

BOARD OF WATER SUPPLY

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



December 7, 2021

RICK BLANGIARDI, MAYOR

BRYAN P. ANDAYA, Chair
KAPUA SPROAT, Vice Chair
RAY C. SOON
MAX J. SWORD
NA'ALEHU ANTHONY

JADE T. BUTAY, Ex-Officio
ROGER BABCOCK, Jr., Ex-Officio

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

ELLEN E. KITAMURA, P.E.
Deputy Manager and Chief Engineer

NOTICE

The Board of Water Supply, City and County of Honolulu, will hold a Regular Meeting on Monday, December 13, 2021, at 2:00 p.m. in the Boardroom, Public Service Building, 630 South Beretania Street, Honolulu, Hawaii.

Pursuant to the Emergency Proclamation issued by Governor David Y. Ige on November 29, 2021, related to the COVID-19 emergency, in order to allow public participation in a manner consistent with social distancing practices, the following procedures are in effect for the meeting.

Some Board members may be participating in the meeting by interactive conference technology from remote locations.

TESTIMONY

Testimony can be submitted as follows:

- Written testimony may be emailed to board@hbws.org or faxed to (808) 748-5079. Testimony is due by Monday, December 13, 2021, at noon. Written testimonies should include the submitter's address, email address, and phone number. Written testimony will be posted to the BWS website at boardofwatersupply.com.
- Mail written testimony to Board of Water Supply, 630 S. Beretania St., Honolulu, HI 96843. Testimony is due by Monday, December 13, 2021, at noon.
- On-line testimony will be accepted at boardofwatersupply.com/testimony. Fill out the testimony form. Due by Monday, December 13, 2021, at noon.
- Telephone testimony will be accepted during the meeting at (808) 748-6040. Callers will be placed in a queue and brought up to testify one at a time.
- In-person testimony will not be accepted.

Testimony is limited to two (2) minutes and shall be presented by the registered speaker only.

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:
(1) 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.

The agenda for the December 13, 2021, 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 November 22, 2021
2. Considering Adoption of Resolution No. 931, 2021 Regarding the Navy's Red Hill Bulk Fuel Storage Facility and Associated Water Contamination Issues
3. Authorizing a Public Hearing to Consider a Proposed Amendment, to Add an Emergency Halawa Valley Groundwater Monitoring Wells Project, to its Fiscal Year 2021-2022 Capital Improvement Program Budget in Response to the Reported Contamination of the Navy's Red Hill Shaft

ITEMS FOR INFORMATION

1. Board of Water Supply Financial Update
2. 2021 Customer Satisfaction Survey
3. Status Update of Groundwater Levels at All Index Stations
4. Water Main Repair Report for November 2021

EXECUTIVE SESSION

1. Approval of the Minutes of the Executive Session Held on November 22, 2021
2. To Consult with the Board's Attorney on Questions and Issues Pertaining to the Board of Water Supply's Proposed Settlement of Claim #21-049, Relating to Property Damages at 86-268 Alamihi Street, Waianae, Hawaii following an 8" PVC Main Break at 86-277 Kawili Street, Waianae, Hawaii on February 1, 2021 [HRS §92-5(a)(4)]
3. To Consult with the Board's Attorney on Questions and Issues Pertaining to the Board of Water Supply's Proposed Settlement of Claim #20-069-F, Relating to Property Damages to several units at AOA Waikalani Woodlands, Hawaii following a Board of Water Supply Pressure Reducing Valve failure on March 13, 2020 [HRS §92-5(a)(4)]
4. 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 Kalawahine 2.0 MG Reservoir and Connecting Pipelines [HRS §92-5(a)(4)]

5. 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)]

MINUTES

THE REGULAR MEETING OF THE BOARD OF WATER SUPPLY

December 13, 2021

At 2:06 PM on December 13, 2021, in the Board Room of the Public Service Building at 630 South Beretania Street, Honolulu, Hawaii, Board Chair Andaya called to order the Regular Meeting.

Present: Bryan P. Andaya, Chair
Kapua Sproat, Vice Chair via WebEx
Max Sword, Board Member
Na'alehu Anthony, Board Member via WebEx
Jade T. Butay, Board Member, Ex-Officio
via WebEx
Roger Babcock, Jr., Board Member, Ex-Officio
via WebEx

Also Present: Ernest Lau, Manager and Chief Engineer
Ellen Kitamura, Deputy Manager and Chief Engineer
via WebEx
Jason Takaki, Program Administrator,
Capital Projects Division via Vimeo
Scott Poomaihealani, Assistant Program Administrator,
Customer Care Division via Vimeo
Kathleen Elliott-Pahinui, Information Officer,
Communications Office via WebEx
Raelynn Nakabayashi, Executive Assistant I,
Executive Support Office
Jason Nikaido, Acting Program Administrator,
Field Operations Division via WebEx
Joseph Cooper, Waterworks Controller,
Finance Division via WebEx
Michele Thomas, Executive Assistant I,
Human Resources Office via Vimeo
Henderson Nuuhiwa, Program Administrator,
Information Technology Division
via Vimeo
Michael Matsuo, Land Administrator, Land Division
via WebEx
Erwin Kawata, Program Administrator,
Water Quality Division via WebEx
Barry Usagawa, Program Administrator,
Water Resources Division via WebEx
Kevin Ihu, Program Administrator,
Water System Operations Division
via Vimeo
Kathy Mitchell, Administrative Services Officer
via Vimeo

Becki Ward, Ward Research via WebEx
Deanna Thyssen, Manager's Secretary via WebEx
Joy Cruz-Achui, Board Secretary
Steven Norstrom, Information Specialist II,
Communications Office via WebEx
Stella Bernardo, Information Specialist II,
Communications Office via WebEx
Michele R. Harman, Community Relations Specialist,
Communications Office via WebEx
Blaine Fergerstrom, Information Specialist II,
Communications Office via WebEx

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

Absent: Ray C. Soon, Board Member

REGULAR MEETING

Chair Bryan Andaya requested a roll call for the Regular Meeting. Chair Andaya asked each Board Member to respond verbally when their names were called. Vice Chair Kapua Sproat, aye; Board Member Na'alehu Anthony, aye; and Board Member Jade Butay, aye.

Chair Andaya introduced those present in the Boardroom, Manager Ernest Lau and Board Secretary Joy Cruz-Achui.

Chair Andaya announced that Steven Norstrom, Information Specialist II from the Communications Office would be monitoring public testimony via WebEx. Also joining via WebEx from the City and County Corporation Counsel were Deputy Jeff Lau and Deputy Jessica Wong.

Chair Andaya requested 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. He announced if anyone on WebEx should encounter any technical issues during the meeting to please use the WebEx chat to connect with the Board of Water Supply (BWS) support team.

Chair Andaya stated that the Board of Water Supply (BWS) is dedicated to providing safe, dependable, and affordable water now and into the future.

Chair Andaya stated the following procedures are in effect for the meeting:

Board Members are participating from remote locations via WebEx.

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](https://www.boardofwatersupply.com/testimony), which were all due on Monday, December 13, 2021, at noon. However, late testimony will be accepted by email, fax, or mail. Telephone testimony is accepted by calling (808) 748-6040, where you will be put in the queue and allowed to testify one at a time. Unfortunately, due to the pandemic, in-person testimony is suspended. Pursuant to HRS Section 92-7.5, Board Meeting materials are available to view on our website at www.boardofwatersupply.com/boardmeeting.

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

APPROVAL OF MEETING

Approval of the Minutes of the Regular Meeting Held on November 22, 2021

MOTION TO APPROVE

Na'alehu Anthony and Jade Butay motioned and seconded, respectively, to approve the Minutes of the Regular Meeting of November 22, 2021. The motion was unanimously carried.

THE MINUTES OF THE REGULAR MEETING HELD ON NOVEMBER 22, 2021, WERE APPROVED AT THE DECEMBER 13, 2021 BOARD MEETING			
	AYE	NO	COMMENT
BRYAN P. ANDAYA	X		
KAPUA SPROAT	X		
RAY C. SOON			ABSENT
MAX J. SWORD			ABSENT
NA'ALEHU ANTHONY	X		
JADE T. BUTAY	X		
ROGER BABCOCK, JR.			ABSENT

"December 13, 2021

**CONSIDERING
ADOPTION OF
RESOLUTION
NO. 931, 2021
REGARDING THE
NAVY'S RED HILL
BULK FUEL
STORAGE
FACILITY AND
ASSOCIATED
WATER
CONTAMINATION
ISSUES**

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

Chair and Members:

Subject: Considering Adoption of Resolution No. 931, 2021
Regarding the Navy's Red Hill Bulk Fuel Storage Facility
and Associated Water Contamination Issues

We submit for your consideration of Resolution No. 931, 2021 regarding the Navy's Red Hill Bulk Fuel Storage Facility and recent water contamination issues at Joint Base Pearl Harbor Hickam (JBPHH).

On December 2, 2021 the Navy determined their Red Hill Shaft water source is contaminated with petroleum and the source of fuel odors present in JBPHH housing tap water. That night, the Board of Water Supply (BWS) shut down Halawa Shaft pumping station that delivers 20% of the water to metropolitan Honolulu to prevent any fuel contamination of the BWS Honolulu water system.

The proposed Resolution before you today reaffirm the need to protect our drinking water aquifer and urges the Navy to take swift action to install secondary containment or relocate the fuel away from the aquifer and we ask the Board for your approval of this Resolution.

Respectfully Submitted,

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

Attachment"

DISCUSSION:

Chair Bryan Andaya announced that he would be taking the agenda out of order. He stated Resolution No. 931, 2021 pertained to the Navy's Red Hill Bulk Storage Facility which is also being discussed in Executive Session, therefore would return to this item.

At 4:44 PM the Board reconvened in the Board's Regular Board meeting to discuss action number 2, Resolution 931, 2021 Regarding the Navy's Red Hill Bulk Fuel Storage Facility and Associated Water Contamination Issues.

Erwin Kawata, Program Administrator, Water Quality Division gave the report.

During Mr. Kawata's presentation, Chair Andaya asked to explain why the BWS stopped pumping water from the BWS Halawa Shaft.

Mr. Kawata explained that pumping at Halawa Shaft was stopped to slow the migration of petroleum contamination to Halawa Shaft and prevent any

contamination that eventually reached Halawa Shaft from entering the BWS distribution system. Otherwise, the BWS would be in the same predicament as the U.S. Navy. He shared that the likelihood of ever being able to pump water from the BWS Halawa Shaft is very minimal prevent the chance of contaminated water entering the BWS pipelines. He stated that once contaminated water gets into the pipeline or aquifer it would be very difficult to remove the contaminants.

Chair Andaya inquired if the BWS would not be able to use the Halawa Shaft after the fuel is removed from the Red Hill tanks.

Mr. Kawata responded that removing the fuel from the Red Hill tanks would reduce the potential for further damage and degradation to the aquifer from future releases. The fuel release that caused the recent contamination of the Navy's Red Hill Shaft is already in the aquifer. Understanding where that contamination is located and traveling in the aquifer is important to knowing if Halawa Shaft and other BWS wells that are currently shut down can ever be restarted.

Manager Lau also responded stating that removing the fuel from the Red Hill tanks would prevent any future leaks and risks. He added that understanding where the direction of the contamination plume and determining the direction of water flow will determine how quickly it is moving is important. The Navy's reporting of detecting petroleum contamination in the Navy's Aiea Halawa Shaft is critical to understanding where the contamination could be traveling in the aquifer. The Navy reported a preliminary detection of over nine hundred and twenty parts per billion TPH-diesel then shortly thereafter quickly recalled their statement. The Department of Health is doing additional testing that will help validate the finding.

Vice Chair Kapua Sproat expressed her appreciation for all the information and guidance but also expressed her concern for Oahu's water future. She asked besides installing monitor wells in the surrounding areas what other steps must be taken and how many monitoring wells would need to be installed to detect contamination.

Mr. Kawata replied the U.S. Navy currently has monitoring wells in place on their property that the BWS cannot readily access. Installing monitor wells that the BWS owns, would give the BWS the accessibility to data without having to rely on the U.S. Navy. Therefore, the next step would be to install 50 to 75 monitoring wells that can help identify the width, length, and depth of the plume across the valley. The challenge is the terrain and getting landowner approval.

Vice Chair Sproat inquired on the cost of installing each monitoring well.

Mr. Kawata responded that it can cost up to two million (M) per monitoring well depending on the depth of the monitoring well.

Vice Chair Sproat expressed her concern about the process and time it could take to install a monitoring well. She asked how does the BWS gets the information needed now to keep the community safe.

Mr. Kawata replied that the BWS would have to rely on the information the U.S. Navy provides to the Department of Health (DOH).

Manager Lau shared that the BWS has requested for the U.S. Navy to do more frequent tests to determine the speed that groundwater is moving to plume. He shared that the BWS has requested access to the U.S. Navy's monitoring wells but has been denied. The U.S. Navy stated they would provide the BWS with the data they collect.

Board Member Na'alehu Anthony inquired about the size of the affected aquifer and the potential for the plume to move.

Mr. Kawata explained that the affected areas of interest stretch from Waimalu to Moanalua where the BWS wells are located and the one mile across the valley to the BWS Halawa Shaft.

Manager Lau added that the Waimalu hydrologic unit estimates a sustainable yield of 45 million gallons per day (mgd).

Kapua commented that there is no way to distinguish where the water stops flowing in the Waipahu, Waiawa, Halawa, or any other area.

Manager Lau agreed with Vice Chair Sproat's comment stating that they are all connected.

Board Member Anthony inquired about the data that was presented indicating elevated levels of Total Petroleum Hydrocarbons (TPH). He asked why no one was alerted.

Location	Date	TPH-d (ppb)	TPH-g (ppb)	TPH-o (ppb)	Xylene, Total (ppb)	Naphthalene (ppb)
RHAW02	7/20/2020	1900	46	180	<0.3	64
RHAW02	10/12/2020	2000	66	270	<0.3	98
RHAW02	1/23/2021	1500	<18	180	<0.3	44
RHAW02	4/22/2021	1400	41	160	<0.3	69
Red Hill Shaft	1/26/2021	<300	<18	<300	<0.3	<0.1
Red Hill Shaft	4/21/2021	<300	<18	<300	<0.3	<0.1
Red Hill Shaft	7/8/2021	<300	<18	370	<0.3	<0.1
Red Hill Shaft	7/15/2021	<300	<18	480	<0.3	<0.1
Red Hill Shaft	7/29/2021	<300	<18	230	<0.3	<0.1
Red Hill Shaft	8/5/2021	<300	<18	540	<0.3	<0.1
Red Hill Shaft	8/12/2021	<300	<18	320	<0.3	<0.1
Red Hill Shaft	8/26/2021	<300	<18	530	<0.3	<0.1
Red Hill Shaft	9/1/2021	<300	<18	480	<0.3	<0.1
Red Hill Shaft	9/15/2021	<300	<18	270	<0.3	<0.1
Red Hill Shaft	9/22/2021	<300	<18	490	<0.3	<0.1
Red Hill Shaft	9/29/2021	<300	<18	170	<0.3	<0.1
Red Hill Shaft	10/13/2021	<300	<18	<300	<0.3	<0.1
Red Hill Shaft	11/29/2021	<290	31	<290	1.4	3.8

Manager Lau replied that the BWS did not have access to the information until late November when the DOH posted it to their website.

Board Member Anthony asked what options are available and who has the expertise to perform the work that needs to be accomplished.

Mr. Kawata responded that the U.S. Navy is working to remove what is visibly floating on the top of the water table in Red Hill Shaft or adhering to the subsurface rocks using activated carbon. He shared that his primary concern is the amount of fuel that is dissolved into the water and whether it will be treatable. The taste and odor threshold for DOH is 500 parts per billion (ppb).

Board Member Anthony asked what will it take to get water to a safe level of TPH-o for the community to use.

Manager Lau replied that the U.S. Navy will begin with using an activated carbon contractor to filter the TPH out of the water which will need to be treated and tested.

Mr. Kawata replied that is difficult to treat water that has over 100,000 ppb of TPH-o even after using activated carbon. He stated that the fuel can dissolve in water which would also be a challenge depending on the fuel concentration.

Board Member Anthony asked if he was understood correctly, that even after using activated carbon the water would not be safe because fuel has been absorbed by the rocks and surfaces of where the water is contained.

Mr. Kawata agreed with Board Member Anthony.

Vice Chair Sproat asked if there was any way to clean and treat the rocks and surfaces.

Mr. Kawata responded that vapor extraction has been used in porous geology.

Manager Lau stated to prevent any further fuel contamination to the aquifer is to remove the fuel and relocate the tanks.

Vice Chair Sproat suggested that immediate and permanent removal of the fuel while investigating alternatives.

Mr. Kawata mentioned that any contaminants above the groundwater aquifer trapped under Red Hill Shaft are still capable of migrating even after cleanup.

Manager Lau added that rainfall also affects migration through the porous rocks above that moves fuel downward into the groundwater aquifer.

Vice Chair Sproat inquired if the water that was being filtered with activated carbon was going into the storm drains.

Mr. Kawata responded that the BWS is unclear of how the U.S. Navy is "flushing" the water system. The U.S. Navy would need to discuss with the DOH Clean Water Branch and Commission on Water Resource Management (CWRM).

Board Member Anthony suggested that the U.S. Congress be urged to get involved.

Chair Andaya asked if there were any further comments or questions, hearing none, he asked for a motion.

**MOTION
TO APPROVE**

Kapua Sproat and Na'alehu Anthony motioned and seconded, respectively, to approve the Adoption of Resolution 931, 2021 Regarding the Navy's Red Hill Bulk Buel Storage Facility and Associated Water Contamination Issues.

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

Ms. Cruz-Achui conducted a roll call vote: Vice Chair Kapua Sproat, aye; Board Member Max Sword, aye; Board Member Na'alehu Anthony, aye; Board Member Jade Butay, aye; Board Member Roger Babcock, aye; and Chair Bryan Andaya, aye.

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

ADOPTION OF RESOLUTION NO. 931, 2021 REGARDING THE NAVY'S RED HILL BULK FACILITY AND ASSOCIATED WATER CONTAMINATION ISSUES, ADOPTED DECEMBER 13, 2021			
	AYE	NO	COMMENT
BRYAN P. ANDAYA	X		
KAPUA SPROAT	X		
RAY C. SOON			ABSENT
MAX J. SWORD			ABSENT
NA'ALEHU ANTHONY	X		
JADE T. BUTAY	X		
ROGER BABCOCK, JR.	X		

BOARD OF WATER SUPPLY
CITY AND COUNTY OF HONOLULU

RESOLUTION NO. 931, 2021

NAVY RED HILL FUEL STORAGE FACILITY
AND WATER CONTAMINATION ISSUES AT
JOINT BASE PEARL HARBOR HICKAM

WHEREAS, since 2014, the Board of Water Supply has raised concerns of potential aquifer contamination from the Red Hill fuel facility which stores more than 180 million gallons of fuel in vintage World War II tanks, and pipelines and infrastructure that are located 100-feet above a major source of drinking water for Oahu residents and visitors;

WHEREAS, on November 28, 2021, the Navy began receiving complaints of fuel odor in the tap water from JBPHH housing residents and subsequently shut down its Red Hill Shaft water source;

WHEREAS, on December 2, 2021, the Navy ceased the use of its Red Hill Shaft after determining that its water system is contaminated with petroleum and in response, the Board of Water Supply shut down its Halawa Shaft pumping station that serves 20% of the water delivered to 450,000 residents and visitors in metropolitan Honolulu;

WHEREAS, the Board of Water Supply appreciates Hawaii's congressional delegation, the Secretary of Navy, and the Governor for supporting the suspension of operations at the Red Hill fuel facility in response to the JBPHH water contamination crisis;

WHEREAS, the Board of Water Supply reminds the Navy and the US Department of Defense that if secondary containment is not a feasible alternative as the Navy has claimed in response to previous such proposals, then the Navy and the US Department of Defense must find a long-term solution that involves relocating the fuel away from the aquifer;

WHEREAS, the US Environmental Protection Agency and the Hawaii Department of Health continue to be responsible for overseeing the Navy's timely compliance with requirements specified under the Red Hill Administrative Order on Consent; and

WHEREAS, the Board of Water Supply reiterates both its support of the armed forces in safeguarding the Nation and the continued investment of the federal government in the protection of Honolulu's aquifer.

NOW, THEREFORE, BE IT RESOLVED by the Members of the Board of Water Supply, City and County of Honolulu, that the Navy must take steps to identify where leaks, past and present, have occurred in the system and the direction of petroleum movement; and in the aquifer.

BE IT FURTHER RESOLVED that the Board of Water Supply supports ceasing the use of the Red Hill Fuel Facility and the immediate and permanent removal of the fuel while investigating alternatives; and

BE IT FURTHER RESOLVED that the Hawaii Congressional Delegation is urged to introduce legislation directing the Navy to develop and implement a plan to decommission the Red Hill Bulk Fuel Facility and the Facility's underground tanks, and to appropriate funds for the Navy to implement that plan, including to identify and remediate any related contamination; and

BE IT FURTHER RESOLVED that the Board of Water Supply re-iterates its belief that the most effective and efficient solution to the immediate crises requires the relocation of the fuel facility away from the Halawa Aquifer; and

BE IT FINALLY RESOLVED that this Board reaffirms the need for all federal, state, and county agencies to collectively protect and preserve Honolulu's water resources.

ADOPTED:



Bryan Andaya
Chair

Honolulu, Hawaii
December 13, 2021

ADOPTION OF RESOLUTION NO. 931, 2021 REGARDING THE NAVY'S RED HILL BULK FACILITY AND ASSOCIATED WATER CONTAMINATION ISSUES, ADOPTED DECEMBER 13, 2021			
	AYE	NO	COMMENT
BRYAN P. ANDAYA	X		
KAPUA SPROAT	X		
RAY C. SOON			ABSENT
MAX J. SWORD			ABSENT
NA'ALEHU ANTHONY	X		
JADE T. BUTAY	X		
ROGER BABCOCK, JR.	X		



RED HILL BULK FUEL STORAGE FACILITY INFORMATIONAL BRIEFING

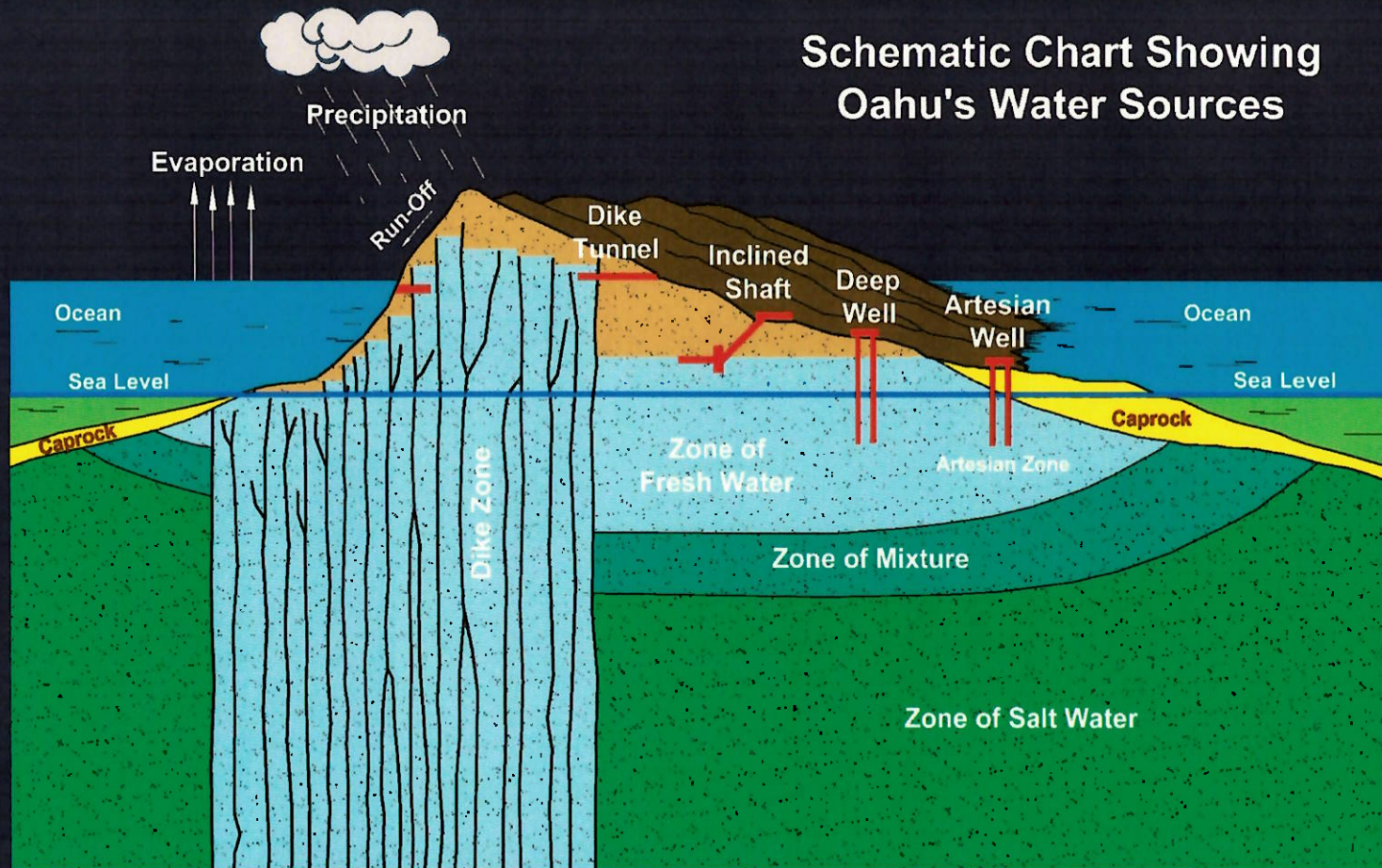
December 13, 2021
boardofwatersupply.com

TODAY'S DISCUSSION

- Oahu's groundwater aquifer
- Red Hill Bulk Fuel Storage Facility
 - Overview of Navy studies and findings to date
- Water contamination at JBPHH housing areas
- Summarize



Schematic Chart Showing Oahu's Water Sources



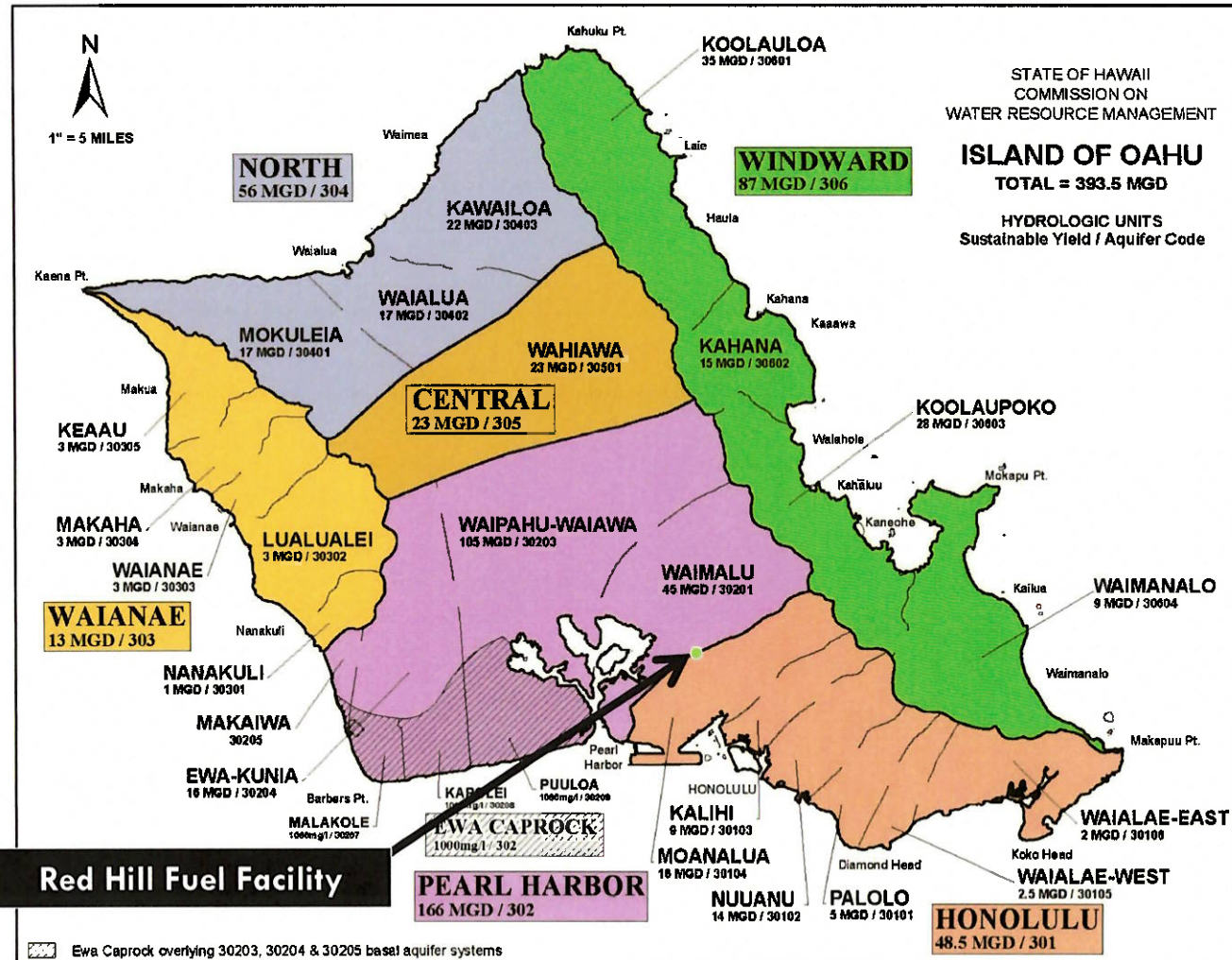
OAHU'S GROUNDWATER BODIES AND CAPROCK

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



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

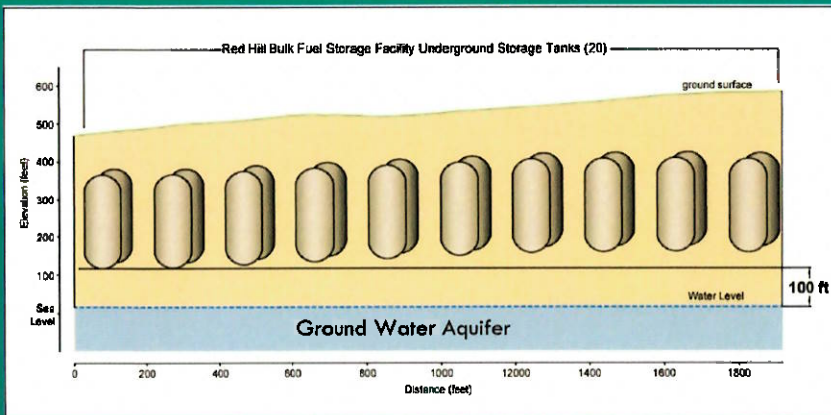




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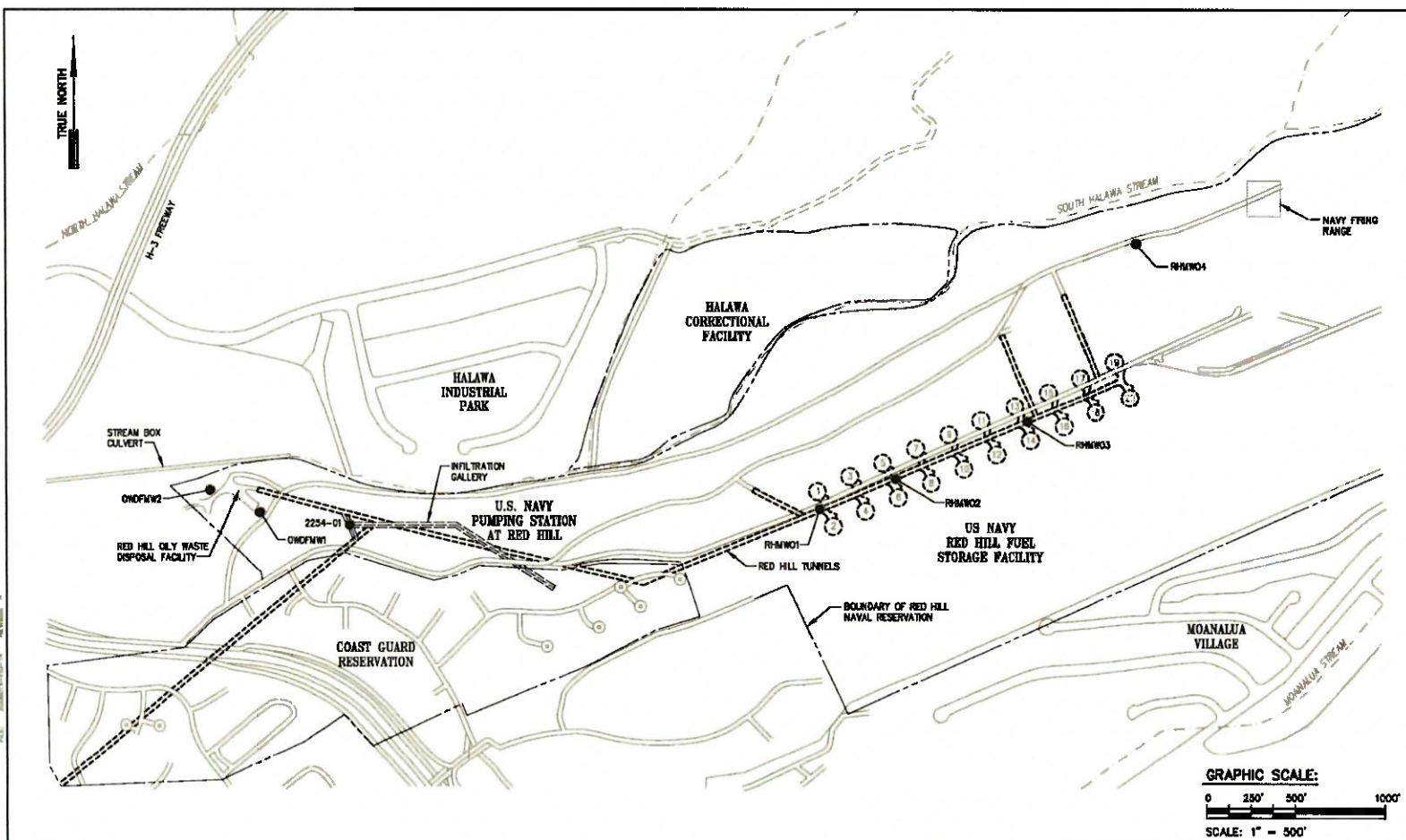
Map Projection: Universal Transverse Mercator





- Twenty tanks sitting on end connected by an upper and lower access tunnel.
- Constructed from 1940 to 1943.
- Each tank is 250 feet high and 100 feet in diameter.
- 12.5 million gallon capacity per tank.
- Concrete with $\frac{1}{4}$ inch steel liner. (Lower dome base is $\frac{1}{2}$ inch)
- Facility declassified in 1995.
- Navy's Red Hill Shaft approx. 2,500 feet down gradient from the facility.
- **Tanks located 100 feet above the groundwater table.**



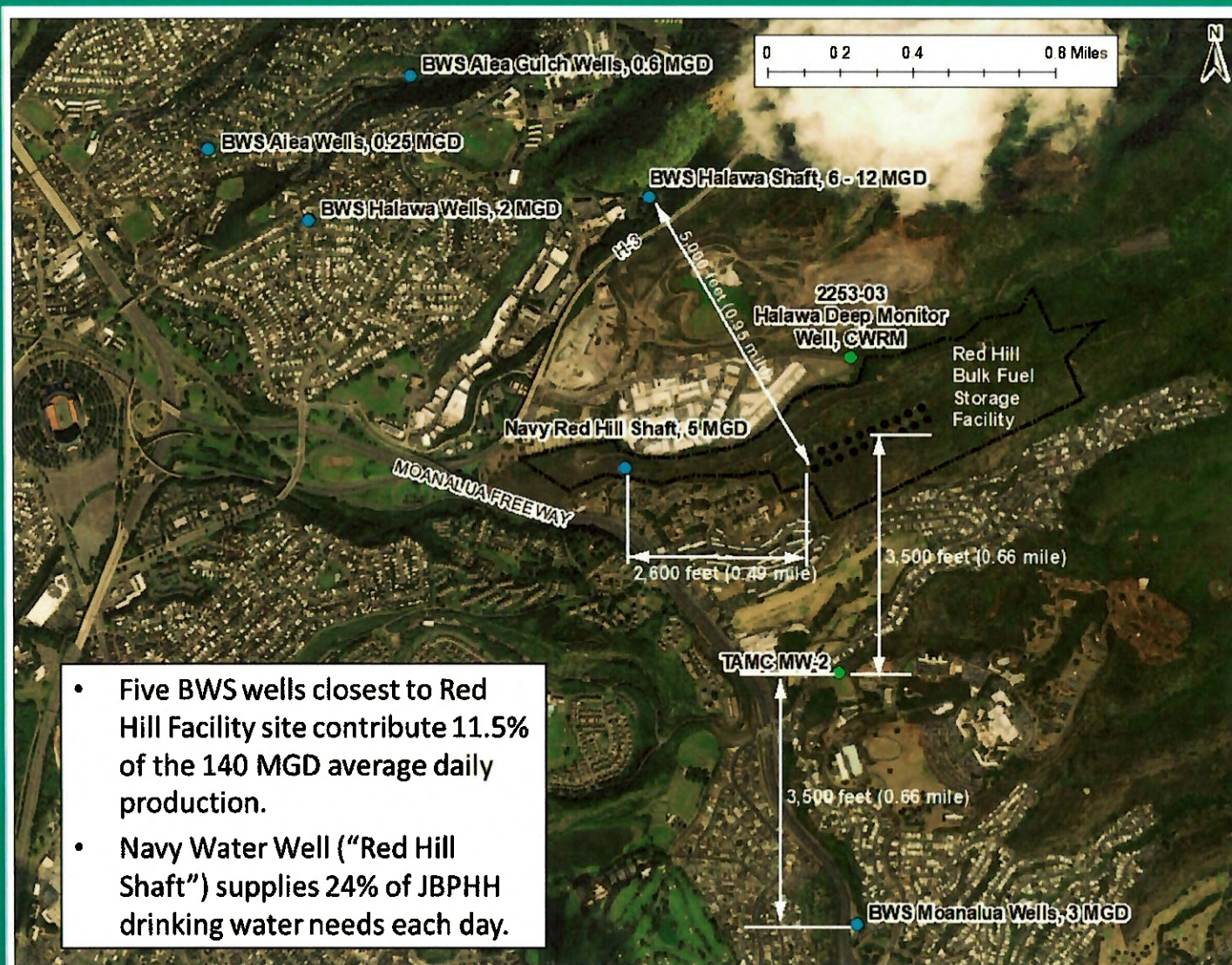


EVALUATE TREATMENT FOR RED HILL WELL,
PEARL HARBOR, HAWAII

GENERAL LOCATION MAP

FIGURE
1-2







NAVY STUDIES AND FINDINGS

- Petroleum hydrocarbons detected in groundwater and rock beneath facility.
- Rusting occurring on the side of the tanks that the Navy cannot inspect nor fix.
- Laboratory tests show the Navy's ability to locate areas of the tank that need repairs is inaccurate 50% of the time.



NAVY STUDIES – CONT.

- 2010 Audit Report
- 2010 Treatment study
- 2015 request to BWS for alternate water service

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Naval Audit Service

Audit Report

Department of the Navy Red Hill and Upper Tank Farm Fuel Storage Facilities

This report contains information exempt from release under the Freedom of Information Act. Exemptions (b)(2) High and (b)(5) apply.

Do not release outside of the Department of the Navy, or post on non-Naval Audit Websites or in Navy Taskers, without approval from the Auditor General of the Navy.

**N2010-0049
16 August 2010**

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 May 18, 2015
 126 A 8 35

DEPARTMENT OF THE NAVY
COMMANDER
 NAVY REGION HAWAII
 200 THUNDERBOLT ST B10110
 JAPANESE HARBOR HONOLULU

CERTIFIED NO: 7016 1280 0008 9859 0005

Mr. Ernest Lau
 Manager and Chief Engineer
 Honolulu Board of Water Supply
 P.O. Box 135037
 Honolulu, HI 96801-5037

Dear Mr. Lau:

SUBJECT: NAVY RED HILL DRINKING WATER SHAFT - POTENTIAL ALTERNATE POTABLE WATER SOURCES

As part of Navy Region Hawaii's routine contingency planning, a contract has been awarded to Engineering Concepts, Inc. (ECI) to complete an engineering study that will identify and evaluate potential alternative and/or recommended potable water sources in lieu of the Navy's Red Hill Drinking Water Shaft in the event that the Red Hill Shaft is unavailable for use. Alternatives and recommendations that will be reviewed include (1) leveraging use of the Navy's other existing water sources, (2) potential development of new sources, and (3) the consideration of purchase of Honolulu Board of Water Supply water.

This project supplements a prior study that was completed in 2010 which evaluated treatment technologies for the Red Hill Shaft, but did not look at other non-treatment alternatives. Development of other alternatives will support the programming and budgeting for a project should it become necessary.

We ask for your support in assisting ECI with evaluating whether becoming a direct customer is possible.

If you have any questions regarding this matter, please contact Ms. Arleen Miskun at 471 1171, extension 201.

Sincerely,

U. A. TUFTS
 Captain, CEC, U.S. Navy
 Regional Engineer
 By direction of the
 Commander

Copy to: Anna Sasaki, Engineering Concepts, Inc.

Final Report

Evaluate Treatment Technologies for the Red Hill Drinking Water Well

Prepared For:
NAVFAC Hawaii
 Pearl Harbor, Hawaii

Prepared by:
HDR/Hawaii Pacific Engineers
 Contract No. N62742-06-D-1881
 13 August 2010
 HPE 2008014

PAST FUEL RELEASES

(c) Tests on Tank 16

After an earth disturbance on June 28, 1948, and previous to our inspection, gaging during the period June 28 to July 21, indicated a loss of 14 inches, or approximately 850 barrels. The suction and discharge valves were blanked off with the oil level standing at 241' - 3-1/4" and a six day test conducted over the period July 21 to July 27. Careful hand gaging during this test indicated a loss of 37.4 barrels per day. The level was then lowered to 198' - 2-5/8" and a two day test was conducted. This indicated a loss of 14.5 barrels per day at this level. The tank was then emptied. The total leakage indicated during the entire period was in the order of 1100 barrels. Results of this and subsequent tests are indicated in accompanying Red Hill Sketch 3.



RECENT RED HILL RELEASES

- 72 releases reported in Red Hill AOC studies
- January 2014 – 27,000 gallons from Tank 5
- March 2020 – Fuel release from Kilo Pier pipelines at Red Hill.
- May 2021 – Pressure surge releasing approximately 1,600 gallons of jet fuel from supply piping in the lower access tunnel
- September 2021 – Navy shut down Red Hill facility for 9 days without informing the DOH.
- November 2021 – 14,000-gallon fuel water mixture release in lower access tunnel quarter mile downgradient from Red Hill Shaft.



NAVY RISK ASSESSMENT STUDY

- Greater than 27% probability of a sudden release of between 1,000 and 30,000 gallons of fuel each year
- Greater than 34% chance of a sudden release of more than 120,000 gallons of fuel in the next 100 years
- Greater than 5% probability of a sudden release of more than 1 million gallons of fuel in the next 100 years
- For chronic, undetected releases, the expected fuel release is 5,803 gallons per year (facility-wide)

[For example: 25 years x 5,803 gallons/year = 145,075 gallons released]

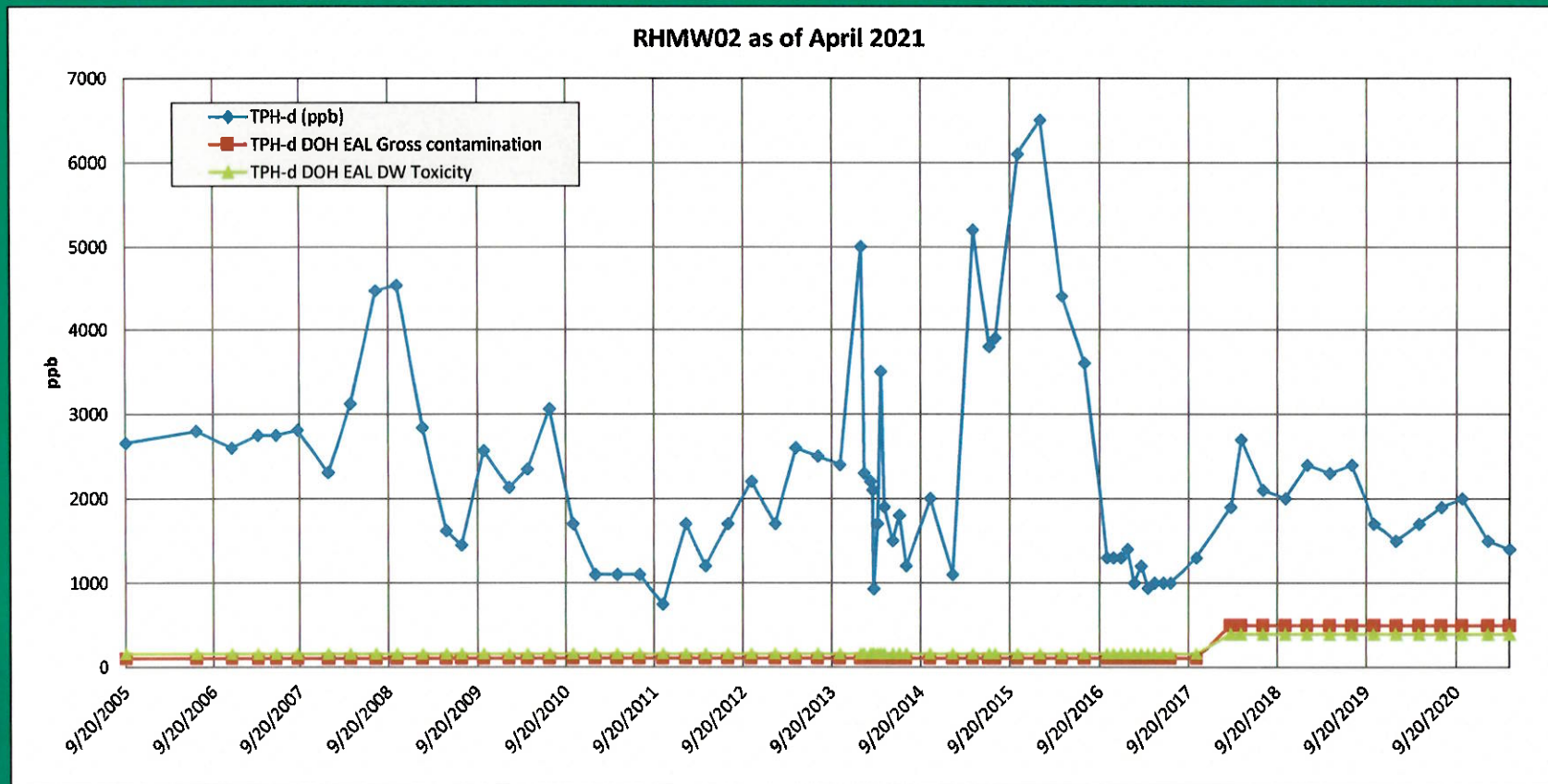


RED HILL SHAFT WATER QUALITY

- Navy Annual Water Quality Report (CCR)
 - 2018 – 65 ppb TPH-d
 - 2019
 - Ethylbenzene – 1.2 ppb J
 - Toluene – 0.24 ppb J
 - Xylene – 0.81 ppb J
 - 2021 – 490 ppb TPH-d



GROUNDWATER MONITORING



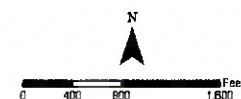
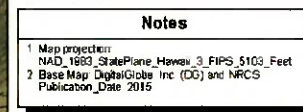
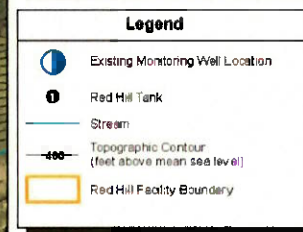
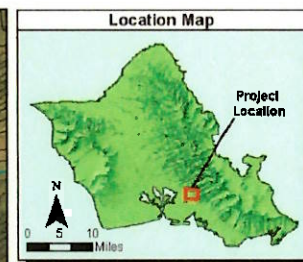


Figure 1
Site Location Map
 2nd Qtr 2021 Groundwater LTM Report
 Red Hill Bulk Fuel Storage Facility
 JBPHH, O'ahu, Hawaii



RED HILL SHAFT AND GW MONITORING

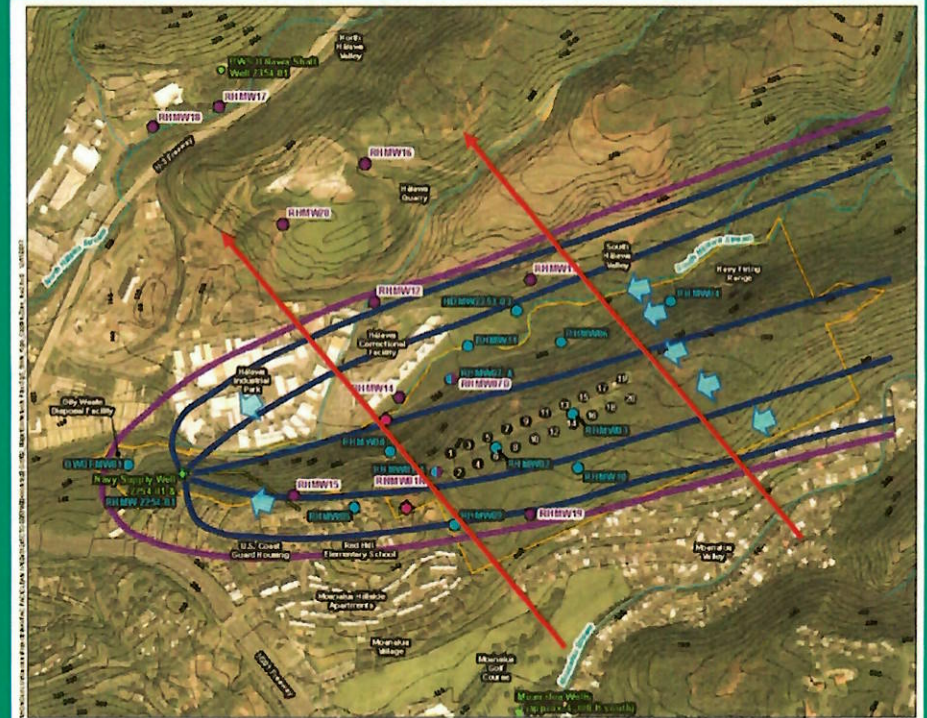
Location	Date	TPH-d (ppb)	TPH-g (ppb)	TPH-o (ppb)	Xylene, Total (ppb)	Naphthalene (ppb)
RHMW02	7/20/2020	1900	46	180	<0.3	64
RHMW02	10/12/2020	2000	66	270	<0.3	98
RHMW02	1/25/2021	1500	<18	180	<0.3	44
RHMW02	4/22/2021	1400	41	160	<0.3	69
Red Hill Shaft	1/26/2021	<300	<18	<300	<0.3	<0.1
Red Hill Shaft	4/21/2021	<300	<18	<300	<0.3	<0.1
Red Hill Shaft	7/8/2021	<300	<18	370	<0.3	<0.1
Red Hill Shaft	7/15/2021	<300	<18	480	<0.3	<0.1
Red Hill Shaft	7/29/2021	<300	<18	230	<0.3	<0.1
Red Hill Shaft	8/5/2021	<300	<18	540	<0.3	<0.1
Red Hill Shaft	8/12/2021	<300	<18	320	<0.3	<0.1
Red Hill Shaft	8/26/2021	<300	<18	530	<0.3	<0.1
Red Hill Shaft	9/1/2021	<300	<18	480	<0.3	<0.1
Red Hill Shaft	9/15/2021	<300	<18	270	<0.3	<0.1
Red Hill Shaft	9/22/2021	<300	<18	490	<0.3	<0.1
Red Hill Shaft	9/29/2021	<300	<18	170	<0.3	<0.1
Red Hill Shaft	10/13/2021	<300	<18	<300	<0.3	<0.1
Red Hill Shaft	11/29/2021	<290	31	<290	1.4	3.8

Ref. <https://health.hawaii.gov/ust/files/2021/12/Red-Hill-Notice-of-Interest-Sampling-Results-10-May-21-22-Nov-21.pdf>



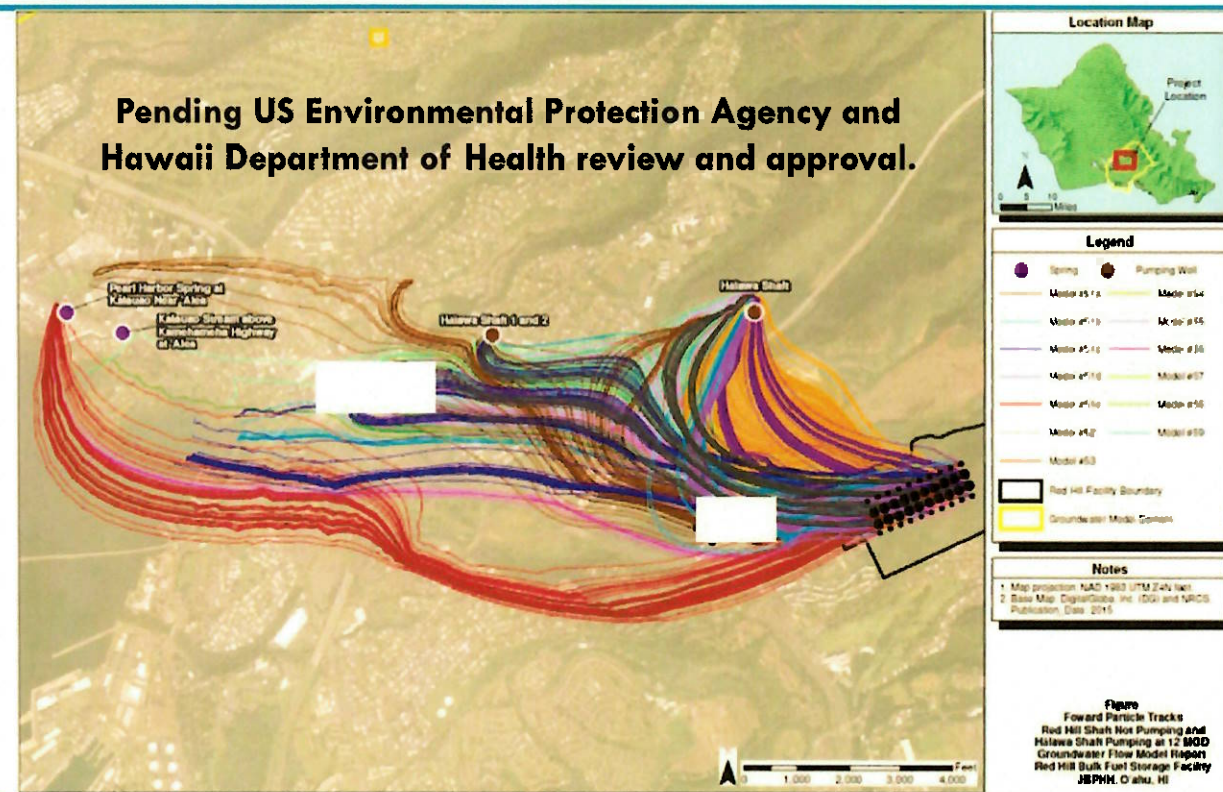
STUDIES & FINDINGS – CONT.

- DOH report says the Navy's groundwater model unable to reproduce measurements recorded in the field.
- Field data shows groundwater can flow from the facility to the northwest toward the BWS Halawa Shaft.
- Claims of subsurface geologic features that isolate Halawa Shaft from the tanks is unsupported.



- Navy groundwater model of cross valley flow

Forward Particle Tracking from All Models with Red Hill Shaft Off and Halawa Shaft Pumping at 12 mgd



WATER CONTAMINATION AT JBPHH HOUSING

- Nov. 28 – Navy shuts down Red Hill Shaft in response to complaints of fuel odor in tap water from JBPHH housing residents
- Nov. 30 – BWS reduces Halawa Shaft pumpage to 5 mgd in response to Red Hill Shaft shut down
- Dec. 2 – Navy determines petroleum contamination in Red Hill Shaft as the cause of fuel odor in tap water.
- Dec. 2 – BWS shuts down Halawa Shaft in response to Navy announcement
- Dec. 8 – Navy announces detecting 920 ppb TPH-d at Navy's Aiea Halawa Shaft.
- Dec. 8 – BWS shuts down BWS Halawa Wells and Aiea Wells



DOH EMERGENCY ORDER TO NAVY ON 12/6/21

- Immediately suspend operations including fuel transfers at Red Hill
- Install a drinking water treatment system at Red Hill Shaft
- Within 30 days submit a workplan and implementation schedule to assess the Facility operations and system integrity to safely defuel the tanks. Upon receiving DOH approval of the workplan, make the necessary repairs and changes in operations to address any deficiencies identified in the assessment
- Within 30 days of completing the required corrective actions, defuel the tanks. Any refueling subject to DOH approval.

STATE OF HAWAII DEPARTMENT OF HEALTH SOLID AND HAZARDOUS WASTE BRANCH UNDERGROUND STORAGE TANK SECTION			
EMERGENCY ORDER			
TO: THE UNITED STATES DEPARTMENT OF THE NAVY, c/o REAR ADMIRAL TIMOTHY KOTT, COMMANDER NAVY REGION HAWAII, 850 Ticonderoga St., Suite 110 JSPHH, Hawaii 96808-0101, Respondent.	Docket No. 21-UST-EA-02 Re: Emergency Change-in-Service and Defueling of 20 Underground Storage Tanks, Red Hill Bulk Fuel Storage Facility		
<p>This Emergency Order ("EO") is an administrative action initiated pursuant to chapters 91 and 342L of the Hawaii Revised Statutes ("HRS") and chapters 11-1 and 11-280.1 of the Hawaii Administrative Rules ("HAR") by the DEPARTMENT OF HEALTH (the "Department") against THE UNITED STATES DEPARTMENT OF THE NAVY, c/o ADMIRAL TIMOTHY KOTT, COMMANDER NAVY REGION HAWAII (the "Respondent") and is based upon recent impacts on the Respondent's drinking water system incident to the operation of the Red Hill Bulk Fuel Storage Facility (the "Facility"). Respondent is the owner and operator of the Facility. This EO concerns only the issues identified herein and does not function to preclude or limit actions by any public agency or private party. The Department reserves the right to bring other actions as may be necessary to protect public health and the environment.</p> <p>I. AUTHORITY AND BACKGROUND</p> <table border="1"><thead><tr><th>Statutes/Rules</th><th>Section 342L-8, HRS, states that: §342L-8. Emergency powers, procedures. (a) Notwithstanding any other law to the contrary, if the governor or the director determines that an imminent peril to human health and safety or the environment is or will be caused by: (1) A release; (2) Any action taken in response to a release from an underground storage tank or tank system; or (3) The installation or operation of an underground storage tank or tank system that requires immediate action, the governor or the director, without a public hearing, may order any person causing or contributing to the peril to immediately reduce or stop the release or activity, and may take any and all other actions as may be necessary. The order shall fix a place and time, not later than twenty-four hours hereafter, for a hearing to be held before the director. (b) Nothing in this section shall be construed to limit any power which the governor or any other officer may have to declare an emergency and act on the basis of such declaration, if such power is conferred by statute or constitutional provision, or otherwise in the office.</th></tr></thead></table>		Statutes/Rules	Section 342L-8, HRS, states that: §342L-8. Emergency powers, procedures. (a) Notwithstanding any other law to the contrary, if the governor or the director determines that an imminent peril to human health and safety or the environment is or will be caused by: (1) A release; (2) Any action taken in response to a release from an underground storage tank or tank system; or (3) The installation or operation of an underground storage tank or tank system that requires immediate action, the governor or the director, without a public hearing, may order any person causing or contributing to the peril to immediately reduce or stop the release or activity, and may take any and all other actions as may be necessary. The order shall fix a place and time, not later than twenty-four hours hereafter, for a hearing to be held before the director. (b) Nothing in this section shall be construed to limit any power which the governor or any other officer may have to declare an emergency and act on the basis of such declaration, if such power is conferred by statute or constitutional provision, or otherwise in the office.
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Page 1 of 6			



SUMMARY

- BWS shut down BWS Halawa Shaft, Aiea Wells and Halawa Wells in response to Navy announcement of petroleum contamination at Navy Red Hill Shaft and distribution system sample point near Aiea Halawa Shaft.
- Continued storage of Red Hill fuel above the aquifer endangers the resource from further contamination.
- Immediately relocate the fuel away from the aquifer.



QUESTIONS / DISCUSSION





Mahalo!

BOARD OF WATER SUPPLY

Red Hill Bulk Fuel Storage Facility
Informational Briefing
boardofwatersupply.com for more
information
December 13, 2021

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

"December 13, 2021

AUTHORIZING A
PUBLIC HEARING
TO CONSIDER A
PROPOSED
AMENDMENT, TO
ADD AN
EMERGENCY
HALAWA VALLEY
GROUNDWATER
MONITORING
WELLS PROJECT,
TO ITS FISCAL
YEAR 2021-2022
CAPITAL
IMPROVEMENT
PROGRAM
BUDGET IN
RESPONSE TO
THE REPORTED
CONTAMINATION
OF THE NAVY'S
RED HILL SHAFT

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

Chair and Members:

Subject: Authorizing a Public Hearing to Consider a Proposed
Amendment, to Add an Emergency Halawa Valley
Groundwater Monitoring Wells Project, to its Fiscal Year
2021-2022 Capital Improvement Program Budget in
Response to the Reported Contamination of the Navy's
Red Hill Shaft

We recommend that the Board authorize a public hearing to be held at 2:00 p.m. on Monday, January 24, 2022, to consider the resolution to adopt the proposed Amended Capital Improvement Program Budget for the fiscal year beginning July 1, 2021 and ending June 30, 2022.

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

Respectfully Submitted,

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

Attachment"

DISCUSSION:

At 2:14 PM Chair Andaya announce that Board Member Max Sword joined the Board meeting and was present in the Boardroom.

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

Chair Andaya inquired if the public hearing is to amend the Capital Improvement Program (CIP) budget due to the contamination from the Navy's Red Hill Shaft.

Ms. Nakabayashi replied yes, and if a public hearing was authorized by the Board then the Board of Water Supply (BWS) would present a Capital Improvement Project (CIP) budget amendment, in detail, that would include the new project line 3A to install monitoring wells Halawa.

Board Member Max Sword asked if there was a way to expedite the public hearing process considering the urgency of the situation at Halawa and begin the necessary steps.

Ms. Nakabayashi responded that before the budget is amended, a public hearing must be held, and a public notice with information on the hearing must be published in the newspaper and online. Should the Board adopt the resolution amending the CIP Budget, after the public hearing, the funds would be available immediately to begin project 3A.

Manager Ernest Lau explained that because Fiscal Year 2021-2022 CIP budget didn't include a project of this type, a new project line needed to be created. He stated the BWS would seek an emergency procurement process to expedite the construction of project 3A to install monitoring wells at Halawa.

Ms. Nakabayashi explained the BWS is doing all that is possible to expedite the work required. The State Procurement Code, HRS Chapter 103D does allow for emergency procurement when there are clear and imminent threats to public health and safety. The BWS intends to take quick action in response to the Red Hill emergency and work may begin immediately with contract awards to follow the Budget amendment.

Vice Chair Kapua Sproat echoed Board Member Sword's concern. She suggested the Board hold a special meeting and public hearing.

Manager Lau responded that holding a special meeting and public hearing would be possible in the first week of January 2022. The BWS would work together with the Board to schedule a date.

**MOTION
TO APPROVE**

Max Sword and Kapua Sproat motioned and seconded, respectively, to approve the Authorization of a Public Hearing to Consider a Proposed Amendment to its Fiscal Year 2021-2022 Capital Improvement Program Budget.

At 2:27 PM, Chair Andaya announce Board Member Babcock joined the Board Meeting via WebEx.

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

Ms. Cruz-Achui conducted a roll call vote: Vice Chair Kapua Sproat, aye; Board Member Max Sword, aye; Board Member Na'alehu Anthony, aye; Board Member Jade Butay, aye; Board Member Roger Babcock, aye; and Chair Bryan Andaya, aye.

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

**AUTHORIZING A PUBLIC HEARING TO CONSIDER A
PROPOSED AMEDMENT TO ITS FISCAL YEAR 2021-
2022 CAPITAL IMPROVEMENT PROGRAM BUDGET
WAS APPROVED ON DECEMBER 13, 2021**

	AYE	NO	COMMENT
BRYAN P. ANDAYA	X		
KAPUA SPROAT	X		
RAY C. SOON			ABSENT
MAX J. SWORD	X		
NA'ALEHU ANTHONY	X		
JADE T. BUTAY	X		
ROGER BABCOCK, JR.	X		

NOTICE OF PUBLIC HEARING

NOTICE IS HEREBY GIVEN that the BOARD OF WATER SUPPLY, CITY AND COUNTY OF HONOLULU, will hold a PUBLIC HEARING in the Board Room, Public Service Building, 630 South Beretania Street, on Monday, January 24, 2022, at 2:00 p.m. or soon thereafter, where all interested persons shall be afforded the opportunity of being heard, while complying with all directives from the Governor of the State of Hawaii and the Mayor of the City and County of Honolulu, on the adoption of the proposed Amendment to the Fiscal Year (FY) 2021-2022 Capital Improvement Program Budget of the Board of Water Supply for the fiscal year beginning July 1, 2021 and ending June 30, 2022.

Information to be discussed at this public hearing will be made available online at www.boardofwatersupply.com. All comments on or suggested changes to the proposed Amended FY 2021-2022 Capital Improvement Program Budget of the Board of Water Supply should be filed in writing before the date of the public hearing or presented in person at the time of the hearing, via technically feasible methods complying with all directives from the Governor of the State of Hawaii and the Mayor of the City and County of Honolulu. Persons wishing to present oral testimony are requested to register by 1:00 p.m. on January 24, 2022, with Luella Paekukui, (808) 748-5176, by providing your name, phone number, and subject matter of testimony. Testimony is limited to three minutes and shall be presented by the registered speaker only. Any person requiring special assistance who plans to attend the public hearing, may contact Luella Paekukui at (808) 748-5176, no later than January 19, 2022, so that appropriate accommodations can be provided.

**BOARD OF WATER SUPPLY
CITY AND COUNTY OF HONOLULU**



AUTHORIZING A PUBLIC HEARING TO
CONSIDER A PROPOSED AMENDMENT,
TO ADD AN EMERGENCY HALAWA
VALLEY GROUNDWATER MONITORING
WELLS PROJECT, TO ITS FISCAL YEAR
2021-2022 CAPITAL IMPROVEMENT
PROGRAM BUDGET IN RESPONSE TO
THE REPORTED CONTAMINATION OF
THE NAVY'S RED HILL SHAFT

Raelynn Nakabayashi

December 13, 2021
boardofwatersupply.com

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BOARD OF WATER SUPPLY
CITY AND COUNTY OF HONOLULU



RESOLUTION NO. 923, 2021

BE IT FURTHER RESOLVED...is hereby appropriated...for a total of ONE HUNDRED SEVENTY-NINE MILLION NINE HUNDRED SEVENTY-SIX THOUSAND DOLLARS (\$179,976,000) for expenditures of the Board of Water Supply Capital Improvement Program Budget for the fiscal year beginning July 1, 2021 and ending June 30, 2022

ADOPTION OF RESOLUTION 923, 2021, ADOPTING THE OPERATING AND CAPITAL IMPROVEMENT BUDGET FOR THE FISCAL YEAR 2021-2022 AND APPROPRIATING FUNDS THEREFOR, ADOPTED MAY 24, 2021

	AYE	NO	COMMENT
BRYAN P. ANDAYA	X		
KAPUA SPROAT	X		
RAY C. SOON	X		
MAX J. SWORD	X		
NA'ALEHU ANTHONY	X		
JADE T. BUTAY	X		
ROGER BABCOCK JR.	X		



Board of Water Supply
Capital Improvement Program
FY 2022

Summary by Categories	Operating Fund (1)	Operating Fund - SRF Eligible (2)	Special Expendable Fund (3)	Improvement Fund (4)	Total
I. Research and Development	6,900,000	-	-	-	6,900,000
II. Renewal and Replacement					
A. Pumps	5,565,000	10,000,000	-	25,500,000	41,065,000
B. Reservoirs	100,000	-	-	-	100,000
C. Pipelines	2,950,000	-	-	58,950,000	61,900,000
D. Treatment	3,500,000	-	-	-	3,500,000
E. Facilities	13,260,000	-	-	1,650,000	14,910,000
Category II - sub-total	25,375,000	10,000,000	-	86,100,000	121,475,000
III. Capacity Expansion					
A. Pumps	-	-	100,000	-	100,000
B. Reservoirs	-	-	-	-	-
C. Pipelines	-	4,300,000	-	-	4,300,000
D. Treatment	-	-	800,000	-	800,000
E. Facilities	-	-	18,000,000	-	18,000,000
Category III - sub-total	-	4,300,000	18,900,000	-	23,200,000
Total - Categories I - III	32,275,000	14,300,000	18,900,000	86,100,000	151,575,000
Construction Cost Index Account	2,421,000	1,430,000	1,700,000	7,250,000	12,801,000
Contract Adjustment Account	15,600,000	-	-	-	15,600,000
Capital Improvement Program - Total	50,296,000	15,730,000	20,600,000	93,350,000	179,976,000

(1) Operating Fund is defined as rate revenue or cash

(2) Operating Fund - SRF Eligible is defined as projects that are eligible for participation in the State of Hawaii, Department of Health State Revolving Fund (SRF) loan program.

(3) Special Expendable Fund is a restricted fund in which water system facilities charges are deposited and the funding reserved for water system capacity expansion projects

(4) Improvement Fund is defined as the proceeds of Water System Revenue Bonds



				Operating Fund	Operating Fund - SRF	Special Expendable Fund	Improvement Funds	Total
I. Research and Development								
3A. Halawa Valley Groundwater Monitoring Wells, Phase II	Install two (2) monitoring wells in Halawa Valley near the Navy Red Hill Underground Fuel Storage Facility	CPWD	Const	2,000,000	-	-	-	2,000,000
Total Category I - Research and Development				8,900,000	-	-	-	8,900,000
II. Renewal and Replacement								
Pumps Total				5,565,000	10,000,000	-	25,500,000	41,065,000
Reservoirs Total				100,000	-	-	-	100,000
C. Pipelines								
25. New Service Lateral Installations at Various Location	Install new service laterals at various locations	PD	Const	1,750,000	-	-	-	1,750,000
BUDGET AMENDMENT				(1,750,000)	-	-	-	(1,750,000)
		PD	P&C	250,000	-	-	-	250,000
BUDGET AMENDMENT				(250,000)	-	-	-	(250,000)
Pipelines Total				550,000	-	-	58,500,000	59,050,000
Treatment Total				3,500,000	-	-	-	3,500,000
Facilities Total				13,250,000	-	-	1,500,000	14,750,000
Total Category II - Renewal and Replacement				23,375,000	10,000,000	-	56,100,000	113,675,000
III. Capacity Expansion								
Total Category III - Capacity Expansion				-	4,300,000	18,900,000	-	23,200,000
Total Categories I - III				32,275,000	14,300,000	18,900,000	56,100,000	151,575,000
Construction Cost Index Adjustment				2,421,000	1,430,000	1,700,000	7,250,000	12,801,000
Contract Adjustment Account				15,000,000	-	-	-	15,000,000
FY 2022 Capital Improvement Program Total				50,296,000	15,730,000	20,600,000	33,350,000	179,976,000

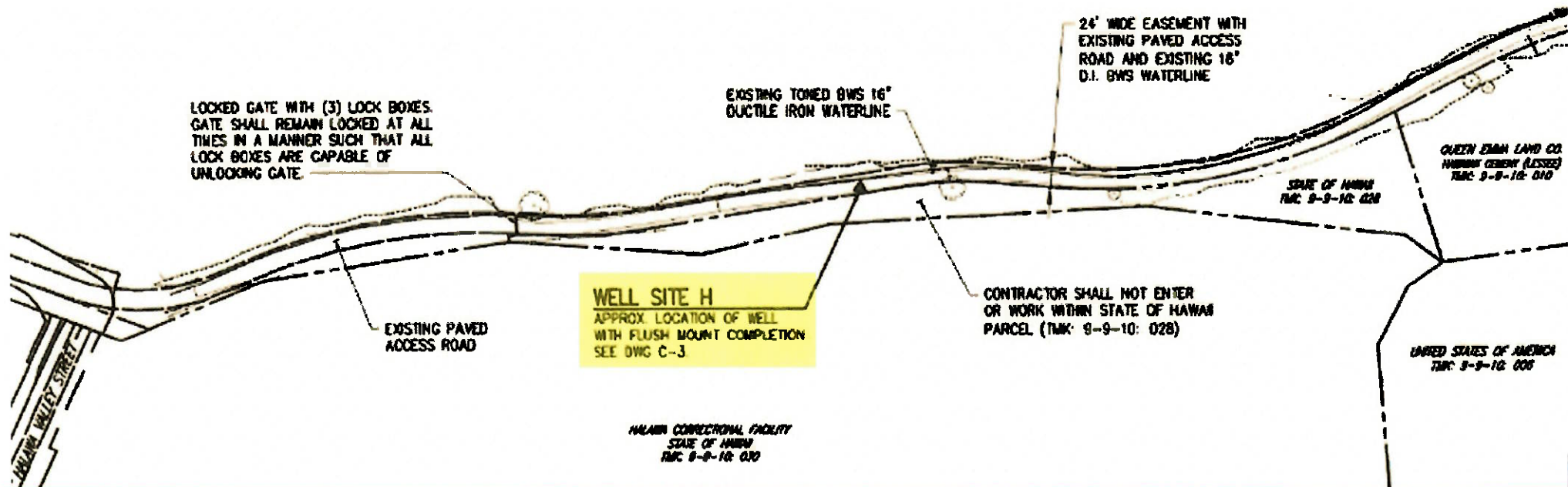
Add \$2,000,000 – Project No. 3A
“Halawa Valley Groundwater
Monitoring Wells, Phase II”

Remove \$2,000,000 Funding For Project
No. 25 “New Service Lateral
Installations at Various Locations”





QUEEN EMMA LAND CO.
HAWAII CEMENT (LESSEE)
TRAC 9-9-10: 010





Mahalo!

BOARD OF WATER SUPPLY

Authorizing a Public Hearing - FY 2022 CIP Amendment

Raelynn Nakbayashi

(808) 748-5177, rnakabayashi@hbws.org

boardofwatersupply.com for more information

December 13, 2021

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

ITEM FOR INFORMATION NO. 1

"December 13, 2021

**BOARD OF
WATER SUPPLY
FINANCIAL
UPDATE**

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

Subject: Board of Water Supply Financial Update

Joseph Cooper, Waterworks Controller, Finance Division, will present the Board of Water Supply's Financial Update.

/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.

Chair Andaya inquired if the difference between how much water is being pumped in the winter and the summer is approximately 40 million gallons per day (mgd).

Mr. Cooper replied that from the lowest point last winter to the highest peak in August the BWS pumped 40 mgd more. However, using the 5 year average and the 30 day moving average, the difference between winter and summer is a difference of 20 mgd.

Chair Andaya asked if homes within a condominium association would fall into residential or commercial accounts.

Mr. Cooper responded homes within a condominium association would be considered a residential account.

Chair Andaya thanked Mr. Cooper for his report.

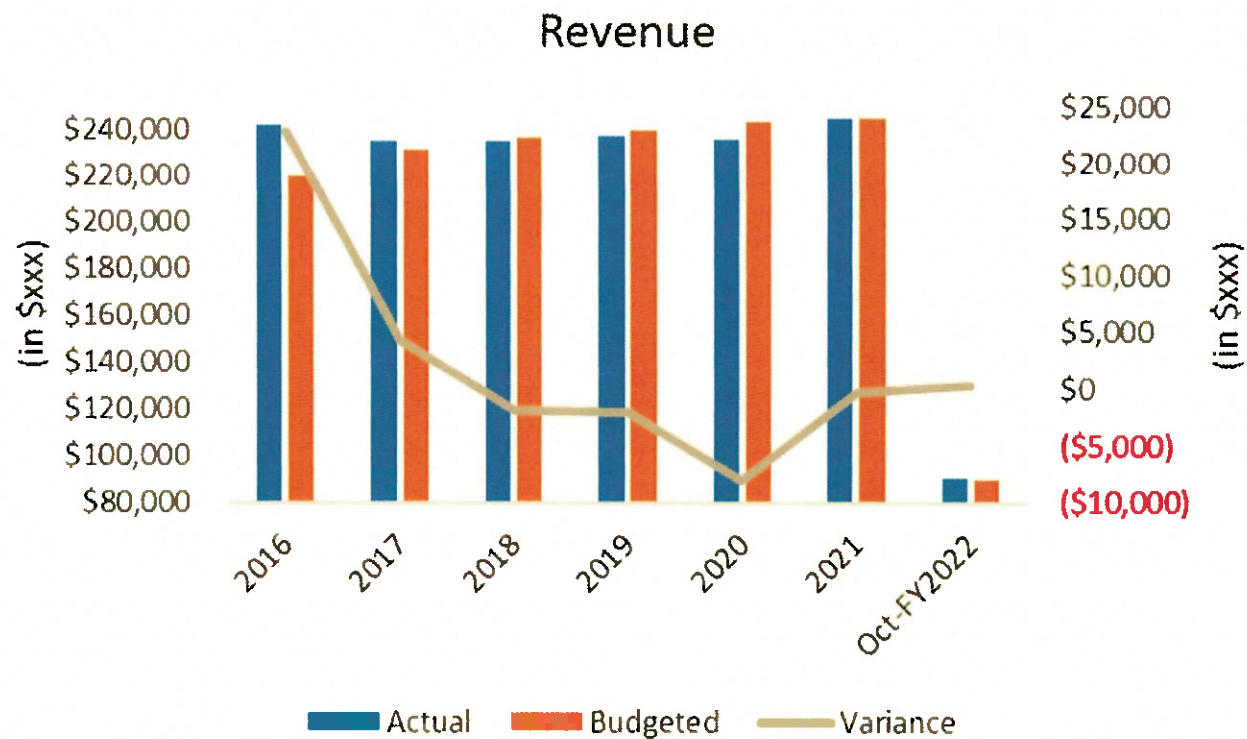


FINANCIAL UPDATE 2021

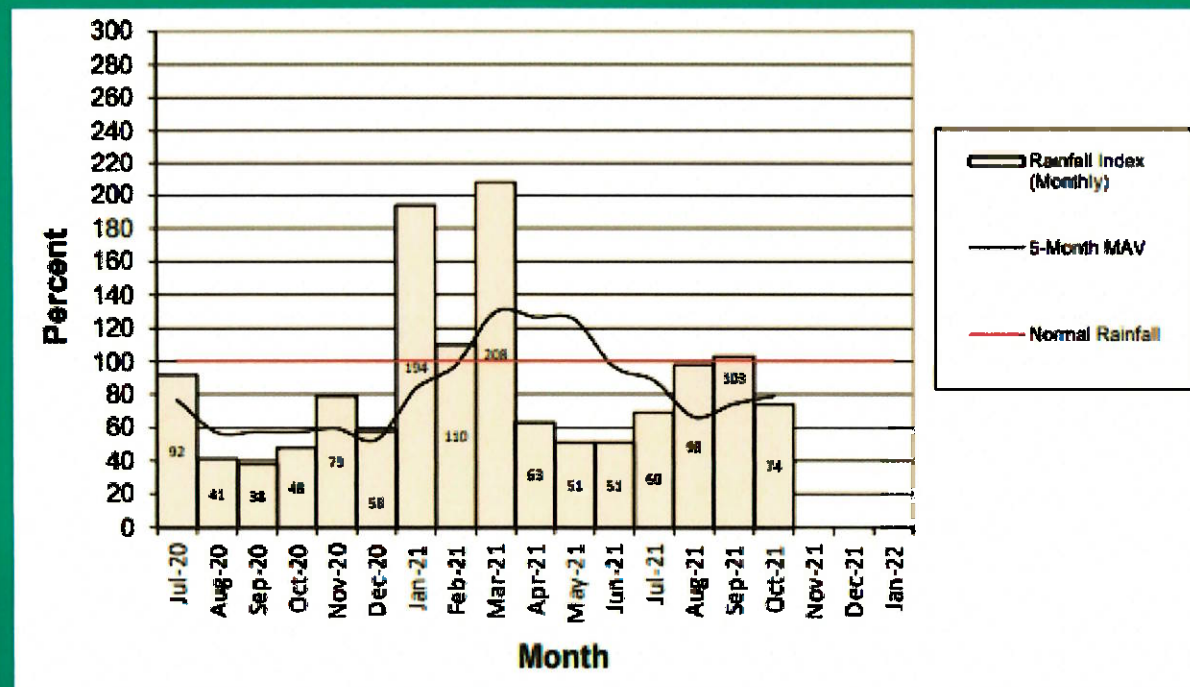
Joe Cooper
December 13, 2021
boardofwatersupply.com



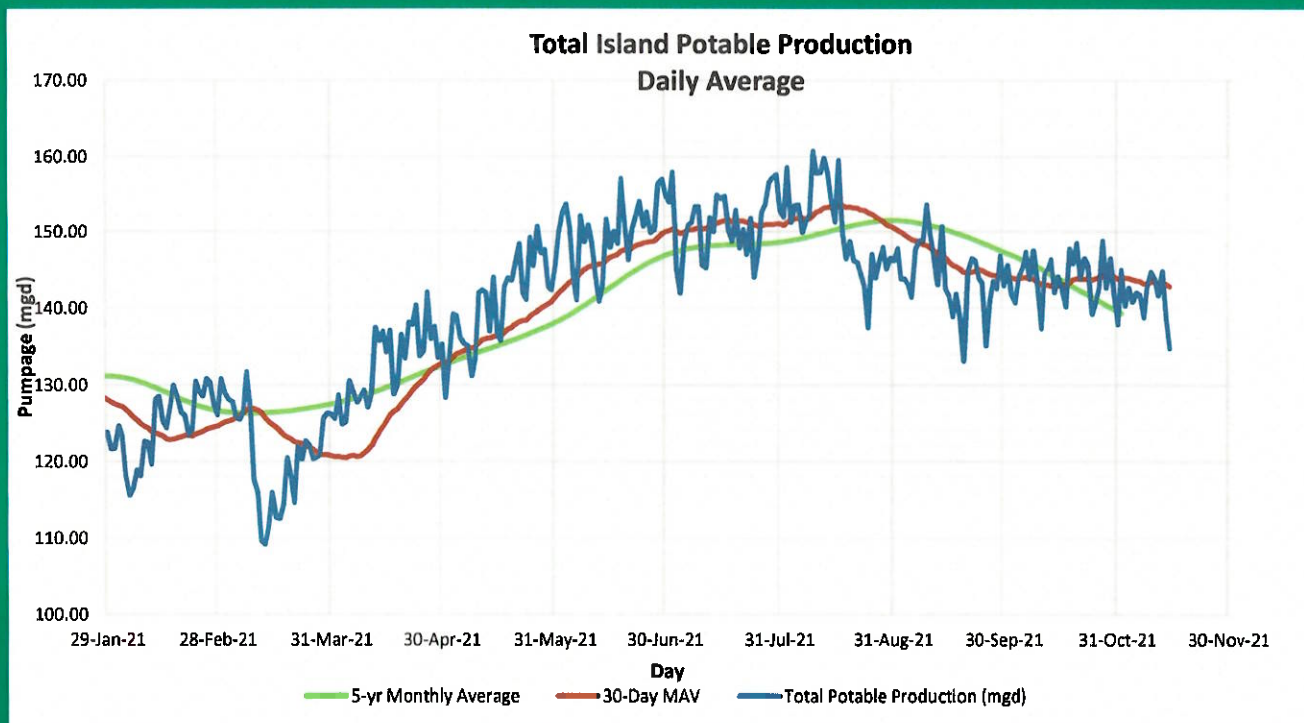
REVENUES – BUDGET vs ACTUAL FY 2016 – FY 2022



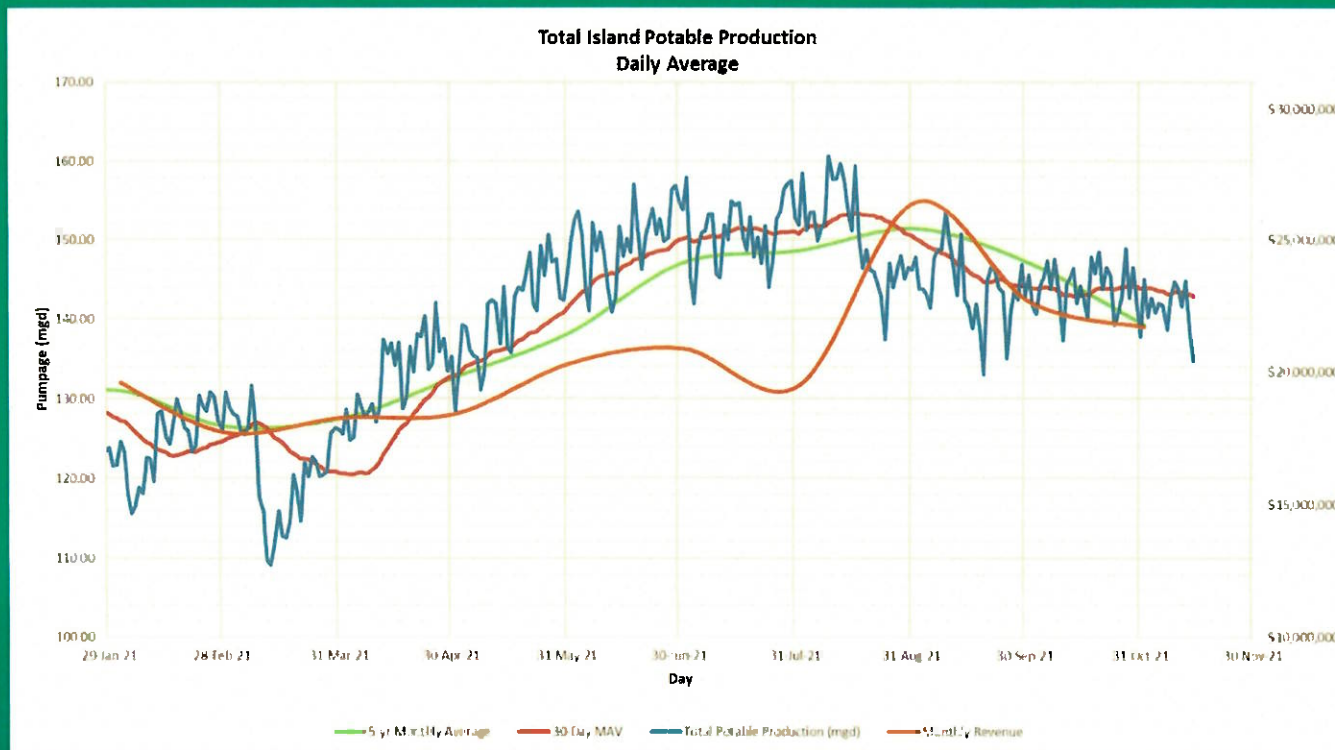
WATER DEMANDS ARE VERY DEPENDENT UPON WEATHER



TOTAL ISLAND POTABLE WATER PRODUCTION JAN – NOV 2021



TOTAL ISLAND POTABLE WATER PRODUCTION JAN - NOV 2021 WITH REVENUE

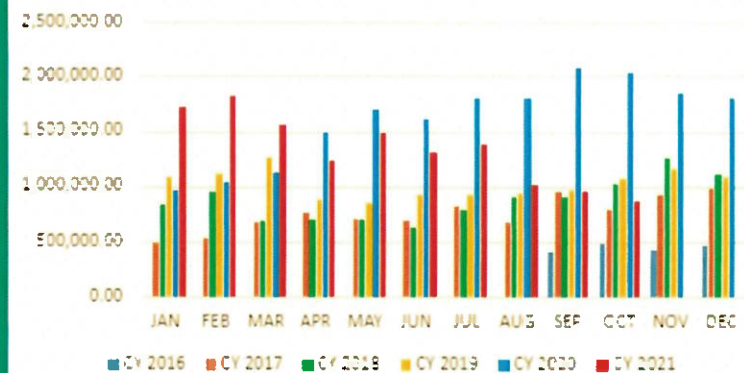


DELINQUENT ACCOUNTS COMMERCIAL

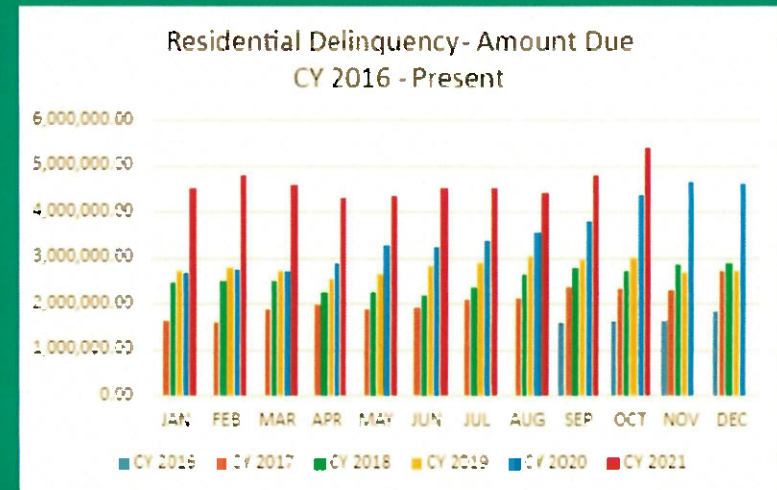
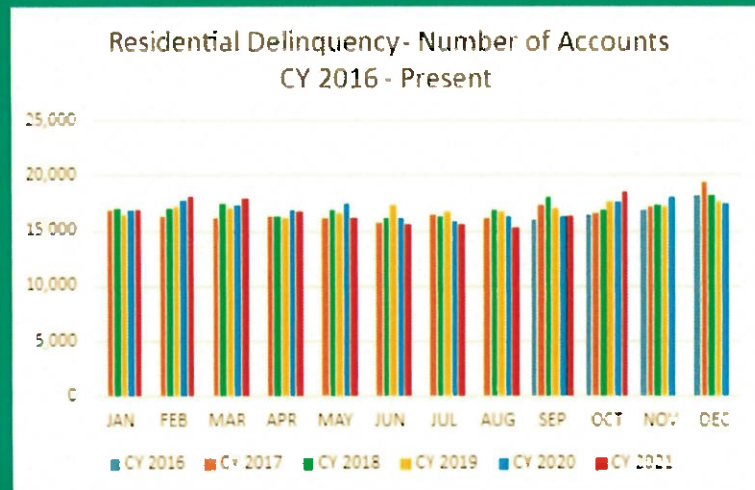
Commercial Delinquency - Number of Accounts
CY 2016 - Present



Commercial Delinquency - Amount Due
CY 2016 - Present



DELINQUENT ACCOUNTS RESIDENTIAL



ANNUAL CARRY OVER (\$M) FY 2016 – FY 2021





Mahalo!

BOARD OF WATER SUPPLY

WWW.BOARDOFWATERSUPPLY.COM



ITEM FOR INFORMATION NO. 2

"December 13, 2021

2021
CUSTOMER
SATISFACTION
SURVEY

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

Subject: 2021 Customer Satisfaction Survey

Becki Ward of Ward Research will present the results from the 2021 Customer Satisfaction Survey. These surveys are done every 2 years and measure customer service and messaging for the Board of Water Supply.

Respectfully submitted,

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

Attachment"

The foregoing was for information only.

DISCUSSION:

Becki Ward, Ward Research, gave the report.

Board Member Na'alehu Anthony expressed his appreciation for the report. He inquired if there were any additional feedback from participants as to why they scored the BWS lower or higher in some categories.

Ms. Ward responded that unfortunately, due to survey length, there were no open-ended questions to follow up the ratings. She stated she would review the surveys taken to check for any additional comments and get back to the Board.

Board Member Anthony asked if Ms. Ward had any recommendations to help the BWS reach customers during unprecedented times. He suggested considering a survey to be done sooner than the two years to obtain data.

Ms. Ward offered to work with the BWS. She stated data gathered during unprecedented times could help determine how perceptions of the BWS may be impacted. She shared that the Board should have confidence knowing that the public sees the BWS as a very trusted source.

Chair Andaya inquired if the outreach and advertising efforts of the BWS affected the results of the survey done.

Ms. Ward replied that the survey results were affected in both positive and negative ways due to today's circumstances. She explained that due to the pandemic the BWS did less outreach which was reflected in the lower levels of awareness of outreach activities. However, conservation

messages from the BWS advertising were played back in the survey data which was a positive impact.

Chair Andaya and Manager Lau thanked Ms. Ward for the report.



WARD RESEARCH
I N C O R P O R A T E D

Understanding Resident Perceptions of the Board of Water Supply

Prepared for:

**The Board of Water Supply
December 2021**

Methodology

- 4th wave of biannual tracking survey, began 2015
- Moved to a mixed method, phone + online
- Total of 675 interviews
- Margin of error +/-3.8%
- August 7 – September 1, 2021

Key Takeaways

- Satisfaction has dipped in some aspects, particularly related to perceived affordability and fairness of rates; while satisfaction with providing safe and dependable water remain strong and unchanged.
- Unclear what role COVID experience has played
- Strong trust in BWS as a source of info about fresh water issues
- Positive playback of conservation messages and behaviors

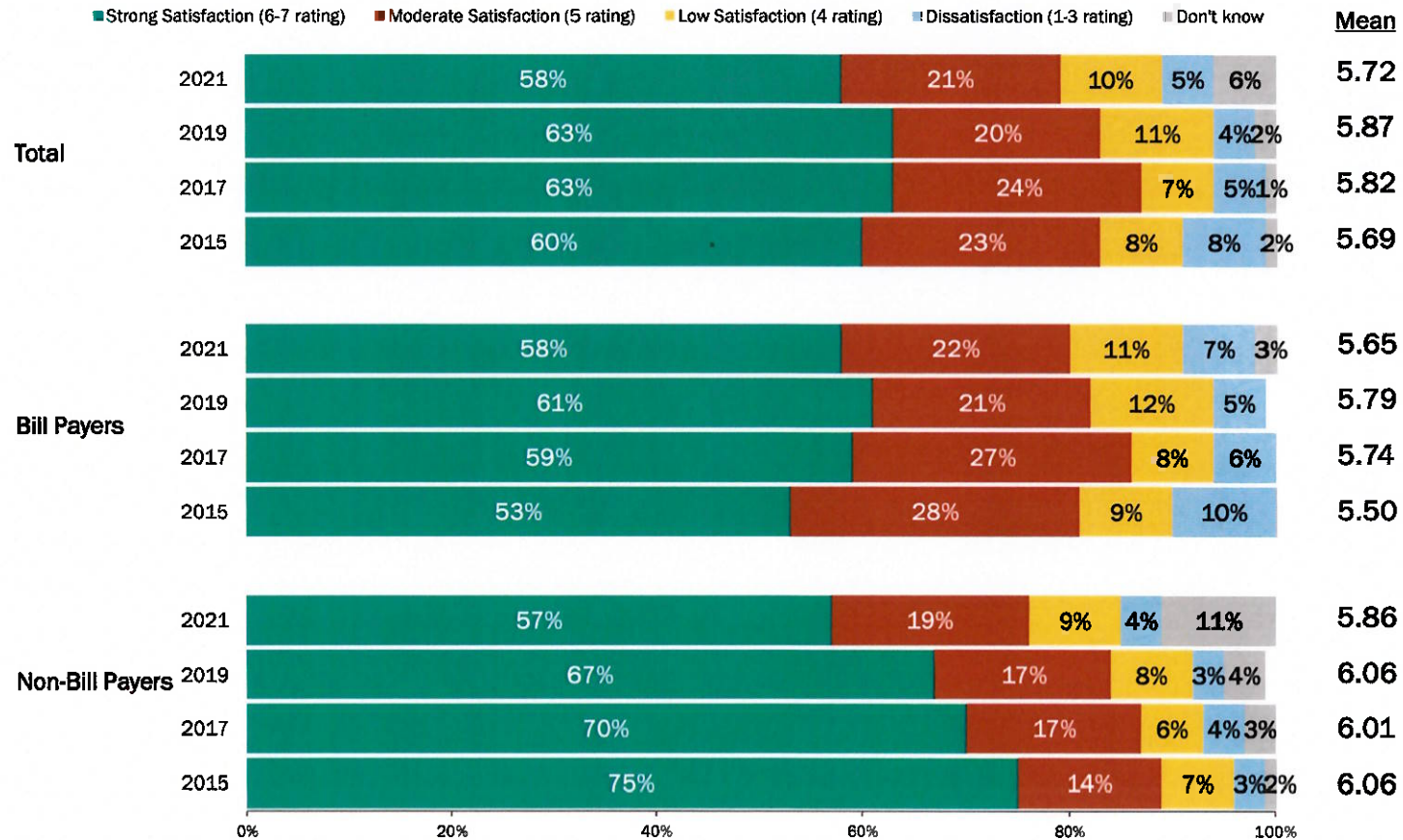
Overall Satisfaction with the BWS

- Overall satisfaction with BWS dipped slightly.
- Strong satisfaction with BWS dipped slightly among bill-payers, with a larger decline among non-bill payers.
- Strong satisfaction with BWS's *ability to keep water rates affordable* continued on downward trend.
- In contrast, strong satisfaction with BWS's ability to provide *dependable water* and *safe water* remained unchanged.

Base= Total: 2021=675, 2019=682, 2017=686, 2015=685; Bill Payers: 2021=423, 2019=460, 2017=472, 2015=454; Non-Bill Payers: 2021=252, 2019=222, 2017=214, 2015=231

Overall Satisfaction with the BWS

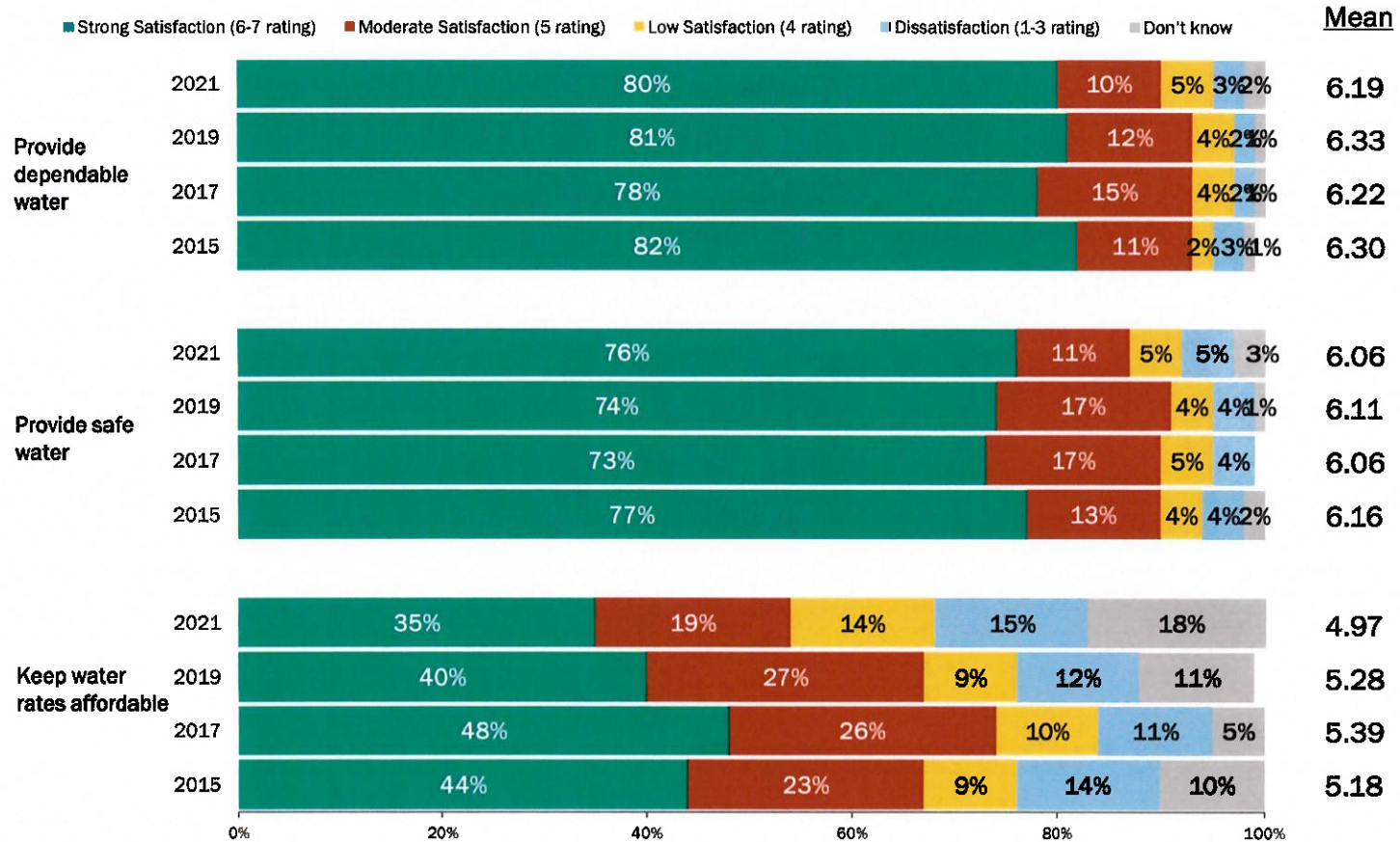
How would you rate your overall satisfaction with the Board of Water Supply?



Base= Total: 2021=675, 2019=682, 2017=686, 2015=685; Bill Payers: 2021=423, 2019=460, 2017=472, 2015=454; Non-Bill Payers: 2021=252, 2019=222, 2017=214, 2015=231

The BWS Mission

How satisfied are you with the Board of Water Supply's ability to:



Base= Total: 2019=682, 2017=686, 2015=685

Indicates statistically-significant differences in strong satisfaction ratings

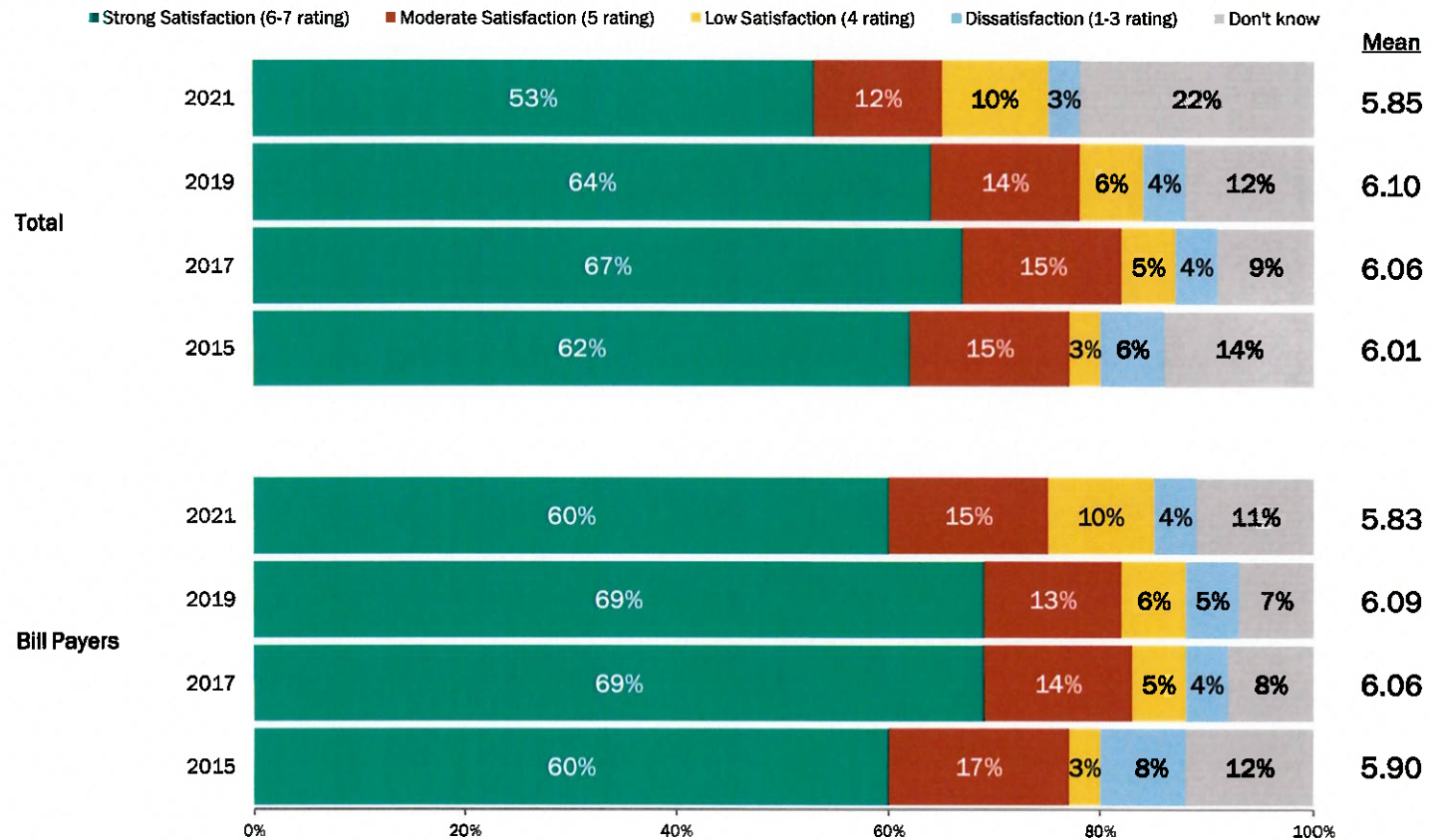
Customer Service

- Just over half indicated strong satisfaction with *overall customer service they receive from BWS*.
- Among bill payers only, 60% are strongly satisfied with *overall customer service that they receive from BWS*, significantly lower than in 2019.

Base= Total: 2021=675, 2019=682, 2017=686, 2015=685; Bill Payers: 2021=423, 2019=460, 2017=472, 2015=454; Non-Bill Payers: 2021=252, 2019=222, 2017=214, 2015=231

Satisfaction with Overall Customer Service

How would you rate your satisfaction with the Board of Water Supply
in terms of overall customer service?



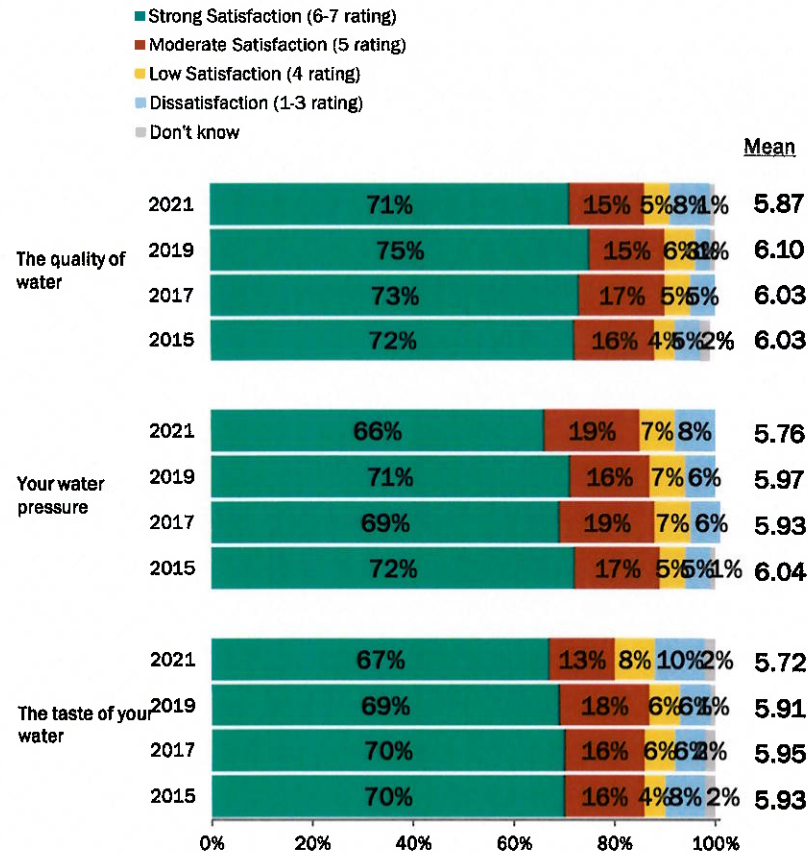
Base= Total: 2021=675, 2019=682, 2017=686, 2015=685; Bill Payers: 2021=423, 2019=460, 2017=472, 2015=454; Non-Bill Payers: 2021=252, 2019=222, 2017=214, 2015=231

Quality of Water and Delivery of Water Service

- Residents continued to indicate strong levels of satisfaction with the *quality* and *taste* of their water, as well as with their *water pressure*.
- Proportion indicating strong satisfaction with job that BWS is doing to *protect, manage, & sustain O'ahu's water resources* remained unchanged.
- Strong satisfaction with BWS's *fast response to trouble calls* dropped off sharply; attributed more to large increase in "don't know's" as opposed to an increase in less satisfied.
- Strong satisfaction with BWS *providing water to customers and for having reliable service* remained the same.
- Half are strongly satisfied with job BWS is doing *repairing, maintaining, and replacing O'ahu's water delivery system*.

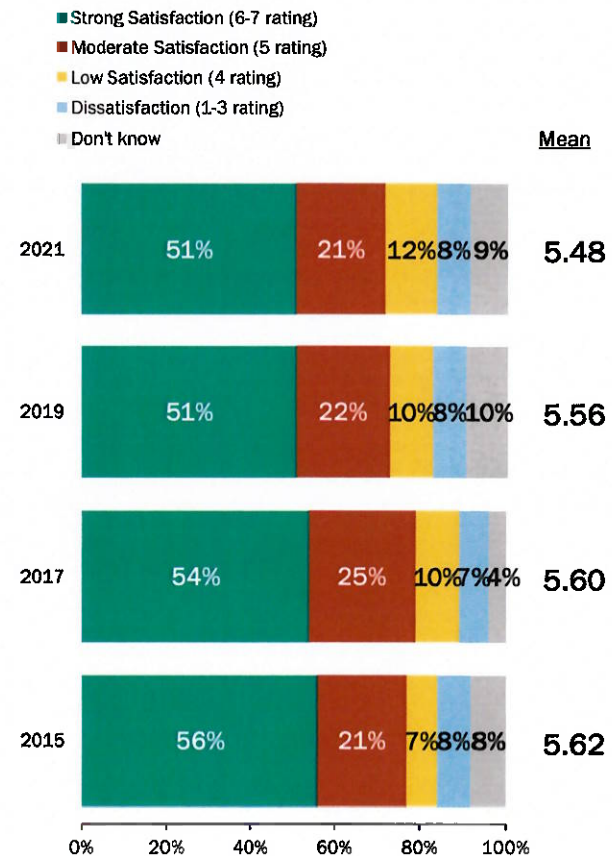
The Quality of Water

How satisfied are you with:

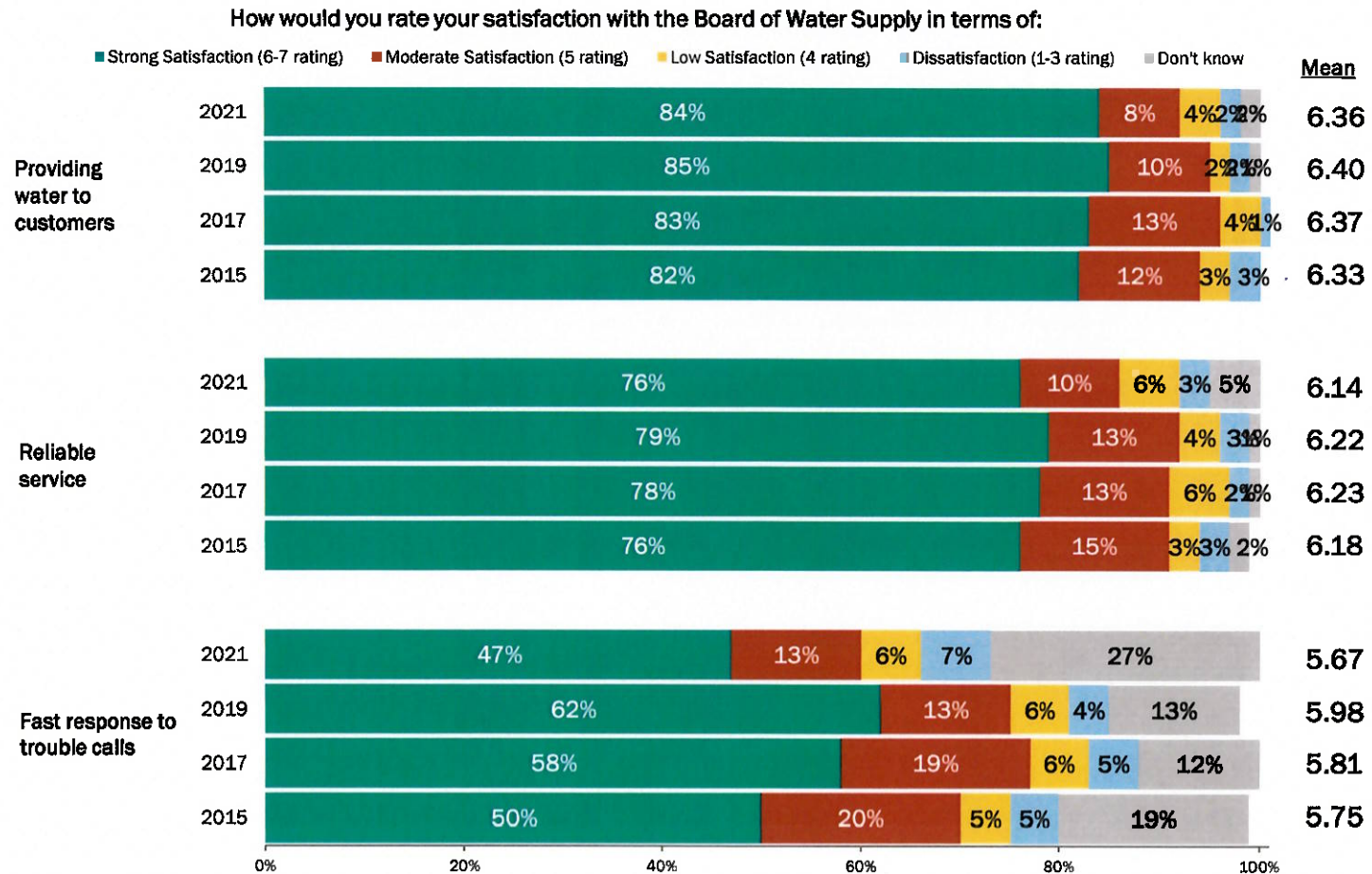


Base= Total: 2021=675, 2019=682, 2017=686, 2015=685

How satisfied are you with the job that the Board of Water Supply is doing protecting, managing, and sustaining O'ahu's water resources?



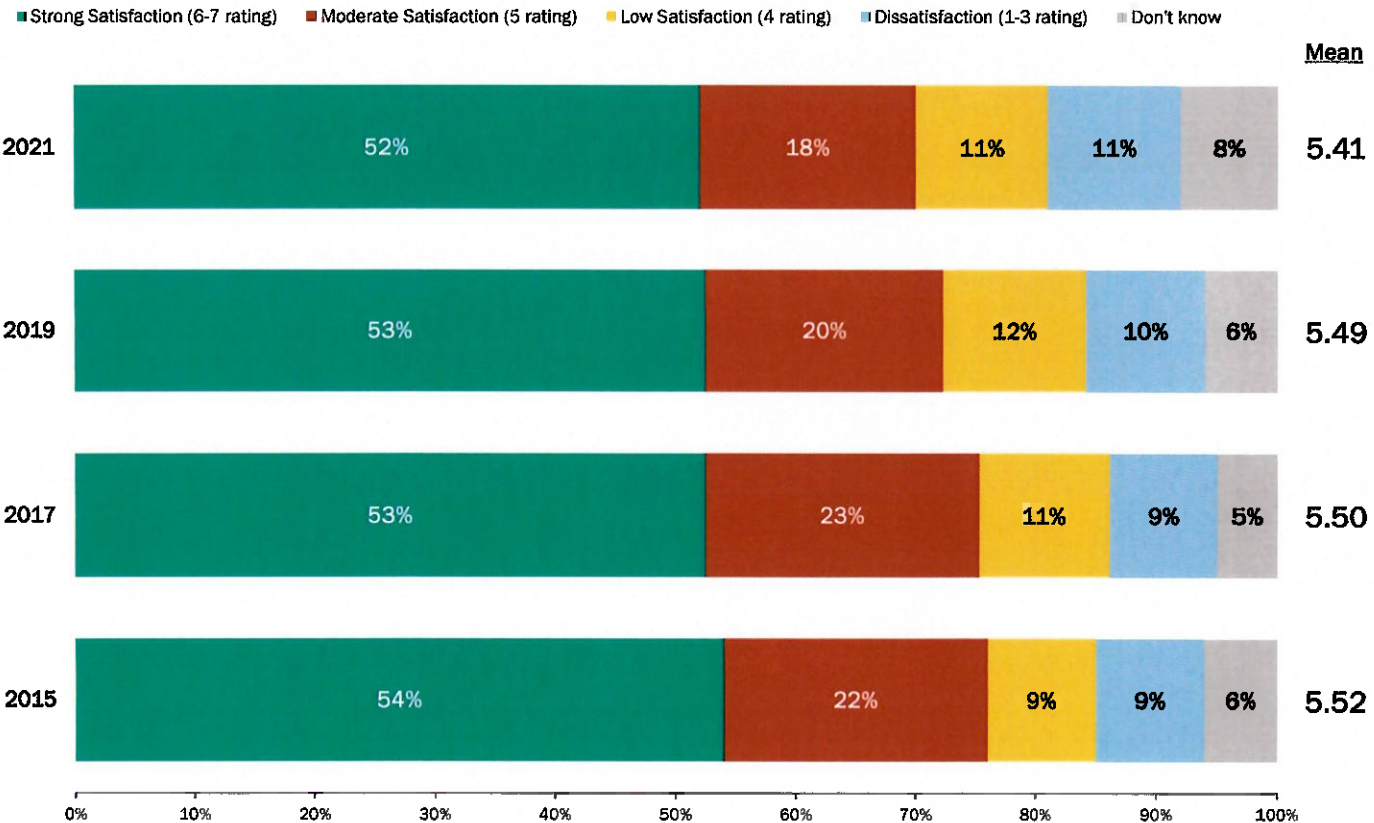
The Delivery of Water Service



Base Total: 2021=675, 2019=682, 2017=686, 2015=685

The Water Delivery System

How satisfied are you with the job that the Board of Water Supply is doing repairing, maintaining, and replacing O'ahu's water delivery system?



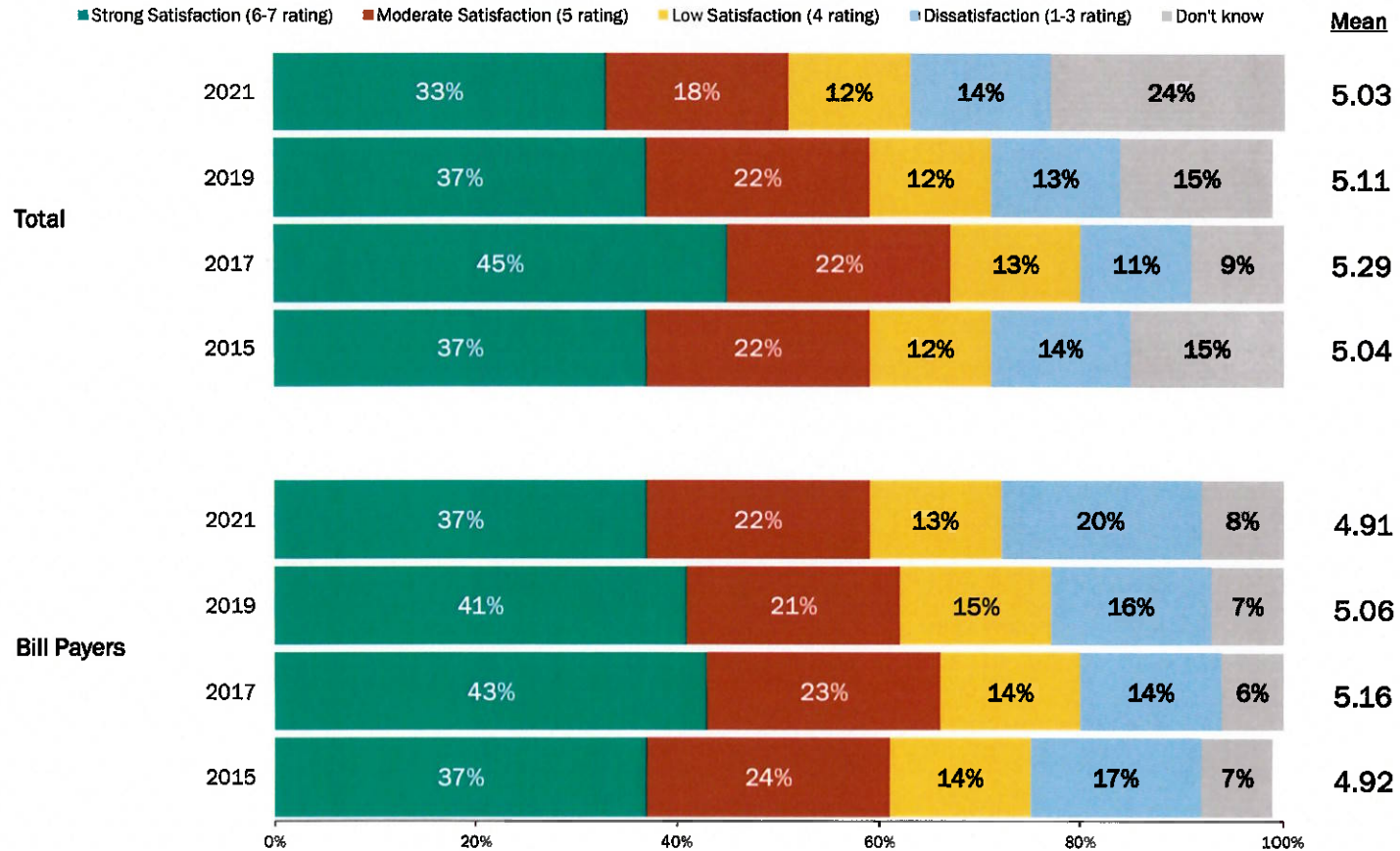
Base= Total: 2021=675, 2019=682, 2017=686, 2015=685

Rates, Bills, & Cost of Water Service

- Those strongly satisfied with BWS in terms of fairness of water rates continued on downward trend.
- Less than 3 in 10 residents said cost of water service is very affordable.

Fairness of Water Rates

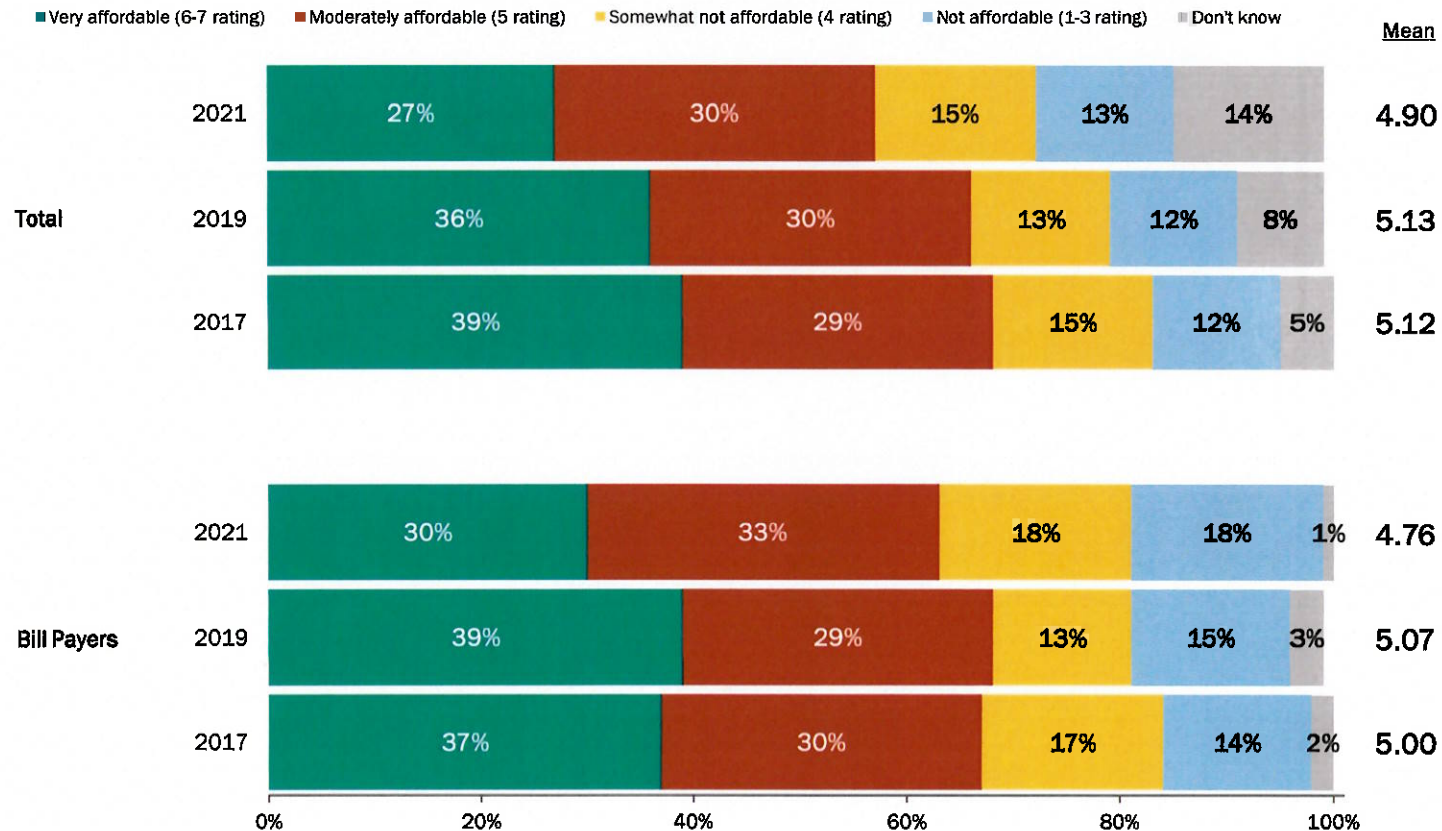
How would you rate your satisfaction with the Board of Water Supply in terms of fairness of water rates?



Base= Total: 2021=675, 2019=682, 2017=686, 2015=685; Bill Payers: 2021=423, 2019=460, 2017=472, 2015=454;

Perceptions about Affordability of Water Service

How affordable would you say your water service is?



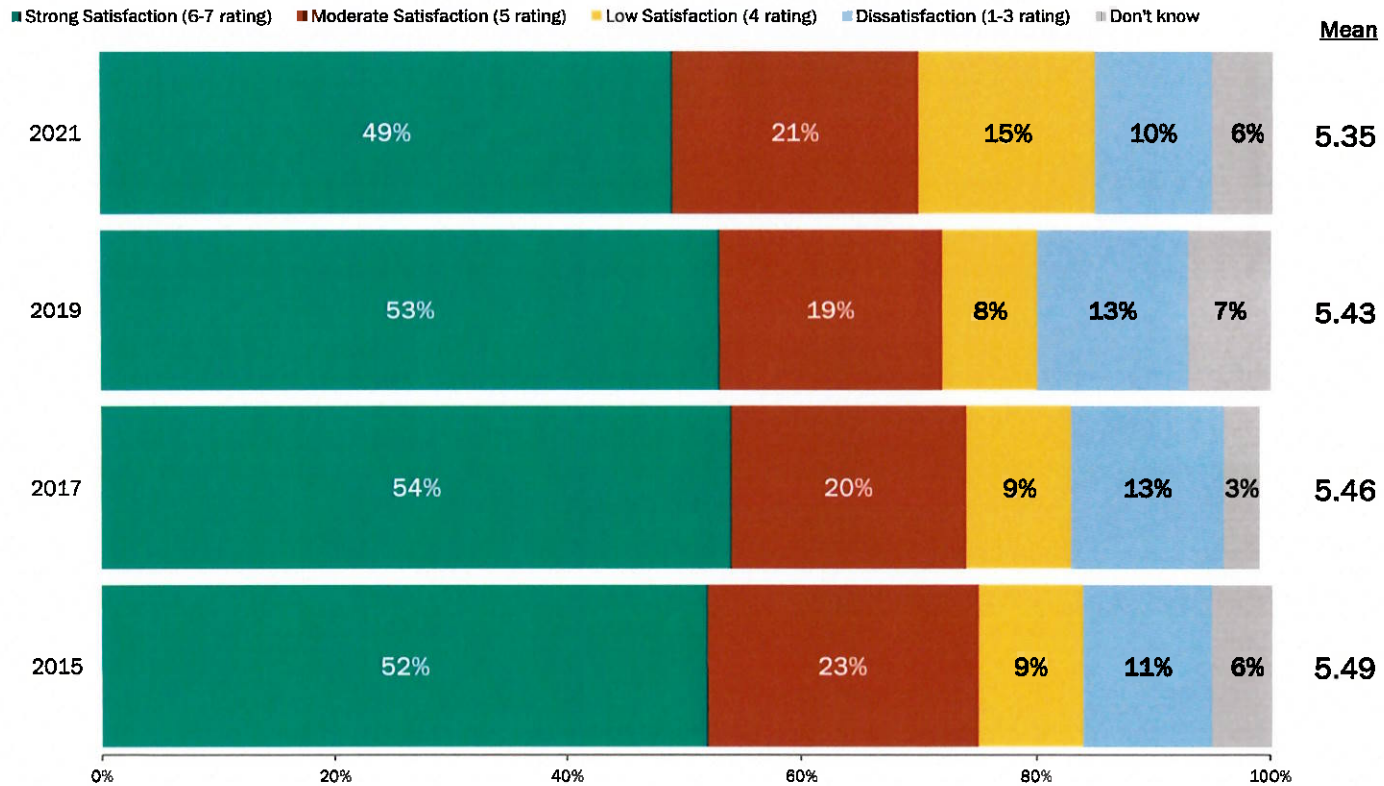
Base= Total: 2021=675, 2019=682, 2017=686, 2015=685; Bill Payers: 2021=423, 2019=460, 2017=472,

Water Conservation

- One-half reported strong satisfaction with BWS efforts to inform residents how to conserve water and keep bills lower.
- Slight majority have made changes in their daily routines (in the past year or two) in order to conserve water.
- Of this segment, nearly half said that they take shorter showers or fewer showers, far outdistancing all other behavioral changes.
- Although residents believe everyone holds great responsibility in water conservation, they place slightly greater responsibility on BWS (versus O'ahu's residents, the Government, and O'ahu's businesses).

Water Conservation

How would you rate the Board of Water Supply in terms of their efforts to inform residents how to conserve water and keep their bills lower?

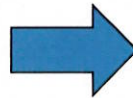
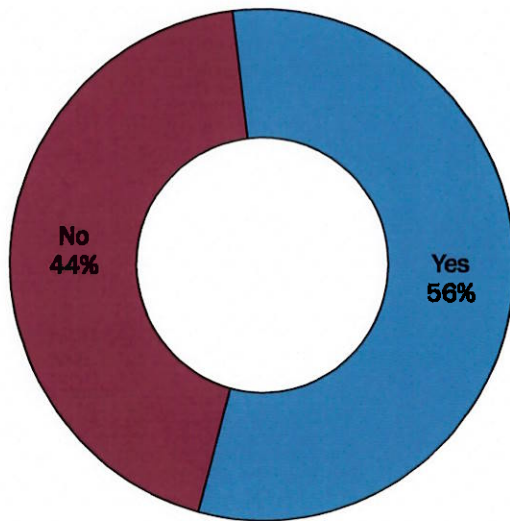


Base= Total: 2021=675, 2019=682, 2017=686, 2015=685

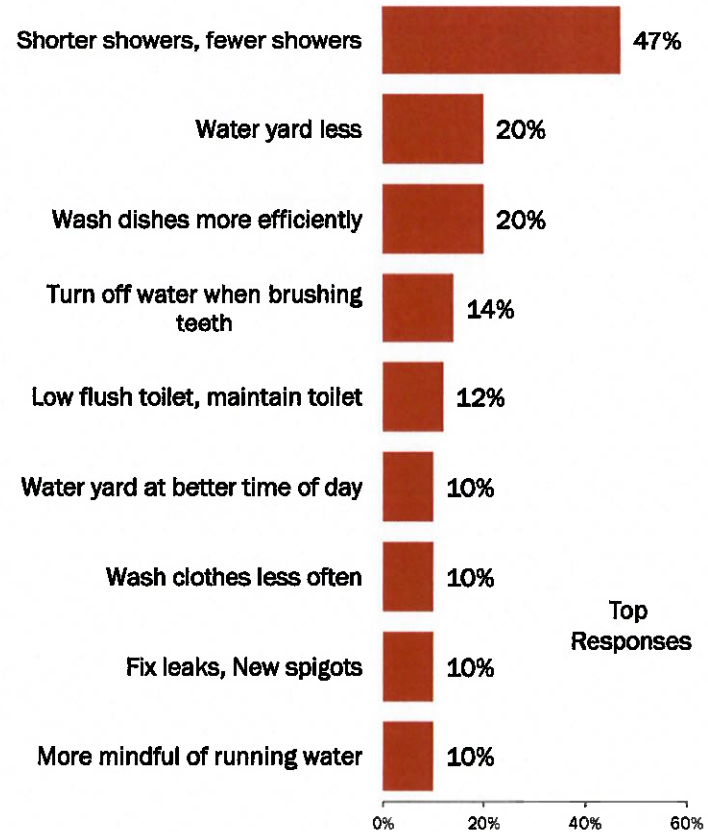
Note: Prior to 2021, question was worded "How would you rate the Board of Water Supply in terms of informing residents how to conserve water and keep their bills lower?"

Changes in Daily Routines To Conserve Water - 2021

In the past year or two, have you made any changes in your daily routines to conserve water?



What kinds of changes have you made?

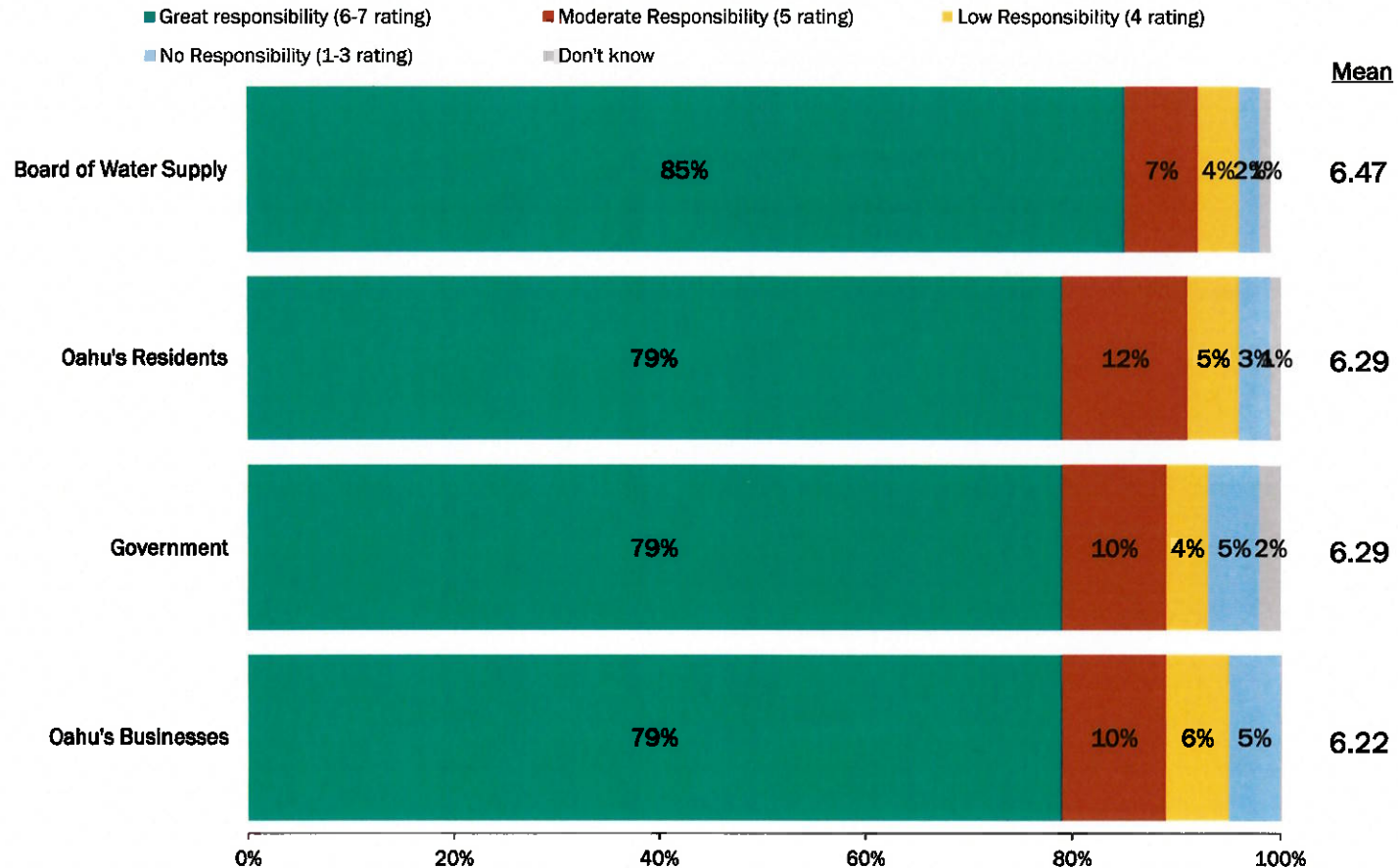


Base= Total: 2021=675 *Question was added in 2021

Base= Total: 2021=379 *Question was added in 2021

Responsibility in Water Conservation – 2021

Who has the greatest responsibility in water conservation?



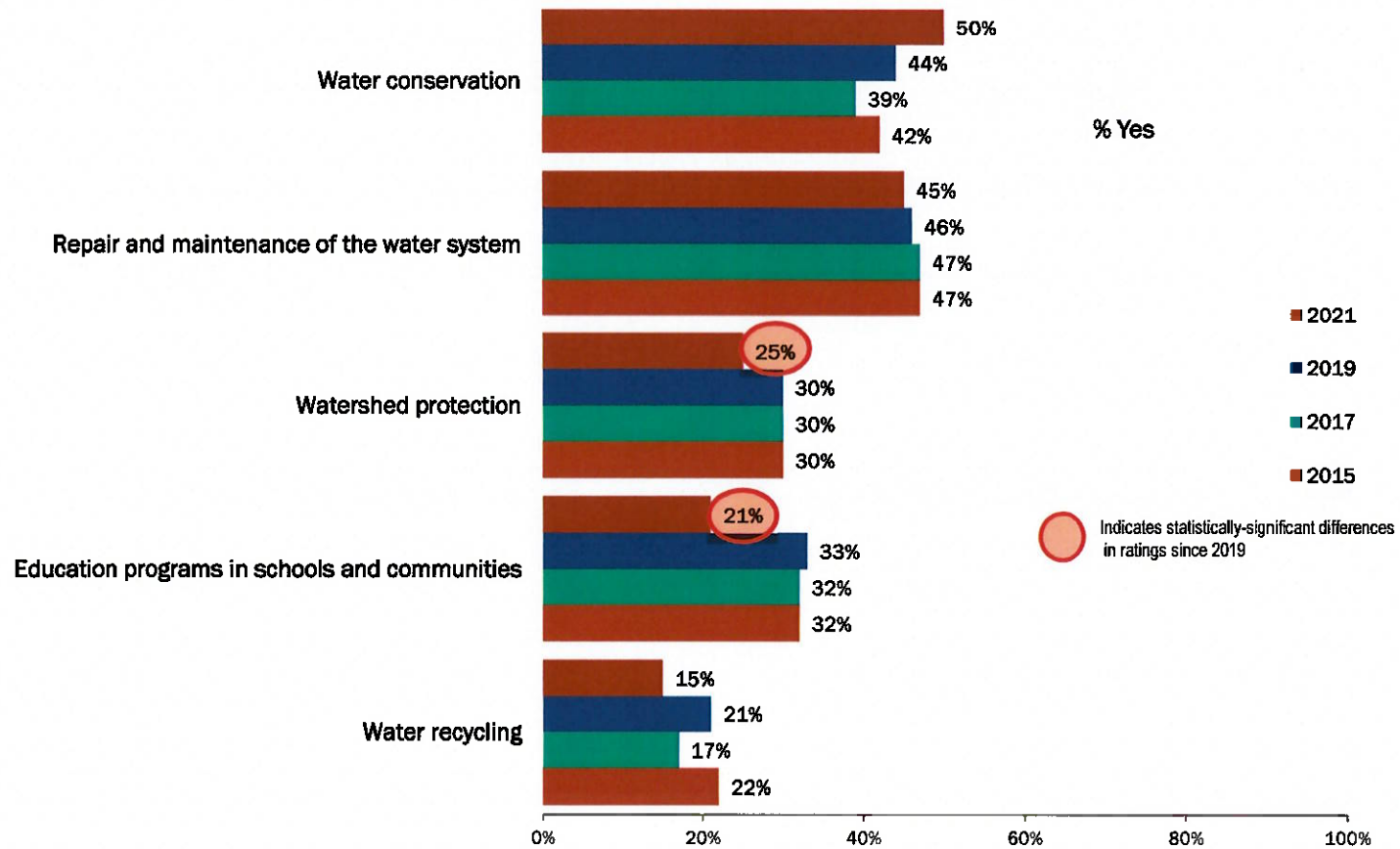
Base= Total: 2021=675 *Question was added in 2021

Community Outreach & Message Recall

- Although awareness of most BWS's activities & programs declined, awareness of BWS activities & programs related to water conservation increased.
- Significant declines in awareness of BWS education programs in schools & communities and activities related to water recycling.
- Strong trust in scientists and BWS to provide honest, accurate information about freshwater issues.
- Distrust/low trust in State Department of Health increased.
- Business leaders and elected officials continue to be least trusted sources of information about freshwater issues.

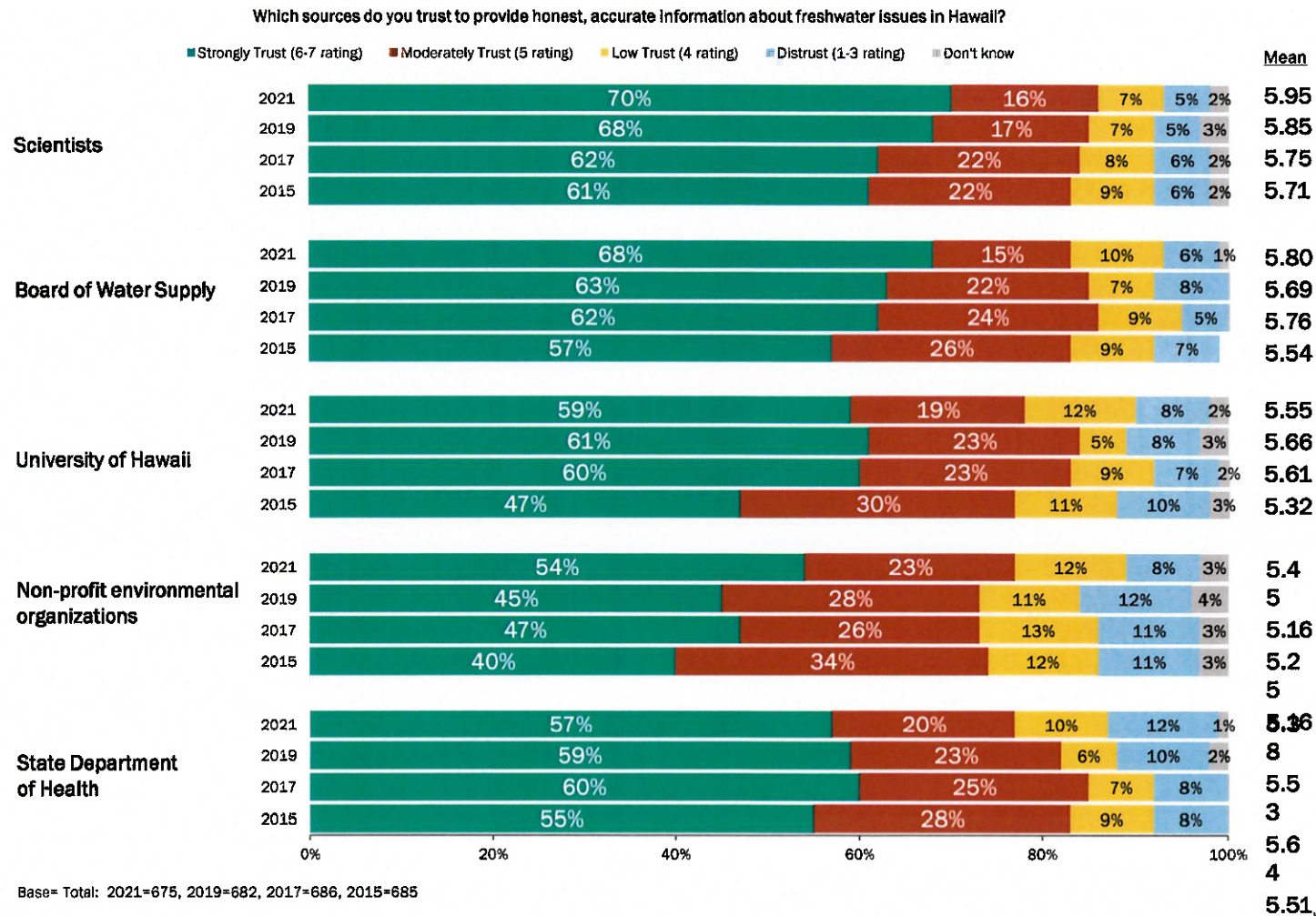
BWS Programs and Activities

Have seen or heard of the BWS's activities and programs in the following areas



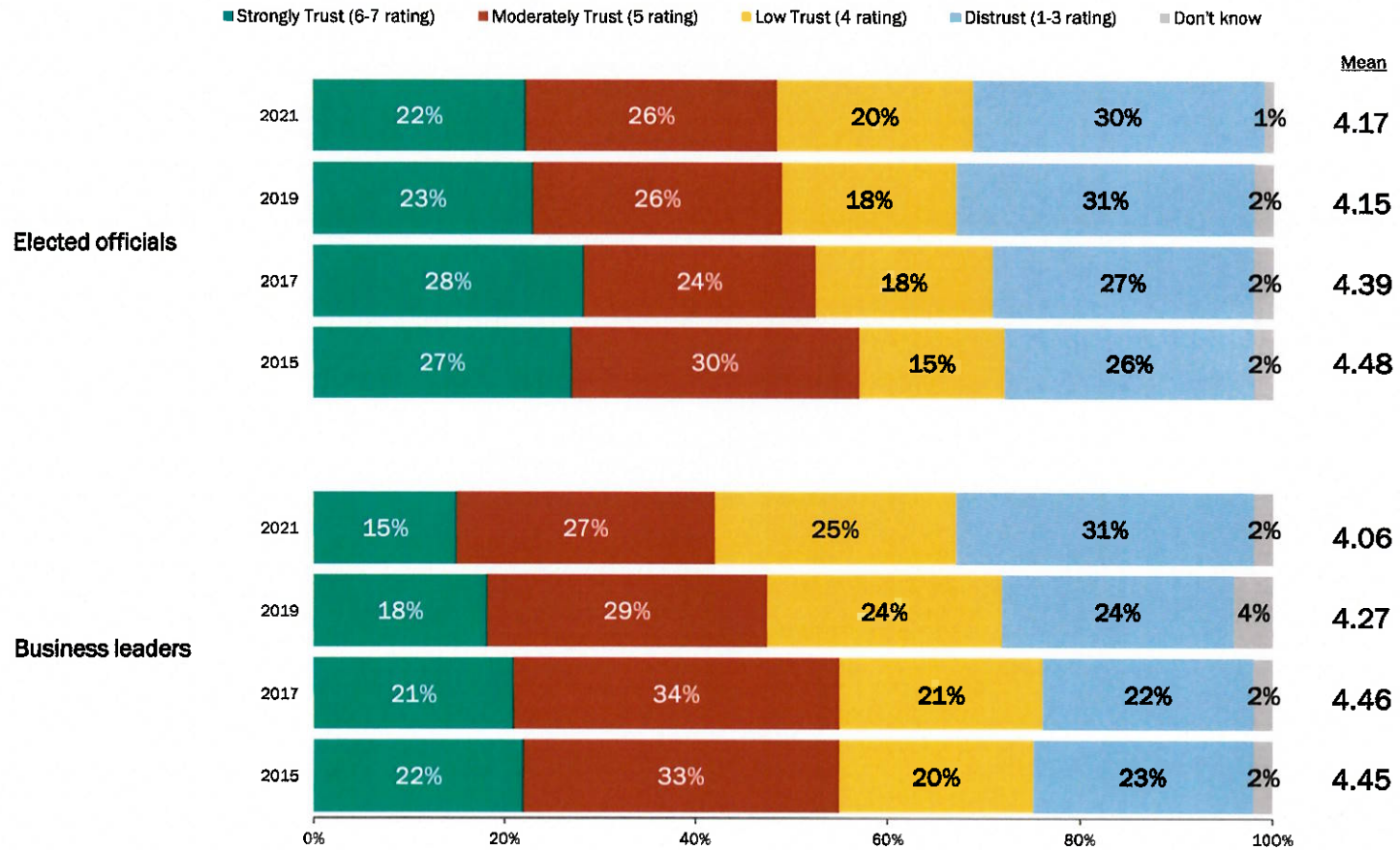
Base= Total: 2021=675, 2019=682, 2017=686, 2015=685

Sources of Information about Freshwater Issues (1 of 2)



Sources of Information about Freshwater Issues (2 of 2)

Which sources do you trust to provide honest, accurate information about freshwater issues in Hawaii?



Base= Total: 2021=675, 2019=682, 2017=686, 2015=685

ITEM FOR INFORMATION NO. 3

"December 13, 2021

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

There were two aquifer index stations in low groundwater condition for the production month of November 2021. Kaimuki is in Caution Status. Punaluu is in Alert Status. The monthly production average for November 2021 was 140.01 million gallons per day.

The Board of Water Supply rainfall index for the month of November 2021 was 39 percent of normal, with a 5-month moving average of 77 percent. As of November 30, 2021, the Hawaii Drought Monitor showed a gradation from abnormally dry conditions on the windward side of Oahu to moderate drought conditions on the leeward side of the Koolau Mountains and Honolulu, and severe drought conditions for the rest of the island. The National Weather Service (NWS) is forecasting above-normal precipitation for December 2021. In addition, due to the present La Nina conditions, NWS is forecasting enhanced probabilities for above normal precipitation through the winter months and into Spring 2022.

Most monitoring wells exhibited stable to slightly decreasing head levels for the month, likely due to increased pumping during the fall dry season. Average monthly Production for November 2021 was higher than the previous year and the 5-year monthly average.

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

Attachment"

The foregoing was for information only.

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

Board Member Anthony inquired if the information presented included any data since the BWS had to shut down Halawa Shaft and the impact the shut down may have caused to the BWS water system.

Mr. Usagawa replied that the information presented is for November due to the one month lag, there is no data is available at this time. The December

report will indicate whether water demand decreased due to the help and cooperation of the community and conservation messaging.

Chair Andaya asked if the report specifies how much was being pumped from Halawa Shaft, Halawa Well, and Aiea Well.

Mr. Usagawa responded that in November all three sources were still in use, therefore, the report reflects Halawa Shaft pumped 11.6 million gallons per day (mgd), Aiea Well 1.1 mgd, and Halawa Well 0.67 mgd.

Chair Andaya commented the Halawa Shaft provides water 20% of urban Honolulu's water.

Manager Lau stated that Oahu uses approximately 50 mgd of which 10 million gallons of water are being pumped from Halawa Shaft. This information is available to the public on the BWS website.

Manager Lau expressed his appreciation for Board Member Anthony's suggestions and recommendations throughout this process.

Mr. Usagawa expressed his gratitude to the Water Systems Operations Division who has managed to shift the BWS water system to meet the demands required to provide and service the BWS customers.

Manager Lau commented that the BWS will have to keep a close watch on the BWS water system.

Vice Chair Kapua Sproat inquired if other wells in surrounding areas are being monitored since the BWS is not able to predict the movement of the plume.

Mr. Usagawa replied that the Halawa Well and Aiea Well would be the closest wells within the Halawa Valley area that would be affected thus have been shut down.

Vice Chair Sproat expressed her appreciation to Manager Lau, Mr. Erwin Kawata, Program Administrator, Water Quality Division, and the BWS for their leadership, the vision, and courage to speak the truth to power and to keep us all apprised of this issue that's still very vital for Hawaii water future.

**PRODUCTION, HEAD AND RAINFALL REPORT
MONTH OF NOVEMBER 2021**

POTABLE

STATION	MGD
HONOLULU (1)	
KULIOUOU	0.01
WAILUPE	0.11
AINA KOA	0.03
AINA KOA II	0.71
MANOA II	0.85
PALOLO	1.56
KAIMUKI HIGH	1.53
KAIMUKI LOW	2.03
WILDER	7.35
BERETANIA HIGH	4.69
BERETANIA LOW	1.44
KALIH HIGH	0.00
KALIH LOW	0.00
KAPALAMA	0.62
KALIH SHAFT	7.23
MOANALUA	1.31
HALAWA SHAFT	11.61
KAAMILO	0.85
KALAUAO	6.21
PUNANANI	12.16
KAAHUMANU	0.24
HECO WAIU	2.46
MANANA	0.34
WELLS SUBTOTAL:	63.33
MANOA TUNNEL	0.17
PALOLO TUNNEL	0.00
GRAVITY SUBTOTAL:	0.17
HONO. SUBTOTAL:	63.50

STATION	MGD
WINDWARD (2)	
WAIMANALO II	0.07
WAIMANALO III	0.00
KUOU I	0.96
KUOU II	0.06
KUOU III	0.74
LULUKU	0.86
HAIKU	0.32
IOLEKAA	0.26
KAHALUU	0.58
KAHANA	0.00
PUNALUU I	0.00
PUNALUU II	2.76
PUNALUU III	2.53
KALUANUI	1.26
MAAKUA	0.30
HAUULA	0.26
WELLS SUBTOTAL:	10.97
WAIM. TUNNELS I & II	0.00
WAIM. TUNNELS III&IV	0.19
WAIHEE INCL. WELLS	0.65
WAIHEE TUNNEL	3.31
LULUKU TUNNEL	0.13
HAIKU TUNNEL	0.00
KAHALUU TUNNEL	1.47
GRAVITY SUBTOTAL:	5.75
WIND. SUBTOTAL:	16.71

STATION	MGD
NORTH SHORE (3)	
KAHUKU	0.40
OPANA	0.35
WAIALEE I	0.04
WAIALEE II	0.69
HALEIWA	0.00
WAIALUA	2.43
N.SHORE SUBTOTAL:	3.92

STATION	MGD
MILILANI (4)	
MILILANI I	1.88
MILILANI II	0.00
MILILANI III	0.68
MILILANI IV	2.19
MILILANI SUBTOTAL:	4.76

STATION	MGD
WAIHAWA (5)	
WAIHAWA	0.00
WAIHAWA II	3.11
WAIHAWA SUBTOTAL:	3.11

STATION	MGD
PEARL CITY-HALAWA (6)	
HALAWA 277	0.67
HALAWA 550	0.00
AIEA	1.19
AIEA GULCH 497	0.19
AIEA GULCH 550	0.23
KAONOHI I	1.21
WAIMALU I	0.00
NEWTOWN	1.03
WAIU	0.84
PEARL CITY I	0.83
PEARL CITY II	1.12
PEARL CITY III	0.26
PEARL CITY SHAFT	0.93
PEARL CITY-HALAWA SUBTOTAL:	8.50

STATION	MGD
WAIPAHU-EWA (7)	
WAIPIO HTS.	1.09
WAIPIO HTS. I	0.00
WAIPIO HTS. II	0.43
WAIPIO HTS. III	1.23
WAIPAHU	5.68
WAIPAHU II	1.93
WAIPAHU III	3.79
WAIPAHU IV	2.72
KUNIA I	4.73
KUNIA II	1.93
KUNIA III	1.49
HOAEAE	5.74
HONOLULU I	0.00
HONOLULU II	4.40
MAKAKILO	0.15
WAIPAHU-EWA SUBTOTAL:	35.31

STATION	MGD
WAIANAE (8)	
MAKAHA I	0.81
MAKAHA II	0.00
MAKAHA III	0.10
MAKAHA V	0.08
MAKAHA VI	0.00
MAKAHA SHAFT	0.00
KAMAILE	0.07
WAIANAE I	0.32
WAIANAE II	0.49
WAIANAE III	0.73
WELLS SUBTOTAL:	2.59
WAI. C&C TUNNEL	1.40
WAI. PLANT. TUNNELS	0.21
GRAVITY SUBTOTAL:	1.61
WAIANAE SUBTOTAL:	4.19

NONPOTABLE

NONPOTABLE	MGD
KALAUAO SPRINGS	0.42
BARBERS POINT WELL	1.26
GLOVER TUNNEL NP	0.29
NONPOTABLE TOTAL:	1.97

RECYCLED WATER (OCTOBER 2021)

RECYCLED WATER	MGD
HONOLULU WRF R-1	7.88
HONOLULU WRF RO	1.34
RECYCLED WATER TOTAL:	9.22

**PRODUCTION, HEAD AND RAINFALL REPORT
MONTH OF NOVEMBER 2021**

PRODUCTION SUMMARIES

TOTAL WATER	MGD
PUMPAGE	132.49
GRAVITY	7.53
POTABLE TOTAL:	140.01
NONPOTABLE	1.97
RECYCLED WATER	9.22
TOTAL WATER:	151.21

CWRM PERMITTED USE AND BWS ASSESSED YIELDS FOR BWS				
POTABLE SOURCES				
WATER USE DISTRICTS		A PERMITTED USE/ BWS YLDS	B NOV 2021	C DIFF. A-B
1	HONOLULU	82.93	63.33	19.60
2	WINDWARD	25.02	12.75	12.27
3	NORTH SHORE	4.70	3.92	0.78
4	MILILANI	7.53	4.76	2.77
5	WAHIAWA	4.27	3.11	1.16
6	PEARL CITY-HALAWA	12.25	8.50	3.75
7	WAIPAHU-EWA	50.63	35.31	15.32
8	WAIANAE	4.34	2.59	1.75
TOTAL:		191.67	134.28	57.39

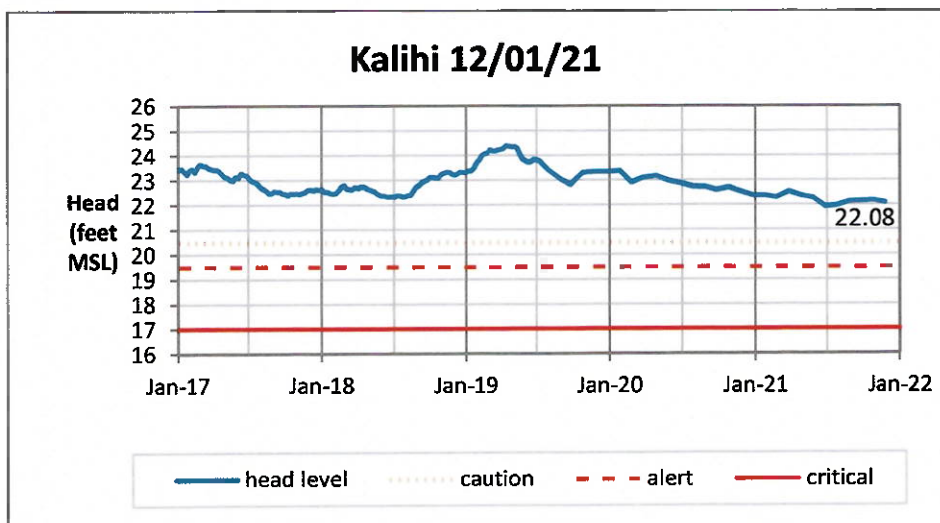
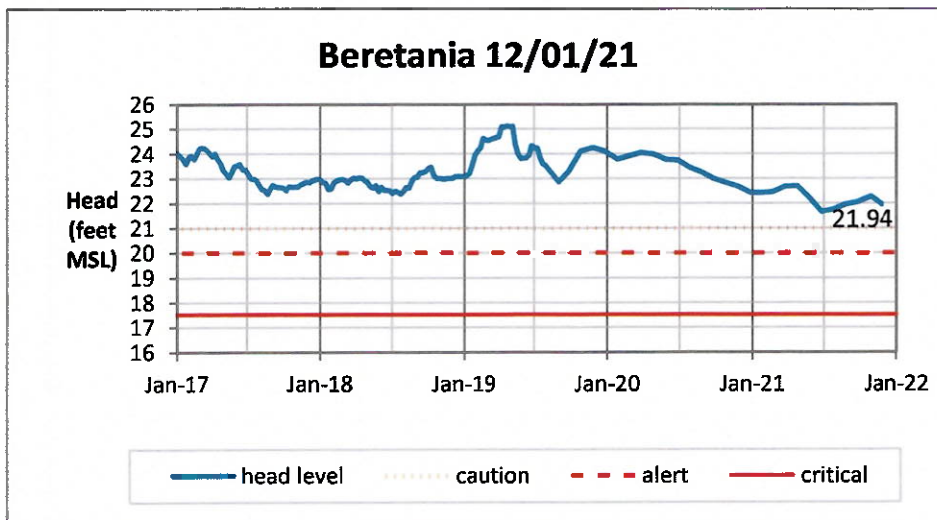
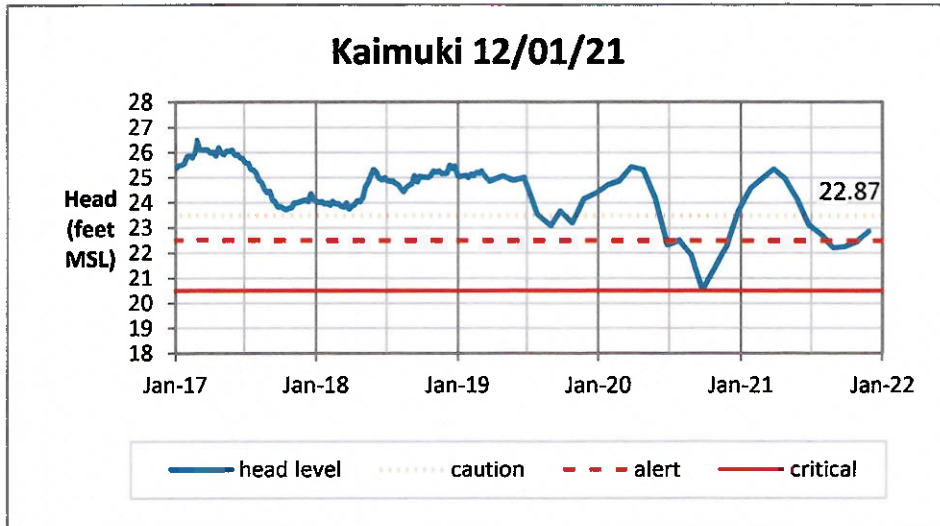
CWRM PERMITTED USE FOR BWS				
NONPOTABLE SOURCES				
WATER USE DISTRICTS		A PERMITTED USE	B NOV 2021	C DIFF. A-B
7	WAIPAHU-EWA (BARBERS POINT WELL)	1.00	1.26	-0.26
TOTAL:		1.00	1.26	-0.26

EFFECTIVE WATER DEMAND PER DISTRICT

IMPORT/EXPORT BETWEEN WATER USE DISTRICTS			
FROM	TO		MGD
2	1	WINDWARD EXPORT	0.02
7	8	BARBERS PT LB	5.67

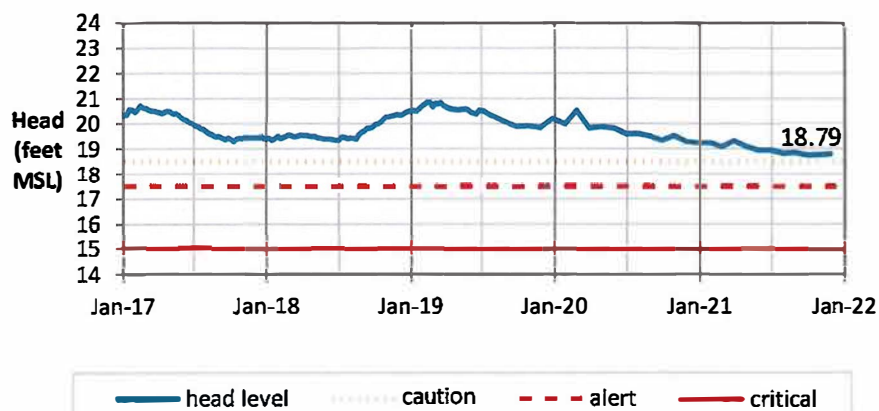
WATER USE DISTRICTS		SUBTOTAL	IMPORT	EXPORT	EFFECTIVE WATER DEMAND
1	HONOLULU	63.33	0.02	-	63.35
2	WINDWARD	12.75	-	0.02	12.73
3	NORTH SHORE	3.92	-	-	3.92
4	MILILANI	4.76	-	-	4.76
5	WAHIAWA	3.11	-	-	3.11
6	PEARL CITY-HALAWA	8.50	-	-	8.50
7	WAIPAHU-EWA	35.31	-	5.67	29.64
8	WAIANAE	2.59	5.67	-	8.25
TOTAL:		134.28	5.69	5.69	134.28

Head Report

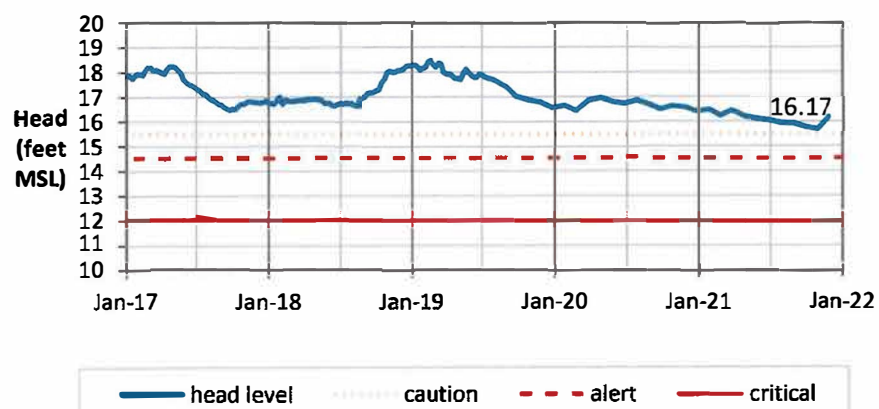


Head Report

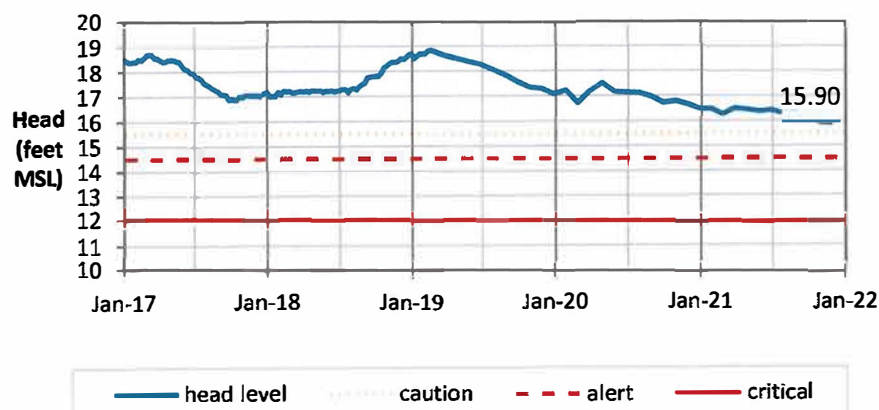
Moanalua 12/01/21



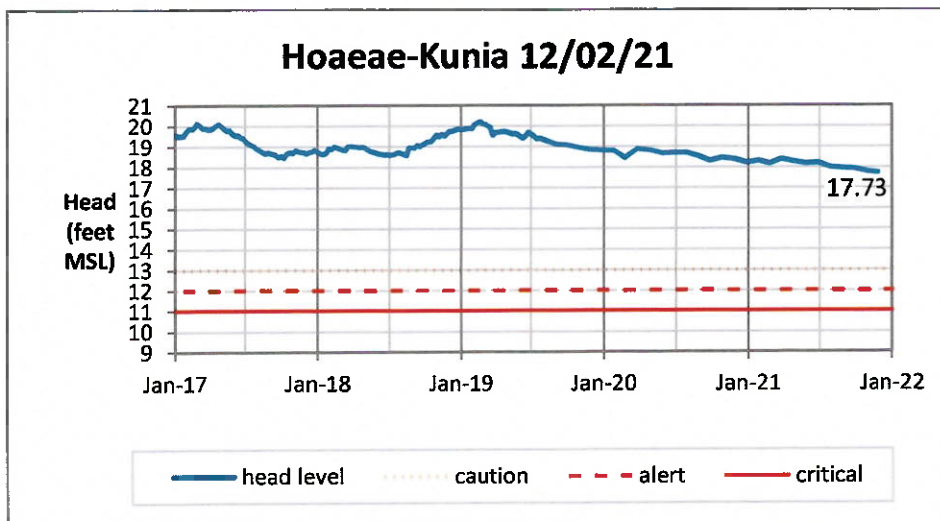
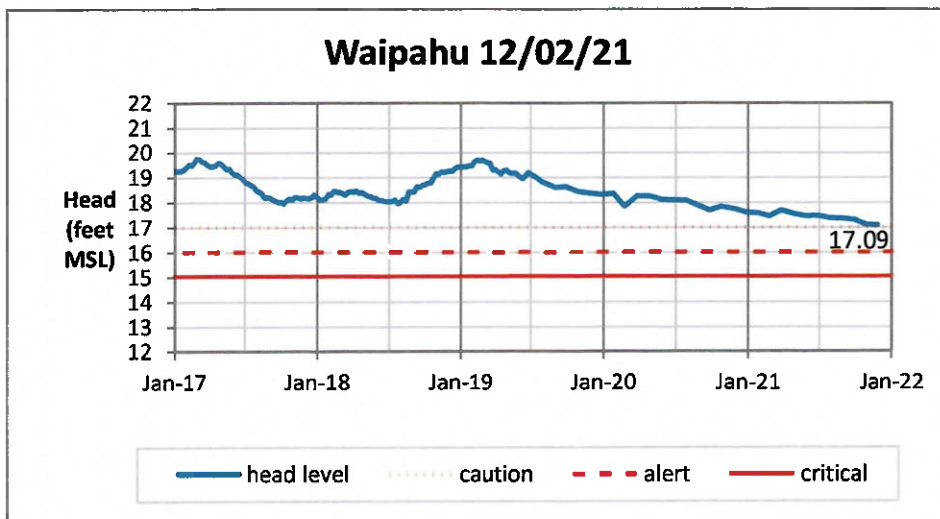
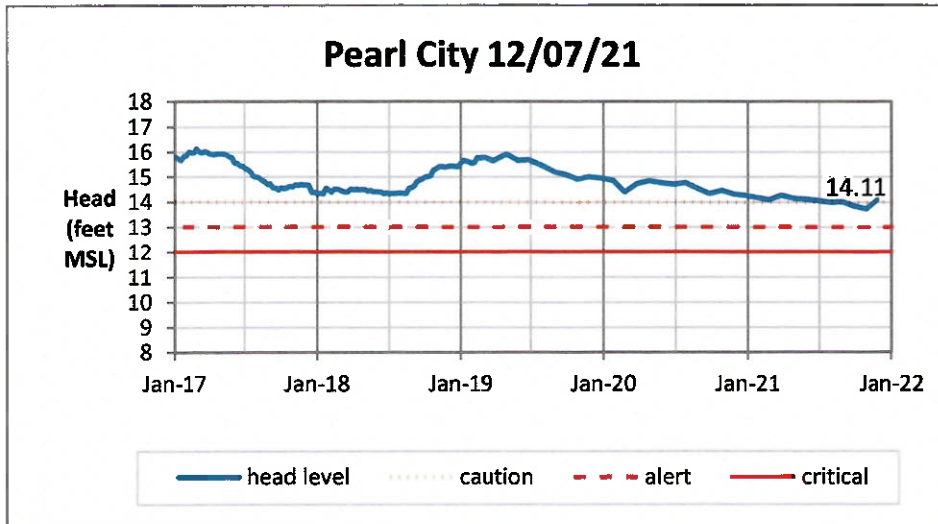
Halawa 12/07/21



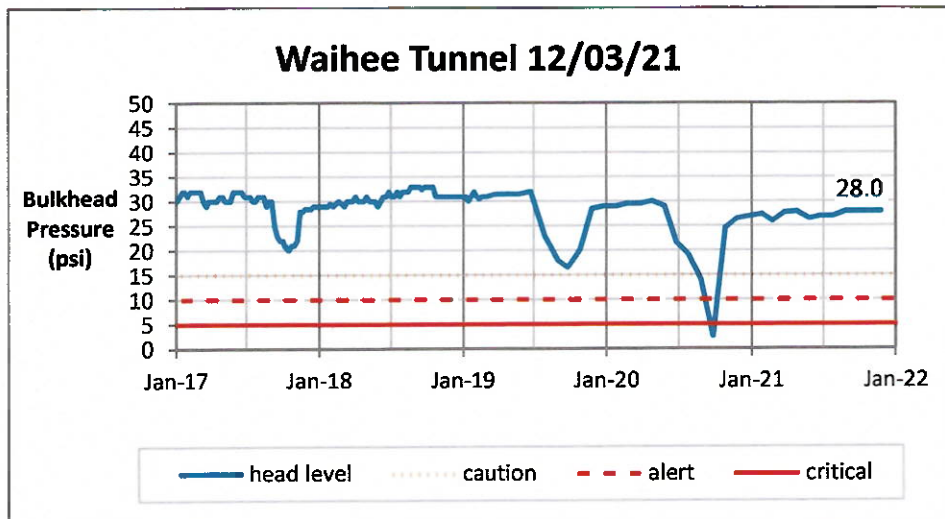
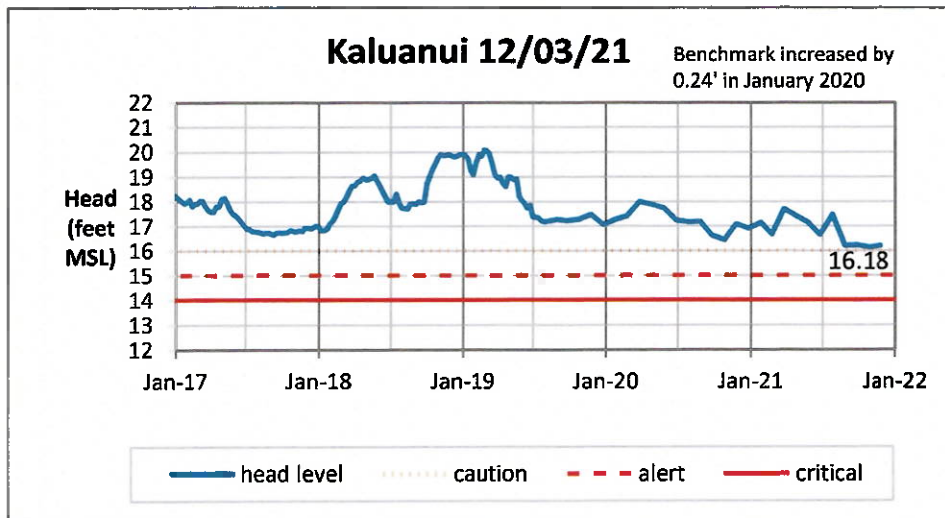
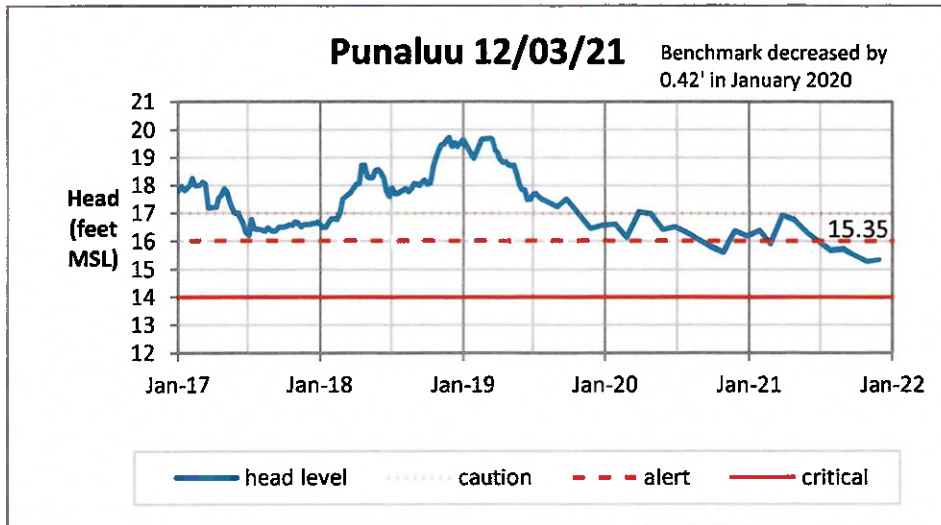
Kalauao 12/03/21



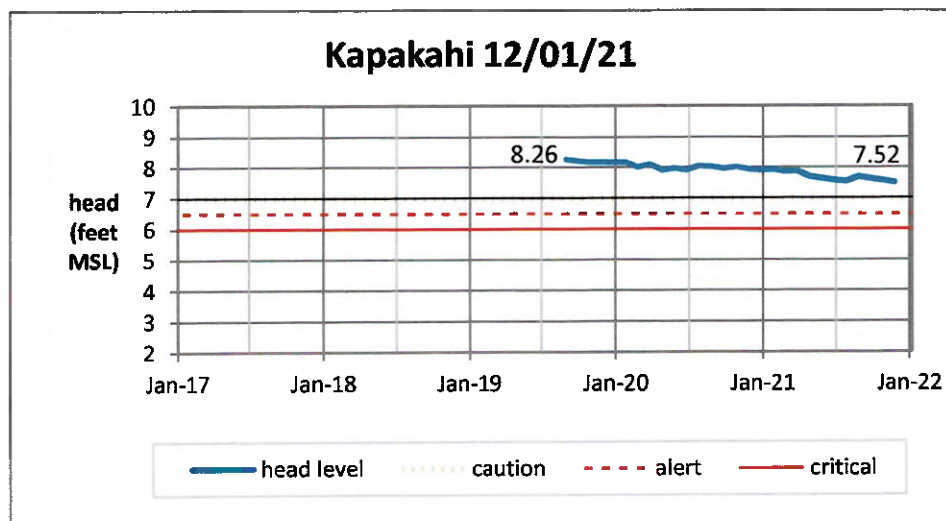
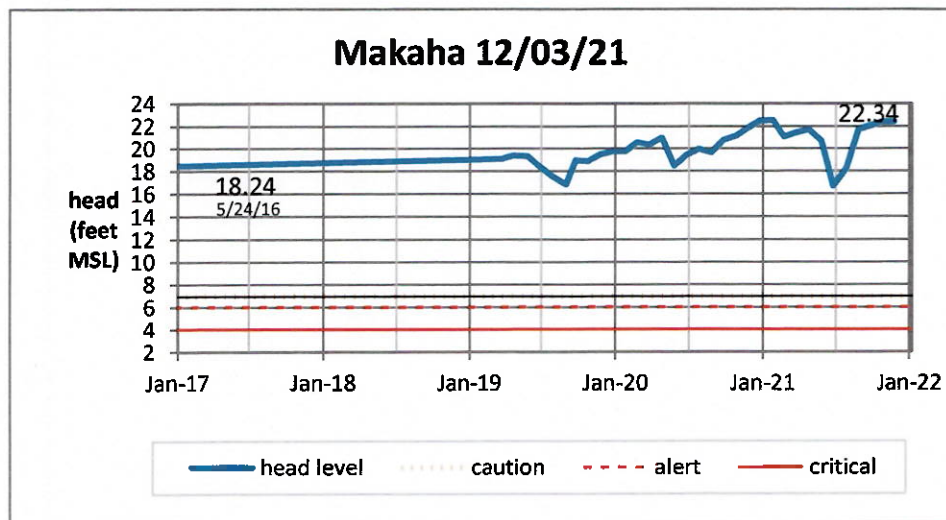
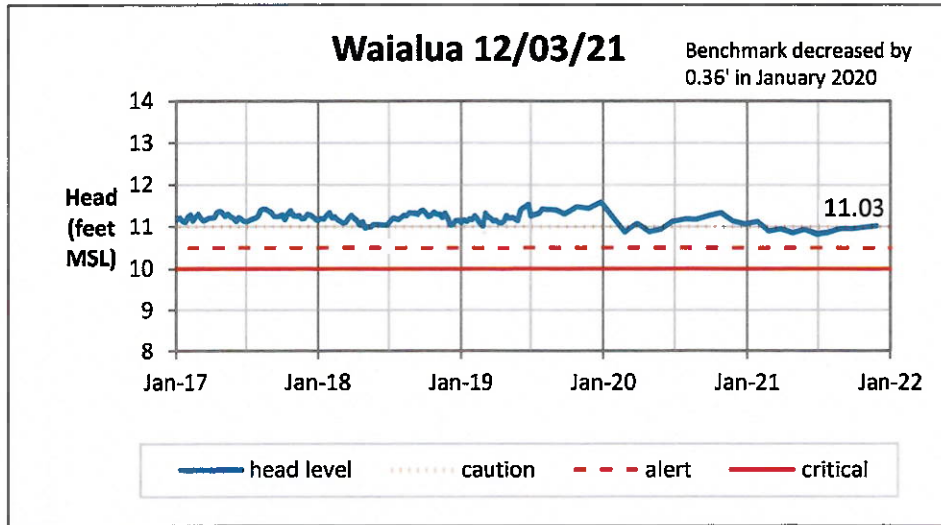
Head Report

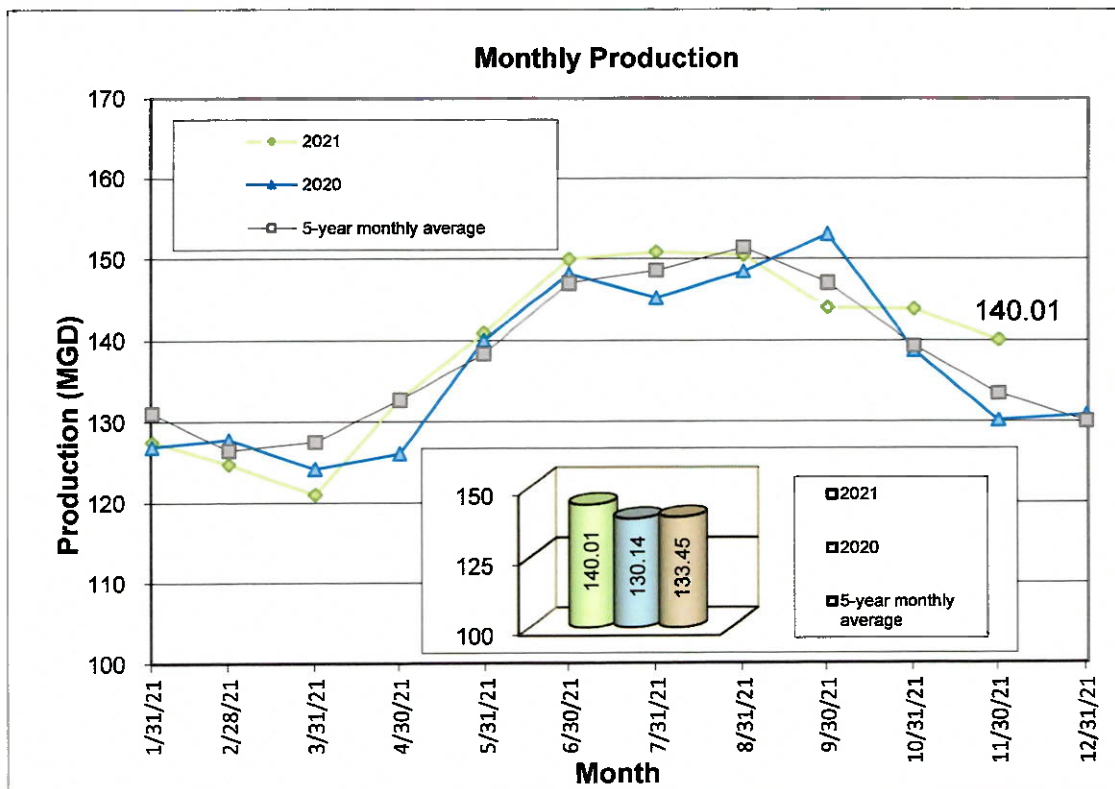
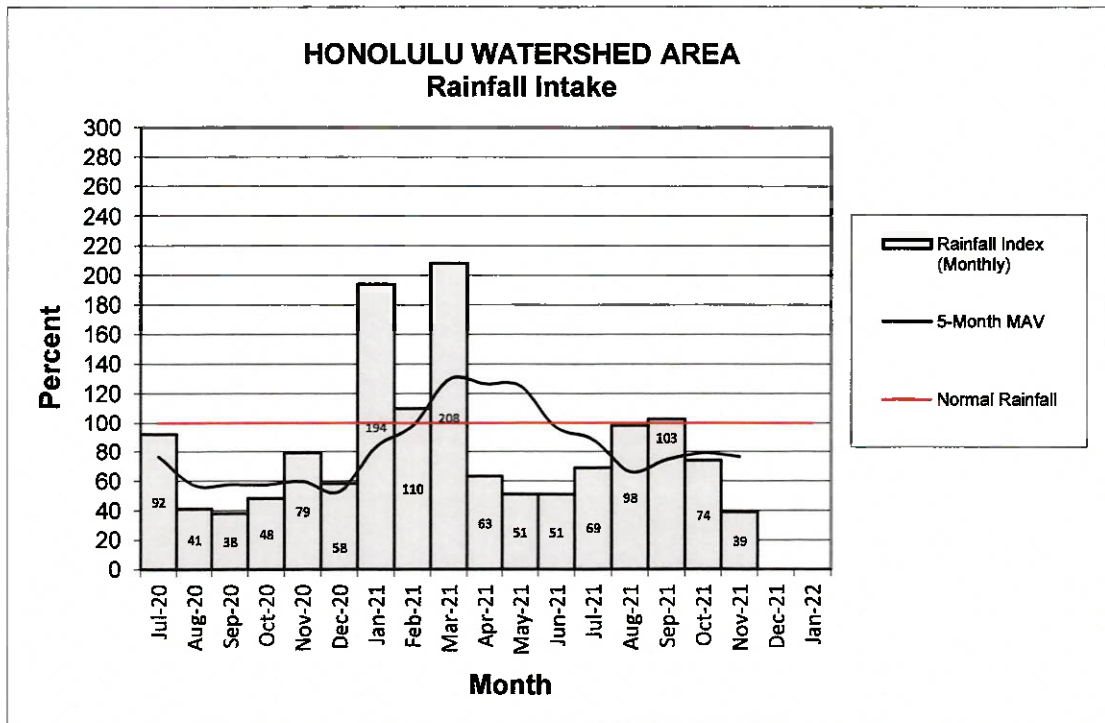


Head Report



Head Report





ITEM FOR INFORMATION NO. 4

"December 13, 2021

**WATER MAIN
REPAIR
REPORT FOR
NOVEMBER 2021**

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

Chair and Members:

Subject: Water Main Repair Report for November 2021

**Jason Nikaido, Acting Program Administrator, Field Operations Division,
will report on water main repair work for the month of November 2021.**

Respectfully submitted,

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

Attachment"

The foregoing was for information only.

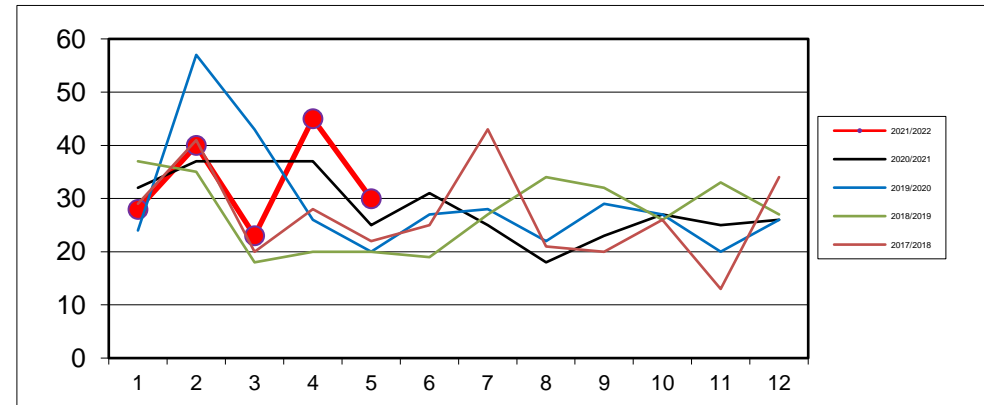
**DISCUSSION: Jason Nikaido, Acting Program Administrator, Field Operations Division,
gave the report. There were no comments or discussion.**

WATER MAIN REPAIR REPORT

for November 2021

	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	Total
2021/2022	28	40	23	45	30								166
2020/2021	32	37	37	37	25	31	25	18	23	27	25	26	343
2019/2020	24	57	43	26	20	27	28	22	29	27	20	26	349
2018/2019	37	35	18	20	20	19	27	34	32	26	33	27	328
2017/2018	29	41	20	28	22	25	43	21	20	26	13	34	322

Date	Address	Size (In)	Pipe Type
11/1/2021	2180 Halakau St, Honolulu	12	DI
11/1/2021	94-563 Awamoi St, Waipahu	8	CI
11/1/2021	939 Wailupe Pl, Honolulu	6	CI
11/2/2021	1315 Haku Pl, Honolulu	4	CI
11/2/2021	89-065 Haleakala Ave, Waianae	8	PVC
11/2/2021	1314 Kainui Dr, Kailua	12	CI
11/3/2021	814 Kinau St, Honolulu	6	CI
11/4/2021	2446 Aumakua St, Pearl City	8	CI
11/4/2021	3562 Trousseau St, Honolulu	8	CI
11/4/2021	45-659 Uhilehua St, Kaneohe	4	CI
11/7/2021	1014 Kalahu Pl, Honolulu	4	CI
11/8/2021	1624 Kino St, Honolulu	8	CI
11/9/2021	94-911 Farrington Hwy, Waipahu	8	CI
11/10/2021	2408 Burbank St, Honolulu	8	PVC
11/10/2021	3048 Polohinano Pl, Honolulu	4	CI
11/15/2021	59-468 Hoalike Rd, Haleiwa	8	CI
11/15/2021	3012 Hoaloha Pl, Honolulu	4	CI
11/16/2021	2026 Aamanu St, Pearl City	8	CI
11/17/2021	2932 Makalei Pl, Honolulu	6	CI
11/18/2021	98-1286 Akaaka St, Aiea	8	PVC
11/21/2021	45-15 Kaneohe Bay Dr, Kaneohe	12	DI
11/23/2021	45-871 Kapoo St, Kaneohe	8	CI
11/24/2021	91-1007 Hanapaa St, Kapolei	4	DI
11/24/2021	653 Kihapai St, Kailua	8	CI
11/25/2021	1230 Kainui Dr, Kailua	12	CI
11/26/2021	2031 Puna St, Honolulu	6	CI
11/26/2021	89-071 Haleakala Ave, Waianae	8	PVC
11/27/2021	2715 Oahu Ave, Honolulu	8	CI
11/30/2021	270 Auwaiolimu St, Honolulu	6	CI
11/30/2021	5250 Poola St, Honolulu	8	CI



19 miles of pipeline were surveyed by the Leak Detection Team in the month of November.

**MOTION TO
RECESS INTO
EXECUTIVE
SESSION**

There being no further business Chair Andaya at 3:22 PM called for a motion to adjourn the Open Session. Max Sword so moved; seconded by Kapua Sproat and unanimously carried.

Upon unanimous approved motion, the Board recessed into Executive Session Pursuant to [HRS § 92-5 (a)(4)] at 3:30 PM to Consider Issues Pertaining to Matters Posted for Discussion at an Executive Session.

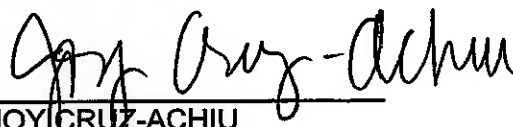
**OPEN
SESSION**

The Board reconvened in Open Session at 4:44 PM and returned to act on Action item number two.

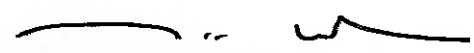
**MOTION TO
ADJOURN**

There being no further business Chair Andaya at 6:00 PM called for a motion to adjourn the Regular Session. Jade Butay so moved; seconded by Na'alehu Anthony and unanimously carried.

The minutes of the Regular Meeting held on December 13, 2021 are respectfully submitted,


JOY CRUZ-ACHIU

APPROVED:


BRYAN P. ANDAYA
Chair of the Board
JAN 24 2022

Date

THE MINUTES OF THE REGULAR SESSION BOARD MEETING ON DECEMBER 13, 2021 WERE APPROVED AT THE JANUARY 24, 2022 BOARD MEETING			
	AYE	NO	COMMENT
BRYAN P. ANDAYA	X		
KAPUA SPROAT	X		
RAY C. SOON	X		
MAX J. SWORD			ABSENT
NA'ALEHU ANTHONY	X		
JADE T. BUTAY	X		
DAWN B. SZEWCZYK	X		