M I N U T E S

REGULAR MEETING
OF THE
BOARD OF WATER SUPPLY

July 27, 2015

At 2:02 PM on July 27, 2015 in the Board Room of the Public Service Building at 630 South Beretania Street, Honolulu, Hawaii, and also at 3042 Kalihiwai Road, Kalihiwai, Kaua'i, Board Chair Miyashiro called to order the Regular Meeting.

Present:	Duane R. Miyashiro, Chair Adam C. Wong, Vice Chair Theresia C. McMurdo (left at 4:05 p.m.) David C. Hulihee (left at 4:26 p.m.) Ross S. Sasamura Ford N. Fuchigami Kapua Sproat
Also Present:	Ernest Lau, Manager and Chief Engineer Ellen Kitamura, Deputy Manager and Chief Engineer Shawn Nakamoto Erwin Kawata Barry Usagawa Jason Takaki Daryl Hiromoto Joe Cooper Karen Tom Robert Morita Bradley Tamaoka Paul Kikuchi Mike Matsuo Keoni Mattos Jason Takaki Lorna Heller Travis Ota Alan Hakoda Brittney Higuchi Miwako Coker Teri Akana
Others Present:	Krishna Jayaram, Deputy Corporation Counsel Dan Lawrence, Deputy Corporation Counsel Tom Myers, Brown and Caldwell John Sigda, INTERA

APPROVAL OF MINUTES	Approval of the Minutes of the Regular Meeting held on June 22, 2015
MOTION TO APPROVE	Theresia McMurdo and Ross Sasamura motioned and seconded, respectively, to approve the Minutes of the Regular Session Meeting of June 22, 2015. The motion was unanimously carried.

Chair Miyashiro announced that Board Member Kapua Sproat is participating via teleconference. Ms. Sproat reported that although her location was publicly noticed, no one has elected to join her at her location.

BOARD OF WATER SUPPLY
CITY AND COUNTY OF HONOLULU

RESOLUTION NO. 857, 2015

BRADLEY J. TAMAOKA
2015 EMPLOYEE OF THE YEAR

WHEREAS, BRADLEY J. TAMAOKA, an Industrial Construction Inspector with the Capital Projects Division, has been a dedicated and exceptional employee since joining the Board of Water Supply (BWS) in October 1990 and has been selected as the Department's 2015 Employee of the Year; and

WHEREAS, MR. TAMAOKA is a well-respected and extremely knowledgeable employee whose ever-positive attitude helps him to continually and successfully facilitate collaboration between government agencies, contractors, and all stakeholders involved in the construction projects he is assigned to; and

WHEREAS, MR. TAMAOKA plays a vital role in ensuring the proper construction of the BWS's water pumping stations and reservoirs. He manages these projects to ensure timely completion and quality construction on these very important facilities that are critical to provide safe, dependable and affordable water for the million plus people on Oahu; and

WHEREAS, MR. TAMAOKA's outstanding ability to recognize and quickly resolve day-to-day issues encountered in the field has resulted in hundreds of thousands of dollars in savings for the BWS by avoiding costly change orders; and

WHEREAS, MR. TAMAOKA is always willing to provide assistance to other construction inspectors with their project assignments and he adeptly coaches and mentors co-workers on all aspects of being an effective Industrial Construction Inspector; and

WHEREAS, MR. TAMAOKA has also been a valuable resource for the neighbor island water utilities in accomplishing large and complex water system rehabilitation projects; and

WHEREAS, BRADLEY J. TAMAOKA has been selected as a Board of Water Supply Employee of the Year and will go on to represent BWS in the upcoming City Employee of the Year Recognition Ceremony, bringing pride and honor to the Department, his family, and friends; 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 BRADLEY J. TAMAOKA our sincere appreciation for his outstanding service to the Department and to the City and County of Honolulu; and

BE IT FURTHER RESOLVED that the Members of this Board express to BRADLEY J. TAMAOKA our sincere congratulations upon his selection as the Board of Water Supply Employee of the Year for 2015; and

BE IT FINALLY RESOLVED that this Resolution be presented to MR. TAMAOKA with our heartfelt aloha and best wishes for success in all his future endeavors.

Adopted this 27th day of July 2015
Board of Water Supply, Honolulu, Hawaii

DUANE R. MIYASHIRO
Chair of the Board

Deputy Manager Kitamura read Resolution No. 857, 2015.

MOTION TO ADOPT

Adam Wong motioned to adopt Resolution No. 857, 2015, Bradley J. Tamaoka - 2015 Board of Water Supply Employee of the Year, and was seconded by Theresia McMurdo. On behalf of the Board, Chair Miyashiro thanked Mr. Tamaoka for his service and dedication to the BWS and congratulated him on the award. The motion was unanimously carried.

In recognition as the BWS 2015 Employee of the Year, Chair Miyashiro presented Mr. Tamaoka with a plaque and a framed signed resolution. Mr. Tamaoka will represent the Board of Water Supply at the City and County of Honolulu's annual Employees' Recognition Program later this year.

RESOLUTION NO. 857, 2015, ADOPTED ON JULY 27, 2015 – BRADLEY J. TAMAOKA, 2015 EMPLOYEE OF THE YEAR			
	AYE	NO	COMMENT
DUANE R. MIYASHIRO	X		
ADAM C. WONG	X		
THERESIA C. MCMURDO	X		
DAVID C. HULIHEE	X		
KAPUA SPROAT	X		
ROSS S. SASAMURA	X		
FORD N. FUCHIGAMI	X		

BOARD OF WATER SUPPLY
CITY AND COUNTY OF HONOLULU

RESOLUTION NO. 858, 2015

HENDERSON L. K. NUUHIWA
2015 MANAGER OF THE YEAR

WHEREAS, HENDERSON L. K NUUHIWA, Program Administrator of the Information Technology (IT) Division, has been selected as the Board of Water Supply's (BWS) Manager of the Year for 2015; and

WHEREAS, MR. NUUHIWA joined the BWS in November 2011, and during his four years as part of the BWS's management team, he has successfully overseen and led the BWS division that is responsible to install, maintain, and upgrade the various vital IT systems that ensure the continuous and smooth functioning of the Department and its water system for its one million users now and in the future; and

WHEREAS, under HENDERSON NUUHIWA's exemplary leadership, the BWS's critical information systems and water facilities are better protected; a new customer information system allows for better maintenance of records and transactions of water rate payers, as well as more timely revenue collection; data capture and processing in key BWS information systems have been improved through successful upgrades; and various personal computer hardware and software upgrades have greatly enhanced user experience for BWS employees; and

WHEREAS, MR. NUUHIWA developed an IT Strategic Plan that supports the Department's long- and short-term goals and objectives, as approved by this Board, and also established an IT Steering Committee to provide direction for the Department's IT projects and programs; and

WHEREAS, HENDERSON NUUHIWA has proven himself to be a dedicated and excellent manager who personifies attributes that employees desire in their leaders as he leads by example, continually establishes a well-functioning work environment for his staff, and purposefully provides them with professional growth opportunities; and

WHEREAS, MR. NUUHIWA's selection as the 2015 Board of Water Supply Manager of the Year and his nomination to the City Manager of the Year Recognition Ceremony has brought pride and honor to the BWS and all his family and friends; now, therefore

BE IT RESOLVED by the Members of the Board of Water Supply, City and County of Honolulu, that we hereby do express to HENDERSON NUUHIWA our heartfelt appreciation for his outstanding service to the Department and to the City and County of Honolulu; and

BE IT FURTHER RESOLVED that the Members of this Board express our sincere congratulations upon his selection as the Board of Water Supply Manager of the Year for 2015; and

BE IT FINALLY RESOLVED that this Resolution be presented to MR. NUUHIWA with our warmest aloha and best wishes for all his future endeavors.

Adopted this 27th day of July 2015
Board of Water Supply, Honolulu, Hawaii

DUANE R. MIYASHIRO
Chair of the Board

Deputy Manager Kitamura read Resolution No. 858, 2015.

MOTION TO ADOPT

Ross Sasamura motioned to adopt Resolution No. 858, 2015, Henderson L. K. Nuuhiwa - 2015 Board of Water Supply Manager of the Year, and was seconded by Adam Wong. Although Mr. Nuuhiwa could not attend, on behalf of the Board, Chair Miyashiro expressed his sincere appreciation to Mr. Nuuhiwa for his service and dedication to the BWS and congratulated him on the award. The motion was unanimously carried.

Mr. Nuuhiwa could not attend today's meeting, therefore, in recognition as the BWS 2015 Manager of the Year, Chair Miyashiro will present Mr. Nuuhiwa with a plaque and a framed signed resolution at a later time. Mr. Nuuhiwa will represent the Board of Water Supply at the City and County of Honolulu's annual Employees' Recognition Program later this year.

RESOLUTION NO. 858, 2015, ADOPTED ON JULY 27, 2015 – HENDERSON L. K. NUUHIWA, 2015 MANAGER OF THE YEAR			
	AYE	NO	COMMENT
DUANE R. MIYASHIRO	X		
ADAM C. WONG	X		
THERESIA C. MCMURDO	X		
DAVID C. HULIHEE	X		
KAPUA SPROAT	X		
ROSS S. SASAMURA	X		
FORD N. FUCHIGAMI	X		

ITEM FOR INFORMATION NO. 1

"July 27, 2015

BWS COMMENTS TO RED HILL AOC AND SOW

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

Chair and Members:

Subject: Board of Water Supply Comments to the Red Hill Bulk Fuel Storage Facility Administrative Order on Consent and Statement of Work

Erwin Kawata, Water Quality Division Program Administrator, will present a brief summary of the Board of Water Supply comments to the proposed Red Hill Bulk Fuel Storage Facility Administrative Order on Consent (AOC) and Statement of Work (SOW) that was released on June 1, 2015, by the United States Environmental Protection Agency and the Hawaii State Department of Health.

Respectfully submitted,

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

Attachment"

The foregoing was for information only.

DISCUSSION

Manager Lau informed the Board that Ms. Sproat is also participating via GoToMeeting so that she can view the presentations. Mr. Lau asked all presenters to speak at the table so that Ms. Sproat can hear them and it is not meant to disrespect the Board.

Erwin Kawata, Water Quality Program Administrator, stated that he would be providing a brief overview of BWS's comments to the Red Hill Administrative Order on Consent (AOC) and the Statement of Work (SOW). He introduced the Board to Dr. John Sigda of INTERA who is the head of the consultant team hired by BWS. Dr. Sigda assisted BWS with preparing the comments to the AOC and SOW.

Mr. Kawata gave the presentation. Following the presentation, Dr. Sigda showed a three dimensional visualization of information that was compiled in the last several years where he lives in Albuquerque, New Mexico, where fuel supply from the Kirtland Air Force Base (KAFB) has been leaking into the groundwater for at least 50 years and has created contamination in the groundwater. The fuel contamination trapped underneath the water has

dissolved and created a plume of a very highly carcinogenic substance from aviation gasoline, moving directly to Albuquerque's drinking water supplies and wells. Dr. Sigda showed an elevation map of the Rift Valley, the Rio Grande River and the area where the leak from the KAFB started occurring from the late 1940s. He showed the cross section showing the geology of mainly sand, gravel and clay, leading down the rivers with a lot of faults. Up until about last year, KAFB was very unwilling to work with the water utility authority, so there was a lot of conflict between the water utility authority, the regulators, and the Department of Defense (DOD).

The visualization showed gray lines that represent wells, which are 500 feet deep and go to 600 feet deep. Each of the wells costs on order of $200,000. Dr. Sigda showed colored cylinders that represent the groundwater where the carcinogen has been detected. He showed the source area and the area of the plume. Dr. Sigda stated that over 120 wells had been placed just in the groundwater alone, along with another several dozens of wells in the area between the water table and the ground to look for fuel that's trapped above the water table.

Dr. Sigda stated that since 2010, the KAFB spent over $90 million to characterize the site, with almost no remediation done. Within the last 15 years, the relationship has improved between the water utility authority, the regulators, and the DOD. They are now working as a team, and just this month they started to have the first well to extract the contaminated groundwater.

Dr. Sigda stated that he wanted to show this visualization to show the source area downward of the fuel leak to better understand what is happening in that area and to give an idea of about how many wells may be needed to clean up the contamination. Dr. Sigda stated that if you compare KAFB to Red Hill and focus on the source areas, Red Hill has only seven wells in that area compared to several dozens of wells at KAFB. Those seven wells have not found all the fuel that has leaked on the subsurface. Dr. Sigda concluded by informing the Board that BWS's comments presented to the Environmental Protection Agency (EPA) and the State Department of Health (DOH) basically said that the BWS could not support the AOC as currently written.

Board Member Sasamura asked what the green trace represented.
Dr. Sigda explained that the orange line represents the trace of the plume right at the water table and the next line is 30 feet below that at the intermediate level. He showed the line, which represents about 60 feet below the water table where the plume is found at a greater depth. The visualization shows that the contamination does not just stay at the water table but can move or be distributed across several tens of feet of the aquifer. He showed outlines of the contamination where detections have been found and said that in most of the cases, it exceeds the maximum contaminant level.

Dr. Sigda pointed out that the Ridgecrest Wells are some of Albuquerque's best public supply wells and even now at this late date (they've been putting in wells since 2011 and have over 120 wells) they are still trying to find the edge of the plume, as it's moving closer towards the Ridgecrest Wells. Dr. Sigda stated that they will be creating a three dimensional visualization of Red Hill, looking at the geology, the wells and where the contamination is found.

Chair Miyashiro asked for confirmation that Dr. Sigda said that the KAFB spent upwards of $100 million to monitor and track and that did not include removing the contamination. Dr. Sigda confirmed the amount of money spent and stated that the first groundwater contamination had just begun being removed this past month. Since about 2004, KAFB used a vacuuming system called soil vapor extraction that pulled the fuel out of the soil between the water table and the ground surface. They extracted the fuel from 500 feet of soil above the water table. So far about 500,000 gallons of fuel have been removed at KAFB. The estimated leak from this pipeline is anywhere between 2 and 24 million gallons, which is equivalent to about two Exxon Valdezes. Each of the 15 Red Hill tanks is one Exxon Valdez. If only one tank were to leak, there would be a very large contamination.

Mr. Miyashiro asked if there is technology to extract the contaminated soil or remove the contamination if it gets into the water. Dr. Sigda replied that there is technology to remove some of the contamination and that it is not possible at present to remove all of the fuel, therefore, a fuel leak would limit the use of part of the aquifer. Remediation methods could capture the dissolved plume, but there would still be fuel trapped in the groundwater and in the soil above the water table. It could take several hundred millions of dollars to achieve acceptable clean-up.

Board Member Wong asked what approach was taken for the relationship to improve between the water utility authority, the regulators, and the DOD. Dr. Sigda explained that Commissioner Maggie Hart Stebbins who was on the Albuquerque Bernalillo County Water Utility Authority Board, had many questions that weren't getting answered to her satisfaction. She directed the water utility to hire a consultant, and they hired INTERA. INTERA began to review every document that the KAFB wrote and INTERA informed the KAFB of things that needed to be done. The regulators paid very little attention to what was going on. Commissioner Stebbins began to press the local politicians in the county and at the federal level as well. The Federal Congressional Delegation began to understand the risks, so they approached the DOD, the Pentagon, and that's when it turned around. Dr. Sigda also stated that personnel changes were made at the state level and things started to change and move forward. Mr. Wong asked if Dr. Sigda is referring to the regulatory agency, and Dr. Sigda replied, yes, the New Mexico Environment Department.

Board Member McMurdo asked if the EPA was involved. Dr. Sigda replied that the New Mexico Environment Department called in EPA to provide

technical support. EPA did some technical analyses and calculations to show which way the contamination was moving and how it could be best cleaned up. So everyone was working as a team.

Mr. Wong asked if the monies spent for the characterization came out of the Air Force's budget or if the monies were provided after the congressional delegation got involved. Dr. Sigda replied that the Air Force had remediation funds that were used. Dr. Sigda stated that based on the Red Hill AOC, rather than putting monies into cleaning up a future leak, it should be put into rehabilitating the tanks.

Ms. McMurdo asked Dr. Sigda for an estimated cost to do a similar characterization study at Red Hill. Dr. Sigda stated that what really made the cost at Albuquerque go up to $90 million was the fact that they spent four years not working as a team. The regulators refused to listen to the water utility authority so bad science was done. The cost was also high due to putting in wells that were several hundred feet in depth. What needs to be done first at Red Hill is to locate the fuel that has leaked and see what the threat is to the aquifer. Maybe a whole lot of fuel has not made it to the aquifer and that needs to be understood.

Mr. Miyashiro inquired if Albuquerque uses surface water for potable water. Dr. Sigda replied yes, they bought surface water rights from the Rio Grande, and then they built a surface water intake to mine the aquifer. He stated that unlike Oahu's aquifer, once their water is used from the aquifer, it's gone forever, and then they end up with soil subsidence problems that could cause great crevices and disturb infrastructure, roads, houses, buildings, etc.

Ms. McMurdo inquired about the response to BWS's comments to the AOC and SOW. Mr. Lau replied that he had a call from the U.S. EPA in San Francisco asking to meet to discuss BWS's comments. EPA commented that there were over 120 responses or comments on the AOC, but BWS's was by far the most substantive. EPA didn't indicate what they would do with BWS's comments, how long they would take to consider it, when they would make a decision to either proceed with the AOC as written or modify it, or just drop the whole idea. Mr. Lau indicated that this was the only feedback received so far. Mr. Lau informed the Board that he could report back to them next month after the meeting with EPA.

Board Member Fuchigami asked Dr. Sigda if he looked at the comments that BWS submitted. Dr. Sigda replied that he did and that he helped to develop some of the comments. Mr. Fuchigami inquired if Dr. Sigda considered if rehabilitation was worth the effort as opposed to just moving the fuel tanks to another location. Dr. Sigda replied that he didn't look at that in particular, but they had team members from a company called Exponent, who are experts at corrosion and the integrity of tanks and pipelines, review the documents made available by the Navy and learned that there is quite a lot of corrosion underway. There is no system in place to slow corrosion, it will continue in the future and more and larger releases of fuel should be expected.

Contractors did studies in the late 1990s on what they could do to fix the tanks and solutions were identified on one report, and it said it would take less than four years to implement building a tank within the tank; however the costs were not part of the document. What it comes down to is what would be the cost of moving the facility versus the cost of rehabilitating the tanks versus the cost of replacing the sole source aquifer. Mr. Lau informed Mr. Fuchigami that part of BWS's comments were to either shut down the facility, upgrade the tanks, temporarily relocate the fuel to other locations, or do a benefit cost analysis to completely relocate the fuel to other locations either on Navy property and/or private property or other locations in the Pacific and determine whether or not it's more effective and a less impact on tax payers.

Mr. Fuchigami said that the question is in today's world, would anyone build a fuel tank underground. Dr. Sigda stated that the Red Hill facility is a one of a kind engineering marvel and at the time it was built, it was truly amazing, but it was not meant to be a facility that was going to last for so many decades. Mr. Fuchigami agreed and asked why make the same mistake twice. Why not make new tanks and put them above ground where it would be easier to determine leaks and easier to fix. Mr. Lau agreed and stated that part of BWS's comments asked the Navy to consider the option of putting the tanks above ground rather than trying to invest in a 72-year old facility, which would cost a huge amount of money and in 20 years have to redo it again.

Mr. Lau pointed out the Department's and Board's public trust responsibility to protect and preserve the water resources for the people of Hawaii and for the future generations. Mr. Lau stated that this is why the Department's approach has been quite aggressive. Mr. Lau asked for the Board's feedback on whether or not they felt the Department's approach was too aggressive, not aggressive enough, or if they are on the right track. Mr. Miyashiro asked Board Member Sproat for her feedback.

Ms. Sproat stated that Mr. Lau has a very firm grasp of the law in this area and that she strongly agrees with him. She said that the public trust doctrine is embedded in the State Constitution in Article 11, Section 1 and also in Article 11, Section 7. The State Department of Land and Natural Resources Commission on Water Resource Management has primary kuleana under the state law to protect the resources, however, Supreme Court cases such as the Kauai Springs Case and the Kelly Case have made it clear that the Constitutional provisions also apply to other state and county agencies as well. Ms. Sproat stated that the Board Members have a public trust duty of protecting of the water resource, as well as the planning and allocation of it. The Board Members have a legal obligation to ensure that the prescribed measures on whatever is being done are going to protect the resource. In cases such as the Red Hill situation where there is not enough information or scientific certainty, the Board Members have a duty to err on the side of protecting the resource by adopting reasonable measures to protect the public's interest, which is to provide safe water for present and future

generations. Ms. Sproat stated that in her mind, they do not have a choice. They have a legal obligation to uphold and protect the water resources. Ms. Sproat commended Mr. Lau and Mr. Kawata for investing so much of their time and energy by diligently pursuing this. Ms. Sproat added that she did some research on the KAFB spill and said that that would be BWS's worst case scenario. The Department and the Board have an opportunity to take proactive action now. She stated that there needs to be more information on the plume and how far it has spread. The fact that it is already been identified up gradient of where the spill occurred, that is a significant concern. Ms. Sproat stated that Mr. Lau's and Mr. Kawata's actions have been consistent with what their legal obligation is, and she encourages the Board to pass a resolution or take some kind of action to continue on this path.

Ms. McMurdo said that the Board has already approved a resolution supporting Mr. Lau's direction in this matter. Mr. Lau confirmed that the Board approved two resolutions and the last one was to support double-lining the tanks at Red Hill.

Mr. Fuchigami stated that he feels Mr. Lau has done everything possible to work together with the Navy, but without success. He feels that Mr. Lau and his staff need the Board's support and suggested that the Board write a letter to the congressional delegation expressing their dissatisfaction with the lack of cooperation from the Navy. Ms. McMurdo agreed that Mr. Lau should continue his efforts to seek the congressional delegation's help in getting the Navy to do the right thing, but this should be done in person rather than in a letter.

Mr. Wong asked if it would be proper for Mr. Lau to have, as part of his presentation to the congressional delegation, a letter from the Board urging them for their support. Ms. Sproat stated that she feels all three suggestions go together and also suggested that the Chair or other members of the Board accompany Mr. Lau in his meetings with the congressional delegation so they can see that Mr. Lau has the support of the Board. Ms. McMurdo agreed that members of the Board should accompany Mr. Lau to these meetings and suggested that there be a clear communication strategy in place prior to the meetings. Ms. Sproat agreed and suggested including the public trust provisions because it's important for the public to understand that the Board is bound by the State Constitution to pursue this and to protect the water resources.

Mr. Fuchigami asked if BWS and the Navy use the same water source that is in potential danger. Mr. Lau replied yes, that the Navy depends on the same aquifer as BWS, and the Navy is in full control of the contamination in the aquifer.

Mr. Wong asked Mr. Lau what he needs from the Board to accomplish his goal. Mr. Lau said that it's clear that the Board is very supportive of the Department's efforts and thanked them for the good discussion. Mr. Lau

stated that perhaps the Board could approve a resolution next month that expresses their support with references to the public trust requirement, the BWS' and Board's obligations. He added that he welcomes any Board Member to join him at the meetings with the legislative, congressional, and city council staff members. Mr. Lau also stated that a letter from the Board may be appropriate at some point, strongly stating the Board's position.

Mr. Fuchigami asked Mr. Lau if he met with house staff advisors when he met with the congressional team last year. Mr. Lau replied that they were the Hawaii office staff, some of them assigned to military affairs. Mr. Lau stated that it would be great if any of the Board Members could help arrange face to face meetings with the Senators or Congresspersons when they are in Hawaii. Ms. McMurdo said it would be important to secure the support of a key congressional member who would "champion" the cause and help BWS. Mr. Wong suggested using a lobbyist. The Board discussed the option of a consultant or outside legal counsel.

The Board recessed at 3:14 p.m. and reconvened at 3:20 p.m.

Mr. Miyashiro referenced Ms. Sproat's comment about the Water Commission having primary kuleana under the state law to protect the water resources. He inquired about meeting with the Water Commission. Mr. Lau informed the Board that he did reach out to them. Mr. Miyashiro concluded that based on the discussion, the Board is in collective support of the efforts of Mr. Lau, Ms. Kitamura and the Department to help protect the water resource. Mr. Miyashiro also concluded that the Board would like Mr. Lau to continue to exhaust all avenues to accomplish the goal of getting the Navy to do what is necessary to protect the water resource. Mr. Miyashiro commented that he knows that the Red Hill situation will go on for years down the road and involve future Boards and Managers, but he hopes that the current Board and Manager can lay the foundation to resolve this issue.

WATER FOR LIFE

Safe, dependable, and affordable water now and into the future

Board of Water Supply
City and County of Honolulu

Waimalu – Moanalua Aquifer Update

BWS Comments on the Red Hill Bulk Fuel Storage Facility Administrative Order on Consent (AOC) and Statement of Work (SOW)

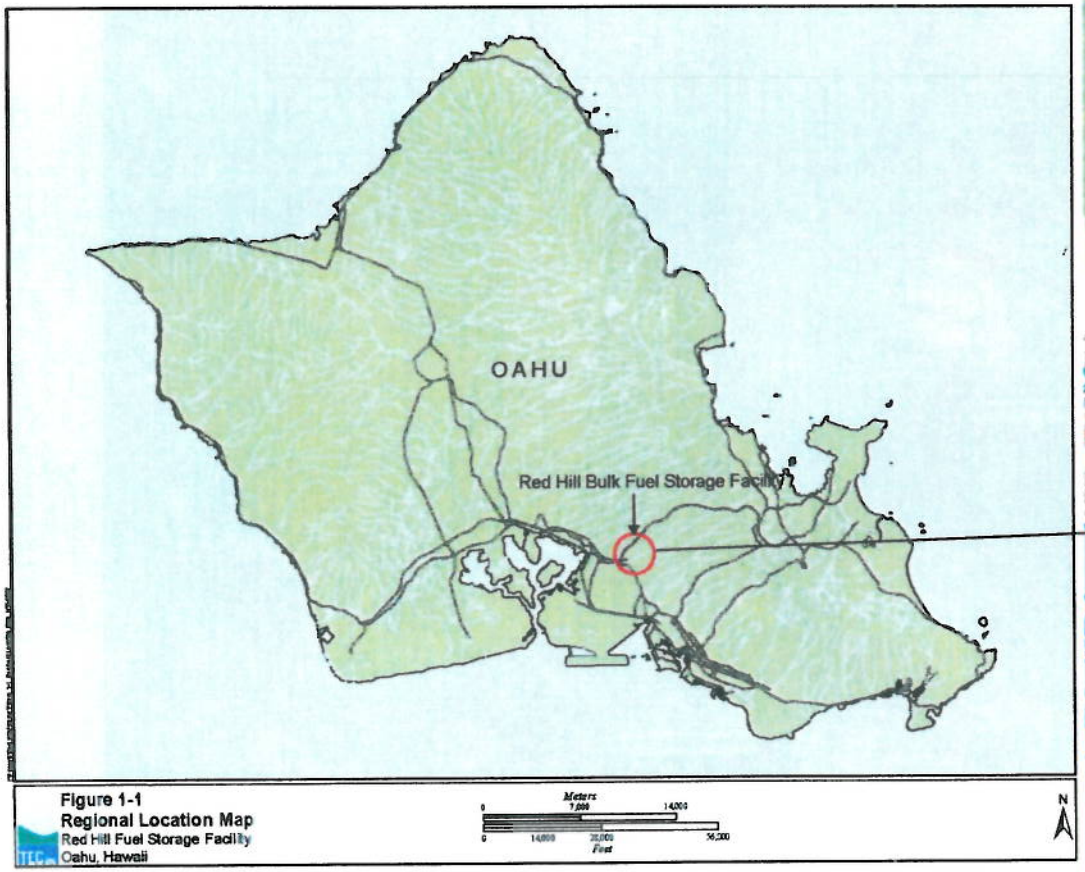
Board Meeting

July 27, 2015

AOC and SOW

- Background
- BWS comments
- Next steps

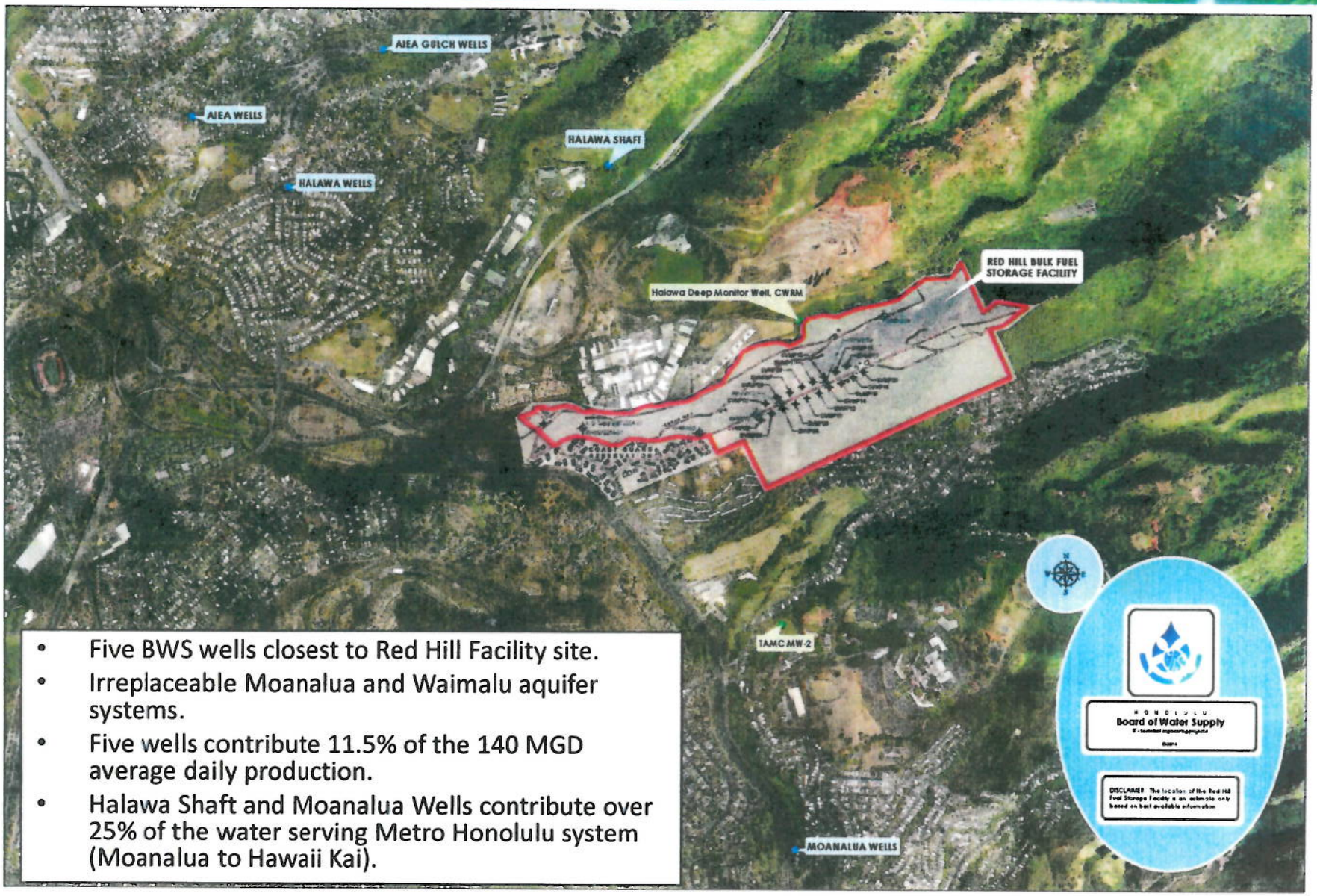
Red Hill Fuel Facility Location



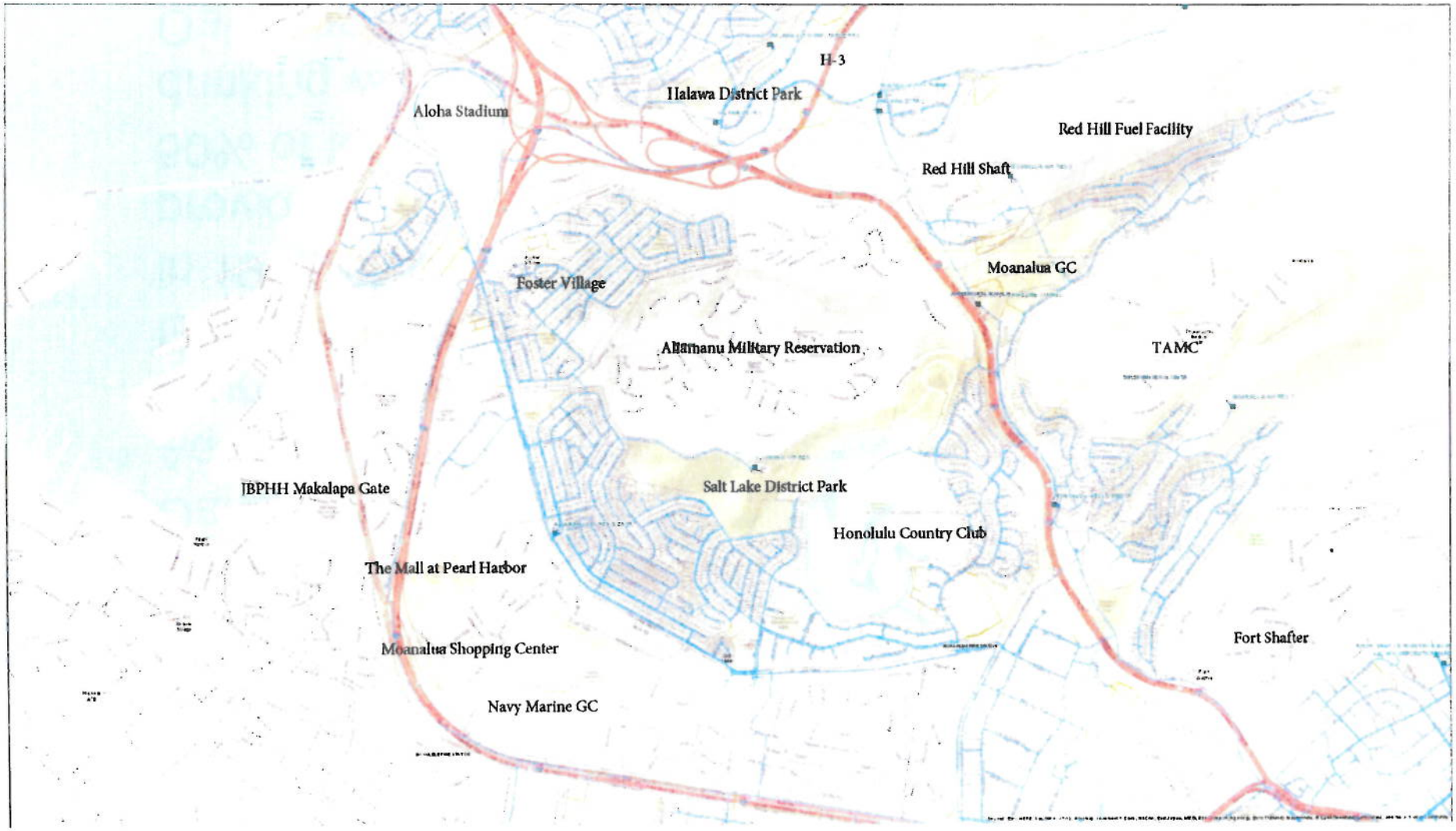
WATER FOR LIFE

Safe, dependable, and affordable water now and into the future

Board of Water Supply
City and County of Honolulu

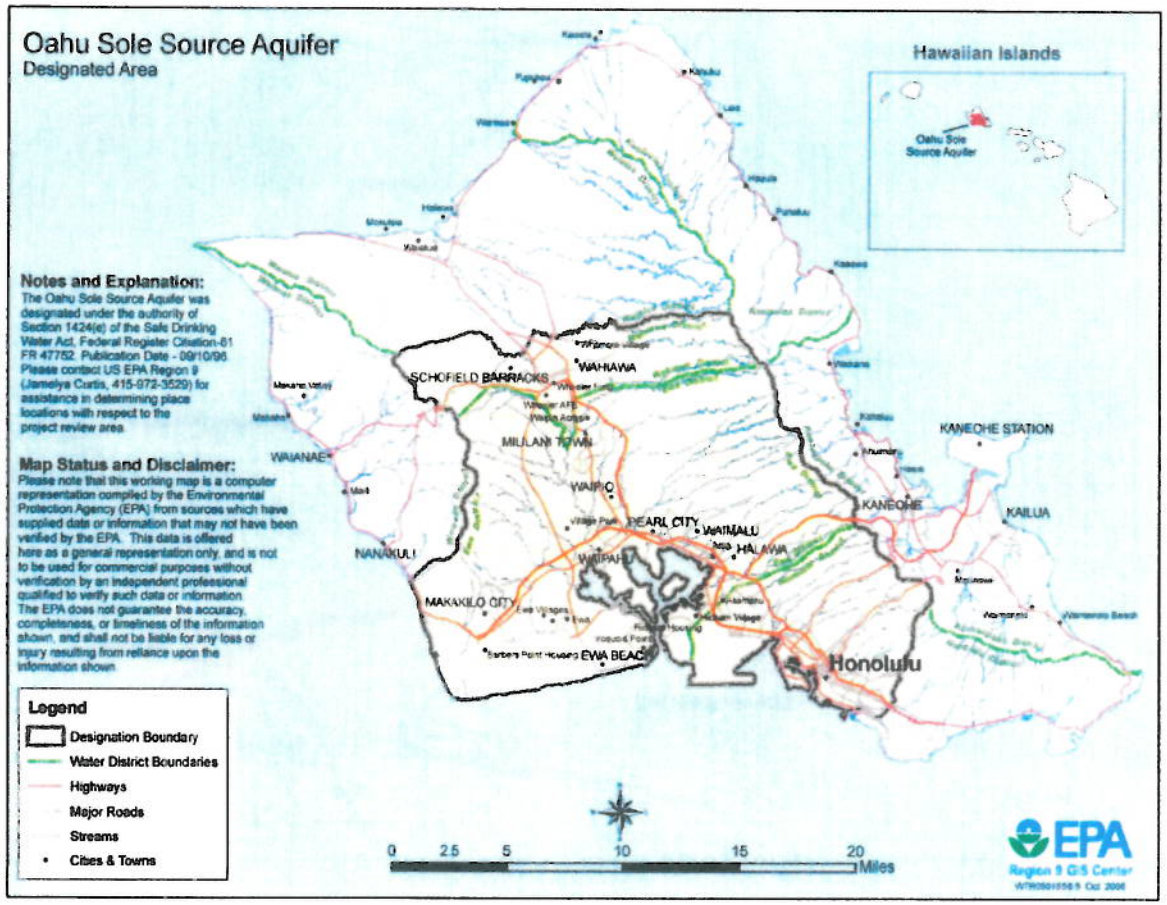


- Five BWS wells closest to Red Hill Facility site.
- Irreplaceable Moanalua and Waimalu aquifer systems.
- Five wells contribute 11.5% of the 140 MGD average daily production.
- Halawa Shaft and Moanalua Wells contribute over 25% of the water serving Metro Honolulu system (Moanalua to Hawaii Kai).


H-3
Halawa District Park
Aloha Stadium
Red Hill Fuel Facility
Red Hill Shaft
Moanalua GC
Foster Village
Aliamanu Military Reservation
TAMC
JBPHH Makalapa Gate
Salt Lake District Park
Honolulu Country Club
The Mall at Pearl Harbor
Fort Shafter
Moanalua Shopping Center
Navy Marine GC
Honolulu Board of Water Supply
City and County of Honolulu
Printed By: EKAWATA
July 9, 2015
1:11,000

Sole Source Aquifer

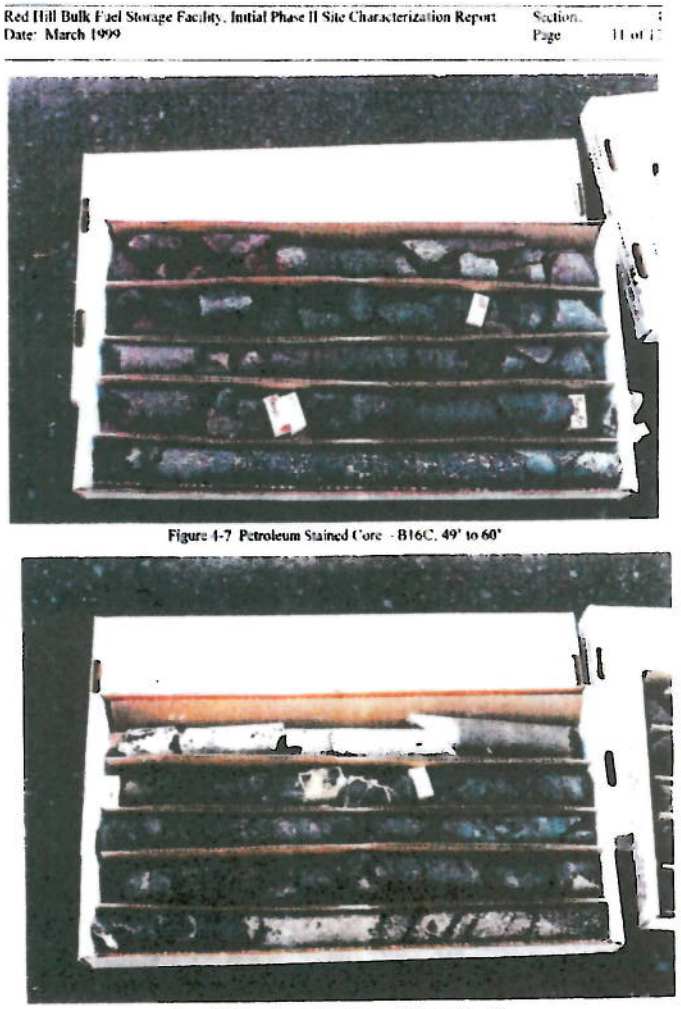
- Red Hill located in the Southern Oahu Basal Aquifer – sole source aquifer EPA designated in 1987 which provides over 50% of the drinking water to Oahu residents.

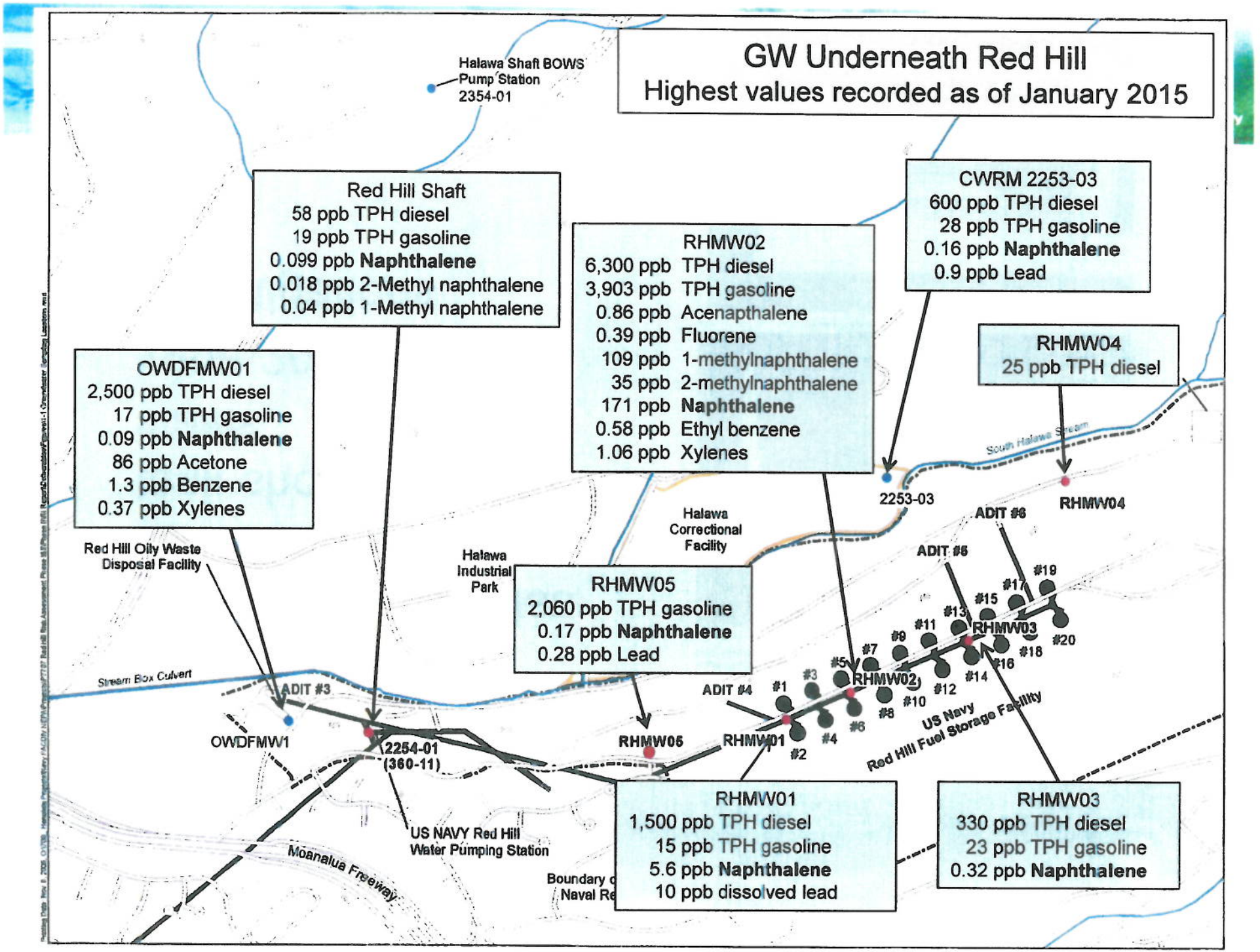


Underneath Red Hill Tanks

- Basalt core samples taken from under each tank show petroleum stains.
- 1998-2002 Investigations.

Ref: Navy Phase II Site Characterization Report, Section 4, page 11, March 1999. (Related to Release ID 990051)




GW Underneath Red Hill
Highest values recorded as of January 2015
Halawa Shaft BOWS Pump Station 2354-01
Red Hill Shaft
58 ppb TPH diesel
19 ppb TPH gasoline
0.099 ppb Naphthalene
0.018 ppb 2-Methyl naphthalene
0.04 ppb 1-Methyl naphthalene
RHMW02
6,300 ppb TPH diesel
3,903 ppb TPH gasoline
0.86 ppb Acenapthalene
0.39 ppb Fluorene
109 ppb 1-methylnaphthalene
35 ppb 2-methylnaphthalene
171 ppb Naphthalene
0.58 ppb Ethyl benzene
1.06 ppb Xylenes
CWRM 2253-03
600 ppb TPH diesel
28 ppb TPH gasoline
0.16 ppb Naphthalene
0.9 ppb Lead
RHMW04
25 ppb TPH diesel
OWDFMW01
2,500 ppb TPH diesel
17 ppb TPH gasoline
0.09 ppb Naphthalene
86 ppb Acetone
1.3 ppb Benzene
0.37 ppb Xylenes
RHMW05
2,060 ppb TPH gasoline
0.17 ppb Naphthalene
0.28 ppb Lead
RHMW01
1,500 ppb TPH diesel
15 ppb TPH gasoline
5.6 ppb Naphthalene
10 ppb dissolved lead
RHMW03
330 ppb TPH diesel
23 ppb TPH gasoline
0.32 ppb Naphthalene
South Halawa Stream
2253-03
RHMW04
Halawa Correctional Facility
Halawa Industrial Park
Red Hill Oily Waste Disposal Facility
ADIT #6
ADIT #5
ADIT #4
ADIT #3
Stream Box Culvert
OWDFMW1
2254-01 (360-11)
RHMW05
RHMW01
RHMW02
RHMW03
US NAVY Red Hill Water Pumping Station
Moanalua Freeway
US Navy Red Hill Fuel Storage Facility

AOC / SOW Background

- June 1, 2015 EPA and DOH released for public review and comment a proposed AOC and SOW.
- Minimize the threat of future leaks at Red Hill.
- Initial July 1 comment deadline extended to July 20, 2015.

BWS Comments Preparation

- BWS and consultant team conducted a technical and regulatory review.
- Considered testimonies heard at the June 18 Public Meeting.
- Ka Wai Ola - Water For Life
  - Guiding principle and declaration to the importance of water for life.
  - Commitment as stewards of this most precious resource to ensure a safe, dependable, and affordable water supply for present and future generations.

BWS Comments – AOC & SOW

1. Need appropriate site characterization, clean up existing below-ground contamination, and install a properly designed monitoring well network
2. Focuses on continued study of improvements when appropriate solutions already identified. Need action to quickly eliminate the threat from new fuel releases.

BWS Comments – cont.

3. SOW planning and work timeframes are too long and lack firm deadlines for making changes. Allows Facility operations to continue unchanged for decades.
4. Unacceptably limits public and stakeholder participation.
5. Needs to require full disclosure and access to all records, data, and studies about fuel leaks at the Facility over its history.

BWS Comments – cont.

6. AOC and SOW able to override existing and future regulations that apply to the Facility. If there is a conflict between AOC/SOW and the rules, the most stringent regulatory requirements should apply.
7. Does not require commitment to provide sufficient funding to enable timely completion of AOC and SOW tasks.

Next Steps

- BWS AOC comments submitted July 20
- Comments and summary posted on-line.
- Final EPA 2015 revised Underground Storage Tank (UST) rules (Federal Register 7/15/15) cancels field-constructed tank deferrals.
- BWS groundwater study proceeding.
  - INTERA, Inc.
- Monitoring well installation in FY 2016.
- Health effects study started.

Questions

ITEM FOR INFORMATION NO. 2

"July 27, 2015

WATER CONSERVATION BRANCH UPDATE

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

Subject: Water Conservation Branch Update

Water Resources staff will provide a presentation on the Department's Water Conservation Program and Water use trends.

Respectfully submitted,

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

Attachment"

The foregoing was for information only.

DISCUSSION

Barry Usagawa, Water Resources Division Program Administrator, presented an overview of the Department's Water Conservation Program. Topics included water resource strategies, conservation programs both internal and external conservation programs, reducing water demand, potable and nonpotable water use, trends, sustainability, incentives, public outreach programs, leak detection, large water user programs, regulations, alternative source development, recycling, conservation alternatives, tours and workshops, green business partnerships, and planning for Oahu's future and next steps.

Mr. Sasamura asked what percentage of water is used for irrigation in a single-family residence. Mr. Usagawa responded about 50 percent of water is used for irrigation in the drier areas of single-family residences.

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Board of Water Supply
City and County of Honolulu

Honolulu Board of Water Supply Water Conservation Program Past, Current, and Future

Barry Usagawa, PE – Honolulu Board of Water Supply

Lorna Heller, PE – Honolulu Board of Water Supply

Dean Nakano – Brown and Caldwell

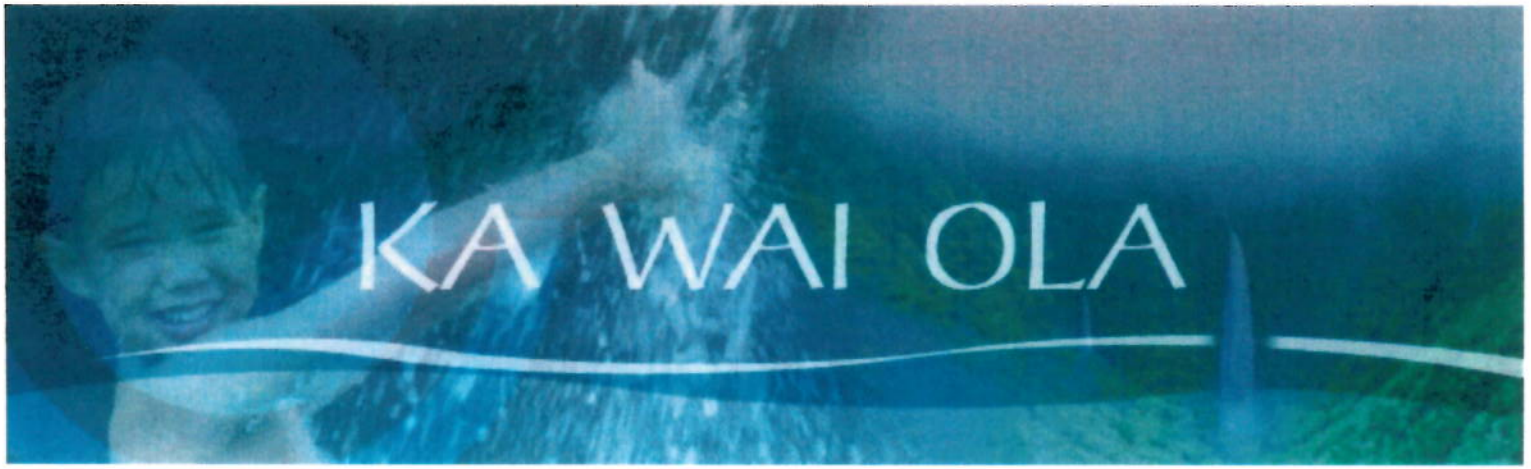
Lisa Maddaus, PE (CA) – Maddaus Water Management

Reinhard Sturm, Water System Optimization

Brown AND Caldwell

MADDAUS WATER MANAGEMENT

WSO



Outline of Presentation Topics

- Conservation: A Key Water Resource Strategy
- Historical Success in Reducing Water Demand
- Program Overview and Update
- Next Steps and Implementation

Water Resource Strategies

- Watershed Management
  - Protect Forested Recharge Areas
  - Control Invasive Species
  - Source Water Protection
- Water Conservation
  - Resource
  - Demand-Side Management
  - Infrastructure Efficiency
- Natural and Alternative Water Supplies
  - Groundwater
  - Surface water
  - Recycled and brackish nonpotable
  - Desalination
    - Brackish and Seawater
  - Renewable Energy & Energy Efficiency

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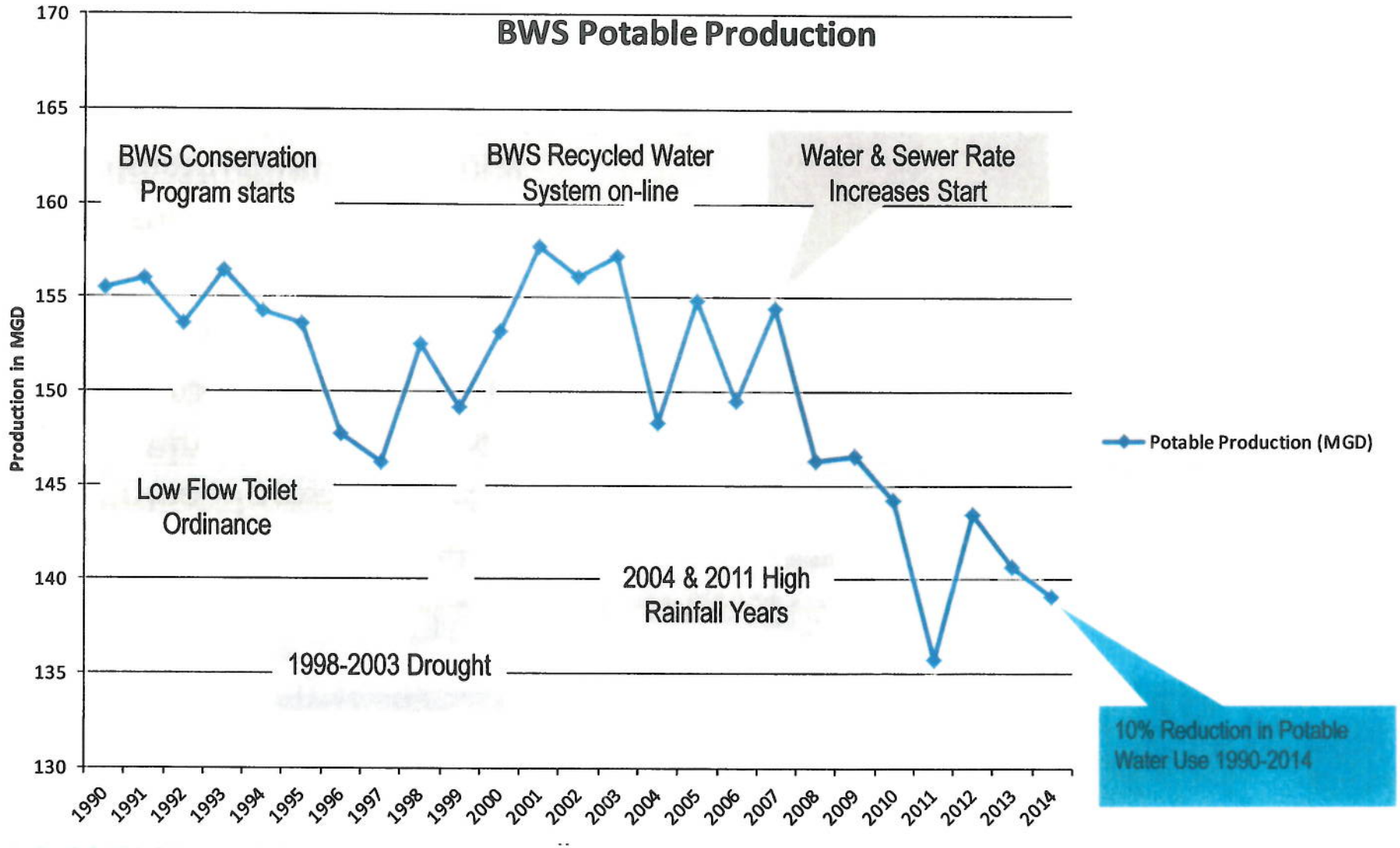
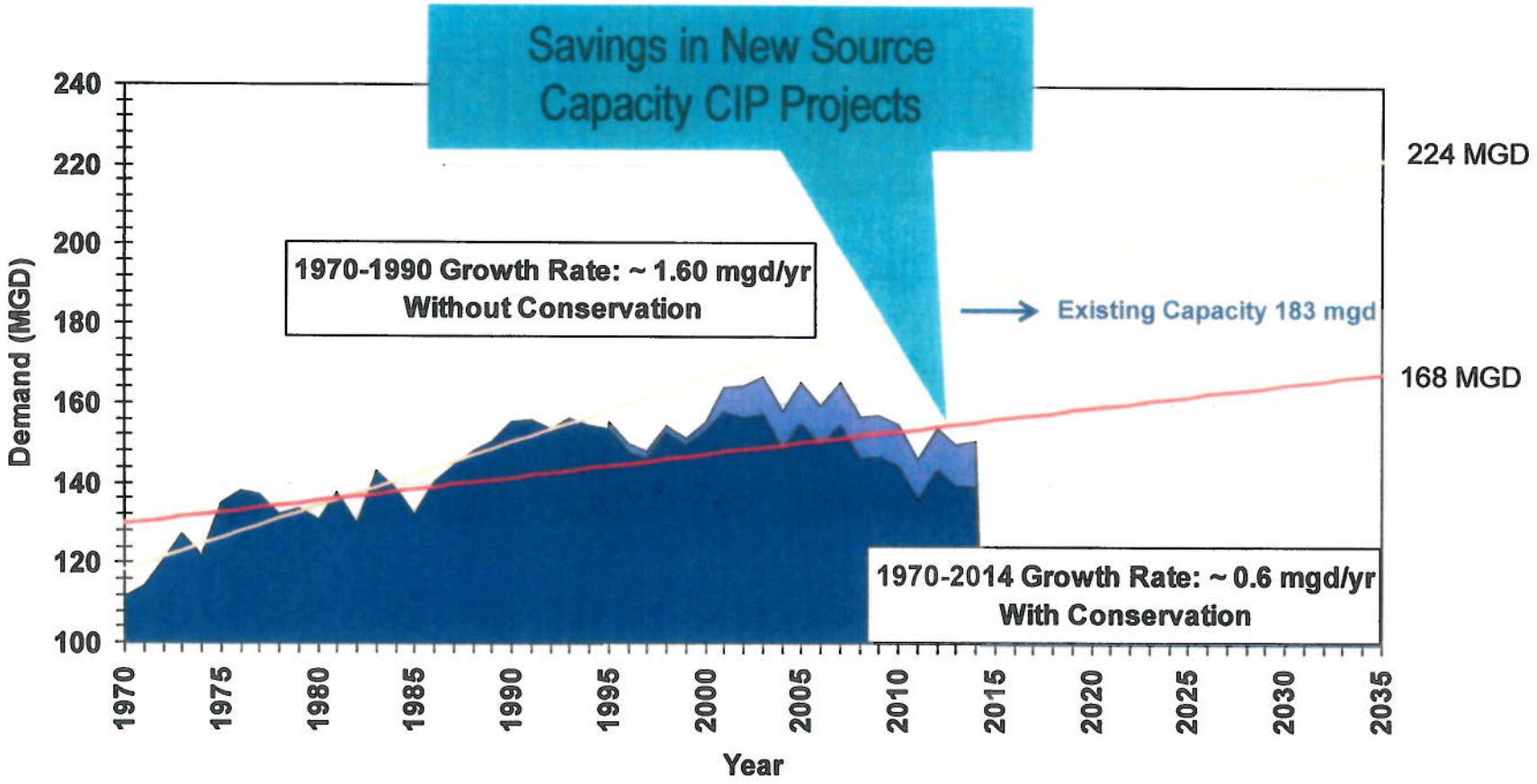
City and County of Honolulu

Historical Success in Reducing Water Demand



BWS Potable Water System Demand Projections
Historical Potable & Nonpotable Water Use



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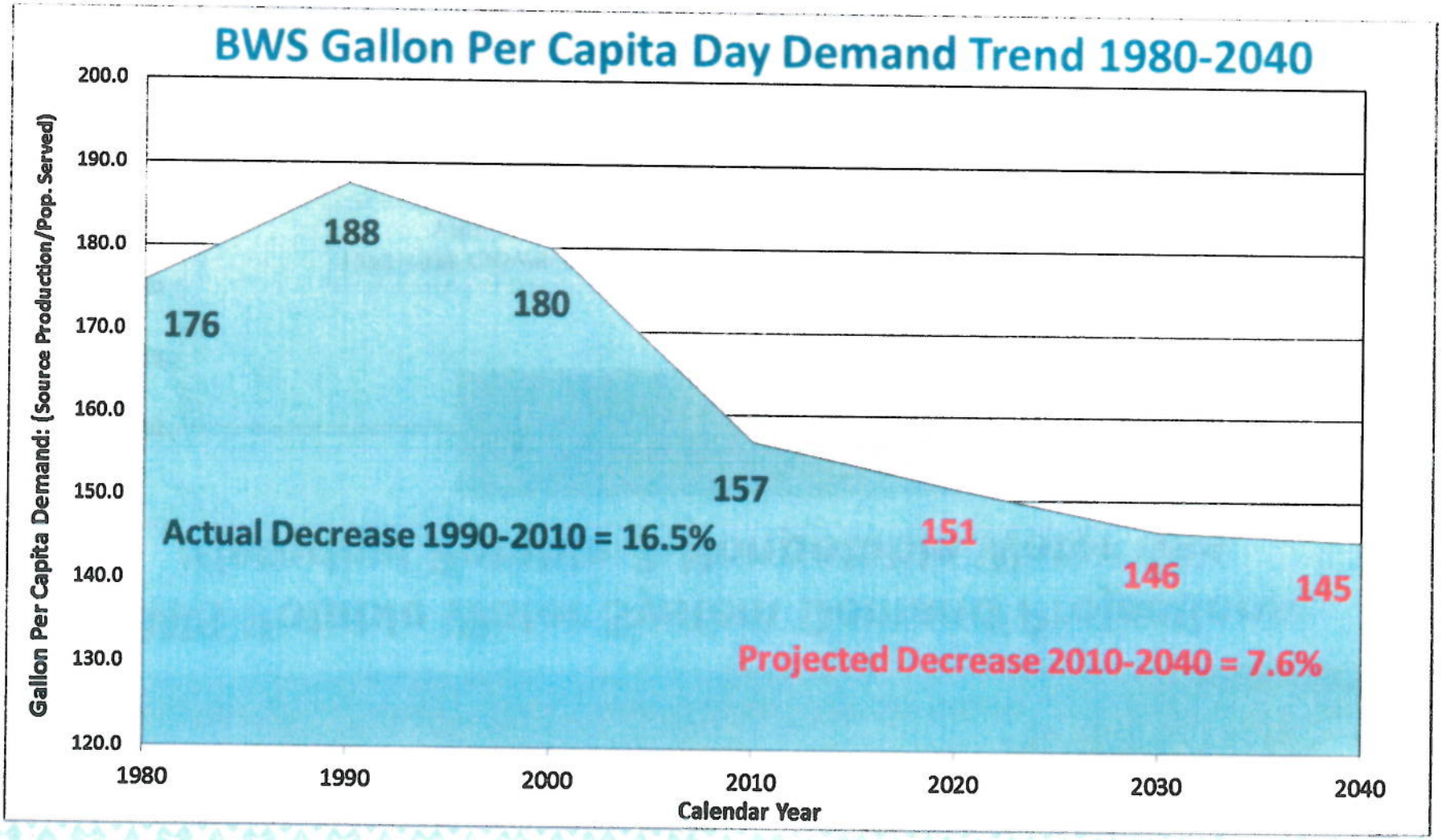
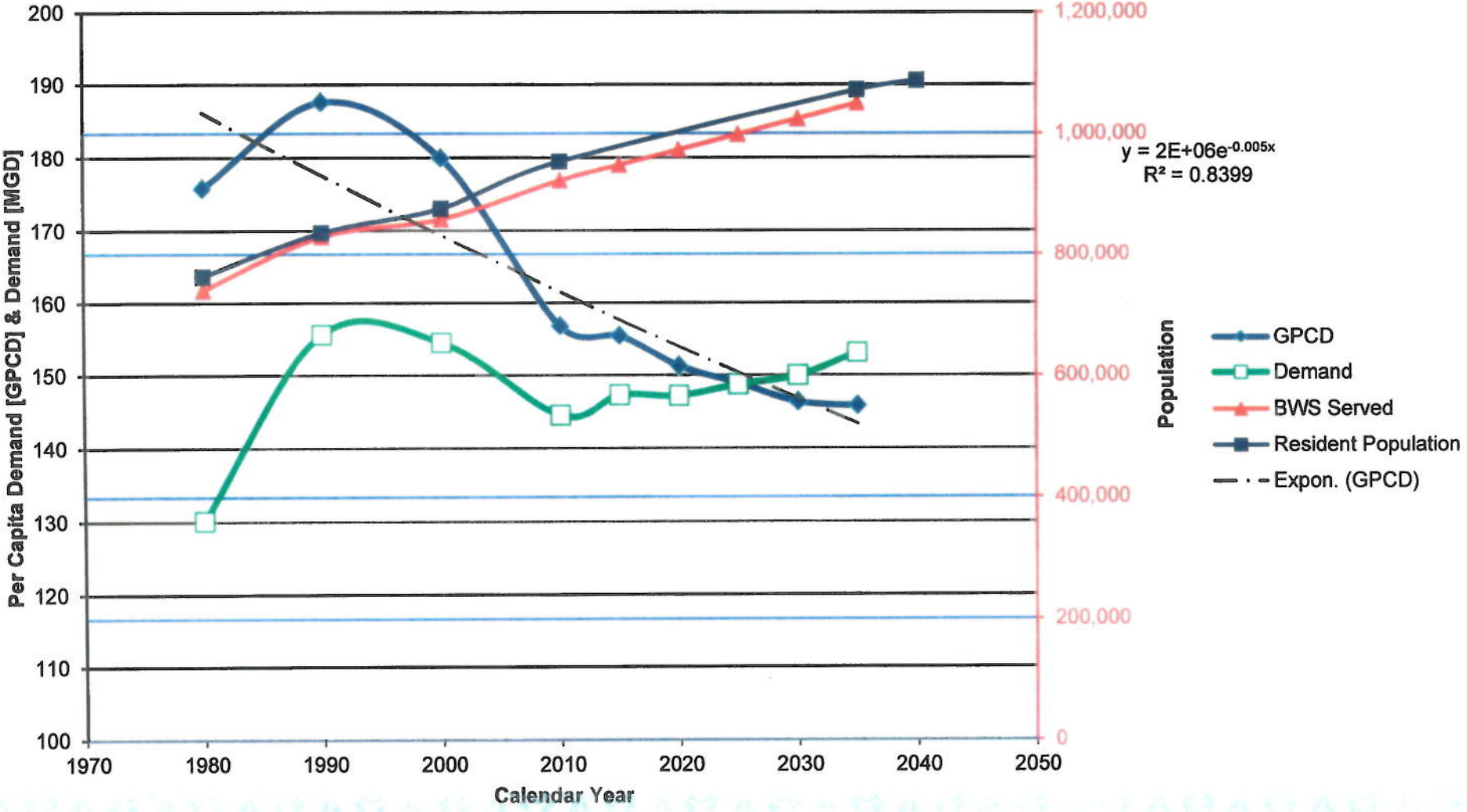
Conservation Will Reduce Future Demand

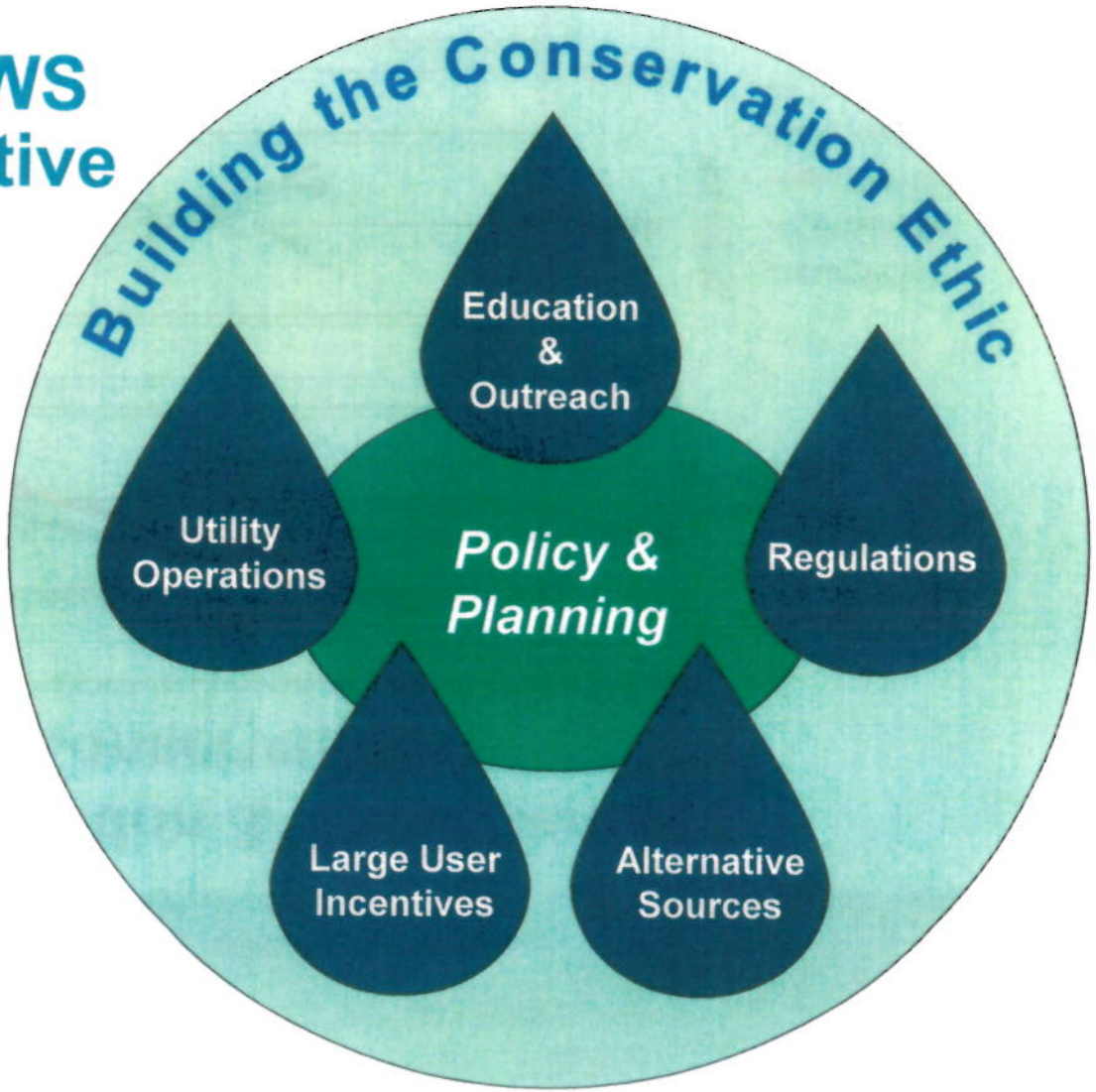


Trends of Population & Water Demand with Conservation



Water Resource Sustainability is a BWS Strategic Plan Objective

- Water Conservation is a Department-Wide Effort
- Efficiency is a core value in work practices and water system operations
- Conservation is a way of life
- BWS Conservation Program has 5 key areas



PUBLIC EDUCATION & OUTREACH	LEAK DETECTION, REPAIR & MAINTENANCE	LARGE WATER USER PROGRAMS	REGULATION	ALTERNATIVE SOURCE DEVELOPMENT, RECYCLING & CONSERVATION ALTERNATIVES
• **Schools** –Educational Material –Curriculum Devlopment –Annual Poster & Poetry Contests –Hawaii State Science Fair • **Tours** –Fred Ohrt Museum –Halawa Xeriscape Garden –Nuuanu Watershed –Water Recycling Facility --Waihee Tunnel • **Workshops on Water Conservation Gardening & Rain barrel catchments** **General Outreach** --Water Conservation Calendar --Water Matters Newsletter --Summer Conservation Media Campaign --Speakers' Bureau --NHB Liaison --BWS Website, Social media • **Water Conservation Information/Complaints** • **Communications** --News Releases / Advisories on Water Emergencies / High Water Usage / -- Water Conservation / Education Publications --Water Waste Hotline • **Special Events** –Fix-A-Leak Week –Water Conservation Week –Halawa Xeriscape Garden Open House & Unthristy Plant Sale –Community Events	• **Leak Detection and Repair** (within BWS distribution system and storage facilities) • **Pipeline Corrosion Protection Program** • **Flow Transmitter Maintenance** • **Repair and / or Replacement** of Water distribution mains and service line leaks, valves & fire hydrants • **Enforcement** of unauthorized use of water • **Meter Maintenance Program** • **Meter-Reading / Water Bill Monitoring** (Identify high water use due to undetected leakage; report seepages, leaks, or other signs of possible water leaks) • **Water Audits and Water Loss Control Program:** development of internal water use efficiency practices and programs • **Cathodic Protection** Monitoring and Maintenance -flow transmitter maintenance -pipeline corrosion programs • **QUINCI**: Quality Infrastructure Conservation Initiative	• **Visitor Industry** –Conservation Education –Linen Reuse Placard • **Government Agencies** –Conservation Partnership Projects • **Business / Commercial** –Conservation Education –Low-Flow Fixture Incentives –Restaurant placard, water served only upon request --Cooling Tower conductivity meters and softening systems --Rebates for Water Efficient Appliances • **Irrigation Systems** Submetering, On-site Weather Stations, Moisture Controllers, Sprinkler Heads	• **BWS Rules & Regulations** –Governing wasteful water use practices (Empowering department to discontinue water service) –Use of nonpotable water for irrigation of large landscaped areas, golf courses, parks, highways, school playgrounds –Restaurant water service, water served only upon request –Restricted irrigation program (Applicable to periods of low rainfall and high consumption) • **BWS Low Ground Water (Drought) Plan** • **County Legislation** requiring low-flush toilets, and low-flow showerheads and faucet fixtures • **Conservation Rate Structure (Inverted Block Rate)** • **New Construction Regulations** –Dual Water Systems –High Efficiency Fixtures --Green Infrastructure --Rain Barrel Catchments	• **Nonpotable Water System Standards and Master Plans** • **Grey Water Reuse** • **Nonpotable Source Development** –Caprock –Brackish –Surface Springs • **Water Recycling** –Honouliuli Water Recycling Facility –Mililani MBR –Ala Wai Golf Course MBR Scalping Plant • **Desalination** –Kalaeloa Seawater –Kapolei Brackish Water • **Research & Studies** –Nuuanu Stormwater impoundment aquifer storage and recovery –Evapotranspiration Study –Evaluation of New Water Conservation Efficiency Measures

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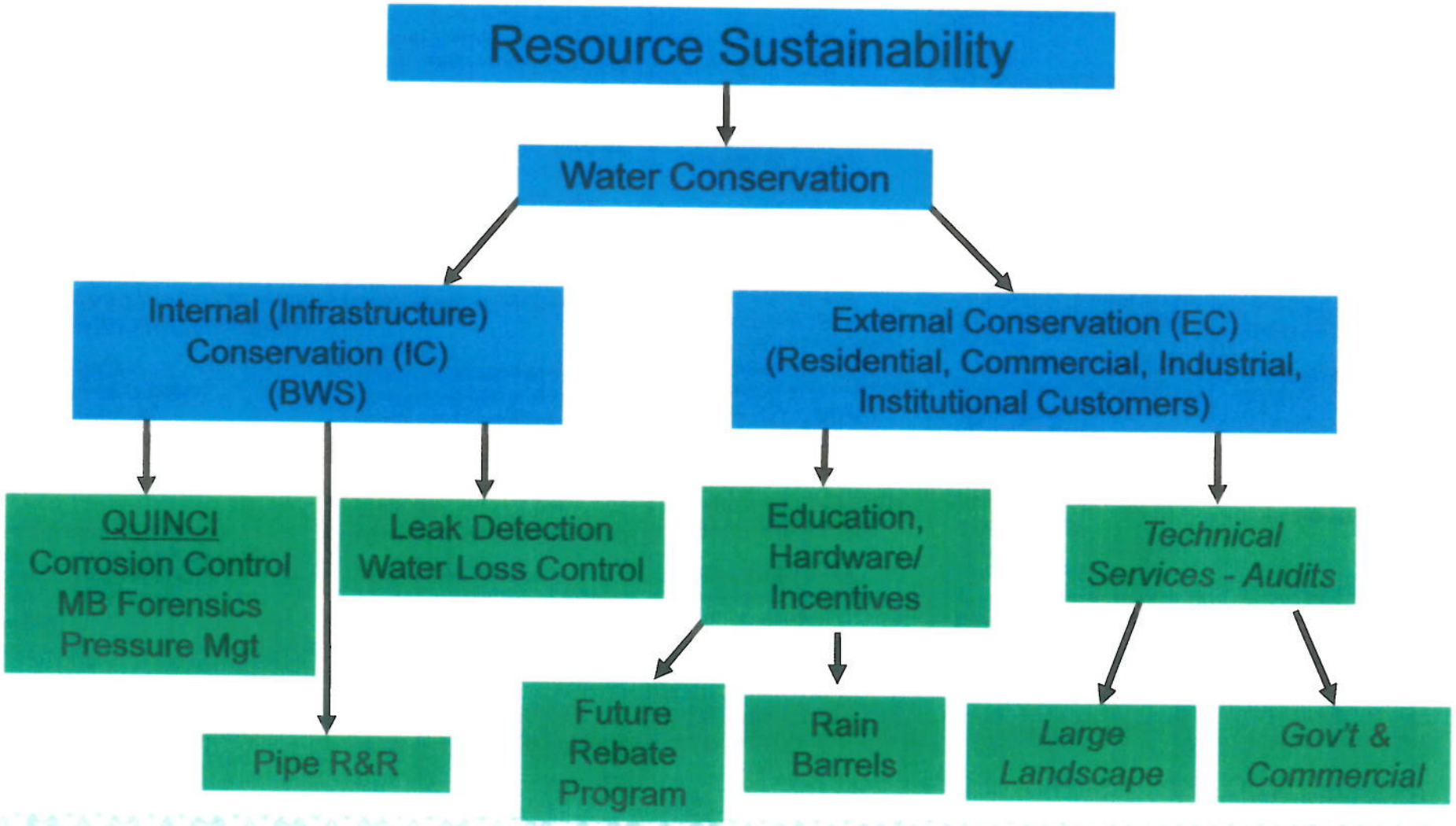
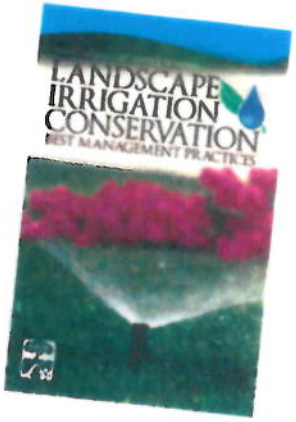
City and County of Honolulu

BWS Water Conservation Program



Public Education & Outreach

- Conservation Contests & Calendar
- WaterMatters
- Detect-A-Leak Week
- EPA WaterSense
- Restaurant Conservation
- Seven Ways to Save Water
- Xeriscape
- Efficient Landscape Irrigation
- Oahu Planting Guide
- Water Waste Hotline

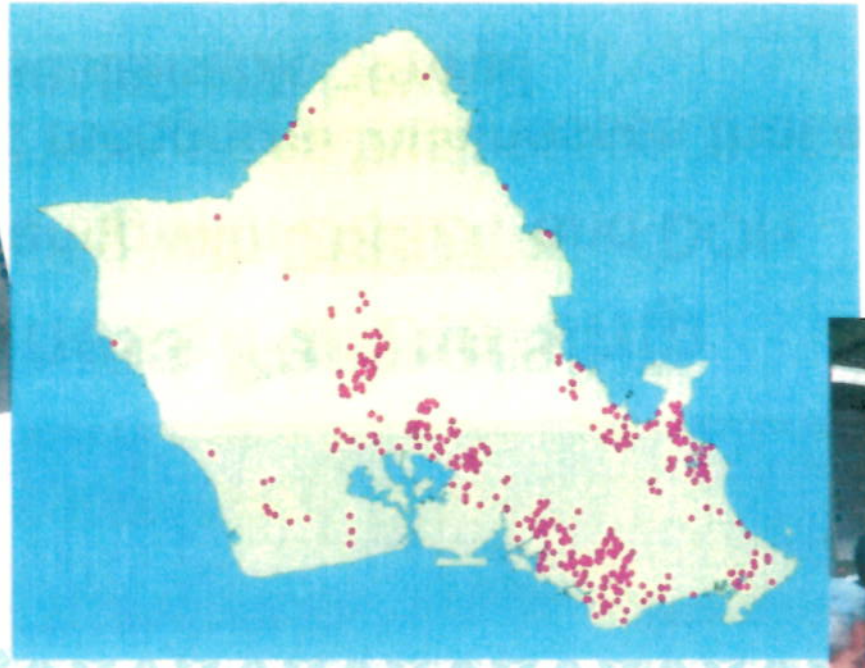


Conservation Tours and Workshops

- Waihee Tunnel Tour
- Halawa Xeriscape Garden Open House and Unthirsty Plant Sale
- Rain Barrel Catchments
- Wreaths, Decorate Eggs with Xeriscape Plants
- Aquaponics

Residential Rain Barrel Workshops

- 4-5 rain barrel workshops annually @ HXG
- Over 700 rain barrels have been distributed to Oahu Residents
- Saves about 253,000 gallons of water a year



Green Business Partnership

- BWS is Partnering with DBEDT and DOH
  - Assists and recognizes businesses that are dedicated to creating a sustainable Hawaii
  - Help businesses go beyond compliance, particularly in the areas of:
    - Water Conservation
    - Energy Conservation
    - Waste Reduction
    - Pollution Prevention
    - Natural Resource Preservation
    - Community Involvement
    - Cultural Preservation

HAWAII
GREEN BUSINESS PROGRAM

Green Business 2015 Awardee List

No	Green Business Partipants	Category
1	Whole Foods Kahala Mall	Groceries Store
2	Turtle Bay	Hotel/Resort
3	Hyatt Waikiki	Hotel/Resort
4	Volcano Lodge	Hotel/Resort
5	Kahala Resort	Hotel/Resort
6	Lanikai Juice	Restaurant & Food Service
7	Bill's Sydney	Restaurant & Food Service
8	Nook Neighborhood	Restaurant & Food Service
9	Green Hotel Forum	Green Event
10	EWC Concert on the Lawn	Green Event
11	Kamehameha School Retreat	Green Event
12	The Chaos of SustAINAbility	Green Event
13	Honeywell	Office/Retail
14	Hawaii Pacific University	Office/Retail
15	Patagonia - Ward Avenue location	Office/Retail
16	KUPU/RISE Office	Office/Retail
17	EWC	Office/Retail
18	Sustainable Island Products (SIP)	Office/Retail
19	Kapolei Fire Station	Government
20	Sustainability Unconference	Green Event
21	Annual Sustainability Higher Education Summit	Green Event
22	Hawaii Theater 2015	Green Event
23	E-Drive Charrette	Green Event
24	TEDx Paradigm Shift	Green Event

Internal Conservation Program

- BWS Water Master Plan
  - Main Break Forensics & Causal Factors
- QUINCI (Quality Infrastructure Conservation Initiative)
  - Corrosion & Water Loss Control
  - PVC Pipe Materials and Performance Study
- Optimized Pressure Management Pilots
  - Hawaii Kai Pressure Reducing Valve Project
    - Kalama and Kamiloiki Valleys
  - Metro Low Operational Adjustments
    - Addressed Line Booster Recirculation
    - Targeted valve checks for open and closed valves
    - Reduce pump pressures to float Punchbowl & Bella Vista reservoirs, reduced main breaks in town

Water Loss Reduction

- Leak Detection Savings

	Leak Detection	
YEAR	Gallons per Year Saved	MGD Saved
2007	827,820,000	2.268
2008	381,217,680	1.044
2009	446,760,000	1.224
2010	715,026,240	1.959
2011	1,466,769,896	4.019
2012	332,652,240	0.911
2013	450,897,728	1.235
2014	326,239,920	0.894

- 2014 Summary for Leaks

  Total Miles Surveyed = 419.25 miles

  Total number of leaks found = 223

- Estimated Water Savings 0.9 mgd or 328.5 million gallons in 2014

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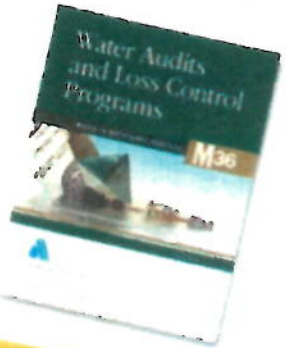
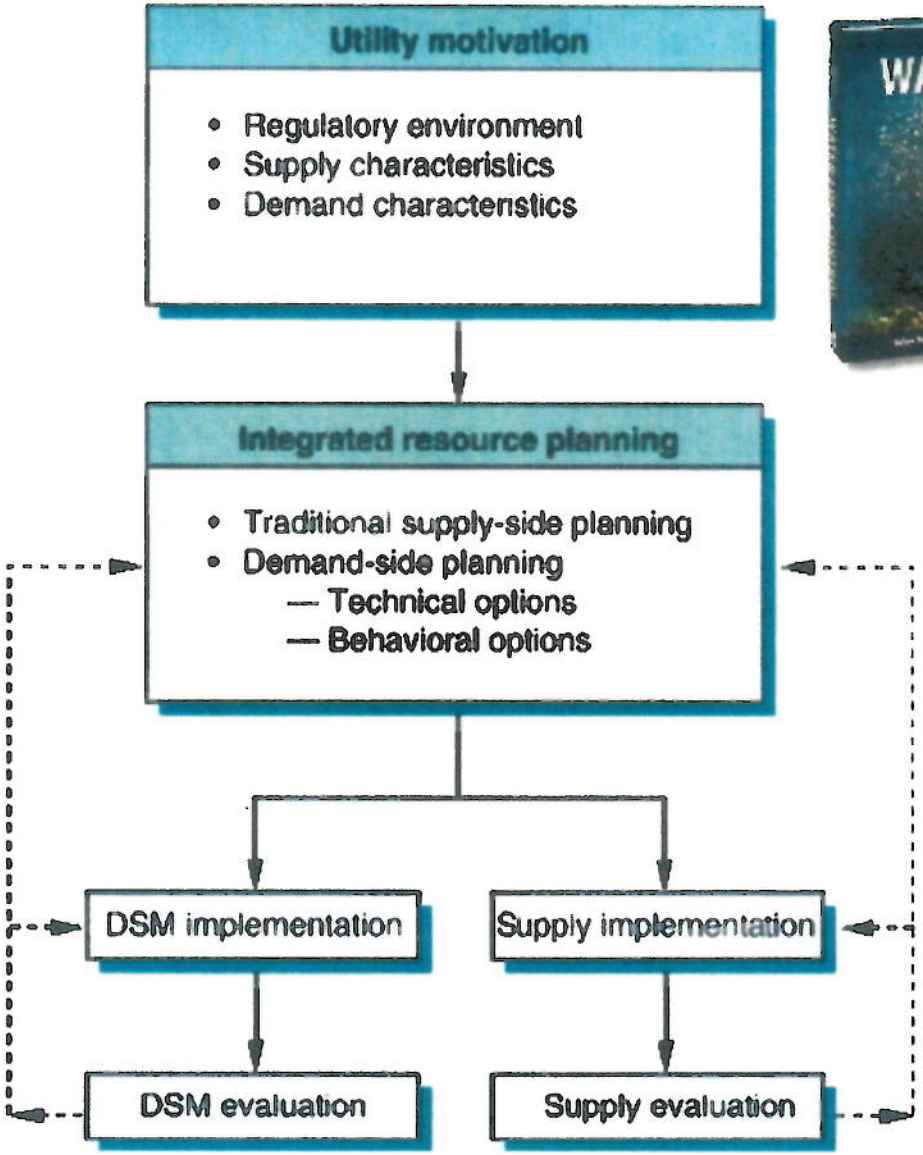
City and County of Honolulu

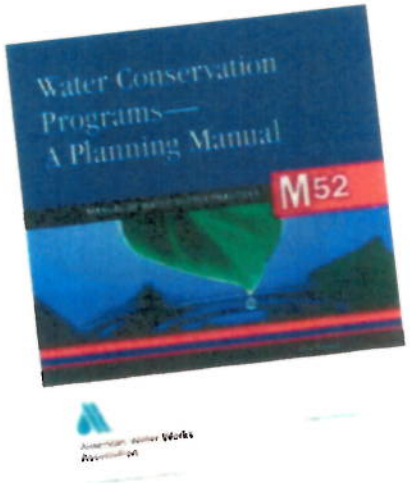




Note: "DSM" stands for demand side management

Planning Process for BWS Program

- **Overall Water Conservation Program (WCP)**
  - Phase 1 pilot projects
    - Conceptual measures reviewed and screened
    - Pilot project development (2006-2008)
    - Market penetration study
  - Phase 2 cost-effectiveness analysis
    - Demand side management least cost planning Decision Support System Model (DSS Model) (2009-2010)
    - Conservation measures selection
  - Phase 3 implementation plan



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Board of Water Supply

Pilot Water Conservation Projects

Green, green building

<u>Jamba Study:</u>

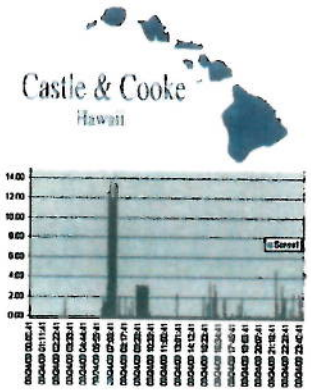
Annually, 66.9 kgal would be saved.

Quarterly, $47.72 would be saved on water and $100.65 would be saved on sewer.

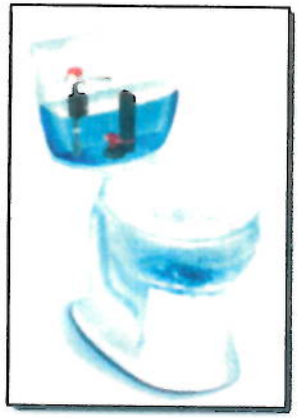
The cost of 2 high efficiency spray nozzles would be made up within the first quarter.

Pre-rinse spray nozzles –

Jamba Study



Wai Akamai



Ultra low flow toilet replacement

Rain Barrels

Toilet flapper replacement

Water Conservation DSS Model

- Evaluated cost-effectiveness (benefit versus costs): business case
- Built the business case, based on:
  - Projected long-term demands (population and employment)
  - End uses of water
  - Plumbing code and natural replacement
  - Targeted measures to reduce demands
  - Individual measure and overall program cost-effectiveness and water savings

WATER FOR LIFE

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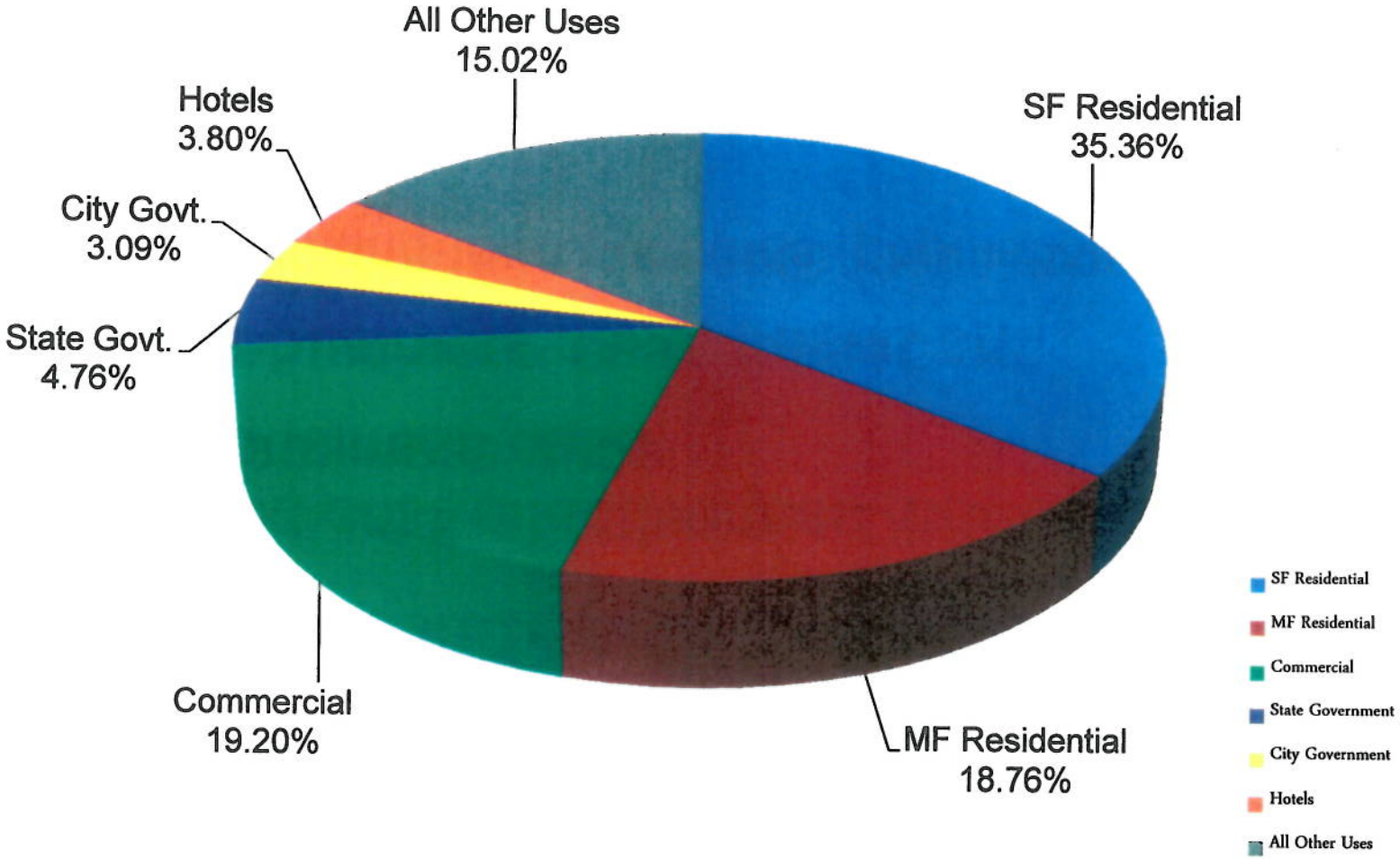
Board of Water Supply

Where does the water go?



2014 Data

Reviewed more than 50 Measures & Modeled 15 Measures

- Foundational Best Management Practices
  - Public & School Education
  - Water Waste
  - Water Loss
  - Pricing
- Residential
- Commercial & Industrial
- Large Landscape Irrigation

15 Measures BWS evaluated in DSS Model

External Program Elements:

1. Commercial/government water savings
2. Hotel/motel/condo water savings
3. Large landscape conservation surveys
4. Water budgets
5. Cooling tower program with HECO
6. Weather-based controller rebates
7. Coin-operated laundries with HECO
8. Restaurant incentives program with HECO

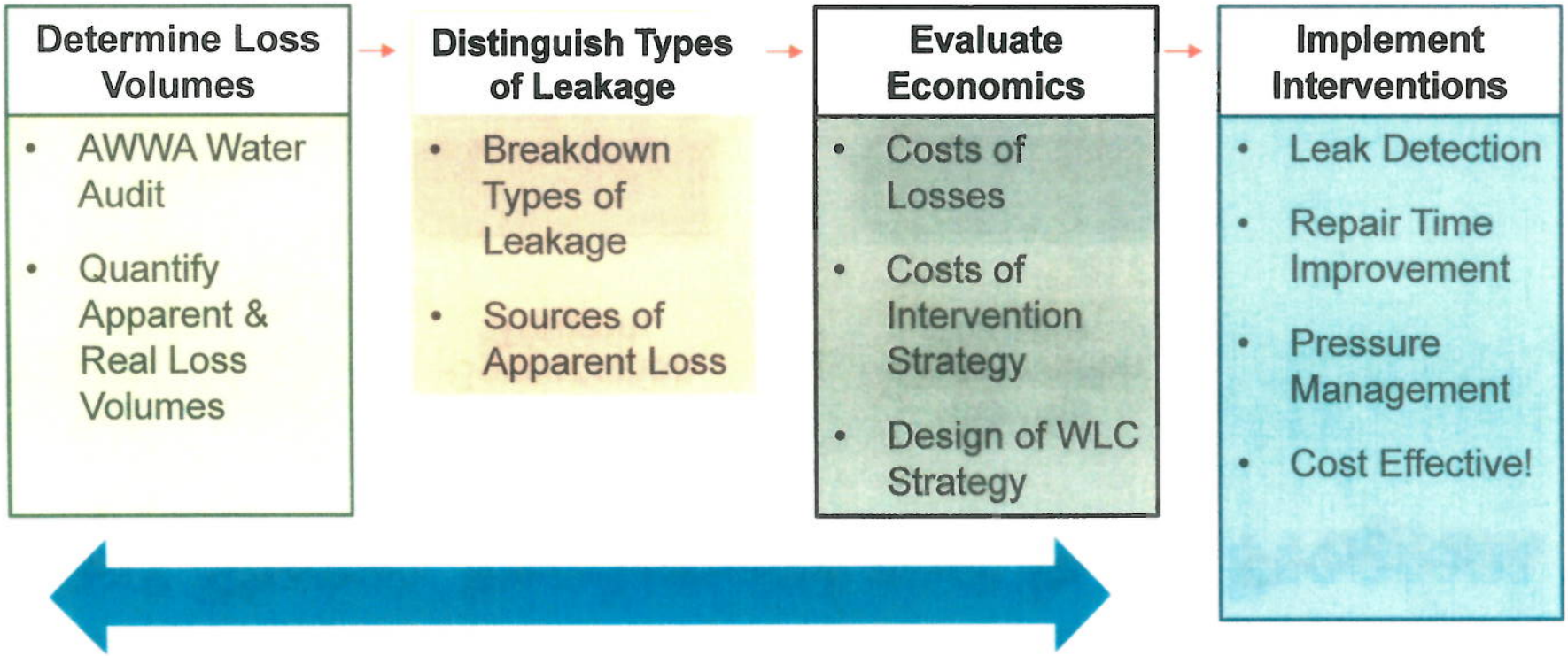
Incentive-based Elements:

1. Rebate RMF efficient clothes washers
2. Residential Hi-Eff Toilet rebate
3. Residential rain barrel incentive program
4. Rain barrel for large properties or commercial properties
5. Financial incentives for irrigation upgrades
6. HECO partnerships pre-rinse valve - education and awareness

BWS Internal Elements:

1. Water loss control (leak detection)

Water Loss Program Development



Next Steps: Implement and Build Program

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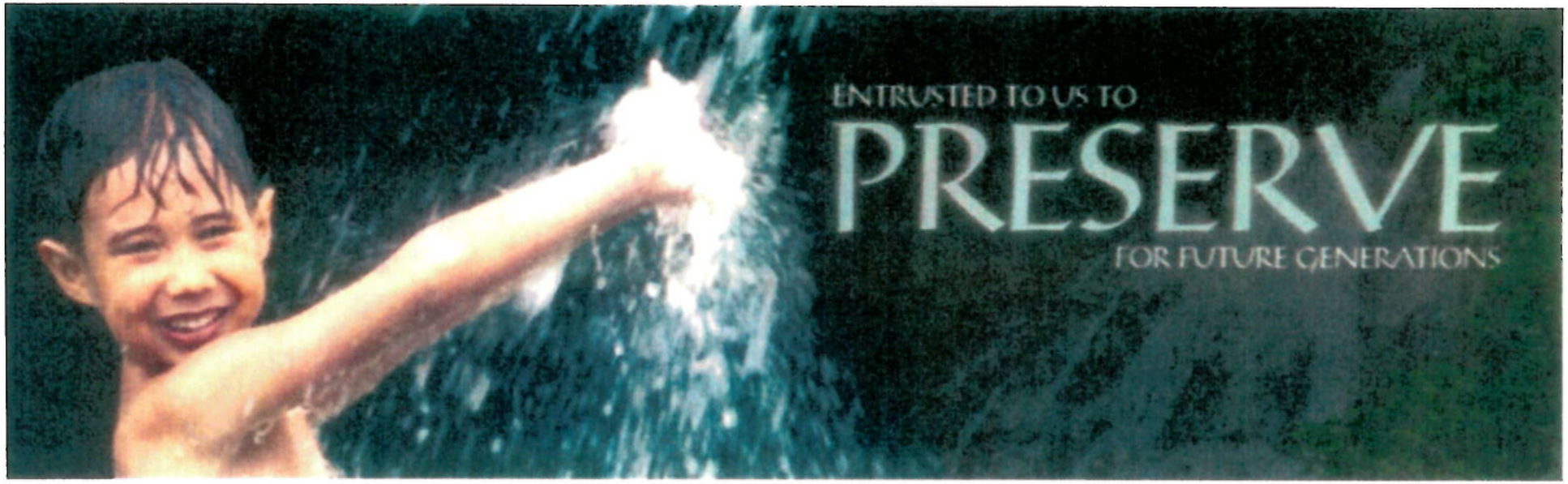
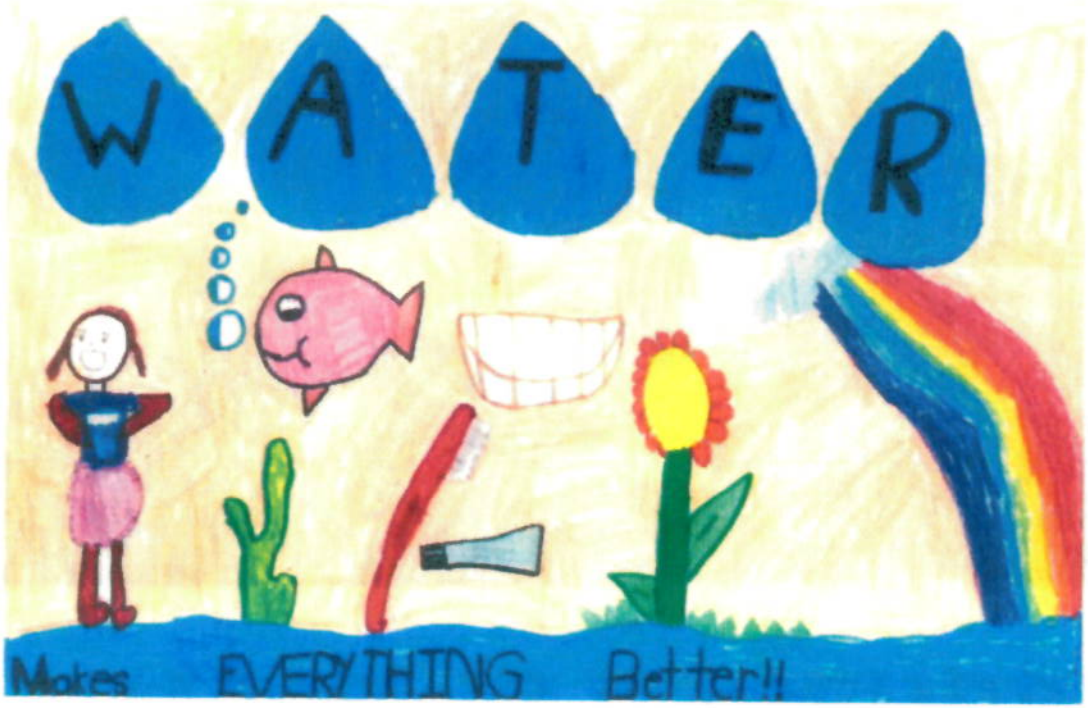
Water is Essential for Life



MAHALO

December *The Wonder of Water*



FIRST PLACE, Kindergarten
Stecya Santos
St. Elizabeth School
Ms. Sommerlyn Leong

"Everything"

I am everything, but everyone sees me
differently.
I am nature's firewood.
I am scientists' ultimate chemical.
I am children's plaything.
I am salvation.

I am the air that the creatures in the sea
breathe.
But then I come, and I leave in that same
moment.
I cannot say when I will ever return.

It is hope,
That will try to take me to where I need
to go.
Sometimes I do not go to the places that
beg for me to stay.
My fate and existence
Is never in my control.
Sometimes fools handle me; it is never fair

I am everything;
Priceless and fragile, and everything that
anything will ever need.
I am life itself, and its savior.

SECOND PLACE, Grade 11
Torie Chinen-Ramento
Moanalua High School
Ms. Liane Voss

ITEM FOR INFORMATION NO. 3

"July 27, 2015

DEFERRED CIP PROJECTS

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

Subject: Deferred Capital Improvement Program (CIP) Projects for Fiscal Year 2013 – Fiscal Year 2015

As requested at the May 26, 2015 Board Meeting, Jason Takaki, Program Administrator of our Capital Projects Division, will provide a report on all deferred CIP projects from the last three fiscal years.

Respectfully submitted,

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

Attachment"

The foregoing was for information only.

DISCUSSION

Jason Takaki, Capital Projects Division Program Administrator, provided a follow up and explanation of the Deferred CIP Projects for fiscal year (FY) 2013 – FY 2015 per Board Member Wong's request in May 2015. He explained that the tabulation is Department-wide and separated by FY. The first section lists lapsed projects – projects that are budgeted but, for the reasons stated, were not executed. In almost every case, the project was executed in the following or a subsequent FY.

Mr. Takaki showed the second section, which is a tabulation of budget amendments presented to the Board during the respective FY and represent project deferrals and additions after the CIP was initially approved. The bottom line of the second section is the funds provided into the Contract Adjustment Account and made available for other projects. In each of these FYs, encumbrances exceeded the budgeted amounts for projects. The Contract Adjustment Account and Construction Cost Index Account provide the flexibility and funding to efficiently manage the CIP in a time of rising costs.

Mr. Wong noted that the formatting of the numbers for the FY 2013 - 2014 is different from the other years. Mr. Takaki confirmed that the numbers, shown in red, should be in black like the other years. In FY 2013 - 2014, $20 million was deferred and $17 million in projects were added, so $3 million was added to the Contract Adjustment Account. The net change to the Contract Adjustment Account is consistent. Mr. Takaki stated that only in

FY 2013 should it be a negative amount in red, indicating a reduction to the Contract Adjustment Account. In that year, funds were moved into the projects budget.

The orange section and the net change to the Contract Adjustment Account do not include the section above, the lapsed projects. Lapsed projects are funds that were available at the end of the FY but were not moved by Board action. Funding that is lapsed is carried over into the next fiscal year for the operating budget or CIP. No funds are ever lost.

Honolulu Board of Water Supply
Deferred CIP Projects for FY13-FY15

Line No.	Project Title	Project Type	Division	Budget	Notes
	Fiscal Year 2012-13				
Projects lapsed in FY13:					
1	MAAKUA WELL UNIT NO.2	CONST.	WR	210,000	Project delayed when DLNR required preparation and implementation of an archaeological monitoring plan during construction.
4	EMERGENCY GENERATOR STUDY FOR BWS FACILITIES	P & E	WSO	250,000	Resources were not available to undertake this project.
27	MAXIMO UPGRADE	P & E	IT	1,350,000	Due to the delay with CC&B implementation, resources were not available to initiate this project. Project was reprogrammed and initiated in FY14.
29	INTERNET MIGRATION	P & E	IT	455,000	Division was unable to complete procurement process before fiscal year ended. Project was reprogrammed for FY15.
30	DOCUMENT MANAGEMENT SYSTEM	P & E	IT	250,000	Resources were not available to undertake this project.
Total project funds lapsed:				**2,515,000**	
Projects deferred in FY13:					
5	PUMP RENEWAL AND REPLACEMENT	CONST.	CP	2,572,000	Reduce appropriation from $3.5M to $2.845M based on reassessment of estimated costs
7	PACIFIC HEIGHTS BOOSTER RENOVATION	CONST.	CP	1,500,000	Funding reappropriated under Budget Amendment No. 1. State Historic Preservation Division and Hawaiian Electric Company reviews of the project delayed the completion of the final design. Project rescheduled for construction in the next fiscal year.
9	BERETANIA PUMP STATION RENOVATION	P & E	CP	50,000	Funding reappropriated under Budget Amendment No. 1. The project was intended to update renovation plans that were completed, but never constructed. However, significant changes to the scope of work are required and the project will instead be re-scoped and re-prioritized, with updated cost estimates, in the next fiscal year.
24	KAMILOIKI BOOSTER REPAIR	P & E	CP	150,000	Funding reappropriated under Budget Amendment No. 2. The intended repairs will be combined with a larger mechanical/electrical equipment renovation project to facilitate construction coordination of trades.
34	LUALUALEI LINE BOOSTER IMPROVEMENTS	CONST.	CP	3,000,000	Funding reappropriated under Budget Amendment No. 2. Modifications to the design are required to address optimum pump sizing. The revised plans will not be ready for advertisement in the current fiscal year.
Total project funds deferred:				**7,272,000**	
Projects added to FY13:					
2	SYSTEM ASSESSMENT AND ASSET MANAGEMENT PLANNING	P & E	WR	1,000,000	Appropriation increased from $1M to $2M for root cause analysis of main breaks and condition assessment of existing pipelines to develop a pipeline repair and rehabiliation program that will be more cost effective than wholesale replacement.
4A	AUTOMATED METER READING (AMR) INFORMATIONAL STUDY	P & E	CC	400,000	Initiate assessment of various water meter reading systems and conduct a life cycle analysis of options.
8	PUMP RENEWAL AND REPLACEMENT	P & E	CP	1,588,400	Increase appropriation to address system needs.
19A	KAPIOLANI BOULEVARD 12-INCH MAIN	CONST.	CP	5,200,000	Project was deferred in previous fiscal year pending necessary approvals.
33	PROFESSIONAL SERVICES FOR BWS PROJECTS	P & E	CP	475,000	Increase appropriation to provide for additional needs in construction management, archaeological monitoring and geotechnical investigations.
Total project funds added:				**8,663,400**	
Net change to Contract Adjustment Account:				**(1,391,400)**	Amount transferred to projects budget

Honolulu Board of Water Supply
Deferred CIP Projects for FY13-FY15

Line No.	Project Title	Project Type	Division	Budget	Notes
	Fiscal Year 2013-14				
Projects lapsed in FY14:					
3	ENERGY SAVINGS PERFORMANCE CONTRACTING (ESPC) - BWS FACILITIES	P & E	WR	(800,000)	Appropriation was intended to fund the Investment Grade Audit portion of the ESPC project but timing proved too aggressive for use of CIP funds.
27	FIRE HYDRANT INSTALLATIONS AT VARIOUS LOCATIONS IN KAILUA	CONST	CP	(150,000)	Project for replacement of hydrants in Kailua area canceled due to resident complaints that they rather have their roads paved.
29	KUAHEA STREET: 8 INCH MAIN, PHASE II	CONST	CP	(200,000)	Project plans being prepared by the City for this joint project were not ready for advertisement. Rebudget BWS share in next fiscal year.
54	NALU UPGRADE	P & E	IT	(765,000)	Due to resource constraints and higher priority projects, the Nalu Enhancement project was reprogrammed into FY15.
64	PROJECT INFORMATION MANAGEMENT SYSTEM	CONST	CP	(1,000,000)	System requirements were still being developed and more time was needed to define Division needs. Project rebudgeted in FY15.
65	EMERGENCY GENERATORS AT BWS FACILITIES	CONST	CP	(5,745,000)	Management requested project deferral and scope expansion to add hardening of appurtenant facilities to the installation of permanent emergency generators. Additional design work required. Reschedule construction for a subsequent fiscal year once design is completed.
Total project funds lapsed:				(8,660,000)	
Projects deferred in FY14:					
9	MARINERS RIDGE BOOSTER I: REPAIR OF PUMPING UNITS	CONST.	CP	(263,000)	Funding reappropriated in Budget Amendment No. 1. Project scope refinements delayed completion of design contract award and project will not be ready for construction in the current fiscal year. Reschedule construction for FY15.
10	AINA KOA BOOSTER I: REPAIR OF PUMP NO. 2	CONST	CP	(175,000)	Funding reappropriated in Budget Amendment No. 1. Project scope refinements delayed completion of design contract award and project will not be ready for construction in the current fiscal year. Reschedule construction for FY15.
12	WAHIAWA WELLS I UNIT 3 REHABILITATION	CONST	WR	(375,000)	Funding reappropriated in Budget Amendment No. 3. Design was intended to be completed in-house. However, loss of key personnel precludes performing the work in-house. Instead, the design of the project will be initiated in the current fiscal year.
17	WAIALAE IKI WELL RENOVATION	P & E	CP	(150,000)	Funding reappropriated in Budget Amendment No. 1. Design will not be initiated in the current fiscal year due to staffing shortages and workload. Reschedule design for FY15.
18	MILILANI WELLS II IMPROVEMENTS	P & E	CP	(150,000)	Funding reappropriated in Budget Amendment No. 1. Design will not be initiated in the current fiscal year due to staffing shortages and workload. Reschedule design for FY15.
20	PUMP RENEWAL AND REPLACEMENT	P & E	CP	(200,000)	Portion of funds reappropriated in Budget Amendment No. 2 based on reassessment of estimated costs.
28	HIHIMANU STREET 12-INCH MAIN	CONST	CP	(150,000)	Portion of funds reappropriated in Budget Amendment No. 1 based on letter from Department of Hawaiian Home Lands indicating low bid received and minimal contract changes during construction reducing BWS share of joint project.
31	PALOLO WATER SYSTEM IMPROVEMENTS, PART III	CONST	CP	(4,700,000)	Funding reappropriated in Budget Amendments No. 1 and 2. Project deferred to allow further investigation of rehabilitation technologies to be utilized.
32	PALOLO WATER SYSTEM IMPROVEMENTS, PART IV	CONST	CP	(4,700,000)	Funding reappropriated in Budget Amendment No. 2. Project deferred to allow further investigation of rehabilitation technologies to be utilized.
43	NUUANU RESERVOIR NO. 4 DAM IMPROVEMENTS	CONST	LAND	(1,500,000)	Funding reappropriated in Budget Amendment No. 3. The permitting process is taking longer than anticipated. Reschedule construction for FY15.

Honolulu Board of Water Supply
Deferred CIP Projects for FY13-FY15

Line No.	Project Title	Project Type	Division	Budget	Notes
45	KAMAILE PLANTATION WELLS SEALING	CONST	WR	(325,000)	Funding reappropriated in Budget Amendment No. 3. Review of the archaeological inventory survey the the State Historic Preservation Division has not been completed and will likely affect the project scope. The design cannot be completed and construction will need to be rescheduled in a future fiscal year when all conditions are finalized.
57	KALAWAHINE 180 2.0 MG RESERVOIR	CONST	WR	(8,000,000)	Funding reappropriated in Budget Amendment No. 3. Transmission mains need to be realigned due to cancellation of proposed construction of booster station at Beretania Complex.
Total project funds deferred:				**(20,688,000)**	
Projects added to FY14:					
2	BWS WATER MASTER PLAN	P & E	WR	4,750,000	Increase appropriation in Budget Amendment No. 3 to fund completion of the infrastructure condition assessment, master plan, financial rate study and communication plan.
3A	CONSTRUCTION MANAGEMENT FOR VARIOUS BWS PROJECTS	CONST	CP	1,600,000	Appropriation added in Budget Amendment No. 1. Professional construction management services to investigate and implement process and procedure improvements and to meet increased workloads.
3B	EWA SHAFT HYDRO-GEOLOGICAL FIELD INVESTIGATION AND PRELIMINARY ENGINEERING STUDY	P & E	WR	2,000,000	Appropriation added in Budget Amendment No. 3. This study will assess seepage into Ewa Shaft and propose physical improvements and provide basis of design report.
3D	RED HILL FUEL UNDERGROUND FUEL STORAGE FACILITY AND GROUNDWATER CONTAMINATION STUDY	P & E	WQ	300,000	Appropriation added in Budget Amendment No. 3 for study to determine extent and impact of fuel releases on the Waimalu and Moanalua aquifers.
4	PUMP RENEWAL AND REPLACEMENT	CONST	CP	1,050,000	Appropriation increased in Budget Amendment No. 2 to address immediate system needs.
20A	WAHIAWA WELLS I UNIT 3 REHABILITATION	P & E	WR	100,000	Appropriation added in Budget Amendment No. 3 to design well repair to address partial well collapse.
40A	MAPUNAPUNA WATER SYSTEM IMPROVEMENTS, PART I	CONST	CP	2,093,000	Appropriation added in Budget Amendment No. 1 to fund contract amount for FY13 project that exceeded budgeted amount due to higher pipe installation costs related to anticipated petroleum hydrocarbon contaminated soils.
65	EMERGENCY GENERATORS AT BWS FACILITIES	CONST	CP	5,745,000	Appropriaiton added in Budget Amendment No. 2 to install stationary emergency generators at selected pump stations/well facilities to improve the reliability of the water system in the event of a sustained power outage.
Total project funds added:				**17,638,000**	
Net change to Contract Adjustment Account:				**3,050,000**	Amount transferred from projects budget

Honolulu Board of Water Supply
Deferred CIP Projects for FY13-FY15

Line No.	Project Title	Project Type	Division	Budget	Notes
	Fiscal Year 2014-15				
Projects lapsed in FY15:					
31	WATER MAIN INSTALLATION & REPLACEMENT	CONST	CP	100,000	Funding of placeholder budget item for unanticipated needs will not be required in FY15.
40A	MAILIILII 20-INCH PIPELINE RELINING	P & E	CP	250,000	Required analysis for scope of work will not be completed in time to award a design contract this fiscal year.
42	NUUANU RESERVOIR NO. 4 DAM IMPROVEMENTS	CONST	CP	1,500,000	Late reassignment of this project to Capital Projects resulted in an insufficient bidding period for this project. Only one bid was received and exceeded available funds. Project needs to be rebudgeted and readvertised in the next fiscal year.
44	TWO-WAY RADIO UPGRADES	CONST	WSO	750,000	Need to reassess transfer of two way radio system to BWS wireless network. Purpose of the separate two-way radio system is for redundancy in communications during an emergency.
46	RTU UPGRADES	CONST	WSO	1,500,000	Pilot testing of the equipment is still on-going. Need more data and feedback prior to island wide installation of new equipment.
48	KAILUA IWI KUPUNA REINTERMENT	CONST	CP	100,000	Final design to address desires of all stakeholders and project permitting will not be completed in time for award this fiscal year.
53	RTU UPGRADES	P & E	WSO	200,000	Pilot testing of the equipment is still on-going. Need more data and feedback prior to planning and design of island wide implementation.
Total funds lapsed:				**4,400,000**	
Projects deferred in FY15:					
7	KAMAILE WELLS RENOVATION	CONST	CP	1,400,000	Funding reappropriated in Budget Amendment No. 3. Extended review time by SHPD and likely design changes due to final recommendations preclude completion of the plans and specifications for construction in FY15.
10	KEANU LINE BOOSTER: REPLACE PUMPING UNITS	CONST	CP	1,820,000	Funding reappropriated in Budget Amendment No. 1. Additional items of work identified during the design phase will delay the completion of the plans and specifications. Reschedule construction for FY16.
12	DIAMOND HEAD LINE BOOSTER: REPLACE PUMPING UNITS	CONST	CP	935,000	Funding reappropriated in Budget Amendment No. 1. Pre-design investigation identified leaking isolation valves at site. Additional work to replace valves adversely impacted design schedule and delayed the completion of the plans and specifications. Reschedule construction for FY17.
39	FIRE HYDRANT INSTALLATIONS AT VARIOUS LOCATIONS	P & E	CP	100,000	Funding reappropriated in Budget Amendment No. 1. Locations identified in Kailua area will be included in a large area-wide upgrade project following deferral of hydrant installation in FY14.
56	CUSTOMER INFORMATION SYSTEM	P & E	IT	2,737,143	Funding reappropriated in Budget Amendment No. 3. Only a portion of the budget funds are needed in the current fiscal year.
58	NALU ENHANCEMENT	P & E	IT	765,000	Funding reappropriated in Budget Amendment No. 3. Project implementation delayed to FY16.
59	IT PROJECT MANAGEMENT	P & E	IT	1,400,000	Funding reappropriated in Budget Amendment No. 3. Funding no longer needed as a result of changes in how IT approaches applications projects.
63	DOCUMENT MANAGEMENT SYSTEM	P & E	IT	2,000,000	Funding reappropriated in Budget Amendment No. 2. Project implementation delayed to FY16.
68	KALAWAHINE 180 2.0 MG RESERVOIR, PART II	P & E	WR	350,000	Funding reappropriated in Budget Amendment No. 1. This appropriation not needed. Additional funding for the reservoir design project was provided in FY14 from the contract adjustment account.
72	SECURITY CAMERA MANAGEMENT SYSTEM	P & E	IT	500,000	Funding reappropriated in Budget Amendment No. 3. Project implementation delayed to FY16.
Total project funds deferred:				**12,007,143**	

Honolulu Board of Water Supply
Deferred CIP Projects for FY13-FY15

Line No.	Project Title	Project Type	Division	Budget	Notes
Projects added to FY15:					
5A	GROUND WATER QUALITY ASSESSMENT AND CHARACTERIZATION	P & E	WQ	800,000	Appropriation added in Budget Amendment No. 1 to provide a study to characterize ground water quality and assess the long-term impacts of fuel leaks on the Moanalua and Waimalu aquifers beyond the bourndary of the Red Hill facility
6	PUMP RENEWAL AND REPLACEMENT	CONST	CP	1,100,000	Appropriation increased in Budget Amendment No. 1 to provide for immediate needs that were identified after the FY15 budget was finalized.
21A	KALUANUI LINE BOOSTER RENOVATION	P & E	CP	935,000	Appropriation added in Budget Amendment No. 1 to fund Kaluanui Line Booster renovation project to replace deferred Diamond Head Line Booster pump replacement.
40A	MAILIILII 20-INCH PIPELINE RE-LINING	P & E	CP	250,000	Appropriation added in Budget Amendment No. 1 to address large leak in transmission main under the concrete drainage channel. Transmission capacity to Waianae 242 reservoir significantly reduced until main is repaired.
40B	ROOSEVELT BRIDGE 12-INCH RECYCLED WATER MAIN	P & E	WR	75,000	Appropriation added in Budget Amendment No. 3 to BWS to enter into utility agreement with State DOT.
40B	ROOSEVELT BRIDGE 12-INCH RECYCLED WATER MAIN	CONST	WR	325,000	Appropriation added in Budget Amendment No. 3 to BWS to enter into utility agreement with State DOT.
Total project funds added:				3,485,000	
Net change to Contract Adjustment Account:				8,522,143	Amount transferred from projects budget

ITEM FOR INFORMATION NO. 4

"July 27, 2015

WATER MASTER PLAN UPDATE

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

Chair and Members:

Subject: Board of Water Supply Water Master Plan Quarterly Update

Barry Usagawa, Program Administrator of our Water Resources Division, will present an update of the Board of Water Supply Water Master Plan.

Respectfully submitted,

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

Attachment"

The foregoing was for information only.

DISCUSSION

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

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Board of Water Supply
City and County of Honolulu

Water Master Plan

Board Quarterly Update No. 8

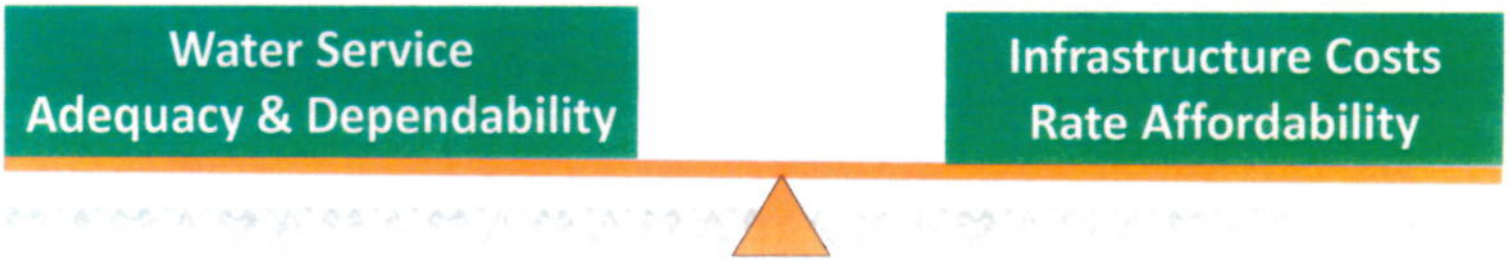
July 27, 2015

Previous Water Master Plan Updates

- Water Master Plan Components
  - Goals and Objectives
  - Schedule
  - Tasks and Status
- Main Break Causal Factors
- Pipeline Condition Assessments
- Pilot Pipeline Condition Assessment Tools
- 3-Year Public Engagement Strategy
- Leak Detection & Special Design Projects
- Echologics Leak Finder Survey
- Stakeholder Advisory Group & Reservoir Condition Assessments
  Today's Topic

BWS Water Master Plan

- The Water Master Plan is a comprehensive program that, looking ahead over the next 30 years, evaluates the entire water system, identifies necessary improvements, and balances needs and costs for our customers.
  - A best practice of water utilities seeking to ensure stewardship of water supplies and infrastructure.
  - Provides vital information for policy makers to make decisions about how to balance water service adequacy & dependability with the cost of infrastructure improvements and rate affordability to our customers.



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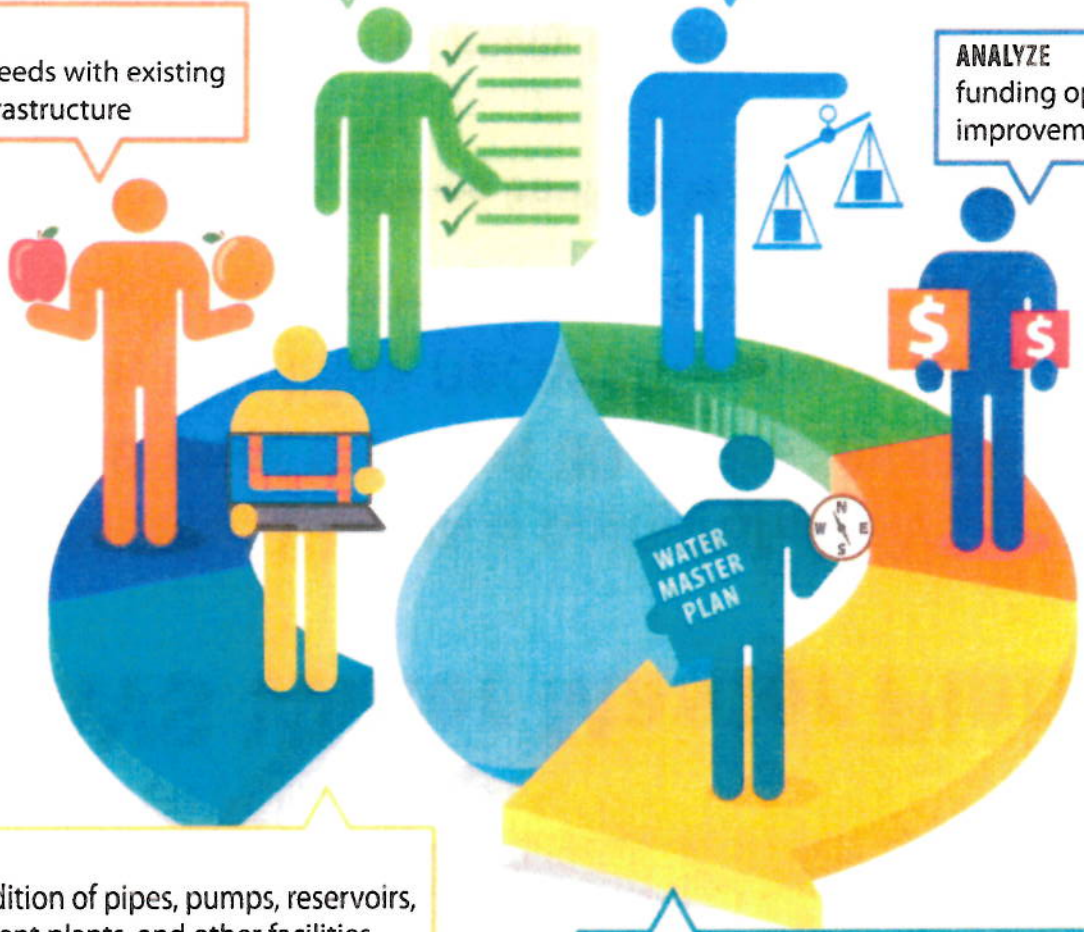
IDENTIFY
needs for increasing existing supplies and improvements to existing facilities

PRIORITIZE
improvements over a 30-year period based on risks to the system and providing reliable service to customers

COMPARE
projections of future needs with existing water supplies and infrastructure

ANALYZE
funding options to pay for improvements, including rates



ASSESS
existing condition of pipes, pumps, reservoirs, wells, treatment plants, and other facilities

DEVELOP
a comprehensive plan to implement improvements, including priorities, schedules, costs, financing, and rates

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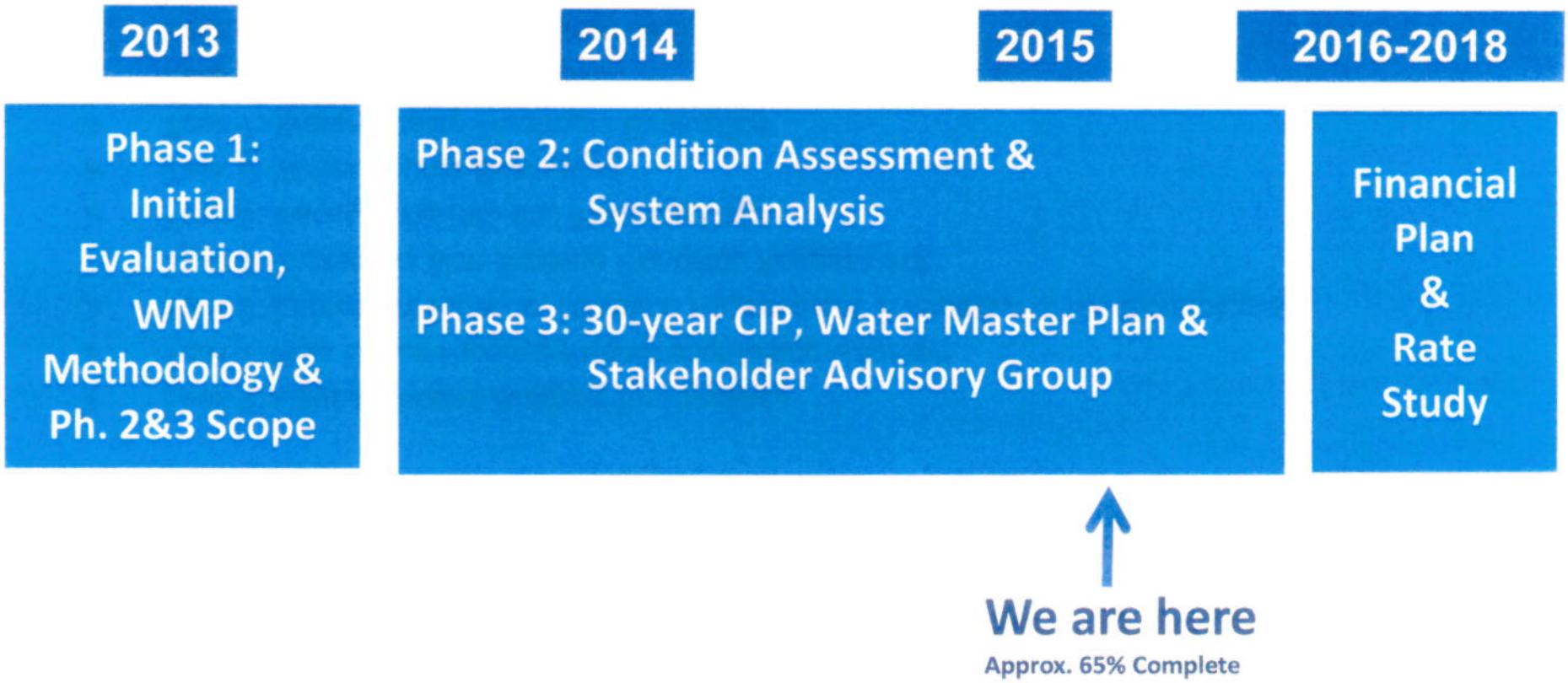
City and County of Honolulu

Water Master Plan Schedule



Water Master Plan Tasks

- Task 1: Causal Factors Analysis for Pipelines
- Task 2: Risk Based Pipeline Prioritization Using CapPlan
- Task 3: Implement Pipeline Condition Assessment: Evaluation of CA technologies
- Task 4: Implement Non-Pipeline Condition Assessment
- Task 5: Background Info and Planning Data
- Task 6: Water Source Evaluation
- Task 7: Water Quality Treatment Evaluation
- Task 8: Water System Evaluation
- Task 9: Operation and Maintenance Evaluation
- Task 10: Recommended Capital Improvement Plan
- Task 11: Financial Plan and Rate Study (rescheduled to 2016)
- Task 12: Communications Plan
- Task 13: Project Management
- Task 14: Update Causal Factors
- Task 15: Recommend Transmission Pipeline Rehabilitation and Replacement
- Task 16: Water Master Plan Report
- Task 17: Implementation Plan Coordination
- Task 18: Project Support

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Board of Water Supply
City and County of Honolulu

SAG Meeting 1 May 5, 2015

Neil S. Blaisdell Center 4:00 to 6:30pm

Agenda featuring:

- Expectations of the group and meetings
- The BWS's commitment to the SAG
- Overview of the BWS & our water system
- Introduction to the Water Master Plan
- Stakeholders' top priorities (interactive)

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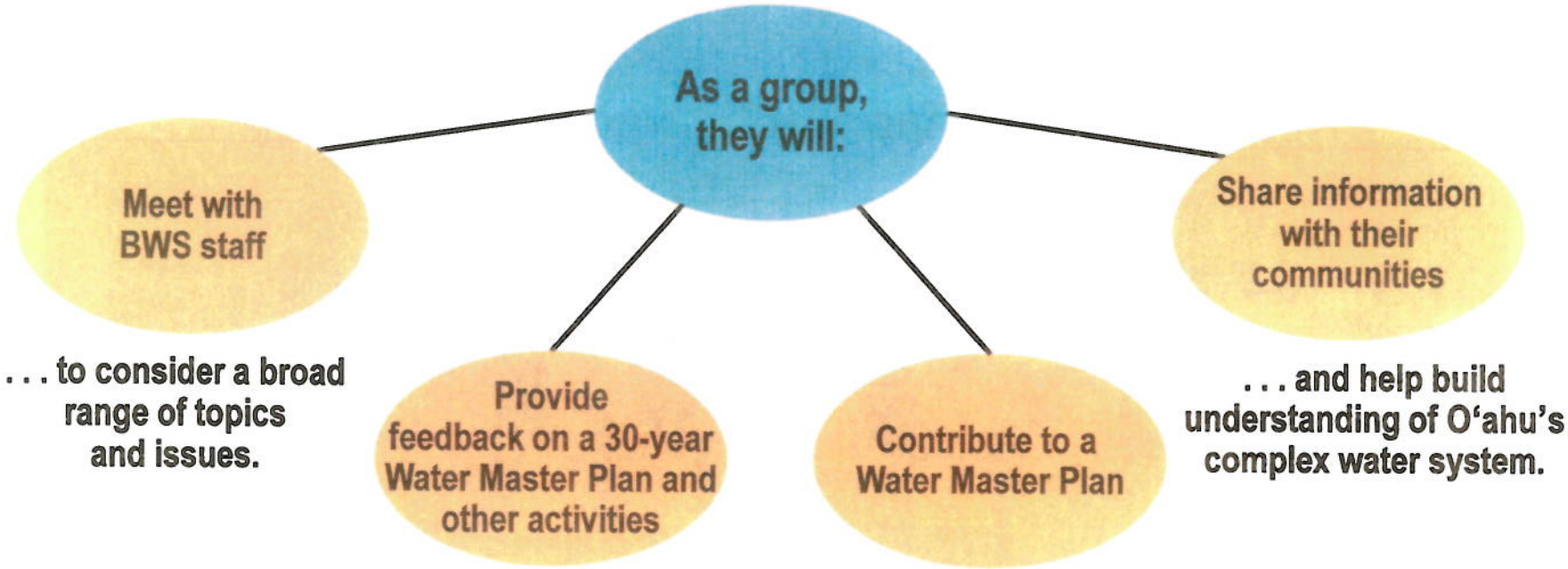
City & County of Honolulu

The 28 Stakeholder Advisory Group members represent diverse communities and interests.

Eric Au	Sheraton - Waikiki
Jackie Boland	AARP Hawaii
Pono Chong	Chamber of Commerce Hawaii
Bill Clark	Resident of Council District 6
Richard Dahl	James Campbell Properties, LLC
Mark Fox	The Nature Conservancy of Hawaii
Gregg Fraser	Hawaii Restaurant Association
Neil Hannahs	Kamehameha Schools
Kekoa Ho	Resident of Council District 3
Rick Hobson	Building Industry Association of Hawaii
Shari Ishikawa	Hawaiian Electric Co.
Micah Kane	Pacific Links Hawaii
Will Kane	Mililani Town Community Association
Ralph Mesick	First Hawaiian Bank
Helen Nakano	Resident of Council District 5
Robbie Nicholas	Hawaii Kai Golf Course
Dean Okimoto	Nalo Farms Inc.
Alison Omura	Coca-Cola Bottling Co.
Kathleen Pahinui	Resident of Council District 2
Dick Poirier	Resident of Council District 9
Elizabeth Reilly	Resident of Council District 4
Cynthia Rezentes	Resident of Council District 1
Francois Rogers	Blue Planet Foundation
Josh Stanbro	Hawaii Community Foundation
Cruz J. Vina, Jr.	Resident of Council District 8
Christopher Wong	Resident of Council District 7
Lee Yamamoto	Marine Corps Base Hawaii
Suzanne Young	Honolulu Board of Realtors

The Board of Water Supply Stakeholder Advisory Group



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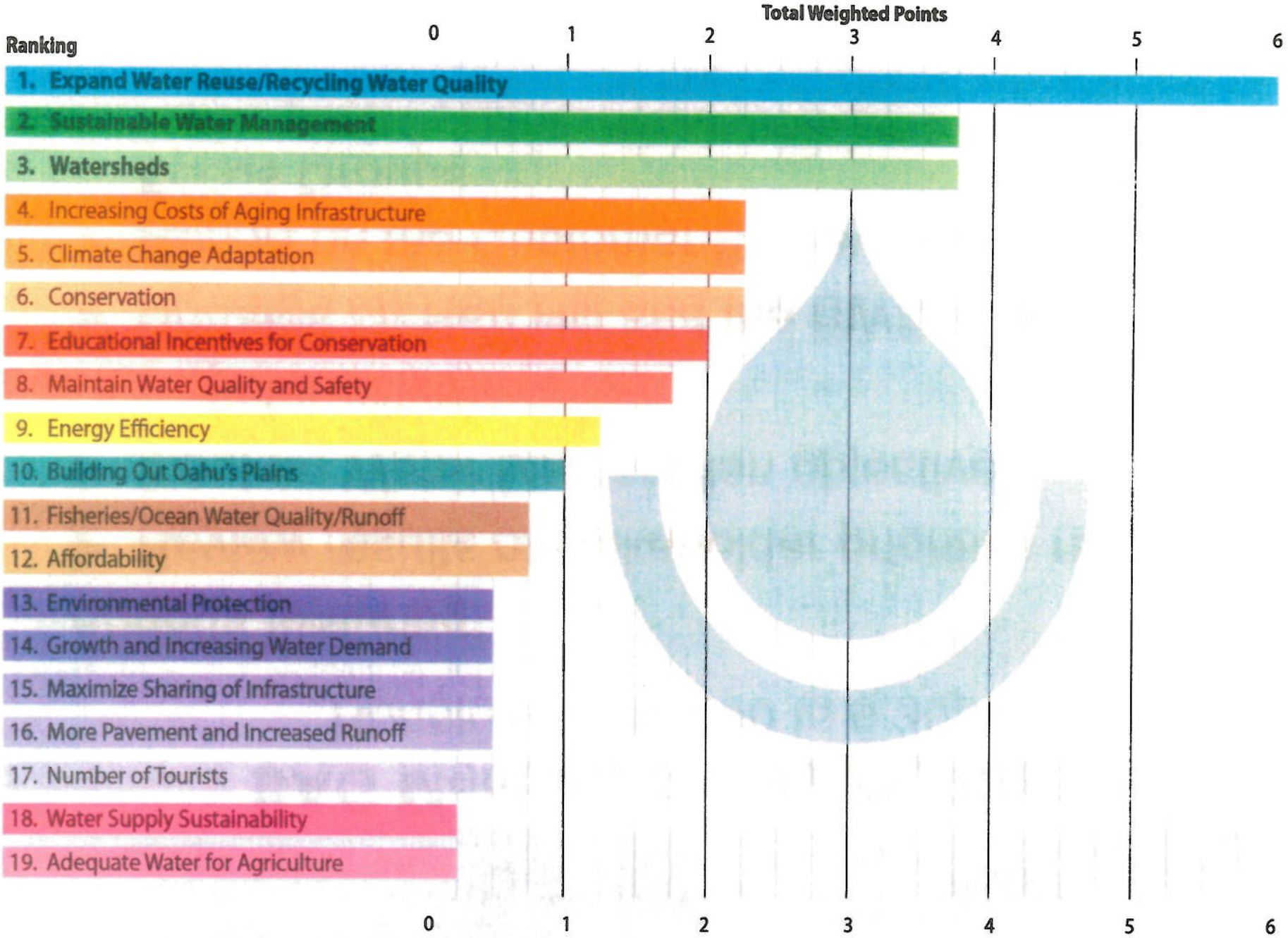

Note: Seven additional considerations did not receive any votes.

WATER FOR LIFE

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Board of Water Supply

SAG Meeting 2 July 21, 2015

Honolulu Club 4:00 to 6:30pm

Agenda featuring:

- Review results of stakeholder priorities rating
- Input on Water Master Plan objectives (interactive)
- Updates on Red Hill and the BWS audit
- Report on the Customer Survey and Focus Groups

Stakeholder Comments

- "I decided to join the SAG even though my schedule is very busy because I believe that the WMP will benefit all of us if we commit to being a part of it."

- "We have a chance to plan for our water future the right way and not like it was done in the past."

More Stakeholder Comments

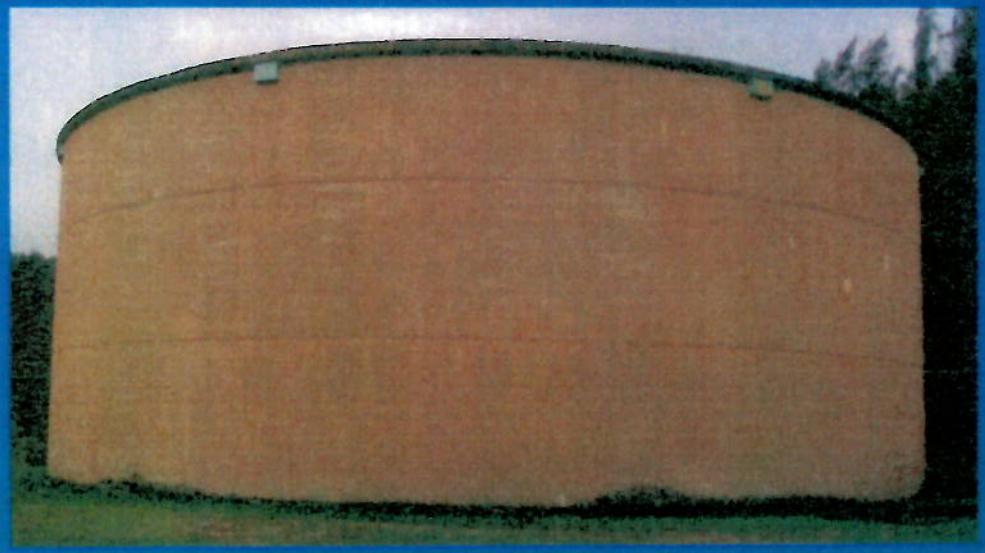
- "I want to continue to be a part of the SAG because the right people are involved. It is apparent that everyone involved with planning the SAG really cares; you just can't fake that."

- "These aren't the usual players and it is refreshing because I know we are all invested in Oahu's future."

Reservoir Condition Assessments

1. Reservoir Inspections
    1. Visual of external structure - 171
    2. Internal with remote operating vehicle - 30
2. Seismic and wind analyses - 17
    1. Evaluate existing reservoirs for current wind/seismic forces
    2. Identify reservoir reliability improvements to better withstand wind and seismic events
    3. Develop conceptual seismic retrofit details and costs for representative reservoirs
3. Support 30-year CIP development
    a. Extrapolate conceptual retrofits over entire system to develop budgets for 30-year CIP
    b. Prioritize retrofits for consideration in the 30-year CIP

Reservoir types



Conventionally reinforced

- Passive standard reinforcement resists hoop tension
- Long track record of success with minimal maintenance
- Less efficient for larger capacities

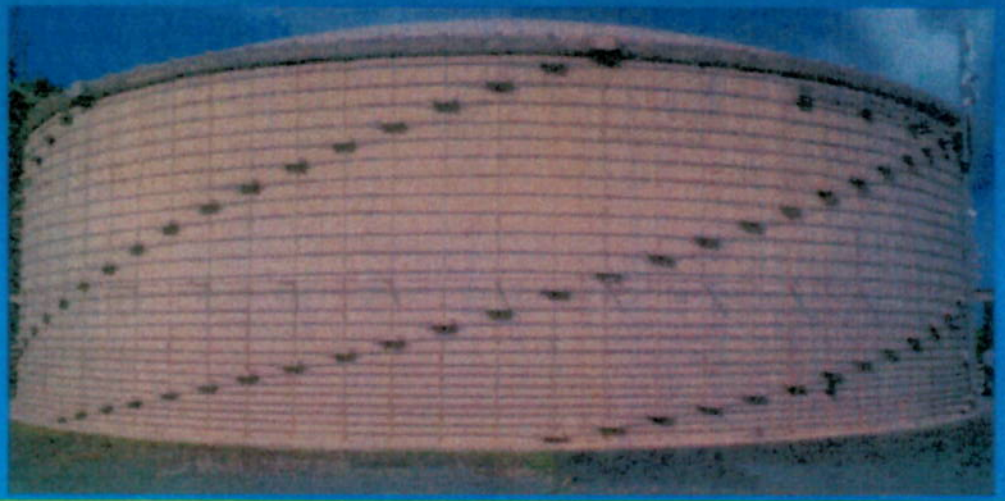
Internal post-tensioned

- Some in service 50+ years
- Tendons in internal wall ducts actively compress wall

Reservoir types (continued)

Wire-wound

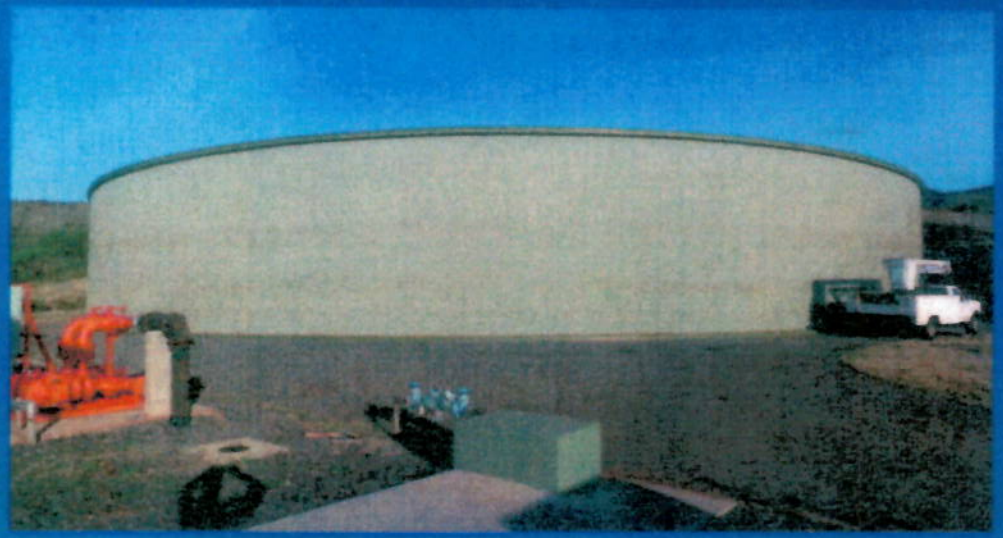
- 1950s – 1960s tanks have required varying levels of maintenance
- Prestressed wires applied to core wall exterior and covered with pneumatic mortar



External post-tensioned

- Wire-wound tank repair
- Post-tensioned strands applied to exterior
- Maintenance, corrosion, security concerns

Reservoir types (continued)



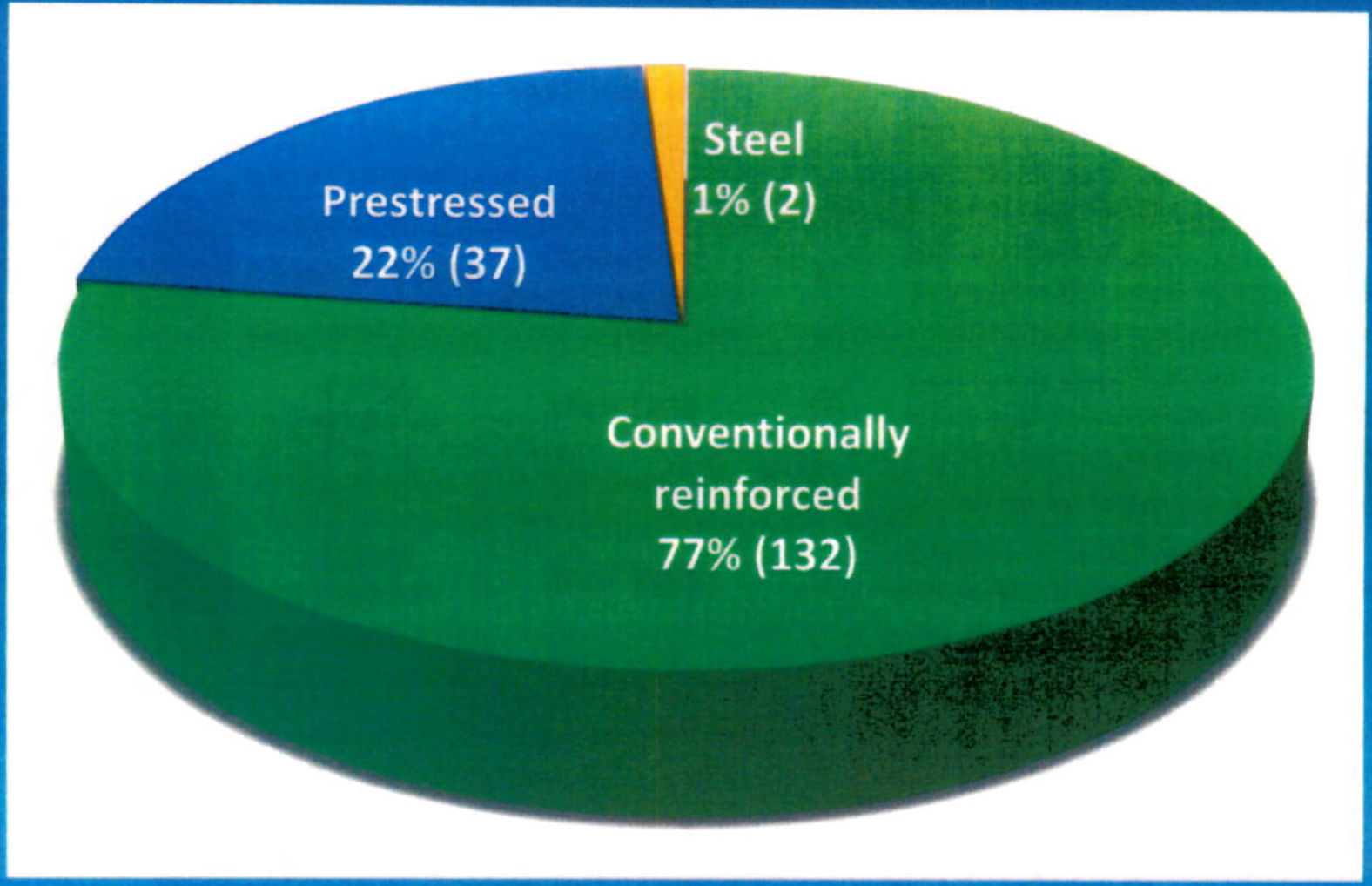
Strand-wound

- Wire-wound tank repair or new construction
- Galvanized prestressing strands applied to core wall to place wall in compression
- Larger capacities possible

Elevated

- 0.5 MG wire-wound (1958)
- 0.5 MG welded steel (1990)

Conventionally reinforced is predominant



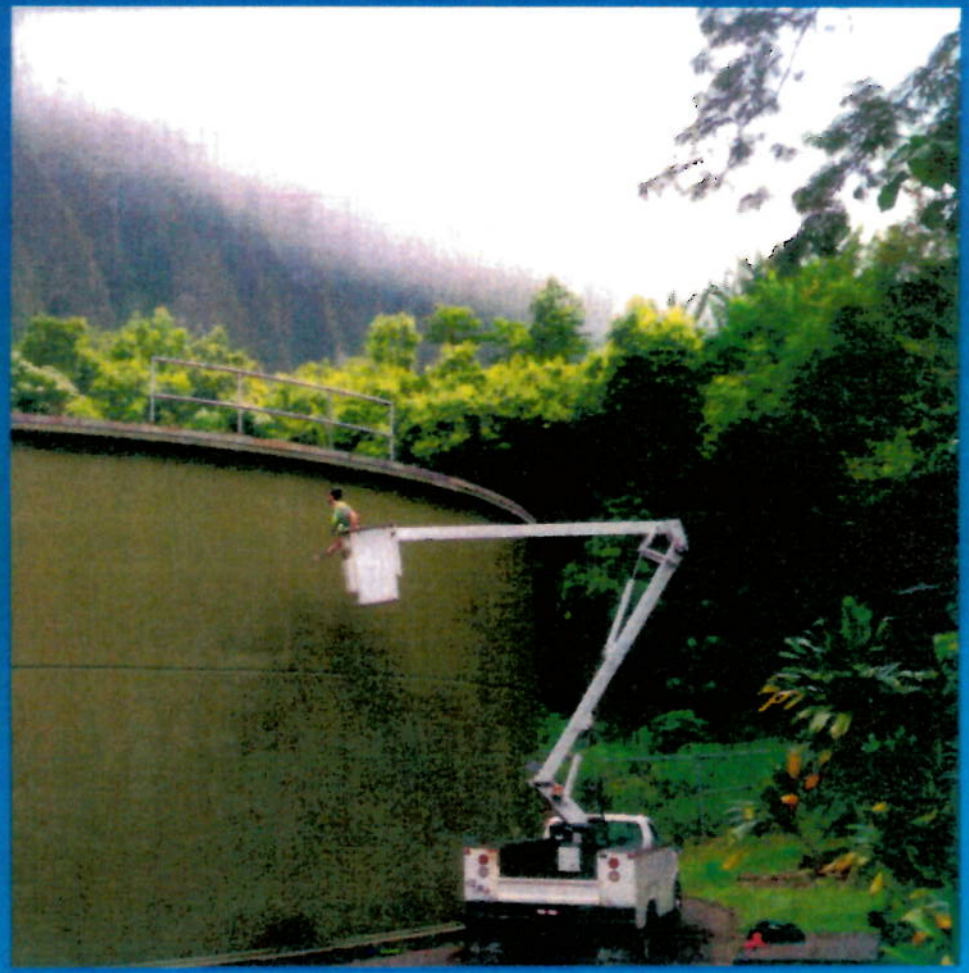
BWS reservoir distribution

Reservoir type	Capacity range	Years built	Quantity @ BWS	Notes
Conventionally reinforced	0.1MG to 1.0MG	1911-1961	43	Generally fixed, pinned, or unanchored, contained sliding bases
Conventionally reinforced	1.0MG+ to 4.0MG	1911-1961	7	Generally fixed, pinned, or unanchored, contained sliding bases
Conventionally reinforced	0.1MG to 1.0MG	1961-2008	60	Generally unanchored, partially-contained sliding bases
Conventionally reinforced	1.0MG+ to 4.0MG	1966-1998	19	Generally unanchored, partially-contained sliding bases
Wire-wound	2.0MG to 3.5MG	1961	3	Constructed by Preload
External post-tensioned	0.2MG to 4.0MG	1976-1989 (years retrofitted)	7	Technique primarily used to repair wire-wound reservoirs
Strand-wound	1.0MG to 4.0MG	2004-present (years retrofitted)	5	Occasionally used to repair wire-wound reservoirs but also used for new construction
Post-tensioned with strands	1.0MG to 2.0MG	1971-1972 (year retrofitted)	2	Occasionally used to repair wire-wound reservoirs
Internal post-tensioned	1.0MG to 5.0MG	1962-2010	20	Reservoirs are constructed with or without pilasters
Elevated wire-wound	0.5MG	1958	1	Wahiawa 1361 No. 1
Elevated welded steel	0.5MG	1990	1	Wahiawa 1361 No. 2

Reservoir inspections

Objectives:

- Document condition of concrete, rebar, paint, appurtenances
- Identify components requiring repair
- Document performance of prior repair methods over time
- Identify and prioritize repairs for inclusion in 30-year CIP

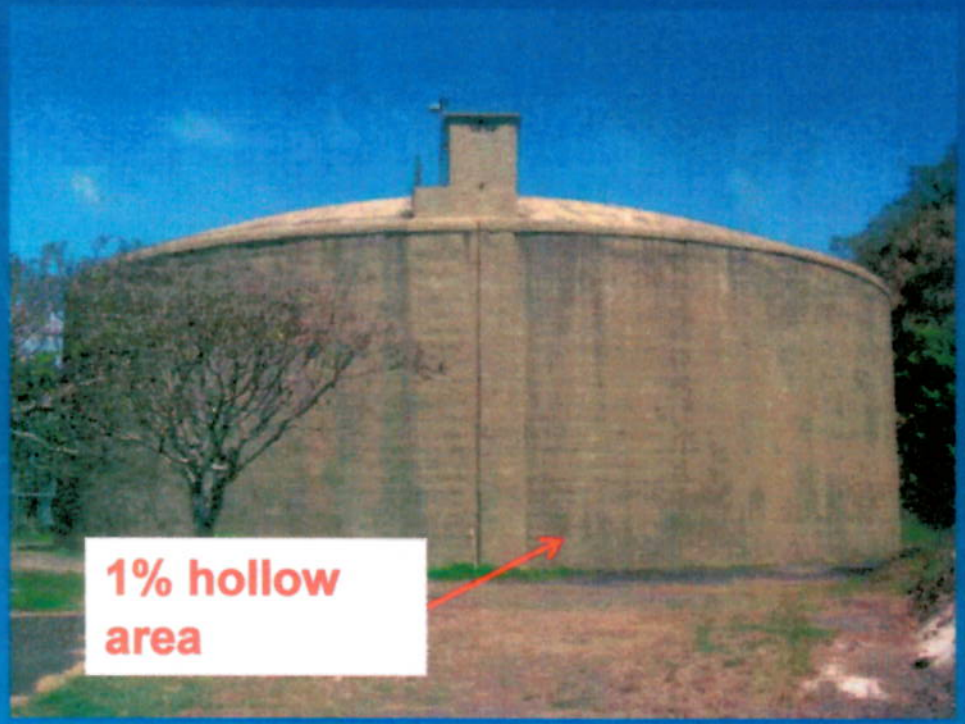


Three evaluation techniques were used

Approach	# of Reservoirs	How selected	Purpose
1. Exterior inspection	171	All active reservoirs	Visual inspection of all reservoirs in system
2. Interior ROV inspection	30	Reservoirs >40 yrs old not previously interior inspected	Assess interior condition of older reservoirs
3. Analytic evaluation (desktop)	17	Representative samples of different design/materials	Identify seismic and wind upgrade opportunities

Benefits of periodic inspections

- A regular inspection program can document the reservoir or component conditions over time
- Allows for rapid evaluation of reservoir/component condition



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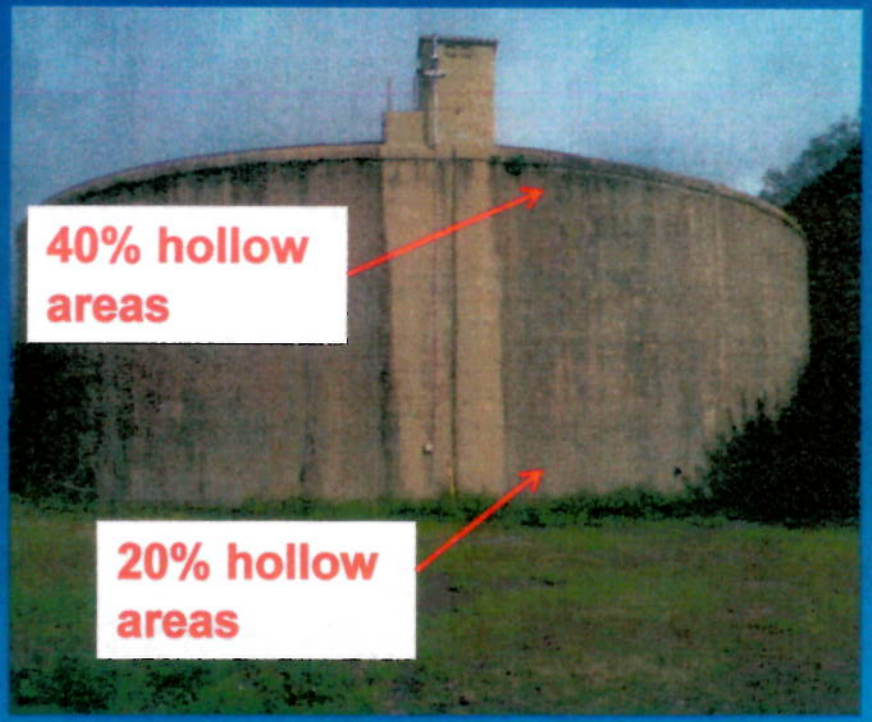
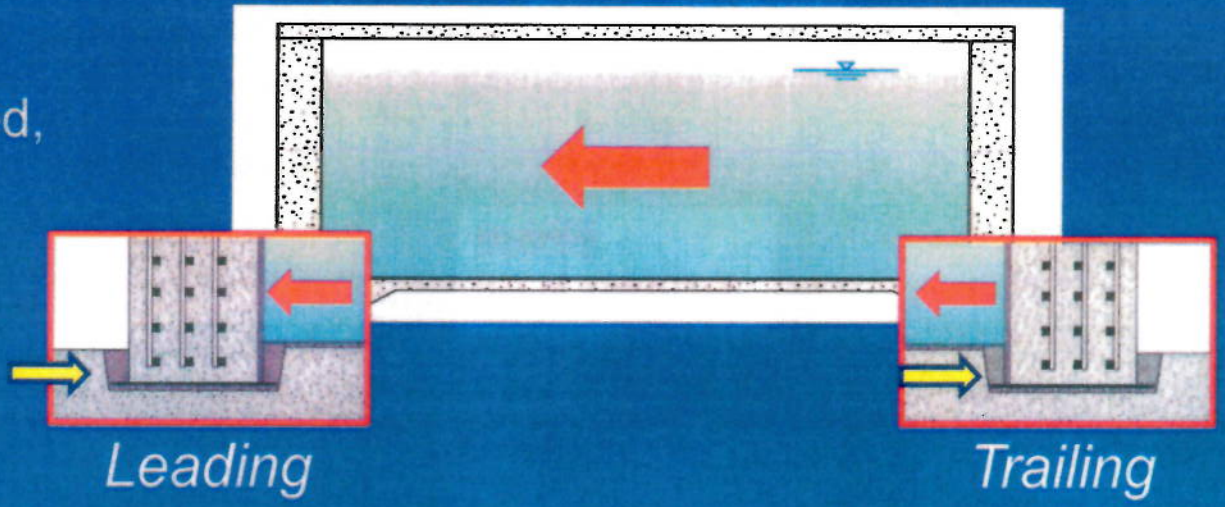


May 2014

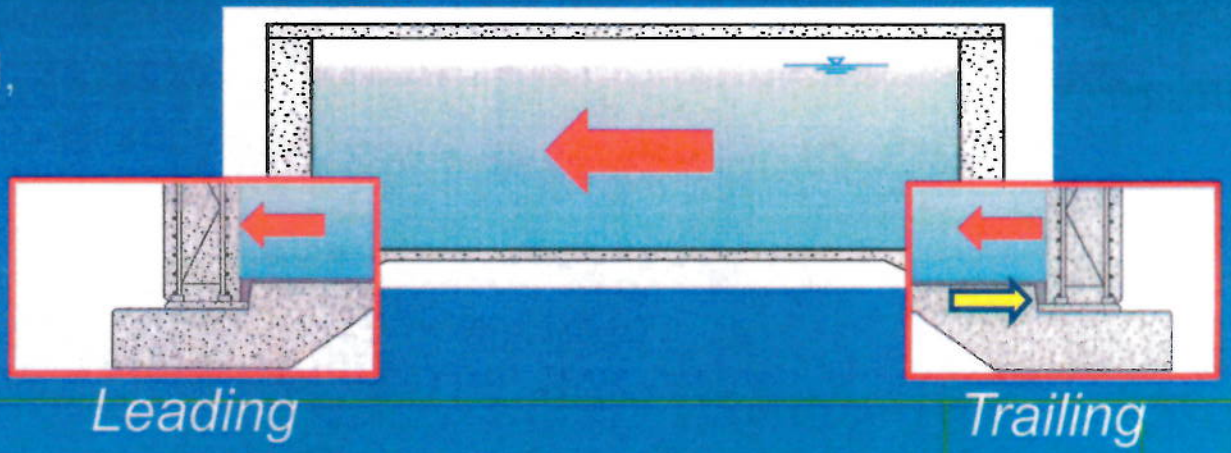
Review as-built drawings

- Varying reservoir behavior by different wall-foundation connections was driving force for Finite Element Model analyses

Pre-1961 unanchored, contained

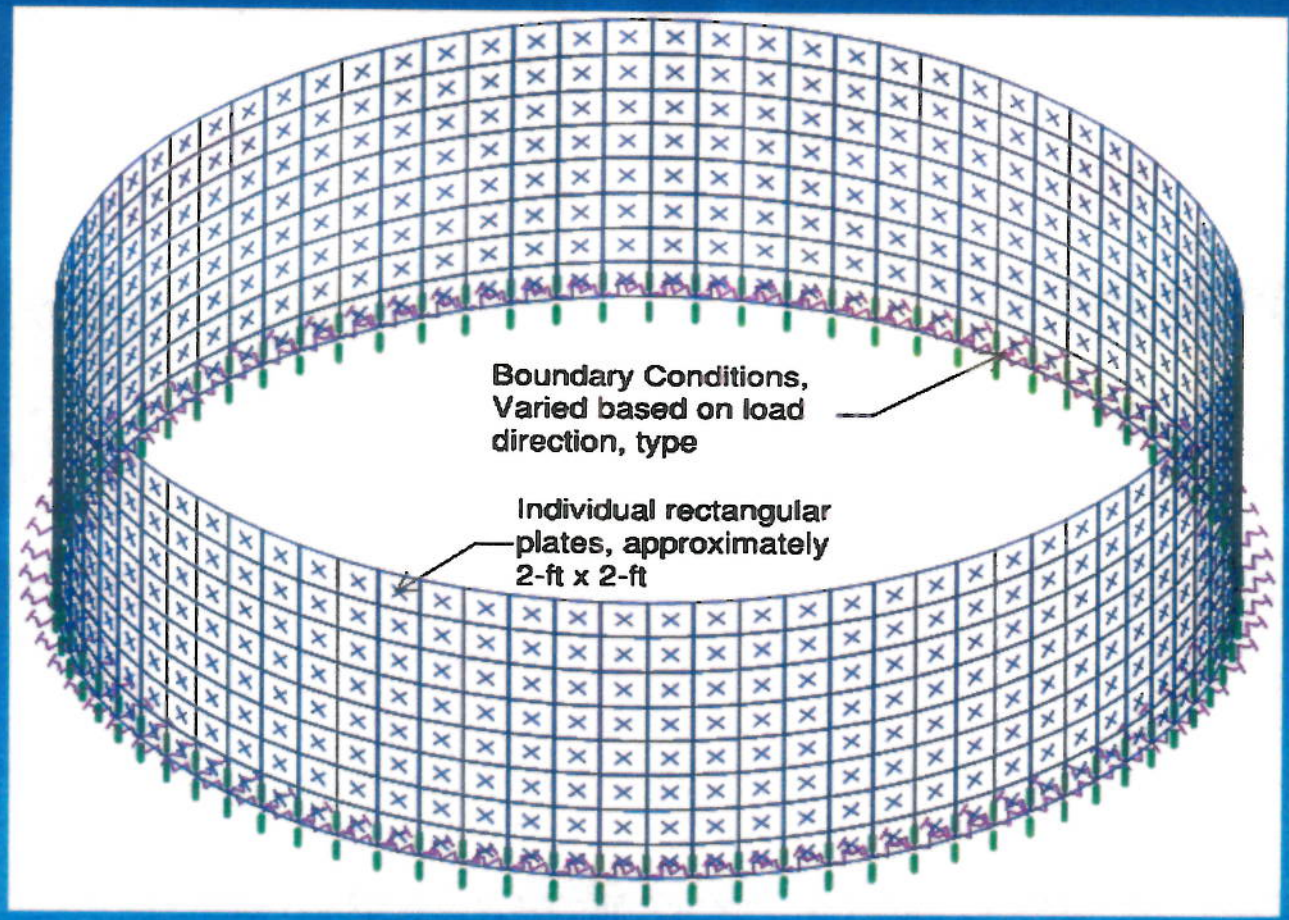


Post-1961 unanchored, partially contained



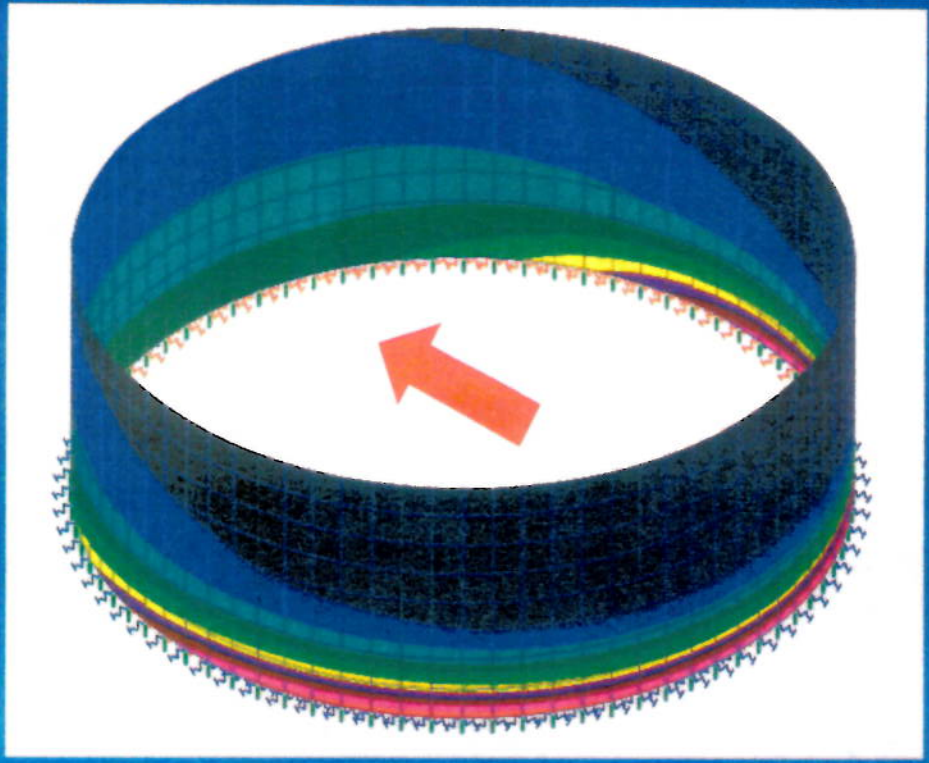
Analyze reservoirs (continued)

Finite Element Model (FEM) developed in RISA 3D

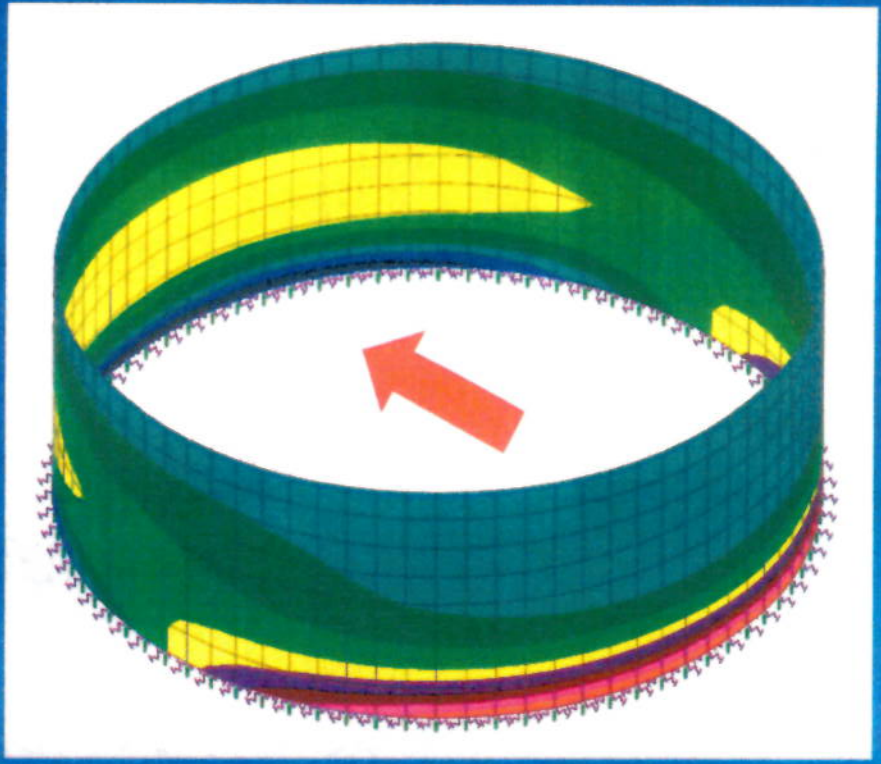


Develop optional conceptual retrofit details and costs

Hoop tension: Retrofit to create contained wall-floor connection distributed loads between leading and trailing walls



Partially-contained
Post-1961



Contained
Pre-1961 or after curb retrofit

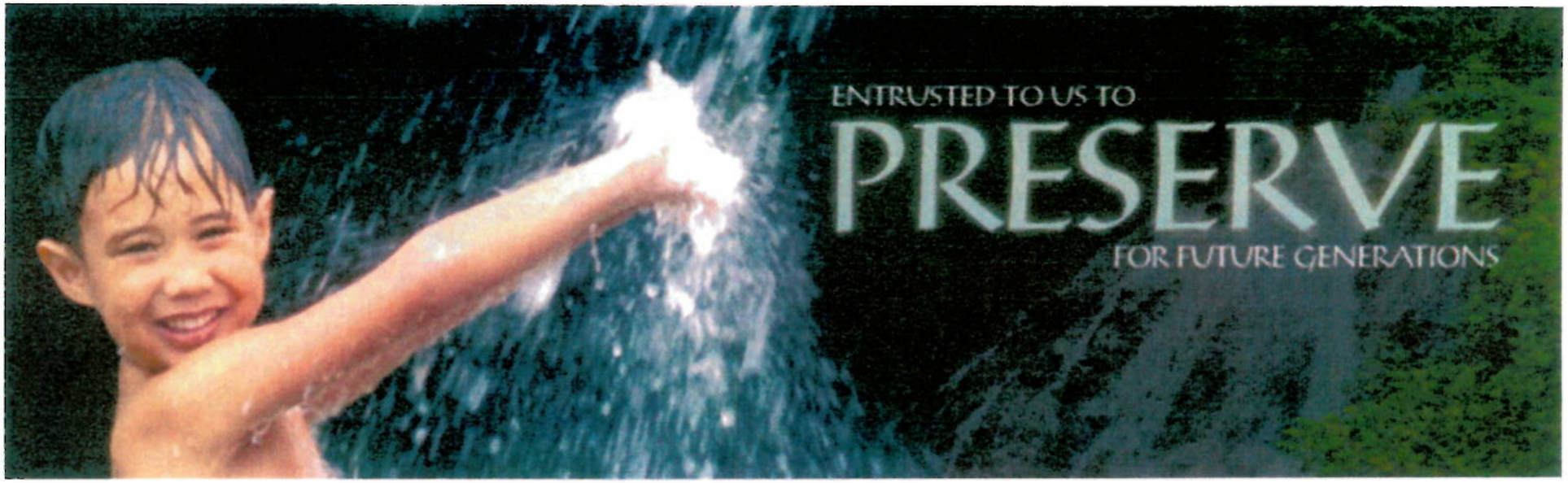
Reservoir condition assessment summary

- Majority of reservoirs are good from a condition and structural integrity (seismic/wind) standpoint
- Inspection program: identified **469 reservoir repair items** at total cost of **$56.8M**
  - Immediate: 33 @ $6M
  - Short-term: 144 @ $20.4M
  - Long-term: 292 @ $30.4M
- Seismic/wind analyses: identified **135 seismic retrofit projects** that would improve seismic performance to meet current code level forces at total cost of **$40.2M**
  - Life safety: 15 @ $16.5M
  - Water quality: 120 @ $23.7M

WATER FOR LIFE

Safe, dependable, and affordable water now and into the future

Board of Water Supply
City and County of Honolulu



ITEM FOR INFORMATION NO. 5

"July 27, 2015

GROUNDWATER LEVELS

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 are three aquifer index wells within low groundwater status for the production week that ended on July 11, 2015. Punaluu and Pearl City are under a Caution status while Kaimuki is under an Alert status. The weekly production average for the period was 155.67 million gallons per day.

The Board of Water Supply rainfall index for the month of June 2015 was 98 percent of normal, with a 5-month moving average of 78 percent. As of July 7, 2015, the Hawaii Drought Monitor shows abnormally dry to moderate drought conditions across West Oahu through East Honolulu.

The National Weather Service is forecasting above-normal rainfall through October 2015 (primarily associated with a heavy storm season). Climate models indicate El Niño conditions may continue through the winter season, yielding below-normal rainfall from November 2015 through April 2016.

Most index monitor wells continue to exhibit decreasing trends, reflecting the influences of limited rainfall from previous months and the increases in pumpage typical for this time of year.

Respectfully submitted,

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

Attachments"

The foregoing was for information only.

DISCUSSION

Barry Usagawa, Water Resources Division Program Administrator, gave the report. Mr. Miyashiro inquired if there is anything of note regarding Pearl City wells. Mr. Usagawa replied no, the caution groundwater level was established conservatively at a small tolerance. Groundwater levels are 0.02' into the caution level.

PUMPAGE, HEAD, AND RAINFALL REPORT

Week of 7/05/15 to 7/11/15

STATION		HEAD	STATION	MGD	HEAD	STATION	MGD	HEAD		MGD	HEAD
METRO			WINDWARD			EWA-WAIANAE (CONT)			PH (CONT)		
KULIOUOU	0.00					MAKAHA IV	0.00		PEARL CITY II	1.14	
WAILUPE	0.00		WAIMANALO II	0.42		MAKAHA V	0.00		PEARL CITY III	0.45	
WAIALAE-IKI	0.00		WAIMANALO III	0.43		MAKAHA VI	0.00		WAIAU	1.07	
AINA KOA	0.48		KUOU I	0.65		MAKAHA SHAFT	0.66	10.99	NEWTOWN	2.13	
AINA KOA II	0.75		KUOU II	0.09		KAMAILE	0.34		KAONOHI I	1.34	
WAIALAE SHAFT	0.00		KUOU III	0.68		WAIANAE I	0.30		WAIMALU I	0.00	
MANOA II	1.66		LULUKU	1.00		WAIANAE II	0.43		AIEA	0.23	
PALOLO	1.12		HAIKU	0.32		WAIANAE III	0.61		AIEA GULCH 497	0.52	
KAIMUKI HIGH	3.82	21.41	IOLEKAA	0.00		MAKAKILO	0.88		AIEA GULCH 550	0.26	
KAIMUKI LOW	2.68		KAHALUU	0.91		HONOULIULI I	4.32		HALAWA 277	0.75	
WILDER	7.23		WAIHEE	0.00		HONOULIULI II	4.64		HALAWA 550	0.00	
BERETANIA HIGH	4.91	21.73	KAHANA	0.84		SUBTOTAL:	13.60		KAAHUMANU MTR(-)	0.00	
BERETANIA LOW	2.58		PUNALUU I	0.00	16.35	IMPORT FROM PH			KAAMILO FLO MTR (-)	0.00	
KALIHI HIGH	1.87	21.42	PUNALUU II	3.25		KAPOLEI LINE BSTR	17.76		KUNIA I	6.13	17.83
KALIHI LOW	1.07		PUNALUU III	1.19		HONOULIULI LB FLOW	16.68		KUNIA II	2.31	
KAPALAMA	0.73		KALUANUI	1.26		EWA BEACH FLOW	4.34		KUNIA III	1.37	
KALIHI SHAFT	8.36		MAAKUA	0.29		HONOULIULI I (-)	-4.32		HOAEAE	7.99	
MOANALUA	1.26	18.51	HAUULA	0.00		HONOULIULI II (-)	-4.64		EWA SHAFT	0.00	
SUBTOTAL:	38.52					SUBTOTAL:	29.82		WAIPAHU INTCON. (-)	-3.28	
			KAHUKU	0.33					EWA-WAIANAE (-)	-29.82	
IMPORT FROM PH			OPANA	1.04		PEARL HARBOR			PH LOCAL USE:	15.42	
HALAWA SHAFT	9.42	15.94	WAIALEE I	0.00		WAHIAWA	1.73		TOTAL SUBURBAN:	74.22	
KAAMILO	0.00		WAIALEE II	0.00		WAHIAWA II	2.29				
KALAUAO	9.12	16.25	SUNSET BEACH	0.00		MILILANI I	3.70		KALAUAO SPRINGS	0.85	
PUNANANI	11.37		SUBTOTAL:	12.70		MILILANI II	0.00		BARBERS POINT (NP)	1.21	
KAONOHI II	0.00					MILILANI III	0.87		GLOVER TUNNEL (NP)	0.48	
WAIMALU II	0.00	14.36	WIND. EXPORT	0.14		MILILANI IV	1.35				
KAAHUMANU	0.79					WAIPIO HTS.	0.59		HEAD CONDITION		
HECO WAIAU	2.66		HALEIWA-WAIALUA			WAIPIO HTS. I	0.32		CAUTION / ALERT		CRITICAL
MANANA	0.48		HALEIWA	0.00		WAIPIO HTS. II	0.24		PUNALUU / KAIMUKI		
KAAHUMANU FLOW MT	0.00		WAIALUA	2.82		WAIPIO HTS. III	1.10		PEARL		
KAAMILO FLOW MTR	0.00		SUBTOTAL:	2.82		WAIPAHU	3.28	17.53	CITY		
TOTAL IMP/EXP WAIP. INT:	0.00					WAIPAHU II	0.94				
IMPORT FRM WIND:	0.14		EWA-WAIANAE			WAIPAHU III	1.54				
SUBTOTAL:	33.98		MAKAHA I	0.00		WAIPAHU IV	3.39				
			MAKAHA II	0.46		PEARL CITY SHAFT	1.08	13.98			
TOTAL METRO:	72.50		MAKAHA III	0.96		PEARL CITY I	0.41				

CWRM PERMITTED USE FOR BWS POTABLE SOURCES						PUMPAGE	2015	2014	GRAVITY	2015	2014
	A	B	C	D	E	SUBURB.	74.22	69.83	SUBURB.	8.53	6.95
WATER DISTRICTS	PERMITTED USE	2015	DIFF. B-A	YEAR/ DATE	DIFF. D-A	METRO	72.50	66.38	METRO	0.42	0.60
						TOTAL:	146.72	136.21	TOTAL:	8.95	7.55
HONOLULU	45.27	38.94	-6.33						Manoa	0.17	
WINDWARD	25.21	18.30	-6.91			NUUANU #5			Palolo	0.25	
NORTH SHORE	4.08	4.19	0.11			(rainfall)	0.10"	1.72"	Waim. I&II	0.08	
WAHIAWA	4.27	4.02	-0.25						Waim. III&IV	0.19	
WAIANAE	4.34	4.36	0.02						Waihee incl.	0.96	
EWA-KUNIA	15.88	9.84	-6.04						Waihee tun.	1.46	
PEARL HARBOR	92.66	78.34	-14.32						Luluku	0.09	
TOTAL:	191.71	157.99	-33.72						Haiku	2.27	
									Kahaluu	1.92	
									Waia. C&C	1.40	
									Waia plant.	0.16	

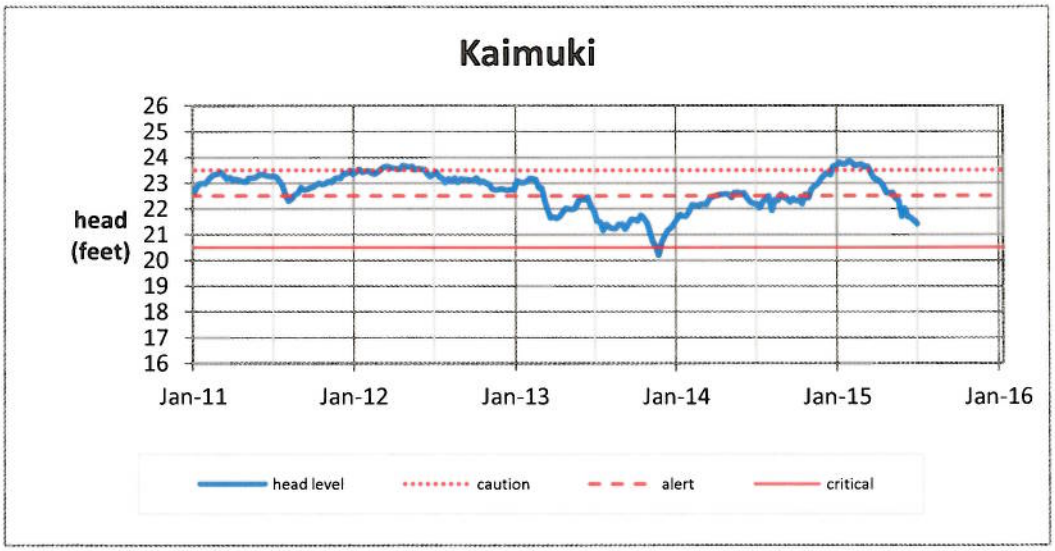
DROUGHT STATUS REPORT
DRAFT IN MGD

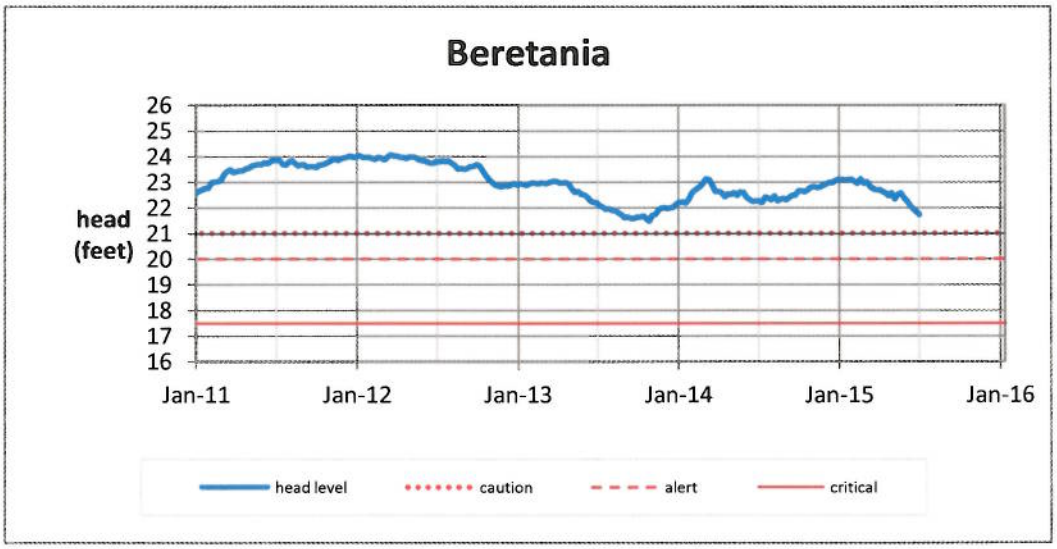
WATER USE DISTRICT	AUTHORIZED USE	2014	6/14-6/20 2015	2014	6/21-6/27 2015	2014	6/28-7/04 2015	2014	7/05-7/11 2015
HONOLULU	45.27	35.30	40.74	35.66	42.26	35.15	40.68	34.85	39.08
WINDWARD	25.21	14.79	15.50	13.67	15.58	14.87	16.46	15.47	18.16
NORTH SHORE	4.08	3.87	5.15	3.90	5.14	3.97	4.27	3.92	4.19
WAHIAWA	4.27	3.55	3.91	3.63	3.84	3.71	3.99	3.68	4.02
EWA-WAIANAE	20.22	24.03	43.73	26.10	44.20	26.37	43.94	28.13	44.98
PEARL HARBOR	92.66	59.97	44.53	54.68	42.55	56.81	44.22	57.69	45.24
TOTAL	191.71	141.51	153.56	137.64	153.67	140.88	153.56	143.74	155.67

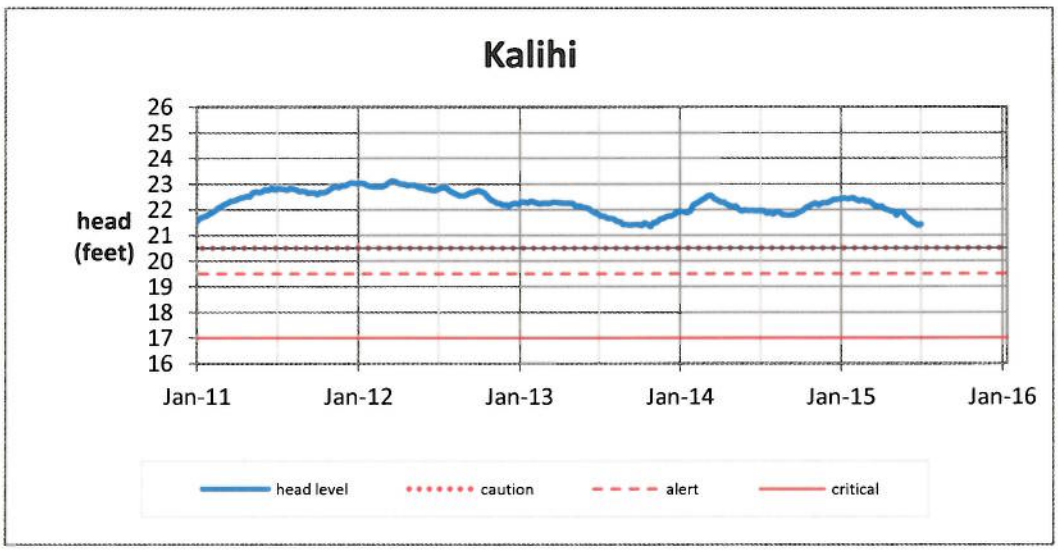
Accounts for in-district pumpage and transfers

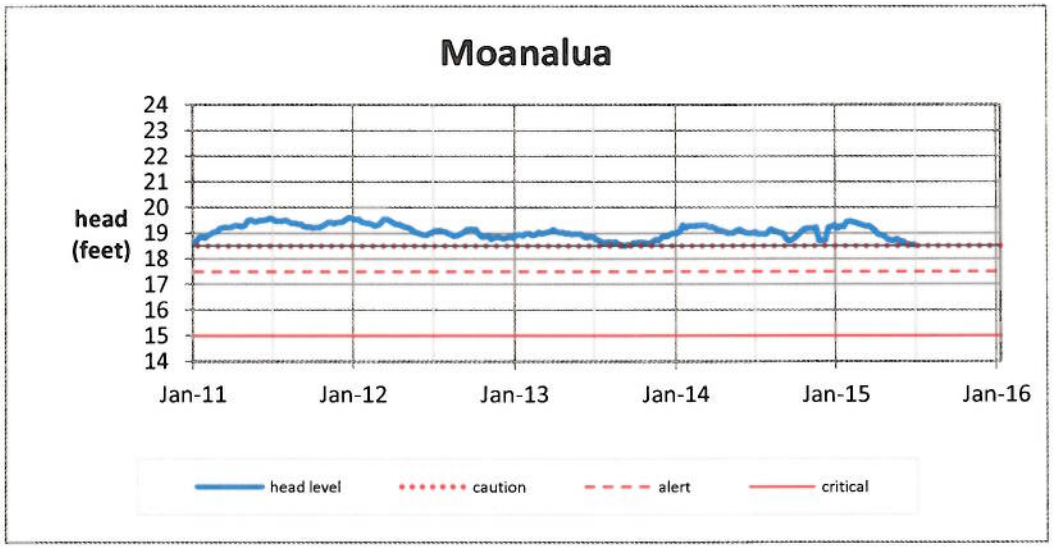
HEAD IN FEET

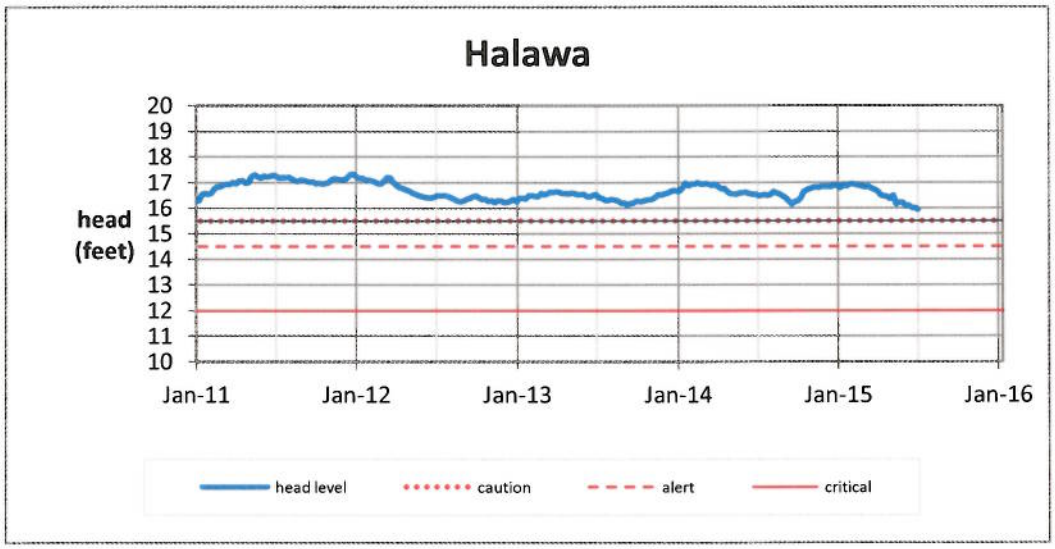
		2014	6/14-6/20 2015	2014	6/21-6/27 2015	2014	6/28-7/04 2015	2014	7/05-7/11 2015
HONOLULU									
KAIMUKI		22.43	21.68	22.27	21.65	22.21	21.54	22.20	21.41
BERETANIA		22.31	22.08	22.24	21.96	22.27	21.85	22.27	21.73
KALIHI		21.98	21.54	21.97	21.47	21.97	21.39	21.96	21.42
MOANALUA		19.01	18.56	19.00	18.56	19.00	18.54	19.03	18.51
PEARL HARBOR									
HALAWA		16.56	16.10	16.54	16.01	16.53	16.00	16.48	15.94
KALAUAO		16.95	16.46	16.97	16.37	17.01	16.35	16.99	16.25
PEARL CITY		14.68	14.15	14.70	14.09	14.68	14.07	14.68	13.98
WAIPAHU		18.30	17.76	18.29	17.68	18.25	17.64	18.23	17.53
KUNIA		18.58	18.07	18.56	18.02	18.57	17.96	18.57	17.83
EWA-WAIANAE									
MAKAHA		14.16	15.86	14.36	15.53	14.42	13.07	14.32	10.99
WINDWARD									
PUNALUU		18.10	16.74	17.91	16.62	17.54	16.61	17.24	16.35
KALUANUI		18.22	16.69	18.05	16.57	17.48	16.62	17.26	16.51
NORTH SHORE									
WAIALUA		11.15	11.00	11.19	11.01	11.15	11.07	11.14	11.06

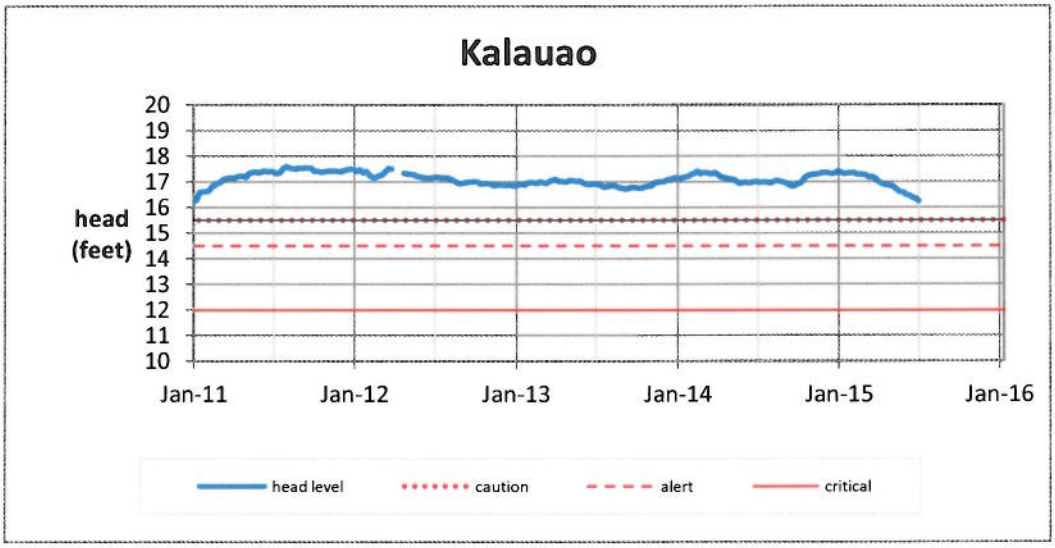

Kaimuki
head (feet)
26
25
24
23
22
21
20
19
18
17
16
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
head level
caution
alert
critical

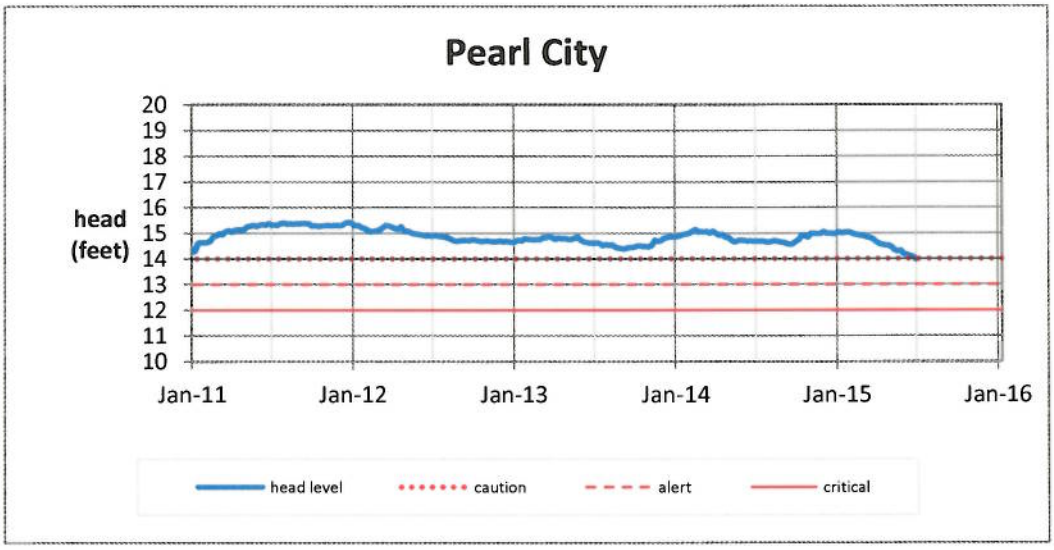

Beretania
head (feet)
26
25
24
23
22
21
20
19
18
17
16
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
head level
caution
alert
critical

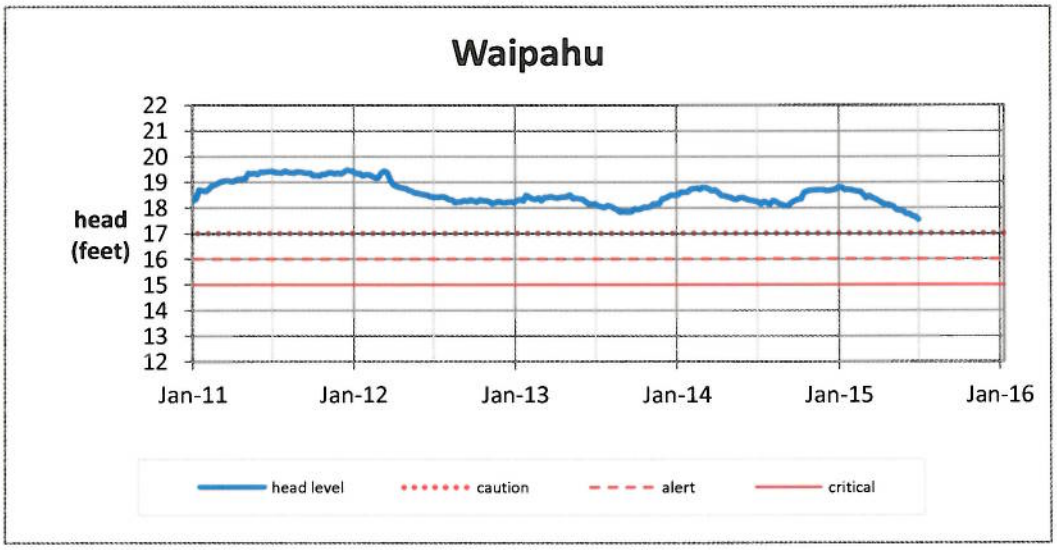

Kalihi
head (feet)
26
25
24
23
22
21
20
19
18
17
16
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
head level
caution
alert
critical

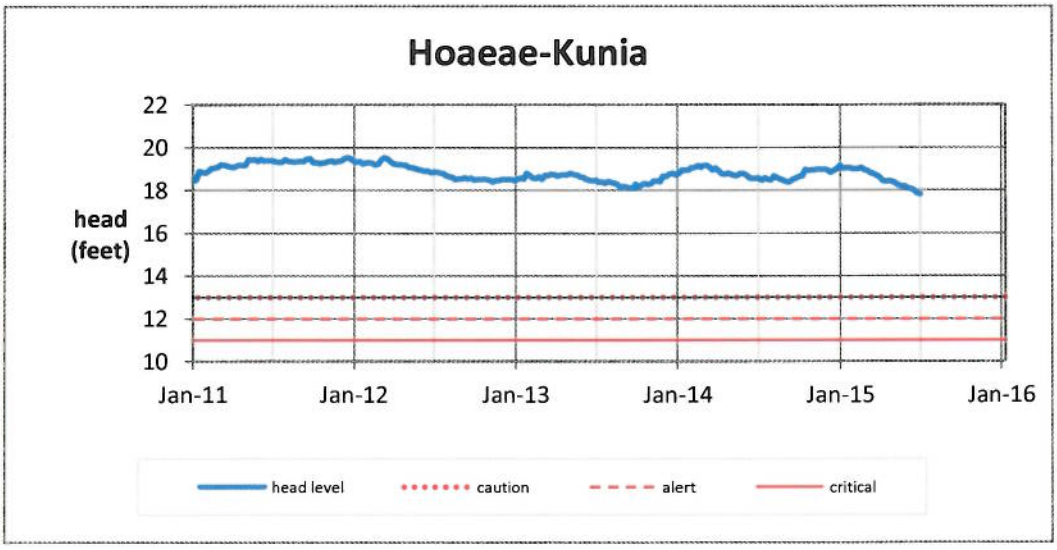

Moanalua
head (feet)
24
23
22
21
20
19
18
17
16
15
14
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
head level
caution
alert
critical

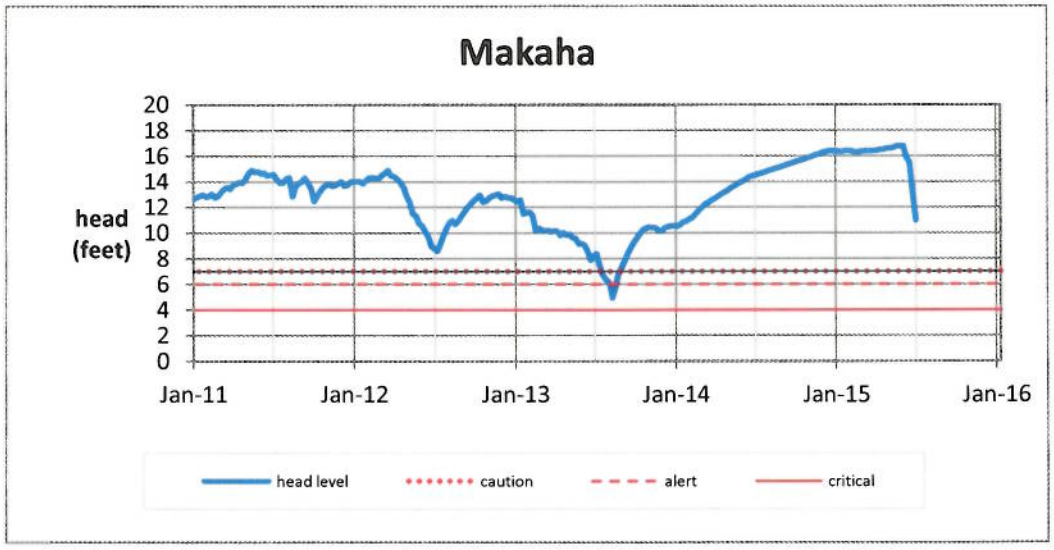

Halawa
head (feet)
20
19
18
17
16
15
14
13
12
11
10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
head level
caution
alert
critical

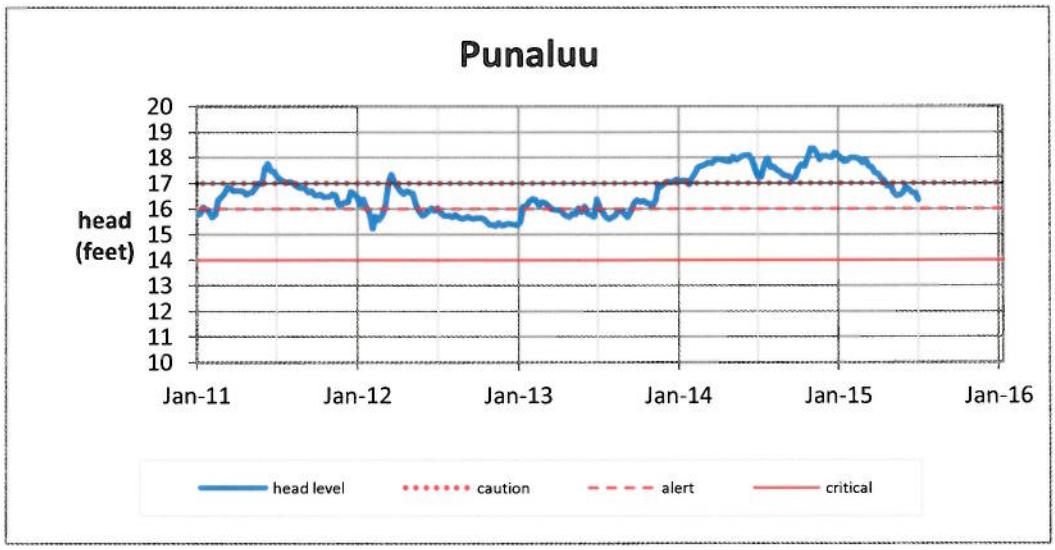

Kalauao
head (feet)
20
19
18
17
16
15
14
13
12
11
10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
head level
caution
alert
critical

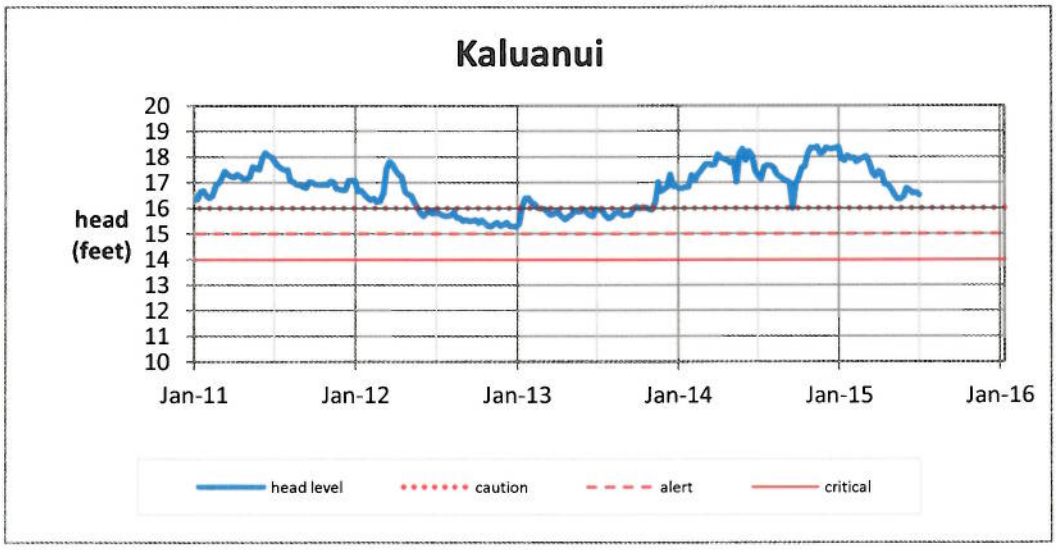

Pearl City
head (feet)
20
19
18
17
16
15
14
13
12
11
10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
head level
caution
alert
critical

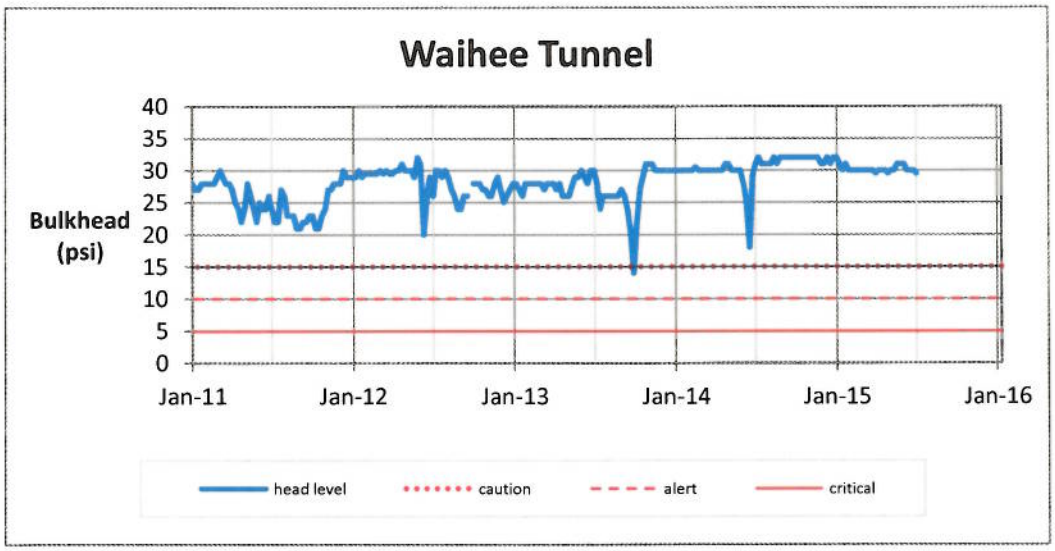

Waipahu
head (feet)
22
21
20
19
18
17
16
15
14
13
12
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
head level
caution
alert
critical

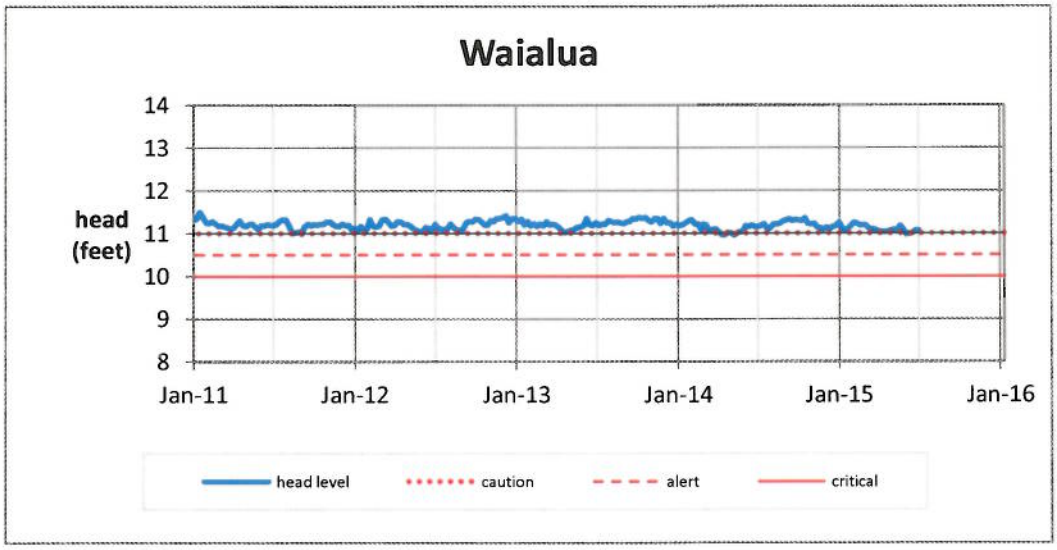

Hoaeae-Kunia
head (feet)
22
20
18
16
14
12
10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
head level
caution
alert
critical

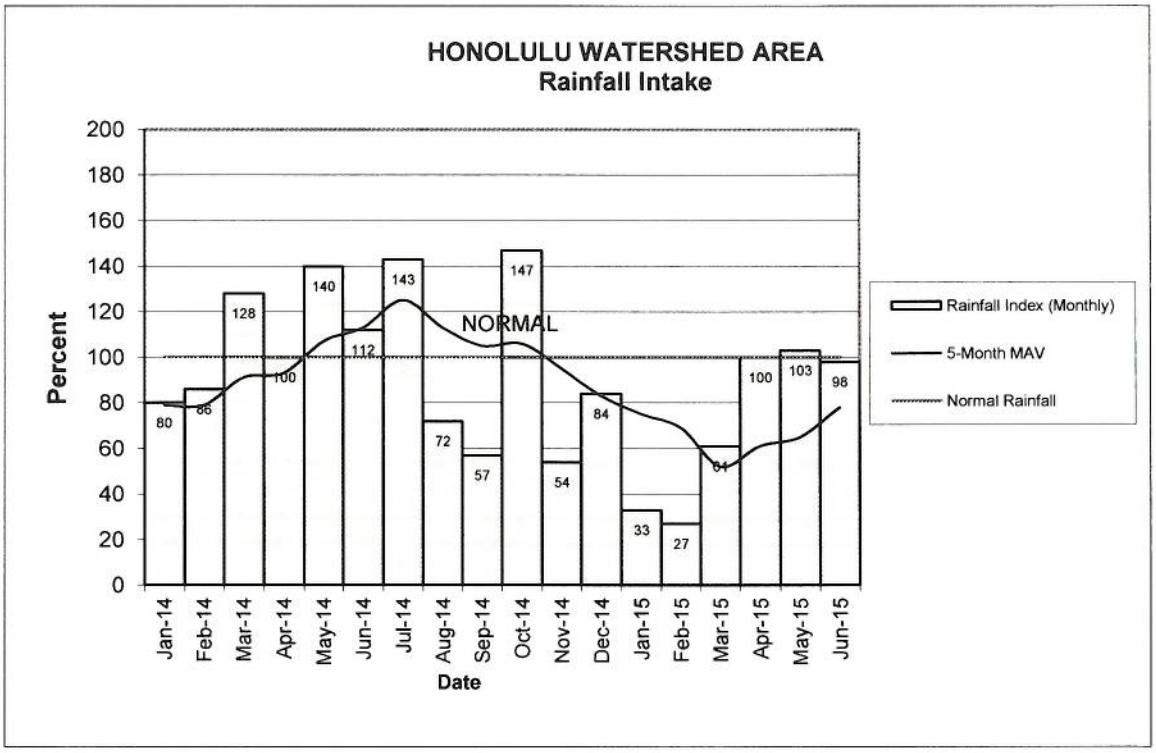

Makaha
head (feet)
20
18
16
14
12
10
8
6
4
2
0
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
head level
caution
alert
critical

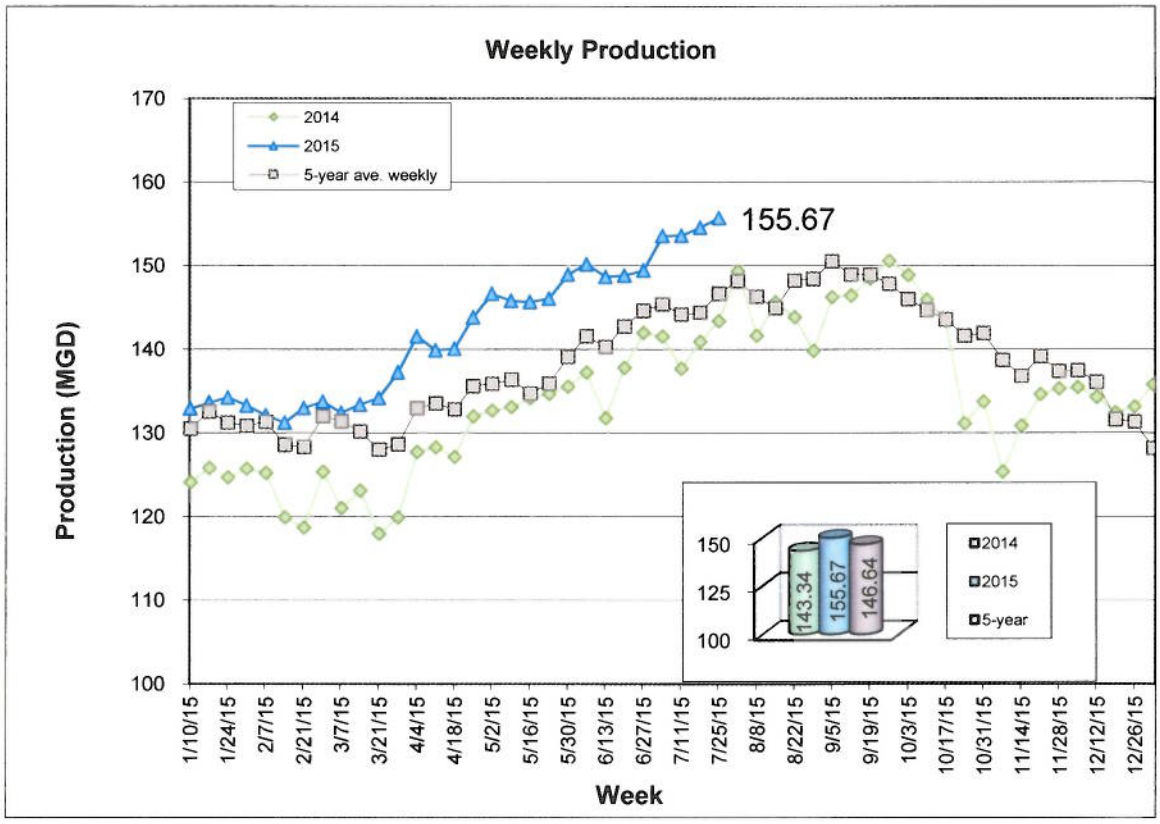

Punaluu
head (feet)
20
19
18
17
16
15
14
13
12
11
10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
head level
caution
alert
critical


Kaluanui
head (feet)
20
19
18
17
16
15
14
13
12
11
10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
head level
caution
alert
critical


Waihee Tunnel
Bulkhead (psi)
40
35
30
25
20
15
10
5
0
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
head level
caution
alert
critical


Waialua
head (feet)
14
13
12
11
10
9
8
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
head level
caution
alert
critical


HONOLULU WATERSHED AREA
Rainfall Intake
Percent
Date
NORMAL
Rainfall Index (Monthly)
5-Month MAV
Normal Rainfall
80
86
128
100
140
112
143
72
57
147
54
84
33
27
64
100
103
98
Jan-14
Feb-14
Mar-14
Apr-14
May-14
Jun-14
Jul-14
Aug-14
Sep-14
Oct-14
Nov-14
Dec-14
Jan-15
Feb-15
Mar-15
Apr-15
May-15
Jun-15


Weekly Production
Production (MGD)
Week
2014
2015
5-year ave. weekly
155.67
143.34
155.67
146.64
2014
2015
5-year

ITEM FOR INFORMATION NO. 6

"July 27, 2015

FINANCIAL UPDATE

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

Subject: Financial Update for the Quarter Ended June 30, 2015

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

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

Respectfully submitted,

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

Attachments"

The foregoing was for information only.

DISCUSSION

Joe Cooper, Finance Division Waterworks Controller, gave the presentation. There were no comments or discussion.

Budget vs. Actual
Revenue and Expense Totals
As of June 30, 2015

	YTD Actuals	YTD Budget	Favorable/ (Unfavorable) Variance
Revenues	217,564,000	217,633,000	(69,000)
Operating Expenses	(149,452,000)	(179,285,000)	29,833,000
Net Revenues (expenditures)	68,112,000	38,348,000	29,764,000

Board Of Water Supply
Statement of Revenues, Expenses And Change In Net Assets
As of June 30, 2015

Current Month Actual	% Revenue	Last Year Actual	% Revenue	Description	Year to Date Actual	% Revenue	Last Year to Date Actual	% Revenue	% Change
				REVENUE					
20,295,433.78	100.00	16,340,546.26	100.00	OPERATING REVENUE	214,283,114.39	100.00	194,942,722.22	100.00	9.92
20,295,433.78	100.00	16,340,546.26	100.00	REVENUE	214,283,114.39	100.00	194,942,722.22	100.00	9.92
				OPERATING EXPENSES					
2,658,194.14-	13.10	2,598,603.48-	15.90	LABOR COSTS	32,056,055.57-	14.96	30,756,201.02-	15.78	4.23
948,855.05-	4.68	2,206,160.01-	13.50	SERVICES	11,328,459.60-	5.29	13,249,027.76-	6.80	14.50-
914,763.33-	4.51	740,985.59	4.53	SUPPLIES	5,652,980.47-	2.64	3,997,553.96-	2.05	41.41
21,168.06-	.10	27,897.18-	.17	EDUCATION & TRAINING	141,181.43-	.07	70,561.43-	.04	100.08
3,029,139.20-	14.93	3,922,010.39-	24.00	UTILITIES	24,559,841.26-	11.46	28,620,863.22-	14.68	14.19-
98,395.69-	.48	423,006.75-	2.59	REPAIR AND MAINTENANCE	1,850,585.24-	.86	2,894,263.75-	1.48	36.06-
1,425,913.23-	7.03	2,115,548.67-	12.95	MISC	18,040,332.23-	8.42	17,317,947.86-	8.88	4.17
3,376,288.05-	16.64	5,397,838.47	33.03	RETIREMENT SYSTEM CONTRIBUTIO	21,065,219.11-	9.83	18,959,105.86-	9.73	11.11
56,492.43-	.28	34,060.32	.21	MISC EMPLOYEES' BENEFITS	262,597.80	.12	202,772.92	.10	29.50
12,529,209.18-	61.73	5,120,342.10-	31.34	OPERATING EXPENSES	114,432,057.11-	53.40	115,662,751.94-	59.33	1.06-
1,706,991.95-	8.41	2,049,817.12-	12.54	NON OPERATING REVENUE AND EXPE	8,379,938.73-	3.91	9,703,857.62-	4.98	13.64-
2,777,254.58	13.68	3,726,609.99	22.81	CONTRIBUTION IN AID	18,820,467.84	8.78	14,816,558.24	7.60	27.02
9,822,357.83-	48.40	18,363,348.48-	112.38	OTHER EXPENSES	56,294,319.11-	26.27	63,916,635.14-	32.79	11.93-
985,870.60-	4.86	5,466,351.45-	33.45	Change In Net Assets	53,997,267.28	25.20	20,476,035.76	10.50	163.71

Board Of Water Supply
Balance Sheet
As of June 30, 2015

Description	Amounts			Change	
	Current	Last Month End	Last Year End	This Month	This Year
ASSETS					
CURRENT ASSETS	54,524,498.70	51,236,258.78	43,583,832.83	3,288,239.92	10,940,665.87
RESTRICTED ASSETS	19,889,822.28	5,914,322.82	15,871,669.73	13,975,499.46	4,018,152.55
INVESTMENTS	264,221,987.12	275,458,366.51	220,305,587.35	-11,236,379.39	43,916,399.77
OTHER ASSETS	12,194,792.04	13,082,532.07	8,972,982.66	-887,740.03	3,221,809.38
PROPERTY / PLANT	1,118,151,626.18	1,122,426,206.96	1,120,477,820.67	-4,274,580.78	-2,326,194.49
TOTAL ASSETS	1,468,982,726.32	1,468,117,687.14	1,409,211,893.24	865,039.18	59,770,833.08
LIABILITIES					
CURRENT LIABILITIES	19,289,952.36	17,782,902.68	31,259,856.70	1,507,049.68	-11,969,904.34
OTHER LIABILITIES	36,215,805.59	36,359,364.71	26,731,427.57	-143,559.12	9,484,378.02
BONDS PAYABLE, NONCURRENT	291,874,137.70	291,386,718.48	283,615,045.58	487,419.22	8,259,092.12
LIABILITIES	347,379,895.65	345,528,985.87	341,606,329.85	1,850,909.78	5,773,565.80
NET ASSETS					
RETAINED EARNINGS	280,378,657.73	336,718,619.10	309,146,646.62	-56,339,961.37	-28,767,988.89
FUND BALANCE	594,633,831.66	594,633,831.66	594,633,831.66	0.00	0.00
RESERVE FOR ENCUMBRANCES	192,593,074.00	136,253,112.63	163,825,085.11	56,339,961.37	28,767,988.89
CURRENT YEAR CHANGES TO FU	53,997,267.28	54,983,137.88	0.00	-985,870.60	53,997,267.28
NET ASSETS	1,121,602,830.67	1,122,588,701.27	1,067,605,563.39	-985,870.60	53,997,267.28
TOTAL LIABILITIES AND NET ASSETS	1,468,982,726.32	1,468,117,687.14	1,409,211,893.24	865,039.18	59,770,833.08

Board Of Water Supply

Budget vs Actual Appropriation Budget - Total BWS Summary

($000's)

CIFIS 15820-3021

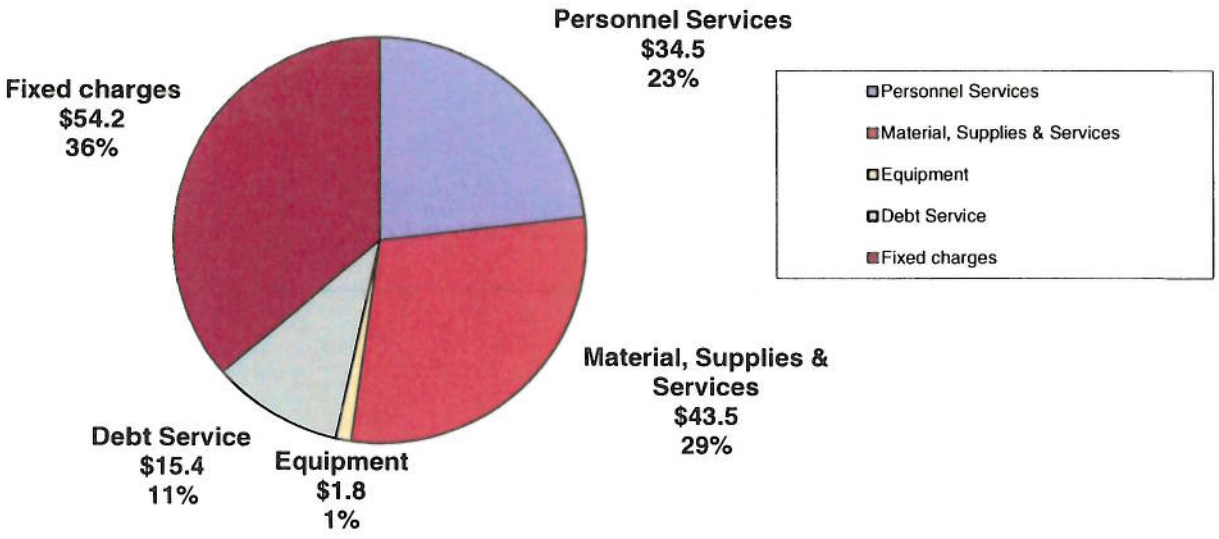
AS OF 6/30/2015

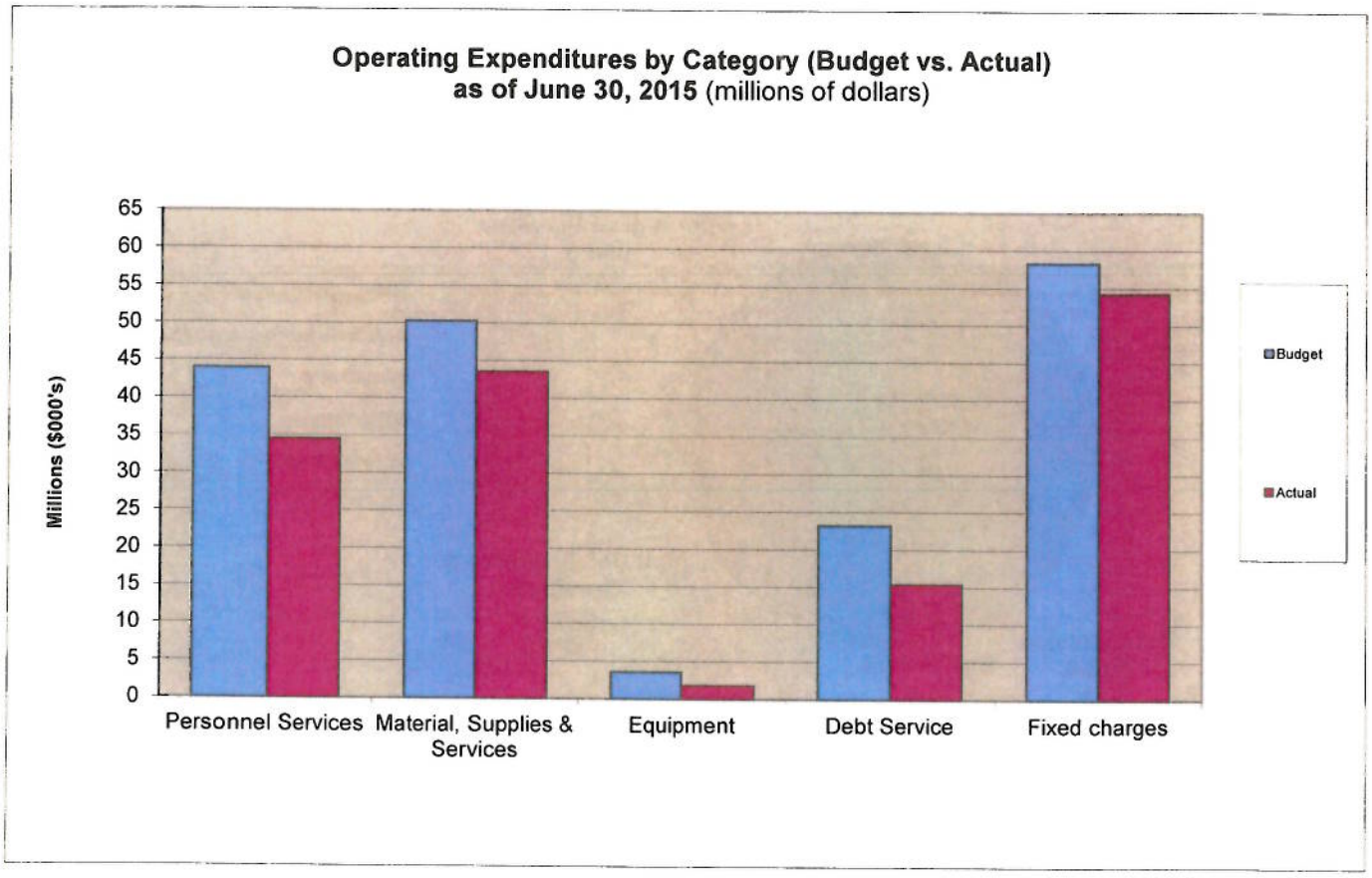
OPER UNIT ALL

BUSINESS UNIT ALL

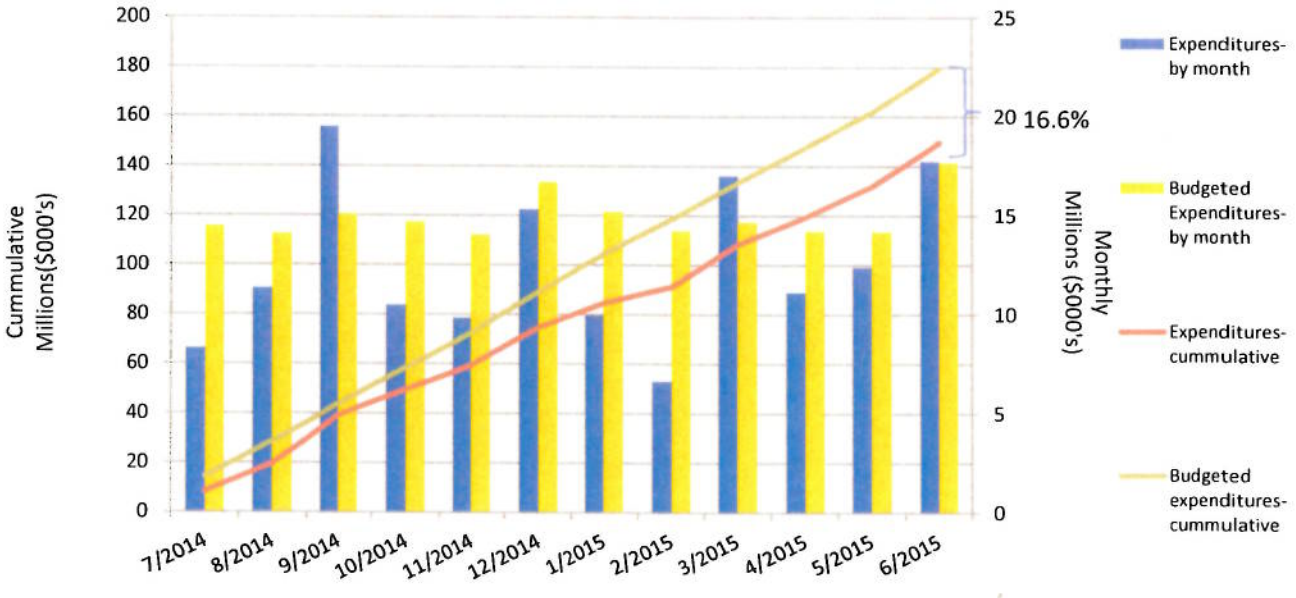
YTD-TO-DATE					FOR THE FISCAL YEAR				
YTD Actuals	YTD Budget	Avail/ (Over)	%	Object Description	Revenues/ Expend	Open Encumb	Annual Budget	Avail/ (Over)	%
217,564	217,633	69	.03	REVENUE	217,564		217,633	69	.03
				OPERATING EXPENSES:					
34,501	43,931	9,430	21.47	Personnel Services	34,501		43,931	9,430	21.47
				MATERIALS AND SUPPLIES					
15,708	19,645	3,937	20.04	Services	8,260	7,448	19,645	3,937	20.04
12,838	13,015	177	1.36	Supplies	10,387	2,451	13,015	177	1.36
329	566	237	41.87	Education & Training	254	75	566	237	41.87
	12	12	100.00	Utilities			12	12	100.00
2,414	5,133	2,719	52.97	Repairs & Maint	1,598	816	5,133	2,719	52.97
12,222	11,921	(301)	2.52-	Misc	10,492	1,730	11,921	(301)	2.52-
1,789	3,557	1,768	49.70	Equipment	530	1,259	3,557	1,768	49.70
15,402	23,205	7,803	33.63	Debt Service	15,402		23,205	7,803	33.63
				FIXED CHARGES.					
26,385	32,813	6,428	19.59	Utilities	26,385		32,813	6,428	19.59
3,300	3,300			Case Fees	3,300		3,300		
7,926	7,608	(318)	4.18-	Retirement System Contribution	7,926		7,608	(318)	4.18-
16,638	14,579	(2,059)	14.12-	Misc Employees' Benefits	16,638		14,579	(2,059)	14.12-
149,452	179,285	29,833	16.64	TOTAL OPERATING EXPENDITURES	135,673	13,779	179,285	29,833	16.64
68,112	38,348	(29,764)		NET REVENUES (EXPENDITURES)	81,891	(13,779)	38,348	(29,764)	

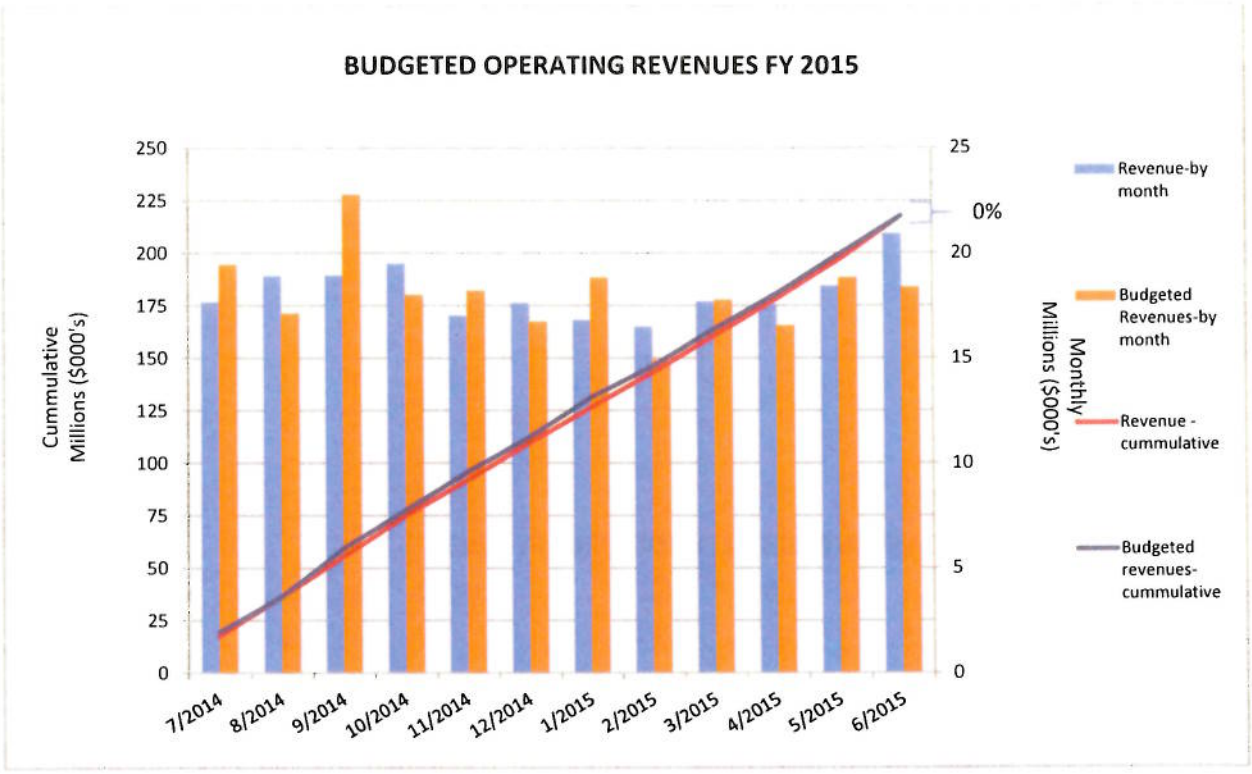
Total Operating Expenditures - $149.5
As of June 30, 2015
(millions of dollars)




Operating Expenditures by Category (Budget vs. Actual)
as of June 30, 2015 (millions of dollars)
Millions ($000's)
65
60
55
50
45
40
35
30
25
20
15
10
5
0
Personnel Services
Material, Supplies & Services
Equipment
Debt Service
Fixed charges
Budget
Actual

BUDGETED OPERATING EXPENDITURES FY 2015




BUDGETED OPERATING REVENUES FY 2015
Cummulative Millions ($000's)
Monthly Millions ($000's)
250
225
200
175
150
125
100
75
50
25
0
25
20
15
10
5
0
0%
7/2014
8/2014
9/2014
10/2014
11/2014
12/2014
1/2015
2/2015
3/2015
4/2015
5/2015
6/2015
Revenue-by month
Budgeted Revenues-by month
Revenue - cummulative
Budgeted revenues-cummulative

WATER FOR LIFE

Safe, dependable, and affordable water now and into the future

Board of Water Supply
City and County of Honolulu

Financial Performance

July 2014 – June 2015

Budget to Actual
July 2014 – June 2015

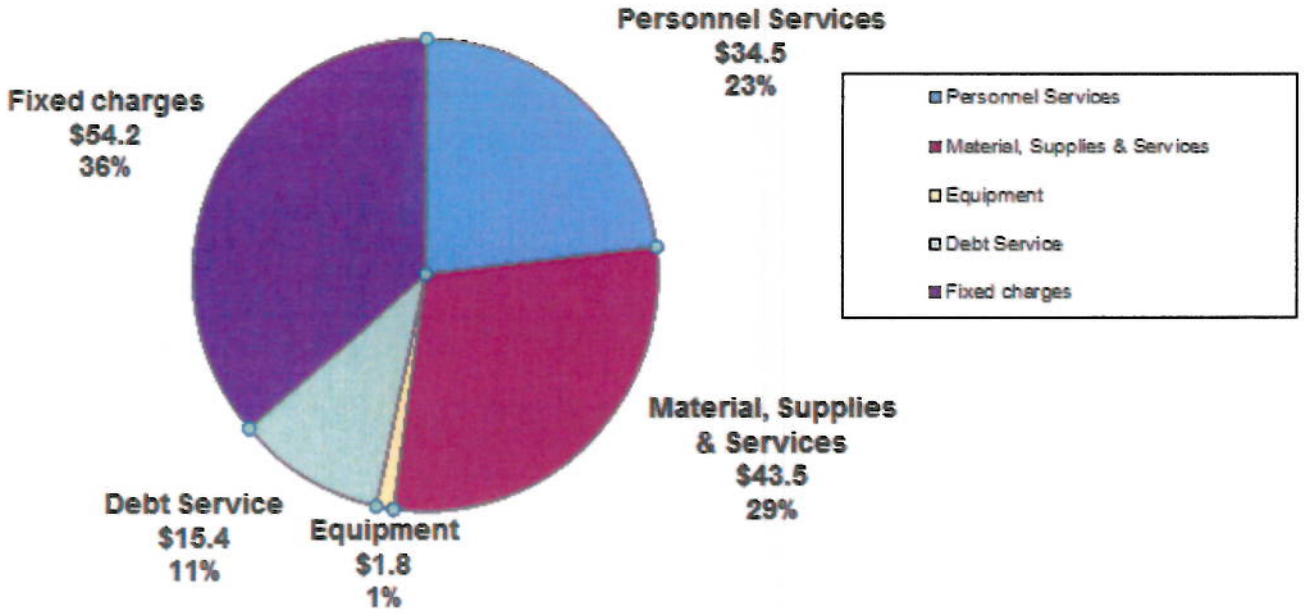
- Actual Revenue $218 million vs. Budgeted Revenue $218 million
- Operating costs are $150 million vs. Budgeted costs of $179 million
- Actual Net Revenue $68 million vs. Budgeted Net Revenue $38 million

Cost Drivers

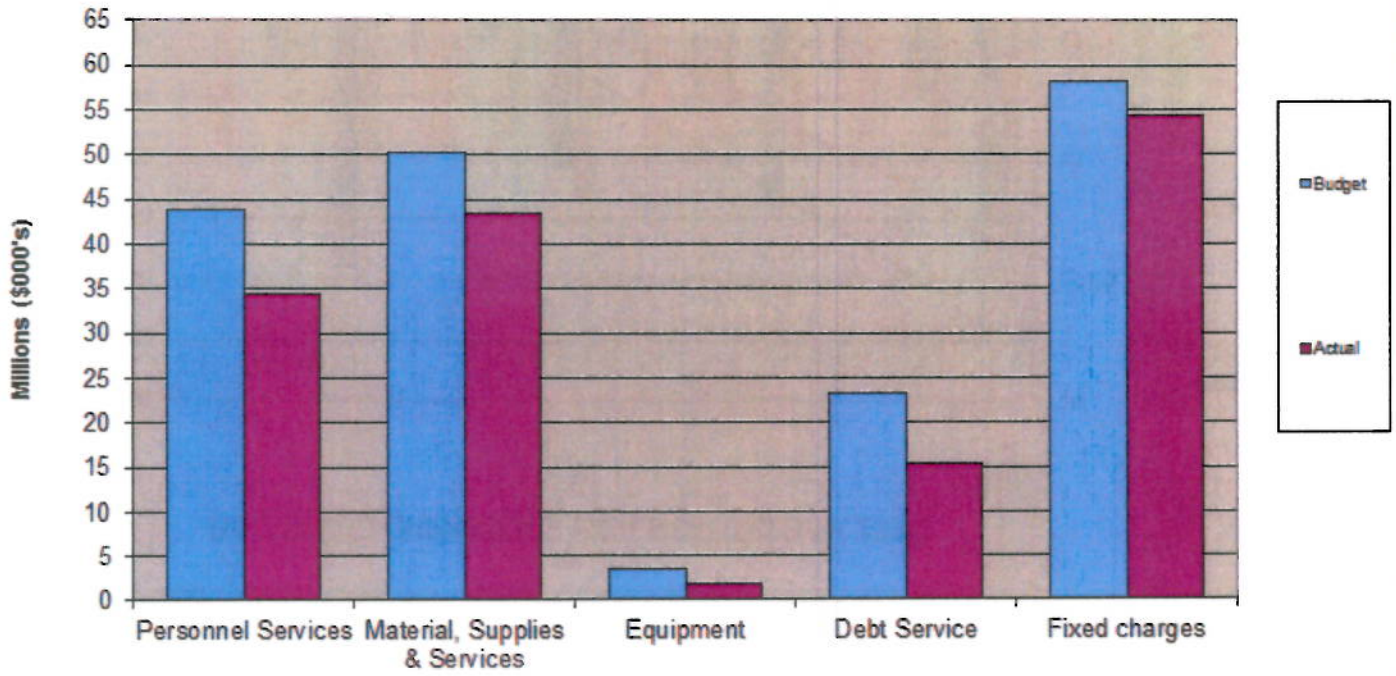
Year to Date June 2015

	Actual (millions)	Budget (millions)
• Personnel	$35	$44
• Services/Supplies	$29	$33
• Repairs & Misc.	$15	$17
• Equipment	$ 2	$ 4
• Utilities	$26	$33

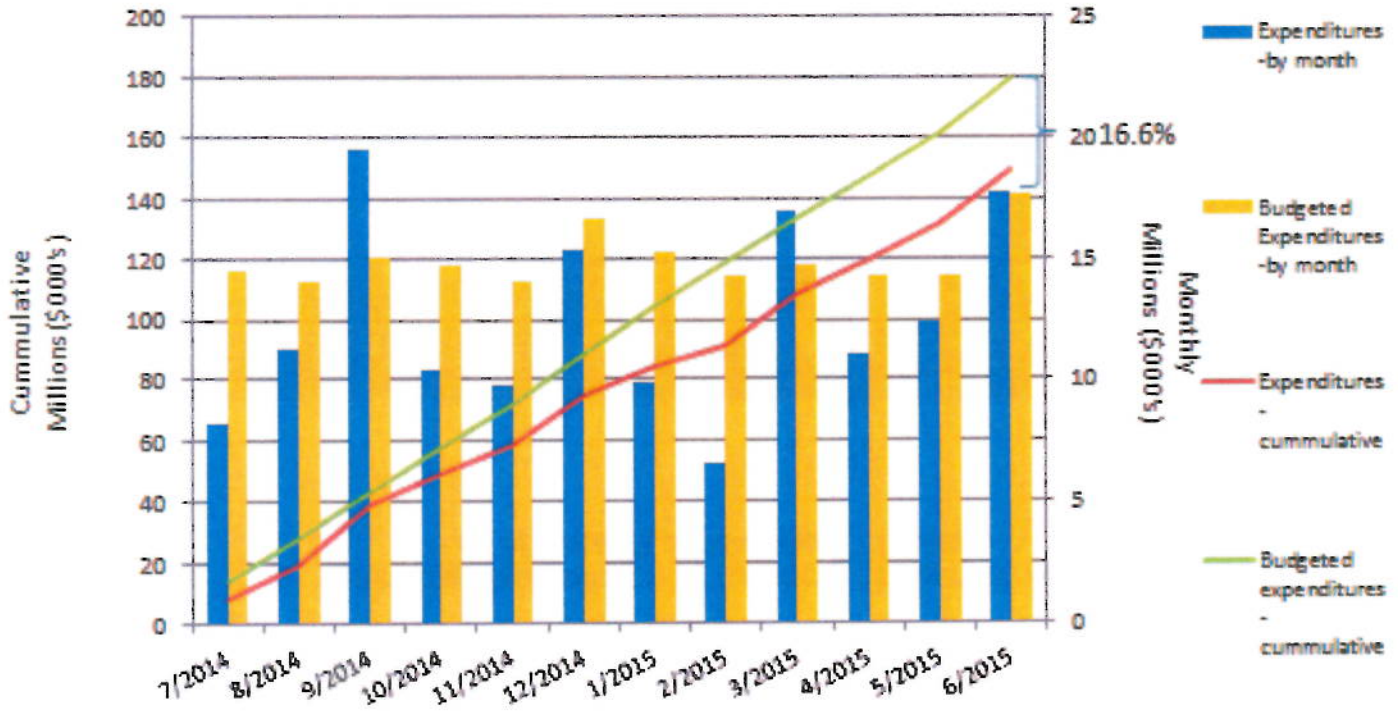
Total Operating Expenditures - $149.5
As of June 30, 2015
(millions of dollars)



Operating Expenditures by Category (Budget vs. Actual)
as of June 30, 2015 (millions of dollars)



BUDGETED OPERATING EXPENDITURES FY 2015

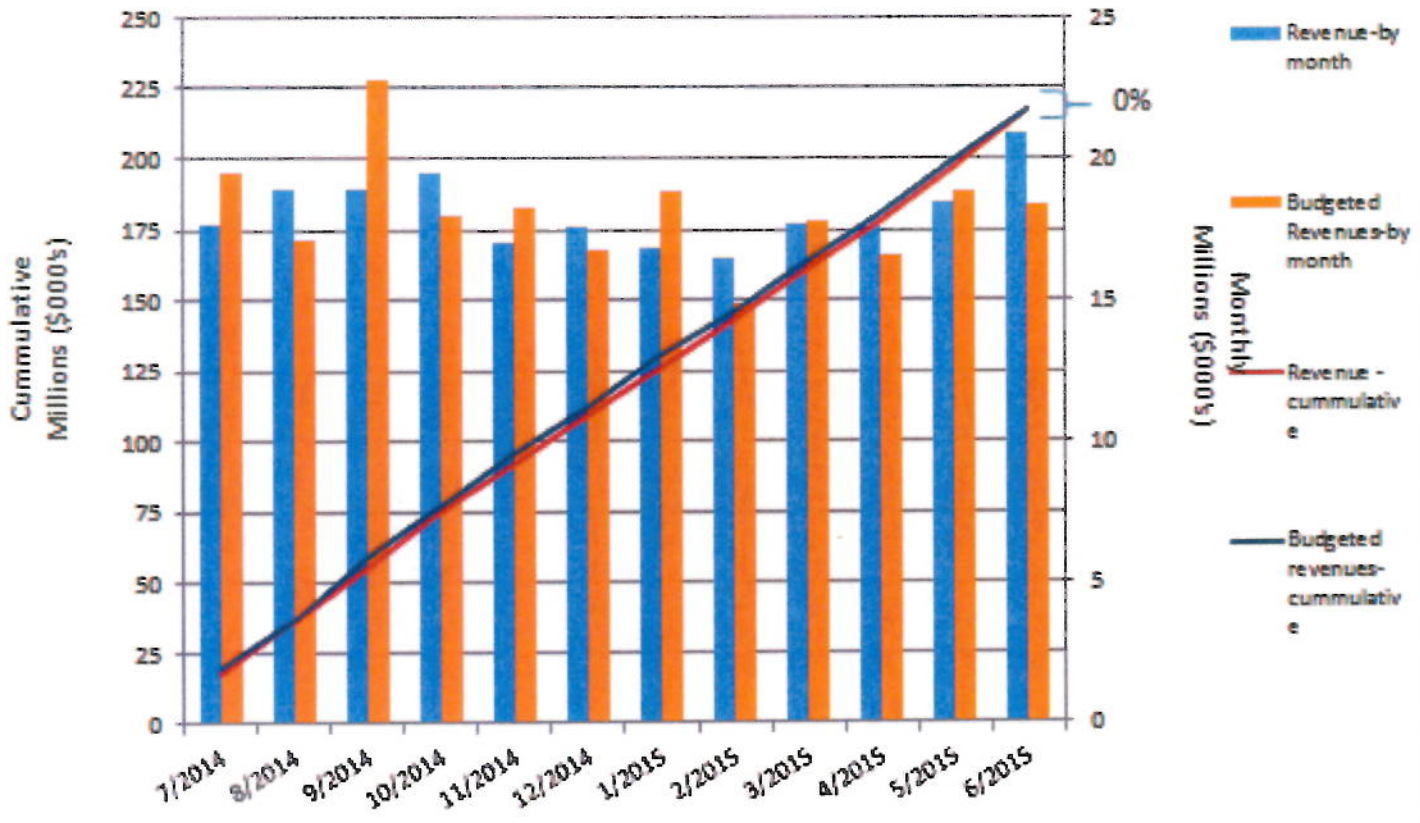


WATER FOR LIFE

Safe, dependable, and affordable water now and into the future

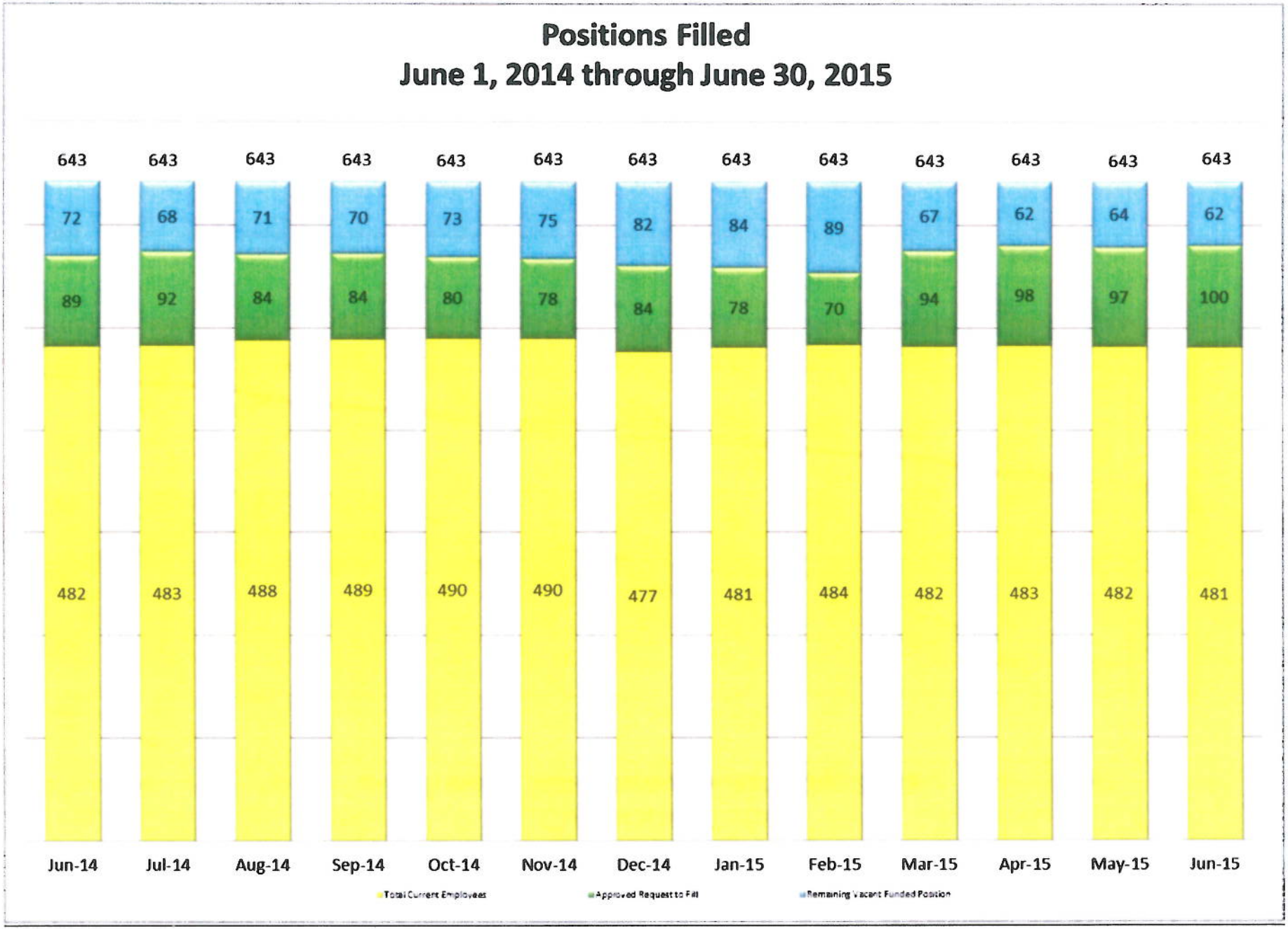
Board of Water Supply
City and County of Honolulu

BUDGETED OPERATING REVENUES FY 2015

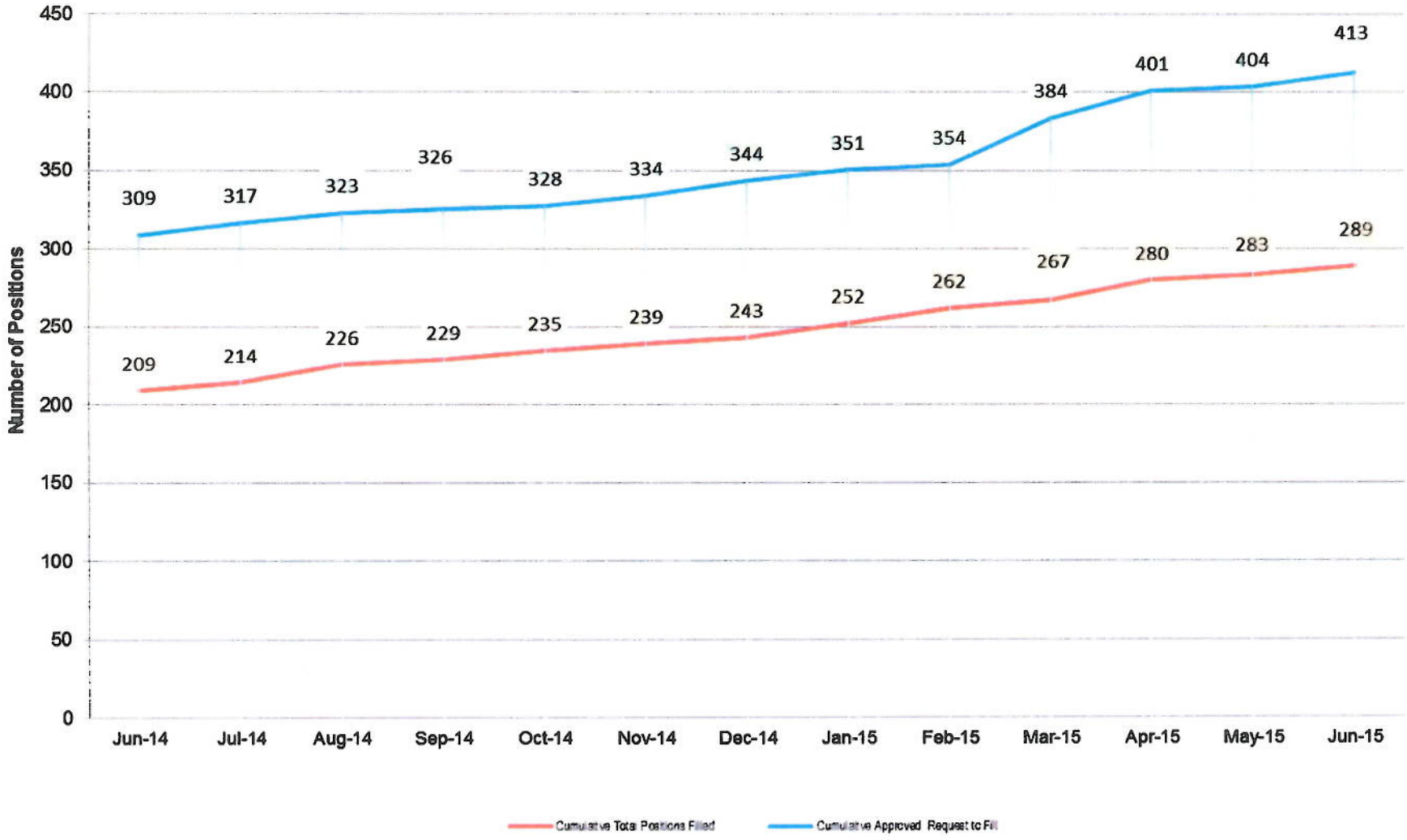


Questions
or
Comments

Actions: 2 New Hires, 4 Promotions, 3 Separations, 9 New Approvals to Fill, 0 Cancelled



Cumulative Totals
June 1, 2014 through June 30, 2015



DISCUSSION Karen Tom of the Human Resources Office gave the report. There were no comments or discussion.

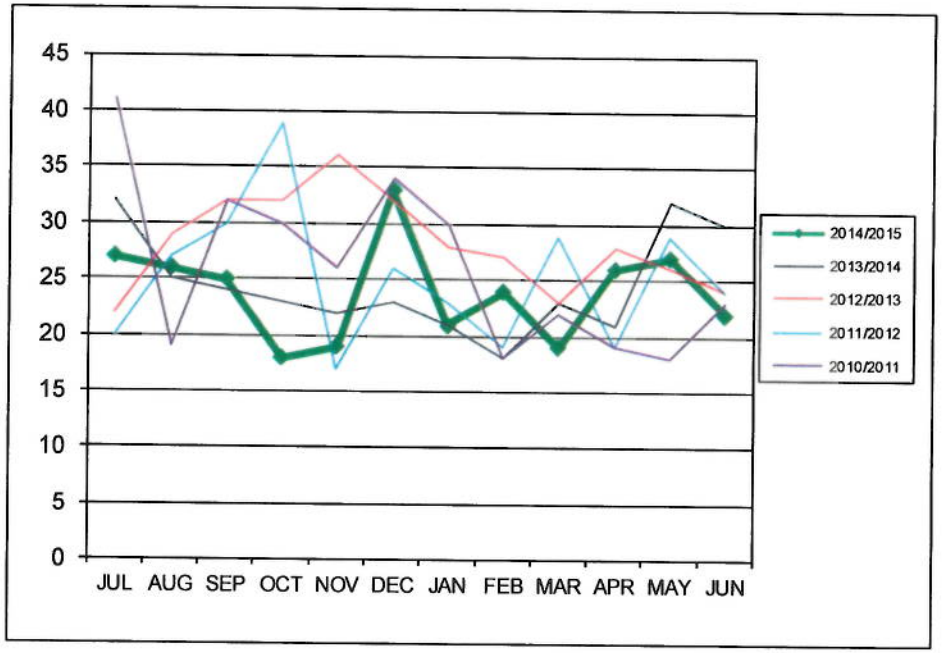
ITEM FOR INFORMATION NO. 8

WATER MAIN REPAIR REPORT

for June 2015

	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	Total
2014/2015	**27**	**26**	**25**	**18**	**19**	**33**	**21**	**24**	**19**	**26**	**27**	**22**	**287**
2013/2014	32	25	24	23	22	23	21	18	23	21	32	30	294
2012/2013	22	29	32	32	36	32	28	27	23	28	26	24	339
2011/2012	20	27	30	39	17	26	23	19	29	19	29	24	302
2010/2011	41	19	32	30	26	34	30	18	22	19	18	23	312

Date	Address	Size	Cause
6/2	921 Emmeluth Ln.	8" D.I.	Corrosion
6/2	4269 Sierra Dr.	8" C.I.	Unknown
6/3	Kalakaua Av. & Keoniana St.	8" A.C.	Unknown
6/3	1219 Auwai Dr.	8" C.I.	Corrosion
6/4	400 bl. Kawailoa Rd.	12" C.I.	Corrosion
6/5	99-190 Heleconia Pl.	8" C.I.	Unknown
6/5	3439 Paty Dr.	8" C.I.	Corrosion
6/7	Alala Rd. & Kaneapu Pl.	8" P.V.C.	Unknown
6/7	5147 Keikilani Cr.	8" C.I.	Unknown
6/12	653 Ala Moana Bl.	8" C.I.	Unknown
6/16	94-967 Awaiki St.	8" C.I.	Corrosion
6/17	3533 Woodlawn Dr.	8" C.I.	Corrosion
6/19	2416 Holomua St.	4" C.I.	Pressure
6/19	2199 Kalia Rd.	12" P.V.C.	Bear on Rock
6/20	59-559 Akanoho Pl.	8" C.I.	Corrosion
6/22	Iholena St. & Lolena St.	6" C.I.	Damage
6/23	2830 Lowrey Av.	8" P.V.C.	Unknown
6/24	Back of 98-1465 Kaahumanu St.	36" C.C.	Corrosion
6/25	1526 10th Av.	16" C.I.	Corrosion
6/25	94-956 Awanei St.	8" C.I.	Corrosion
6/26	45-608 Halekou Pl.	4" C.I.	Corrosion
6/30	4510 Aliikoa St.	8" C.I.	Unknown



Bold * - Pro-active Leak Repair

27.07 miles of pipelines were surveyed by the Leak Detection Team in the month of June.

DISCUSSION

Daryl Hiromoto, Field Operations Division Program Administrator, gave the report.

He informed the Board about the 24" main break on Farrington Highway this past weekend. He stated that operationally, everything was normal, so they will be doing a forensic study on a piece of the pipe to see if they can tell what caused the break. Mr. Hulihee asked if it was a PVC pipe. Mr. Hiromoto replied yes, it was. Mr. Hiromoto realizes that traffic was the biggest problem. He said that they normally don't bring in the pavers until they complete the repairs, however, in this situation, they called the pavers in early to start paving whatever amount of lanes they could while BWS crews were fixing the pipe. Mr. Hiromoto explained that his division will meet to discuss the series of events that occurred, and will look at ways to improve to alleviate problems in the future.

Mr. Lau explained that in the process of trenching, BWS crews accidentally nicked a sewer line. Mr. Hiromoto stated that the roadway there is made up of coral beds so BWS crews had to break through that and the sewer lateral was hard to detect because it was non-metallic and made of a clay-like material. Mr. Lau and Mr. Hiromoto recognized and thanked the Department of Environmental Services for their assistance in fixing the sewer lateral.

Mr. Wong asked if the total amount of main breaks for this fiscal year was the lowest amount BWS has had. Mr. Hiromoto replied that as far as he knows, yes. Mr. Wong suggested that BWS issue a news release so that the public can see the good efforts of the BWS. Mr. Sasamura suggested showing samples of failed mains so that the public can see what they look like.

MOTION TO RECESS INTO EXECUTIVE SESSION	Upon unanimously approved motion, the Board Recessed into Executive Session Pursuant to [HRS § 92-5(a)(4)] at 4:16 PM to Consult with the Board's Attorney on Questions and Issues Pertaining to Matters Posted for Discussion at an Executive Session.
OPEN SESSION	The Board reconvened in open session at 4:32 PM
MOTION TO ADJOURN	There being no further business Chair Miyashiro at 4:32 PM called for a motion to adjourn the Open Session. Adam Wong so moved; seconded by Ross Sasamura and unanimously carried.

THE MINUTES OF THE REGULAR SESSION BOARD MEETING ON JULY 27, 2015 WERE APPROVED AT THE AUGUST 24, 2015 BOARD MEETING			
	AYE	NO	COMMENT
DUANE R. MIYASHIRO	X		
ADAM C. WONG	X		
THERESIA C. MCMURDO			ABSENT
DAVID C. HULIHEE	X		
KAPUA SPROAT	X		
ROSS S. SASAMURA	X		
FORD N. FUCHIGAMI			ABSENT

Respectfully submitted,

Lisa K. Kim

LISA K. KIM

APPROVED:

DUANE R. MIYASHIRO
Chair of the Board

AUG 24 2015

Date