economic Alliance, and the Research Corporation of the University of Hawaii, made RAY C. SOON a helpful resource for Board deliberations and proceedings; and

WHEREAS, as a Board member, MR. SOON adopted initiatives for programs that preserve and protect Oahu's precious water resources, and he volunteered his time and expertise to help effect business and policy decisions for the Board that will impact the direction and operations of this Department for many years to come; and

WHEREAS, his service is a testament to his commitment to maintaining a municipal water system deserving of trust from the public it serves; now, therefore,

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

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

BE IT FINALLY RESOLVED that this Resolution be presented to RAY C. SOON.

Adopted this 23rd day of January 2023
Board of Water Supply, Honolulu, Hawaii

BRYAN P. ANDAYA
Chair of the Board

ITEM FOR INFORMATION NO. 1

"January 23, 2023

UNITED STATES ENVIRONMENTAL AGENCY (EPA) AND HAWAII DEPARTMENT OF HEALTH (DOH) TO DISCUSS 1) ENVIRONMENTAL ACTION LEVELS (EALS), 2) THE AQUEOUS FILM FORMING FOAM (AFFF) CONCENTRATE SPILL AT THE RED HILL BULK FUEL STORAGE FACILITY, 3) THE PROPOSED 2023 CONSENT ORDER, 4) THE PLAN TO INVESTIGATE AND CHARAC-TERIZE THE NATURE AND EXTENT OF THE CONTAMINATION OF THE GROUND-WATER AQUIFER AND HOW TO CLEAN IT UP, AND 5) HOW TO IMPROVE TRANSPARENCY TO THE PUBLIC AND THE BWS

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

Subject: United States Environmental Protection Agency (EPA) and Hawaii Department of Health (DOH) to discuss 1) Environmental Action Levels (EALs), 2) the Aqueous Film Forming Foam (AFFF) concentrate spill at the Red Hill Bulk Fuel Storage Facility, 3) the proposed 2023 Consent Order, 4) the plan to investigate and characterize the nature and extent of the contamination of the groundwater aquifer and how to clean it up, and 5) how to improve transparency to the public and the BWS

We are pleased to have the EPA and Hawaii DOH representatives present to discuss and respond to questions from the Board and the public and to hear testimony on the Red Hill Bulk Fuel Storage Facility regarding:

1. Setting of Environmental Action Levels (EALs) for Total Petroleum Hydrocarbons (TPH);
2. Results of the EPA and DOH investigation of the November 29, 2022, AFFF concentrate spill at Red Hill, including soil and groundwater test results;
3. The purpose and intent of the proposed Consent Order between EPA, the Navy, and the Defense Logistics Agency;
4. EPA and DOH plan to investigate and characterize the nature and extent of the contamination of the groundwater aquifer at the Navy's Red Hill Bulk Fuel Storage Facility and under the Halawa and Moanalua Valley including the chemicals to be tested for and minimum reporting levels to be reported and how to clean it up;
5. And how EPA and DOH will ensure transparency of data and information to the public and how it will be shared with the BWS.

Respectfully Submitted,

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

Attachment"

The foregoing was for information only.

DISCUSSION: Environmental Protection Agency (EPA) and the Hawaii Department of Health (DOH) gave the report.

Ms. Alison Fong, Assistant Director, RCRA Land, Chemicals and Redevelopment Division, EPA, Region Nine, introduced herself. She expressed her appreciation to the BWS and Manager Lau for joining the EPA's town hall on January 18, 2023, and the public for coming to share their testimony at the January 23, 2023, Board meeting. The EPA listened and read all the testimonies submitted at the December 12, 2022, BWS Board meeting and is committed to hearing all the feedback from the public. Ms. Fong stated that the EPA would try to answer all questions regarding the drinking water, Polyfluoralkyl Substances (PFAS), the consent order, investigation, remediation, defueling, and closure of Red Hill, and community engagement. However, any questions that couldn't be answered at the Board meeting would be noted and followed up on. She then introduced her team that was present with her: Dustin Miner, Office Reginal Counsel Attorney (ORC), to speak on the 2023 proposed Consent Order; Matthew Small, Regional PFAS Expert; Corine Li, Drinking Water Manager; Wayne Praskins, Lead Investigation, and Remediation; Evan Osborne, Lead Defuel and Closure; Alejandro Diaz, Public Affairs Coordinator; and Dominique Smith, Environmental Justice Community Engagement Coordinator.

Ms. Kathleen Ho, Deputy Director of Environmental Health, Department of Health, introduced those who joined her in person: Joanna Seto, Division Administrator, Environmental Health Administration; Roger Brewer, Senior Scientist; Gaudencio "Dennis" Lopez, Branch Chief, Safe Drinking Water Branch; Kelly Ann Lee, Red Hill Coordinator; Gabrielle "Fenix" Grange, Section Chief for Remediation; and Liz Galves, Section Chief, Emergency Response Branch.

At 2:26 PM, Board Member Edwin Sniffen joined the Board meeting in the Board room.

The first item on Information one was item 1: Setting Environmental Action Levels (EALs) for Total Petroleum Hydrocarbons (TPH)

Dr. Roger Brewer, Senior Scientist, DOH, shared that he has been the DOH's Senior Scientist for 30 years. To clarify the confusion of his title, he stated that he is not a toxicologist but a Risk Assessor.

Manager Lau asked Dr. Brewer if, as a Risk Assessor, his full-time responsibility is to develop EALs.

Dr. Brewer explained that as a Risk Assessor, one of his primary responsibilities is to develop the EAL, which the EPA calls Risk-Based Screening Levels (RSLs). The EPA sets and creates RSL models at the level of exposure daily based on the health risks. He then uses the EPA RSL models to develop the EALs that include other issues like contaminants leaching contaminants from the soil and groundwater vapors that seep out of the ground.

Manager Lau inquired if Dr. Brewer consulted with the DOH's toxicologist before setting the EAL.

Dr. Brewer replied that he works directly with the Hawaii State Toxicologist, Dr. Diana Felton, and previously worked with Dr. Barbara Brooks. He also consults regularly with the EPA, the Center for Disease Control (CDC), and other states that deal with petroleum, such as Massachusetts, Washington State, Texas, and California, where he helped develop their environmental screening levels.

Manager Lau asked the EPA to explain RSLs.

Dr. Matthew Small, Regional PFAS Expert, EPA, shared that he is not a toxicologist but a Hydrogeologist and Environmental Engineer who has worked on developing risked-based numbers for petroleum and various compounds. He also mentioned that he was part of developing the American Society for Testing and Materials (ASTM) standard for risk-based corrective action. Dr. Small explained that in his position, toxicity values established by the toxicologist are used and inserted into the EPA's equation, incorporating exposure, years, consumption, and toxicity to develop screening levels. He further explained that RSLs are used during contaminated site clean-ups to help understand the level of risk and are not intended to be final.

Manager Lau inquired if toxicity factors are updated periodically.

Dr. Smal responded that as more information becomes available, the EPA adjusts the toxicity factors and the exposure estimates. For example, the original health advisory was 70 parts per trillion but was recently reduced for Perfluorooctanoic Acid (PFOA) and Perfluorooctane Sulfonate (PFOS) compounds.

Manager Lau asked if the information collected was from research and studies indicating health effects at lower-level toxicity factors.

Dr. Small replied that the EPA gathers information from literature and animal and human epidemiological studies, which are entered into the Integrated Risk Information System (IRIS) program and compiles the data to produce an interim or final toxicity value.

Manager Lau inquired if the EPA lowers the RSLs based on science and knowledge of health effects as necessary to protect public health.

Dr. Small responded yes.

Manager Lau questioned Dr. Brewer, was the EPA's toxicity factors used as a source to set the DOH EALs from the beginning of the Red Hill issue.

Dr. Brewer replied that the DOH guidance document refers to six data sources, including the EPA's toxicity factors, before setting an EAL.

Manager Lau asked what year toxicity factors were used to set the latest EAL.

Dr. Brewer stated that 2017 was the last DOH update on EALs. He responded that before setting the new EAL, the DOH reviews chemicals listed as associated with petroleum, pesticides, heavy metals, explosives, and various compounds and any further information published by the EPA and other states. By reviewing multiple toxicity studies, the DOH determines which level is appropriate.

Manager Lau inquired if the 2009 EPA toxicity factors for Total Petroleum Hydrocarbons (TPH) were used to determine the latest EAL.

Dr. Brewer replied that multiple sources were used to determine the EAL for TPH and believes the EPA data used was from 2009.

Manager Lau stated that the EPA updated the toxicity factor for TPH in October 2022; therefore, he asked if Dr. Brewer intended to update the EAL since the TPH has decreased.

Dr. Brewer responded that he would consult and discuss with the EPA, toxicologists, and other states on the TPH. He also mentioned that there is one thing that the DOH does differently from the EPA: the DOH assesses benzene separately. Therefore, that information is reviewed to determine how the DOH can apply the EPA's toxicity factor.

Manager Lau asked if Dr. Brewer produces or participates in any studies.

Dr. Brewer replied that the DOH does not perform any studies but relies on published studies and larger groups of toxicologists from various states. He mentioned that the DOH is monitoring specific studies regarding jet-propulsion fuel (JP-5) samples taken from Red Hill to understand the chemical and consider developing toxicity.

Manager Lau inquired if the JP-5 sample study included the various additives the military used.

Dr. Brewer responded that the contents used in the fuel study were from the Red Hill tanks. He shared that the military uses different types of additives; one in particular that is being focused on is antifreeze or fuel system icing inhibitor. Dr. Brewer explained that when fuel containing antifreeze is put into water, the antifreeze with ethanol begins to separate from the fuel because it is highly soluble.

Manager Lau explained that people affected by the 2021 JP-5 Red Hill spill were exposed to and affected by additives. He asked Dr. Brewer if any symptoms or health effects were related to the JP-5 and its additives.

Mr. Brewer responded that it would be up to the toxicologists and medical doctors to determine.

Manager Lau asked if the DOH would share any information that becomes available with the BWS and the public.

Dr. Brewer stated that Agency for Toxic Substances and Disease Registry (ATSDR) published the information he shared regarding toxicity factors for petroleum. Currently, samples are being tested at a forensics petroleum laboratory.

Manager Lau asked when the DOH would be expecting the results back.

Dr. Brewer replied that sample results might be back by late spring.

Manager Lau requested that the DOH share the results immediately, as it is crucial to the lives affected by the fuel and/or additives.

Dr. Brewer stated he would share the chemical list once he received the results.

Manager Lau mentioned that the BWS learned from the DOH and the EPA that in December 2021, the Navy took two samples from Red Hill about a week apart after the water was shut off and found PFAS. He inquired if the DOH and the EPA are looking into whether PFAS was in the water supplied to Joint Base Pearl Harbor Hickam (JBPHH) consumers during 2021.

Dr. Brewer shared that PFAS was identified in his first sample but not in other samples after that.

Manager Lau commented that in the annual water quality reports, all public water system operators must report any findings in their drinking water. In 2020 and 2021, up to six different PFAS chemicals were reported for JBPHH.

Dr. Brewer stated that he hadn't seen that information.

Manager Lau stated he would be glad to share that information, which is available on the JBPHH website. He also mentioned that Dr. Small included PFOS and PFOA, which EPA lowered from 70 to 0.004 parts per trillion. Manager Lau expressed his concern for those exposed to PFAS.

Dr. Brewer stated that he is working on compiling information collected from various states and gathering additional toxicity factors.

Manager Lau mentioned that Kunia Village Wells, a third well, was identified to have PFAS chemicals.

Gaudencio "Dennis" Lopez, Branch Chief, Safe Drinking Water Division, DOH, explained that the PFAS that were found in the JBPHH and the Consumer Confidence Reports (CCR) was a Department of Defense (DOD) effort which the DOH was unaware of.

Manager Lau responded that it's a cause for concern due to the number of different chemicals found and the health effects when specific values are combined.

Mr. Lopez explained that it was currently inactive when the test on the third well was performed using the 533 and 537.1 methods. Most of the JBPHH water sources came from their Waiawa well and Aiea Halawa Shaft, a temporary backup source with chloride issues.

Manager Lau expressed his concern because across the valley from the Aiea Halawa Shaft are the BWS Aiea and Halawa Wells, where PFAS was detected in the Halawa Wells. He questioned if the PFAS originated from the Red Hill facility and migrated across the valley.

Mr. Lopez stated that he was unaware that PFAS was detected at the BWS monitoring wells. He offered to work together with Manager Lau to collaborate.

Manager Lau asked for the DOHs and the EPA's assistance in accessing the Navy's information regarding past and present spills, their facility, and their system.

Corrine Li, Drinking Water Manager, EPA, stated that there is no time frame for addressing and mitigating PFAS since more data and better science are available. However, she commented she wouldn't be surprised that there would be a surge in detection since the lowering of the health advisory levels.

Deputy Ho shared that the DOH had an open house regarding PFAS. Unfortunately, PFAS are everywhere: carpeting, clothing, repellant, water repellent, etc. She shared that the DOH brought fliers that explain where it's present and how someone can be exposed to PFAS.

The next item on Information one was item 2: The Aqueous Film Forming Foam (AFFF) concentrate spill at the Red Hill Bulk Fuel Storage Facility.

Liz Galvez, Section Chief, Emergency Response Branch, DOH, shared a brief history of when the Navy reported a release on November 29, 2022. The Navy employee reported the incident between 12:30 PM to 1:00 PM and called the DOH at 2:38 PM; a release happened at Adit six where approximately 1,100 gallons of AFFF, known to be a forever chemical. She arrived at the scene at 3:30 PM and could visibly see spots, but the Navy couldn't explain how the incident happened. She stated that the Navy was required to submit an action plan, sampling plan, and disposal plan, which the DOH and EPA approved on November 30, 2022. The action plan consisted of excavating and digging the affected area, safely storing the debris for sampling and testing, and securing the dug-up area with concrete and asphalt to prevent further contamination of groundwater. Ms. Galvez mentioned that the DOH issued the Navy a notice of interest, and the Navy is taking weekly samples from the groundwater and soil for testing. The DOH is waiting to receive all results to analyze together.

Manager Lau stated that on his tour with John Wade, Rear Admiral, Head of Joint Task Force – Red Hill; Deputy Ho, and Libby Char, Director,

Department of Health, to see the leak, he was taken to Building 313, which housed the pumps and a big plastic tank that contained the AFFF concentrate. It was explained that the leak occurred in Adit 6, from an air relief valve near the tunnel's ceiling, on top of a three-inch pipe. Since the tour, he inquired whether the DOH still believed the leak happened from the air relief valve.

Ms. Galvez replied that the DOH is; however, they are waiting on the final investigation report from the Navy.

Manager Lau mentioned that during the leak tour, the Navy shared that there were leaks or drips of AFFF from inside the tunnel near the tanks. He asked if the DOH was aware of the leaks.

Ms. Galvez responded that she was notified of the leaks. Therefore, visited the site and saw drips that weren't enough to collect by hand.

Manager Lau inquired if the pumps in Building 313 were off during her site visit. He explained if the AFFF pumps were turned off, the pressure in the pipeline would be lower than when the spill of 1,300 gallons of AFFF occurred in Adit 6.

Ms. Galvez couldn't confirm if the AFFF pumps were on or off during her site visit but commented that after the November 29, 2022, incident, the AFFF pump shouldn't have been running. However, she stated that until the final investigative report is received and reviewed, she couldn't comment.

Manager Lau commented that it was essential to know whether the AFFF pumps were running. He explained if the pump was on, the pressure to a three-inch steel pipe might have caused leaks to different locations in the lower tunnel.

Ms. Galvez stated that it was hard to tell from the drops seen during her walk-through.

Manager Lau asked Ms. Galvez, during her walk-through on November 29, 2022, did she also go into the lower tunnel to see the 12 other locations. He commented that he walked through Adit 6 on November 30, 2022.

Ms. Galvez replied that she limited herself due to exposure and lack of proper personal protective equipment (PPE).

Manager Lau requested that the DOH share the investigative report, sample test results, and the video when received.

Ms. Galvez shared that the Navy would release validated data to the public on Friday, January 27, 2022.

At 3:03 PM, Board Member Na'alehu Anthony joined the Board meeting in the Board room.

Manager Lau commented that the video and investigative report would reveal more information and whether there were other releases in the lower tunnel.

Ms. Galvez stated that the DOH requested that information in the letter of interest.

Manager Lau shared that the Navy engineers were not optimistic when he asked if all 1,300 gallons of AFFF and its concentrate were recovered.

Ms. Galvez stated the Navy worked as quickly as possible to contain the contamination by removing the air conditioning, pavement, and concrete.

Board Member Max Sword asked Ms. Galvez to clarify the process of removing the contamination since the area was covered with asphalt.

Ms. Galvez explained that it was filled with asphalt to prevent water retention in the dug hole and remove contamination.

Board Member Sword inquired if the area was tested to the extent of the spill.

Ms. Galvez responded that samples were taken and sent to get tested. If the results indicate more contamination, the Navy will begin excavation.

Board Member Sword commented that the spill occurred approximately two months ago, and the Navy will only provide information on Friday, January 27, 2023. He inquired if it usually takes months to receive the results.

Ms. Galvez explained that the Navy's information on Friday is validated data from a mainland laboratory and usually takes some time.

Board Member Dawn Szewczyk asked if the laboratory performing the tests is certified by the EPA.

Ms. Galvez responded that the laboratory used for data on drinking water is certified by the EPA.

Board Member Na'alehu Anthony asked Ms. Galvez if the Navy used asphalt or cement to secure the excavated area.

Ms. Galvez replied that both asphalt and cement were used. She stated that if the results indicate the contamination is still there, the Navy will go back in and dig the area.

Board Member Anthony inquired how confident Ms. Galvez is with the Navy removing the AFFF contamination. Is there an action plan for the DOH and the EPA to move forward with, regardless of the results?

Ms. Galvez replied that since this is an emergency response, the DOH and the EPA need to discuss the situation further to consider long-term clean-up. She stated she has confidence in the Navy. However, lab data will determine if further clean up will be required.

Board Member Anthony commented that it would be great to understand the possibilities and what may need to be done.

Board Member Jonathan Kaneshiro asked what the size of the area that was excavated.

Ms. Galvez responded that she didn't bring that information but described that area as filling 120 drums, about 150 cubic feet, and about waist high.

Board Member Kaneshiro asked where the contaminated soil is being stored.

Ms. Galvez responded that the Navy has the contaminated soil in a holding area as they were required to have a waste management and disposal plan.

Manager Lau asked if she knew how long the leak was happening. He commented that he was asking because he noticed a little relief valve during his tour of the leak.

Ms. Galvez replied that that information was still being investigated.

Board Member Anthony inquired if there was any word on when the Navy would release the video.

Ms. Galvez responded that she didn't know the answer to that.

Manager Lau asked if Ms. Galvez had seen the video.

Ms. Galvez confirmed that she viewed the video.

Manager Lau commented that the BWS would continue to request the release of the video to the public.

Chair Andaya inquired how much PFAS firefighters use to extinguish a fire versus how much the Navy's spill released.

Ms. Galvez replied that only a firefighter could answer that question. However, she shared that there are different formulas of AFFF, and in previous times 6% of PFAS was used, then lowered to 3%, and recently working on removing fluorine in PFAS.

Board Member Anthony shared that in a discussion with some Army individuals at Fort Shafter, it was mentioned that they are using an AFFF that doesn't contain PFAS. He questioned why the Navy had AFFF containing PFAS stored at Red Hill.

Chair Andaya asked if the EPA regulates AFFF.

Dr. Small responded that AFFF is regulated by Occupational Safety and Health Administration (OSHA).

Manager Lau shared that he has read in some OSHA reports that annual blood tests are being conducted for federal firefighters due to the military's use of AFFF containing PFAS.

Board Member Anthony had follow-up questions regarding Information number 1, item 1. the Setting of Environmental Action Levels (EALs) for Total Petroleum Hydrocarbons (TPH).

Board Member Anthony stated that since other states have been mentioned regarding TPH, he asked if any other state or country has experienced the same amount of TPH released into drinking water as Oahu.

Dr. Brewer responded that he is unaware of any state or country that has experienced any petroleum release of the same size.

Board Member Anthony commented that what happened at Red Hill is unprecedented. He stated that he struggles to understand that the Navy wasn't prepared with the military's unlimited resources. After two years, there's still no information necessary to understand the spills' depth. He asked if there was any information on what precautions were put into place to prevent these spills.

Dr. Brewer stated he doesn't work directly with Red Hill, therefore, didn't know of the Navy's procedures.

Board Member Anthony inquired how long Dr. Brewer has been involved with Red Hill.

Dr. Brewer replied that since the 1990s, he had been periodically involved with Red Hill. However, his primary focus has been on toxicity and screening levels and not the mechanics of preventing releases.

Deputy Ho also replied that she part of the DOH in 2014, but the 2014 Consent Order might have that information.

Board Member Anthony stressed the lack of information, rules, and policies available to the regulators and purveyors regarding the extent of these spills and that no other country has experienced such unprecedented times. He commented, "it's necessary to treat this crisis like a crisis and not business like usual." He appreciated the DOH and the EPA for coming to the BWS Board meeting in person and hopes that this opportunity will allow everyone to come together to discuss the challenges and come up with a solution.

The next item on Information one was item 3: The purpose and intent of the proposed Consent Order between the EPA, the Navy, and the Defense Logistics Agency.

Dusty Miner, Attorney, EPA, shared how the proposed 2023 Consent Order was developed. When the Navy and the EPA negotiated the proposed 2023 Consent Order, the DOH had already issued the May 2022 Emergency Order. He explained the proposed 2023 Consent Order was developed to set a regulatory structure in the defueling and closure of the Red Hill Bulk Storage Facility. The proposed 2023 Consent Order is designed to ensure that the regulators have the authority over which concerns need to be addressed and a long-term drinking water monitoring plan.

Manager Lau asked Mr. Miner to clarify what he meant when he stated that the proposed 2023 Consent Order was designed for regulators to have authority. To Manager Lau's understanding, the EPA and the DOH already have authority over the situation.

Mr. Miner explained that the DOH and the EPA entered into the 2015 Administrative Order of Consent (AOC), which included the operation, site investigation, tank upgrades, and clean-up but didn't include the defueling and closure of Red Hill Bulk Fuel Storage. When the DOH's Emergency Order was established, it required the Navy to get approval for the defueling and closure of Red Hill pursuant to DOH regulations. The 2023 Consent Order allows for an additional layer of the EPA's approval. The goal is to safely defuel and close Red Hill Bulk Fuel Storage Facility.

Manager Lau shared that in reviewing the proposed 2023 Consent Order, it referenced the State of Hawaii Administrative Rules (HAR), which under the DOH's Emergency Order, are responsible for the defueling and closure of Red Hill. But, the DOH isn't participating in the proposed 2023 Consent Order; however, state regulations are referenced. He asked if the rules for underground storage tank (UST) systems are regulated at the federal level by the EPA, which is delegated to the state, and why does EPA believe a consent order is necessary if you're satisfied with the DOH's program. He commented that it seemed redundant.

Mr. Miner explained that the proposed 2023 Consent Order adds an essential layer given the complexity of Red Hill. The proposed 2023 Consent Order stands in an advisory role and allows national and state experts and consultants to ensure the proper repairs are made. It would also warrant the Navy to seek federal and state approval; otherwise, penalties can be issued. He further explained that the DOH Emergency Order and the proposed 2023 Consent Order allow both agencies to work independently but in cooperation and coordination.

Manager Lau inquired why the EPA and the DOH did not come to a unilateral agreement; instead, the EPA has a voluntary settlement agreement with the Navy.

Mr. Miner responded that the EPA and the DOH could have done a consent order together. However, the DOH chose to stand on its existing Emergency Order. He explained that there is a misperception that a unilateral order is more effective with another federal agency or private party. However, unilateral order is similar to an emergency order which sets the framework and requests documents to be submitted. Whereas an Administrative Order of Consent, the Navy is obligated to stay committed and meet far more than what is regulated, such as reviewing an independent third-party contractor before defueling.

Manager Lau stated that the Department of Defense (DOD) had other underground facilities, which are part of the EPA's Region 9, located in Washington, San Diego, and Point Loma, that were decommissioned from the World War II era. He asked if the shutdown of the facilities named was done through voluntary consent order or unilaterally.

Mr. Miner replied he was unfamiliar with the facilities named but was willing to get back to Manager Lau with that information.

Manager Lau inquired if the EPA only regulates situations through voluntary agreements and consent orders or if the EPA has taken unilateral action on a facility that is in peril to the health and environment of the people.

Mr. Miner responded that there's a regulation that applies to everything. However, when a situation or issue warrants an order, the EPA has two authority options: unilateral or consent orders. He shared that throughout the program's history, the EPA has found that a consent order received better responses in negotiation with responsible parties. Mr. Miner explained that both the unilateral and on-consent orders have the same orders under section 7003 Resource Conservation and Recover Act (RCRA) and section 1431 Safe Drinking Water Act.

Manager Lau asked if he understood what Mr. Miner stated: can an order be done unilaterally or in a voluntary agreement with polluters?

Mr. Miner replied yes.

Board Member Sword inquired if the consent order was a negotiation between the EPA and the Navy but not the DOH.

Mr. Miner responded that the consent order is a negotiation between the EPA, the Navy, and the DOD. The EPA and the DOH coordinated together, but the DOH isn't participating in the 2023 Consent Order. Deputy Ho explained that the DOH chose not to participate in the 2023 AOC because they believe that the May 2022 Emergency Order protects the people of the State of Hawaii and the environment, including overseeing the defueling and closure of the Red Hill Bulk Fuel Storage Facility.

Board Member Sword asked what would happen if the AOC was not meeting the DOH standards.

Deputy Ho responded that the DOH would stand on enforcing its Emergency Order. She stated that the DOH and the EPA are working well together and agree to defueling and decommissioning the Red Hill Bulk Fuel Storage. Therefore, the DOH and the EPA have the authority to enforce their Emergency Order and AOC. If all parties don't reach an understanding, the issue will be settled through the courts. She shared that the DOH, the EPA, the DOD, and the BWS regularly meet to discuss the situation.

Board Member Anthony asked how the AOC addresses the remediation and testing of Red Hill.

Mr. Miner explained that the AOC is divided into two closure phases: Phase one closure consists of removing the fuel, cleaning the tanks, and determining the end use of the tanks, which requires the approval of the DOH and the EPA under RCRA. Phase two closure consists of investigation and clean-up, acknowledged in the 2015 AOC that the DOH and EPA participated in. He further explained that once phase one closure is finalized, the 2023 AOC can be closed. The Navy then could ask to refer back to the use of the 2015 AOC, which the DOH and EPA would have to discuss.

Board Member Anthony inquired if the 2023 AOC requires phase one to be completed before moving on to phase two.

Mr. Miner replied that both phases are occurring in parallel.

Board Member Anthony expressed his concern and stated that the EPA has mentioned that they are working above and beyond in defueling Red Hill Bulk Fuel Storage Facility. However, he urged the EPA to give the same attention to the remediation and clean-up for the unknown moving throughout the aquifer.

Manager Lau asked Ms. Corine Li, Drinking Water Manager, EPA, where does the past use and spills of AFFF at Red Hill fall in the proposed 2023 consent order.

Ms. Li responded that it is absent from the current consent order and further explained that ongoing discussion continues regarding how AFFF can be integrated into the remediation and mitigation efforts. She stated that PFAS testing was formalized as a long-term monitoring plan (LTM), and an agreement is already in place. She stated that when the proposed consent order has no enforceable mechanism for long-term monitoring plan, therefore currently discussing it so that when the proposed consent order is executed, there will be enforceable provisions for monitoring in it.

Manager Lau stated that the 2023 Consent Order doesn't include the impact of the released contaminants and the movement of the plume to

the precious water resources for all of Oahu's community but is more focused on the operation and maintenance of the Navy's water system. He commented that that's a fatal flaw in the consent order. Manager Lau firmly stated that he couldn't support the consent order unless it was corrected.

Ms. Li replied that the EPA continues to look into how the Navy addresses the contamination and its sources which generally would include the impacts on Hawaii's groundwater as other purveyors do.

Manager Lau commented that there are two fundamental contradictions in the consent order: the statement that the Navy admits to no liability and the issue of public resources and wells. He asked how a voluntary arrangement would work if the Navy doesn't accept responsibility for its actions that could later be identified in the years ahead.

Mr. Miner explained that the statement in the consent order regarding no admission to liability is standard in any of the EPA's agreements, whether it be a consent decree or administrative consent order. However, the EPA finds liability in the signing party of the consent order, and it does not affect the enforceability. The system in place allows the EPA to make the final decision. If the Navy refuses to comply with the consent order, it will escalate to the Deputy Administrator.

Manager Lau asked if any changes to the consent order would require a new signature; otherwise, the Navy is only bound to the signed agreement.

Mr. Miner confirmed that a new signature would be required if any amendments were made to the agreement.

Manager Lau commented that the consent order is deficient, in his opinion. He asked how the EPA plans to protect Hawaii's water resources and will the consent order protect Hawaii's water resources.

Mr. Miner responded that the EPA believes the best way to protect the water resources of this community is to safely defuel Red Hill Bulk Fuel Storage promptly, followed by the clean up and investigation, which is the focus of the consent order.

Manager Lau commented that he disagreed with Mr. Miner's response. He stated that there were undocumented releases during the dispute over the Navy during the application process for a permit. And there were 72 other documented releases in the past, totaling 180,000 gallons of fuel since Red Hill began operation. He inquired about the past spills and how they will be remediated.

Mr. Miner shared that he and those with him have a lot of experience dealing with groundwater investigation and clean-up but lack experience in defueling. However, he stated regardless of the lack of experience, the focus of this consent order is Red Hill.

Chair Andaya asked if Mr. Miner believed that with a consent order in place, the EPA has a better chance of enforcing the requirements to defuel and close Red Hill.

Mr. Miner replied that without a consent order, the EPA is an advisor to the DOH and the Navy. He shared that as advisors, the EPA can seek penalties in case of a release. And without a consent order, the EPA has no authority to force the Navy to seek the EPA's approval on the defueling and closure of Red Hill. Like the DOH's Emergency Order, the EPA has its consent order, which requires approval from both.

Chair Andaya inquired if the EPA's consent order contains rules that aren't federally regulated but will give the EPA authority to oversee the Navy.

Mr. Miner responded yes, a consent order would allow the EPA to oversee all requirements and ensure that Red Hill is properly defueled and closed pursuant to Hawaii regulations. He explained there is no regulatory role that guarantees inspection is also done by a third-third party contractor if a consent order isn't in place, which is one of the requirements in the consent order. Mr. Miner shared that the purpose of the EPA's consent order is to set a structure in place and regulate operations.

Board Member Sword inquired if the defueling and closure of Red Hill Bulk Fuel Storage include dismantling the facility.

Mr. Miner replied that the Navy plans to close the Red Hill facility permanently. There are three different meanings for "permanent closure" under the DOD regulations: Remove the tanks, keep the tanks in place for other use, or seek another approved method for final closure. He stated that the DOD would seek public comments; however, in any case, the DOD would need the DOH and the EPA's approval.

Board Member Sword asked how clean-up would proceed if the tanks were not dismantled.

Mr. Miner explained that the site investigation and clean-up include removing anything that could cause further releases. The EPA has the regulatory authority if it requires the dismantling of the tanks.

Board Member Anthony asked Mr. Miner, in any of the many projects he's dealt with, if there are similar challenges, such as what Oahu is facing with the TPH intrusion into the aquifer.

Mr. Miner shared that most of his background is in the Federal Superfund program, which deals with large-scale groundwater clean-up. He stated that he hasn't directly worked on a project on a site where contamination got into the drinking water.

Board Member Anthony inquired if fuel is listed in the Superfund.

Mr. Miner responded that petroleum is excluded under the Federal Superfund statute. Therefore, the EPA and the DOH rely on RCRA, which is parallel to clean-up authorities, similar to the investigation and clean-up of Superfund sites.

Board Member Anthony asked Deputy Ho if petroleum is recognized as a contaminant under the Hawaii Revised Statute (HRS).

Deputy Ho replied that petroleum is recognized as a hazardous substance under HRS 128D and defines petroleum in the state Superfund.

Board Member Edwin Sniffen asked Manager Lau if Halawa is still shut down due to potential cross-contamination.

Manager Lau replied, yes, Halawa Shaft, Halawa Wells, and Aiea Wells are still shut down.

Board Member Edwin Sniffen asked Manager Lau when he would be comfortable or what is needed to reopen the BWS Halawa Shaft.

Manager Lau responded that question would be answered in Information one, number four.

The next item on Information one was item 4: EPA and DOH plan to investigate and characterize the nature and extent of the contamination of the groundwater aquifer at the Navy's Red Hill Bulk Fuel Storage Facility and under the Halawa and Moanalua Valley, including the chemicals to be tested for and minimum reporting levels to be reported and how to clean it up.

Wayne Praskins, Lead Investigation and Remediation, EPA, provided an overview of the investigation, characterization, and remediation at Red Hill Bulk Fuel Storage. He shared that since the November 2021 spill, the Navy has focused on the soil and soil gas remediation efforts in Adit 3 and removing the contamination in the groundwater from the Red Hill Shaft vicinity. The methods used to remove fuel from the shaft include using an absorbent, skimming, and pumping. In addition, Mr. Praskins shared that in the investigation and characterization efforts, the Navy has performed weekly sampling and testing of the groundwater monitoring wells for TPH and various other chemicals to understand the nature, extent, and movement of the contaminants in the groundwater. The Navy is expanding its monitoring wells network of up to 22 by the end of 2023, some north and northwest of Red Hill known as sentinel wells, and are committed to testing ten wells weekly for the next six months.

Board Member Sword asked if the information gathered is shared promptly.

Mr. Praskins replied yes, information is shared.
Board Member Sword inquired if water samples were sent to the mainland.

Gabrielle "Fenix" Grange, Section Chief for Remediation, DOH, stated that Hawaii doesn't have EPA-certified labs; therefore, samples are sent to the mainland for testing.

Board Member Sword asked how much time is needed before sample results and final reports are received and shared.

Mr. Praskins replied that it would depend on the type of sampling. However, he shared that for PFAS, it can take up to a week and a half to receive validated raw data and up to three weeks to receive validated results.

Manager Lau stated that considering the size of Red Hill Bulk Fuel Storage and the type of facility, he asked Mr. Praskins his thoughts on how the 22 planned monitoring wells should be patterned and located.

Mr. Praskins stated that the EPA aims to gather as much information from the samples and tests to understand the contaminants' nature, extent, and movement to make the necessary decisions for remediation and assess the threat to the water supply. He shared that he is confident in the Navy's efforts as they plan to install 22 monitoring wells, hoping that the placement and location will provide the information needed. Unfortunately, the site the Navy had planned on, which is north, northwest of the tanks inland of the quarry, was not obtainable.

Manager Lau asked Mr. Praskins if he knew of the Pearl Harbor leak above the ground storage tank.

Mr. Praskins deferred the question to Ms. Grange.

Ms. Grange explained that a significant release occurred at Pearl Harbor, Area 57, a few years ago, where its fuel moved below the tanks.

Manager Lau commented that the past releases at Pearl Harbor weren't of the same magnitude as those at Red Hill. He inquired about the number of wells installed at Pearl Harbor as part of the investigation.

Ms. Grange replied that when the Pearl Harbor leak occurred, it was considered an emergency response led by Ms. Galvez's group.

Ms. Galvez added that the EPA and Coast Guards were also a part of the emergency response at Pearl Harbor.

Manager Lau inquired how many wells were installed in the Pearl Harbor release efforts.

At 4:09 PM Board Member Sword excused himself from the Board meeting.

Ms. Galvez couldn't recall how many wells were installed but remembered numerous trenches.

Ms. Grange stated that the Navy tried to capture as much of the spill before it entered the harbor.

Manager Lau commented that there seemed to have been an extensive investigation and more wells installed at the Pearl Harbor release site than at Red Hill. However, he observes that information is lacking when the fuel is not visible on Navy property and moves into the groundwater, an underground aquifer. Which is why he mentioned Board Member Sniffen's question, what will it take for him to reopen the BWS Halawa Shaft?

Ms. Galvez replied that it's hard to compare since the Pearl Harbor release happened on Navy property. She explained that the biggest threat was that the fuel was in the surface water.

Ms. Grange responded that she would get back to Manager Lau with the number of installed wells.

Manager Lau expressed his concern with the level of effort and urgency on the issues happening at Red Hill, which is greater than fuel going into Pearl Harbor. He commented that the progress at Red Hill is moving at a snail's pace.

Ms. Grange shared that the State Constitution requires water protection for future generations, which is taken seriously. She explained that as regulators, the discussions on protecting drinking water and investigating the fuel movement are the focus. She mentioned that the original AOC (i.e., Admistravie Order on Consent) focused on developing a Red Hill groundwater model to understand the migration of a release. However, with little progress, the DOH rejected the Navy's first groundwater model and allowed more time to improve the models but missed the deadline. Ms. Grange stated that defueling is crucial and has the most significant risk. Therefore, it's a priority for the regulators to understand fuel movement even without the Navy's groundwater model. The Navy stated that their model may not be completed until the end of 2023 or 2024. She also shared that in 2022 the Office of the Navy Research awarded the University of Hawaii a grant to investigate the subsurface and geology of the Red Hill area, which is intended to begin in collaboration with the regulatory agencies to find answers.

Manager Lau responded to Board Member Sniffen's question about when he would be comfortable or what is needed to reopen the BWS Halawa Shaft and stated that considering the lack of information provided, the reopening of Halawa Shaft is indefinite.

Board Member Sniffen expressed his concerns about the timeliness of the whole situation, which affects the ability to take advantage of federal funding for infrastructure, housing, and water, which would expire in the next four years. However, he stated he remains hopeful, hence his question to Manager Lau, what plans does the BWS have moving forward?

Manager Lau replied that due to the indefinite timeline of the investigation, he is taking the precautionary approach because of the risks associated with the unknown migration of the contamination. He stated that the BWS is looking into replacing the wells that have been shut down so that the State and City can also move forward in their efforts of infrastructure and housing and meet the water demand. Manager Lau stated that the uncertainty risks in the water are far too significant for the community to bear and that he's not willing to compromise.

Ms. Grange stated that the DOH is working to gather as much information as possible from various studies as possible and seeking the United States Geological Survey (USGS) and the Commission on Water Resource Management (CWRM) input. She stated that the DOH has an obligation to assist the BWS and the people of Hawaii in providing the necessary information

Manager Lau commented that the State of Hawaii Constitution was mentioned, and he stated that we, the DOH and the BWS, took an oath to uphold it. However, the EPA isn't obligated to take the same oath.

Board Member Anthony asked Ms. Grange to speak on the Navy's remediation. He inquired about how they turned Red Hill Shaft back on and used granular activated carbons (GAC) to filter the water released into the streams. Board Member Anthony inquired about how much water is pumped, the current daily yield, and the purpose of using GACs.

Ms. Grange shared that the Navy is pumping 4.5 million (M) gallons per day (mgd) to test for TPH inline, which has shown no detection. She explained that pumping the water into the stream using the GAC ensures that petroleum-contaminated water is not pumped into the Navy's system, which is deemed not safe to drink but not wasted. Ms. Grange shared that the Navy indicated that pumping is essential to capture the fuel.

Board Member Anthony asked about the difference between inline and verified tests.

Ms. Grange explained that the inline test is a screening test using a fluorescence method, which measures the fluorescence as water goes past the GAC. She mentioned that under National Pollutant Discharge Elimination System (NPDES) permit requires water samples to be collected and analyzed before discharge.

Joanna Seto, Division Administrator for the Environmental Health Administration, explained that the Clean Water Branch regulates the discharge into the Halawa stream and must be reported monthly. The monthly discharge monitoring report is available for the public on the DOH Red Hill and Drinking Water Information page. Ms. Seto shared that the Navy tracks the amount of water discharged weekly, which as of January 7, 2023, the amount discharged is 4.29 mgd. In addition, she shared that the Navy has in-line monitoring at the lead tank and lag tank of the GAC system. The in-line data is collected twice a day, and results are recorded

immediately. The data for the discharge monitoring report is sent to the lab, which takes time to process.

Board Member Anthony stated that Ms. Grange mentioned that data hasn't indicated that there's no petroleum. He inquired if the GAC system is holding the plume in place or whether it is used as a scrubbing mechanism to remove the fuel in the immediate area.

Ms. Seto replied that the Navy primarily installed the GAC system to contain the plume. However, there has been no confirmation that the GAC system is working. Therefore, the Navy continues to look at options while reducing the pumpage from Red Hill Shaft. Currently, the DOH is awaiting information.

Board Member Anthony expressed his confusion due to the lapsed time and the lack of information on the TPH and the methods used.

Mr. Praskins shared the possibilities of where the 2021 and previous releases may have gone: the subsurface, the rock between the surface and groundwater of the vadose zone, or the groundwater. He stated the key objective of the investigation and characterization work is to determine what, where, and how petroleum compounds are moving. Mr. Praskins shared that the Navy began its study to reduce the pumpage in November to help understand the effects on groundwater and the vicinity of Red Hill Shaft.

Board Member Anthony expressed his concerns about how the Navy continues to give excuses and procrastinate in situations where the timing of decisions is crucial to protect the community and its resources. He shared that at a meeting with the Navy, in the BWS Board room, an Admiral's response to testing at a lower level was to test what the regulators say. He asked regulators to figure out how to work with the Navy to expedite the information necessary to remediate Red Hill.

Manager Lau commented that the locations of the current monitoring wells are inadequate to make the necessary determination. It requires all speed wells to be drilled in strategic locations. In addition, he echoed Board Members Anthony's plea and suggested that the regulators be firmer with on the Navy. Manager Lau referred back to the 2015 AOC, Site Characterization Remediation Groundwater model, which was worthless and needed to be redone. He gave the example of a mice's wheel where the mice continue to run in circles and go nowhere. Manager Lau asked Mr. Praskins if he thought groundwater could flow across the valley from Red Hill to the BWS Aiea Halawa Shaft.

Mr. Praskins replied that there is a possibility that groundwater can flow across the valley. He stated that flow is a key question in groundwater modeling efforts.

Manager Lau reiterated Mr. Praskins' reply regarding the possibility of cross-valley flow; the DOH hasn't ruled out the possibility that groundwater could cross the valley towards Halawa Shaft but needs more information.

Mr. Praskin agreed with Manager Lau and added that the DOH requires more data to understand the rates and directions of groundwater movement.

Manager Lau asked Ms. Grange if she agreed with Mr. Praskins's statement.

Ms. Grange responded that she agreed that groundwater cross-valley flow isn't ruled out; it appears that the groundwater is on the Mauka side, which may be a pathway across the valley. The DOH's experts believe the groundwater is moving around the mountainside and may make its way to the BWS Aiea Halawa wells. However, there is evidence that a saprolite (2:39:28) layer may be a deterrent to groundwater moving across the valley; therefore, more tracer tests should be performed, and more wells to be drilled.

Board Member Anthony asked how many wells the Navy has drilled in the last 13 months.

Mr. Praskins replied that the Navy had drilled approximately 10 to 12 wells on and off Navy property.

Board Member Anthony commented that he hopes that data is made available to the public soon.

Ms. Grange stated that water quality data from the newly drilled wells are available on the DOH website.

Board Member Anthony suggested utilizing photography as a tool. He stated that divers used the 1100-foot tunnel at the top of the aquifer to photograph the November 2021 spill, which provided pictures of oil dripping from the ceiling of the shaft. Board Member Anthony commented that visual data from the shaft could provide information to understand what is happening in the water and vadose zone over time. He asked if there was the possibility that the regulators would order more photography of the site in the future.

Ms. Grange agreed with Board Member Anthony that the photos and videos taken from the first dive provided information, but there was no new information on the second dive. She mentioned the modeling the engineers drew from when the shaft was built, which provided helpful information. She explained the engineers discovered two mgd of clean and cold water after adding creek holes to the Mauka end of the tunnel, indicating a clean water source in the deep. However, at Red Hill, there's no indication that the contamination would move through the wells and into the shaft. Ms. Grange referenced the May 2021 release, which indicated that Total Petroleum Hydrocarbon motor oil range (TPHo), a breakdown

from TPH, was found in wells westward of Red Hill in June/July and later discovered in the Red Hill Shaft in September. She stated that photography and visual data might be an approach that could provide further information.

Board Member Kaneshiro inquired if the EPA and the DOH considered setting up a certified laboratory in Hawaii to expedite the process.

Ms. Grange responded that the Navy is funding the University of Hawaii (UH) for a certified laboratory. She shared that the EPA has specific requirements that must be met in setting up a test laboratory.

Board Member Anthony and Manager Lau commented that UH possibly wouldn't fulfill the requirements for an EPA-certified laboratory.

Deputy Ho shared that in 2022 the Legislature provided the DOH with funding and is pursuing the set up of a high-capacity laboratory in Hawaii. She replied to Board Member Anthony and Manager Lau's comment and stated that UH was also granted funding; however, the certification required to open a laboratory of such magnitude would take years.

Manager Lau asked what types of chemicals would be tested at the laboratory.

Deputy Ho wasn't able to provide the complete list of chemicals that would tested but confirmed that TPH is on the list.

Ms. Li commented on the EPA's requirements regarding laboratories. She stated that the EPA doesn't typically certify private and commercial laboratories. Instead, the EPA certifies state laboratories, which the state can then certify private or commercial laboratories.

The next item on Information one was item 5: How the EPA and DOH will ensure transparency of data and information to the public and how it will be shared with the BWS.

Alison Fong, Assistant Director, RCRA Land, Chemicals and Redevelopment Division, EPA, Region Nine, stated that in the efforts to improve transparency to the public and the BWS, the EPA and DOH are incorporating various measures through the 2023 proposed consent order and the 2015 AOC, and the EPA brought in an Environmental Justice Community Engagement Coordinator. She commented that a lot had been learned from engaging since meeting with various community groups, such as the Oahu Water Protectors, Sierra Club, and the BWS. The EPA will take these experiences back to look at ways to improve community engagement. Ms. Fong stated that the public and BWS's comments and input from the Board meeting would be considered before finalizing the proposed 2023 consent order. She shared that there are two critical ways to improve transparency to the public: 1) information and data are provided in a format approved by the EPA but understandable to the general public, and 2) providing public updates quarterly. Ms. Fong spoke

on the 2015 AOC and its investigation remediation, where the BWS has always been an important stakeholder and subject matter expert. She shared that the stakeholders, the BWS, the DOH, the EPA, the CWRM, and the USGS, have met in technical working groups to develop models; the most recent was to discuss the Red Hill Remediation Restoration Action Plan.

Manager Lau questioned Ms. Fong about how the BWS is asked to engage as a subject matter expert but continues to face challenges in receiving or accessing the same information available to the DOH and the EPA. Therefore, the BWS operates without information that hasn't been shared. He commented that the Navy would only respond to the regulator's requests and not the BWS regarding information sharing. For instance, he stated that the BWS has requested for information to be sent in electronic formats, such as an Excel spreadsheet, as opposed to a 700-page portable document format (PDF), so information can be easily analyzed to no avail. Manager Lau suggested the regulators speak with the Navy about sharing an unredacted and complete data set. He also stated that the BWS wants to be included in the groundwater investigation.

Ms. Fong agreed to work with the BWS and the DOH. She mentioned that she had seen an improvement in how data is shared with drinking water information and wants to incorporate that feedback. She shared that the next "roundtable" meeting is on February 23, 2023.

Deputy Ho stated that Manager Lau had a conversation on transparency and hopes to meet on the issues with data sharing regularly. She shared that she offered Manager Lau to accompany her to meet with the Navy to explain what information the BWS needs.

Board Member Anthony expressed his frustration and stated that the information Manager Lau requests is not what he wants but what the community wants for the people. He stated that as part of the federal and state government, regulators, and purveyors, we all need to come together to provide transparency and clarity for the people. He mentioned when the COVID crisis was in effect, massive amounts of data flooded the public view to help them understand what was happening in their community. It was a reflection of how serious COVID could affect the community. However, today our communities come together, affected or not, and join meetings to voice and ask about what is happening to our water and the island's water resources but get no answers. Board Member Anthony requested a page from the DOH website to be shared during the meeting and asked those in the Board room if they could raise their hand if they could understand the information from the DOH website. No hands were raised. He stated that the departments and agencies must develop a solution to share helpful information for everyone to understand.

Ms. Fong and Deputy Ho both agreed with Board Member Anthony. Manager Lau commented that quarterly meetings are not adequate due to the severity of the water contamination issue. He mentioned a conversation he had six months ago with the EPA's Region 9

Administrator regarding transparency. In the discussion was the use of geographic information systems (GIS) to help provide information and tell the story of what was discovered at Red Hill in a way that people can understand. Unfortunately, transparency is still being discussed today. Manager Lau commented that he could relate to Board Member Anthony's frustration; he's frustrated too.

Board Member Anthony apologized to the regulators and said he didn't see them as the enemies. He stated, "We're supposed to be working together for the betterment of our community and be able to serve drinking water that is clean, dependable, and cost-effective." To make that happen, it will require everyone here. Board Member Anthony stated that the people and our communities expect information to be shared in a timely manner.

Ms. Fong agreed that transparency is crucial and must be improved on quickly.

Board Member Sniffen agreed that the BWS doesn't see the regulators as the enemies. However, he commented that if the regulators and the purveyors could agree, the community would stand alongside with confidence.

Chair Andaya commented that he believes that the regulators and the BWS share the goal. He inquired if there was anything that the BWS could assist the regulators with.

Deputy Ho responded that she agreed with Chair Andaya's comment that the common goal is to provide safe drinking water for the people of Oahu. She stated that meeting continuously has helped and would like to continue working together to see this mission through.

Ms. Fong also agreed that continued collaboration with the BWS to share and discuss the groundwater flow and the importance of data sharing to understand the problem better.

Chair Andaya stated that he is encouraged by the commitment to continue the collaborations between regulators and purveyors.

Board Member Dawn Szewczyk mentioned the DOH's flushing plan and suggested that the dashboard-like format used to share that information could be something the public could understand.

Deputy Ho acknowledged that the DOH website is not the most user-friendly. Therefore, the DOH is working to simplify the website.

Chair announced that testifiers were waiting to testify.

Chair Andaya announced that testimony would be taken. There were three in-person testifiers.

Mikey Inouye	*Asked questions regarding the proposed 2023 Consent Order and if its contents included demands of transparency and sharing of information with the BWS.*
Susan Pcola-Davis	*Comments regarding email from Dr. Welton. Also, provided written testimony and 6 attachments from the DOH, the EPA, Dr. Andrew Whelton, the Navy, and the Department of the Army. Also, provided written testimony.*
Gina Hara	*Commented and requested information regarding EAL to DOH, as well as requests to the Board of Water Supply regarding getting the Attorney General involved, a detailed presentation by the Defense Logistics Agency (DLA) and engineers of the Joint Task Force (JTC) on defueling plan, and access to Department of Defense (DOD) test wells; to EPA regarding AAAF situation. Also requesting that funding be set aside for future microorganism-based remediation of toxic chemicals that entered Oahu as legacy fuel. Suggested that the movie "Dark Waters" be watched. Also, provided written testimony.*

At 5:55 PM Board Member Szewczyk excused herself from the Board meeting.

There were a total of five people who testified remotely.

Meredith Wilson	*Commented and asked questions to the DOH regarding*

	sample results, the time it takes before action is taken, and concerns that the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) has petroleum exclusions. Also, it provided written testimony.
Susan Gorman Chang	*Commented on the EALs, the release, and access to results for all parties, that all comments from the public and purveyors should be considered in the proposed consent order, the BWS should be granted access to the Navy property for testing and the lack of transparency. Also provided written testimony.*
Amanda Feindt	*Commented on using her children as guinea pigs, the lack of knowledge, and the downplay of harmful substances in water. Asked how Oahu's situation is in comparison to Camp LeJeune, if EALs would be reconsidered since Agency of Toxic Substances and Disease Registry (ATSDR) results are available, the safe levels of TPH and EALs, and regulating PFAS. Suggested to watch movie "Honor your Brother, Semper Fi". Also provided written testimony.*

At 6:24 PM, Chair Andaya called the Board meeting to stand in recess.

At 6:33 PM, the Board meeting reconvened and called back to order.

Dave Mulinix	*Commented and asked questions regarding the PFAS*

	and PFOS levels detected in Kunia village: why haven't any actions been taken when its been proven to cause various health risks? Also provided written testimony.
Jamie Simic	*Shared her families experiences since the November 2021 spill and requesting for blood tests. Commented and asked about transparency and EALs.*

Chair Bryan Andaya read into the record that there were 17 submitted written testimony:

David Smith	*Commented regarding the contamination of the aquifer, federal funding, and EPA Superfund*
Susan Pcola-Davis	*Comments regarding the email from Dr. Welton. Also, provided written testimony and 6 attachments from the DOH, the EPA, Dr. Andrew Whelton, the Navy, and the Department of the Army. Also, provided in-person testimony.*
Gina Hara	*Commented and requested information regarding EAL to DOH, as well as requests to the Board of Water Supply regarding getting the Attorney General involved, a detailed presentation by the Defense Logistics Agency (DLA) and engineers of the Joint Task Force (JTC) on the defueling plan, and access to Department of Defense (DOD) test wells; to EPA regarding AAAF situation. Also requesting that funding be*

	set aside for future microorganism-based remediation of toxic chemicals that entered Oahu as legacy fuel. Suggested that the movie "Dark Waters" be watched. Also, provided in-person testimony.
Meredith Wilson	*Commented and asked questions to the DOH regarding sample results, the time it takes before action is taken, and concerns that the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) has petroleum exclusions. Also, provided written testimony.*
Susan Gorman-Chang	*Commented on the EALs, the release, and access to results for all parties, that all comments from the public and purveyors should be considered in the proposed consent order, the BWS should be granted access to the Navy property for testing and the lack of transparency. Also provided remote testimony.*
Amanda Feindt	*Commented on using her children as guinea pigs, the lack of knowledge and the downplay of harmful substances in water. Asked how Oahu's situation is compared to Camp LeJeune if EALs would be reconsidered since Agency of Toxic Substances and Disease Registry (ATSDR) results are available, the safe levels of TPH and EALs, and regulating PFAS. Suggested to watch the movie " Honor your Brother, Semper Fi". Also provided remote testimony.*

Dave Mulinix	*Commented and asked questions regarding the PFAS and PFOS levels detected in Kunia village, why haven't any actions been taken when its been proven to cause various health risks. Also provided written testimony.*
David Smith	*Submitted a copy of testimony sent to Congressman Ed Case.*
Sherry Pollack	*Commented and asked questions of the EALs.*
Katherine McClanahan	*Questioned the EPA and the DOH regarding groundwater sampling data, EALs exposure, transparency, and when a simplified list of known or suspected contaminates will be available.*
Colonel Ann Wright	*Requested that the BWS continue to press DOH for lower EALs. Commented that the DOD fund a certified lab for the State of Hawaii.*
Cheryl Burghardt	*Commented that there should be no consent order decision without including the BWS.*
Diane Fujimura	*Commented on the way that the Red Hill crisis is being handled. The DOH, the EPA, and the Navy must be transparent and include the BWS.*
Melodie Aduja	*Opposes the proposed consent order as drafted and supports the BWS. Submitted document from Wai Ola Alliance (4 pages).*
Kate Righter	*Supports the efforts of the BWS regarding AFFF and PFAS*
Noel Shaw	*Commented regarding EALs and PFAS. Suggested that the EPA learn the history of Hawaii and*

	the importance of wai is to its people.
Malia Marquez	*Opposed the proposed consent order as drafted.*

At 6:57 PM, Chair Andaya called for the Board meeting to stand in recess.

At 7:03 PM, Chair Andaya called the Board Meeting back to order.

Chair Andaya announced that he would deferring the following items to the next Board meeting:

- Items Requiring Board Action
  - Item 1. Approval of the Minutes of the Regular Meeting Held on December 12, 2022
- Items for Information
  - Item 3. Environmental Protection Agency (EPA) Water Infrastructure Finance and Innovation Act (WIFIA) Program Financing
  - Item 4. Recruitment Status
  - Item 5. Status Update of Groundwater Levels at All Index Stations
  - Water Main Repair Report for December 2022
- Executive Session
  - Approval of the Minutes of the Executive Session Held on November 28, 2022

From: contactus=notify2.boardofwatersupply.com@mg.boardofwatersupply.com on behalf of contactus@notify2.boardofwatersupply.com
To: Stella Bernardo; Board of Water Supply Board of Directors
Subject: Board Meeting Testimony Submittal or Request - January 23, 2023 - Mikey Inouye
Date: Friday, January 20, 2023 7:45:00 PM

BWS TESTIMONY SUBMITTAL / REQUEST TO TESTIFY FORM

Form Submitted on:	1/20/2023 7:44:54 PM
Meeting Date:	January 23, 2023
I wish to provide	Advance written testimony + request to give in-person oral testimony at 630 S. Beretania Street

TESTIFIER INFORMATION

Full Name	Mikey Inouye
Email	banzaimike@gmail.com
Phone (optional)	(808) 225-8582

TESTIMONY DETAILS

Agenda Item	Info 01: United States Environmental Protection Agency and Hawaii Department of Health discussion
Your Position on Matter	I wish to comment
Representing	Organization
I wish to provide	Advance written testimony + request to give in-person oral testimony at 630 S. Beretania Street
Written	

Testimony (if entered on the online form; otherwise see attached)	I will read my testimony at the meeting and if needed submit it prior to the meeting upon request.

ACKNOWLEDGEMENTS

Terms and Agreement Check Box	I UNDERSTAND and ACCEPT that all public meeting transcripts and testimony are public documents. Therefore, any testimony that is submitted orally or in writing, electronically or in person, for use in the meeting process is public information.

From: contactus=notify2.boardofwatersupply.com@mg.boardofwatersupply.com on behalf of contactus@notify2.boardofwatersupply.com
To: Stella Bernardo; Board of Water Supply Board of Directors
Subject: Board Meeting Testimony Submittal or Request - January 23, 2023 - Susan Pcola-Davis
Date: Monday, January 23, 2023 12:20:31 PM

BWS TESTIMONY SUBMITTAL / REQUEST TO TESTIFY FORM

Form Submitted on:	1/23/2023 12:20:10 PM
Meeting Date:	January 23, 2023
I wish to provide	Advance written testimony + request to give in-person oral testimony at 630 S. Beretania Street

TESTIFIER INFORMATION

Full Name	Susan Pcola-Davis
Email	susanp60@yahoo.com
Phone (optional)	(808) 387-3061

TESTIMONY DETAILS

Agenda Item	Info 01: United States Environmental Protection Agency and Hawaii Department of Health discussion
Your Position on Matter	I wish to comment
Representing	Self
I wish to provide	Advance written testimony + request to give in-person oral testimony at 630 S. Beretania Street

Board of Water Supply Meeting January 23, 2023 Susan A. Pcola-Davis

Written Testimony (if entered on the online form; otherwise see attached)	Attachment Summary: January 8, 2022 Original email from Dr. Whelton. He was the consultant for distribution recovery. There are significant differences between his recommendations and what actually was done. January 15, 2022 Memo for the Record. Incorrectly states Spill occurred on November 28, 2021 Shaft was secured on November 28, 2021. Aiea/Halawa shaft was used between November 28-December 3, 2021. It is still uncertain whether the closure of that shaft was due to fuel contamination since all focus has gone to the Red Hill shaft. 3.3 (Pg. 2) Hydraulic Model developed in 2014. Clearly indicated that that model had some limitations. 3.4 (Pg. 2) Clearly indicates that Dr. Whelton is considered the SME. MOST IMPORTANTLY: 4.1 CONSTRAINTS!! 4.6 (Pg. 3) Last sentence: "TRUE UNIDIRECTIONAL" not feasible due to the following reasons. 4.6.1 through 5 READ VERY CAREFULLY WHAT KIND OF FLUSHING WAS DONE???? February 7, 2022 Memo for Interagency DWST. Please read carefully. This is the ARMY flushing report. Different from Navy reports. 4.4 (pg.2) is one example. 4. February 8, 2023 Zone I1 Removal Action Report Paragraph 2: Clearly states the spill occurred on NOVEMBER 20, 2021 5. February 15, 2022 Validity and application of Volumetric Exchange Method Paragraphs 1-2 mention Dr. Whelton however it appears that the recommendations from him were pick and chose or drastically modified. 6. EPA Consent Order: Long Term Monitoring Plan "Unidirectional Flushing" Susan A. Pcola-Davis

ACKNOWLEDGEMENTS

Terms and Agreement Check Box	I UNDERSTAND and ACCEPT that all public meeting transcripts and testimony are public documents. Therefore, any testimony that is submitted orally or in writing, electronically or in person, for use in the meeting process is public information.

Board of Water Supply

Director's Meeting: December 12, 2022

Written Testimony

DOH/EPA

In 2017 the EALs were increased. Mr. Ernie Lau's requests to lower them back was refused by Bruce Anderson, Libby Char and now Kenneth Fink has a chance to make it right! Why isn't the HIDOH even discussing and reconsidering the lowered EALs?

Ask every adult living on Oahu what the EAL should be? Right, there should not be any fuel in our water? So what is reasonable?

Department of Health: Roger Brewer

Revised
April 20, 2022
Signed: K. Ho June 16, 2022

Why so long to sign?

> *A summary of the updates is included in the introduction to the attachment. The updates resulted in a marginal change of the example TPH tapwater action levels presented in Table 1.*
>
> *A more detailed study of the chemical makeup of JP 5 jet fuel and other petroleum fuels is currently underway. The results of that study and methods presented in this memorandum and will summarized in a separate document and used to formally update HIDOH TPH guidance.*

Is the summarized separate document available and when will the HIDOH TPH guidance be formally updated?

Regardless of the calculation corrections, how can you feel confident that these numbers would support contamination early enough to prevent more contamination to the aquifer? These numbers do not seem to set off the alarms.

What is a number for non detect?

Does non detect mean anything lower than 266, 346 or 450 g/L will not be identified?

Was the HIDOE aware of the Navy discarding samples because they knew they would be doing flushing? Did HIDOE know before and agree or not know until after?

Subject: Recommended Risk-Based Drinking Water Action Levels for TPH Associated with Releases of JP5 Jet Fuel.

April 20, 2022, Updates

The February 12, 2022, version of this memorandum was updated to correct the following errors:

- Table 3. Calculation of dermal exposure parameters revised to exclude consideration of >EC8 aliphatic compounds and >EC16 aromatic compounds. Error in spreadsheet used to calculate values also corrected. Dermal parameter values for 1-methylnaphthalene added to table. Revised TPH parameter values used to update calculated TPH tapwater action levels.

- Table 4. Effective solubility values corrected (action levels not affected).

- Table 5. Proportion of xylenes in dissolved-phase, BTEXNM mixture revised to 74% from 75% (action levels not affected).

- Table 7. Oral and dermal weighted Reference Doses revised from 0.036 mg/kg day to 0.035 mg/kg-day (action levels not affected).

- Table 8. Calculated TPH tapwater action levels revised to reflect updates to dermal exposure parameter values. [See changes below; read footnotes related to ingestion, dermal and inhalation of vapers not just dermal]

Table 1. Calculated action levels for TPH associated with JP-5 contaminated groundwater under different plume degradation scenarios.

Plume Degradation Scenario	JP-5 TPH Action Level	Notes
[1]Non-Degraded	266 µg/L	Applies to groundwater impacted by releases of fresh product in immediate vicinity of a production well with minimal degradation of JP-5 related hydrocarbons before entering a drinking water system.

Plume Degradation Scenario	JP-5 TPH Action Level	Notes
[2]Mixed	346 µg/L	Applies to partially degraded plumes that include a mixture of degraded and non-degraded JP-5 related hydrocarbons (considered applicable to most aged releases of JP-5).
[3]Degraded	450 µg/L	Applies to plumes where all hydrocarbons have undergone some degree of degradation and are no longer significantly volatile (requires extensive monitoring to support degradation state and use).

Notes

1. Assumes no degradation of hydrocarbons or associated reduction in volatility; considers exposure via ingestion, dermal contact and inhalation of vapors.
2. Assumes 50:50 mixture of non-degraded and degraded hydrocarbons with volatility of non-degraded compounds preserved; considers exposure via ingestion and dermal contact with reduced but still significant exposure via inhalation of vapors.
3. Assumes at least partial degradation of all hydrocarbons to non-volatile compounds and exposure via ingestion and dermal contact.

APPROVED

Kathleen Ho

Kathleen S. Ho
Deputy Director f Environmental Health

Jun 16, 2022
Date

SECTION 9

SUPPLEMENTAL GUIDANCE FOR SELECT CONTAMINANTS OF CONCERN
INTERIM FINAL – APRIL 2014
LOG OF TGM UPDATES

TECHNICAL GUIDANCE MANUAL LOG OF UPDATES This page updated: Aug 24, 2021

9.3 PETROLEUM CONTAMINATED SITES

A discussion of target chemicals of potential concern and the evaluation of petroleum releases is included in Volume 1 and Appendix 1 of the EHE guidance document (HDOH, 2016). This guidance is summarized and expanded below.

Petroleum is a complex mixture of hundreds of different compounds composed of hydrogen and carbon or "hydrocarbon" compounds (API 1994). The chemistry and toxicity of petroleum releases depends in part on the type of fuel released and the media tested. The bulk of the compounds are evaluated collectively under the all-inclusive category of Total Petroleum Hydrocarbons (TPH). The concentration of TPH in soil and groundwater is typically reported in terms of "carbon ranges," or the number of carbon molecules in individual hydrocarbon compounds based on the type of fuel released: 1) C5-C12 ("gasoline range" or "TPHg"), 2) C10-C24 ("diesel range" or "TPHd") and 3) C24-C40+ ("residual fuels" or "TPHo"). A number of different terms are applied to these ranges. As discussed below, reference to these ranges is less useful for air and soil vapor data.

"Gasoline-range" TPH is defined as a mixture of petroleum compounds characterized by a predominance of branched alkanes and aromatic hydrocarbons with carbon ranges of C6 to C12 and lesser amounts of straight-chain alkanes, alkenes, and cycloalkanes of the same carbon range (see also NEIWPCC 2003). Vapors from these fuels tend to be dominated by lighter-range, more volatile, C5-C8 aliphatics (HDOH, 2016, 2012). Although not studied in detail, dissolved-phase gasoline in groundwater is also likely to be biased towards more soluble, lighter-range compounds.

Petroleum compounds characterized by a wider variety of straight, branched, and cyclic alkanes, polynuclear aromatic hydrocarbons (PAHs, especially naphthalenes and methylnaphthalenes), and heterocyclic compounds with carbon ranges of approximately

C9 to C25 are referred to as "Diesel Range" TPH. These compounds dominate the makeup of diesel and other middle distillates fuels (e.g., kerosene, diesel fuel, home heating fuel, JP-8, etc.). These fuels also contain a small but important amount of lighter, aliphatic compounds. Vapors from the fuels can somewhat counterintuitively be dominated by these "gasoline range," C5-C12, aliphatic compounds (HDOH 2012). As discussed in Subsection 9.3.1.2 below and in Section 7, it is important that these compounds be included in the analysis of TPH in air and soil vapor samples associated with releases of middle distillate fuels. Dissolved-phase, middle-distillate fuel in groundwater could also be biased towards more soluble, "gasoline-range" compounds. A dominance of "TPHg" in groundwater samples does not in itself indicate that the source of the contamination is associated with gasoline. A more detailed review of the chromatograph pattern and site history will be necessary to make this determination.

Residual fuels (e.g., Fuel Oil Nos. 4, 5, and 6, lubricating oils, mineral oil, used oils, and asphalts) are characterized by complex polar PAHs, naphthenoaromatics, asphaltenes, and other high-molecular-weight saturated hydrocarbon compounds with carbon ranges that in general fall between C24 and C40. Compounds associated with these fuels and related products are not considered to be volatile, although methane generated by degradation of the fuels could pose potential hazards at some sites.

Note that the breakdown of heavy petroleum can lead to an increase in volatile petroleum compounds (Chaplin 2002). This necessitates the collection of soil vapor samples at sites contaminated by heavier fuels, as well as gasolines and middle distillates.

Due to the number of sites with residual petroleum contamination, HDOH prepared a guidance document that outlines procedures for long-term management of residual petroleum contamination where full cleanup is not practicable. This guidance, Long-Term Management of Petroleum-Contaminated Soils and Groundwater (HDOH, 2007c) is included in TGM Section 19 as Appendix 19-A. The document includes three, supporting decision trees for determining the need for continued, HDOH oversight. Self-implemented, long-term management by the property owner and closure of the case in the HDOH database is possible in scenarios where the area and volume of contaminated soil and/or groundwater is minimal.

9.3.1 RECOMMENDED TARGET ANALYTES

Recommended target analytes for petroleum contaminated soil and groundwater are provided in Table 9-5.

Table 9-5 Target Analytes for Releases of Petroleum Products

Petroleum Product	Media	Recommended Target Analytes
Gasolines	Soil	TPH, BTEX, naphthalene, MTBE and appropriate additives and breakdown products (e.g., TBA, lead, ethanol, etc.)
	Soil Vapor	TPH, BTEX, naphthalene and MTBE plus other volatile additives and methane
	Groundwater	Same as soil
Middle Distillates (diesel, kerosene, Stoddard solvent, heating fuels, jet fuel, etc.)	Soil	TPH, BTEX, naphthalene, and methylnaphthalenes (1- and 2-)
	Soil Vapor	TPH, BTEX, naphthalene, and methane
	Groundwater	Same as soil
Residual Fuels (lube oils, hydraulic oils, mineral oils, transformer oils, Fuel Oil #6/Bunker C, waste oil, etc.)	Soil	TPH, VOCs, naphthalene, methylnaphthalenes (1- and 2-), the remaining 16 priority pollutant PAHs, PCBs, and heavy metals unless otherwise justified
	Soil Vapor	TPH, VOCs, naphthalene, and methane
	Groundwater	same as soil

1. Include any additional volatile additives in soil vapor samples if suspected to be present.
2. VOCs includes BTEX and chlorinated solvent compounds.

Petroleum contamination in soil, water or air/soil vapors should be evaluated in terms of both TPH and a short list of target "indicator chemicals" that are specific to the type of petroleum product released. As discussed in the previous section, non-specific compounds collectively reported as TPH typically comprise the bulk of petroleum fuels. Target indicator chemicals typically make up only a small fraction of the total petroleum present but are also important players in the assessment of environmental hazards posed to human health and the environment. The toxicity and fate and transport of these chemicals in the environment has been studied in detail.

9.3.1.1 TARGET INDICATOR COMPOUNDS

Target, indicator compounds for petroleum fuels include benzene, toluene, ethylbenzene, xylenes (total), methyl-tert butyl ether (MTBE), naphthalene and number of individual, polyaromatic hydrocarbon compounds (see Table 9-5). Separate evaluation of these chemicals is based on the availability of adequate toxicity data and the potential for the chemicals to drive risk and the need for remedial actions at contaminated properties in conjunction with TPH. Separate environmental action levels for these compounds are presented in the HEER Office EHE guidance (HDOH 2016).

All other petroleum compounds are collectively reported and evaluated under "TPH," as described above. Volatile components of petroleum that are not specifically identified as target indicator compounds in Table 9-5 but reported as separate compounds by the laboratory using EPA Method 8260 or similar methods do not need to be separately evaluated. Examples include trimethylbenzenes and other aliphatics and aromatics not specifically identified as target indicator compounds (refer to Subsection 2.11 in the EHE guidance document; HDOH, 2016). These compounds are included under the analysis and evaluation of the TPH component of petroleum.
Seventeen, semi-volatile PAHs are recommended as target, indicator compounds for releases of heavier petroleum fuels or waste oils:

Seventeen, semi-volatile PAHs are recommended as target, indicator compounds for releases of heavier petroleum fuels or waste oils:

- Acenaphthene
- Acenaphthylene
- Anthracene
- benzo(a)anthracene
- benzo(b)fluoranthene
- benzo(g,h,i)perylene
- benzo(a)pyrene
- benzo(k)fluoranthene
- chrysene
- dibenzo(a,h)anthracene
- fluoranthene
- fluorine
- indeno(1 ,2,3)pyrene,
- methylnaphthalenes (1 & 2)
- naphthalene
- phenanthrene
- pyrene

In practice, the need for remedial actions at sites impacted with PAHs is typically driven by benzo(a)pyrene. Naphthalene can be reported with either semi-volatile or volatile

compounds (see Section 7). Separate Environmental Action Levels (EALs) for 1- and 2-methylnaphthalenes are presented in the EHE guidance document (HDOH, 2016).

The suite of PAHs that should be tested at a given site depends on the type of the petroleum product released (after MADEP 2002). As indicated in the Table 9-5, naphthalene is the only PAH that requires reporting for gasoline release sites. Both methylnaphthalenes and naphthalene should be reported at sites with releases of middle distillates (diesel, jet fuel, etc.). The full suite of PAHs should be considered at sites with releases of heavier petroleum fuels and waste oil, unless site-specific information on the product released justifies eliminating specific PAHs.

Methylnaphthalenes do not need to be reported for soil vapor samples as a default. Based on data reviewed by HDOH, these compounds are unlikely to drive potential vapor intrusion hazards at petroleum release sites over TPH or benzene due to their relatively low volatility and concentration in most middle distillates and residual fuels. Testing for these compounds in soil vapor also requires different sample collection and analytical methods (e.g., sorbent tubes and TO-1 analysis; see Subsection 7.8.2). Reporting of these compounds in soil vapor samples may, however, be required at sites impacted by Manufactured Gas Plant waste.

9.3.1.2 TOTAL PETROLEUM HYDROCARBONS

Soil, groundwater, and soil vapor samples must always be tested for TPH (or equivalent) in addition to targeted, individual chemicals. Laboratory analysis for TPH as gasolines and middle distillates is generally carried out using gas chromatography, modified for "gasoline-range" organics ("Volatile Fuel Hydrocarbons") and "diesel-range" organics ("Extractable Fuel Hydrocarbons"), respectively (e.g., EPA Method 8015). Analysis for TPH as residual fuels up to the C40 carbon range can be carried out by gas chromatography, infrared absorption, or gravimetric methods. The latter methods are rarely used, however, due to their inability to discriminate the type of the petroleum present and interference with organic material in the soil.

The concentration of TPH (or equivalent) in soil vapor should always be reported as the sum of C5-C12 compounds for whole air samples and C5-C18 for sorbent tube samples, regardless of the type of petroleum fuel involved. Refer to Appendix 1 of the HDOH EHE guidance for a detailed discussion on total volatile petroleum hydrocarbons (see

also Brewer et al 2013). As discussed above and in Subsection 7.8.2, results from a petroleum vapor study carried out by HDOH study indicate that C5-C8 aliphatic compounds can make up a significant if not dominant fraction of the total TPH present in vapors associated with diesel and other middle distillate fuels (HDOH, 2012, 2012c). This is important, since current laboratory protocols typically require that they report "TPHdiesel" in any media as the sum of C10 to approximately C24 hydrocarbon compounds. Excluding the contribution of C5-C8 aliphatics to the total concentration of TPH reported in air or soil vapor samples associated with middle distillate fuels would be inappropriate, however.

To help address this issue, laboratories should be instructed to report TPH (or equivalent) in air or vapor samples as: 1) The sum of C5-C12 compounds for whole-air samples (e.g., summa canister samples and TO-15 lab methods, with the understanding that aromatics can only be confidently summed to C10) or 2) The sum of C5-C18 for samples collected using a sorbent media (e.g., sorbent tubes and TO-17 lab methods, with the understanding that aromatics can only be confidently summed to C16). This should be done regardless of whether the samples are associated with gasolines or middle distillates.

Laboratory methods for reporting of TPH in indoor air and soil gas are discussed in Subsection 7.13. A combination of both TO-15 (Summa canister samples) and TO-17 (sorbent tube samples) is currently recommended for initial investigation of petroleum-contaminated sites (see HDOH, 2012c). The collection of concurrent, sorbent tube samples can be discontinued if initial data indicate that C12+ compounds make up less than 10% of the total TPH present in vapors.

Designation of chromatogram patterns as "gasoline range" (e.g., C5-C12) or "diesel range" (e.g., C10-C24) with respect to traditional, laboratory methods for TPH in soil or water is not applicable to air and vapor samples and can be misleading. The reported concentration of TPH can then be compared to HDOH soil gas action levels. The sum of concentrations of individual, target analytes such as BTEX and naphthalene that will be evaluated separate can be subtracted from the reported concentration of TPH in order to avoid double counting, although this is not likely to make a significant difference in the final concentration.

As discussed in TGM Subsection 7.8, the initial collection of both Summa canister samples and sorbent tube samples is recommended for soil vapor investigations at diesel and middle distillate sites. This is due to limitations on the ability to extract >C12 compounds

from Summa canisters (see Subsection 7.13.1.1). A minimum Summa canister size of one-liter is recommended, in order to help collect a representative sample (tested for both TPH and target, indicator compounds such as BTEX and naphthalene). A maximum, 50ml vapor draw might be required for sorbent tube samples due to limitations of the sorbent material (tested only for TPH). Sorbent tube data are used to evaluate the relative proportion of >C12 compounds associated with TPH.

If the relative fraction of >C12 is less than 10% of the TPH then the concentration of TPH reported for the Summa canister can be used for comparison to action levels and Summa canisters can be relied upon for the collection of future samples. If >10% of the vapor-phase TPH is associated with >C12 compounds then a combined use of Summa data and sorbent tube data should be used to evaluate the site. For example, request that the laboratory report TPH for the sorbent tube sample as the sum of >C12 compounds. Add this to the concentration of TPH reported for the Summa sample (i.e., TPH as sum of C5-C12). The resulting, total TPH concentration can then be compared to soil gas action levels. This approach excludes the concentration of aromatic compounds greater than C10 but less than C12. Based on published information and data collected by the HEER Office, however, these compounds make up an insignificant (i.e., <10%) proportion of TPH vapors at typical, petroleum-release site.

Reported concentrations of unidentified hydrocarbons as gasoline, diesel or oil indicate that the chromatogram generated for the sample does not match standards used to quantify TPH. Reported concentrations of TPH should be considered approximate, but adequate for comparison to HDOH action levels. A more detailed evaluation through petroleum carbon range analysis can be carried out on a site-specific basis as warranted.

Silica gel cleanup of samples, in particular for surface water and groundwater, should not be carried out without consultation with HDOH. Two options are recommended: (1) Directly compare TPH data to HDOH EALs in the absence of silica gel cleanup, and/or (2) Report data both with and without silica gel cleanup. For the second option, compare the nonpolar, TPH fraction to HDOH EALs and evaluate potential hazards posed by TPH-derived, polar breakdown products to drinking water and aquatic habitats in a site-specific EHE (see HDOH, 2016).

Dissolved-phase TPH in water is composed of unaltered, nonpolar compounds originally in the parent fuel and polar compounds associated with the oxidation and biodegradation of

the former (e.g., Zemo 1995, 2008, Lang et al 2009, Mohler et al. 2013). Polar compounds can be removed by passing the sample through silica gel prior to analysis, referred to as "silica gel cleanup (SGC)." A column SGC lab method should be used rather than a shake or funnel method (e.g., Method 3630C, USEPA 1996k). If polar compounds are removed, both non-SGC and SGC data should be reported.

In many cases silica gel cleanup will significantly reduce the concentration of TPH reported for the sample. The polar compounds, which can dominate the overall mass of TPH in groundwater at aged-release sites, are primarily organic acids/esters and alcohols with variable amounts of ketones, phenols and aldehydes. These compounds must be taken into account as part of a site investigation. From an environmental hazard standpoint, the sum of the polar compounds and nonpolar compounds (i.e., the concentration of TPH reported in the absence of a silica gel cleanup) represents the concentration of TPH that should be directly compared to HDOH Environmental Action Levels (refer to HDOH EHE guidance; HDOH, 2016).

Methods for development of separate EALs for TPH-related, polar compounds or evaluation of these compounds in a site-specific EHE or human-health risk assessment have not been fully developed. The toxicity of the polar fraction of the TPH to both humans and aquatic organisms has only recently begun to be studied (e.g., Zemo et al. 2013). As a default, and for the purposes of this guidance, the health risk and other potential environmental concerns associated with these compounds (e.g., toxicity to aquatic organisms, taste and odors in drinking water, etc.) is assumed at an initial screening level to be identical to the parent, nonpolar TPH compounds.

If silica gel cleanup of samples for a site is still desired (e.g., evaluation of degradation, fingerprinting of fuel releases, site-specific risk assessment, etc.), then the objectives and methodology to be implemented should be presented to HDOH for review and approval. A quantitative evaluation of potential threats to human health and the environment should be carried out in accordance with the HDOH EHE guidance document for a site-specific EHE. This includes addressing potential aquatic ecotoxicity concerns as well as gross contamination concerns (e.g., drinking water taste and odors). Alternative action levels for each environmental hazard should be presented and supported for comparison to data. In most cases, it is anticipated that long-term management of groundwater contaminated primarily with polar, TPH breakdown compounds above HDOH action levels will still be

required due to potential nuisance and aquatic toxicity hazards, even in the absence of apparent risk to human health (e.g., via impacts to drinking water resources).

Comparison of data for groundwater samples tested with and without silica gel cleanup could be useful for assessing the state of natural biodegradation within a plume of petroleum-contaminated groundwater and optimizing remedial and monitoring actions. For example, no further active remediation may be appropriate for areas of the plume where the majority of dissolved-phase hydrocarbons have degraded into polar compounds (i.e., significant reduction of reported TPH concentration in samples processed with silica gel cleanup). Active remediation could focus on areas of the plume where a comparison of data indicates that significant, natural degradation is not occurring. Data can also be used as one line of evidence to support a recommendation for no further monitoring and site closure following the HEER office guidance for long-term monitoring of petroleum-contaminated sites (HDOH, 2007c; see TGM Section 19, Appendix 19-A).

9.3.2 PETROLEUM CONTAMINATION ENCOUNTERED DURING SUBSURFACE SOIL EXCAVATION

Unanticipated petroleum (free product) or petroleum-contaminated soil is sometimes encountered during construction work where subsurface soil is being excavated. The HEER Office has a Guidance Fact Sheet, consistent with the Hawai'i Environmental Response Law (HRS 128D HDOH, 1990), to assist project managers, contract workers, safety and health personnel or anyone involved in construction and excavation of soils when petroleum is encountered on a site. This document, "Guidance Fact Sheet for Use When Petroleum Contamination is Encountered During Subsurface Soil Excavation", is provided in Appendix 9-D.

In rare cases the reported concentration of TPH in soil with strong petroleum odors could fall below HEER Office EALs for gross contamination (refer to HDOH, 2016). This could be due to sampling error in the field, laboratory sample processing error, or the inability of the laboratory method to accurately quantify the amount of TPH in the soil. Even so, soil with an obvious petroleum odor should be considered grossly contaminated and managed appropriately. Removal and/or treatment of vadose-zone soil that exceeds the HEER Office EAL for subsurface gross contamination (e.g. 5,000 mg/kg) is typically recommended at a minimum when complete cleanup cannot be achieved. The HEER Office should be

contacted regarding the on-site management or re-use of additional, petroleum contaminated soil. Refer also to the HEER Office Clean Fill Guidance for additional information (HDOH 2017d)

Referencing the following enclosure:

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

STATE OF HAWAI'I
DEPARTMENT OF HEALTH
KA 'OIHANA OLAKINO
P. O. BOX 3378
HONOLULU, HI 96801-3378

December 8, 2022

Sent via Electronic Mail

Mr. Ernest Y. W. Lau, P.E.
Manager and Chief Engineer
Board of Water Supply
City and County of Honolulu
630 South Beretania Street
Honolulu, HI 96843
elau@hbws.org

Subject: **Response to Honolulu Board of Water Supply November 30, 2022, and December 5, 2022, letters, Red Hill Bulk Fuel Storage Facility**

What does this mean? Why the use of a passive verb, "encourage." Why consult with Navy on the release of any Navy-generated documents related to past AFFF uses and releases and PFAs?

EPA and DOH will encourage the Navy to release to the public the PFAS sampling data promptly after results are available. We will also encourage the Navy to release to the public the documents provided in response to the NOI, including AFFF safety data sheets and an inventory of any AFFF remaining at the Red Hill Bulk Fuel Storage Facility. Finally, we will examine our files and then consult with the Navy on the release any Navy-generated documents related to past AFFF uses and releases and PFAS.

PFAS-Specific Sampling and Analysis plan, Red Hill Bulk Fuel Storage Facility, Adit 6

JOINT BASE PEARL HARBOR-HICKAM, O'AHU, HAWAI'I

Date: 30 NOV 2022

Prepared for: Red Hill OIC

Project Action Limits

Groundwater

- **Groundwater data will be screened against residential scenario regional screening levels (RSLs) based on a hazard quotient (HQ) of 0.1 (DoD, 2022). RSLs for PFOS, PFOA, PFBS, PFHxS, PFNA, and HFPO-DA based on an HQ of 0.1 are presented in the November 2022 RSL Table (USEPA, 2022). Data will also be screened against HEER Office TGM Section 4.2.7 (HDOH 2021), interim**

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soil and water environmental action levels (EALs) Per- and Polyfluroroalkyl Substances (April 2021).

Soil

- **Soil data will be screened residential scenario RSLs based on an HQ of 0.1 (DoD, 2022). Residential soil RSLs for PFOS, PFOA, PFBS, PFHxS, PFNA, and HFPO-DA based on an HQ of 0.1 are presented in the November 2022 RSL Table (USEPA, 2022). Data will also be screened against HEER Office TGM Section 4.2.7 (HDOH 2021), interim soil and water environmental action levels (EALs) Per- and Polyfluroroalkyl Substances (April 2021).**

In layman's terms, please explain the 2022 RSL Table for residential scenario regional screening levels based on hazard quotient of 0.1.

Present an example of exceedance of RSLs.

Board of Water Supply Meeting

January 23, 2023

Susan A. Pcola-Davis

Attachment Summary:

1. January 8, 2022 Original email from Dr. Whelton. He was the consultant for distribution recovery. There are significant differences between his recommendations and what actually was done.
2. January 15, 2022 Memo for the Record. Incorrectly states Spill occurred on November 28, 2021 Shaft was secured on November 28, 2021. Aiea/Halawa shaft was used between November 28-December 3, 2021. It is still uncertain whether the closure of that shaft was due to fuel contamination since all focus has gone to the Red Hill shaft.
   3.3 (Pg. 2) Hydraulic Model developed in 2014. Clearly indicated that that model had some limitations.
   3.4 (Pg. 2) Clearly indicates that Dr. Whelton is considered the SME.
   MOST IMPORTANTLY: 4.1 CONSTRAINTS!!
   4.6 (Pg. 3) Last sentence: "TRUE UNIDIRECTIONAL" not feasible due to the following reasons.
   4.6.1 through 5 READ VERY CAREFULLY
   WHAT KIND OF FLUSHING WAS DONE????
3. February 7, 2022 Memo for Interagency DWST. Please read carefully. This is the ARMY flushing report. Different from Navy reports.
   4.4 (pg.2) is one example.

4. February 8, 2023 Zone I1 Removal Action Report Paragraph 2: Clearly states the spill occurred on NOVEMBER 20, 2021

5. February 15, 2022 Validity and application of Volumetric Exchange Method

Paragraphs 1-2 mention Dr. Whelton however it appears that the recommendations from him were pick and chose or drastically modified.

6. EPA Consent Order: Long Term Monitoring Plan "Unidirectional Flushing"

Jan 8, 2022

From: Whelton, Andrew J <awhelton@purdue.edu>
Sent: Saturday, January 8, 2022 4:58 AM
To: Lee, Andre K (NAVFAC HI BD) CIV USN NAVFAC HAWAII PEARL (USA) <andre.k.lee4.civ@us.navy.mil>
Cc: Isaacson, Kristofer P <isaacsok@purdue.edu>; Proctor, Caitlin Rose <proctoc@purdue.edu>
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
540-230-6069

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 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 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 removed 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 safely.
    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,

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. Who was the contractor ?

Provide the contract to include any mods thru the process

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 are you 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.

draw

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 contaminanted 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.

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review the underlying evidence of each incident, often the utility and state didn't document much. Even incidents overseas had little documentation. It seems groups simply tried something, it did or didn't work, and they moved on. They also didn't sample much and rarely it an entire water distribution system that was affected.

Again, I can get on a zoom call or phone this afternoon MST to connect. I was called into the Colorado wildfires to help the communities identify and design water sampling and recovery plans. We're getting data every day and meeting with state and federal agencies. This is the Marshall Fire and Middle Fork Fire. I apologize for the delayed response.

Andy

Cell/text: 540-230-6069

Zone A1
PC Peninsula

*******15 Jan 2022 Army
MEMORANDUM FOR THE RECORD
From: LCDR Carl Chase, JBPHH Drinking Water Distribution System Recovery Team
To: Interagency Drinking Water System Team
Subj: DISTRIBUTION SYSTEM RECOVERY PLAN ADDENDUM – ZONE A1 ANALYSIS
Ref:

(a) Memorandum for the Record from LCDR John Daly regarding the Distribution System Zone Flushing, December 28, 2021
(b) State of Hawaii Department of Health, Directive One– Flushing Requirements Navy Water System Incident, Case No.: 20211128-1848 (HI Directive One, dated 08 December, 2021)
(c) Drinking Water Distribution System Recovery Plan, 17 December 2021
(d) Incident Specific Criteria to Meet Lines of Evidence Objectives 1c and 2a, dated 05 January 2022

1. OBJECTIVE: The Drinking Water Distribution System Recovery Plan (DWDSRP) was signed by the Interagency Working Group on 17 December 2021. This addendum provides additional technical information to document the system flushing methodology and engineering approach used to restore Flushing Zone A1 to service as requested by the State of Hawaii Department of Health (HI DoH) in reference (d).

2. BACKGROUND:

2.1. Portions of the Navy water distribution system serving 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.

2.2. Prior to the aquifer contamination incident (incident), water users connected to the Navy's system were supplied by three Navy owned water sources, Red Hill Shaft, Aiea/Halawa Shaft and Waiawa Shaft. In the time period prior to the incident, Waiawa Shaft was the main water source supplying approximately 16 million gallons per day (MGD) to the JBPHH system with at least one pump operating full time (100%). A single Red Hill Shaft pump was operated intermittently as a secondary source to supply approximately 5.5 MGD to the system. The Aiea/Halawa shaft was not being operated due to concerns over high chloride concentrations caused by saltwater intrusion into the aquifer.

2.3. On the evening of 28 November 2021, the Red Hill Shaft was secured and all pumping operations ceased. The Aiea/Halawa shaft briefly served as the secondary source starting on 28 November 2021 but was shut down on 03 December 2021 to prevent westward contaminant migration in the aquifer.

2.4. Since 03 December 2021. Waiawa Shaft has been the sole water source providing potable

3.1. ArcGIS was the primary tool used for mapping, volumetric calculations, and spatial analysis of the JBPHH utility systems.

3.2. System flows were measured by meters at key points within the distribution system. Data was recorded and stored by the Navy's SCADA system historian. SCADA is also monitored 24/7 by water system operators.

3.3. A hydraulic model was developed in 2014 and calibrated to conditions at the time. It is a skeletonized model depicting major transmission lines to many areas of the base. It does not include all mainline pipes, the Hickam area, or laterals feeding residence and non-residence facilities. The model was considered to be of limited use in determining the effectiveness of system flushing. It was primarily used to determine areas that were most likely impacted by the contamination event. The results directly correlated with initial reporting from impacted residents.

3.4 Dr. Andrew Whelton, a Purdue University associate professor of civil, environmental, and ecological engineering and recognized for his expertise in disaster response and recovery, provided recommendations to the US Navy based on his research and experience. His work is often cited in EPA literature and he is a leading expert in the field of recovering contaminated drinking water plumbing. His recommendations were incorporated into the DWDSRP.

4. CONSTRAINTS: In addition to Section 1.3 of the DWDSRP, the following constraints were considered during development of the plan:

4.1. Waiawa Shaft pumps are capable of pumping 19 MGD with 2 pumps running at full speed. 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 has ranged from 11 to 14 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. Discharge to the Navy's sanitary sewer system and the Fort Kamehameha Wastewater Treatment Plant (Ft. Kam WWTP) was limited to 1 MGD by wastewater operations staff. Much of the infrastructure Ft. Kam WWTP was considered to be in poor condition and some process elements do not have a backup unit. The direct discharge of too much potable water to the plant was also thought to pose the risk of "wash out" of the microbes that provide secondary treatment.

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

4.6. JBPHH 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 other contaminants from the pipe segment. True unidirectional flushing of the system was determined not to be a feasible method for flushing the JBPHH potable water system for the following reasons:

4.6.1. Per section 1.2 of the DWDSRP, 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. A unidirectional flushing program would take several months to develop and implement and the timeline was not considered feasible for a return to service.

lie?

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

4.6.3. 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.

4.7. Dr. Whelton recommended three volumetric turnovers for impacted pipe networks. 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 volumetric turnovers. Zones where the hydraulic modelling indicated that contamination may have travelled, were in close hydraulic proximity to Red Hill Shaft, and had few complaints were flushed with the recommended three volumetric turnovers. Low priority was given to zones where SCADA data indicated that water was fed solely from Waiawa Shaft before and after the incident. To reduce water waste, flush zones with lower risk of contamination were volumetrically turned over a minimum of once or twice.

5. Following Dr. Whelton's recommendation, the DWDSRP was 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. 19 total zones were established that could be

portions of the system include the Naval Magazine area (NAVMAG), A2 and A3 located to the south. Flow meter data shows that water flows from north to south in this zone and does not reverse.
Section 2a.1 Memorandum for Record

6.2. WATER USE/TENANTS; Water users in this zone are mostly residential housing tenants. Operational tenant facilities include Marine Corps warehouses to the north, a SPAWAR facility on the east shore and the Navy Seal Compound on the southern tip of the peninsula.

6.3. PIPE VOLUME: Per section 2.5.1.1. of the DWDSRP, Flush Zone A1 has a mainline pipe volume of 390 thousand gallons (KGal) and a minimum turnover volume of 1,950 KGal. With the exception of the main transmission pipelines, mainline pipes in the zone are 6 to 8-inches in diameter. Transmission main pipes upstream of this zone were not included in the pipe volume since they are fed directly from Waiawa Shaft and were considered "clean".

6.4. PRIORITY: Zone A1 was a high "priority 1" zone and was included in Phase #1 because it was used as a proof of concept for the mobile GAC operations. The likelihood of contamination entering this zone is very low because it is fed solely from Waiawa Shaft. All zones within Phase #1 were required to be flushed with five volumetric turnovers minimum.

6.5. HYDRANT SELECTION: Five geographically and hydraulically dispersed flushing hydrants were selected to flush Zone A1. Hydrants were also selected so that they were as far as possible from the 24- and 30-inch transmission mains and water would be pulled through the mains serving residences and facilities.

6.6. DEAD-END LINES: It is possible that flushing was not induced in some small neighborhood loops or longer dead-end lines serving facilities or piers. To address this concern, additional distribution water line samples were taken in locations selected in a joint effort by the Navy, DoH, and EPA. These samples are representative of other dead-end lines within the zone.

6.7.1. The total volume flushed through the system was 1,969 KGal for 5 volumetric turnovers. Actual volumetric turnovers exceeded the minimum requirement.

6.8. SCADA Data: Daily average flow data collected between 18 November 2021 and 09 January 2022 is shown in Figure 3 below. Instantaneous (1 minute) flow data at meters 4700, 4710 and 4704 was also reviewed to ensure that the direction of flow did not reverse.:

6.8.1. Meter 4787 (Figure 1) at Waiawa Shaft shows an average flow of 15.53 MGD.

6.8.2. An average of 6.60 MGD continued through Meter 4700 towards McGrew Point. 6.8.3. The majority of the remaining volume, approximately 8.9 MGD flowed through Zone A1 each day. Between

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

7 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 I1

1. OBJECTIVE. This addendum provides additional technical information to document the system flushing methodology and engineering approach used to restore Zone I1 (Red Hill Housing) to service as requested by the State of Hawaii Department of Health (HI DoH). This memorandum and associated technical document (see Army Flushing Report for Zone I1) 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.

2.2. Prior to the aquifer contamination incident, water users connected to the JBPHH system were supplied by three Navy owned water sources, Red Hill Shaft, Aiea/Halawa Shaft and Waiawa Shaft. In the time period prior to the incident, Waiawa Shaft was the main water source supplying approximately 16 million gallons per day (MGD) to the JBPHH system with at least one pump operating full time (100%). A single Red Hill Shaft pump was operated intermittently as a secondary source to supply approximately 5.5 MGD to the system. The Aiea/Halawa shaft was not being operated due to concerns over high chloride concentrations caused by saltwater intrusion into the aquifer.

2.3. On the evening of 28 November 2021, the Red Hill Shaft was secured and all pumping operations ceased. The Aiea/Halawa shaft briefly served as the secondary source starting on 28 November 2021 but was shut down on 03 December 2021 to prevent westward contaminant migration in the aquifer. This drinking water incident is attributed to the Red Hill shaft.

2.4. Since 03 December 2021, Waiawa Shaft has been the sole water source providing potable water to the distribution network. It is located 5.5 miles west of the Red Hill Fuel Facility and testing has not found any water quality issues at this source.

SUBJECT: Army Flushing Report for Zone I1

2.6. This memorandum is specific to Red Hill Housing also called Flushing Zone I1. Water is supplied to Red Hill Housing by the JBPHH water system via a 30" water main which is pumped to two (2) 250K storage tank and gravity fed to consumers. Red Hill Housing (I1) is hydraulically distinct after water is conveyed to the storage tank. A water distribution system diagram is provided in Enclosure 1.

3. Engineering Analysis and Tools. US Army Garrison-Hawaii (USAG-HI) utilized engineering judgement informed by existing tools and data sources such as ArcGIS, Supervisory Control and Data Acquisition (SCADA) system historic and current data, water system hydraulic model, and input from water system infrastructure contamination subject matter experts (SMEs) to include US Army Environmental Command (USAEC), US Army Corps of Engineers (USACE), and Naval Facilities Engineering Systems Command (NAVFAC) to develop water system flushing methodologies. The following text provides additional information on this analysis and tools.

3.1. ArcGIS was the primary tool used for mapping, volumetric calculations, and spatial analysis of the utility systems.

3.2. System flows were measured by meters at key points within the distribution system. Data was recorded and stored by the Navy's SCADA system historian. SCADA is also monitored 24/7 by water system operators.

3.3. A hydraulic model of Army assets was developed and iteratively refined over the last 3 years. However, model calibration is not possible as data requirements are not available, e.g., water meters on residences and, c-factors. Therefore, the model is skeletonized depicting major transmission lines to many areas of the zone. The model is considered to be of limited use in determining the overall effectiveness of system flushing.

3.4 Pressure data loggers were used at strategic locations in the distribution system to monitor flushing operations.

4. CONSTRANTS. 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

other contaminants from the pipe segment. 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. 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.

4.6. 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 volumetric turnovers. Army Zones were flushed with this safety factor.

5. Flushing Operations. 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. Four (4) total zones were established that could be independently flushed without adverse hydraulic or water quality impacts to previously flushed zones.

6. Flushing Zones. Detailed information, i.e., maps, calculations, data, are included in the Army Flushing Report-Zone I1 intended to accompany this memorandum.

6.1. Flushing Zone Commonalities.

6.1.1. Army tank volumes were cycled prior to flushing.
6.1.2. Flushing started at a hydrant and discharged into a sanitary sewer manhole.
6.1.3. Five (5) volume exchanges of the distribution pipes.
6.1.4. Systematic directional flow without operating valves.
6.1.5. Higher velocities required more hydrants and shorter runs of pipe to be flushed.
6.1.6. Every effort was made to account for elevation when flushing hydrants.

6.2. Specific Limitations. The Red Hill Housing (Zone I1) neighborhood is limited to 200 gallons per minute (gpm) due to wet well size and pump capacity. Two hydrants were flushed

6.4. Volume. In consultations with professionals a recommendation of three volumetric turnovers for impacted pipe networks was established. A factor of safety was applied to the highest priority zones by specifying a minimum of five volumetric turnovers.

Zone I1= 17,000 (kgals) , 5 volumes = 85,200 (kgals)

7.0. Residential Flushing. Zone I1 flushing of 137 homes in the Red Hill residential community was accomplished over a four (4) day period. The original intent was to complete residential flushing within 2 calendar days, i.e., 10 and 11 January. However, it was determined on 11 January via quality control checks by USAG Hawaii Department of Public Works (DPW) and Island Palm Communities (IPC) that documented residential flushing times were inconsistent with the agreed Standard Operating Procedure (SOP). Specifically, a stand-alone or duplex home has an absolute minimum flush time; 72 residences did not meet the minimum flush time requirement. Conversations with Task Force Ohana (Flushing Team) indicate flushing was done properly. However, steps articulated in the SOP were accomplished out of sequence (water heaters not flushed in the right sequence) and not adequately documented. Therefore, 72 homes were re-flushed in accordance with the prescribed SOP. A limited number of concerns were identified during the residential flushing: (1) low pressure; (2) COVID quarantined residents; (3) unsecured pets; and (4) resident plumbing and other technical issues. Concerns are documented in Enclosure 5 Residential Flushing Worksheet. Residential flushing for Zone I1 is complete.

8.0. Non-Residential Flushing. Non-residential flushing is complete. Flushing was done in accordance with the SOP and records are provided in the Enclosure 7 Army Flushing Report for Zone I1.

9.0. Water Quality Data. The Army must comply with parameters identified by the IDWST and are provided in the accompanying Enclosure 6 Water Quality Data & Sampling Plan. All samples are within the Department of Health Groundwater Action Levels, Department of Health Safe Drinking Water Act Regulatory Constituents and the US Environmental Protection Agency Maximum Contaminate Levels (MCLs) for drinking water. Samples collected in residential housing after the residential flushing did exceed the incident specific parameter of 2.9 parts per billion (ppb) for Copper. The likely source of copper is corrosion of household plumbing systems and/or erosion of natural deposits from the flushing event. The copper samples are well below the regulatory MCL drinking water standard of 1300 ppb. The Army will continue to sample and report copper samples in the annual consumer confidence report. Mercury was detected in one of the samples. The sample that detected mercury is below the regulatory drinking water MCL of 2 ppb and is a laboratory estimated value.

10.0. Re-flushing. During residential flushing of Zone I1 it was identified that 72 residences did not meet the minimum flush time requirement. Therefore, these homes were re-flushed flowing the prescribed SOP and flush times documented.

SUBJECT: Army Flushing Report for Zone I1

2/7/2022

X Nisit A. Gainey

Signed by: GAINEY.NISIT.ANTHONY.1067651371

NISIT A. GAINEY
Director, Public Works

7 Encls
1. Water System Diagram
2. Flushing Map All Zones
3. Worksheet for Flushing Volumes
4. Residental Flushing Maps
5. Residential Flushing Worksheet
6. Water Quality Data & Sampling Plan
7. Army Flushing Report for Zone I1

NAVY

February 8, 2022

From: Naval Facilities Engineering Systems Command Representative, IDWS Team
To: Interagency Drinking Water System Team

Red Hill

SUBJ: ZONE I1 REMOVAL ACTION REPORT

Ref: (a) Drinking Water Sampling Plan, December 2021
(b) Drinking Water Distribution System Recovery Plan, December 2021
(c) Single Family Home Flushing Plan Checklist and Standard Operating Procedures, December 23, 2021
(d) Non-Residential Facility Flushing Plan Checklist and Standard Operating Procedures, January 4, 2022
(e) DOH's Guidance on the Approach to Amending the Drinking Water Health Advisory, December 30, 2021; HEER Incident Case No.: 20211128-1848
(f) DOH Checklist to Amend the Drinking Water Health Advisory in Zone XX

Encl: (1) Zone I1 Removal Action Report

1. The enclosed report documents completion of the requirements outlined in references (a) through (f). This is in response to HEER Incident Case No.: 20211128-1848 involving the Joint Base Pearl ~~Harbor-Hickam~~ (JBPHH) Public Water System No. 360.

2. 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 and, on the 23rd of November, Admiral Paparo, directed an independent investigation of the spill event, and ordered the investigating officer to also determine any connection between the 20 November event and the spill that occurred earlier this year, on the 6th of May. The results of the investigation are pending public release.

On the 27th of November, the Commander, Navy Region Hawaii, RDML Tim Kott, met with the Fleet Logistics Center Commander, who operates The Red Hill Fuel Storage Facility for the Navy, and they jointly made the decision to stop Red Hill Tank fuel transfer operations based on the ongoing investigation into the recent spills.

On Sunday, the 28th of November, the JBPHH HQs and Hawaii Department of Health (HDOH) began receiving phone calls from military residents reporting a chemical or petroleum taste and smell to the water on the Navy's drinking water system. As more calls were received, it became clear that the reports were a clustered around neighborhoods fed by the Red Hill Shaft Well, so the Navy, on the evening of the 28th of November, shut down that well and stood up the

On December 8, 2021, HDOH issued Directive 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 December 17, 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 signing of this plan was the second work product of the IDWS Team, which is focused on efficiently and effectively restoring safe drinking water to JBPHH military housing communities. Earlier in that week, the team jointly signed the Drinking Water Sampling Plan.

The flushing of the water distribution lines resumed on December 20, 2021. Residence and non-residence facilities were flushed and sampled after the completion of flushing and testing of the distribution system of a specific Zone. This report specifically documents the requirements outlined in references (a) through (f) for Zone I1.

3. The removal action report (RAR) for Zone I1 documents two specific lines of evidence necessary to amend the drinking water health advisory for Zone I1 as provided by HDOH. The two lines of evidence under evaluation included:

i. Ensure no contamination is entering the water system.
ii. Ensure no contamination remains in the system and water chemistry concerns are addressed.

Each line of evidence has several objectives with specific lines of evidence and incident specific criteria required to be met. Achievement of the criteria will be described and supported with documentation in the subsequent sections of the RAR.

4. I certify under penalty of law that I have personally examined and I am familiar with the information submitted and I the submitted information is true, accurate, and complete.

MENO.MICHAEL.W.AYNE.JR.1088310035 Digitally signed by MENO.MICHAEL.W.AYNE.JR.1088310035

Also Refers to Dr. Whelton email

February 15, 2022

From: Naval Facilities Engineering Systems Command Representative, IDWS Team
To: Interagency Drinking Water System Team

SUBJ: VALIDITY AND APPLICATION OF VOLUMETRIC EXCHANGE METHOD

Ref: (a) Drinking Water Distribution System Recovery Plan, December 2021

Encl: (1) Dr. Whelton email documenting volumetric exchange method dtd 08 JAN 22

1. This letter documents the basis of the volumetric exchange method used in the development of reference (a). The basis of the flushing method was based on two key recommendations from Dr. Whelton, who served as the Navy's consultant in the early stages of the incident. Enclosure (1) documents key recommendations from Dr. Whelton which included flushing from a clean source, systematically moving through the entire system, and flushing at least three times the pipe volume. Rules of three is what Dr. Whelton generally recommends.

2. Reference (a) incorporated the recommendations from Dr. Whelton by creating a flushing sequence that began with clean water from the Waiawa shaft and flushing systematically through the entire system. The volumetric exchanges for each zone and zone flushing sequence plan was developed by Navy engineers. This is outlined in table 2.4, Distribution System Recovery Plan Diagram, and section 2.5, Flushing Plan Phasing, of reference (a). A safety factor was applied to the rule of three to obtain five volumetric turnovers for the phase 1 zone areas. Phase 2 zone areas had three volumetric turnovers. Phase 3 zone area had two volumetric turnovers and phase 4 zone areas had one volumetric turnover. The phase 3 and phase 4 zone volumetric turnover determinations were made after considering the up-gradient zone flushing volumes and the non-potable use of water in the zones.

3. I certify under penalty of law that I have personally examined and I am familiar with the information submitted and the submitted information is true, accurate, and complete.

MENO.MICHAEL.WAYNE.JR.1088310035
Digitally signed by MENO.MICHAEL.WAYNE.JR.1088310035
Date: 2022.02.15 07:17:55 -10'00'

M. W. Meno
Captain, U.S. Navy Civil Engineer Corps

Within one-hundred-and-eighty (180) days after EPA's approval of the Hydraulic Model, Navy shall submit, for EPA approval, a Unidirectional Flushing ("UDF") Plan. The UDF Plan shall include:

- A contaminant slug study from each active source or potential location of the contaminant within the distribution system, identifying early valve closure response to contain the spread of contamination;
- A UDF Computer Model Study incorporating the completed Hydraulic Model and a velocity or sheer-stress based flushing target to remove sediments and solids from the line;
- The results of a series of UDF event runs, under the model, for each area or hydraulic flushing zone (established in the *December 2021 Drinking Water Distribution System Recovery Plan*, https://health.hawaii.gov/about/files/2021/12/Drinking-Water-Distribution-System-Recovery-Plan.pdf); and
- A computer-model-generated flushing report for each hydraulic zone showing all parameters needed to sequence and perform UDF flushing in sections for each zone.

Any updates, additions or changes to the JBPHH System should be reflected in a revision to the Hydraulic Model in subsection 6.5.3, and flushing report for each area (zone) contingent to any construction.

6.5.5 MAINTENANCE FLUSHING PROGRAM

6.5.5.1 INTERIM FLUSHING

Within thirty (30) days after the Effective Date, and until approval of the Maintenance Flushing Program required under this subsection, Navy shall continue to perform any ongoing interim flushing of Navy-owned and/or -operated distribution lines to ensure safe drinking water is served to its consumers.

6.5.5.2 DEVELOPMENT OF MAINTENANCE FLUSHING PROGRAM

Within two-hundred-and-seventy (270) days after EPA's approval of the Hydraulic Model, Navy shall submit to EPA for approval a Maintenance Flushing Program, designed to improve water quality served to customers. The Maintenance Flushing Program shall be developed in accordance with American Water Works Association ("AWWA") Standard G200-15 Distribution Systems Operation and Management, subsection 4.1.8 System Flushing, effective May 1, 2015 (available at AWWA's website at: https://www.awwa.org/Portals/0/Awwa/Publishing/Standards/G200-15LookInside.pdf?ver=2020-03-09-114002-377). UDF shall be incorporated wherever possible, particularly, among other circumstances, where the Hydraulic Model required under 6.5.3 indicates it is necessary. The entire system, including dead-ends and blow-off locations, shall be flushed at least annually, with the possible need for more frequent flushing based on the reoccurrence of the following: air and sediment in the lines; issues with maintaining free chlorine residual; and issues (customer complaints) with taste, odor or color. Records of all Maintenance Flushing Program flushing events shall include the following: date, time, locations, persons responsible

From:	contactus=notify2.boardofwatersupply.com@mg.boardofwatersupply.com on behalf of contactus@notify2.boardofwatersupply.com
To:	Stella Bernardo; Board of Water Supply Board of Directors
Subject:	Board Meeting Testimony Submittal or Request - January 23, 2023 - Gina Hara
Date:	Monday, January 23, 2023 8:09:16 AM

BWS TESTIMONY SUBMITTAL / REQUEST TO TESTIFY FORM

Form Submitted on:	1/23/2023 8:09:09 AM
Meeting Date:	January 23, 2023
I wish to provide	Advance written testimony + request to give remote oral testimony by Zoom videoconference

TESTIFIER INFORMATION

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TESTIMONY DETAILS

Agenda Item	Info 01: United States Environmental Protection Agency and Hawaii Department of Health discussion
Your Position on Matter	I wish to comment
Representing	Self
I wish to provide	Advance written testimony + request to give remote oral testimony by Zoom videoconference

1) The Board of Water has an EAL of 100ppb for TPH-d because we can

Written Testimony (if entered on the online form; otherwise see attached)

taste and smell petroleum at 160ppb. The Department of Health's Roger Brewer changed the EAL to 400ppb at the many protests of the Board of Water. The BOW refused to be part of the AOC because of transparency concerns. The community and affected family members from the 2021 spill have testified repeatedly that they ask the DOH go back to 100ppb. I want to ask for the last time, if the Dept of Health can go back to 100ppb. I ask the Department of Health to watch DARK WATERS on Amazon Prime for $3.99 and read the book Exposure by chemical lawyer Robert Bilott about how a community of 70,000 people were poisoned by DuPont and how their Department of Health raised their EALs similar to Hawaii's DOH. I ask after all this, if the DOH does not correct the EAL to return the TPH-d back to 100ppb, that other experts and peers weigh in quickly in a presentation solely focused on this issue, and the process of only having Roger Brewer, a geologist, determine the EAL be overhauled. If even a TPH-d EAL was "raised" when there was no problem with it being at 100ppb for so long, the community has no confidence in the AFFF / PFAS and PFOA protocol of the Department of Health. After this meeting, I request that the Board of Water request an investigation by the attorney general or appropriate party to ensure our safety and determine if there is a conflict of interest. 2) I request that the Board of Water request a detailed presentation by the DLA and Engineers of the JTF to go over a defueling plan to go over past mistakes blow by blow and how this relates to the current proposed plans and alternatives in detail. It would be important to record and show the public what the defuel plan is as presented by those making the plans to see if the plan is detailed enough. This may take a series of meetings with independent engineers weighing in and asking questions. Usually the TRIM or Tank Readiness exercises is when an accident happens - and independent contractors are "blamed." The defueling project is similar in that it is new plans, new people, and new independent contractors. 500,000 gallons an hour is a lot of pressure. Please be sure to televise such a meeting so that proper two way communication by engineers is possible. 3) Regarding the AFFF situation, I request that the EPA do an accounting for 1) every PFAS / PFOA that has entered Hawaii by the DOD 2) how much is missing and where 3) what is the specific time and plan for when these chemicals will leave Hawaii. 4) Mr. Lau has asked the Navy & Admiral Wade publicly at the EPA meeting this past week for access to test Red Hill test wells. I ask that the Board of Water formally request full access to all DOD test wells on Halawa Aquifer as well as any water test well. There is no reason to restrict testing access. In fact, this should be a priority for the DOD in the spirit of transparency. 5) I request that funding be set aside for the future microorganism-based remediation of the toxic chemicals that have entered Oahu as legacy fuel has been appearing in Moanalua and Halawa already has PFOS in water reports based on 2020 testing - this means contamination has been happening for a long time for it to have reached the aquifer. The microorganism - based remediation I request is one that is based on indigenous microorganisms harvested and attenuated with fuel eating microorganisms of AFFF eating organisms - and put on and in the soil to remediate the aquifer. This system also has the potential to not just clean the fuel from Red Hill, but can also clean up the Ewa Plains which Mr. Lau had stated in 2015 uses millions in activated charcoal. Thank you, Gina Hara, Halawa Valley

ACKNOWLEDGEMENTS

Terms and Agreement Check Box	I UNDERSTAND and ACCEPT that all public meeting transcripts and testimony are public documents. Therefore, any testimony that is submitted orally or in writing, electronically or in person, for use in the meeting process is public information.

From: contactus=notify2.boardofwatersupply.com@mg.boardofwatersupply.com on behalf of contactus@notify2.boardofwatersupply.com
To: Stella Bernardo; Board of Water Supply Board of Directors
Subject: Board Meeting Testimony Submittal or Request - January 23, 2023 - Meredith Wilson
Date: Monday, January 23, 2023 2:17:16 PM
Attachments: M Wilson-BWS Testimony 1.23.23.pdf

BWS TESTIMONY SUBMITTAL / REQUEST TO TESTIFY FORM

Form Submitted on:	1/23/2023 2:16:50 PM
Meeting Date:	January 23, 2023
I wish to provide	Advance written testimony + request to give remote oral testimony by Zoom videoconference

TESTIFIER INFORMATION

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TESTIMONY DETAILS

Agenda Item	Info 01: United States Environmental Protection Agency and Hawaii Department of Health discussion
Your Position on Matter	(select from list)
Representing	(select from list)
I wish to provide	Advance written testimony + request to give remote oral testimony by Zoom videoconference

Written Testimony (if entered on the online form; otherwise see attached)

ACKNOWLEDGEMENTS

Terms and Agreement Check Box	I UNDERSTAND and ACCEPT that all public meeting transcripts and testimony are public documents. Therefore, any testimony that is submitted orally or in writing, electronically or in person, for use in the meeting process is public information.

Aloha, my name is Meredith Wilson and I lived on Joint Base Pearl Harbor-Hickam for 5 years. A lot of us now have come to think of our lives in two major stages: "Pre-Red Hill" and now sadly "Post-Poisoning."

We'd love to get our time back, our health back, our memories back, but leaders on so many fronts leave us with no choice but to continue showing up and pressing for simply what they would want if someone did this to them & their families.

Firstly, in the April 20th, 2022 memo from DOH, it says a "more detailed study of the chemical makeup of JP-5 jet fuel and other petroleum fuels is underway" and it will be "used to formally update HIDOH TPH guidance."

Can DOH representatives answer these questions:
-Is this detailed study complete and if not when can the public expect it?

-Also, did DOH send samples from the Red Hill shaft to the mainland and receive a full carbon-range breakdown as well as information on additives and cleanup materials within that water?

-Have you seen any of the soil sample results after the November 2022 AFFF concentrate spill?

-Regarding the recent PFAS in drinking water results showing up across Oahu, how will you advise BWS to handle based off of new EPA health advisories? These communities need to at the very least know that the National Academies of Sciences recommends specific health monitoring like thyroid, kidney, and other panels that people should be aware of NOW.

Last one for DOH:
-Is it correct that your Department waited until July of 2022 to request from ATSDR for a Public Health Assessment? The affected community had been reaching out individually begging for studies to be done since December and yet 8 extremely valuable months of time ticked by until you called for help. Why was this?

And finally for the EPA representatives:
Since I noticed most of my comments on the Consent Order don't really matter unless they're online, I'll save my breath.

I was concerned to learn that Superfund or (CERCLA) has the petroleum exclusion. I'm a ruthlessly optimistic person, so I'm already looking forward to Red Hill's closure and remediation.
-In order for Red Hill to be considered for Superfund, does the contamination have to be more than just the jet fuel? For example PFAS from the AFFF in the plume has to be identified? What does that process look like?

Mahalo as always for the BWS and the groups & individuals who collectively speak up, don't stop.

We're better together.

#OlaIKaWai

From: contactus=notify2.boardofwatersupply.com@mg.boardofwatersupply.com on behalf of contactus@notify2.boardofwatersupply.com
To: Stella Bernardo; Board of Water Supply Board of Directors
Subject: Board Meeting Testimony Submittal or Request - January 23, 2023 - Amanda Feindt
Date: Monday, January 23, 2023 2:24:30 PM

BWS TESTIMONY SUBMITTAL / REQUEST TO TESTIFY FORM

Form Submitted on:	1/23/2023 2:24:20 PM
Meeting Date:	January 23, 2023
I wish to provide	Advance written testimony + request to give remote oral testimony by Zoom videoconference

TESTIFIER INFORMATION

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TESTIMONY DETAILS

Agenda Item	Info 01: United States Environmental Protection Agency and Hawaii Department of Health discussion
Your Position on Matter	I wish to comment
Representing	Self
I wish to provide	Advance written testimony + request to give remote oral testimony by Zoom videoconference
Written	

Testimony (if entered on the online form; otherwise see attached)	I would like to repeat 2 questions from my last testimony which were never answered by EPA OR HDOH

ACKNOWLEDGEMENTS

Terms and Agreement Check Box	I UNDERSTAND and ACCEPT that all public meeting transcripts and testimony are public documents. Therefore, any testimony that is submitted orally or in writing, electronically or in person, for use in the meeting process is public information.

Written Testimony for Honolulu BWS Meeting, 23 JAN 2023

Amanda L. Feindt (Mother of 2, Army Officer, Advocate, Former Resident of Ford Island)
Contact Info: amandafeindt@gmail.com / #757-816-6073

As mother of 2 small children, who, *at the age of 1 and 3 years old*, were poisoned by jet fuel in our drinking water, I'd like to start by highlighting the ***actual truth***.... and that is: the **complete lack of** transparency, respect and empathy EPA and DOH officials have shown towards the Red Hill impacted families + concerned members of the local community. After 14 months, thanks for **finally** showing up to hear us say **"shame on each of you"** for signing off and completely dismissing the families who came to last month's BWS meeting IOT share their story + get their questioned answered by you.

And since you haven't reviewed our testimony's from last month, I'd like to repeat: I do not appreciate you using MY CHILDREN as your test dummies or guinea pigs as part of your science fair project. With the number of on-going medical symptoms, particularly in innocent children, your EALs are clearly ***not*** sufficient to ensure the health and safety of this community. I've heard a lot tonight about your priorities associated with safe defueling, and while I agree **important**, I'd ask that you'd prioritize **first + foremost** the threat your current EALs still pose to human health!

I'd also like to make very clear that I do not appreciate all the "I don't knows" or "I think" ... all the non-shallant answers to Mr. Lau's + other board members tonight ... all the chuckles ... and the fact that **after 14 months** you still don't have clear answers for us. This is not a laughing matter. Over the past 14 months, the only thing you've proved to this community is that you are part of the problem, not the solution. Your incompetence and inaction has not only taken away our ability to protect our innocent children, but prevented medical professional from properly treating our families. As Susan stated, **We**, the impacted families, demand a complete list of contaminants, including jet fuel additives and cleanup chemicals you mentioned this evening.. immediately.

Lastly, we are sick of being gaslighted by all of you. How dare you come up to that podium talking about "PFAS being everywhere (carpeting, clothing, etc)," ... when we're all **clearly** gathered here tonight to discuss PFAS found **in our drinking water**. Again, enough with the gaslighting, downplaying the significance of these harmful substances being in our drinking water, and treating us like a bunch of idiots. I've risked my life for this country .. for our basic human rights, one of which being **access to clean + safe drinking water.** Any amount of PFAS or Jet Fuel in our drinking water does not equal clean or safe water.

With that being said, here are my questions:

1. How this situation is any different than what happened at Camp Lejeune? Are you completely unaware of the long-term health impacts, cancers, and deaths (particularly childhood death) associated with the Camp Lejeune water crisis? Are you consulting with the medical and environmental experts who have been working on that crisis for decades now? Watch Documentary "Semper Fi: Always Faithful" (Camp Lejeune community treated the same way we are being treated)
2. With the number of known **ongoing** medical symptoms, validated by 2 separate ATSDR studies, what is your plan to re-look or update your EALs? Again, current EALs are clearly not sufficient.
3. It has been briefed that DOH's TPH/Jet Fuel EAL was calculated based on potential harm caused to a 70lb human being – can you confirm 70lbs is the accurate weight for your calculations?
4. Can you clarify that when you and the Navy say our "drinking water is safe"**and** that "there is no fuel detected in our drinking water".... Does that mean there is **NO** FUEL in our drinking water or no fuel detected above 266ppb?

5. With as many respiratory issues reported, why haven't you or the Navy conducted air quality testing in our homes over the past 14 months or part of monthly monitoring?
6. EPA- knowing the responsibility of your agency can you please explain - Why don't you regulate TPH/JP-5 in our drinking water?
7. Can you confirm if the PFAS detected in our drinking water in 2020 + 2021 was above the legal limits set for PFAS today?
8. Last, With a history of PFAS being in our drinking water and a recent, massive PFAS spill, why are we not testing PFAS in the drinking water as part of monthly monitoring?

From: contactus=notify2.boardofwatersupply.com@mg.boardofwatersupply.com on behalf of contactus@notify2.boardofwatersupply.com
To: Stella Bernardo; Board of Water Supply Board of Directors
Subject: Board Meeting Testimony Submittal or Request - January 23, 2023 - Susan Gorman-Chang
Date: Monday, January 23, 2023 12:04:13 PM

BWS TESTIMONY SUBMITTAL / REQUEST TO TESTIFY FORM

Form Submitted on:	1/23/2023 12:03:42 PM
Meeting Date:	January 23, 2023
I wish to provide	Advance written testimony + request to give remote oral testimony by Zoom videoconference

TESTIFIER INFORMATION

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TESTIMONY DETAILS

Agenda Item	Info 01: United States Environmental Protection Agency and Hawaii Department of Health discussion
Your Position on Matter	I wish to comment
Representing	Self
I wish to provide	Advance written testimony + request to give remote oral testimony by Zoom videoconference

Board of Water Supply (BWS) January 23, 2023 Meeting Susan Gorman-

Written Testimony (if entered on the online form; otherwise see attached)	Chang, Oahu resident and water drinker Item #1 I strongly believe that the Environmental Action Levels (EALs) for Total Petroleum Hydrocarbons (TPH) should be at no more than 100 ppb, because that is the level at which a human being can smell and taste the TPH. Considering the trauma caused, especially by the November 2021 fuel leak where residents ingested and were sickened, and continue to be sickened by, jet fuel in their water there is no reason the Hawaii Department of Health (DOH) should allow a level of TPH that can be detected when drinking or smelling the water. If the water smells foul, then the public is less likely to drink it, leading to dehydration and/or substitution of very unhealthy sugar and corn syrup heavy carbonated beverages or equally harmful sugar filled fruit juice drinks. This is a public health crisis on so many levels. The Hawaii DOH should decrease their EAL for TPH to 100 ppb. Item #2 The Navy and DOH must immediately release the report of the investigation and findings as well as the video footage of the AFFF concentrate spill at Red Hill to the public. In addition, the Board of Water Supply must be granted full access to testing of wells that the Navy has thus far refused to allow. Item #3 The EPA should, and must, read through each and every written comment and suggestion, from individuals, the Board of Water Supply, environmental groups, etc., regarding the Consent Order AND provide written comment on each suggestion specifically identifying where a suggestion was added to the Consent Order. If/when a suggestion cannot be added to the Consent Order, a though written explanation as to why should be provided. The EPA stated at the recent Town Hall Meeting that Red Hill is their number one priority, so the EPA should put all available personnel on this Consent Order ASAP. In no way should this process of addressing comments and suggestions slow down the defueling process by the Navy. Item #4 Board of Water Supply must be given access and allowed to test the water in all wells and groundwater and streams including those on Navy bases or those areas considered to be on Navy grounds . Item # 5 One example of a lack of transparency is the "Defueling Information Sharing Forum Group." These meetings are closed, are not recorded, and the public is not informed in any way what transpires at these meetings. Vice Admiral John Wade was quoted, "The DISF is meant to be a constructive forum in which information and sincere feedback is shared between participants ". Why, then, is there such lack of transparency? This appears to be a way for the Navy to pretend they are being transparent when in fact they are not.

ACKNOWLEDGEMENTS

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From: contactus=notify2.boardofwatersupply.com@mg.boardofwatersupply.com on behalf of contactus@notify2.boardofwatersupply.com
To: Stella Bernardo; Board of Water Supply Board of Directors
Subject: Board Meeting Testimony Submittal or Request - January 23, 2023 - Dave Mulinix
Date: Monday, January 23, 2023 10:43:09 AM

BWS TESTIMONY SUBMITTAL / REQUEST TO TESTIFY FORM

Form Submitted on:	1/23/2023 10:42:22 AM
Meeting Date:	January 23, 2023
I wish to provide	Advance written testimony + request to give remote oral testimony by Zoom videoconference

TESTIFIER INFORMATION

Full Name	Dave Mulinix
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Phone (optional)	(808) 239-8276

TESTIMONY DETAILS

Agenda Item	Info 01: United States Environmental Protection Agency and Hawaii Department of Health discussion
Your Position on Matter	I wish to comment
Representing	Organization
I wish to provide	Advance written testimony + request to give remote oral testimony by Zoom videoconference

Aloha, The Hawaii State Department of Health (DOH) reported recent test

Written Testimony (if entered on the online form; otherwise see attached)	results of Kunia Village's water which far surpassed the EAL's for PFOS and PFOA. Kunia's drinking water results were 50 ppt for PFOS and 27 ppt for PFOA. With EPA's revised drinking water advisory (.02 ppt for PFOS and .004 ppt for PFOA), Kunia's levels for PFOS are 2,500 times over the EPA limit, and levels for PFOA are 6,750 times over the limit. Yet with these extreme levels of PFAS in Kunia's water, DOH advises: "Although long-term consumption of drinking water with PFAS could be a health risk, the low levels of PFAS in the Kunia Village water system are not an acute health threat. No immediate action is necessary for the system's 650 users. However, those concerned may use a home filtration option to reduce PFAS. " The EPA has already made clear that even extremely low levels of PFAS in drinking water may be unsafe. A recent review from the U.S. Centers for Disease Control and Prevention (CDC) outlines a host of health effects associated with PFAS exposure, including cancer, liver damage, decreased fertility, and increased risk of asthma and thyroid disease. PFOA also causes pregnancy-induced hypertension in women, and is associated with increased risk for sporadic miscarriage during the second half of the first trimester. PFOA is believed to cause significantly reduced infant birthweight, and is likely to cause birth abnormalities, preterm deliveries, stillbirths, and nervous system development problems in children. PFOA is associated with increased risk of ADHD and Autism in children. Despite these known health risks, DOH advises no action other than individuals who so choose can start paying out of pocket for home filtration? My question to Diana Felton and the DOH is how can you say that the levels of the PFAS chemicals perfluorooctanoic acid (PFOA) and perfluorooctane sulfonic acid (PFOS) detected at Kunia Village are very low when their levels for PFOS are 2,500 times over the EPA limit and levels for PFOA are 6,750 times over the limit? In addition, why are you saying that "no immediate action is necessary" when you know that the health risks of PFAS can be very severe, and when the levels of PFOS are 2,500 times over the EPA limit and levels for PFOA are 6,750 times over the EPA limit? Why haven't you taken any action to prevent further PFAS poisoning of the Kunia community? My question to Diana Felton, DOH, and EPA: Because the levels are exponentially above safe levels as determined by the EPA, and because PFAS bio-accumulate, why isn't effort being made to warn the residents not to drink the water? My question to Diana Felton and the DOH: Since it is your responsibility to protect the health of the community and follow the precautionary principle, and because the health risks can be so severe, why aren't you getting blood samples from Kunia residents to determine how much PFAS poisoning they have already suffered? By the way the State of Massachusetts takes the health and safety of their citizens and the advisory of the EPA seriously. They will shut down their wells if the PFAS contamination is above 20ppt. So why isn't Diana Felton and the DOH not taking this contamination seriously and taking action to protect the health and safety of the people of Oahu? Please advise. Dave Mulinix Kahaluu

ACKNOWLEDGEMENTS

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is public information.

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To: Stella Bernardo; Board of Water Supply Board of Directors
Subject: Board Meeting Testimony Submittal or Request - January 23, 2023 - Jamie Simic
Date: Monday, January 23, 2023 5:58:12 PM

BWS TESTIMONY SUBMITTAL / REQUEST TO TESTIFY FORM

Form Submitted on:	1/23/2023 5:57:11 PM
Meeting Date:	January 23, 2023
I wish to provide	Advance written testimony + request to give remote oral testimony by Zoom videoconference

TESTIFIER INFORMATION

Full Name	Jamie Simic
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Phone (optional)	(808) 782-9686

TESTIMONY DETAILS

Agenda Item	Info 05: Status Update of Groundwater Levels at All Index Stations
Your Position on Matter	I wish to comment
Representing	Self
I wish to provide	Advance written testimony + request to give remote oral testimony by Zoom videoconference
Written Testimony	

(if entered on the online form; otherwise see attached)

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From: Communications <comrel@hbws.org>
Sent: Tuesday, January 17, 2023 10:23 AM
To: Kimberly Kuwaye <kkuwaye@hbws.org>
Subject: FW: Red Hill Contamination Testimony David Smith, Thank You Mark for returning my call.

Aloha Kim

Please find attached letters that the writer wanted me to forward to Ernie re: Red Hill.

Wayne Maria
Board of Water Supply
Information Specialist II
630 South Beretania St., Honolulu, HI 96843
Ph: (808) 748-5316 | boardofwatersupply.com
@BWSHonolulu BWSHonolulu

From: David Smith <smithde54@yahoo.com>
Sent: Tuesday, January 17, 2023 9:52 AM
To: Communications <contactus@hbws.org>
Subject: Red Hill Contamination Testimony David Smith, Thank You Mark for returning my call.

Ernie Lau,
Enclosed are a private memo to Ed Case from the Moanalua meeting that was ignored by the EPA and DOH.
Also enclosed is my current written testimony; if allowed to speak I will paraphrase these issues:
- Moanalua aquifer will contaminate the rest of Oahu.
- Congress should rescind the $50,000,000 yearly contract with the US Navy unless there are tangible efforts.
- The EPA Superfund should take over from the US Navy.

David Smith
(808) 737 4187
smithde54@yahoo.com

From: Joy Cruz-Achiu
To: Stella Bernardo
Cc: Kimberly Kuwaye
Subject: FW: Red Hill Contamination Testimony David Smith, Thank You Mark for returning my call.
Date: Tuesday, January 17, 2023 11:40:02 AM
Attachments: Testimony reg Navy Fuel Tanks at Red Hill.docx
image001.png

Hi Stella,

Please see attached Mr. David Smith's testimony on Info #1.

Mahalo,

Joy L. Cruz-Achiu
Board Secretary
Office of the Manager and Chief Engineer
Board of Water Supply
630 South Beretania Street
Honolulu, Hawaii 96843
808-748-5068
Email: jcruz-achiu@hbws.org

From: Kimberly Kuwaye <kkuwaye@hbws.org>
Sent: Tuesday, January 17, 2023 11:30 AM
To: Ernest Lau <elau@hbws.org>
Cc: Joy Cruz-Achiu <jcruz-achiu@hbws.org>
Subject: FW: Red Hill Contamination Testimony David Smith, Thank You Mark for returning my call.

Hi Ernie,

Please see attachments and below email from Mr. David Smith.

Joy- Mr. Smith also provided his testimony.

Thanks,
Kim

Testimony reg Navy Fuel Tanks at Red Hill sent to Ed Case

David Smith is a retired Civil Engineer requesting a congressional review of the EPA and Dept of Health review of the Navy regarding leaks of toxic jet fuel into the ground and potentially contaminating the drinking water in the aquifer. This request is in response to a recent public meeting on 11/19/2019 at Moanalua Middle School.

My argument centers on the premise that there is a serious tangible problem and a threat to the aquifer which has not been addressed by the Navy. A tangible threat can ONLY be addressed by tangible options and the appropriate funding. The Navy has offered intangible options such as increased monitoring with more test wells. The Navy has increased funding 50% over the next 5 years (from $168M/5 years to $250M/5 years). It doesn't justify how a few additional test wells equate to $33.6 million spent this past year or where the remaining $134 million was used in the past 4 years. However the Navy now wants $50 million per year for the next 5 years. Keep in mind NO tangible options are offered to justify the expense. The Navy response was there MAY be a solution to remedy this concern in the future AND we should add another 7 years added onto a 2038 deadline (new proposed deadline year 2045). While the present funding is suspect, the very real threat to Oahu's water supply would demand increased funding, possible EPA Super-funding.

The tangible problem centers around both external and internal corrosion of the steel tanks which has documented a 26,000 gal leak in 2014. Time is a factor in how to address the problem & solution. The steel which is currently 73 years old has now exceeded its useful life considering leaks can only become worse and that the water table is 100 ft below the tanks. There was testimony at the meeting that the Navy has altered the test results to appear more favorable. I personally have viewed these tanks 40 years ago and saw significant corrosion and degradation.

There are a few tangible solutions:

(a)Deactivating these vessels and moving the fuel elsewhere. This would require construction of double hulled above ground tanks with current safety standard detection monitors. Because of the volume of fuel oil, this will take years to construct.

(b)Construction of inspection accesses below each of the tanks. This will require contingencies which will move the fuel quickly once leaks are detected. These contingencies have to be done in advance of leak detection.

(c)Geologic studies to find the effects of fuel oil migration

(d)Health studies related to potential cancers due to benzene and other toxic elements.

(e)Water treatment studies to mitigate the toxic elements in the water. Some studies have been done for trace dry cleaning solutions found at the Schofield Water pumps near Wheeler. It is questionable if aeration would work on these much larger and denser hydrocarbons. The fuels might reside in the ground and contaminate the water forever.

The issue involves poor understanding of the aquifer and hydraulic consequences. Most of the people at the meeting, including the Navy, thought the contamination was localized in the Salt Lake area. While the point source would be the tanks or the pipes leading into Pearl Harbor/ Hickam most geologists believe that a hydrocarbon such as jet fuel would

act like any other liquid through the dike rock and permeable soils, but because of the specific gravity, would float on the water table which rises to elevation 300 ft. at the Schofield plateau. The jet fuel would contaminate all surfaces in which it came into contact throughout the entire island of Oahu. The effect would be catastrophic to all living things on Oahu.

The reason I've asked a congressman to be involved now is that the residents in the area are frustrated with the Navy, which appears to be kicking this problem down the road. The Navy is following administrative procedure with the Dept of Health and the EPA but may be ignoring the very real potential for disaster. A congressional inquiry and a light touch might accomplish a lot at this stage of the conflict.

The overwhelming majority of about 100 people attending the Moanalua meeting and Earnest Lau of the Board of Water Supply as well as Carol Fukunaga of the City Council believe their fears are real. A Federal entity might help the conflict.

Sincerely,
David Smith (808) 737-4187 smithde54@yahoo.com

PS The body of this letter has only been sent to you. Please consider helping. Potentially this is a great opportunity.

From: contactus=notify2.boardofwatersupply.com@mg.boardofwatersupply.com on behalf of contactus@notify2.boardofwatersupply.com
To: Stella Bernardo; Board of Water Supply Board of Directors
Subject: Board Meeting Testimony Submittal or Request - January 23, 2023 - Sherry Pollack
Date: Sunday, January 22, 2023 9:46:22 PM

BWS TESTIMONY SUBMITTAL / REQUEST TO TESTIFY FORM

Form Submitted on:	1/22/2023 9:45:28 PM
Meeting Date:	January 23, 2023
I wish to provide	Advance written testimony

TESTIFIER INFORMATION

Full Name	Sherry Pollack
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TESTIMONY DETAILS

Agenda Item	Info 01: United States Environmental Protection Agency and Hawaii Department of Health discussion
Your Position on Matter	I wish to comment
Representing	Self
I wish to provide	Advance written testimony

Aloha We must use the precautionary principle when environmental and

Written Testimony (if entered on the online form; otherwise see attached)	human health hazard is uncertain and the stakes are high. That goes for jet fuel and especially PFAS (forever chemicals) contamination. I urge you to adopt a threshold of less than 100 ppb for TPH. I am also urging you to ensure more transparency from the Navy and the ability for more community involvement in these decisions. In addition, we must have ground water studies immediately to assess the full nature of the contamination problem and prevent more from getting to the environment. We also need a third party to take over remediation efforts before something else happens to threaten or completely destroy our precious aquifer. Our groundwater is already contaminated and we need to defuel quickly. The Navy's current timeline is too long. What EAL are you currently using for TPH? If it is not 100 ppb as the BWS is recommending, please explain why. A recent test result of Kunia Village's water found it far surpasses the EAL's for PFOS and PFOA. Kunia's drinking water results were 50 ppt for PFOS and 27 ppt for PFOA. With EPA's revised drinking water advisory (.02 ppt for PFOS and .004 ppt for PFOA), Kunia's levels for PFOS are 2,500 times over the EPA limit and levels for PFOA are 6,750 times over the limit. Why are the EPA and DOH not taking immediate action? States such as Massachusetts would be either ensuring the water is filtered or shut down the wells if levels were exceeded. We can't allow the people in Kunia Village to continue drinking poisonous water. Failure to take action is unacceptable.

ACKNOWLEDGEMENTS

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To: Stella Bernardo; Board of Water Supply Board of Directors
Subject: Board Meeting Testimony Submittal or Request - January 23, 2023 - Katherine McCLanahan
Date: Sunday, January 22, 2023 11:12:00 PM

BWS TESTIMONY SUBMITTAL / REQUEST TO TESTIFY FORM

Form Submitted on:	1/22/2023 11:11:35 PM
Meeting Date:	January 23, 2023
I wish to provide	Advance written testimony

TESTIFIER INFORMATION

Full Name	Katherine McCLanahan
Email	kmac101197@gmail.com
Phone (optional)	(318) 393-6438

TESTIMONY DETAILS

Agenda Item	Info 01: United States Environmental Protection Agency and Hawaii Department of Health discussion
Your Position on Matter	I wish to comment
Representing	Self
I wish to provide	Advance written testimony

My name is Katherine McClanahan and my family and I were affected by the

Written Testimony (if entered on the online form; otherwise see attached)	contamination at Red Hill and multiple of us continue with symptoms. I have 2 questions for the EPA or Hawaii Dept of Health based on the groundwater sampling data of May 2021 to Dec 2021 that was finally posted to the HDOH website in late August or early September 2022. The Navy continues robbing us of the chance for healthy futures and we need you to step in and truly assist. So Question # 1) For the EPA, HDOH, or even Mr Lau because I believe he has everyone's best interest: Based on your knowledge to date, How many months (in 2021) does the EPA or HDOH believe families were exposed to toxins well above EALs? If you can, please for the sake of our health, would you give us a direct answer in "number of months?" 1B) If your answer is we were exposed more than 1 month, are you HDOH or EPA willing to change the current Navy narrative by publicly stating that our families were indeed long term or chronically exposed?? 2) Our doctors are struggling, many of our symptoms were not fleeting, and our future health and our children's futures are at stake here. With that said, is the EPA or HDOH willing to provide families a simple formatted Excel spreadsheet or Word Document with each and every toxin/contaminant known or suspected that we were exposed to that we can provide to our specialists? Not a 41 page paper from 2016 but an Excel spreadsheet of toxins in one column and known/likely side effects in the right column? It would be great if your experts placed the most concerning toxins at the top of the list and went down from there. If no research has been done on the toxin because of how we were exposed (ingesting, bathing, washing, etc), say that. Our doctors want to help but they need your assistance in this. Thank you, Katherine McClanahan

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To: Stella Bernardo; Board of Water Supply Board of Directors
Subject: Board Meeting Testimony Submittal or Request - January 23, 2023 - Colonel (Ret) Ann Wright
Date: Monday, January 23, 2023 5:03:09 AM

BWS TESTIMONY SUBMITTAL / REQUEST TO TESTIFY FORM

Form Submitted on:	1/23/2023 5:03:03 AM
Meeting Date:	January 23, 2023
I wish to provide	Advance written testimony + request to give remote oral testimony by Zoom videoconference

TESTIFIER INFORMATION

Full Name	Colonel (Ret) Ann Wright
Email	annw1946@gmail.com
Phone (optional)	(808) 741-1141

TESTIMONY DETAILS

Agenda Item	Info 01: United States Environmental Protection Agency and Hawaii Department of Health discussion
Your Position on Matter	Support
Representing	Self
I wish to provide	Advance written testimony + request to give remote oral testimony by Zoom videoconference

Thank you for discussing 4 very important issues in today's meeting. Please

Written Testimony (if entered on the online form; otherwise see attached)	continue to press DOH for lower EALs. The current level is too high and allows for too high levels of contamination before being declared as dangerous. Please press DOH to at least verbally describe what they saw in the footage of the AFFF leak since the Navy still has not released the footage nor their investigation Please press DOH and EPA to demand that DOD fund an independent laboratory on island so we do not have to wait weeks to get results on testing of water in homes as well as wells! Keep up the great work Board of Water Supply! Mahalo, Ann Wright 2333 Kapiolani Blvd Honolulu, HI 96826

ACKNOWLEDGEMENTS

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To: Stella Bernardo; Board of Water Supply Board of Directors
Subject: Board Meeting Testimony Submittal or Request - January 23, 2023 - Colonel (Ret) Ann Wright
Date: Monday, January 23, 2023 3:39:17 PM

BWS TESTIMONY SUBMITTAL / REQUEST TO TESTIFY FORM

Form Submitted on:	1/23/2023 3:38:53 PM
Meeting Date:	January 23, 2023
I wish to provide	Advance written testimony + request to give in-person oral testimony at 630 S. Beretania Street

TESTIFIER INFORMATION

Full Name	Colonel (Ret) Ann Wright
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TESTIMONY DETAILS

Agenda Item	Info 01: United States Environmental Protection Agency and Hawaii Department of Health discussion
Your Position on Matter	Support
Representing	Self
I wish to provide	Advance written testimony + request to give in-person oral testimony at 630 S. Beretania Street

I'm listening to the BWS meeting. 1. State of Hawaii and EPA must require

DOD to fund a laboratory in Hawaii instead of sending samples to the mainland and waiting 2 months for a CRISIS/ EMERGENCY ! One year after 19,000 gallons of jet fuel and now 1300 gallons of AFFF concentrate and still NO LAB in HAWAII. DOD has $2 billion from Congress! Make DOD fund a lab and fly it over from the mainland ASAP!!! I have a lot of information on AFFF/PFAS and Lots of data on PFAS releases on military bases. A huge release on a military base in Okinawa: PHOTOS of huge amount of PFAS exploding at US airbase in Okinawa (and contaminating water sources-see next article. US Military Bases Are Poisoning Okinawa The U.S. military has contaminated the drinking water for almost half-a-million Japanese – but Japanese authorities can't do anything about it. By Jon Mitchell October 12, 2020 US Military Bases Are Poisoning Okinawa https://thediplomat.com/2020/10/us-military-bases-are-poisoning-okinawa/ On Kadena Air Base, Okinawa prefecture, an accident blamed on a malfunctioning sprinkler system discharged tens of thousands of liters of firefighting foam in December 2013. Credit: Photographs obtained from the United States Air Force via the US Freedom of Information Act. Host to 31 U.S. military bases, Okinawa, Japan's southernmost prefecture, is no stranger to the risks of bearing the burden of the U.S.-Japan alliance. In 1959, the U.S. military accidentally shot a nuclear rocket into a local harbor; six years later, it lost a hydrogen bomb in nearby seas; then in 1969, a leak of nerve agent on the island so shocked the world that President Richard Nixon was forced to renounce his nation's first-use policy on chemical weapons. But these incidents pale compared to what Okinawans are facing today: the U.S. military has polluted the drinking water for 450,000 people – a third of the prefecture's population – in the worst case of environmental contamination in the island's history. The chemicals causing the problem are per- and polyfluoroalkyl substances (aka PFAS) which are used in the production of food wrapping, nonstick cookware and military firefighting foams. PFAS are highly resistant to heat, oil and water, but in these strengths lie their dangers. Virtually indestructible in nature, they accumulate in our bodies, taking decades to expel. According to the U.S. Agency for Toxic Substances and Disease Registry, health problems linked to PFAS include cancers of the kidneys and testicles, high cholesterol and decreased vaccine response – a particular concern during the current pandemic. Okinawans first realized their island was contaminated with PFAS in 2016 when tests by local authorities detected high levels of the substances in rivers running through and near Kadena Air Base, the largest U.S. Air Force installation in the Pacific. The discovery prompted further checks near military facilities on the island, revealing elevated PFAS levels in spring water, fish and farmers' fields. Most alarming, prefectural officials found PFAS in the island's drinking water, which is sourced from rivers near Kadena Air Base and an aquifer beneath the facility. Levels peaked at 120 parts per trillion (ppt); as a comparison, the U.S. Environmental Protection Agency recommends a maximum level of 70 ppt – but even this, say experts, is way too high. The contaminated drinking water is supplied to seven municipalities – home to 450,000 Okinawans, thousands of U.S. service members and their families, and, at least in pre-pandemic times, millions of international tourists. Checks on residents who regularly drank the water showed that blood levels of some PFAS compounds were 53 times higher than the national average. The findings shocked many Okinawans – but perhaps they shouldn't have come as a surprise. PFAS contamination from firefighting foam has been detected on military installations throughout the U.S. In March, the Department of Defense

Written Testimony (if entered on the online form; otherwise see attached)

announced there were 651 stateside bases with such suspected pollution. In the U.S., when PFAS contamination is discovered, the military holds meetings with local communities and supplies them with alternative water sources. The Department of Defense has also admitted to PFAS contamination at its bases in South Korea, Belgium and Honduras. So how has it responded to polluting the drinking water for 450,000 people in Japan? With a deafening silence. In 2016, Okinawa government officials asked permission to inspect Kadena Air Base. Four years later, they're still waiting for approval, while requests by local residents have been met with similar silence. When the Pentagon does deign to comment on the matter, it claims that it can't be sure of the source of the contamination. In 2019, for example, a military spokesperson told the media, "It would be inappropriate to speculate where the presence of [PFAS] in off base waterways originated." (Okinawa possesses no large-scale industries that manufacture or use the substances.) One way to pry open the military's opacity has been via the U.S. Freedom of Information Act. Internal reports from Kadena Air Base reveal that between 2001 and 2015, the facility mistakenly released at least 23,000 liters of various firefighting foams. One notable case from 2015 involved a drunk marine trespassing into one of Kadena's hangars and activating the sprinkler system; military reports described the act as "vandalism." In-house documents also confirm PFAS hotspots within the base. On Kadena Air Base, Okinawa prefecture, an accident blamed on a malfunctioning sprinkler system discharged tens of thousands of liters of firefighting foam in December 2013. Photographs obtained from the United States Air Force via the U.S. Freedom of Information Act. Despite this evidence, the military continues to stonewall Japanese officials' requests for on-base checks. At the root of the problem lies a six-decade-old Status of Forces Agreement (SOFA), signed at the same time as the U.S.-Japan Security Treaty. The agreement outlines how the U.S. military operates in Japan, including who can enter its facilities, and Japanese officials – it's clear – are not included on the guest list. Whereas the status of forces agreements of other U.S. allies, such as Germany, permit access by local authorities, in Japan the bases remain off-limits. When it comes to environmental compliance, the military is allowed to police itself; bases are not subject to Japanese laws or punishment following violations. Even when the military returns land to civilian use, SOFA exempts it from the need to conduct clean-ups. Between 2003 and 2018, Japanese tax-payers paid out 13 billion yen ($124 million) to remediate former bases on Okinawa, many of which were tainted with toxins such as dioxin, asbestos and lead. As for PFAS, Japan has been paying millions of dollars for filters at the island's main treatment plant to try to lower levels in the drinking water. In April of this year, Okinawans' anger flared again when a barbecue party held by marines at Futenma Air Station triggered a hangar's sprinkler system. 140,000 liters of PFAS firefighting foam and water spilled off the base; marines did nothing to help the clean-up outside the fence line. Okinawa's governor, Denny Tamaki – himself the son of a U.S. marine – slammed the accident as extremely careless. Six days after the spill, in an unprecedented development, the U.S. military allowed Japanese officials to inspect the accident scene. It was a rare concession but some residents saw it as a step – albeit small – in the right direction. Opinion polls generally show the majority of Okinawans support the U.S.-Japan alliance – but they wish their prefecture wasn't burdened with 70 percent of the U.S. military presence in Japan. They also wish SOFA would be overhauled; 39 of Japan's 47 prefectural governors agree that SOFA needs to be rewritten. At the time it

was penned 60 years ago, nobody realized how harmful military operations could be to the environment, but in the ensuing decades, it has become clear that concentrating the U.S. military presence on Okinawa concentrates contamination there, too. If the U.S. wants to maintain Okinawan support for the U.S.-Japan alliance then it needs to understand that protecting human health and the environment is inseparable from its wider mission of protecting Japan. Winner of the Foreign Correspondents' Club of Japan's lifetime achievement award for press freedom, Jon Mitchell is the author of three Japanese books about military contamination and the forthcoming "Poisoning the Pacific" (Rowman & Littlefield). Okinawa prefecture finds high PFAS levels, seeks further tests on US military bases By MATTHEW M. BURKE AND KEISHI KOJA

ACKNOWLEDGEMENTS

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From: contactus-notify2.boardofwatersupply.com@mg.boardofwatersupply.com on behalf of contactus@notify2.boardofwatersupply.com
To: Stella Bernardo; Board of Water Supply Board of Directors
Subject: Board Meeting Testimony Submittal or Request - January 23, 2023 - Colonel (Ret) Ann Wright
Date: Monday, January 23, 2023 3:46:46 PM

BWS TESTIMONY SUBMITTAL / REQUEST TO TESTIFY FORM

Form Submitted on:	1/23/2023 3:46.07 PM
Meeting Date:	January 23, 2023
I wish to provide	Advance written testimony + request to give in-person oral testimony at 630 S. Beretania Street

TESTIFIER INFORMATION

Full Name	Colonel (Ret) Ann Wright
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TESTIMONY DETAILS

Agenda Item	Info 01. United States Environmental Protection Agency and Hawaii Department of Health discussion
Your Position on Matter	Support
Representing	Self
I wish to provide	Advance written testimony + request to give in-person oral testimony at 630 S. Beretania Street
Written Testimony (if entered on the online form; otherwise see attached)	Admiral Wade told me at the Open House this week that the PFAS contaminated soil is stored at Pearl Harbor, but he didn't know where!! The public needs to know where it is to be reassured that its not next to a school, childcare facility, etc!!! How long will it be in Hawaii. What hazardous waste facility is it going to on the mainland??? More information needed! Transparency about toxic, hazardous materials!!! More information on PFAS in Okinawa- relevant for Hawaii STARS AND STRIPES • December 8, 2022 https://www.stripes.com/theaters/asia_pacific/2022-12-08/okinawa-pfas-contamination-military-bases-8344635.html#:~:text=CAMP%20FOSTER%2C%20Okinawa%20%E2%80%93%20The%20Environmental,a%20division%20official%20said%20recently Okinawa prefecture sampled 46 sites surrounding U.S. military installations between July and September as part of a biannual groundwater survey, according to a Dec. 1, 2022, statement from the environmental division. Okinawa prefecture sampled 46 sites surrounding U.S. military installations between July and September as part of a biannual groundwater survey, according to a Dec. 1, 2022, statement from the environmental division. (Keishi Koja/Stars and Stripes) BUY PHOTO CAMP FOSTER, Okinawa – The Environmental Preservation Division for Okinawa prefecture suspects U.S. military bases are the source for high levels of toxic PFAS contamination discovered in summer groundwater samples, a division official said recently. The division requested base access for further testing, the official told Stars and Stripes on Monday. The prefecture sampled 46 sites surrounding U.S. military installations between July and September as part of a biannual groundwater survey, according to a Dec. 1 statement from the environmental division. Of the sites sampled, 32 exceeded Japan's provisional safe drinking water standard of 0.05 micrograms per liter, according to data released with the statement. Yara Hijaga spring, approximately 1,500 feet from the northern fence line at Kadena Air Base, registered the highest levels of a combined PFOS and PFOA mixture, 2.1 micrograms per liter – 42 times the provisional safety standard. The highest levels came from sources downstream of U.S. bases, particularly Marine Corps Air Station Futenma, rather than upstream sources, the spokesman said. "We think that the contamination comes from the U.S. bases," the division spokesman told Stars and Stripes by phone Monday. Some government officials in Japan are required to speak to the media on condition of anonymity. PFAS – manmade per-and polyfluoroalkyl substances – are chemicals used to make coatings and products that resist heat, oil, stains, grease and water, according to the Centers for Disease Control and Prevention website. It's also found in firefighting foam commonly used at U.S. military bases. PFOS and PFOA are examples of PFAS. The U.S. Environmental Protection Agency updated its health advisories in June to say no level of PFOS or PFOA in drinking water is safe. The synthetic compounds accumulate in the body over time, according to the agency. Studies involving lab animals show exposure to PFOA increases the risk of certain tumors of the liver, testicles, breasts and pancreas, according to the American Cancer Society. In August, the prefecture asked the Okinawa Defense Bureau, Lt. Gen. James Bierman Jr., the commander of III Marine Expeditionary Force, and the U.S. Consulate General in Naha for access to MCAS Futenma, Kadena and Camp Hansen, a Marine base, to take water samples, the spokesman said. The prefecture has not yet received a response, the division spokesman said Monday. III MEF did not respond to emailed questions regarding on-base access from Stars and Stripes on Tuesday. The 18th Wing at Kadena on Tuesday referred Stars and Stripes to U.S. Forces Japan, which said that day in an unattributed statement it was not able to comment on the test results. By Thursday, USFJ had not responded to subsequent inquiries made Tuesday about on-base sampling and the use of firefighting foam at Okinawa bases. Okinawa prefecture has been sampling sites around U.S. bases twice a year since 2017, after high levels of PFOS were detected in 2016, the environmental division statement said. The groundwater sampling this year concentrated on areas surrounding MCAS Futenma, Kadena and Hansen, as well as Camps Foster and McTureous, according to the environment division statement. The highest combined levels around MCAS Futenma came from Aranakigaa, which registered 1.4 micrograms per liter, 28 times the provisional standard. Aranakigaa is a spring downstream from the base and about a quarter-mile from its western fence line. The prefecture plans further water and soil sampling in fiscal 2023, the division spokesman said Monday.

ACKNOWLEDGEMENTS

Terms and Agreement Check Box	I UNDERSTAND and ACCEPT that all public meeting transcripts and testimony are public documents. Therefore, any testimony that is submitted orally or in writing, electronically or in person, for use in the meeting process is public information

From: contactus=notify2.boardofwatersupply.com@mg.boardofwatersupply.com on behalf of contactus@notify2.boardofwatersupply.com
To: Stella Bernardo; Board of Water Supply Board of Directors
Subject: Board Meeting Testimony Submittal or Request - January 23, 2023 - cheryl burghardt
Date: Monday, January 23, 2023 7:51:59 AM

BWS TESTIMONY SUBMITTAL / REQUEST TO TESTIFY FORM

Form Submitted on:	1/23/2023 7:51:41 AM
Meeting Date:	January 23, 2023
I wish to provide	Advance written testimony

TESTIFIER INFORMATION

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TESTIMONY DETAILS

Agenda Item	Info 01: United States Environmental Protection Agency and Hawaii Department of Health discussion
Your Position on Matter	I wish to comment
Representing	Self
I wish to provide	Advance written testimony

There can be no consent decision between the EPA and the NAVY without the

Written Testimony (if entered on the online form; otherwise see attached)	Board of Water Supply. The community knows that the meetings last week were only box checks. We've seen this all too many times before. As an O'ahu resident who is directly affected by the Navy's inability to do the right thing. I ask that the Board of Directors of Water Supply continue to take a strong stance for the protection of our water. Demand that the EPA acts in the best interest of the people of Hawai'i not the US Govt/Navy. When the tanks at REDHILL or some other military-caused disaster harm our water. they will leave and we'll be here to deal with it all. The EPA and Navy need to make a commitment to "do the right thing. the pono thing" and put their $$$$$ and person-power to the issue and solve it NOW. thank you.

ACKNOWLEDGEMENTS

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From: contactus=notify2.boardofwatersupply.com@mg.boardofwatersupply.com on behalf of contactus@notify2.boardofwatersupply.com
To: Stella Bernardo; Board of Water Supply Board of Directors
Subject: Board Meeting Testimony Submittal or Request - January 23, 2023 - Diane Fujimura
Date: Monday, January 23, 2023 10:26:55 AM
Attachments: BWS tetimony 1-23-2023.pdf

BWS TESTIMONY SUBMITTAL / REQUEST TO TESTIFY FORM

Form Submitted on:	1/23/2023 10:25:44 AM
Meeting Date:	January 23, 2023
I wish to provide	Advance written testimony

TESTIFIER INFORMATION

Full Name	Diane Fujimura
Email	diyimnida1@gmail.com
Phone (optional)	(808) 351-0787

TESTIMONY DETAILS

Agenda Item	Info 01: United States Environmental Protection Agency and Hawaii Department of Health discussion
Your Position on Matter	Oppose
Representing	Self
I wish to provide	Advance written testimony

Written Testimony (if entered on the online form; otherwise see attached)

ACKNOWLEDGEMENTS

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BWS meeting January 23, 2023

After virtually attending the recent EPA Town Hall meeting on January 18, 2023, I was disgusted at the "same-ole, same-ole" show put on by the EPA. First the DoD/Navy, now the EPA, how much more incompetence can we put up with, should we put up with?!

It is astounding to realize that the EPA personnel on hand at the Town Hall are uneducated as to the enormity of the Red Hill water disaster. They say they are listening and hearing what is being said by the community testimonies, but, as evidenced in the Consent Decree, they are not, and have not heard a single word.

Where is the direct input and participation from the Board of Water Supply? Where is the direct input and participation from the Department of Health? And, of course, where is the direct input and participation from the COMMUNITY? Where is the transparency from the Navy, the EPA . . it's as opaque as ever. Unacceptable.

WE, the people, are facing an existential crisis. Our WATER is poisoned, and we are threatened with the permanent and total destruction of our source of life, our sole-source aquifer. We LIVE here! The Navy and the EPA personnel do not. What is it going to take for us to have a determinant say in the defueling and decommissioning of Red Hill? What is it going to take for the BWS and the DOH to be able to direct and shape the defueling and decommissioning of Red Hill? The Navy and EPA must take direct ORDERS from US, BWS, and DOH.

There should be NO AFFFs with PFAS anywhere. EALs must be determined for TPH! Red Hill must be completely defueled and decommissioned WAY BEFORE July 2024. We cannot be at the mercy of incompetence, disregard, and disrespect by the Navy and the EPA.

Nuff already!

Diane Choy Fujimura
Sierra Club Hawaii/Shut Down Red Hill Coalition

From: contactus=notify2.boardofwatersupply.com@mg.boardofwatersupply.com on behalf of contactus@notify2.boardofwatersupply.com
To: Stella Bernardo; Board of Water Supply Board of Directors
Subject: Board Meeting Testimony Submittal or Request - January 23, 2023 - Melodie Aduja
Date: Monday, January 23, 2023 11:30:08 AM
Attachments: TALKING POINTS EPA Red Hill Consent Order Public Meeting PUBLIC (2).pdf

BWS TESTIMONY SUBMITTAL / REQUEST TO TESTIFY FORM

Form Submitted on:	1/23/2023 11:29:47 AM
Meeting Date:	January 23, 2023
I wish to provide	Advance written testimony + request to give remote oral testimony by Zoom videoconference

TESTIFIER INFORMATION

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TESTIMONY DETAILS

Agenda Item	Info 01: United States Environmental Protection Agency and Hawaii Department of Health discussion
Your Position on Matter	Oppose
Representing	Organization
I wish to provide	Advance written testimony + request to give remote oral testimony by Zoom videoconference

Written Testimony (if entered on the online form; otherwise see attached)

ACKNOWLEDGEMENTS

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Wai Ola Alliance

Wai Ola - "The Water of Life"

WaiOlaAlliance.com

BACKGROUND

The Consent Order is essentially a contract between U.S. EPA and the Navy. U.S. EPA is offering the Navy this "voluntary, administrative" agreement rather than enforcing clear violations of the laws that are supposed to protect our people and our environment—the Resource Recovery and Conservation Act and the Safe Drinking Water Act. The Consent Order does not include firm deadlines, enforceable standards, public oversight, meaningful penalties, remediation of the aquifer, or full environmental compensation—all of which are terms we are demanding of the Navy.

U.S. EPA and the Navy have been negotiating the Consent Order for many months. This is the first opportunity for public input. The Honolulu Board of Water Supply was not consulted. The Department of Health declined to participate, i.e., rejected an invitation.

The Consent Order says that the Navy and U.S. EPA agree that the contract is "fair, reasonable, protective of human health and the environment, and in the public interest." Although U.S. EPA has not said how it will decide whether to modify the Consent Order in response to public comments, presumably its 'fairness,' 'reasonableness,' 'protection' of human health and the environment, and 'contribution' to the public interest are the pillars that, if damaged, would require genuine revision.

1) <u>Enforcement Now</u>

The Consent Order is nothing more than a continuation of U.S. EPA's failure to enforce the laws that were meant to protect our communities and our island home.

- The only solution is immediate enforcement of the law. We're way past time for another voluntary, administrative processes. It wasn't the right solution in 2015, and it is insufficient and inappropriate now.
- The Consent Order sets up another process that naively assumes the Navy will be a good faith partner. The Navy does not care about our community, and will do everything to delay and/or avoid complying with the law.
- Enforcement means: (1) *firm deadlines*—the tanks should be emptied by a date certain (e.g., September 1, 2023); (2) *enforceable standards*—mandatory, non-negotiable standards for

cleanup of the aquifer that are protective of human health; (3) *community oversight*—the community must be fully informed and actively engaged in overseeing the Navy's compliance; (4) *substantial penalties*—the Navy must be forced to make real payments that force/incent compliance with deadlines and standards; and (5) *environmental mitigation payments*—the Navy must be made to make monetary payments commensurate with the economic, environmental, and spiritual harm that Red Hill has caused this community over 80 years. These monies should, *at the very least*, fully fund all costs associated with complete clean up the aquifer, including those incurred by the Honolulu Board of Water Supply.

- The Consent Order does not eliminate the imminent and substantial endangerment we are facing. It is unfair, unreasonable, fails to protect human health and the environment, and undermines the public interest.

2. Another Backroom Deal

Secrecy has been a defining characteristic for everything Red Hill for 80 years. Why is U.S. EPA complacent it continuing to shut out meaningful public input?

- U.S. EPA's agreement with the Navy is more of the same—a backroom deal that does not reflect the interests of this community or address the imminent and substantial endangerment we face.
- This whole meeting is a stunt conducted under the guise of "community engagement." Community engagement means taking input *from* the community and building it into plans and decision-making processes.
- The Navy, and now U.S. EPA, are not interested in genuine community engagement. What they want is one way communication—to *tell* the community what they've decided *after* they've decided it.
- The Consent Order doesn't only cut out the public and the organizations that represent our community's interests, but the Honolulu Board of Water Supply too.
- This Consent Order is patently unfair and unreasonable, and would need to be complete re-negotiated to protect human health and the environment, and contribute to the public interest.

3. Set Firm Deadlines for Defueling, Closure, and Cleanup

The Consent Order fails to set firm deadlines for defueling, closure, and cleanup.

- U.S. EPA's decision about what to include and what to omit might explain why the Consent Order fails to reflect the urgency this situation demands.
    - The Consent Order includes details about a small spill in 2022, including that the Navy quickly contained and remediated it.
    - But U.S. EPA didn't see fit to include any details about the May and November 2021 spill that resulted in the poisoning of tens of thousands of people, or that the Navy deliberately kept secret a leak in Pu'uloa that was ongoing for more than a year as part of its effort to secure an operating permit.
- U.S. EPA simply accepts the Navy's proposed timeline for defueling is far too long—as we have stated clearly and loudly for a year.

- There are faster ways to get the fuel out of the tanks. The Consent Order fails to consider the safest and fastest possible option for defueling—construct an above ground pipeline with secondary containment that can be visually monitored,
- The Navy's plan to spend millions of dollars and crucial months trying to fix a dilapidated, underground network that the Navy itself doesn't fully understand is only part of its plan to extend the life of the facility. We demand that Red Hill be permanently shut down.
- The Consent Order must be rewritten to include firm deadlines for: (1) defueling the tanks; (2) the permanent closure of the facility, and (3) complete remediation of the aquifer.
- The Consent Order does not eliminate the imminent and substantial endangerment we are facing. It is unfair, unreasonable, fails to protect human health and the environment, and undermines the public interest.

4. We Demand Complete Remediation of the Aquifer at the Navy's Expense

U.S. EPA's proposal contains virtually no discussion of current contamination—nothing about investigations, no timelines for clean up, and no guaranteed funding.

- The words "sole source" do not even appear in the document!
- The Consent Order must include firm deadlines for completing investigation and cleanup, and require the Navy to fully fund: (1) an immediate and comprehensive investigation into the extent the contamination from releases over the last 80 years, including refunding costs incurred by the Honolulu Board of Water Supply; (2) clear, enforceable standards for aquifer remediation that are the most protective of human health; and (3) ongoing water quality monitoring to ensure long-term compliance with the standards.
- The Consent Order does not eliminate the imminent and substantial endangerment we are facing. It is unfair, unreasonable, fails to protect human health and the environment, and undermines the public interest.

5. Utter Failure to Address "Forever Chemical" Threat

U.S EPA's failure to address the Navy's recent series of releases of "forever chemicals" into our environment is incomprehensible.

- U.S. EPA Consent Order utterly ignores past and recent releases of highly toxic PFAS/PFOA contaminants into our environment.
- The Consent Order must require the Navy to: (1) immediately remove any and all sources of PFAS/PFOA from above our aquifer; and (2) fully fund a comprehensive investigation into past and recent releases of "forever chemicals" into our environment, including long term water quality monitoring of the aquifer and water delivered to customers.
- The Consent Order must require the Navy to clean up and remediate all soils and water sources that have been impacted by these releases.
- The Consent Order does not eliminate the imminent and substantial endangerment we are facing. It is unfair, unreasonable, fails to protect human health and the environment, and undermines the public interest.

6. False National Security Claims

The Consent Order continues U.S. EPA's unquestioning acceptance of the Navy's national security claims. The Navy has been hiding behind vague claims of national security and "defense critical infrastructure" for too long.

- The Consent Order must be re-written to require that the Navy make a specific demonstration that any information being withheld from the public might actually result in some harm to national security.
- Given that the Red Hill facility is 80 years old, and the Navy plans to plan to close it, what harm could come from giving the public the information it deserves?
- The Consent Order must require full public disclosure of any and all information that the Navy cannot demonstrate deserves protection. This means that: (a) disclosure will *likely* result in actual harm to national security; and (b) any harm that might result from disclosure is so substantial that it *outweighs* the undisputable public interest in access to the information.
- The Consent Order does not eliminate the imminent and substantial endangerment we are facing. It is unfair, unreasonable, fails to protect human health and the environment, and undermines the public interest.

From: contactus=notify2.boardofwatersupply.com@mg.boardofwatersupply.com on behalf of contactus@notify2.boardofwatersupply.com
To: Stella Bernardo; Board of Water Supply Board of Directors
Subject: Board Meeting Testimony Submittal or Request - January 23, 2023 - Melodie Aduja
Date: Monday, January 23, 2023 11:54:33 AM
Attachments: Board of Water Supply on Consent Order^J 1-23-2023.pdf

BWS TESTIMONY SUBMITTAL / REQUEST TO TESTIFY FORM

Form Submitted on:	1/23/2023 11:53:35 AM
Meeting Date:	January 23, 2023
I wish to provide	Advance written testimony + request to give remote oral testimony by Zoom videoconference

TESTIFIER INFORMATION

Full Name	Melodie Aduja
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TESTIMONY DETAILS

Agenda Item	Info 01: United States Environmental Protection Agency and Hawaii Department of Health discussion
Your Position on Matter	Oppose
Representing	Organization
I wish to provide	Advance written testimony + request to give remote oral testimony by Zoom videoconference

Written Testimony (if entered on the online form; otherwise see attached)

ACKNOWLEDGEMENTS

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Environmental Caucus of The Democratic Party of Hawai'i

January 23, 2023

Aloha, Members of the Board of Water Supply!

The Environmental Caucus of the Democratic Party of Hawaii strongly supports the courageous position that BWS and its senior staff, Ernie Lau and Erwin Kawata, have been taking in forcefully pushing back against the so-called "Consent Order" being negotiated between the US Department of Defense (Navy and Defense Logistics Agency) and the US Environmental Protection Agency (EPA).

We agree that, as far as the people of Hawaii and particularly Oahu are concerned, we DO NOT CONSENT to that proposal.

We are sure that others who testify today will more than adequately address the substantive scientific and medical issues, and we support that testimony. We will focus on PROCESS and legal issues:

1. We are seriously dismayed and disappointed that the entire State of Hawaii government in general, and its Department of Health in particular, were AWOL at the "town hall" that the Navy, DLA, and EPA presented last Wednesday, January 18, 2023.

2. We also note that no members of the Legislature or Honolulu City Council were present.

3. BWS and Oahu's residents need the support of the State government and other agencies of the Honolulu County government in responding to the so-called "Consent Order."

4. We agree with BWS that the State Department of Health's Emergency Orders of December 6, 2021, and May 6, 2022, must remain in effect and must not be superseded by the so-called "Consent Order".

5. We agree that any governing Order relating to the Red Hill Fuel Storage Facility must provide for "a seat at the table" for BWS, which is the ONLY government agency that we currently trust to protect us.

6. We urge everyone to pay more attention to Act 121 of the 2022 Session of the Legislature, which directed State DOH to acquire federal funds to build and operate a new toxicology laboratory, which is essential to provide Hawaii's state and county governments, including BWS, with timely and reliable reports on the environmental contaminants that are coming from the Red Hill facility.

Thank you again. Imua!

Mahalo nui loa,

Alan Burdick and Melodie Aduja
Co-chairs, Environmental Caucus of the Democratic Party of Hawaii

From: contactus=notify2.boardofwatersupply.com@mg.boardofwatersupply.com on behalf of contactus@notify2.boardofwatersupply.com
To: Stella Bernardo; Board of Water Supply Board of Directors
Subject: Board Meeting Testimony Submittal or Request - January 23, 2023 - Kate Righter
Date: Monday, January 23, 2023 11:43:16 AM

BWS TESTIMONY SUBMITTAL / REQUEST TO TESTIFY FORM

Form Submitted on:	1/23/2023 11:42:51 AM
Meeting Date:	January 23, 2023
I wish to provide	Advance written testimony

TESTIFIER INFORMATION

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TESTIMONY DETAILS

Agenda Item	Info 01: United States Environmental Protection Agency and Hawaii Department of Health discussion
Your Position on Matter	I wish to comment
Representing	Self
I wish to provide	Advance written testimony

I support the concerns that BWS has stated publicly about the proposed

Written Testimony (if entered on the online form; otherwise see attached)	Consent Order, and the importance of transparency and sharing of data with both the public and the BWS. Access to clean water is fundamental to our lives here on this island. Every day Red Hill stands full of jet fuel and AFFF increases the risk that yet another spill will further pollute our aquifers. The Navy needs to have clear and prompt deadlines for emptying the Red Hill Bulk Fuel Storage Facility, and strict penalties for noncompliance. The longterm effects and dangers of PFAS in our water from the recent AFFF spill are still not fully known. It is vital that we have careful monitoring of the contaminants in our water supply and promptly inform relevant state agencies and residents on the water lines of the levels and the risks involved.

ACKNOWLEDGEMENTS

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From: contactus=notify2.boardofwatersupply.com@mg.boardofwatersupply.com on behalf of contactus@notify2.boardofwatersupply.com
To: Stella Bernardo; Board of Water Supply Board of Directors
Subject: Board Meeting Testimony Submittal or Request - January 23, 2023 - Noel Shaw
Date: Monday, January 23, 2023 11:54:07 AM

BWS TESTIMONY SUBMITTAL / REQUEST TO TESTIFY FORM

Form Submitted on:	1/23/2023 11:53:14 AM
Meeting Date:	January 23, 2023
I wish to provide	Advance written testimony

TESTIFIER INFORMATION

Full Name	Noel Shaw
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TESTIMONY DETAILS

Agenda Item	Info 01: United States Environmental Protection Agency and Hawaii Department of Health discussion
Your Position on Matter	I wish to comment
Representing	Self
I wish to provide	Advance written testimony

Aloha BWS Directors and special guest from the EPA and DOH. My name is Noel

Written Testimony (if entered on the online form; otherwise see attached)

Shaw and I am a mother of three and fourth generation Hawaiian Homesteader currently residing in our families homestead in Kalāwahine on the island. My comments today are in reflection of the last meeting and all of the meetings that have happened since. DOH and EPA It was extremely off putting that the EPA and DOH did not participate in receiving testimony from those who came to testify in person at the last meeting. One way that we are able to actively hold governing authorities accountable and get to interact directly with the decision making powers is in these space. I am grateful the EPA has made space with their "town hall" and "open house" to give something to hearing from people- AND I have an expectation of them to continue to meaningfully receive us. EPA I advise that you take a deep dive in to some Hawaiian History and cultural education. This can be done in your off work hours via instagram and thanks to content creators like @kanaeokana and @ainamomona as that's the time many of us have to use to participate here. You doing any work here requires you to have a basic understanding of how we are our own and as such require you to come accordingly. See the 107 STAT. 1510 PUBLIC LAW 103-150--NOV. 23- Apology Bill. for example. DOH, you being at the open house was great AND you should know better as to how meetings of this manner are conduct in Hawai'i- especially on this issue. you know the importance of wai to us as a life giving resource and as a culturally essential starting point. I am upset about how your representatives spoke on the PFAS spill- completely down playing the magnitude of what PFAS poisoning is ("you could drink a glass of water and you'd be fine- it's the long term exposure we're concerned about"- I invite you to drink a glass and let us watch if so). You also failed to establish clearly that there is much we don't know yet and that's being discovered in real time. You also failed to establish any my trust in you to act PREVENTATIVELY and instead we will continue to be on the reactive side UNLESS you are financially resourced to invest for your own family to take precautionary steps. The DOH, like the EPA, is supposed to work toward keeping us all well, and part of that demands of us that we work harder to act on the preventive side of this. That means REALLY removing all the fuel out of those tanks NOW so no PFAS or other pollutants has to continue to be in those spaces and the threat of continued release is maintained. I advise the DOH allocate more resources to acting preventatively AND assessing whether their approach to this crisis is one taken on with sensitivity. If the only time DOH does so is when their presenting evidence collected from military impacted families- like they did when the findings of the Navy Water Contamination Follow Up Survey was shared- we are at a loss because they aren't the only ones. I advise that the DOH commit to doing a general survey on the whole island regarding the Navy's Contamination of our Water- looking at who has switched to alternative water resources and is still drinking from them AND seeing how people's mental health has been since the incident happened in 2021. Please don't wait for me to have a sign that reads. "I bathed my baby in jet fuel." to act- the people of O'ahu are worth more. BWS Please explore what penalties you can impose upon the Navy. If you are the hands that turn off and on the faucet. consider not turning theirs on until we get what we need done. Malama Pono. Noel

ACKNOWLEDGEMENTS

Terms and Agreement Check Box

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From: contactus=notify2.boardofwatersupply.com@mg.boardofwatersupply.com on behalf of contactus@notify2.boardofwatersupply.com
To: Stella Bernardo; Board of Water Supply Board of Directors
Subject: Board Meeting Testimony Submittal or Request - January 23, 2023 - Malia Marquez
Date: Monday, January 23, 2023 12:02:06 PM

BWS TESTIMONY SUBMITTAL / REQUEST TO TESTIFY FORM

Form Submitted on:	1/23/2023 12:01:13 PM
Meeting Date:	January 23, 2023
I wish to provide	Advance written testimony

TESTIFIER INFORMATION

Full Name	Malia Marquez
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TESTIMONY DETAILS

Agenda Item	Info 01: United States Environmental Protection Agency and Hawaii Department of Health discussion
Your Position on Matter	Oppose
Representing	Self
I wish to provide	Advance written testimony
Written	

Testimony (if entered on the online form; otherwise see attached)	I oppose the consent order proposed by the EPA. NO detailed outline. NO accountability repercussions. Mahalo BOW for being diligent on this matter.

ACKNOWLEDGEMENTS

Terms and Agreement Check Box	I UNDERSTAND and ACCEPT that all public meeting transcripts and testimony are public documents. Therefore, any testimony that is submitted orally or in writing, electronically or in person, for use in the meeting process is public information.

ITEM FOR INFORMATION NO. 2

"January 23, 2023

UPDATE ON THE COST OF SERVICE STUDY

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

Chair and Members:

Subject: Update on the Cost of Service Study

Joseph Cooper, Waterworks Controller, Finance Division, will present an update on the Cost of Service Study.

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.

At 7:10 PM, Raelynn Nakabayashi, Executive Assistant I, Executive Support Office, joined the Board meeting in the Board room.

Board Member Sniffen asked what a moderate rate increase of 8% means.

Mr. Joseph Cooper responded that the rate increase would support the revenue to achieve the Capital Improvement Programs (CIP). However, the ultimate decision would be up to the Board to decide.

Manager Lau further explained using his water bill as an example. His single-family home typically uses 4,000 gallons of water a month, which could cost $30 - $40 a month. If there were an increase of 10%, that would be equivalent to $4 more a month. However, that would be for a home that doesn't quite reach the higher tiers. He explained that the tier system is by block ratings. The more water used, the higher the water cost. The tier system is used to encourage water conservation. Manager Lau shared that while trying to meet the general revenue requirements and reach a rate structure that the Board will agree on, various concerns, such as household size and community impact, are considered.

Board Member Sniffen commented that he's never been surprised with his water bill but shocked with the sewer portion of the bill. He stated that if the BWS bill only consisted of water, a 10% increase wouldn't seem too much.

Manager Lau stated that 80% of the BWS customers receive bills with water and sewer combined. He mentioned that the Department of Environmental Services is also currently doing a rate study and planning on a rate increase. Therefore, customers with integrated billing may see a significant increase in their bills. Manager Lau shared that he intends to speak to the Mayor and Managing Director about separating the water and sewer bill. He asked Board Member Sniffen if he thought 10% seemed like a reasonable rate increase.

Board Member Sniffen responded that he felt that 10% seems reasonable; however, as costs are rising, he wonders if acquiring funding now could help in the future.

Manager Lau stated that his approach was to have regular small incremental rate increases over time versus no increase followed by a significant rate increase.

Board Member Sniffen commented that a significant rate increase might be necessary considering inflation.

Manager Lau shared that the BWS had a surplus in the previous rate increase; therefore, the subsequent rate increase was made lower to balance the account. Since then, the BWS has adopted a Financial Policy.

Mr. Cooper stated that he would provide the Board Members with the BWS Financial Policy. He mentioned that the timeline to implement the BWS's following rate schedule isn't until January 2024.

Manager Lau stated that the BWS goes through a process before a rate increase which is part of the cost study. The BWS meets with the community, Small Business Regulatory Review Board, the Board, and Stakeholders, followed by the Board's adoption.

Chair Andaya encouraged all Board Members to attend the Stakeholder Advisory Group meetings, which helped him to understand the process.

Board Member Anthony inquired if there are other ways the BWS can utilize other federal resources besides the American Rescue Plan Act (ARPA).

Manager Lau responded the BWS continues to search for other federal funding. The DOH controls some federal funding since it's coming through the EPA. He shared that some federal funding allows for flexibility in payment plans.

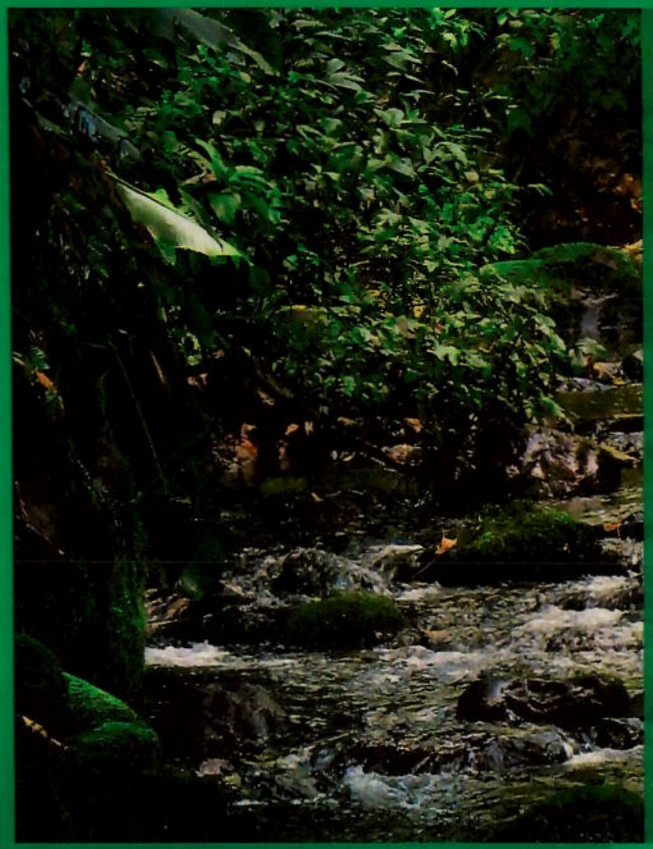
Mr. Cooper also shared that federal funding, such as the ARPA fund, is money granted and doesn't need to be paid back.

Chair Andaya asked what the following steps would be to determine the next rate increase.

Mr. Cooper stated that determining the next rate is still in the beginning stages. However, he shared that the BWS has asked for a Water Infrastructure Finance and Innovation Act (WIFIA) loan of $105 M through the EPA, allowing repayment flexibilities.

Board Member Anthony inquired if there are increases across the Board for all tier types in determining the percentage increase, and if there's an available widget that shows the percentage increase over time.

Mr. Cooper said they can set different percentage rates for each tier and customer category.



UPDATE ON THE COST OF SERVICE STUDY

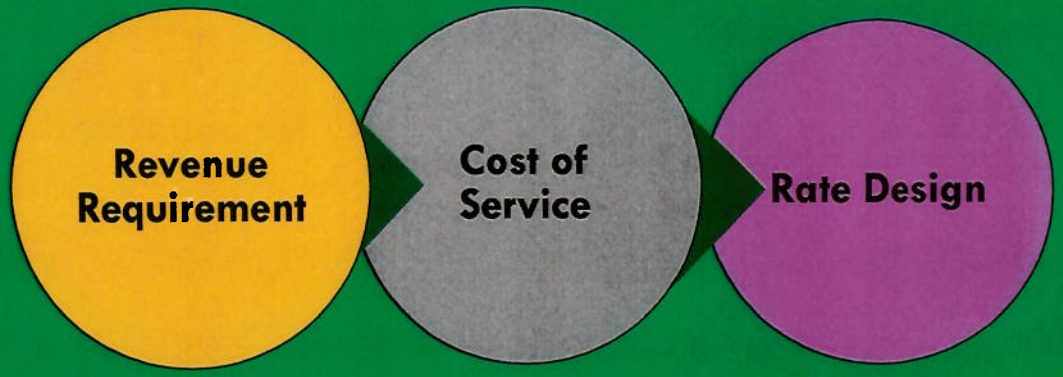
Joe Cooper
Waterworks Controller

January 23, 2023
boardofwatersupply.com

OBJECTIVES

- Provide an Overview of the Cost of Service Study and Rate Making Process
  - External drivers of revenue requirement
  - Cost of service allocations
- Review the Long Range Financial Plan
- Discuss water demand trends
- Seek your initial input on potential rate increase scenarios

THREE PRIMARY STEPS OF RATE MAKING

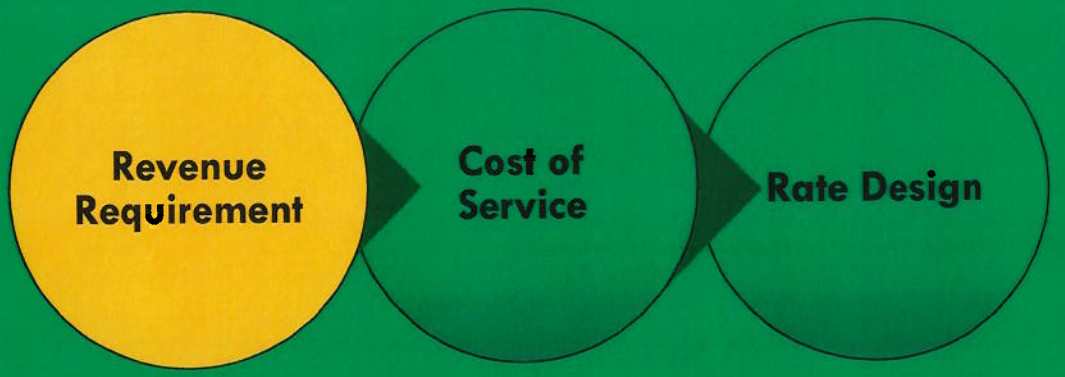


Compare revenue with operating and capital costs

Identify differences in costs to serve each of the customer classes

Consider level and structure of rate design for each class of service

THREE PRIMARY STEPS OF RATE MAKING



Compare revenue with operating and capital costs

Identify differences in costs to serve each of the customer classes

Consider level and structure of rate design for each class of service

4 MAJOR DRIVERS OF REVENUE REQUIREMENT AND RATES

Operations & Maintenance	Operations and maintenance costs
Capital Expenses Paid in Cash vs. Debt	How the Capital Improvement Program is financed
Reserves and Working Capital	Financial policies for credit ratings and stability
Trends and Risks	Preparedness to respond to changing trends and risks

INFLATION'S IMPACT ON PURCHASING POWER

Annual Inflation Rate

BWS Annual Revenue Increase

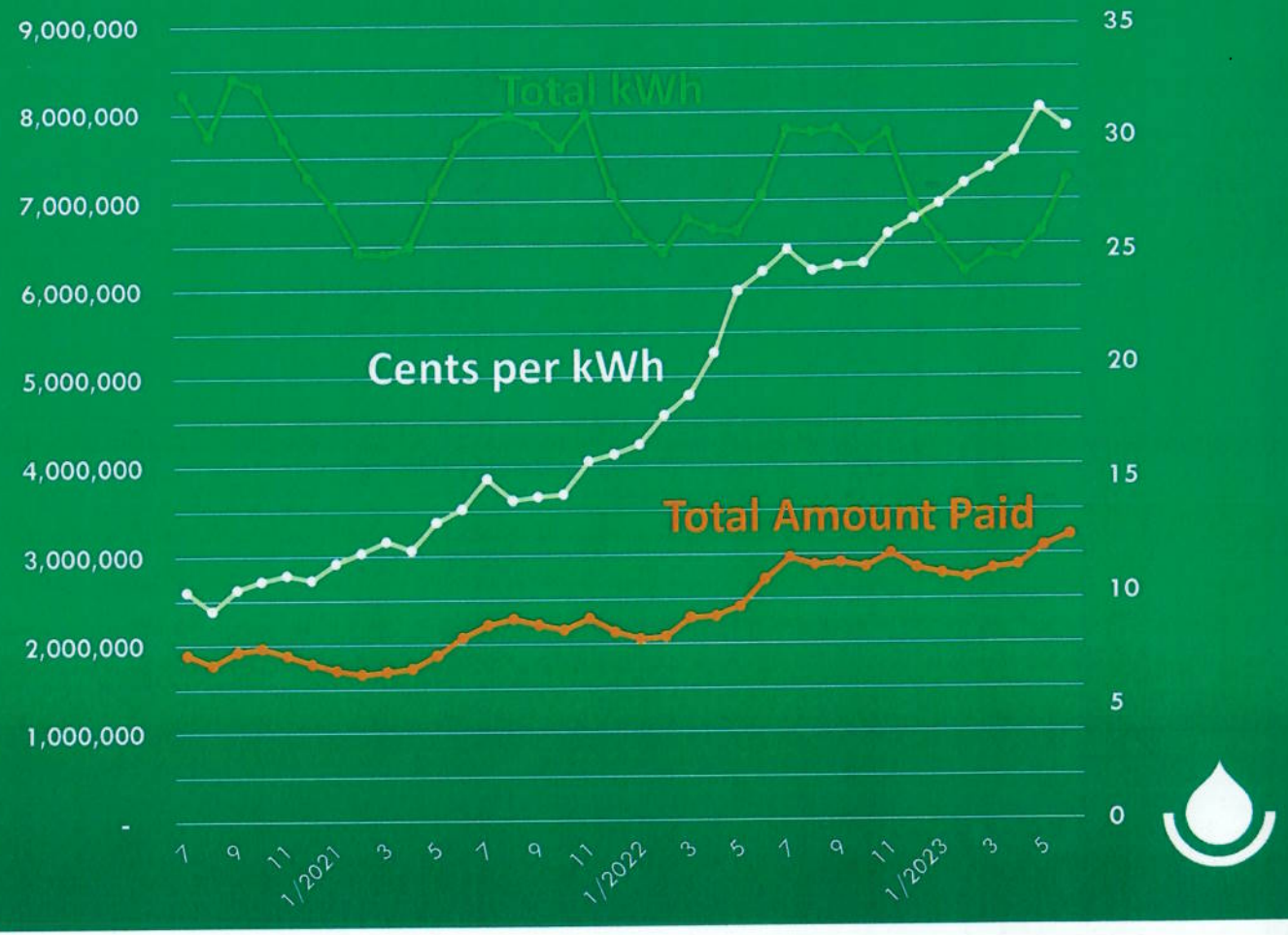
Inflation data/projections from UHERO, Sept. 2022

RED HILL RESPONSE REQUIRES INVESTMENTS IN NEW BWS FACILITIES IN EXCESS OF $200 MILLION

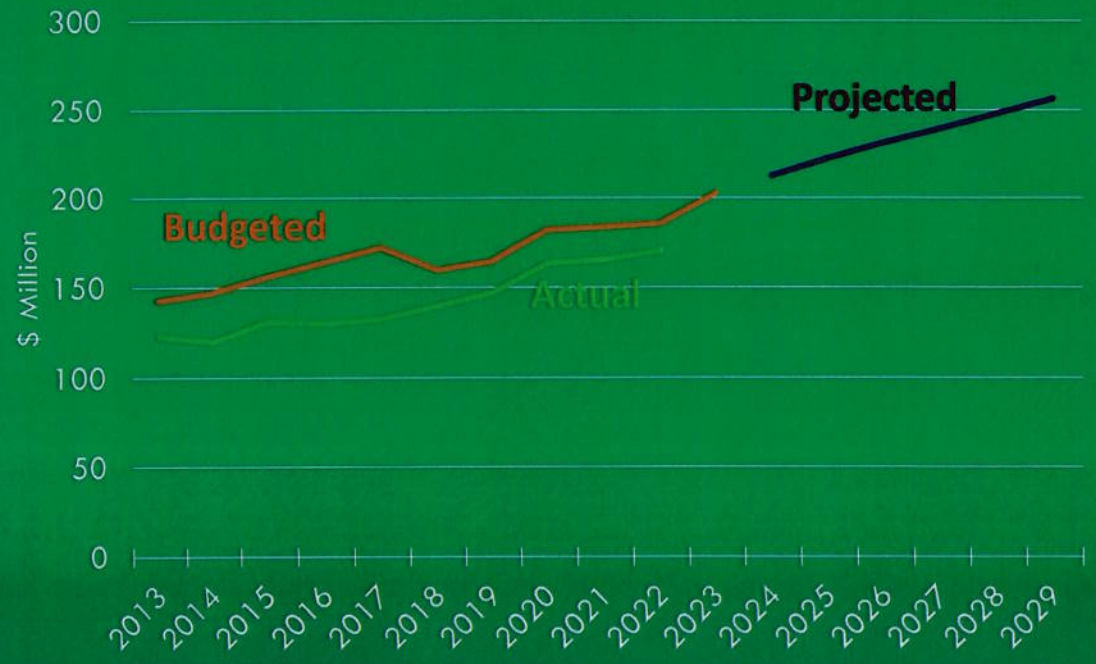
- Monitoring wells for information on how the contamination is moving and exploratory wells to find new sources outside of its path - $30 million
- Replace 17.5 million gallons per day of potable water well pumping capacity - $195 million
- Potential additional capital costs yet to be determined
- Does not include any potential increases to Operations & Maintenance costs
- Cost recovery from Navy is undetermined
- BWS has requested assistance from Hawaii Congressional Delegation

POWER COSTS TRENDING SHARPLY UPWARD

- Power costs have risen dramatically
- Remain high and volatile
- Estimates for FY 2023 range from $30.6 to 39.8 million

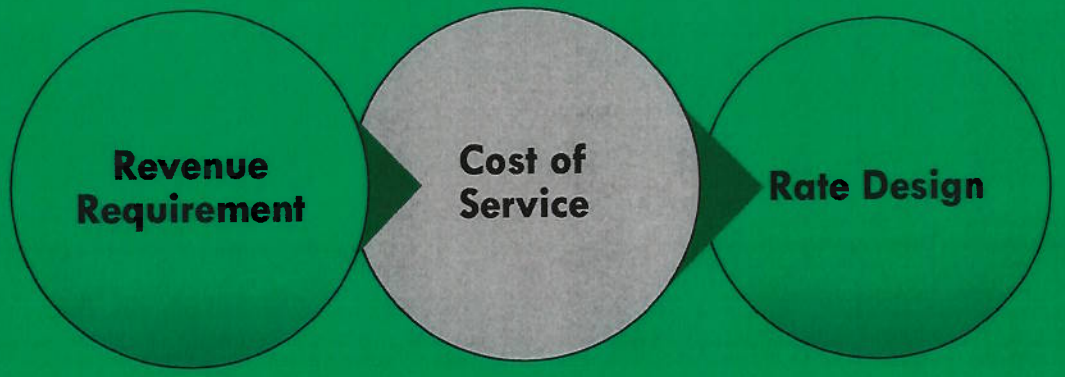


ACTUAL AND PROJECTED OPERATIONS & MAINTENANCE COSTS ($ MILLION)



- **3.85% ACTUAL** 10-year average increase
- **3.78% BUDGETED** 10-year average increase

THREE PRIMARY STEPS OF RATE MAKING



Compare revenue with operating and capital costs

Identify differences in costs to serve each of the customer classes

Consider level and structure of rate design for each class of service

COST OF SERVICE DEFINED

A Cost of Service (COS) analysis determines the cost of providing water service to each distinct customer class, following guidelines from the AWWA Manual M1: *Principles of Water Rates, Fees and Charges.*

Single-family

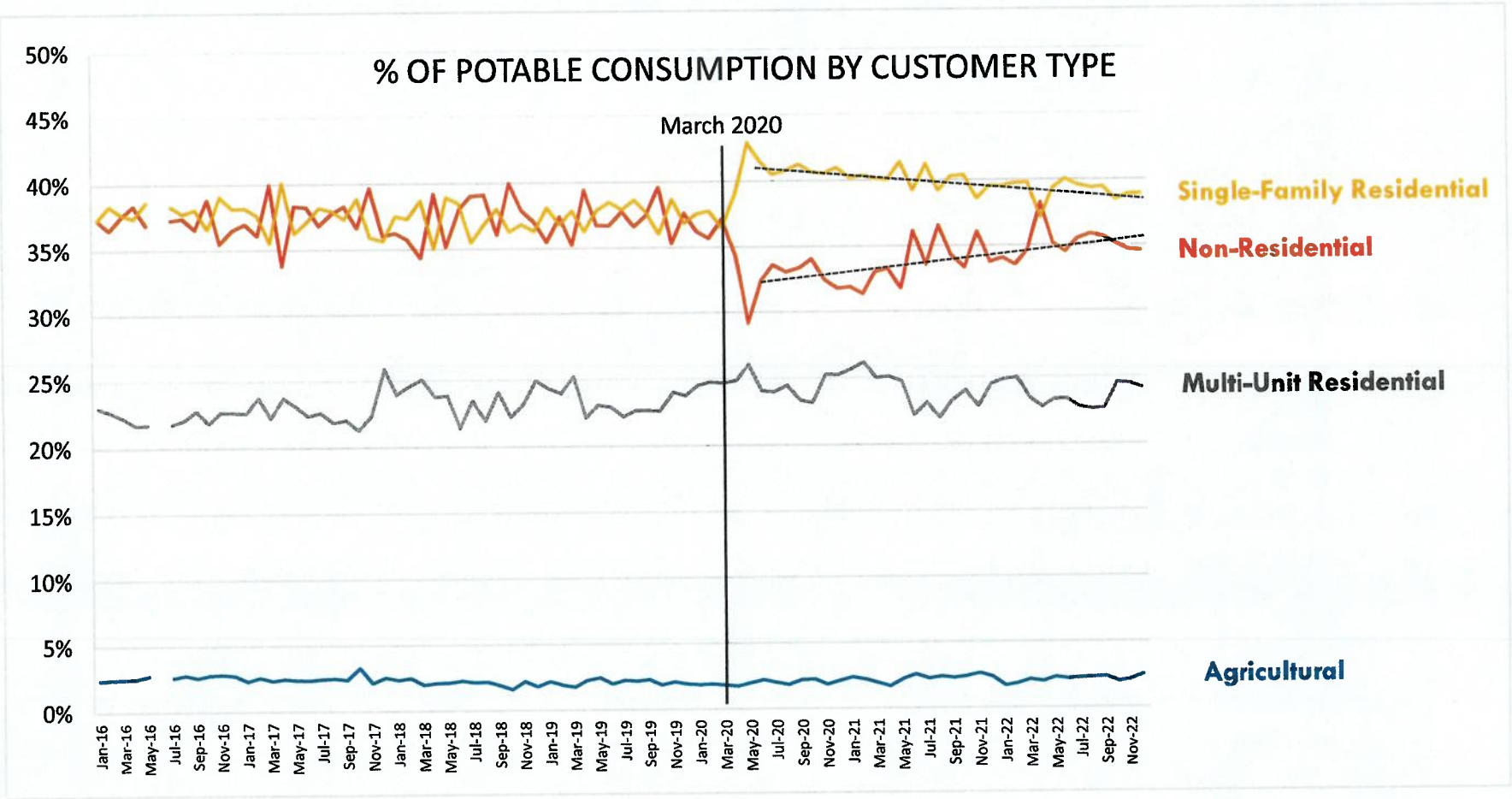
Multi-family

Commercial/Industrial

Agricultural

- Compare costs to rate-based revenue
- Show the impact of the rate structure on varied customer classes
- Inform rate policies and decisions about the rate structure

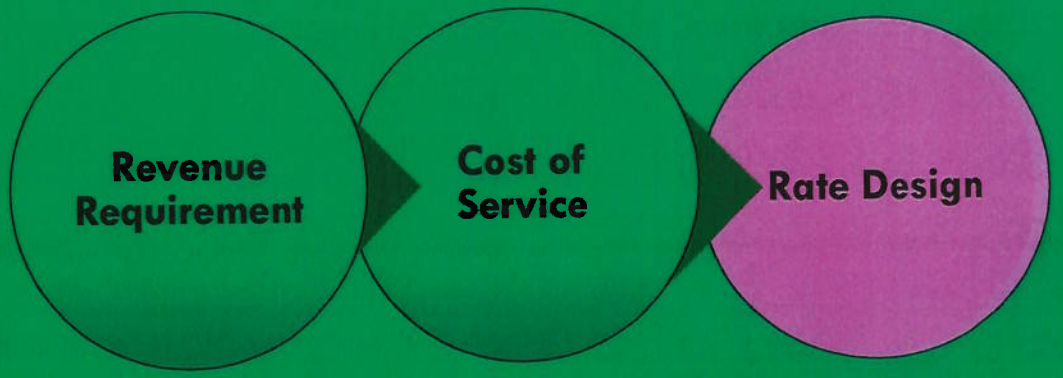
COVID-19 CAUSED CHANGES IN CUSTOMER WATER USE PATTERNS



ADJUSTMENTS TO COST OF SERVICE FROM PREVIOUS RATE STUDY

Customer Class	Cost of Service Recovery FY 2019	Implemented Recommendation
Single-Family Residential	90%	About 95% recovery by FY 2023
Multi-Unit Residential	109%	Bring down to 100% by FY 2023
Agricultural	60%	Maintain 60%
Non-Potable	77%	Bring to 80%
R-1	70%	Maintain about 70%
RO	55%	Bring to about 63%
Non-Residential	120%	Balance downward and provide source of funds for community values

THREE PRIMARY STEPS OF RATE MAKING



Compare revenue with operating and capital costs

Identify differences in costs to serve each of the customer classes

Consider level and structure of rate design for each class of service

TIERED **RESIDENTIAL** WATER RATES

Single-Family

Tier	Gallons/ du/month	Current Rate
1 - EssN	0 to 2,000	$4.46
2	2,001 to 6,000	$5.25
3	6,001 to 30,000	$5.85
4	More than 30,000	$9.25

Multi-Unit

Tier	Gallons/ du/month	Current Rate
1 - EssN	0 to 2,000	$3.77
2	2,001 to 4,000	$4.43
3	4,001 to 10,000	$5.03
4	More than 10,000	$5.98

EssN – Essential needs
Rates are in $ per thousand gallons
du – dwelling unit

NON-RESIDENTIAL WATER RATES

Flat Rate
$5.27

Examples: hotels, restaurants, government, shopping centers, hospitals, retail

AGRICULTURAL WATER RATES

Tier	Gallons/ du/month	Current Rate
1 - EssN	0 to 2,000	$4.46
2	2,001 to 6,000	$5.25
3	More than 6,000	$2.12

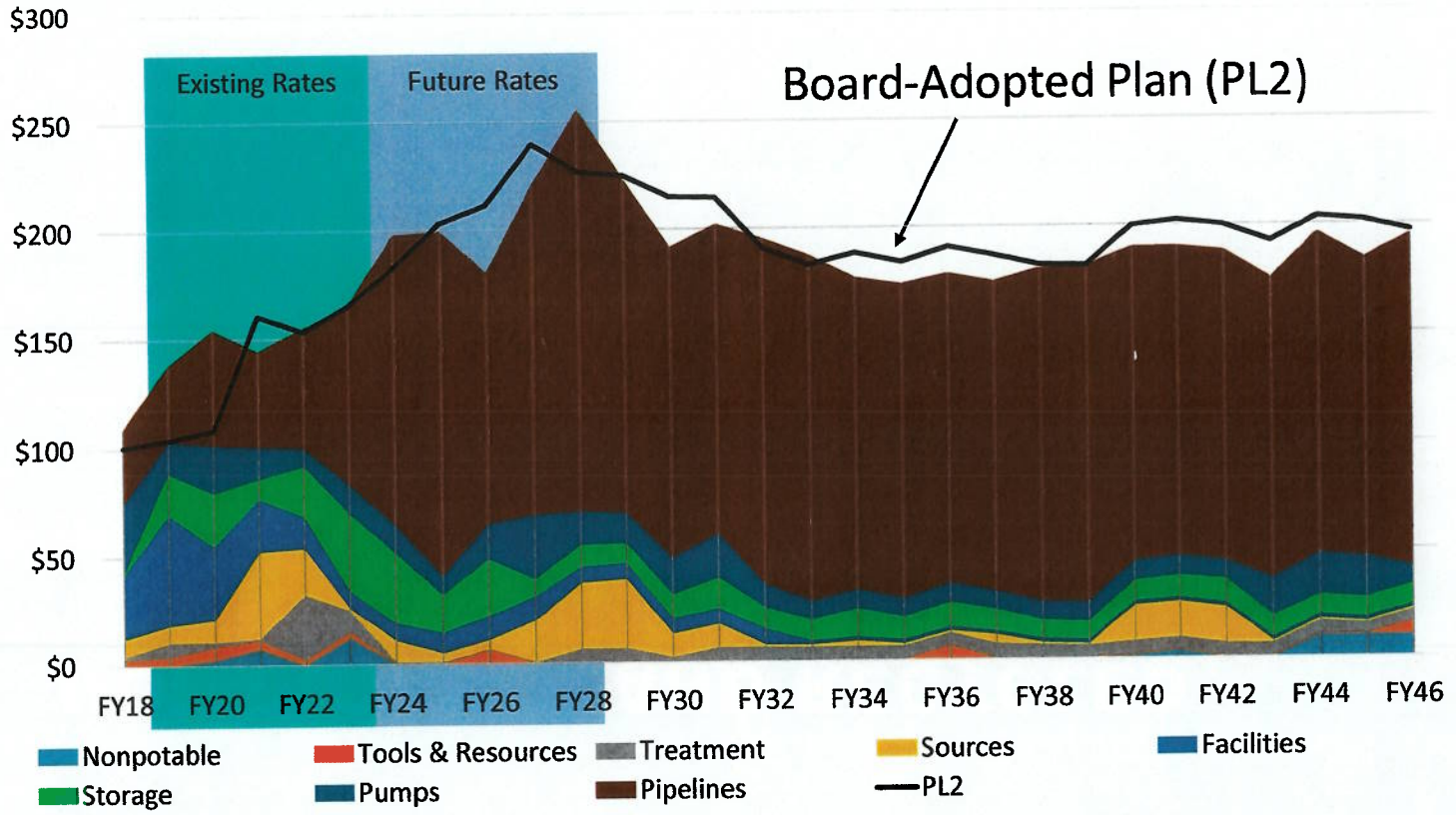
EssN – Essential needs
Rates are in $ per thousand gallons
du – dwelling unit

NON-POTABLE AND RECYCLED
WATER RATES

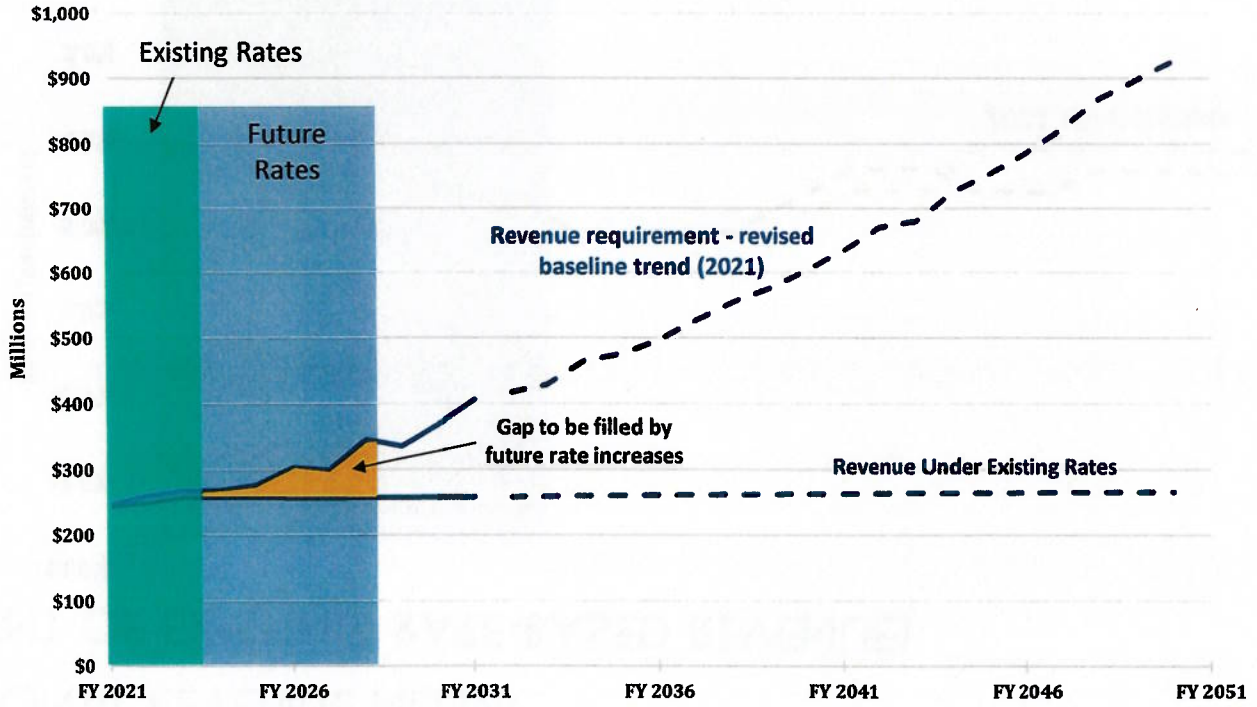
Type	Current Rate
Non-Potable	$2.90
R-1 Golf	$0.65
R-1 Other	$1.96
RO	$6.36

Rates are in $ per thousand gallons

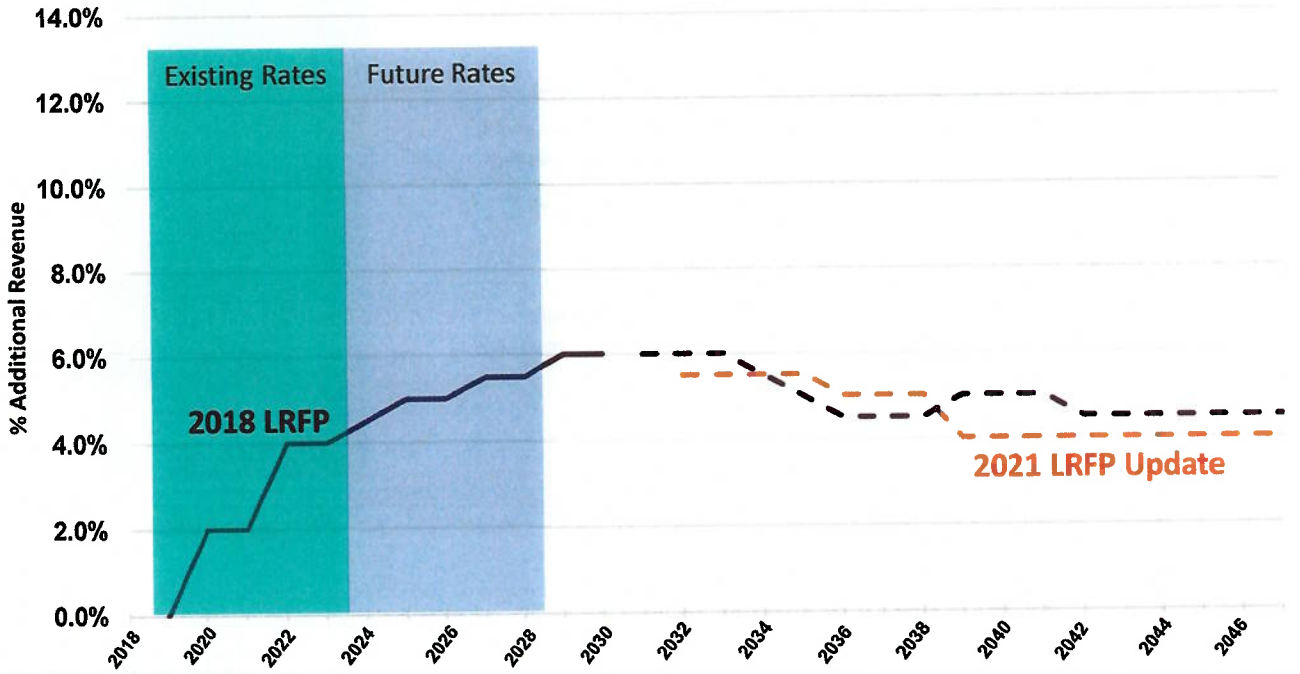
30-YEAR CAPITAL IMPROVEMENT PROGRAM ($ MILLION 2016)



REVENUE REQUIREMENT FROM UPDATED LRFP 2021 ($ MILLION 2020)

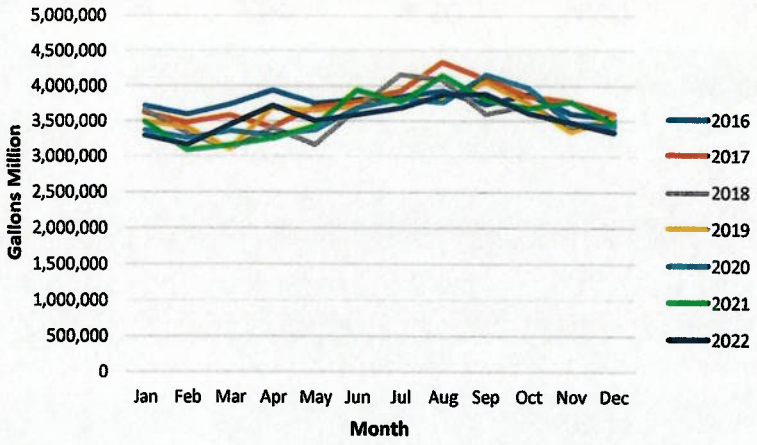


ADDITIONAL REVENUE NEEDS
(PERCENT OF EXISTING RATE-BASED REVENUE)



ASSESSMENT OF WATER CONSUMPTION TRENDS

Monthly Consumption



Annual Consumption

Calender Year	Amount (gallons millions)	Deviation from Average
2016	45,045,131	3.5%
2017	45,079,503	3.6%
2018	42,746,303	-1.8%
2019	43,297,289	-0.5%
2020	42,912,706	-1.4%
2021	42,933,541	-1.3%
2022	42,568,222	-2.2%

RATE-MAKING ASSUMPTIONS

- No growth in water demands
- Updated Operations & Maintenance cost projections
- Inflation applied to Operations & Maintenance and CIP

Fiscal Year	2024	2025	2026	2027	2028	2029
Inflation Rate %	5.00	4.50	4.00	3.50	3.50	3.50

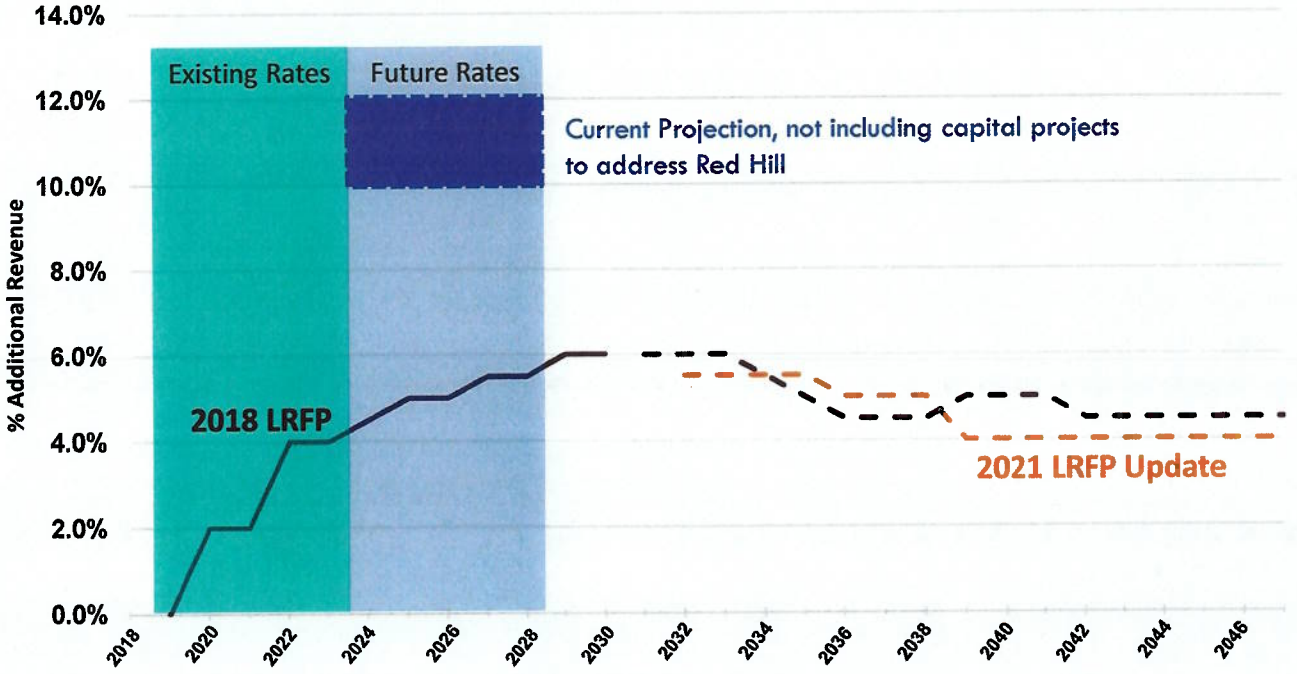
- $50 million in American Rescue Plan Act (ARPA) grants
- Cost of money market-based debt 5% (up from 3.5%)
- Capital projects to address Red Hill delay other CIP projects

PRELIMINARY SCENARIOS OF GIVEN CURRENT CONDITIONS

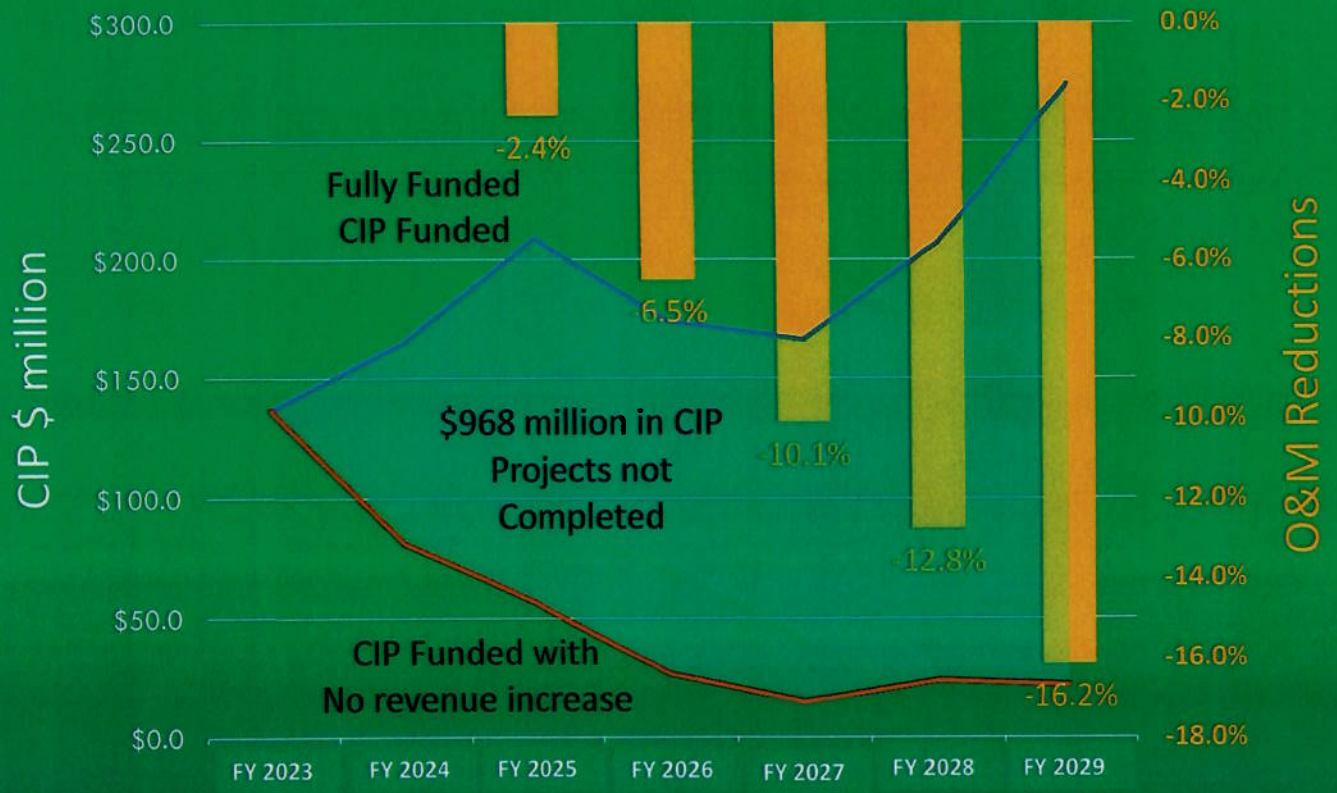
- What revenue increases would be required to stay on plan?
- What would be the impacts of not raising rates now?
- What are some more moderate options?

Note: Increases in revenue requirement don't necessarily equal the same increase in rates

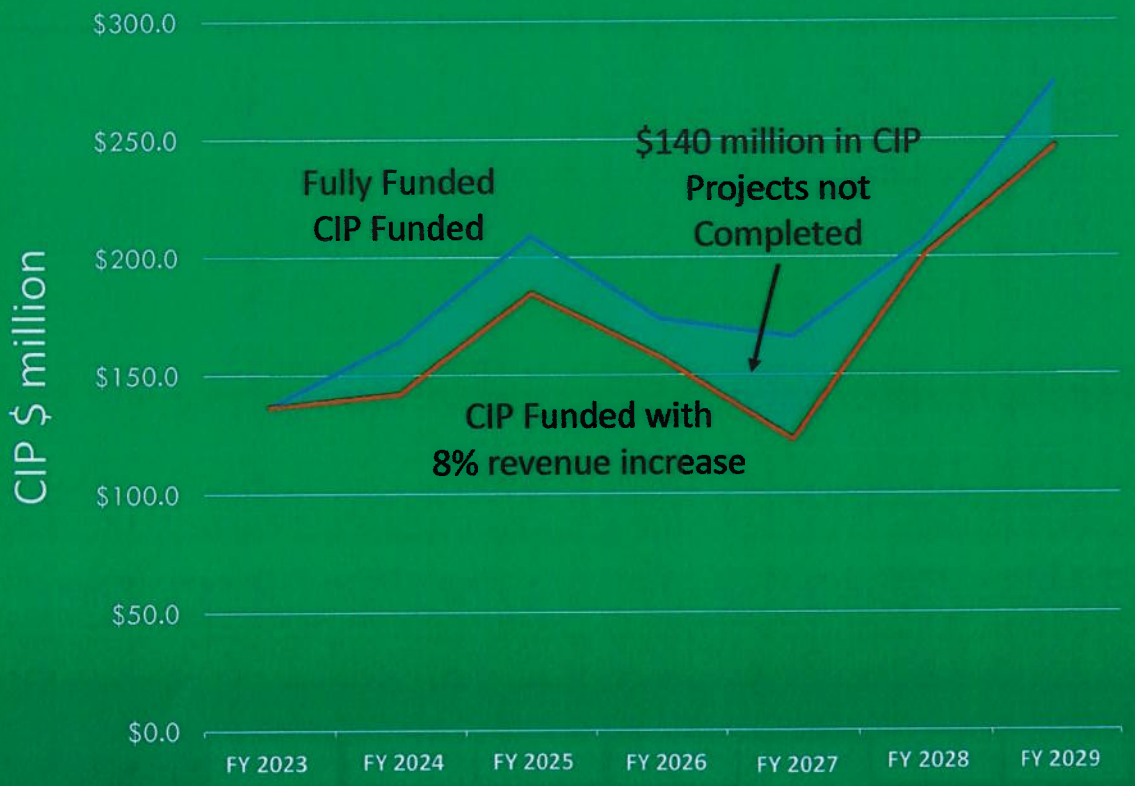
ADDITIONAL REVENUE NEEDS
(PERCENT OF EXISTING RATE-BASED REVENUE) TO STAY ON PLAN



POTENTIAL SCENARIO – NO INCREASES FOR NOW

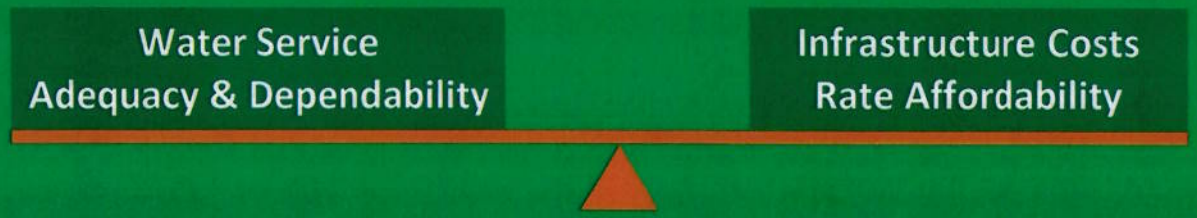


POTENTIAL SCENARIO – "MODERATE" 8% PER YEAR



O&M Reductions

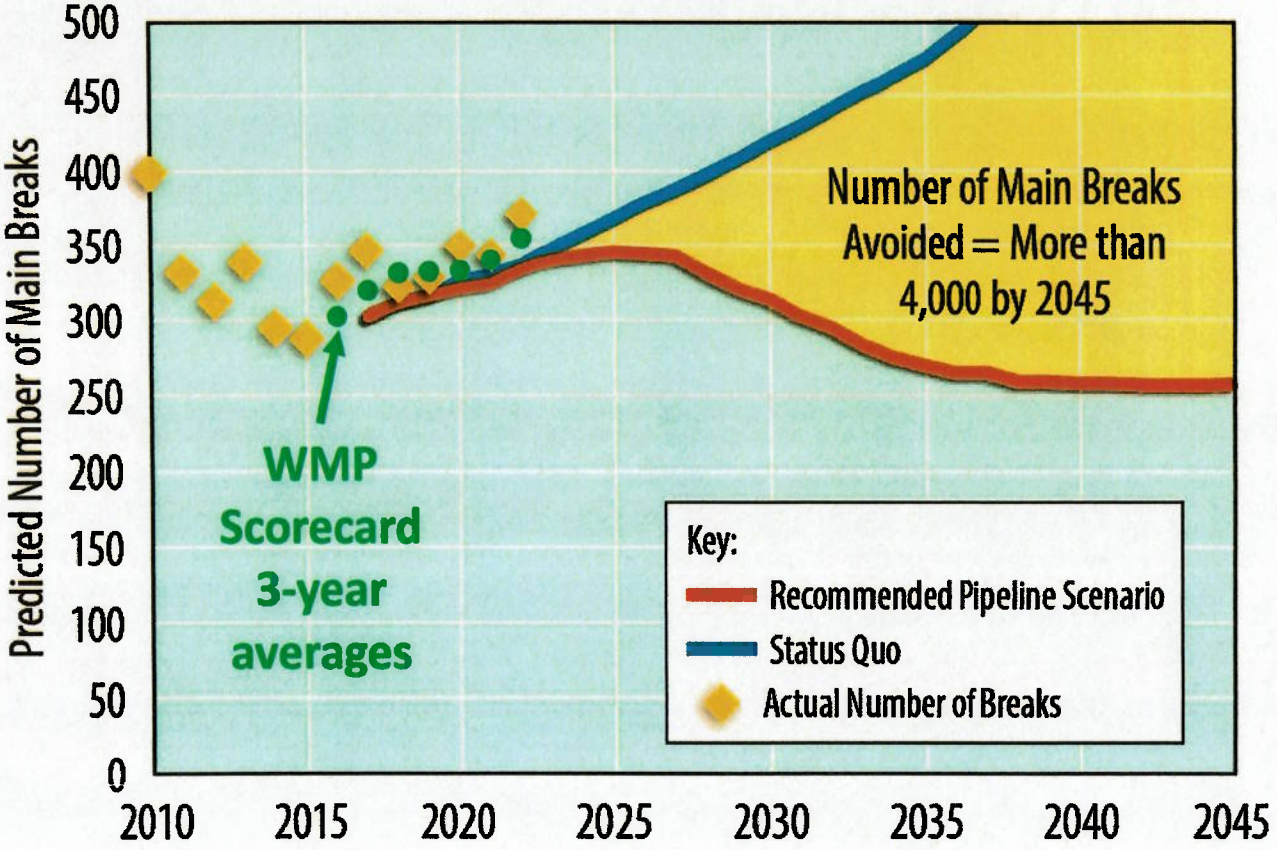
RATE INCREASES WILL BE REQUIRED TO MAINTAIN CURRENT LEVELS OF SERVICE



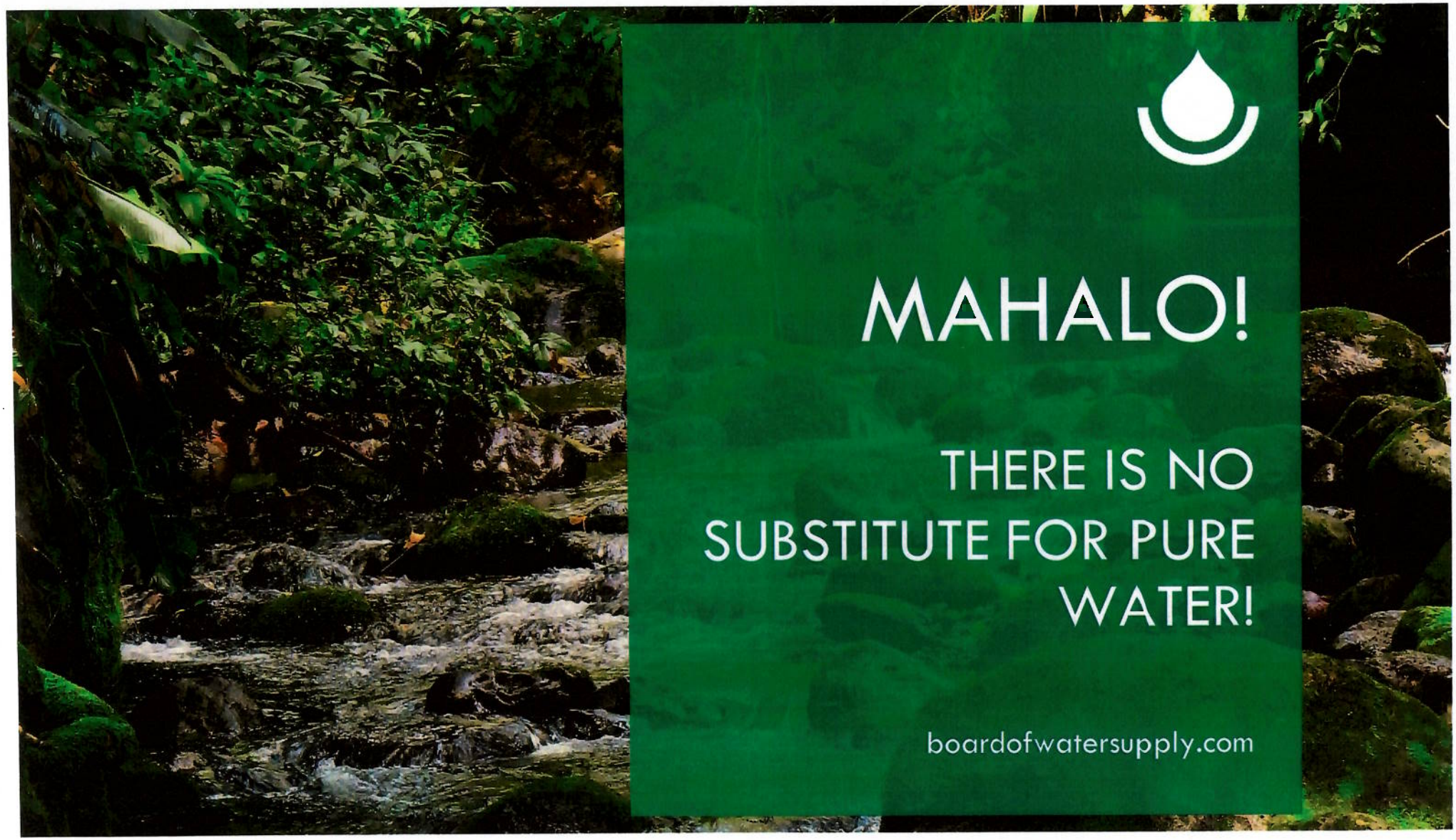
WHAT'S AT RISK WITHOUT ADEQUATE RATE INCREASES?

- **Ability to implement the Capital Improvement Program**
- **Ability to Provide Alternate Water Sources due to Red Hill**
- **Resiliency**
  - Changing economic conditions
  - Natural disasters
  - Watershed protection
  - Climate change
- **High Bond Ratings** – BWS customers benefit from high bond ratings that reduce costs of borrowing
  - S&P Global Ratings: AAA, stable outlook
  - Fitch: AA+, positive outlook
  - Only agency in Hawaii to receive AAA
- **Compliance with Financial Policies**
  - Target 180 days working capital, and never less than 60 days
- **Infrastructure Reliability**

IS AN INCREASE IN MAIN BREAKS AN ACCEPTABLE TRADEOFF?



QUESTIONS / DISCUSSION


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

ITEM FOR INFORMATION NO. 3

"January 23, 2023

ENVIRONMENTAL PROTECTION AGENCY (EPA) WATER INFRASTRUCTURE FINANCE AND INNOVATION ACT (WIFIA) PROGRAM FINANCING

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

Chair and Members:

Subject: Environmental Protection Agency (EPA) Water Infrastructure Finance and Innovation Act (WIFIA) Program Financing

Joseph Cooper, Waterworks Controller, Finance Division, will be making a presentation on the WIFIA Program Financing.

Respectfully Submitted,

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

Attachment"

The foregoing was for information only.

DISCUSSION: Item for Information No. 3 was deferred.

ITEM FOR INFORMATION NO. 4

"January 23, 2023

RECRUITMENT STATUS

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

Chair and Members:

Subject: Recruitment Status

Michele L. Thomas, Executive Assistant, Human Resources Office, will be presenting an update on the Recruitment Status for the period of October 2022 to December 2022.

Respectfully Submitted,

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

Attachment"

The foregoing was for information only.

DISCUSSION: Item for Information No. 4 was deferred.

ITEM FOR INFORMATION NO. 5

"January 23, 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 December 2022. Kaimuki, Pearl City, Kaluanui, and Waialua are in Caution Status. Punaluu is in Alert Status. The monthly production average for December 2022 was 129.27 million gallons per day.

The Board of Water Supply rainfall index for the month of December 2022 was 64 percent of normal, with an identical 5-month moving average of 64 percent. As of January 3, 2023, the Hawaii Drought Monitor shows zero drought to abnormally dry conditions moving roughly south-southwest and north-northwest across Oahu. The National Weather Service is forecasting above-normal precipitation through March 2023.

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

Respectfully Submitted,

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

Attachment"

The foregoing was for information only.

DISCUSSION: Item for Information No. 5 was deferred.

ITEM FOR INFORMATION NO. 6

"January 23, 2023

WATER MAIN REPAIR REPORT FOR DECEMBER 2022

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

Chair and Members:

Subject: Water Main Repair Report for December 2022

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

Respectfully submitted,

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

Attachment"

The foregoing was for information only.

DISCUSSION: Item for Information No. 6 was deferred.

MOTION TO RECESS INTO EXECUTIVE SESSION	There being no further business Chair Andaya at 8:02 PM called for a motion to adjourn the Open Session. Na'alehu Anthony so moved; seconded by Edwin Sniffen and unanimously carried. Upon unanimous approved motion, the Board recessed into Executive Session Pursuant to [HRS § 92-5 (a)(4)] at 8:03 PM to Consider Issues Pertaining to Matters Posted for Discussion at an Executive Session.
OPEN SESSION	The Board reconvened in Open Session at 8:40 PM.
MOTION TO ADJOURN	There being no further business Chair Andaya at 8:41 PM called for a motion to adjourn the Regular Session. Jonathan Kaneshiro so moved; seconded by Edwin Sniffen and unanimously carried.

The minutes of the Regular Meeting held on January 23, 2023 are respectfully submitted,

JOY CRUZ-ACHIU

APPROVED:

BRYAN P. ANDAYA
Chair of the Board

FEB 27 2023
Date

THE MINUTES OF THE REGULAR MEETING HELD ON JANUARY 23, 2023, WERE APPROVED AT THE FEBRUARY 27, 2023, BOARD MEETING			
	AYE	NO	COMMENT
BRYAN P. ANDAYA	X		
KAPUA SPROAT			ABSTAIN
MAX J. SWORD	X		
NA'ALEHU ANTHONY	X		
JONATHAN KANESHIRO	X		
DAWN B. SZEWCZYK	X		
EDWIN H. SNIFFEN	X		