

MINUTES

REGULAR MEETING OF THE BOARD OF WATER SUPPLY

October 28, 2019

At 2:02 PM on October 28, 2019 in the Board Room of the Public Service Building at 630 South Beretania Street, Honolulu, Hawaii, Board Chair Andaya called to order the Regular Meeting.

Present: Bryan P. Andaya, Chair
Kapua Sproat, Vice Chair
Kay C. Matsui
Ross S. Sasamura

Also Present: Ernest Lau, Manager and Chief Engineer
Ellen Kitamura, Deputy Manager and Chief Engineer
Barry Usagawa
Dymian Racoma
Ron Wada
Jadine Urasaki
Erwin Kawata
Jennifer Elflein
Joe Cooper
Kathleen Elliott-Pahinui
Kathy Mitchell
Kevin Ihu
Michele Thomas
Mike Fuke
Mike Matsuo
Raelynn Nakabayashi

Others Present: Jessica Wong, Deputy Corporation Counsel
David Brown, Morgan, Lewis & Bockius LLP
Ella Foley Gannon, Morgan, Lewis &
Bockius LLP
Dr. Carl Bonham, UHERO
Susan Uyesugi, SSFM International
Chris Harris, Harris & Co.
Cynthia K.L. Rezentes

Absent: Ray C. Soon
Max J. Sword
Jade T. Butay

APPROVAL OF MINUTES

Approval of the Minutes of the Regular Meeting held on August 26, 2019.

MOTION TO APPROVE

Ross Sasamura and Kapua Sproat motioned and seconded, respectively, to approve the Minutes of the Regular Meeting of August 26, 2019. The motion was unanimously carried.

THE MINUTES OF THE REGULAR BOARD MEETING ON AUGUST 26, 2019 WERE APPROVED AT THE OCTOBER 28, 2019 BOARD MEETING			
	AYE	NO	COMMENT
BRYAN P. ANDAYA	X		
KAPUA SPROAT	X		
KAY C. MATSUI	X		
RAY C. SOON			ABSENT
MAX J. SWORD			ABSENT
ROSS S. SASAMURA	X		
JADE T. BUTAY			ABSENT

APPROVAL OF MINUTES

Approval of the Minutes of the Regular Meeting held on September 23, 2019.

MOTION TO APPROVE

Ross Sasamura and Kapua Sproat motioned and seconded, respectively, to approve the Minutes of the Regular Meeting of September 23, 2019. The motion was unanimously carried.

THE MINUTES OF THE REGULAR BOARD MEETING ON SEPTEMBER 23, 2019 WERE APPROVED AT THE OCTOBER 28, 2019 BOARD MEETING			
	AYE	NO	COMMENT
BRYAN P. ANDAYA	X		
KAPUA SPROAT	X		
KAY C. MATSUI	X		
RAY C. SOON			ABSENT
MAX J. SWORD			ABSENT
ROSS S. SASAMURA	X		
JADE T. BUTAY			ABSENT

APPROVAL OF
REVISIONS TO
THE BOARD
MEETING
MINUTES

"October 28, 2019

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

Subject: Approval of Revisions to the January 28, 2019,
February 25, 2019, and March 25, 2019 Board
Meeting Minutes

We respectfully recommend that the Board review and revise the January 28, 2019, February 25, 2019, and March 25, 2019 Board Meeting minutes as follows:

January 28, 2019 Board Minutes

The January 28, 2019 Board Minutes incorrectly indicated that the Board approved the January 28, 2019 Board Minutes. The Board approved the December 17, 2018 Board Minutes. Page 2 of the January 28, 2019 Board Minutes will be amended as follows:

Approval of the Minutes of the Regular Meeting held on
[January 28, 2019] December 17, 2018.

February 25, 2019 Board Minutes

1. For Resolution No. 893, 2019, Acceptance of Gifts to the Board of Water Supply from Various Donors in Support of the 2019 Water Conservation Week Program, the signature of the Board Chair and the voting box was missing. The Board Minutes will be amended as follows:

The signature of the Board Chair is added to the Resolution on Page 5 and the voting box is added to the Discussion section on Page 6.

2. For Resolution No. 894, 2019, Acceptance of Gift from City Millo Company, Ltd., in Support of Annual Detect-a-Leak Week Program, the signature of the Board Chair and the voting box was missing. The Board Minutes will be amended as follows:

The signature of the Board Chair is added to the Resolution on Page 8 and the voting box is added to the Discussion section on Page 9.

3. The date in the footer for the Board Minutes on Pages 10 – 30 was incorrectly dated as February 26, 2018 and will be revised as follows:

The date in the footer for the Board Minutes on Pages 10 – 30 is changed to [February 26, 2018] February 25, 2019.

4. Pages 14 and 15 contained the same document titled, "Positions Filled January 1, 2018 through January 31, 2019" and will be revised as follows:

The document on Page 15 is replaced with the document titled "Cumulative Totals January 1, 2018 through January 31, 2019" as reported at the February 25, 2019 Board Meeting.

5. The February 25, 2019 Board Minutes were amended at the March 25, 2019 Board meeting. The title in the voting box on Page 39 should have stated that the Board approved the minutes, as amended. The Board Minutes will be revised as follows:

The title in the voting box of Page 39 approving the February 25, 2019 Board Minutes is changed to "THE MINUTES OF THE REGULAR SESSION BOARD MEETING ON FEBRUARY 25, 2019 WERE APPROVED AS AMENDED AT THE MARCH 25, 2019 BOARD MEETING"

March 25, 2019 Board Minutes

The February 25, 2019 Board Minutes were amended at the March 25, 2019 Board meeting. The Section title on Page 2 did not indicate that the February 25, 2019 Board Minutes was amended and the voting box approving the amendment was missing. The Board Minutes will be revised as follows:

The Section title is changed to "MOTION TO APPROVE AS AMENDED" and the voting box approving the amendment is added to Page 2.

We appreciate the Board's consideration of these recommendations to ensure that the minutes are certified and represent the true records of the proceedings of the Board.

Respectfully submitted,

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

Attachments"

Discussion: Ellen Kitamura, Deputy Manager and Chief Engineer, reviewed the revisions. There were no comments or discussions.

**APPROVAL OF
MINUTES**

Approval of Revisions to the January 28, 2019, February 25, 2019,
and March 25, 2019 Board Meeting Minutes

**MOTION
TO APPROVE**

Ross Sasamura and Kapua Sproat motioned and seconded,
respectively, to approve the Revisions of the Regular Meeting Minutes
for January 28, 2019, February 25, 2019, and March 25, 2019.
The motion was unanimously carried.

THE MINUTES OF THE AMENDED REGULAR BOARD MEETING ON JANUARY 28, 2019, FEBRUARY 25, 2019 AND MARCH 25, 2019 WERE APPROVED AT THE OCTOBER 28, 2019 BOARD MEETING			
	AYE	NO	COMMENT
BRYAN P. ANDAYA	X		
KAPUA SPROAT	X		
KAY C. MATSUI	X		
RAY C. SOON			ABSENT
MAX J. SWORD			ABSENT
ROSS S. SASAMURA	X		
JADE T. BUTAY			ABSENT

"October 28, 2019

ADOPTION OF
RESOLUTION
NO. 904, 2019

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

Chair and Members:

Subject: Adoption of Resolution No. 904, 2019, Acceptance of Gift from Hardware Hawaii (HH Holdings Inc.), in Support of the Detect-A-Leak Week Program

We recommend acceptance of the proposed gift to the Board of Water Supply (BWS), City and County of Honolulu, from Hardware Hawaii of 5,000 toilet leak detection dye tablets valued at \$515.50, in support of our annual Detect-A-Leak Week program, which helps educate the public about the importance of regular leak detection as an effective means to prevent unnecessary water loss.

According to the United States Environmental Protection Agency, the average American home can waste more than 10,000 gallons of water every year from running toilets, dripping faucets, and other household leaks. The most common household leaks are in toilets, so during Detect-A-Leak Week, the public can pick up toilet leak detection dye tablets at any Hardware Hawaii store, Satellite City Hall location, or in the lobby of the BWS Public Service Building at 630 South Beretania Street.

Detect-A-Leak Week will be observed statewide from March 16-22, 2020, with each county water department coordinating its own public outreach program.

We greatly appreciate the continued participation and commitment of our community partners and our customers who support this very worthwhile program, which encourages all customers to embrace their role as responsible stewards of our precious water resource.

Respectfully submitted,

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

Attachments"

Discussion: Kathleen Elliott-Pahinui, Information Officer, Communications Office, gave the report. At the end of Ms. Elliott-Pahinui's report, Chair Andaya expressed his appreciation for Hardware Hawaii's very generous gift. Ms. Elliott-Pahinui will convey his message to Hardware Hawaii.

**MOTION TO
ADOPT**

Ross Sasamura motioned to adopt Resolution 904, 2019, Acceptance of Gift from Hardware Hawaii (HH Holdings Inc.), in Support of the Annual Detect-A-Leak Week Program. The motion was seconded by Kapua Sproat and unanimously carried.

RESOLUTION NO. 904, 2019, ACCEPTANCE OF GIFT FROM HARDWARE HAWAII (HH HOLDINGS INC.), IN SUPPORT OF THE ANNUAL DETECT-A-LEAK WEEK PROGRAM, ADOPTED ON OCTOBER 28, 2019			
	AYE	NO	COMMENT
BRYAN P. ANDAYA	X		
KAPUA SPROAT	X		
KAY C. MATSUI	X		
RAY C. SOON			ABSENT
MAX J. SWORD			ABSENT
ROSS S. SASAMURA	X		
JADE T. BUTAY			ABSENT

BOARD OF WATER SUPPLY
CITY AND COUNTY OF HONOLULU

RESOLUTION NO. 904, 2019

ACCEPTANCE OF GIFT FROM HARDWARE HAWAII (HH HOLDINGS INC.), IN
SUPPORT OF THE ANNUAL DETECT-A-LEAK WEEK PROGRAM

WHEREAS, the Board of Water Supply's (BWS) Detect-A-Leak Week program will be observed from March 16-22, 2020, and focuses consumer attention on property leak detection and timely repair as an effective means to prevent unnecessary water loss; and

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

WHEREAS, Hardware Hawaii (HH Holdings INC.), is offering a gift of 5,000 toilet leak detection dye tablets valued at \$515.50 in support of the BWS's 2020 Detect-A-Leak Week conservation program; and

WHEREAS, the gift to the BWS is beneficial because providing Oahu residents with a free method to check for toilet leaks encourages regular leak detection and their personal responsibility as stewards of our precious water resources; now, therefore,

BE IT RESOLVED that the BWS hereby accept the gift valued at and directs the Manager and Chief Engineer, or his delegate, to accept and thank Hardware Hawaii (HH Holdings INC.), for this gift.

ADOPTED:




BRYAN P. ANDAYA
Chair

Honolulu, Hawaii
October 28, 2019

RESOLUTION NO. 904, 2019, ACCEPTANCE OF GIFT FROM HARDWARE HAWAII (HH HOLDINGS INC.), IN SUPPORT OF THE ANNUAL DETECT-A-LEAK WEEK PROGRAM, ADOPTED ON OCTOBER 28, 2019			
	AYE	NO	COMMENT
BRYAN P. ANDAYA	X		
KAPUA SPROAT	X		
KAY C. MATSUI	X		
RAY C. SOON			ABSENT
MAX J. SWORD			ABSENT
ROSS S. SASAMURA	X		
JADE T. BUTAY			ABSENT

City and County of Honolulu

DECLARATION OF GIFT	
NAME OF DONOR	Hardware Hawaii
DONOR'S ADDRESS	30 Kihapai St., Kailua, HI 96734
DONOR'S TELEPHONE	808-266-1133
STATEMENT OF OWNERSHIP AND/OR TERMS OF CONVEYANCE	
<p>Our organization owns the item described below and desires to give the property to the Board of Water Supply of the City and County of Honolulu. To carry out our purpose, we do hereby absolutely and without condition or reservation give, grant, and convey the property to the City and County of Honolulu.</p>	
DESCRIPTION OF GIFT	VALUE
5,000 tablets—Toilet leak detection dye tablets for Detect-A-Leak Week promotion for March 2020.	\$515.50
TOTAL VALUE OF GIFT	\$515.50
Signature: 	Date: 9/18/2019
Print Name: Mark Haworth	Title: Ad Director/CWGH

ITEM FOR INFORMATION NO. 1

“October 28, 2019

UHERO
PRESENTATION
OF THE 2019
ECONOMIC AND
CONSTRUCTION
ACTIVITY
FORECAST
FOR OAHU

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

Chair and Members:

Subject: UHERO Presentation of the 2019 Economic and
Construction Activity Forecast for Oahu

We are pleased to introduce Dr. Carl Bonham, Executive Director of the University of Hawaii’s Economic Research Office (UHERO) who will present the economic and construction activity forecast for Oahu. The UHERO Forecast Project is a community-sponsored research program of the University of Hawaii at Manoa. The Forecast Project provides the Hawaii community with analysis on economic, demographic, and business trends in the State and the Asia-Pacific region.

The Board of Water Supply continues to be a supporting sponsor of UHERO for their forecast reports to help us understand trends in construction activity, costs and water demand growth.

Respectfully submitted,

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

Attachment”

The foregoing was for information only.

DISCUSSION:

Chair Andaya introduced Dr. Carl Bonham, Executive Director of the University of Hawaii’s Economic Research Office (UHERO), to give his presentation.

Dr. Bonham presentation covered UHERO’s recent quarterly update on the economic outlook for U.S. and Hawaii. In general, UHERO is forecasting a national economic slowdown, but not a recession. For Hawaii, UHERO is forecasting a basic picture of extremely slow growth with the weakest economic growth expected for Oahu.

At the end of Dr. Bonham’s presentation, Manager Lau inquired that with the interest rates for bonds, would this be a good time to sell bonds to finance capital projects. Dr. Bonham affirmed that this is a good time to sell bonds to fund projects and there has been a fair amount of discussion on this topic with respect to the infrastructure needs of the state. Dr. Bonham indicated that there may be lower borrowing costs in a year or so even though the rates are very aggressively low right now.

Barry Usagawa, Program Administrator, Water Resources Division, asked Dr. Bonham for his perspective on the impact of rail and the transit-oriented development. Dr. Bonham replied, with regards to the construction forecast perspective, the rail is not having a large impact in terms of additional growth. Dr. Bonham stated that rail and residential building projects have a stabilizing effect by keeping people employed and the construction pipeline full, but it is not adding to additional growth. This is preferred to the boom-bust alternative.

Dr. Bonham added that it is not just the rail but other large ongoing or proposed government projects that were considered in the construction forecast, i.e. Blaisdell, UH Stadium, OCCC and Honolulu International Airport development projects. However, it is still unclear how the rail will affect other government projects and funding when faced with the challenges of constructing in the downtown area. Additionally, if the state economy slows down significantly, if tax revenue starts to grow more slowly or not at all, there is a tendency to pull back on capital improvement project funding. Right now, UHERO is cautiously optimistic on the other government infrastructure projects, but realize there could be possible delays with rail.

Manager Lau thanked Dr. Bonham for his report and announced that BWS is subscribing to UHERO to keep track of economic projections over time. Dr. Bonham will be invited back annually with a similar presentation to the Board.

Chair Andaya concurred with Manager Lau and added that it is always better to have the bigger picture to make sound policy decisions. This information will be useful when considering water rates and water system facility charges and hookup charges. Chair Andaya thanked Dr. Bonham for his report today.



UHERO
THE ECONOMIC RESEARCH ORGANIZATION
AT THE UNIVERSITY OF HAWAII

Already Weak, Hawaii's prospects look increasingly dicey

Dr. Carl Bonham
Executive Director, UHERO

Honolulu Board of Water Supply

October 28, 2019

Overview

US economy holding its own

- ▶ **US Strengths:** labor market, consumer spending, housing starts
- ▶ **US weakness:** investment, trade, policy by tweet
- ▶ **Risks are clearly to the downside**

Hawaii

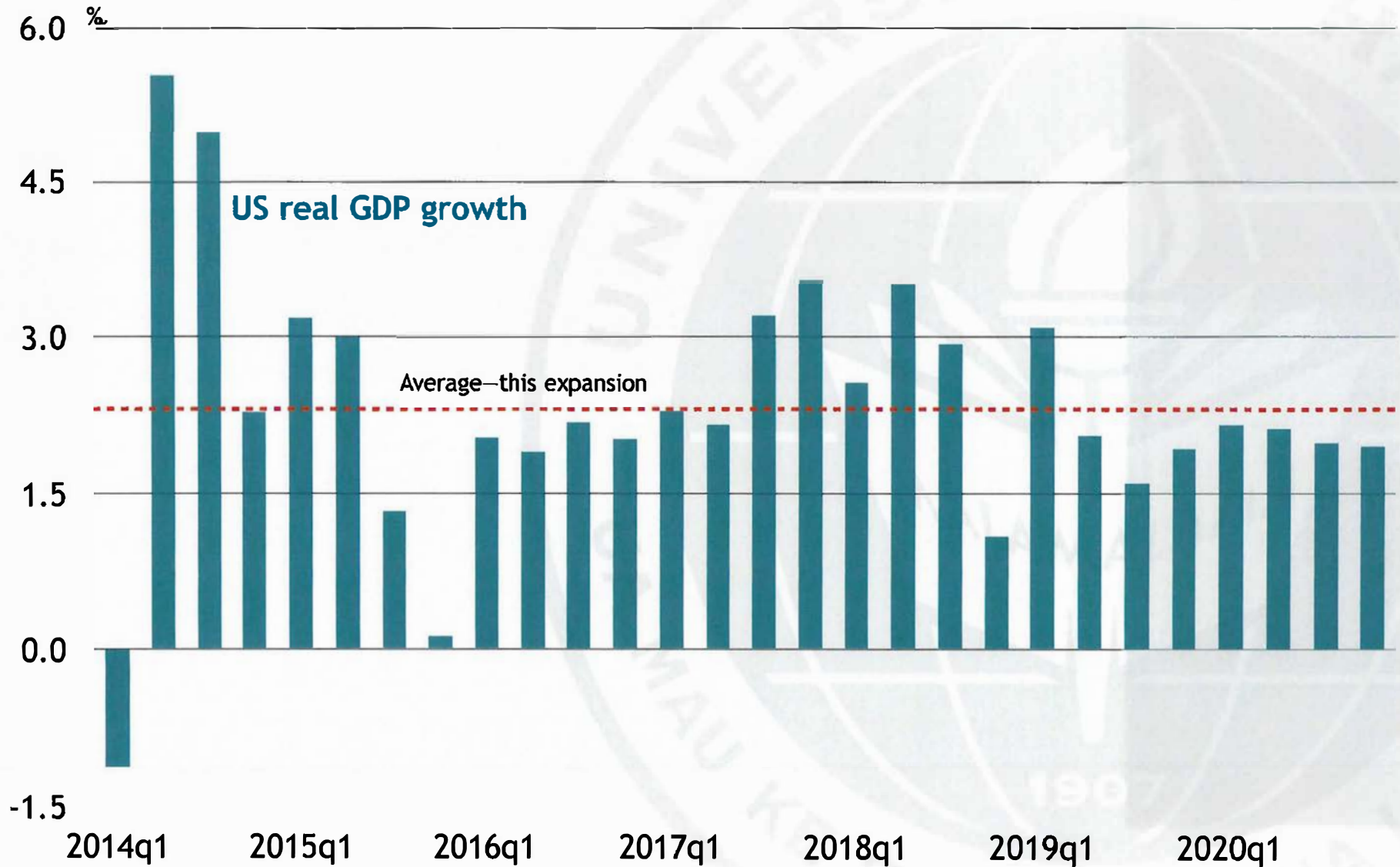
- ▶ **Growth is pau— no job growth and very little income growth**
- ▶ **Tourism boom is over**
- ▶ **Ordinance 19-89**

Summary

- ▶ **Hawaii is poised for several years of very weak growth**
- ▶ **Risks include trade war, European recession, US recession?**
TVR ordinance, impacts on tourism, home prices, and construction

US growth underpins Hawaii's fragile expansion

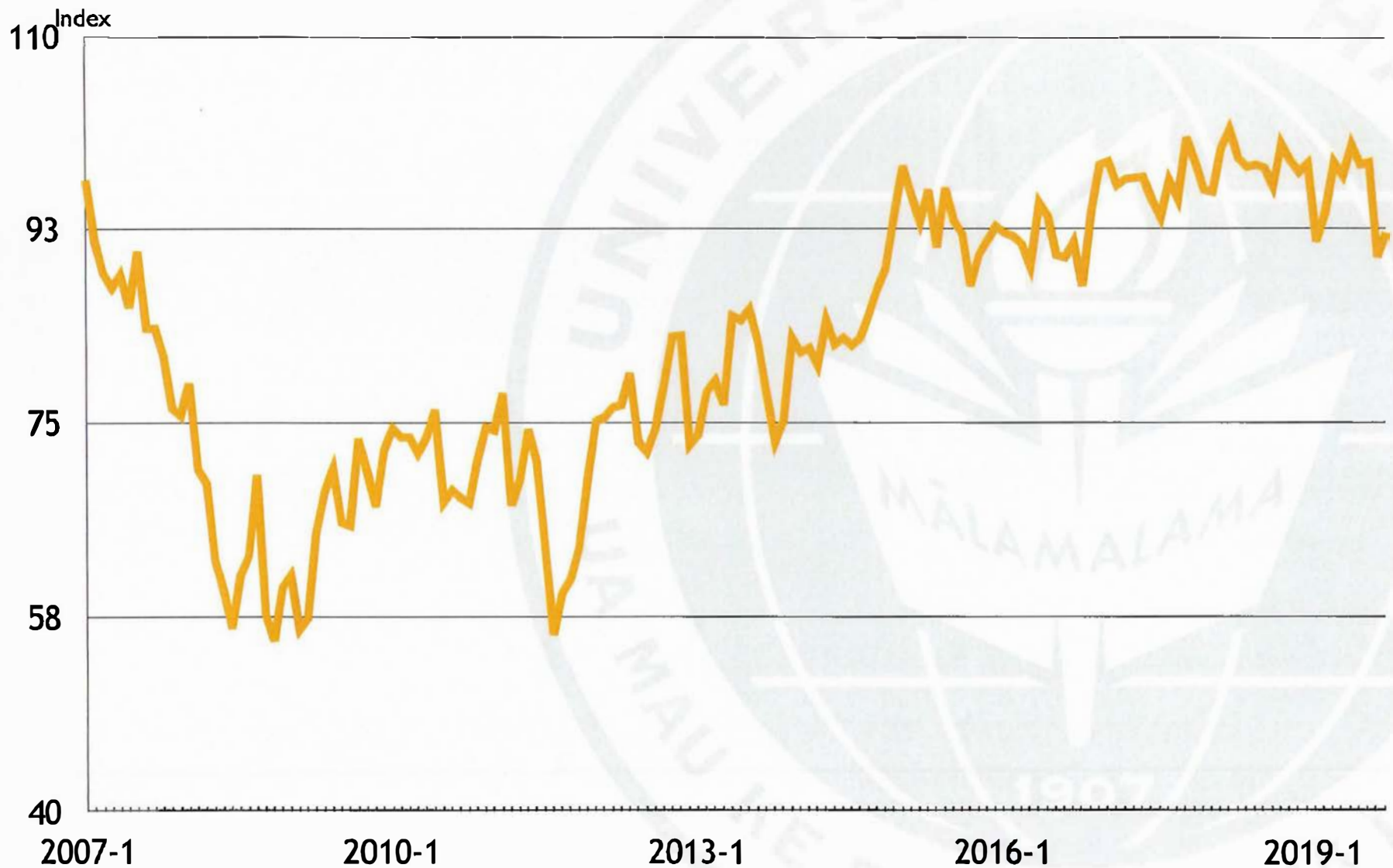
few signs of recession, for now



Source: BEA, UHERO

US strengths: consumer spending

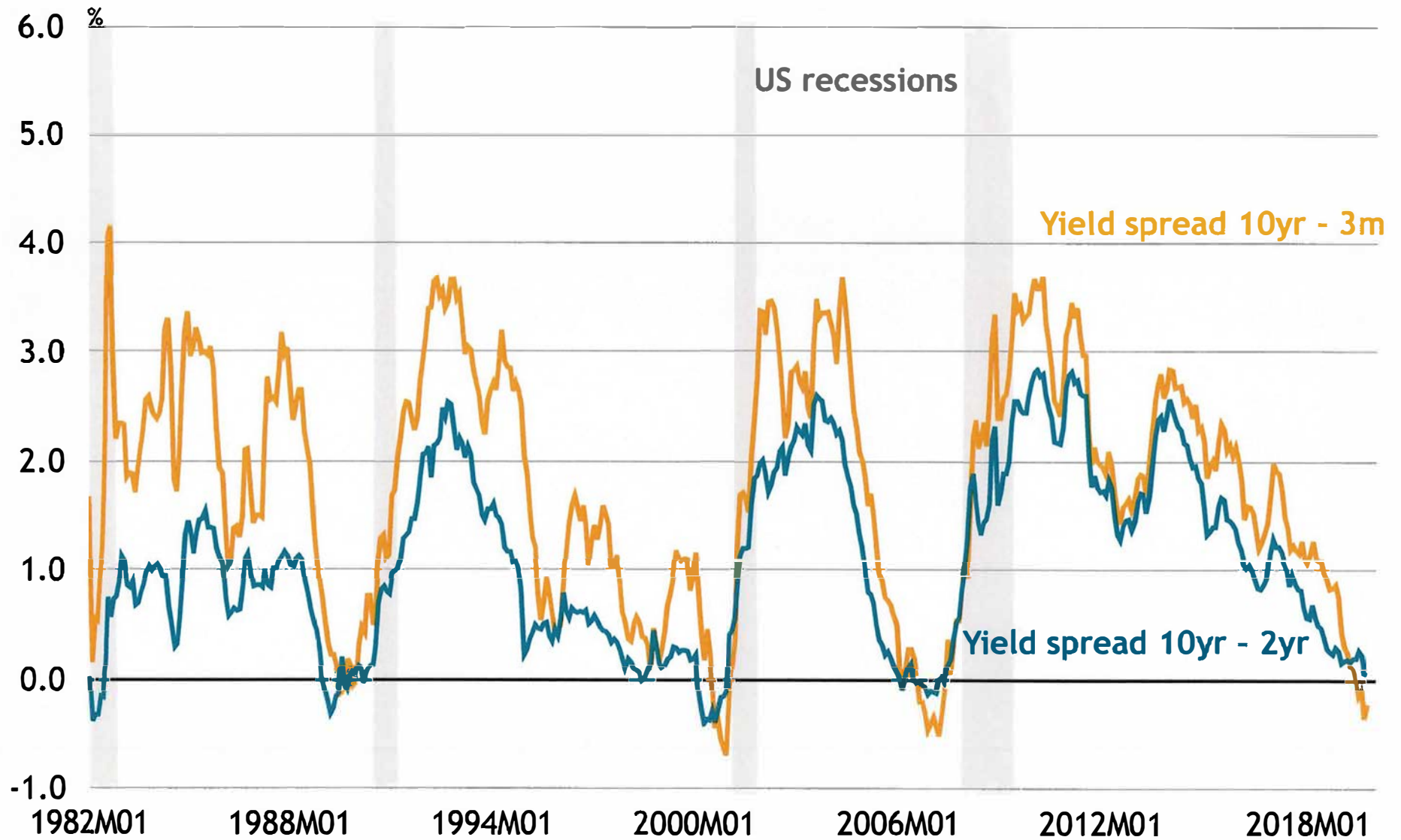
University of Michigan Consumer Sentiment Index



Source: University of Michigan, Survey of Consumers, via FRED

Uncertainty fosters volatility, flight to quality, fed worries

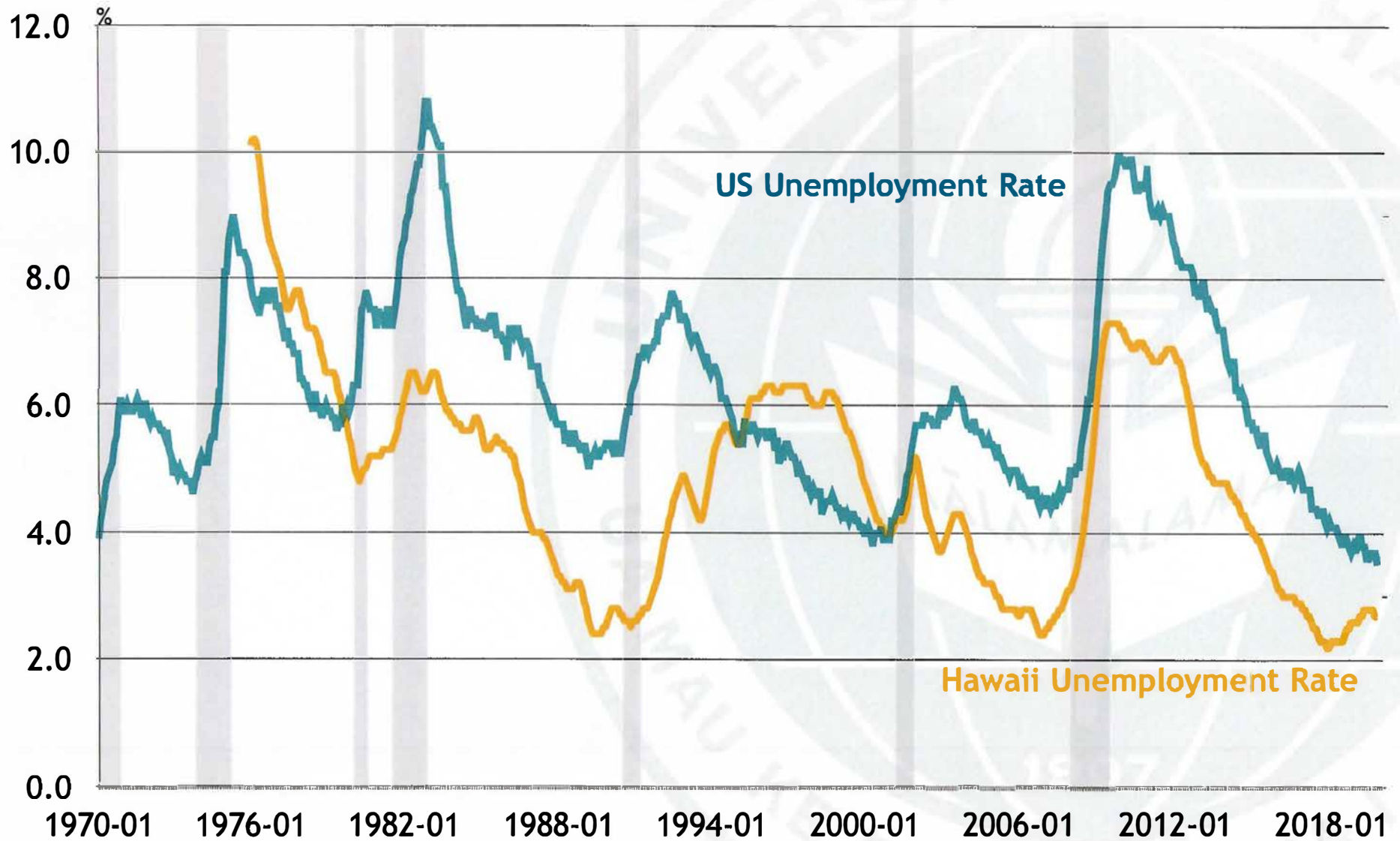
bond market jitters



Source: FRED, UHERO

Unemployment rate signals strong national economy

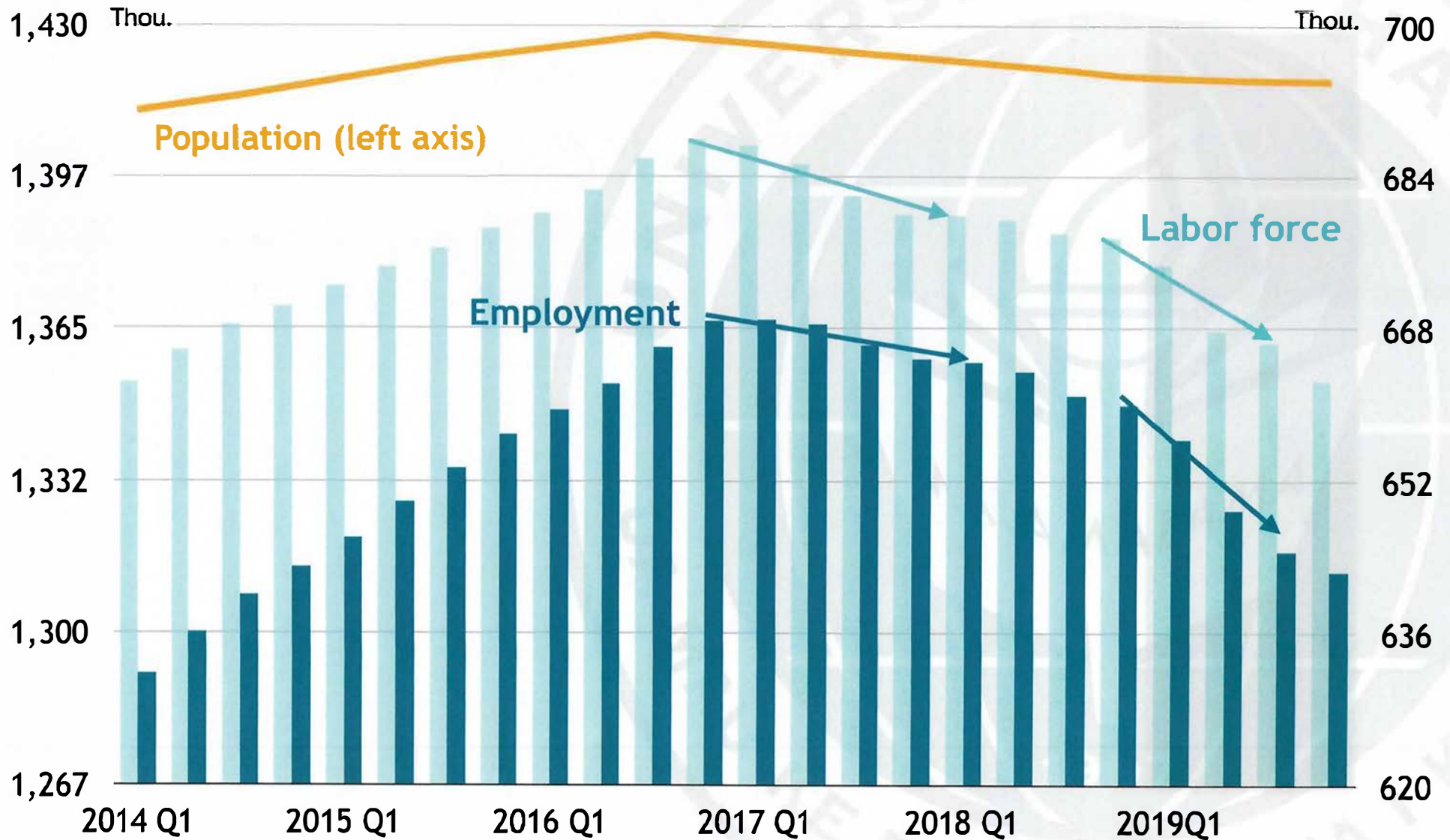
and a weak Hawaii economy



Source: BLS, <https://tinyurl.com/UHERO-USvsHI-unemployment>

Hawaii's low unemployment rate

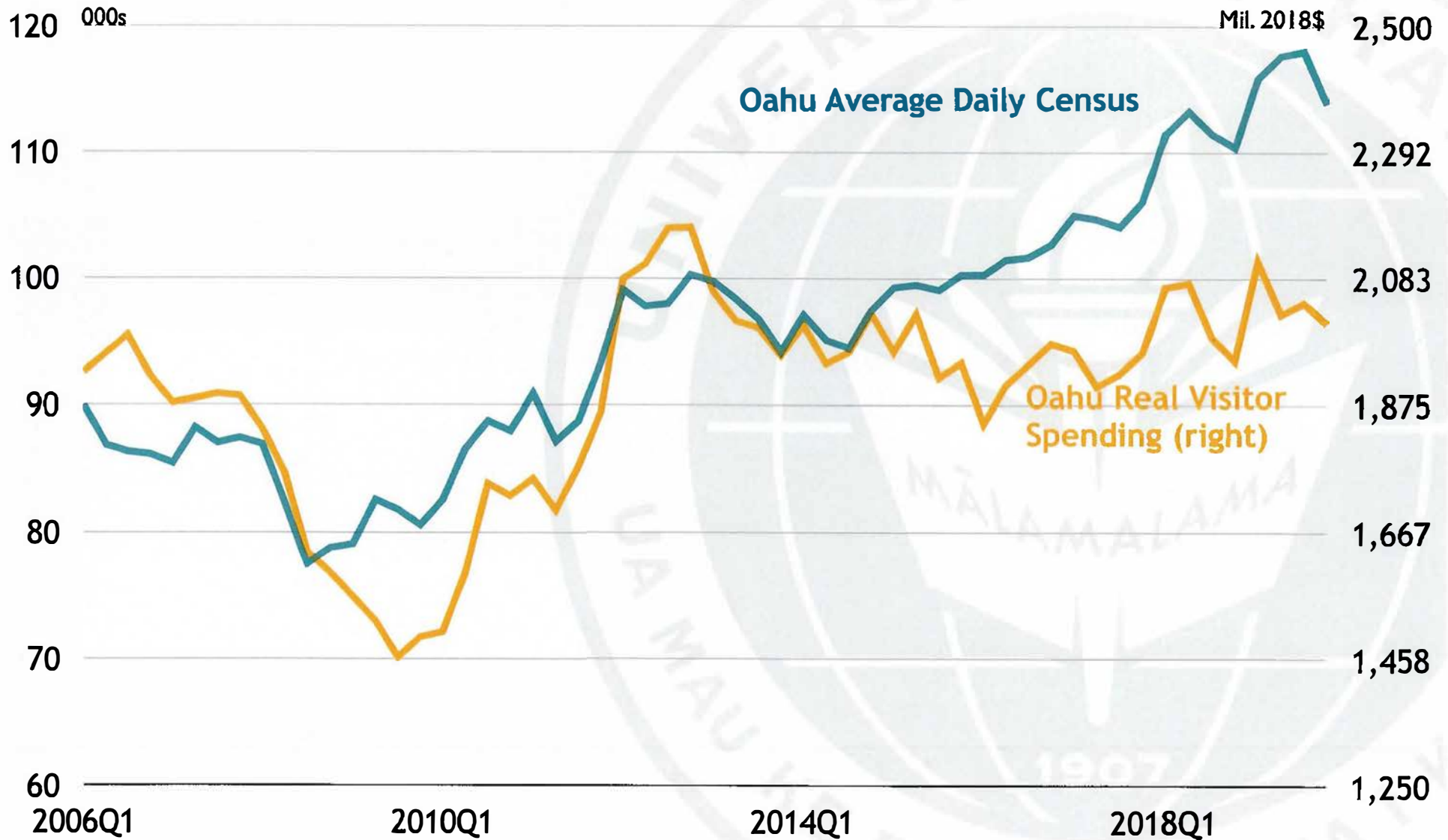
a sign of shrinking workforce



Source: Census, BLS, UHERO. <https://tinyurl.com/UHERO-Pop-LF-Empl>, note axes do not start at 0.

Tourism boom is over

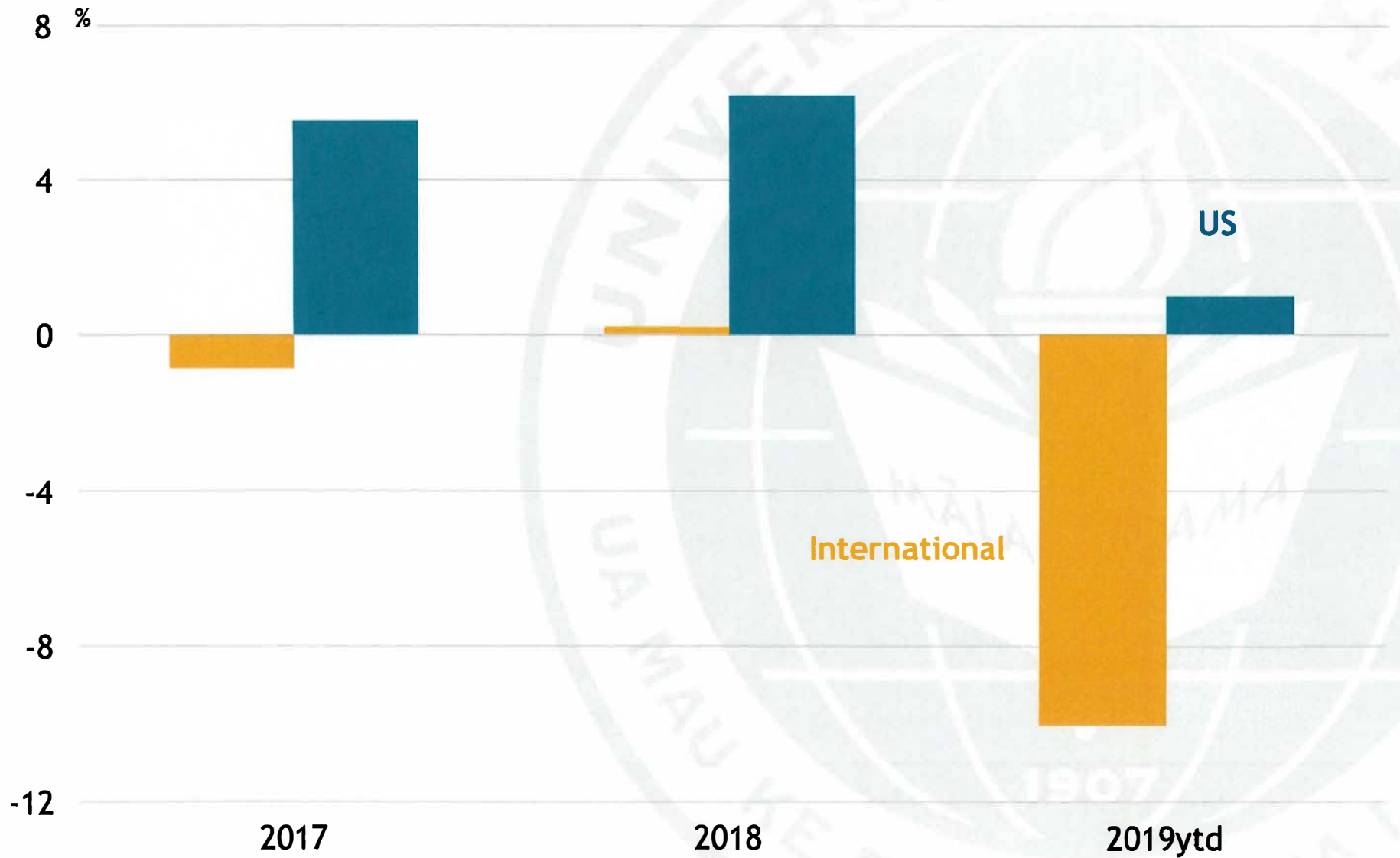
more people, anemic spending



Source: HTA, BLS, UHERO. Spending deflated using Honolulu CPI. <https://tinyurl.com/UHERO-Hon-census-spending>

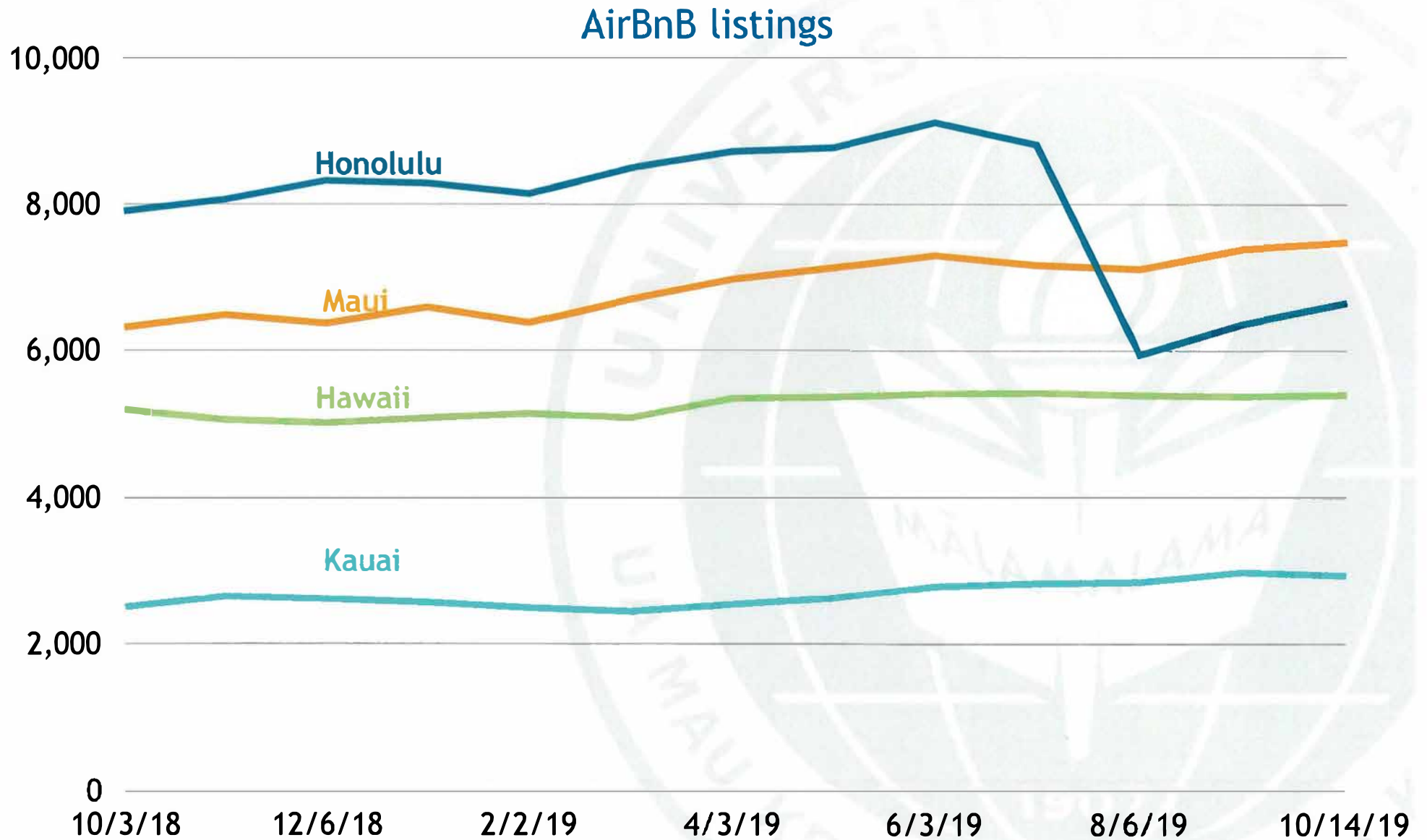
International Markets Slipping

growth of inflation-adjusted state-wide visitor spending



Source: HTA, BLS, UHERO. Nominal visitor spending deflated using Honolulu CPI.

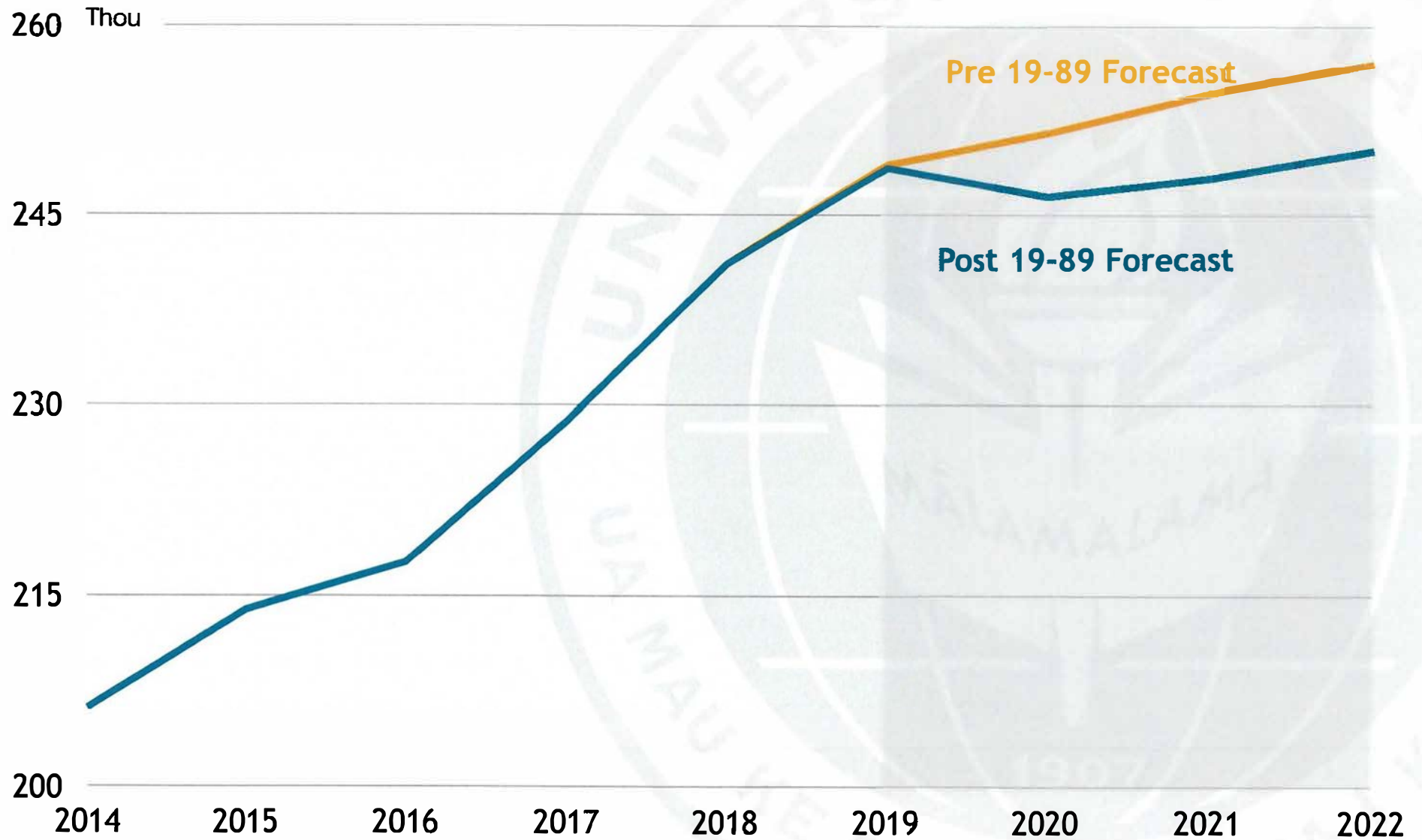
Known impact of ordinance 19-89



Source: Inside AirBnB, UHERO

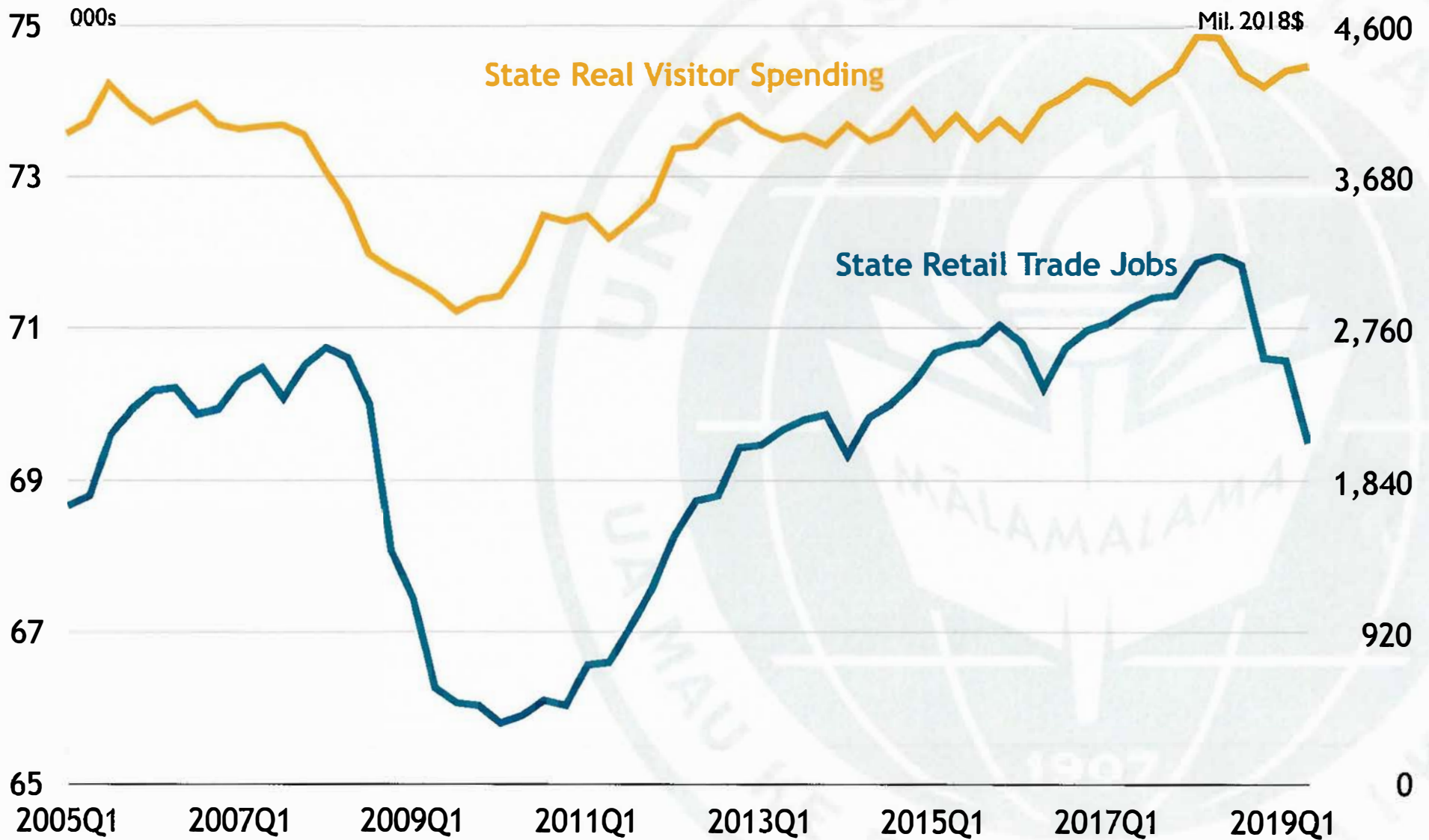
Expected impact of Ordinance 19-89

statewide average daily visitor census



Source: HTA, UHERO

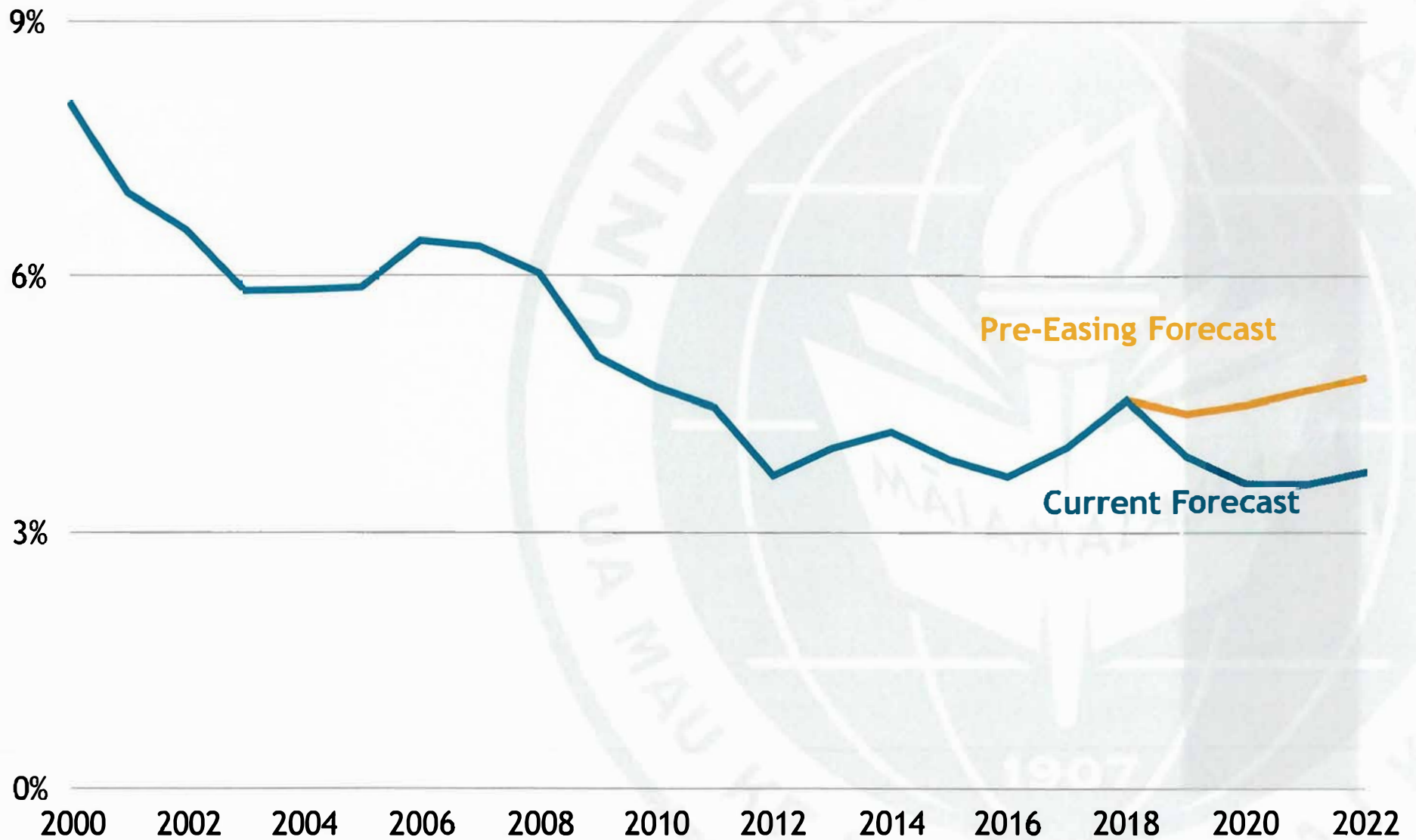
Weak retail prospects will weigh on commercial development



Source: HTA, BLS, UHERO. Nominal visitor spending deflated using Honolulu CPI.

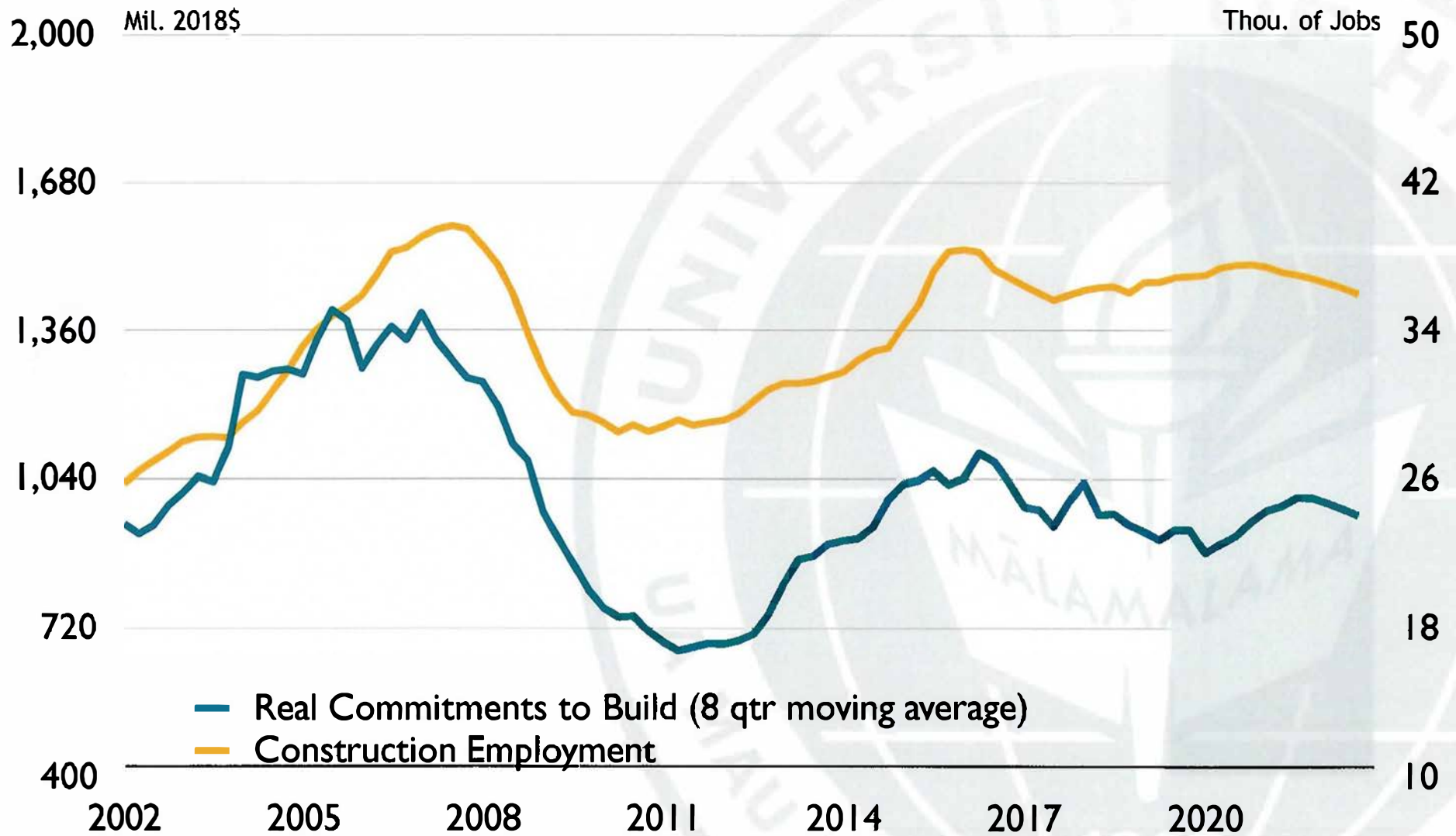
While low borrowing costs will boost affordability

US 30 year mortgage rate



Source: FRED, UHERO.

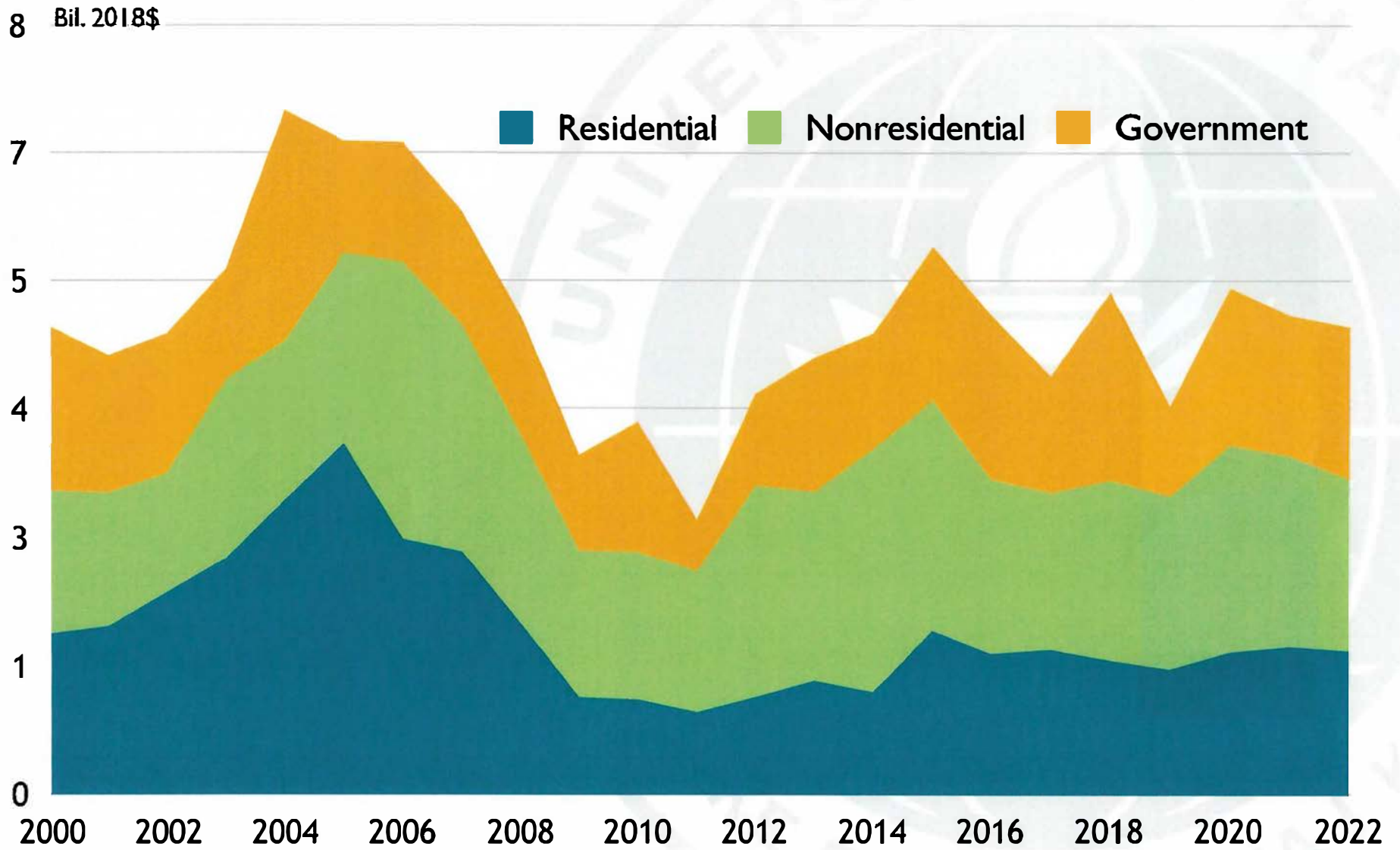
Slow and steady is a good thing



Source: DBEDT, BLS, UHERO

Investment — On Again Off Again

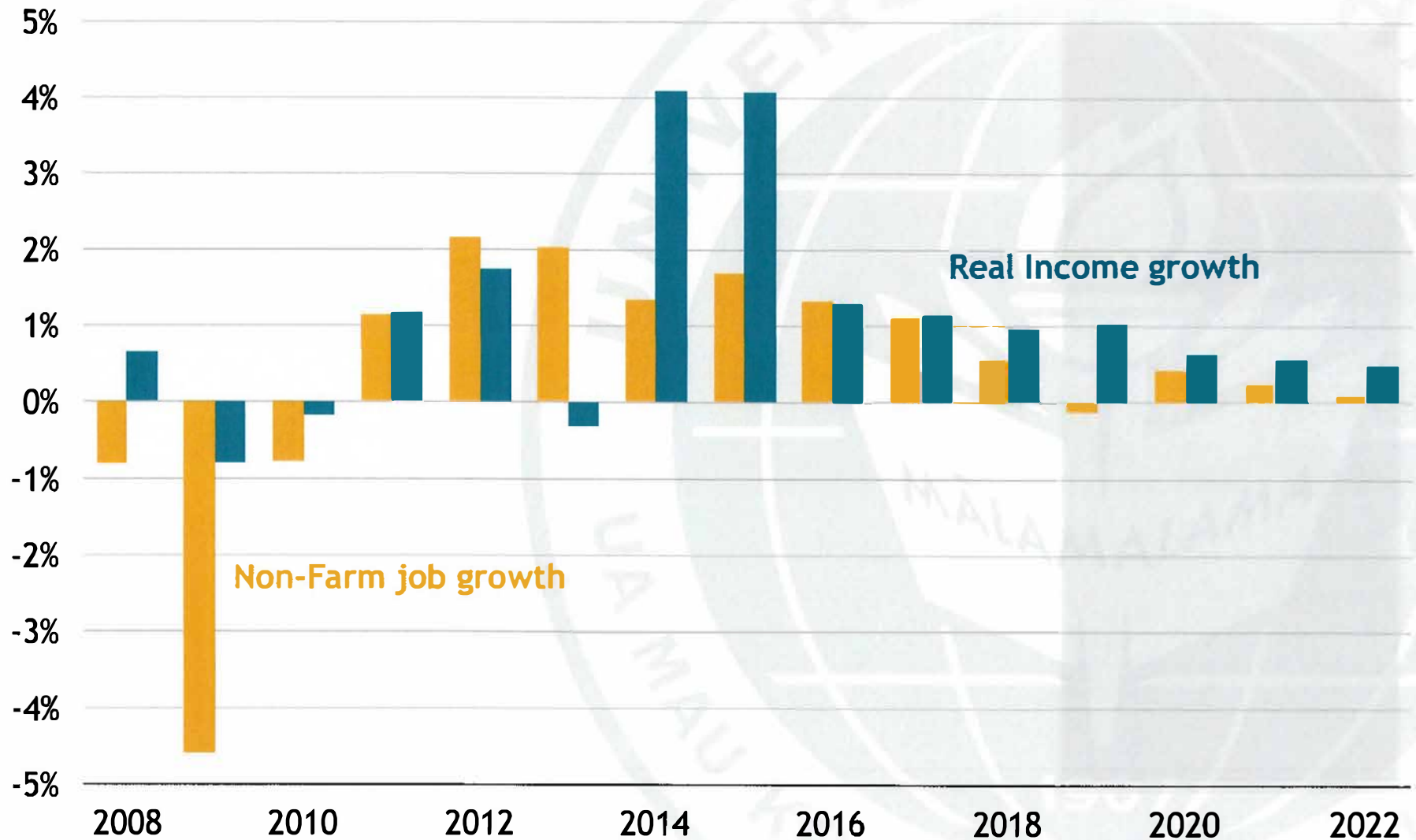
Statewide Authorizations to Build



Source: DBEDT, UHERO

Prospects look increasingly dicey

with very little growth ahead



Source: BLS, BEA, UHERO

ABOUT UHERO

DATA

RESEARCH

PEOPLE

PRODUCTS

BLOG

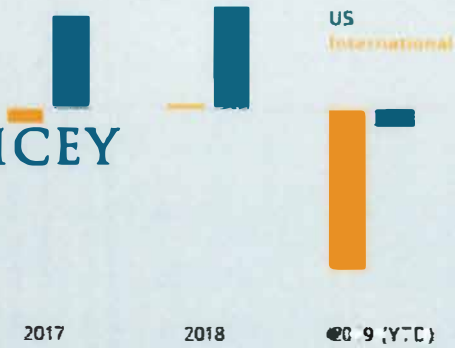
SPONSOR

CONTACT

UHERO STATE FORECAST UPDATE

ALREADY WEAK, HAWAII'S PROSPECTS LOOK INCREASINGLY DICEY

Inflation-adjusted visitor spending



[PUBLIC SUMMARY](#)

UPDATES

SEPTEMBER 20, 2019

[UHERO State Forecast Update: Already weak, Hawaii's prospects look increasingly dicey](#)

SEPTEMBER 19, 2019

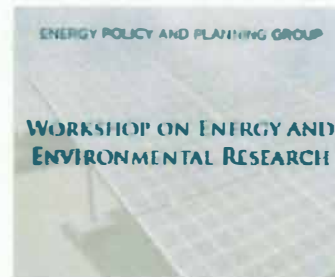
[Wellbeing and Housing Report Supplement](#)

[Drivers of well-being in Hawaii: Quantifying individual and community impacts](#)

[MORE NEWS](#)

[MORE PRODUCTS](#)

WEER



LATEST FORECAST

Already weak, Hawaii's prospects look increasingly dicey

September 20, 2019

[Read the Public Summary](#)

[MORE UHERO FORECASTS](#)

Employment

Visitor Industry

Income

Construction & Housing

External Indicators

Population

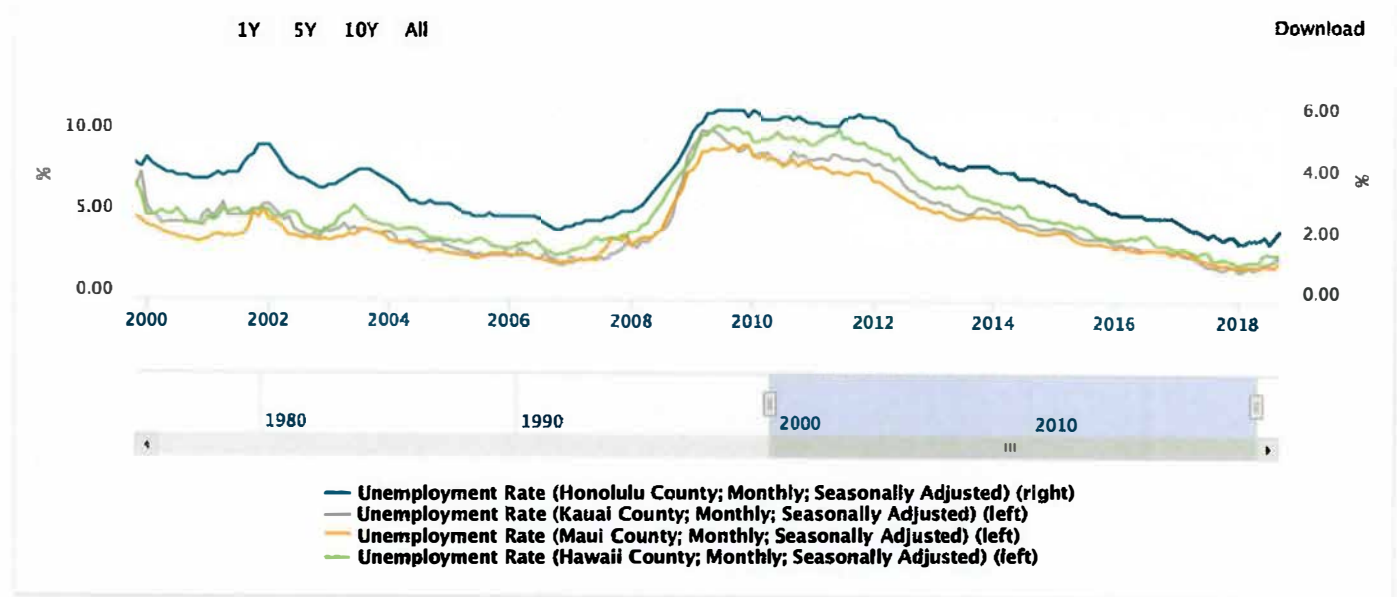
Prices

State Revenue & Expenditure

County Revenue & Expenditures

Analyzer (5)

Analyzer <https://data.uhero.hawaii>



Tooltip Display: Series Name Units Geography

Year/Year Year-to-Date [Download CSV](#)

	2018-05	2018-06	2018-07	2018-08	2018-09
<input type="checkbox"/> Unemployment Rate (HI; M; Se... ⓘ	2.0	2.1	2.1	2.1	2.2
<input checked="" type="checkbox"/> Unemployment Rate (HON; M; ... ⓘ	2.0	2.1	1.9	2.1	2.3
<input checked="" type="checkbox"/> Unemployment Rate (KAU; M; ... ⓘ	2.1	2.3	2.3	2.5	2.8
<input checked="" type="checkbox"/> Unemployment Rate (MAU; M; ... ⓘ	2.0	2.2	2.1	2.1	2.4
<input checked="" type="checkbox"/> Unemployment Rate (HAW; M; ... ⓘ	2.4	2.9	2.9	2.8	2.9

<https://tinyurl.com/UHERO-4countyUR-html>

ITEM FOR INFORMATION NO. 2

"October 28, 2019

PRESENTATION OF DISASTER PREPARATION VIDEO Chair and Members
Board of Water Supply
City and County of Honolulu
Honolulu, Hawaii 96843

Chair and Members:

Subject: Presentation of Disaster Preparation Video Gifted to the Board of Water Supply via Board Resolution 898, 2019

We are pleased to share with you the finished Disaster Preparation Video that was gifted to the Board of Water Supply via Board Resolution 898, 2019 and approved in June's Board meeting.

We are grateful to Hawaiian Fuinki, LLC, for this gift of a one-minute, high-quality television commercial on disaster preparedness. This video allows us to share with countless Oahu residents, via mass communications, important messages of being prepared for a disaster before it strikes and storing tap water, instead of relying on bottled water, to promote sustainability.

It also benefits all Oahu water users without additional expense to BWS ratepayers.

Respectfully submitted,

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

Attachments"

The foregoing was for information only.

DISCUSSION: Kathleen Elliott-Pahinui, Information Officer, Communications Office, gave the report. There were no comments or discussions.

ITEM FOR INFORMATION NO. 3

"October 28, 2019

UPDATE OF
2018-2022
STRATEGIC PLAN
AND WATER
MASTER PLAN
PERFORMANCE
METRICS

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

Chair and Members:

Subject: Update on 2018-2022 Board of Water Supply Strategic
Plan and Water Master Plan Performance Metrics

Ellen Kitamura, Deputy Manager, will present an update on the Board of Water Supply's 5-Year Strategic Plan for Fiscal Years 2018-2022 and Water Master Plan performance metrics for Fiscal Year 2019.

Respectfully submitted,

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

Attachment"

The foregoing was for information only.

DISCUSSION: Ellen Kitamura, Deputy Manager and Chief Engineer, gave the report.

Deputy Manager Kitamura presentation covered updates of the Board of Water Supply Strategic Plan and Water Master Plan Performance Metrics for Fiscal Year 2018-2019. Ms. Kitamura indicated that Strategic plan has nine (9) performance metrics, six (6) metrics either met or were on track, one (1) metric missed the goal by 10% or less and one (1) metric missed the goal by 10% or more. The Water Master Plan has thirty-three (33) performance metrics, nineteen (19) metrics met or were on track, four (4) missed the goal by 10% or less and ten (10) missed the goal by 10% or more.

Mr. Andaya asked if the 2019 statistics are year-to-date.

Ms. Kitamura replied that the metrics were for fiscal year 2019.

Mr. Lau also mentioned that fiscal year 2019 ended on June 30th of this year, currently we are now in fiscal year 2020.

BWS STRATEGIC PLAN WATER MASTER PLAN PERFORMANCE METRICS UPDATE

UWE KA LANI OLA KA HONU A





Overall Summary for FY 2019

PLAN	Total Number of Metrics	Met/on track to meet	Miss by <10% of goal	Miss by > 10% of Goal
Strategic Plan	9	6	1	2
Water Master Plan	33*	19	4	10

* 1 result pending



Strategic Plan – Performance Metrics

Indicator	Performance Metric	Goal	FY 19	FY 18	FY 17	Status
Water Levels at Index Wells	% Wells with stable water levels	100%	100%	100%	100%	●
Water Quality Regulatory Compliance	Number of water quality regulatory violations	0	0	0	0	●
Water Conservation	Gallons per capita consumption (gpcd)	<145 by 2040	155	155	155	●
Watershed Management	Acres of watershed surveyed	5,200	112,402	43,739	5,262	●
Resident Overall Satisfaction	% Strong overall satisfaction with BWS	>59%	63%	NA	59%	●
Employee Departures	Employee turn over rate	7%	8%	10%	9%	●
Pipeline Leak Detection	% Pipes check for leaks per year	25%	18%	26%	12%	●
Main Breaks	Main breaks per 100 miles of pipe	<15 (3-yr avg)	16	16	15	●
Fiscal Stability	Bond rating	AA+ - Fitch Aa2 – Moody's	Met	Met	Met	●

● Met/on track to meet

● Miss by <10% of goal

● Miss by >10% of goal



Employee Departure Rate

Indicator	Performance Metric (SP)	Goal	FY 19	FY 18	FY 17	Status	Lead
Employee Departures	Employee turn over rate	7%	8%	10%	9%	●	HR

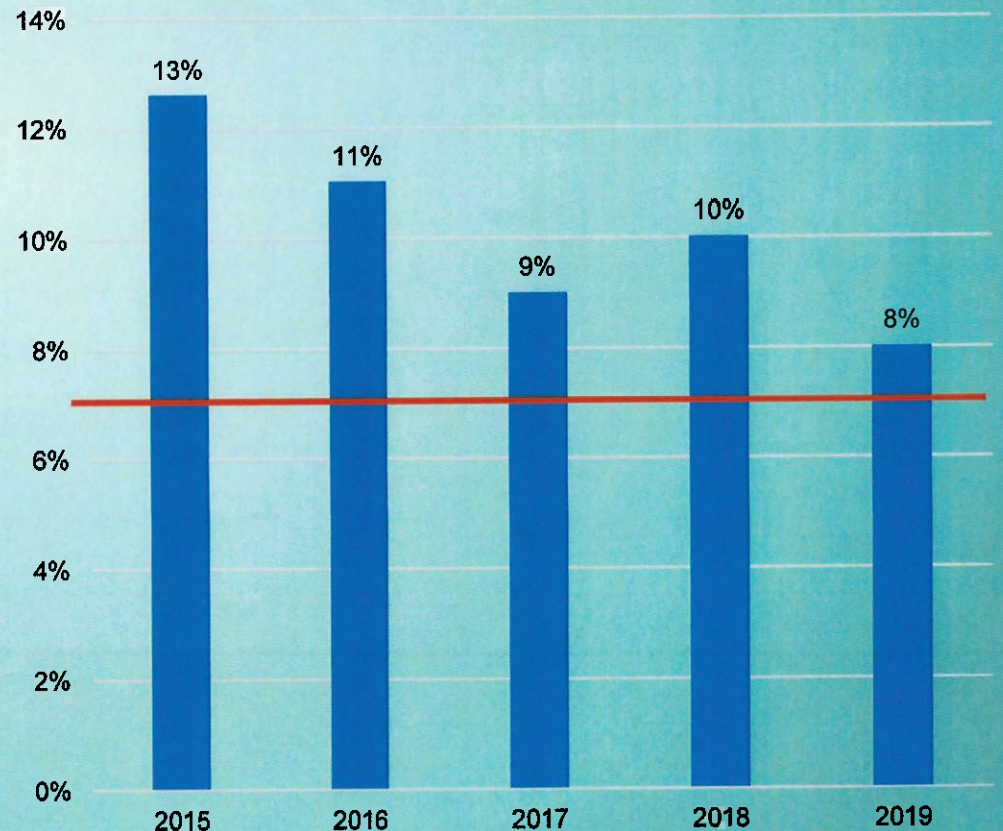
Summary

- Departure rate reduced by 2%
- Slight reduction in employee departures
- Increase in hiring

Reasons/Actions Taken

- Apprentice Programs and Internships
- Increased social media presence
- Job Fairs, College and High Schools visits
- Internship and participation in Pookela Program
- Internal promotional opportunities
- Training curriculums to encourage succession planning

Employee Departure Rates



● Met/on track to meet

● Miss by <10% of goal

● Miss by >10% of goal



Pipeline Leak Detection

Indicator	Performance Metric (SP)	Goal	FY 19	FY 18	FY 17	Status	Lead
Pipeline Leak Detection	% of pipeline surveyed for leaks	25%	18%	26%	12%	●	FO

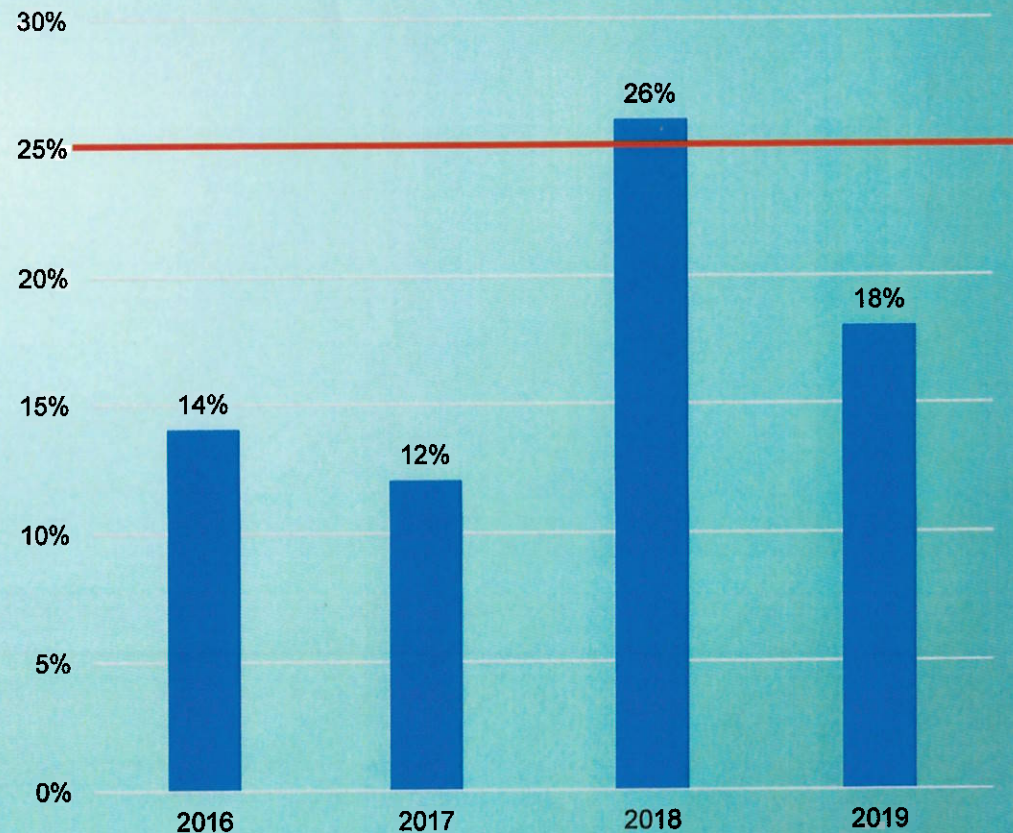
Summary

- Miles surveyed dropped by 8%

Reasons/Actions Taken

- Several special projects were assigned to Leak Detection Team and they were not able to perform routine pipeline leak detection work
- Vacancies are being addressed
- Re-organization underway to increase staff to take care of special projects as well as routine work

% Miles Surveyed



● Met/on track to meet

● Miss by <10% of goal

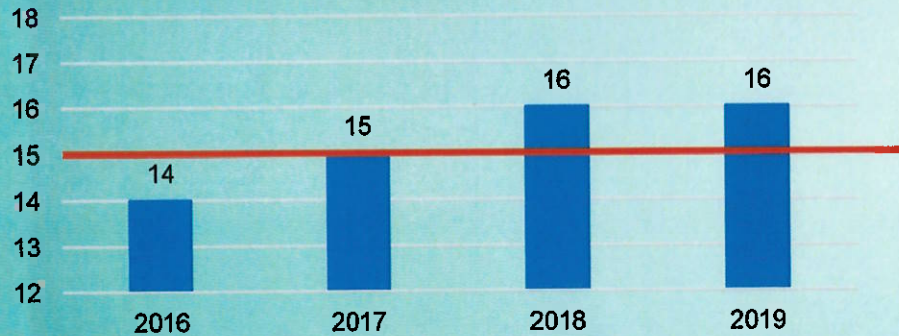
● Miss by >10% of goal



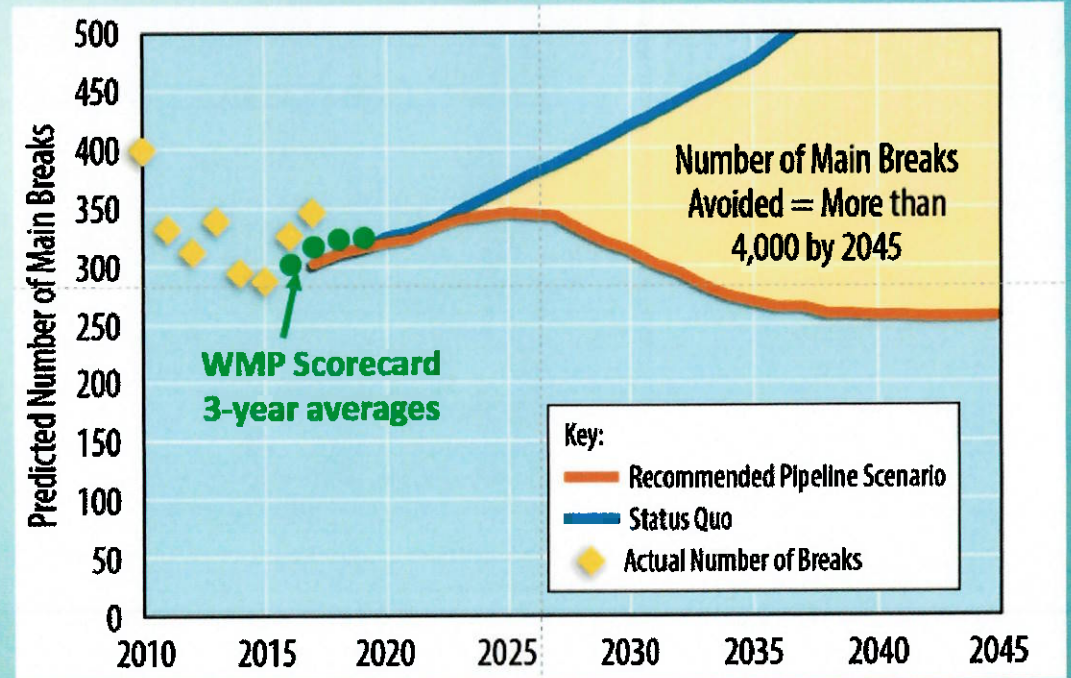
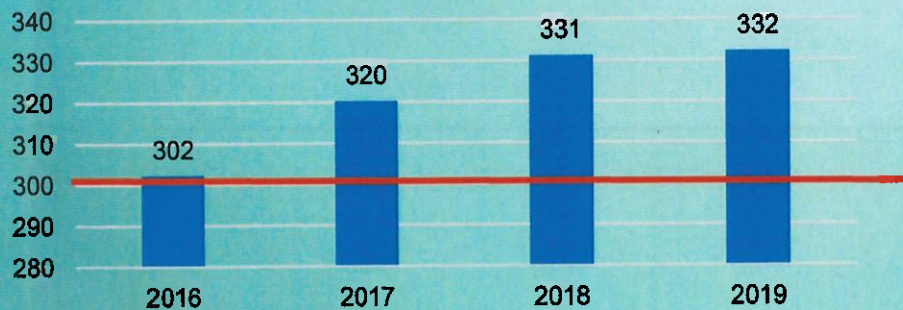
Main Breaks per 100 Miles of Pipe

Indicator	Performance Metric (SP)	Goal	FY 19	FY 18	FY 17	Status	Lead
Main Breaks	Main breaks per 100 miles of pipe	< 15 (3-yr avg)	16	16	15	●	FO

3-Yr Main Break Average
100 Miles of Pipe



3-Yr Annual Main Breaks
Main Breaks per Year



Met/on track to meet



Miss by <10% of goal



Miss by >10% of goal



Overall Summary for FY 2018

PLAN	Total Number of Metrics	Met/on track to meet	Miss by <10% of goal	Miss by > 10% of Goal
		●	●	●
Strategic Plan	9	6	1	2
Water Master Plan	33*	19	4	10

* 1 result pending



WMP Performance Metrics



- BWS Strategic Plan identified 6 primary steps to provide water from source to tap
- BWS Water Master Plan determined performance metrics in each of these steps to monitor and maintain the health of the water system infrastructure
- The performance metrics are used to target opportunities for improvement



Indicator	Metric	Goal	Baseline	FY 2017	FY 2018	FY 2019
Standby source capacity	% of source capacity used at Maximum Day Demand (MDD)	< 50%	44% ●	40% ●	41% ●	41% ●
Water level at index wells	% of wells with stable water levels as determined by BWS	100%	100% ●	100% ●	100% ●	100% ●
Permitted or assessed sustainable yield	Number of sources exceeding source permitted use or assessed sustainable yield (12-month moving avg)	0	0 ●	0 ●	0 ●	0 ●



Indicator	Metric	Goal	Baseline	FY 2017	FY 2018	FY 2019
Water quality regulatory compliance	Number of water quality regulatory violations	0	0 ●	0 ●	0 ●	0 ●
Treatment on-line	% of chlorination systems on-line	100%	100% ●	100% ●	100% ●	100% ●
Comprehensive treatment system condition assessment	Perform comprehensive condition assessment of all potable and nonpotable treatment systems	Update every 5 years	On schedule (last 2014) ●	On schedule ●	On schedule ●	Done ●



Indicator	Metric	Goal	Baseline	FY 2017	FY2018	FY2019
Sufficient pump capacity	% of pressure zones where firm capacity (not counting largest pumping unit at each station) < MDD	< 5%	2.6% ●	2.8% ●	2.8% ●	2.8% ●
Pumps available for use	% of pumps that are available to be put in-service	> 90%	82% ●	81% ●	82% ●	83% ●
Emergency power	% of population served indoor demand (85gpcd) in the event of loss of power	> 85%, distributed geographically	71% ●	71% ●	71% ●	71% ●
Pump station condition assessment	Perform regularly scheduled condition assessment	Update every 5 years	On schedule (last 2015) ●	On schedule ●	On schedule ●	Done ●



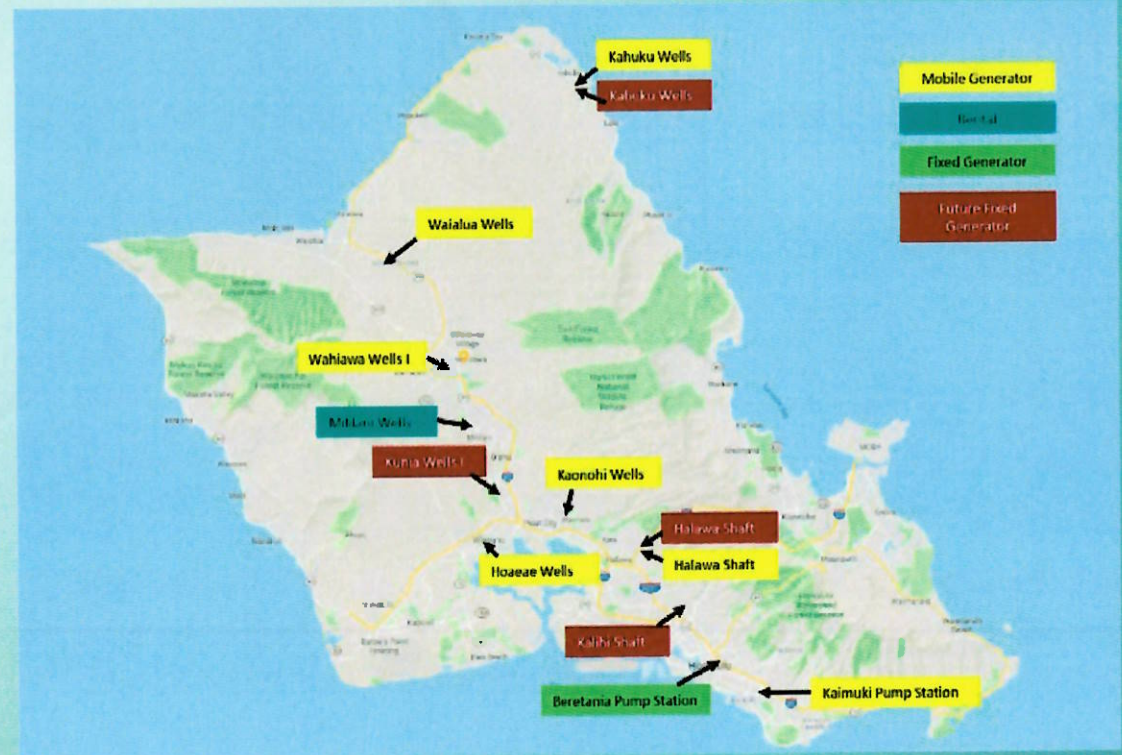
Indicator	Metric	Goal	Baseline	FY 2017	FY 2018	FY 2019
Supply from nonpotable sources	% of total supply served from nonpotable water system	> 12%	6% ●	7.15% ●	7.10% ●	7.8% ●
Annual water resource yield	% of available water resource yield used	< 90%	80% ●	70% ●	72% ●	71% ●
Watershed management	\$ budgeted for watershed management	4% of CIP \$3.35M	\$1.4M ●	\$1.4M ●	\$1.8M ●	\$1.5M ●
	Acres of watershed surveyed for invasive plant species removal per year	5,200 acres	1,691 acres ●	5,262 acres ●	43,739 acres ●	112,402 acres ●
	Watershed area protected by fencing	20% of watershed funding	14% ●	19.80% ●	0% ●	0% ●
Conservation	\$ budgeted for conservation	4% of CIP \$4.80 M	\$0.89M ●	\$1.08M ●	\$1.50M ●	\$1.47M ●
	Per capita consumption	< 145 gpcd (by 2040, starting at 155 gpcd in 2016)	155 gpcd ●	155 gpcd ●	155 gpcd ●	155 gpcd ●



Emergency Power

Indicator	Performance Metric	Goal	FY 19	FY 18	FY 17	Status	Lead
Emergency Power	% of population served indoor demand (85 gpcd) in event of loss of power	>85% distributed geographically	71%	71%	71%	●	WSO

- 8 mobile generators on hand to be pre-deployed (1 rental and 7 owned)
- 5 permanent generators to be installed:
 - FY 2021
 - Kunia Wells I
 - Halawa Shaft
 - Kalihi Yard
 - Kahuku Wells
 - FY 2020
 - Beretania Station



● met/on track to meet

● Miss by <10% of goal

● Miss by >10% of goal



Indicator	Metric	Goal	Baseline	FY 2017	FY2018	FY2019
Reservoir restrictions	Number of reservoirs with use restrictions	< 2%	1% ●	0.58% ●	0.58% ●	0.58% ●
Storage deficient pressure zones	Pressure zones with less than Standard storage and without pumping or transmission equivalency to meet operating, emergency, and fire needs	0%	6% ●	5% ●	5% ●	5% ●
Reservoir condition assessment	Perform regularly scheduled condition assessment	Update every 10 years	On schedule (last 2015) ●	On schedule ●	On schedule ●	On schedule ●

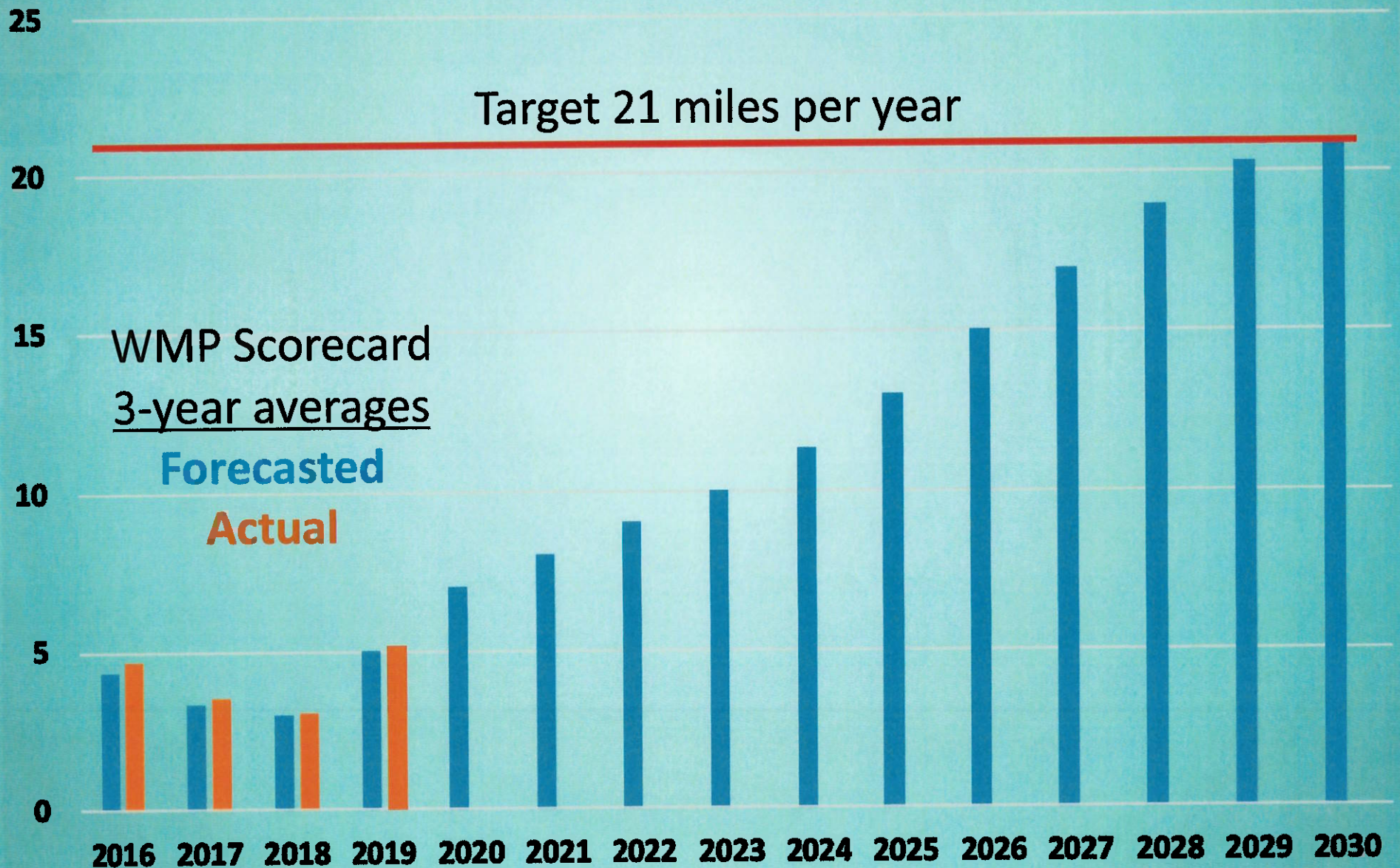


Indicator	Metric	Goal	Baseline	FY 2017	FY2018	FY2019
Pipeline breaks	Pipeline breaks and leaks repaired per 100 miles per year (3-year average)	< 15	14 ●	15 ●	16 ●	16 ●
	Pipeline breaks and leaks repaired per year (3-year average)	< 300	302 ●	320 ●	331 ●	332 ●
Transmission pipeline breaks	Number of pipeline breaks for ≥ 16 inches in diameter (3-year average)	< 14	10 ●	12 ●	13 ●	12 ●
Non-revenue water (results pending)	% of water produced but not sold	< 8.1%	7.8% (5-year average) ●	7.4% ●	8.54 ●	TBD TBD
High risk pipelines	Portion of pipelines with risk score	< 5%	12% ●	14% ●	14% ●	14% ●



Indicator	Metric	Goal	Baseline	FY 2017	FY2018	FY2019
Pipeline R&R	Miles of system pipeline renewed (3-year average)	21 miles	4.7 miles ●	3.5 miles ●	3.0 miles ●	5.1 miles ●
Fire hydrant supply	Hydrants that meet fire flow standards	> 99%	98% ●	98% ●	98% ●	98% ●
Pipeline leak detection	% of pipes checked for leaks per year	25%	14% ●	12% ●	26% ●	18% ●
PWA pipeline condition assessment	Miles of pipelines recommended for PWA by CapPlan framework (currently 6.3 miles), miles assessed per year	6.3 miles (10%)	12 miles (19%) ●	12 miles ●	0 miles ●	0 miles ●

Miles of Pipeline Replacement 3 Yr Avg



TOOLS



Indicator	Metric	Goal	Baseline	FY 2017	FY2018	FY 2019
Water Master Plan update		Update every 10 years	On schedule (last 2016) ●	On schedule ●	On schedule ●	On schedule ●
Hydraulic models and CapPlan updated		Update every 5 years	On schedule (last 2016) ●	On schedule ●	On schedule ●	On schedule ●
GIS update		Annually	On schedule (last 2016) ●	On schedule ●	On schedule ●	On schedule ●
SCADA reliability	% of sources, pump stations, water treatment plants, and reservoirs utilizing microwave backbone for control data	100% (by 2023)	13% (on track) ●	15% ●	23% ●	25% ●

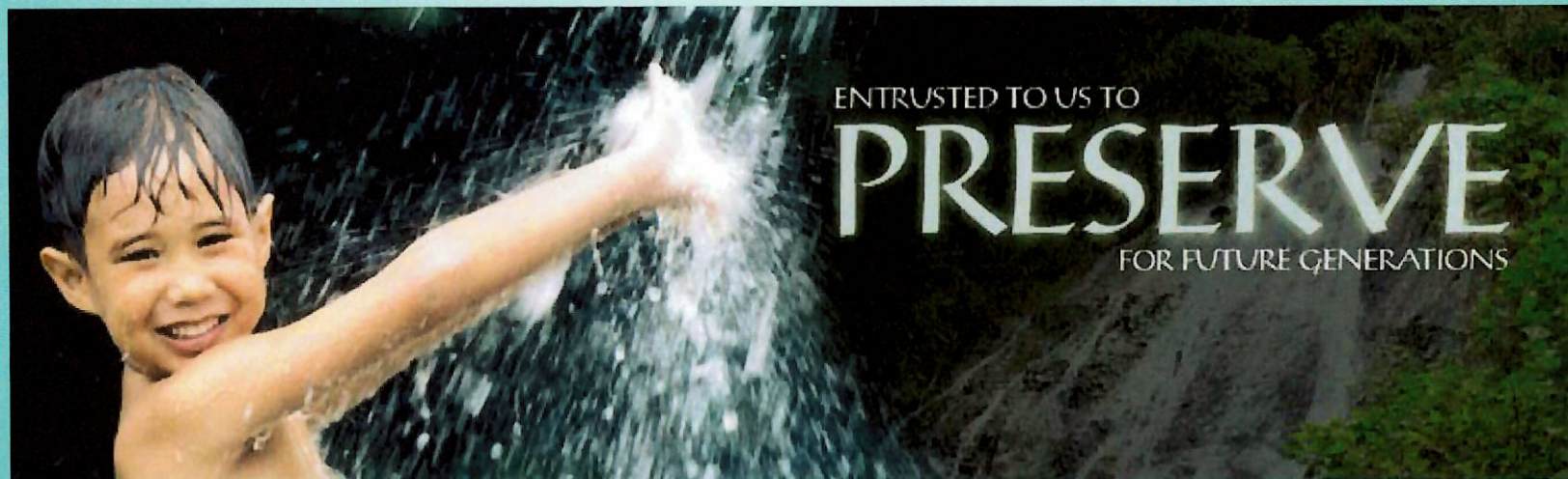
WATER FOR LIFE

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



Board of Water Supply
City and County of Honolulu

Questions?



ITEM FOR INFORMATION NO. 4

“October 28, 2019

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
September 30, 2019

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

Respectfully submitted,

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

Attachment”

The foregoing was for information only.

DISCUSSION: Joseph Cooper, Waterworks Controller, Finance Division, gave the report. There were no comments or discussion.

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 2019 – September 2019



Budget to Actual July 2019 – September 2019

- Actual Revenue \$66 million vs. Budgeted Revenue \$64 million
- Operating costs are \$40 million vs. Budgeted costs of \$49 million
- Actual Net Revenue \$26 million vs. Budgeted Net Revenue \$15 million



Cost Drivers

Year to Date September 2019

	Actual (millions)	Budget (millions)
• Personnel	\$ 10	\$12
• Material/Serv/Supplies	\$ 12	\$19
• Equipment	\$ 0.1	\$ 0.2
• Debt Service	\$ 4	\$ 4
• Utilities	\$ 6	\$ 6

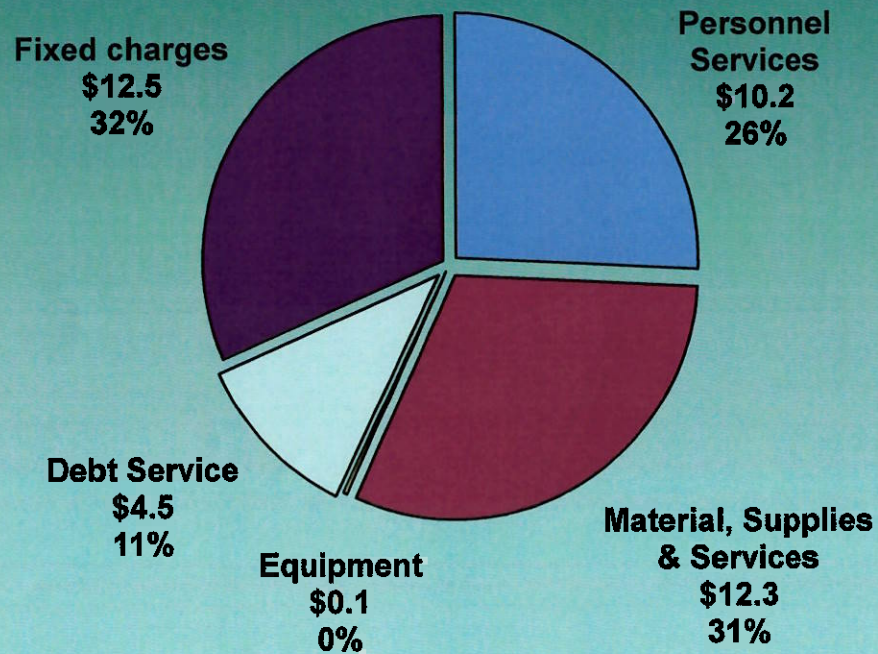
WATER FOR LIFE

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



Board of Water Supply
City and County of Honolulu

Total Operating Expenditures - \$39.6
As of September 30, 2019
(millions of dollars)



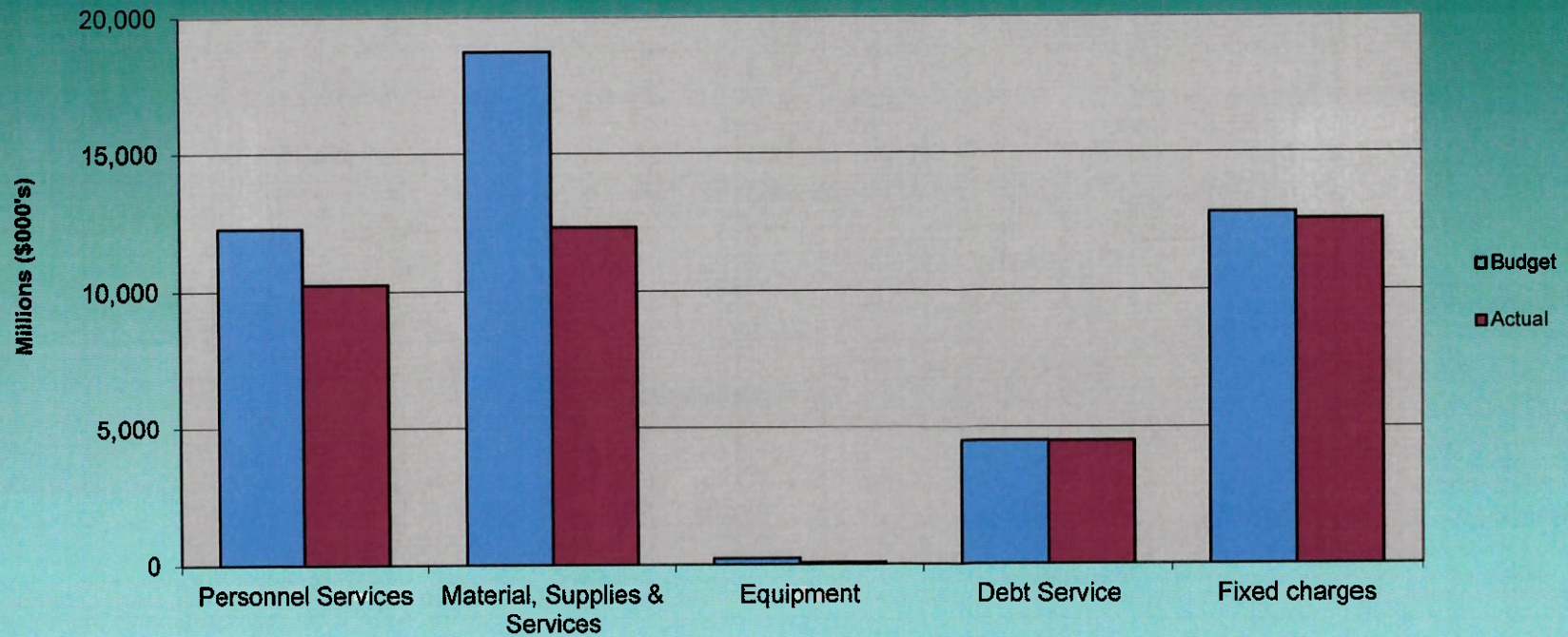
WATER FOR LIFE

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



Board of Water Supply
City and County of Honolulu

Operating Expenditures by Category (Budget vs. Actual) As of September 30, 2019



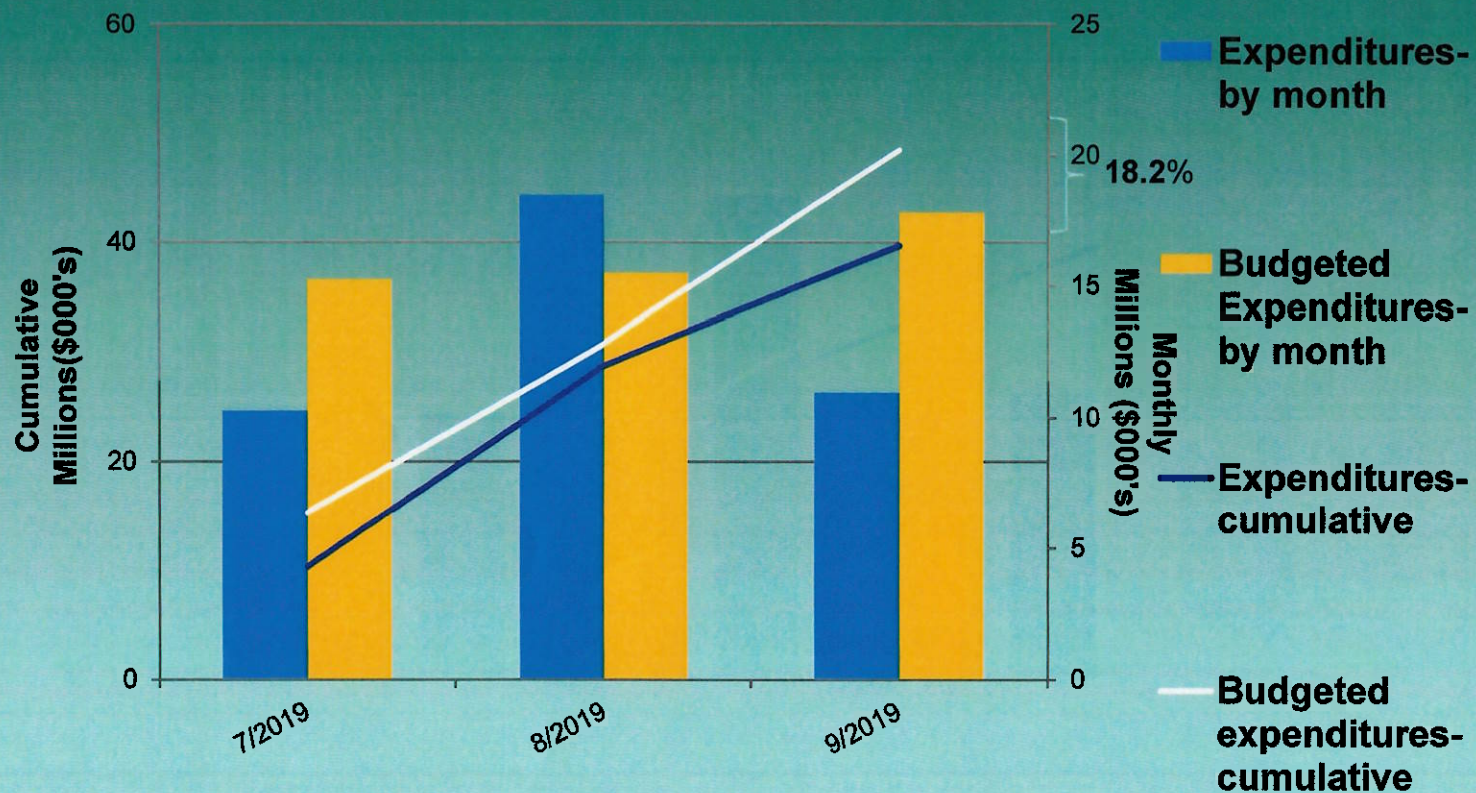
WATER FOR LIFE

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



Board of Water Supply
City and County of Honolulu

BUDGETED OPERATING EXPENDITURES FY 2020



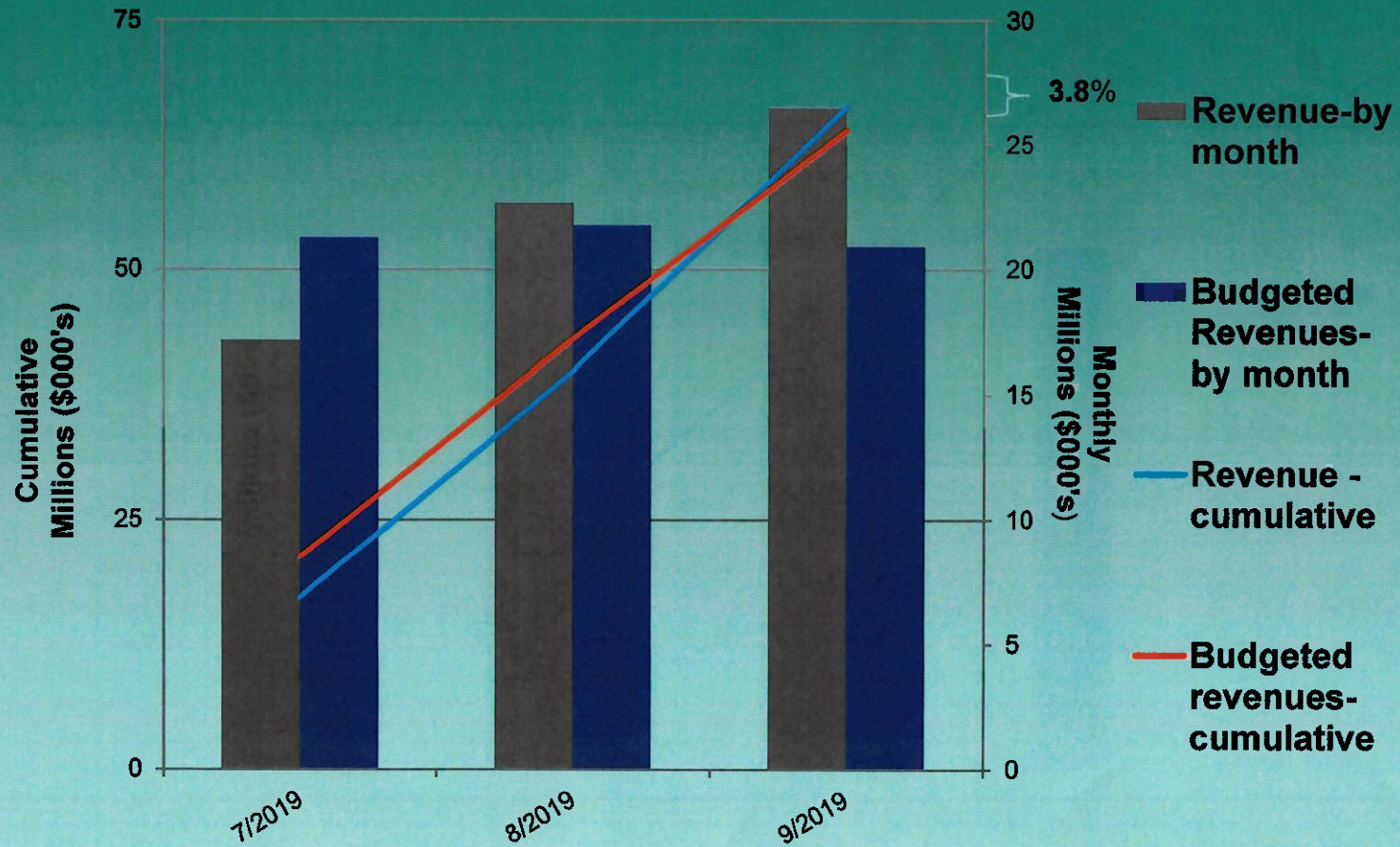
WATER FOR LIFE

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



Board of Water Supply
City and County of Honolulu

BUDGETED OPERATING REVENUES FY 2020



WATER FOR LIFE

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



Board of Water Supply
City and County of Honolulu

Questions
or
Comments

Budget vs. Actual
Revenue and Expense Totals
As of September 30, 2019

	YTD Actuals	YTD Budget	Favorable/ (Unfavorable) Variance
Revenues	66,264,000	63,858,000	2,406,000
Operating Expenses	(39,608,000)	(48,439,000)	8,831,000
Net Revenues (expenditures)	<u>26,656,000</u>	<u>15,419,000</u>	<u>11,237,000</u>

Board Of Water Supply
Statement of Revenues, Expenses And Change In Net Assets
As of September 30, 2019

Current Month Actual	% Revenue	Last Year Actual	% Revenue	Description	Year to Date Actual	% Revenue	Last Year to Date Actual	% Revenue	% Change
				REVENUE					
21,823,945.86	100.00	19,631,453.08	100.00	OPERATING REVENUE	63,026,715.13	100.00	64,095,447.07	100.00	1.67
21,823,945.86	100.00	19,631,453.08	100.00	REVENUE	63,026,715.13	100.00	64,095,447.07	100.00	1.67
				OPERATING EXPENSES					
3,162,542.56-	14.49	2,992,393.56-	15.24	LABOR COSTS	9,252,281.22-	14.68	8,943,332.11-	13.95	3.45
1,714,933.44-	7.86	2,103,911.55-	10.72	SERVICES	3,192,275.73-	5.06	3,880,488.91-	6.05	17.74
1,168,262.62-	5.35	342,628.65-	1.75	SUPPLIES	1,652,301.89-	2.62	556,496.61-	.87	196.91
9,029.12-	.04	5,662.72-	.03	EDUCATION & TRAINING	16,530.75-	.03	30,243.17-	.05	45.34
2,363,517.57-	10.83	2,548,841.57-	12.98	UTILITIES	5,384,584.15-	8.54	5,377,608.97-	8.39	.13
134,925.19-	.62	133,961.18-	.68	REPAIR AND MAINTENANCE	453,063.08-	.72	257,784.71-	.40	75.75
1,675,650.29-	7.68	1,561,438.09-	7.95	MISC	5,283,515.35-	8.38	4,711,296.41-	7.35	12.15
1,967,822.97-	9.02	1,973,953.14-	10.06	RETIREMENT SYSTEM CONTRIBUTIO	5,557,648.97-	8.82	4,826,708.42-	7.53	15.14
97,729.53	.45	1,556,676.13-	7.93	MISC EMPLOYEES' BENEFITS	172,857.32-	.27	1,789,350.55-	2.79	90.34
12,098,954.23-	55.44	13,219,466.59-	67.34	OPERATING EXPENSES	30,965,058.46-	49.13	30,373,309.86-	47.39	1.95
7,038,722.17	32.25	2,140,699.63	10.90	NON OPERATING REVENUE AND EXPE	3,652,032.66	5.79	641,048.45-	1.00	669.70
1,249,294.14	5.72	1,164,937.55	5.93	CONTRIBUTION IN AID	2,864,027.94	4.54	2,697,827.09	4.21	6.16
4,133,881.21-	18.94	4,071,694.15-	20.74	OTHER EXPENSES	12,053,918.88-	19.13	11,863,926.63-	18.51	1.60
13,879,126.73	63.60	5,645,929.52	28.76	Change In Net Assets	26,523,798.39	42.08	23,914,989.22	37.31	10.91

Board Of Water Supply
Statement of Revenues, Expenses And Change In Net Assets
Quarter Ending September 30, 2019

Current Quarter Actual	% Revenue	Last Year Quarter Actual	% Revenue	Description	Year to Date Actual	% Revenue	Last Year to Date Actual	% Revenue	% Change
REVENUE									
63,026,715	100.00	64,095,447	100.00	OPERATING REVENUE	63,026,715	100.00	64,095,447	100.00	-1.67
63,026,715	100.00	64,095,447	100.00	REVENUE	63,026,715	100.00	64,095,447	100.00	-1.67
OPERATING EXPENSES									
-9,252,281	14.68	-8,943,332	13.95	LABOR COSTS	-9,252,281	14.68	-8,943,332	13.95	3.45
-3,192,276	5.06	-3,880,489	6.05	SERVICES	-3,192,276	5.06	-3,880,489	6.05	-17.74
-1,652,302	2.62	-556,497	0.87	SUPPLIES	-1,652,302	2.62	-556,497	0.87	196.91
-16,531	0.03	-30,243	0.05	EDUCATION & TRAINING	-16,531	0.03	-30,243	0.05	-45.34
-5,384,584	8.54	-5,377,609	8.39	UTILITIES	-5,384,584	8.54	-5,377,609	8.39	0.13
-453,063	0.72	-257,785	0.40	REPAIR AND MAINTENANCE	-453,063	0.72	-257,785	0.40	75.75
-5,283,515	8.38	-4,711,296	7.35	MISC	-5,283,515	8.38	-4,711,296	7.35	12.15
-5,557,649	8.82	-4,826,708	7.53	RETIREMENT SYSTEM CONTRIBUTIO	-5,557,649	8.82	-4,826,708	7.53	15.14
-172,857	0.27	-1,789,351	2.79	MISC EMPLOYEES' BENEFITS	-172,857	0.27	-1,789,351	2.79	-90.34
-30,965,058	49.13	-30,373,310	47.39	OPERATING EXPENSES	-30,965,058	49.13	-30,373,310	47.39	1.95
3,652,033	-5.79	-641,048	1.00	NON OPERATING REVENUE AND EXPE	3,652,033	-5.79	-641,048	1.00	-669.70
2,864,028	-4.54	2,697,827	-4.21	CONTRIBUTION IN AID	2,864,028	4.54	2,697,827	4.21	6.16
-12,053,919	19.13	-11,863,927	18.51	OTHER EXPENSES	-12,053,919	19.13	-11,863,927	18.51	1.60
26,523,798	42.08	23,914,989	-37.31	Change In Net Assets	26,523,798	42.08	23,914,989	37.31	10.91

Board Of Water Supply
Balance Sheet
As of September 30, 2019

Description	Amounts			Change	
	Current	Last Month End	Last Year End	This Month	This Year
ASSETS					
CURRENT ASSETS	64,145,777.49	53,540,881.29	59,710,733.12	10,604,896.20	4,435,044.37
RESTRICTED ASSETS	5,963,223.39	5,803,966.12	24,774,795.44	159,257.27	-18,811,572.05
INVESTMENTS	437,668,271.83	436,282,118.77	422,793,913.87	1,386,153.06	14,874,357.96
OTHER ASSETS	14,414,398.07	14,618,548.46	15,363,958.46	-204,150.39	-949,560.39
PROPERTY / PLANT	1,195,420,706.11	1,194,619,711.50	1,198,207,249.98	800,994.61	-2,786,543.87
DEFERRED OUTFLOWS OF RESOURCES	33,731,869.00	33,731,869.00	33,731,869.00	0.00	0.00
TOTAL ASSETS	1,751,344,245.89	1,738,597,095.14	1,754,582,519.87	12,747,150.75	-3,238,273.98
LIABILITIES					
CURRENT LIABILITIES	15,300,034.34	15,518,709.82	42,428,189.76	-218,675.48	-27,128,155.42
OTHER LIABILITIES	33,028,552.52	33,182,686.35	33,458,670.14	-154,133.83	-430,117.62
BONDS PAYABLE, NONCURRENT	276,568,560.07	277,327,726.74	278,772,359.40	-759,166.67	-2,203,799.33
NET PENSION LIABILITY	120,348,341.00	120,348,341.00	120,348,341.00	0.00	0.00
NET OPEB LIABILITY	76,085,333.00	76,085,333.00	76,085,333.00	0.00	0.00
DEFERRED INFLOWS OF RESOURCES	8,859,472.00	8,859,472.00	8,859,472.00	0.00	0.00
LIABILITIES	530,190,292.93	531,322,268.91	559,952,365.30	-1,131,975.98	-29,762,072.37
NET ASSETS					
RETAINED EARNINGS	601,721,908.32	601,721,908.32	601,721,908.32	0.00	0.00
FUND BALANCE	594,633,831.66	594,633,831.66	594,633,831.66	0.00	0.00
RESERVE FOR ENCUMBRANCES	285,910,448.81	299,060,314.34		-13,149,865.53	285,910,448.81
CURRENT YEAR CHANGES TO FU	24,798,212.98	10,919,086.25	-1,725,585.41	13,879,126.73	26,523,798.39
NET ASSETS	1,507,064,401.77	1,506,335,140.57	1,194,630,154.57	729,261.20	312,434,247.20
TOTAL LIABILITIES AND NET ASSETS	2,037,254,694.70	2,037,657,409.48	1,754,582,519.87	-402,714.78	282,672,174.83

Board Of Water Supply
Budget vs Actual Appropriation Budget - Total BWS Summary

10/9/2019

9:41:20

Page -

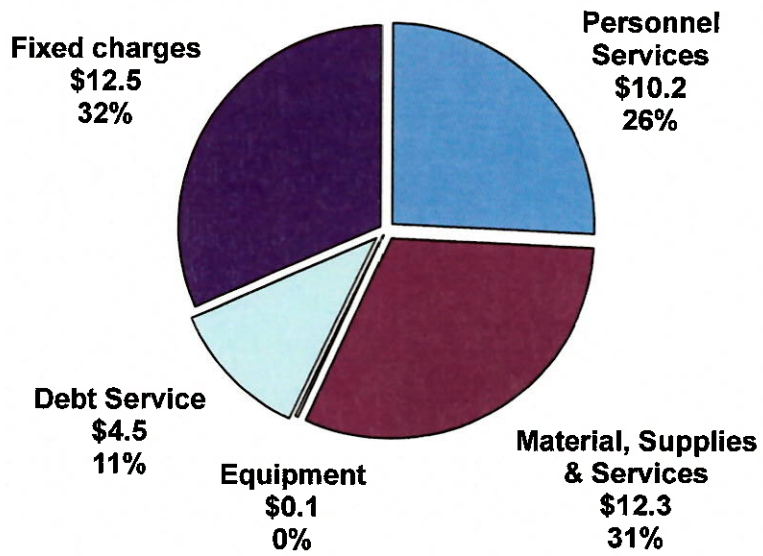
1

OPER UNIT ALL
BUSINESS UNIT ALL

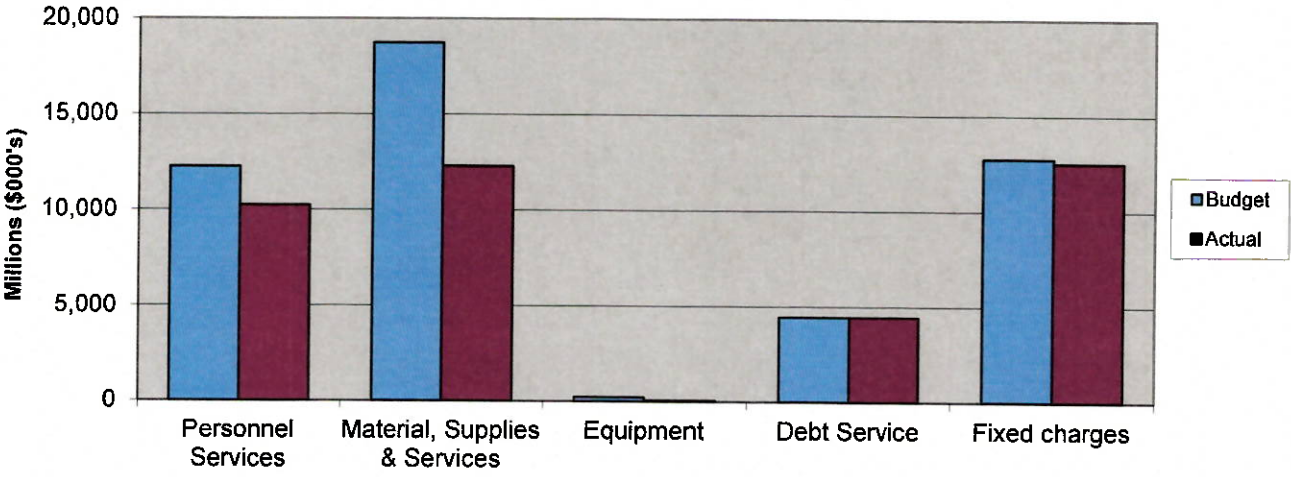
(\$000's)
CIFIS 20820-3021
AS OF 9/30/2019

YTD-TO-DATE				FOR THE FISCAL YEAR					
YTD Actuals	YTD Budget	Avail/ (Over)	%	Object Description	Revenues/ Expend	Open Encumb	Annual Budget	Avail/ (Over)	%
66,264	63,858	(2,406)	3.77-	REVENUE	66,264		243,755	177,491	72.82
				OPERATING EXPENSES:					
10,249	12,245	1,996	16.30	Personnel Services	10,249		49,197	38,948	79.17
				MATERIALS AND SUPPLIES					
3,861	9,907	6,046	61.03	Services	2,939	922	41,431	37,570	90.68
3,523	3,619	96	2.65	Supplies	2,350	1,173	14,953	11,430	76.44
100	170	70	41.18	Education & Training	76	24	883	783	88.67
				Utilities					
596	1,267	671	52.96	Repairs & Maint	409	187	5,416	4,820	89.00
4,210	3,769	(441)	11.70-	Misc	3,431	779	11,705	7,495	64.03
61	212	151	71.23	Equipment		61	7,261	7,200	99.16
4,464	4,465	1	.02	Debt Service	4,464		17,860	13,396	75.01
				FIXED CHARGES:					
6,446	6,078	(368)	6.05-	Utilities	6,446		24,310	17,864	73.48
825	825			Case Fees	825		3,300	2,475	75.00
2,910	2,975	65	2.18	Retirement System Contribution	2,910		11,900	8,990	75.55
2,363	2,907	544	18.71	Misc Employees' Benefits	2,363		11,654	9,291	79.72
39,608	48,439	8,831	18.23	TOTAL OPERATING EXPENDITURES	36,462	3,146	199,870	160,262	80.18
26,656	15,419	(11,237)		NET REVENUES (EXPENDITURES)	29,802	(3,146)	43,885	17,229	

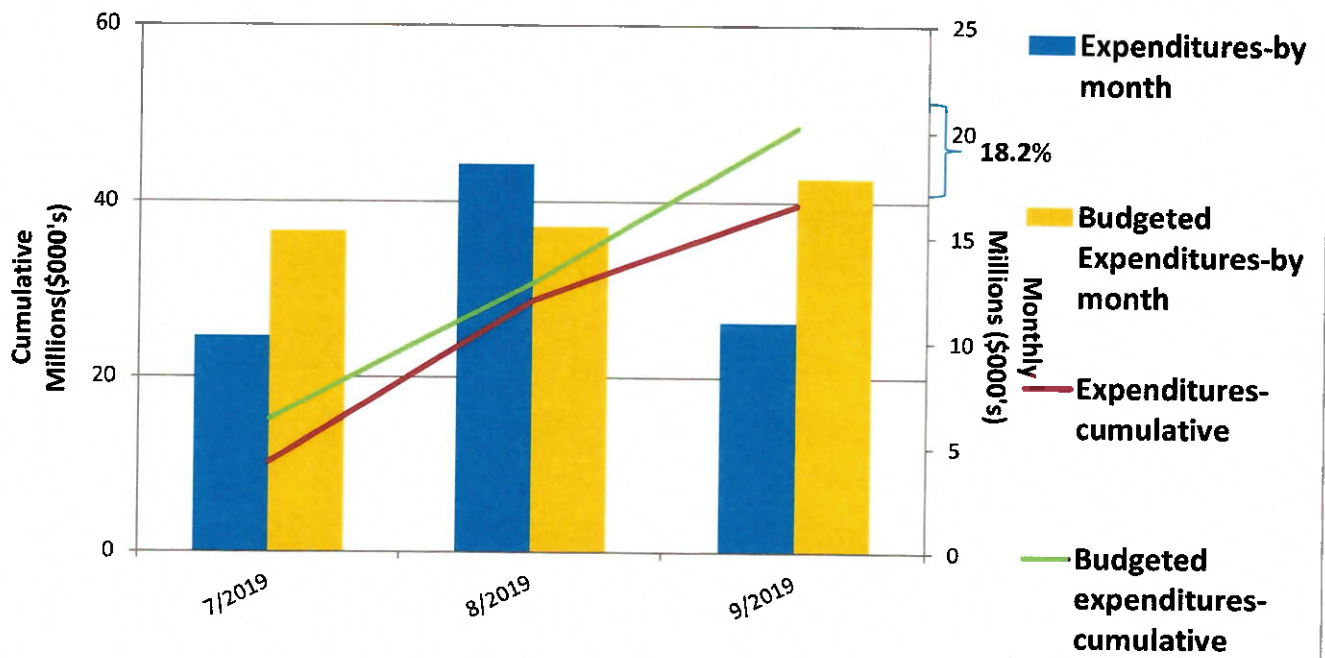
Total Operating Expenditures - \$39.6
As of September 30, 2019
(millions of dollars)



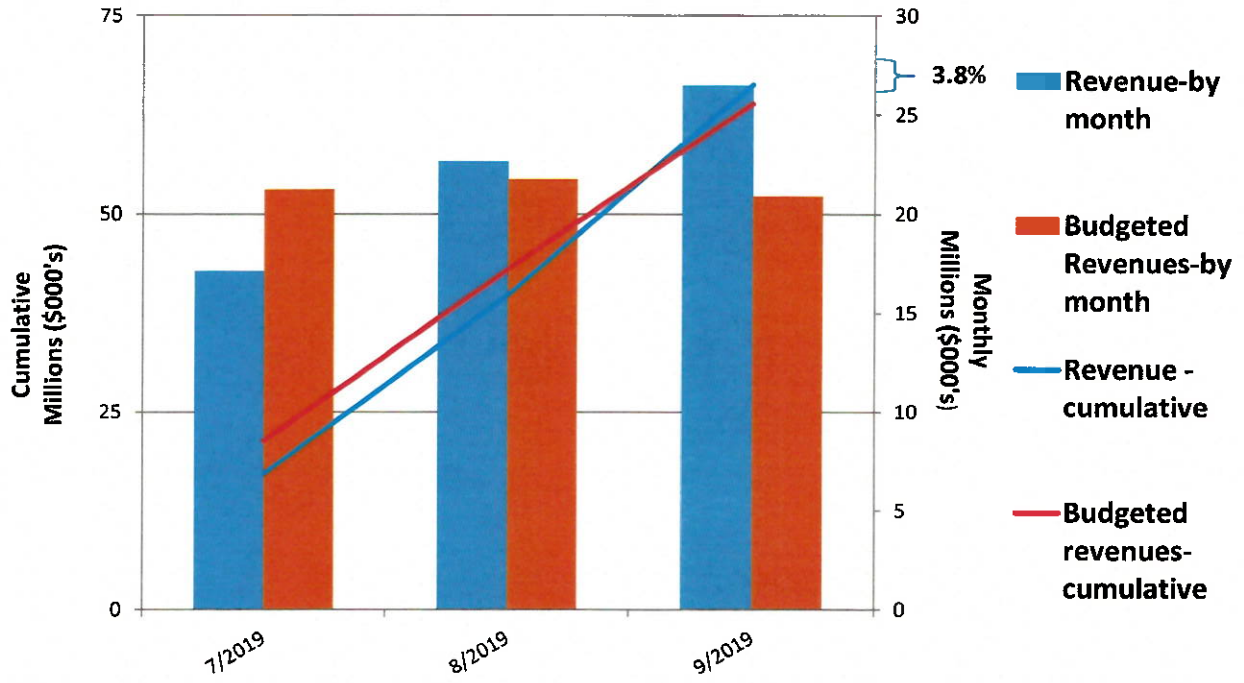
**Operating Expenditures by Category (Budget vs. Actual)
As of September 30, 2019**



BUDGETED OPERATING EXPENDITURES FY 2020



BUDGETED OPERATING REVENUES FY 2020



ITEM FOR INFORMATION NO. 5

“October 28, 2019

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 were no aquifer index wells within low groundwater status for the production month of September 2019. The monthly production average for September 2019 was 148.30 million gallons per day.

The Board of Water Supply rainfall index for the month of September 2019 was 147 percent of normal; with a 5-month moving average of 101 percent. As of October 8, 2019, the Hawaii Drought Monitor shows abnormally dry to moderate drought conditions along the southern coast of Oahu.

Respectfully submitted,

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

Attachment”

The foregoing was for information only.

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

**PRODUCTION, HEAD AND RAINFALL REPORT
MONTH OF SEPTEMBER 2019**

POTABLE

STATION	MGD
HONOLULU (1)	
KULIOUOU	0.08
WAILUPE	0.13
AINA KOA	0.21
AINA KOA II	0.85
MANOA II	0.00
PALOLO	1.14
KAIMUKI HIGH	2.91
KAIMUKI LOW	2.28
WILDER	4.84
BERETANIA HIGH	4.30
BERETANIA LOW	9.98
KALIHI HIGH	2.08
KALIHI LOW	2.29
KAPALAMA	0.75
KALIHI SHAFT	8.65
MOANALUA	1.43
HALAWA SHAFT	6.98
KAAMILO	0.88
KALAUAO	5.96
PUNANANI	8.28
KAAHUMANU	0.25
HECO WAIU	2.70
MANANA	0.22
WELLS SUBTOTAL:	67.22
MANOA TUNNEL	0.17
PALOLO TUNNEL	0.23
GRAVITY SUBTOTAL:	0.40
HONO. SUBTOTAL:	67.62

STATION	MGD
WINDWARD (2)	
WAIMANALO II	0.57
WAIMANALO III	0.00
KUOU I	1.05
KUOU II	0.05
KUOU III	0.50
LULUKU	0.96
HAIKU	0.00
IOLEKAA	0.00
KAHALUU	0.75
KAHANA	0.98
PUNALUU I	0.00
PUNALUU II	2.50
PUNALUU III	1.02
KALUANUI	1.25
MAAKUA	0.25
HAUULA	0.25
WELLS SUBTOTAL:	10.14
WAIM. TUNNELS I & II	0.00
WAIM. TUNNELS III&IV	0.19
WAIHEE INCL. WELLS	0.17
WAIHEE TUNNEL	7.05
LULUKU TUNNEL	0.11
HAIKU TUNNEL	1.07
KAHALUU TUNNEL	0.94
GRAVITY SUBTOTAL:	9.52
WIND. SUBTOTAL:	19.66

STATION	MGD
NORTH SHORE (3)	
KAHUKU	0.68
OPANA	0.25
WAIALEE I	0.37
WAIALEE II	0.47
HALEIWA	0.00
WAIALUA	2.09
N.SHORE SUBTOTAL:	3.86

STATION	MGD
MILILANI (4)	
MILILANI I	2.12
MILILANI II	0.00
MILILANI III	0.82
MILILANI IV	2.03
MILILANI SUBTOTAL:	4.97

STATION	MGD
WAHIAWA (5)	
WAHIAWA	1.10
WAHIAWA II	2.38
WAHIAWA SUBTOTAL:	3.49

STATION	MGD
PEARL CITY-HALAWA (6)	
HALAWA 277	0.67
HALAWA 550	0.00
AIEA	1.17
AIEA GULCH 497	0.42
AIEA GULCH 550	0.21
KAONOHI I	1.07
WAIMALU I	0.00
NEWTOWN	1.13
WAIU	0.92
PEARL CITY I	0.69
PEARL CITY II	1.15
PEARL CITY III	0.32
PEARL CITY SHAFT	0.93
PEARL CITY-HALAWA SUBTOTAL:	8.69

STATION	MGD
WAIPAHU-EWA (7)	
WAIPIO HTS.	1.36
WAIPIO HTS. I	0.80
WAIPIO HTS. II	0.36
WAIPIO HTS. III	1.24
WAIPAHU	5.37
WAIPAHU II	2.17
WAIPAHU III	1.86
WAIPAHU IV	2.87
KUNIA I	4.31
KUNIA II	2.23
KUNIA III	1.34
HOAEAE	5.27
HONOULIULI I	0.00
HONOULIULI II	6.90
MAKAKILO	0.43
WAIPAHU-EWA SUBTOTAL:	36.51

STATION	MGD
WAIANAE (8)	
MAKAHA I	0.00
MAKAHA II	0.22
MAKAHA III	0.23
MAKAHA V	0.27
MAKAHA VI	0.00
MAKAHA SHAFT	0.00
KAMAILE	0.07
WAIANAE I	0.04
WAIANAE II	0.54
WAIANAE III	0.57
WELLS SUBTOTAL:	1.95
WAI. C&C TUNNEL	1.40
WAI. PLANT. TUNNELS	0.16
GRAVITY SUBTOTAL:	1.56
WAIANAE SUBTOTAL:	3.51

NONPOTABLE

NONPOTABLE	MGD
KALAUAO SPRINGS	0.50
BARBERS POINT WELL	1.33
GLOVER TUNNEL NP	0.41
NONPOTABLE TOTAL:	2.23

RECYCLED WATER (AUGUST 2019)

RECYCLED WATER	MGD
HONOULIULI WRF R-1	6.19
HONOULIULI WRF RO	1.65
RECYCLED WATER TOTAL:	7.84

**PRODUCTION, HEAD AND RAINFALL REPORT
MONTH OF SEPTEMBER 2019**

PRODUCTION SUMMARIES

TOTAL WATER	MGD
PUMPAGE	136.82
GRAVITY	11.48
POTABLE TOTAL:	148.30
NONPOTABLE	2.23
RECYCLED WATER	7.84
TOTAL WATER:	158.37

CWRM PERMITTED USE AND BWS ASSESSED YIELDS FOR BWS				
POTABLE SOURCES				
WATER USE DISTRICTS		A	B	C
		PERMITTED USE/ BWS YLDS	SEP 2019	DIFF. A-B
1	HONOLULU	82.93	67.22	15.71
2	WINDWARD	25.02	12.44	12.58
3	NORTH SHORE	4.70	3.86	0.84
4	MILILANI	7.53	4.97	2.56
5	WAHIAWA	4.27	3.49	0.78
6	PEARL CITY-HALAWA	12.25	8.69	3.56
7	WAIPAHU-EWA	50.63	36.51	14.12
8	WAIANAE	4.34	1.95	2.39
TOTAL:		191.67	139.12	52.55

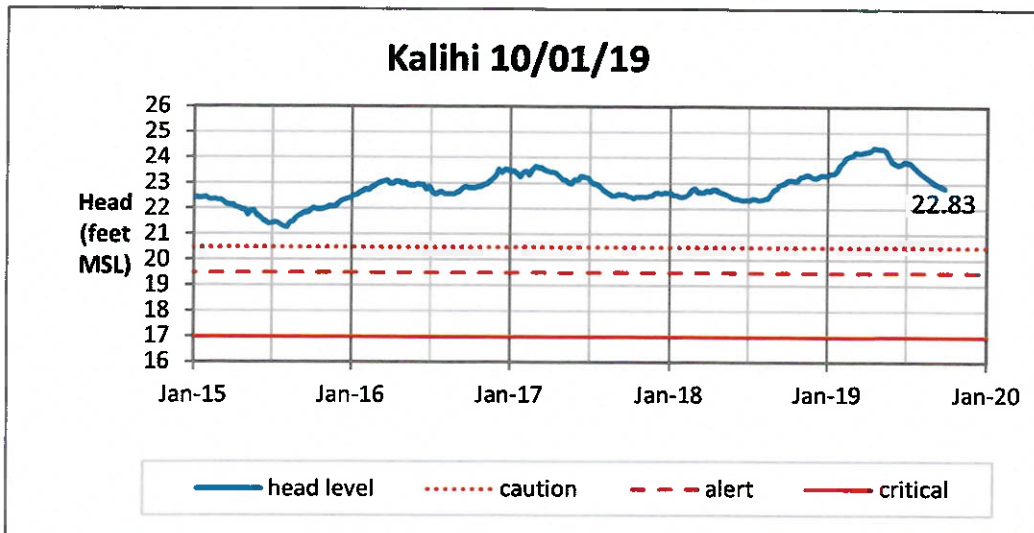
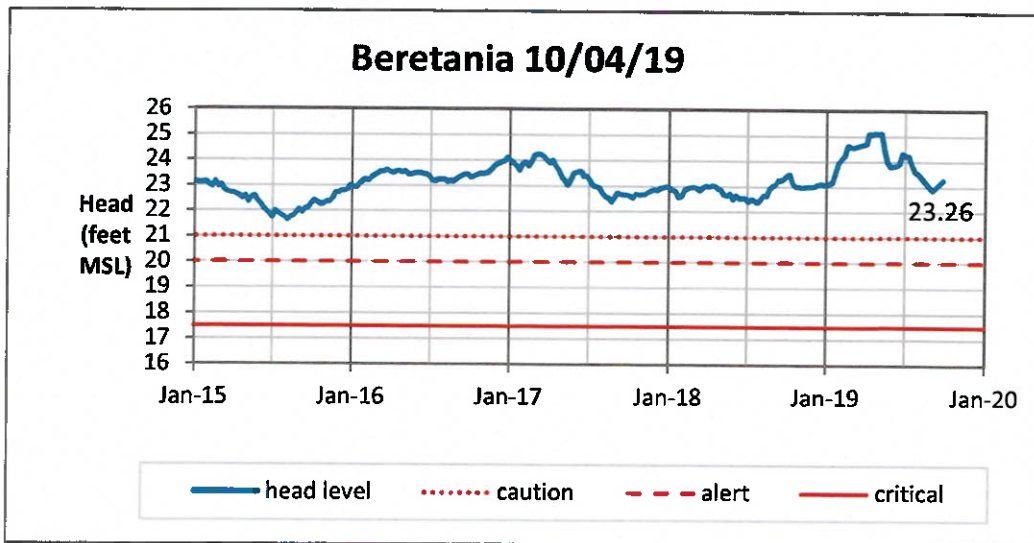
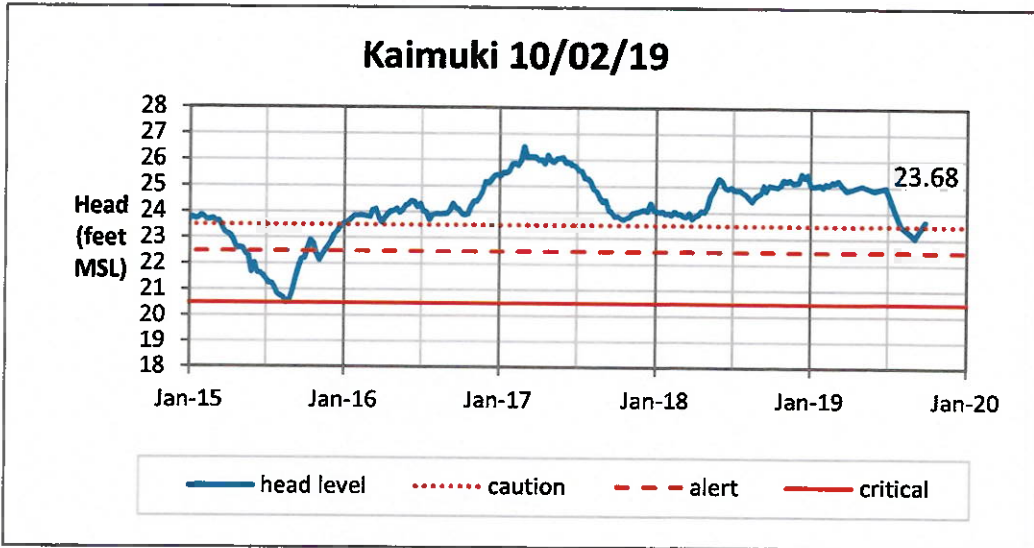
CWRM PERMITTED USE FOR BWS				
NONPOTABLE SOURCES				
WATER USE DISTRICTS		A	B	C
		PERMITTED USE	SEP 2019	DIFF. A-B
7	WAIPAHU-EWA (BARBERS POINT WELL)	1.00	1.33	-0.33
TOTAL:		1.00	1.33	-0.33

EFFECTIVE WATER DEMAND PER DISTRICT

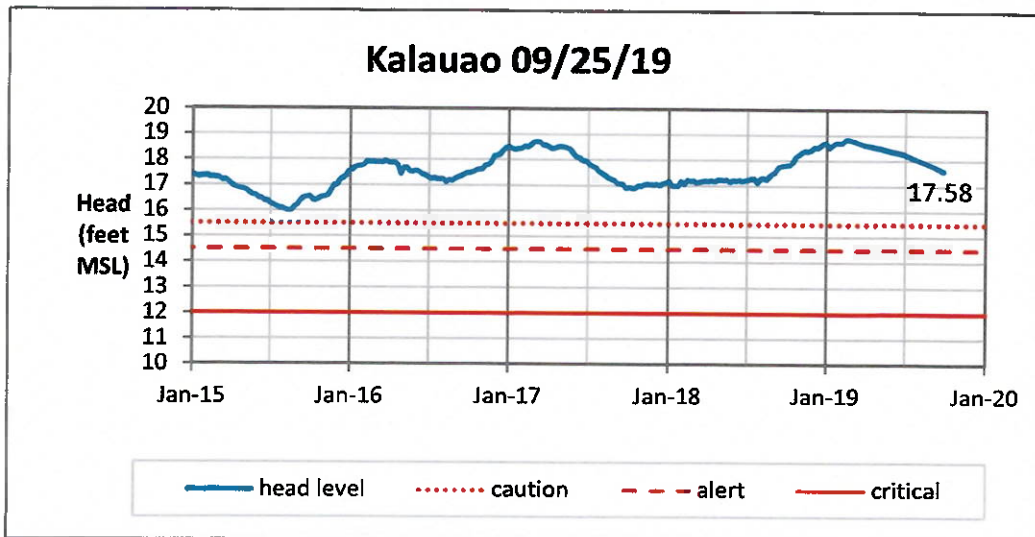
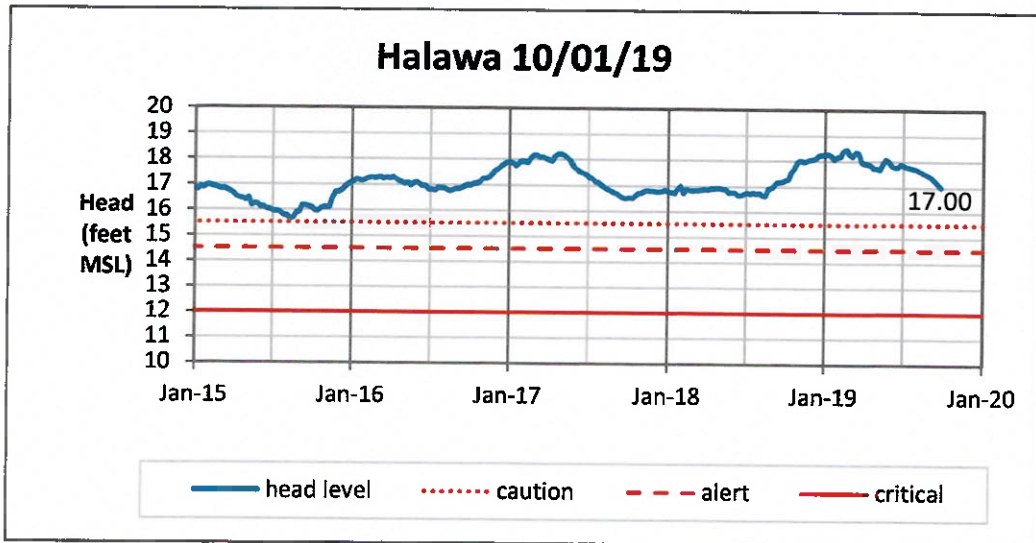
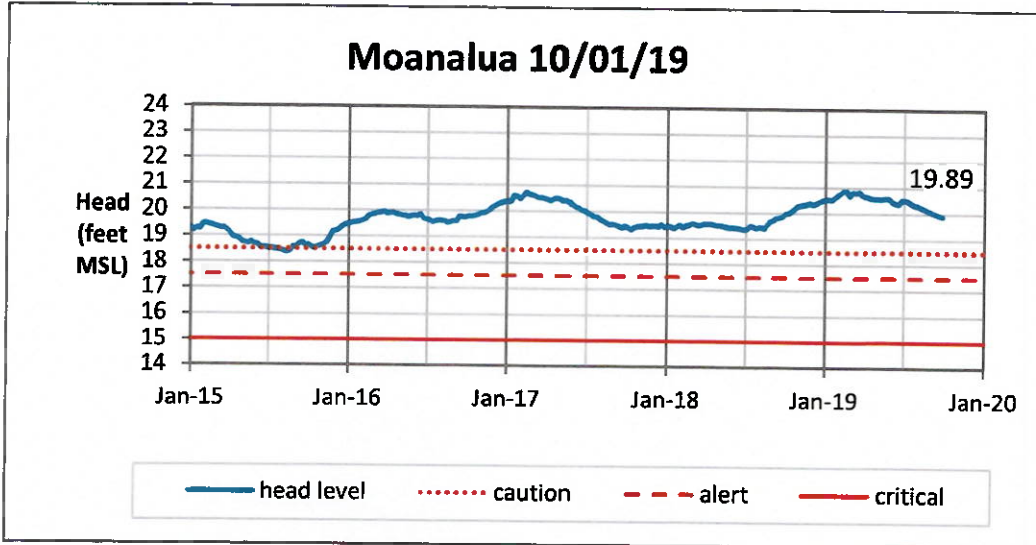
IMPORT/EXPORT BETWEEN WATER USE DISTRICTS			
FROM	TO		MGD
2	1	WINDWARD EXPORT	1.15
7	8	BARBERS PT LB	6.33

WATER USE DISTRICTS		SUBTOTAL	IMPORT	EXPORT	EFFECTIVE WATER DEMAND
1	HONOLULU	67.22	1.15	-	68.37
2	WINDWARD	12.44	-	1.15	11.28
3	NORTH SHORE	3.86	-	-	3.86
4	MILILANI	4.97	-	-	4.97
5	WAHIAWA	3.49	-	-	3.49
6	PEARL CITY-HALAWA	8.69	-	-	8.69
7	WAIPAHU-EWA	36.51	-	6.33	30.18
8	WAIANAE	1.95	6.33	-	8.28
TOTAL:		139.12	7.48	7.48	139.12

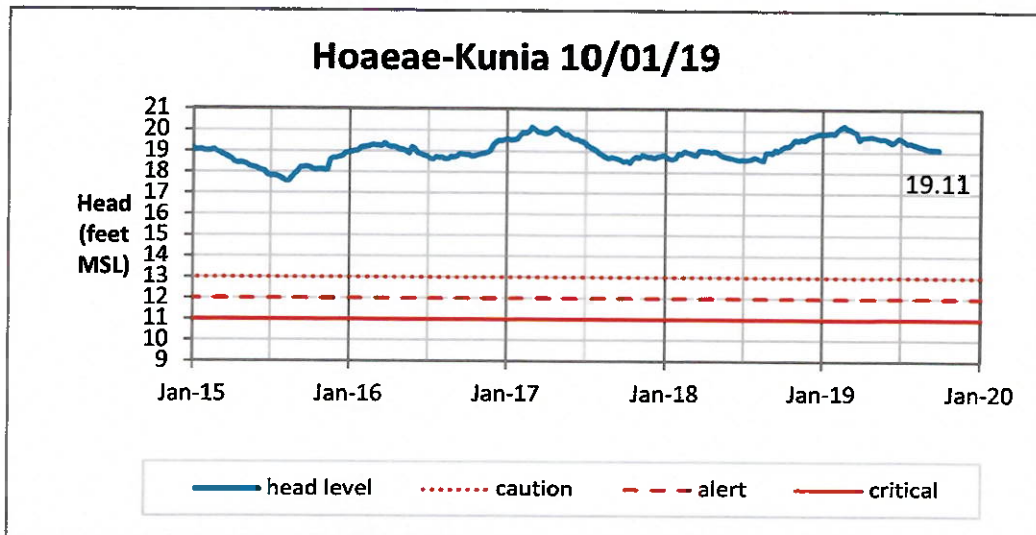
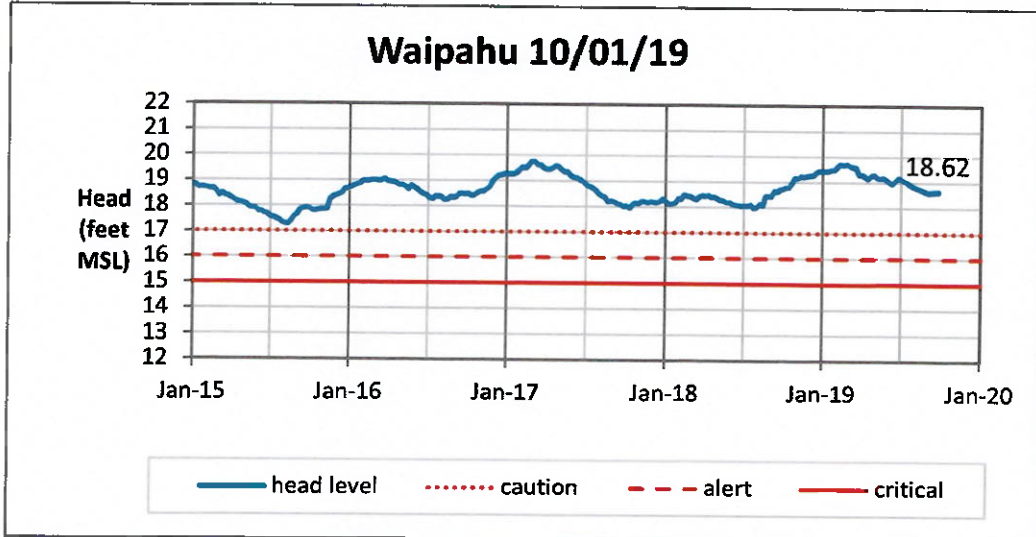
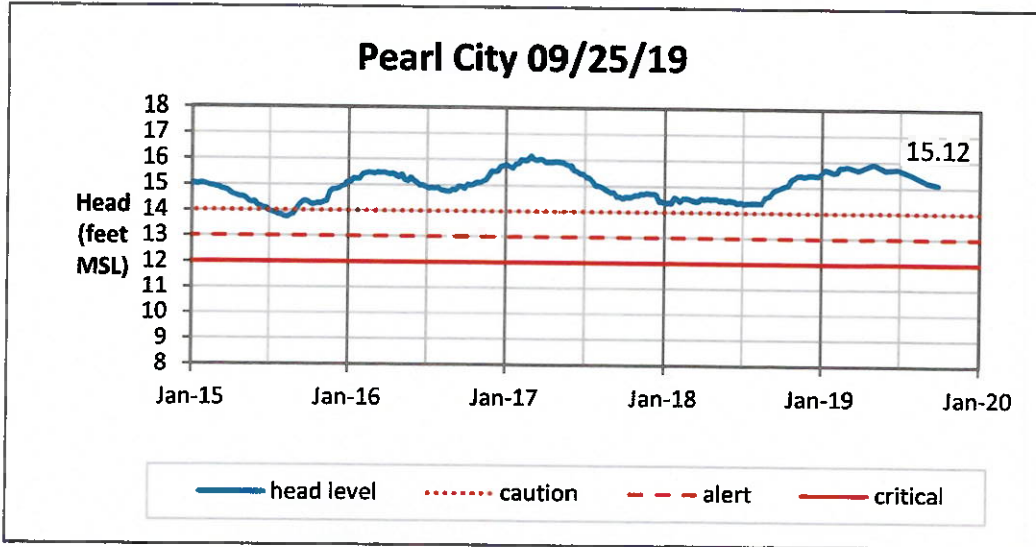
Weekly Head Report



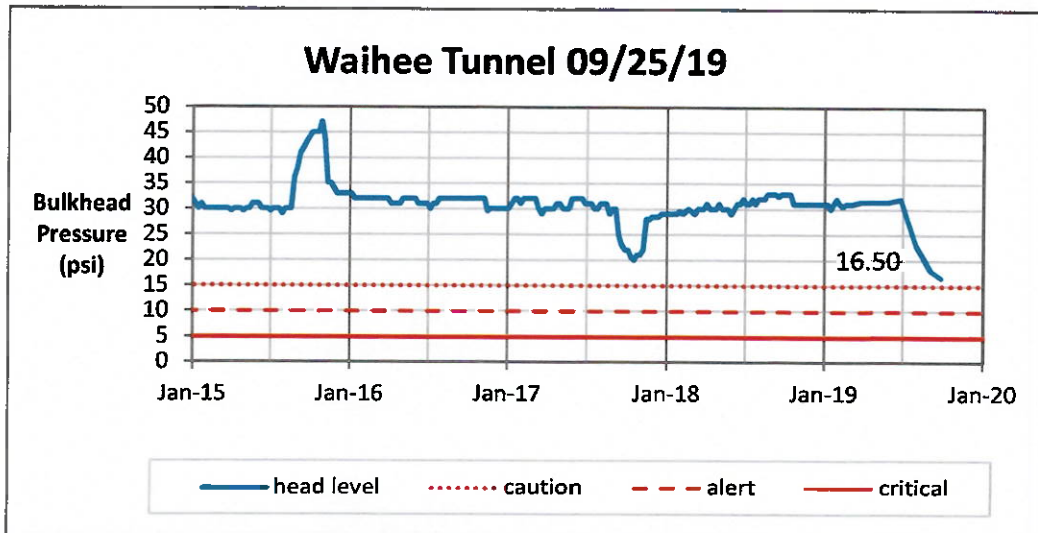
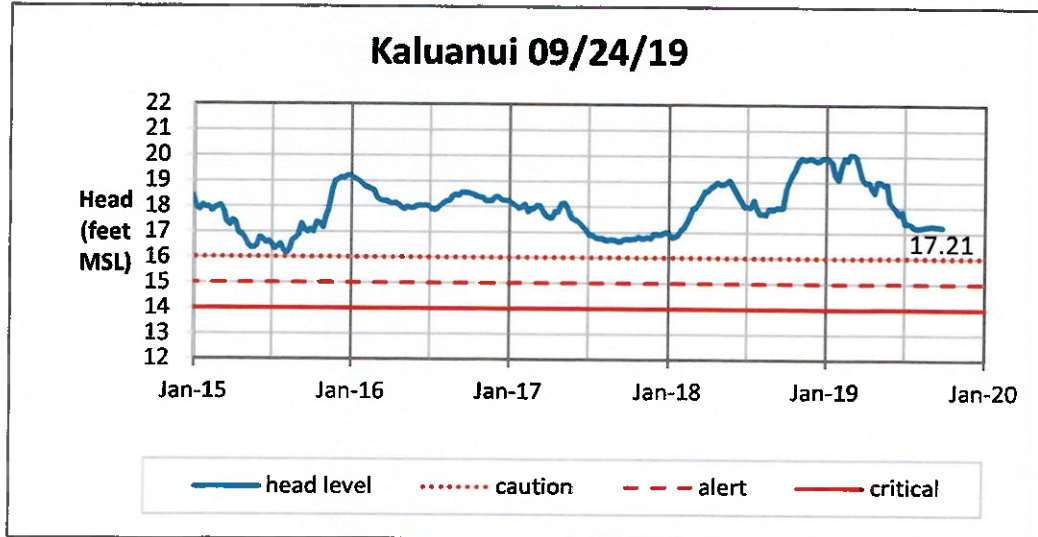
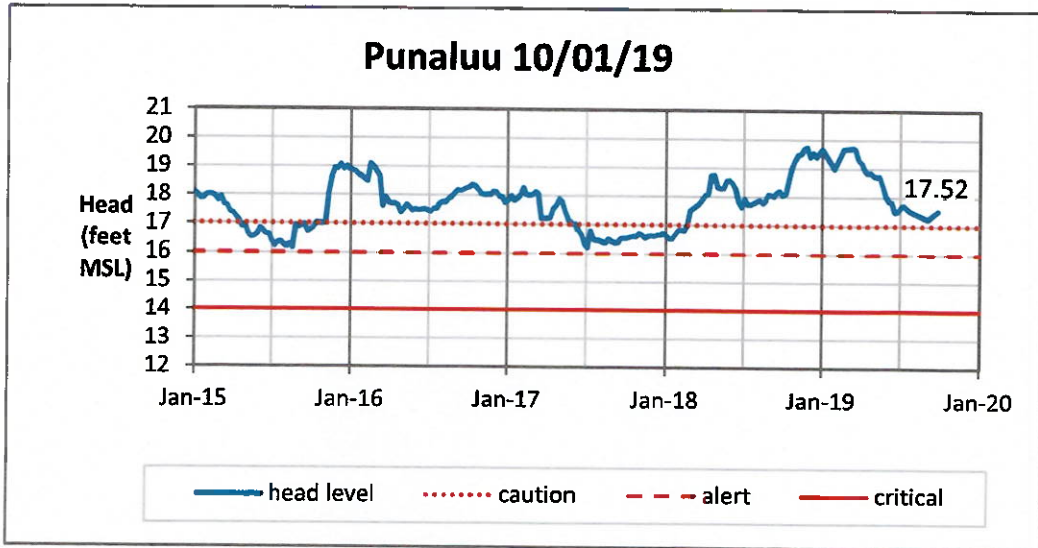
Weekly Head Report



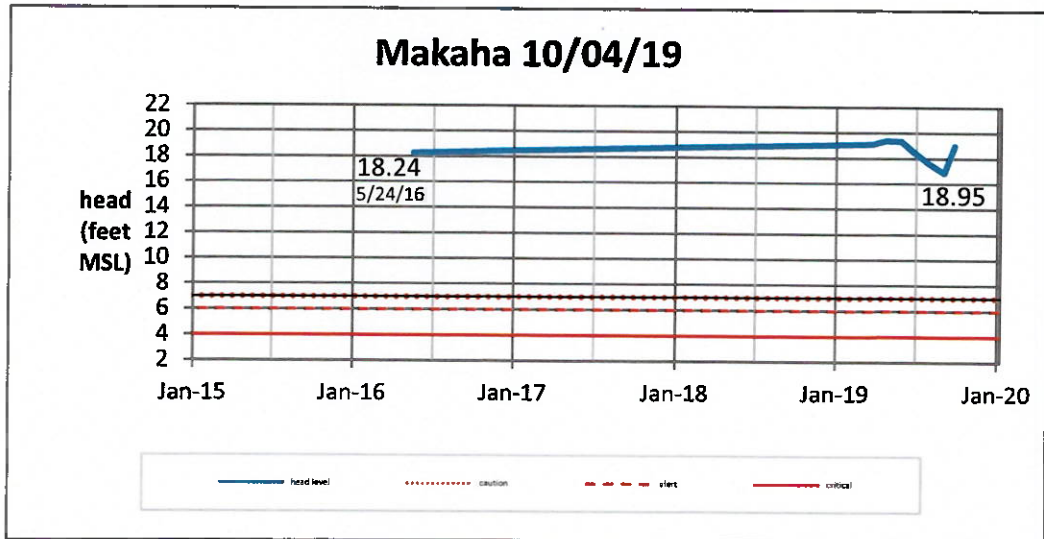
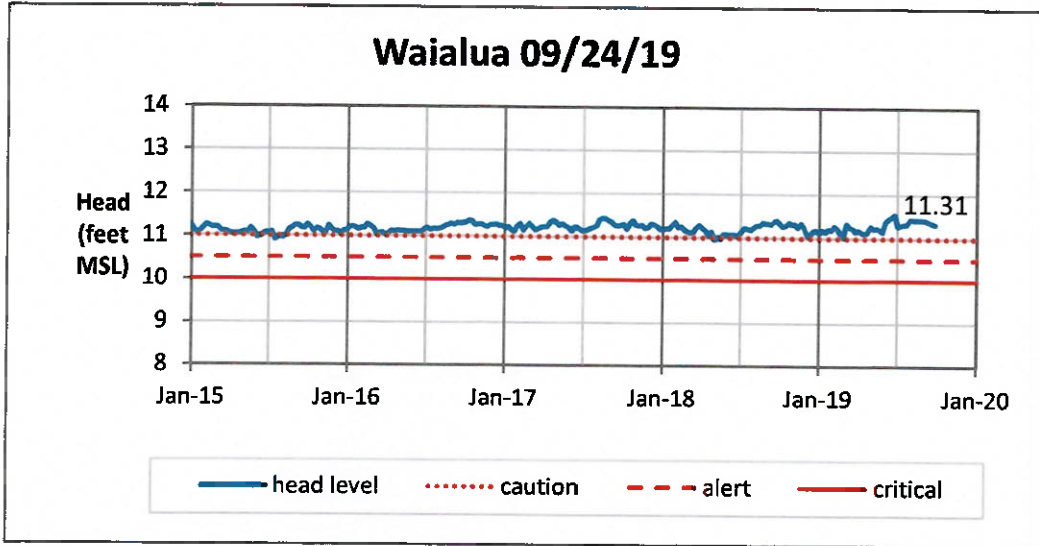
Weekly Head Report

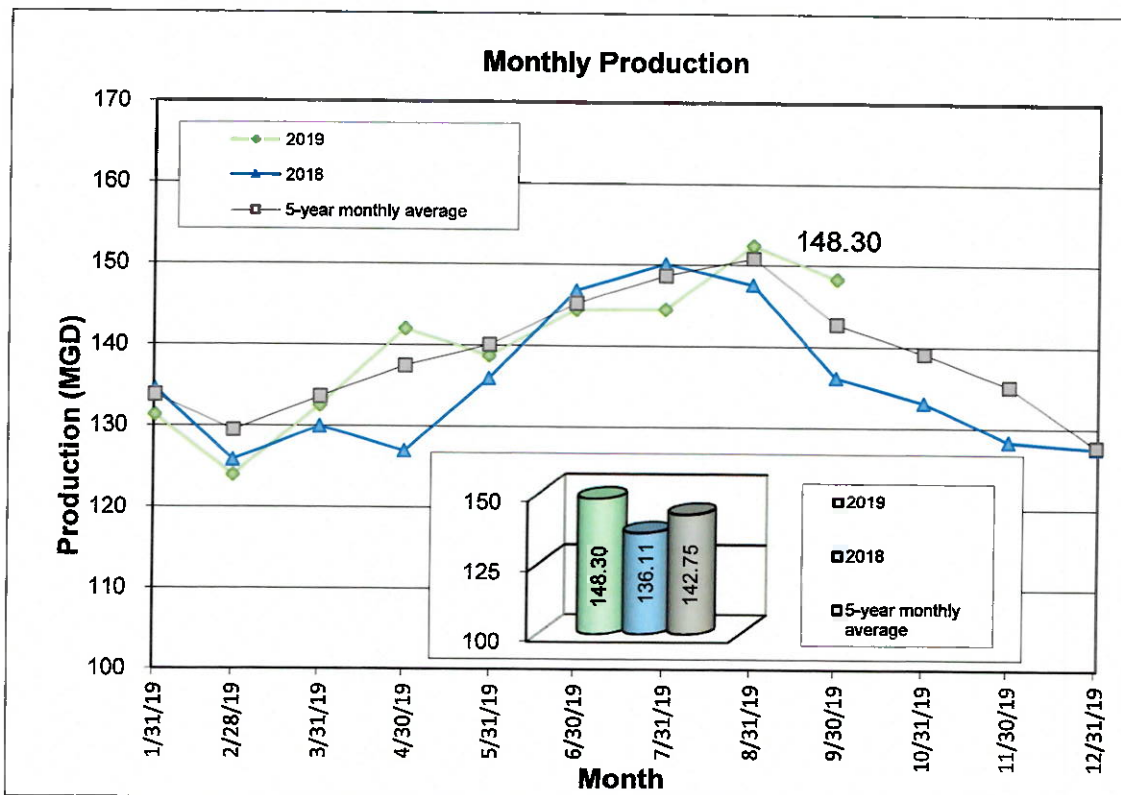
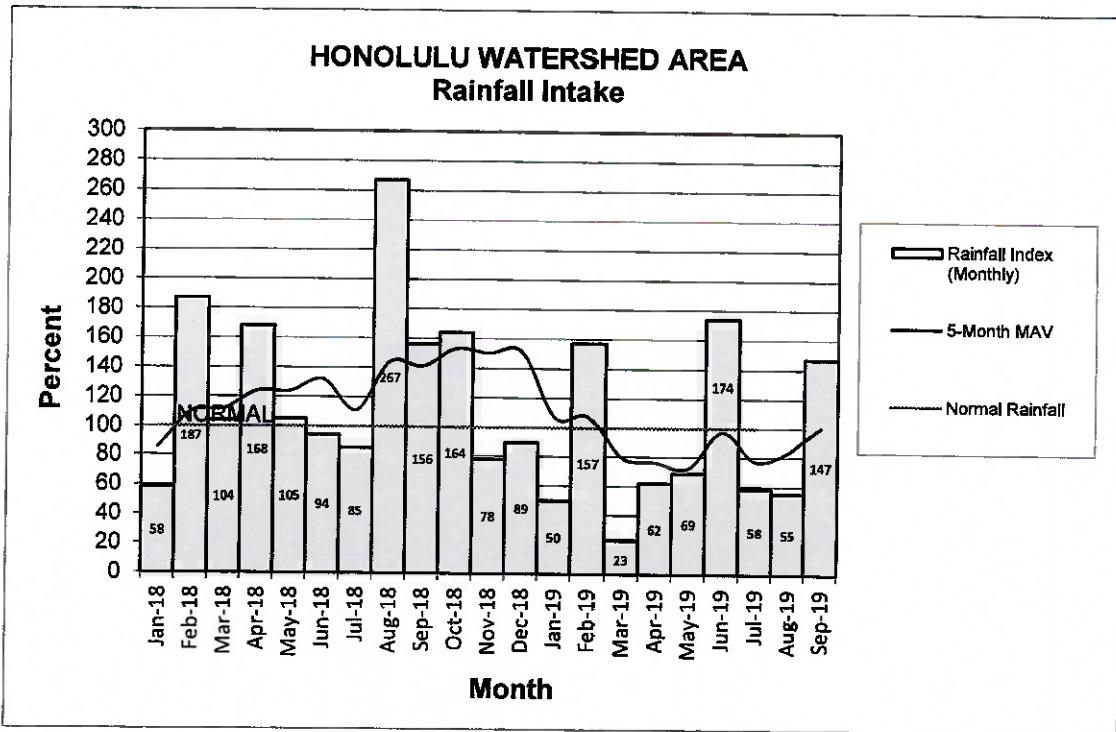


Weekly Head Report



Weekly Head Report





ITEM FOR INFORMATION NO. 6

"October 28, 2019

**WATER MAIN
REPORT**

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

Chair and Members:

Subject: Water Main Repair Report for September 2019

Michael Fuke, Program Administrator, Field Operations Division, will report on water main repair work for the month of September 2019.

Respectfully submitted,

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

Attachment"

The foregoing was for information only.

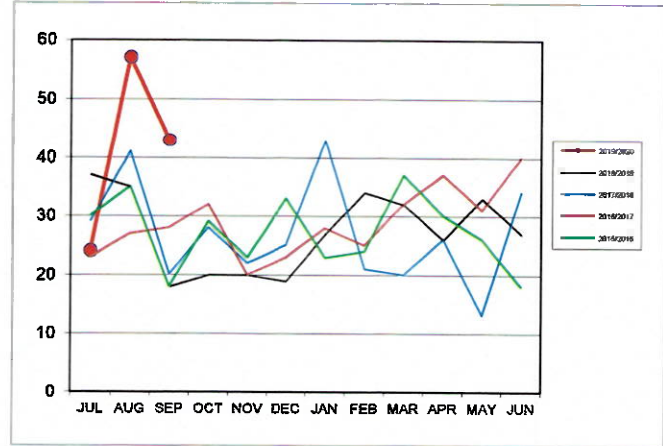
DISCUSSION:

Ernest Lau, Manager and Chief Engineer, gave the report for Michael Fuke, Program Administrator, Field Operations. There were no comments or discussion.

WATER MAIN REPAIR REPORT for September 2019

	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	Total
2019/2020	24	57	43										124
2018/2019	37	35	18	20	20	19	27	34	32	26	33	27	328
2017/2018	29	41	20	28	22	25	43	21	20	26	13	34	322
2016/2017	23	27	28	32	20	23	28	25	32	37	31	40	346
2015/2016	30	35	18	29	23	33	23	24	37	30	26	18	326

Date	Address	Size (In)	Pipe Type
9/2/2019	58-114 Mamao St, Haleiwa	8	CI
9/5/2019	1507 Hoohulu St, Pearl City	8	CI
9/5/2019	2589 Halekoa Dr, Honolulu	8	CI
9/6/2019	98-1354 Kaonoahi St, Aiea	8	CI
9/6/2019	45-735 Wainana St, Kaneohe	6	CI
9/6/2019	1305 Kaukonahua Rd, Waialua	6	PVC
9/7/2019	1009 Komo Mai Dr, Pearl City	12	CI
9/9/2019	895 Ainapo St, Honolulu	8	CI
9/10/2019	1517 Kalaniwai Pl, Honolulu	8	DI
9/11/2019	45-905 Anoi Rd, Kaneohe	16	CI
9/11/2019	89-682 Mokiawe St, Waianae	8	AC
9/12/2019	1134 Mowai St, Kailua	8	PVC
9/12/2019	1111 Hoolai St, Honolulu	6	CI
9/12/2019	89-618 Mokiawe St, Waianae	8	AC
9/12/2019	225 Kuliouou Rd, Honolulu	12	CI
9/14/2019	41-1636 Humupaa St, Waimanalo	8	CI
9/16/2019	177 S. Kamehameha Hwy, Wahiawa	6	CI
9/16/2019	47-117 Heno Pl, Kaneohe	8	DI
9/16/2019	2646 Kilihau St, Honolulu	8	CI
9/17/2019	1044 Malua Dr, Honolulu	6	CI
9/17/2019	2111 Maha Pl, Honolulu	8	CI
9/19/2019	86-261 Farrington Hwy, Waianae	8	CI
9/20/2019	98-1846 Nahele St, Aiea	8	CI
9/20/2019	67-421 Alahaka St, Waialua	8	CI
9/20/2019	1634 Kealia Dr, Honolulu	6	CI
9/21/2019	87-118 Hookele St, Waianae	6	CI
9/22/2019	1658 Kealia Dr, Honolulu	6	CI
9/25/2019	56-155 Kamehameha Hwy, Kahuku	8	PVC
9/25/2019	218 Kellog St, Wahiawa	8	CI
9/26/2019	1390 Ala Aolani St, Honolulu	12	CI
9/26/2019	4156 Ulupua Pl, Honolulu	12	CI
9/26/2019	140 Rose St, Wahiawa	6	CI
9/26/2019	4385 Halupa St, Honolulu	12	PVC
9/27/2019	507 Iliaina St, Kailua	8	AC
9/27/2019	91-508 Pupu St, Ewa Beach	8	CI
9/27/2019	1262 Loko Dr, Wahiawa	6	CI
9/28/2019	858 Lunalilo Home Rd, Honolulu	4	CI
9/28/2019	91-508 Pupu St, Ewa Beach	8	CI
9/29/2019	1952 Kealakai St, Honolulu	8	CI
9/29/2019	84-259 Holt St, Waianae	8	PVC
9/30/2019	41-496 Hihimanu St, Waimanalo	20	CC
9/30/2019	95-967 Wikao St/95-971 Wikao St, Mililani	8	PVC
9/30/2019	46-228 Punawai St, Kaneohe	8	CI



42 miles of pipeline were surveyed by the Leak Detection Team in the month of September.

ITEM FOR INFORMATION NO. 7

October 28, 2019

RED HILL
UPDATE

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

Chair and Members:

Subject: Red Hill Bulk Fuel Facility Update

Erwin Kawata, Water Quality Division Program Administrator, will be presenting an update on the Red Hill Bulk Fuel Storage Facility.

Respectfully submitted,

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

Attachment”

The foregoing was for information only.

DISCUSSION:

Erwin Kawata, Program Administrator, Water Quality Division, gave the report. Chair Andaya recognized Mr. Kawata.

Mr. Kawata reported on the following: Requirements for a TUA Selection; Tank Upgrade Alternatives; Navy’s TUA Selection; Existing Single-Wall Tank – Option 1A; Navy Statements on its TUA Selection; EPA and DOH Requesting Comments; What is “Double Wall Equivalency”?; Concern with “Double Wall Equivalency”; Navy Key Assumptions for TUA Choice; Data Does Not Support TUA Selection; Critical Analysis Not Yet Finished; Oahu’s Groundwater Aquifer; Oahu Sole Source Aquifer; Red Hill UST Permit Status; Fuel Tank Advisory Committee Meeting – Oct. 17, 2019.

After Mr. Kawata’s report, Manager Lau added that the deadline to obtain a permit to operate the Red Hill underground storage tanks was July 15, 2019. However, last month it was disclosed by the Navy that it had received a July 16, 2019 letter from the Department of Health (DOH) stating that the DOH intends to allow the Navy to continue to operate the tanks at the Red Hill facility until its decision on the permit application is rendered.

Mr. Kawata reported that he had made numerous contacts with the staff at the Solid and Hazardous Waste Branch of the DOH regarding the status of the permit. In addition, the Sierra Club had submitted a request for a contested case hearing on the permit. The BWS was not made aware of this letter until October 15, 2019.

According to the July 16 letter, the Navy’s permit application was received on or around May 23, 2019. DOH’s underground storage tank rules provide that a decision on a permit is required within 180 days; otherwise, the permit

application is deemed approved. Based on the information provided in the July 16, letter, the 180-day period would end on or about November 19, 2019, which is the same day of an upcoming public meeting announced by the EPA and the DOH. The purpose of the public meeting is to receive comments from the community on the Navy's Tank Upgrade Alternative Report.

There is a growing concern by the community about Red Hill, and it has been expressed to the BWS that interested parties are looking at the BWS to be more aggressive in terms of outreach to and education for the community.

In the Tank Upgrade Alternative Report, the Navy is recommending Option 1A - Existing Single-Wall Tank. In addition, the Navy is recommending extension of the performance deadline to 2045 whereas the original deadline was 2037. Mr. Lau noted that in 2045, the Red Hill facility will be about 102 years old. The facility was built between 1940 and 1943.

BWS has also learned that DOH is proposing amendments to the underground storage tank administrative rules, and a public meeting is scheduled for December 2, 2019. To reiterate, Mr. Lau reminded the Board that in addition to the December 2 public meeting, there is also a November 19, 2019 public meeting on the Navy's Tank Upgrade Alternative Report.

Manager Lau is very concerned that the BWS has been receiving many inquiries about the situation and asking what BWS plans to do.

Chair Andaya asked if there is more specific information available with respect to the concerns mentioned by Manager Lau; e.g., how many inquiries, who is asking, etc; and raised the possibility of implementing a tracking system. Manager Lau responded that an online survey of customers may be implemented as a method of gauging customer concern levels with numbers. For the water rates, an online survey was instituted with about 1000 people responding. At the current time, BWS's sources have been from the people they meet at the Fuel Tank Advisory Committee meeting where people testified. An online survey for Red Hill will be considered to gauge the customers' perspectives.

Chair Andaya expressed interest in ensuring that the public is made aware of what BWS is doing. Manager Lau thanked Chair Andaya for his suggestion. There are two public meetings for the community to voice their concerns to the EPA and/or DOH. One is the November 19, 2019 meeting and the second is the December 2, 2019 meeting.

Ms. Sproat suggested that the public be made aware of these dates. Manager Lau agreed with Ms. Sproat's suggestions and said that BWS will get the word out. In addition, he noted that the decisions being made now will impact the future generations. If the tank upgrade deadline remains at 2045, it will definitely be impacting the next generations.

He also noted that by 2045 a lot of the people currently working on Red Hill

issue will no longer be in their positions and it will be up to the next generation to carry on. Protection of the water resources is critical to the future. Because of the uncertainty of the future, he urged everyone to err on the side of caution and protect and prevent of contamination of our precious water resources.

Chair Andaya recognized Ms. Kathleen Elliott-Pahinui. Ms. Elliott-Pahinui shared that in the Mayor's annual city report, Red Hill is recognized at about 4 percent indicating that there is general awareness. She reported that more and more people are starting to ask her about Red Hill. Questions are raised more and more at neighborhood meeting; e.g., Hawaii Kai. Also, in a consumer survey prepared by the Communications Office, Red Hill is of interest to the consumers. At the Fuel Tank Advisory Community, she noted that about 12 or so community members testified. Red Hill is also being mentioned in the newspapers and Civil Beat. Comments are increasing as are the letters to the editor. She agreed with Manager's Lau's suggestion that doing a survey is an excellent idea. She will work with her team to put some questions together for a survey.

Ms. Sproat agreed with the suggestions made by Manager Lau and Chair Andaya and suggested providing more information on the upcoming meetings and opportunities for the community members to engage.

**MOTION TO
RECESS INTO
EXECUTIVE
SESSION**

Upon unanimously approved motion, the Board recessed into Executive Session Pursuant to [HRS § 92-5] (a)(4) at 4:01 PM to Consult with the Board's Attorney and to Consider Issues Pertaining to Matters Posted for Discussion at an Executive Session.

**OPEN
SESSION**

The Board reconvened in Open Session at 4:38 PM.

**MOTION TO
ADJOURN**

There being no further business Chair Andaya at 4:41 PM called for a motion to adjourn the Open Session. Ross Sasamura so moved; seconded by Kapua Sproat and unanimously carried.

WATER FOR LIFE

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



Board of Water Supply
City and County of Honolulu

Red Hill Bulk Fuel Storage Facility

Information Update

Board Meeting
October 28, 2019





Today's Discussion

- Navy's Tank Upgrade Alternative (TUA) Decision Document for the Red Hill Bulk Fuel Storage Facility
- Examine the Navy's reasoning for its TUA selection
- Review the basis of the BWS comments to the TUA selection
- Red Hill UST permit status
- Fuel Tank Advisory Committee Meeting

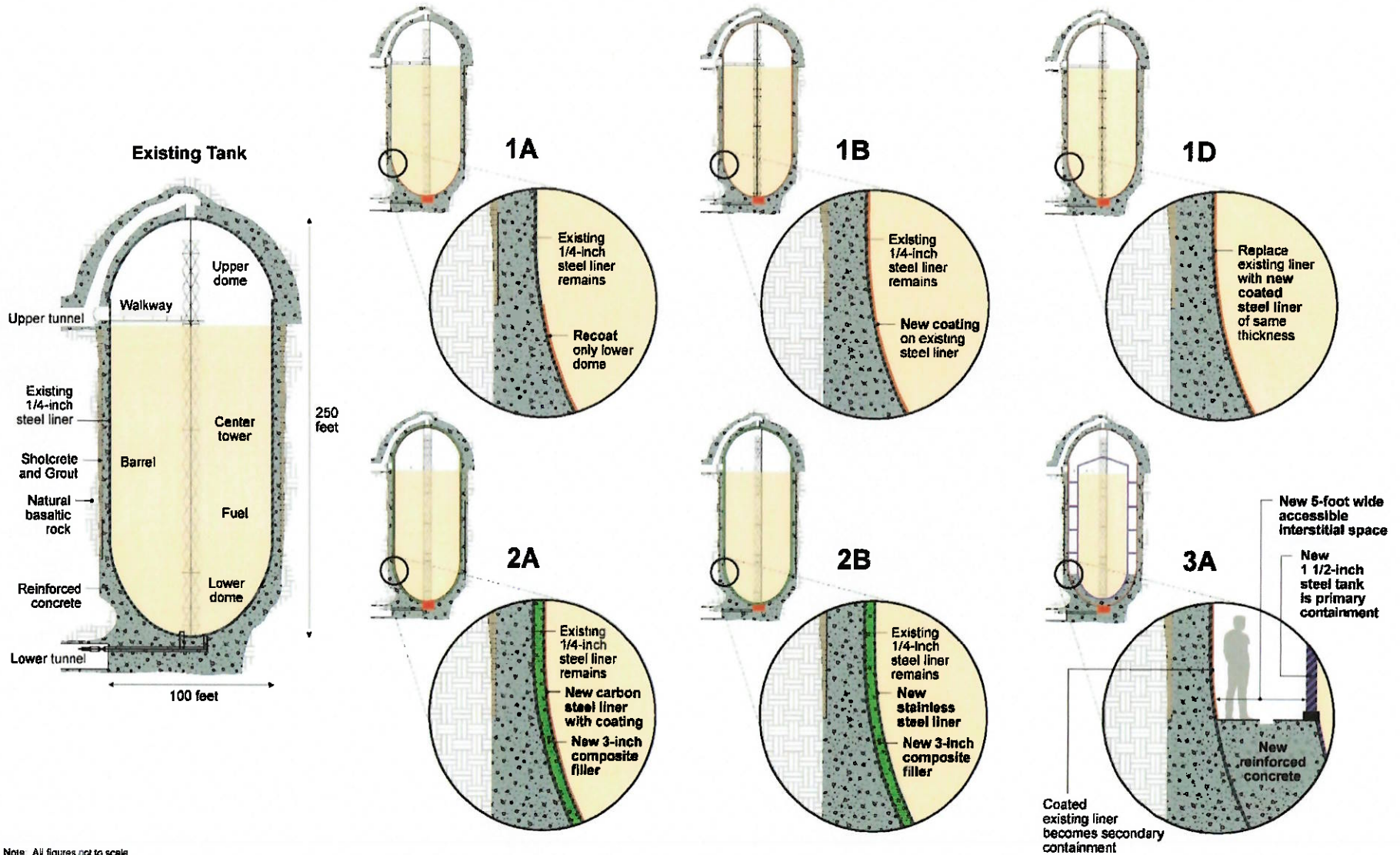


Requirements for a TUA Selection

- The Red Hill AOC requires the Navy to identify, evaluate TUA options and select a TUA “to prevent releases into the environment” (AOC SOW § 3).
- In a August 2019 letter, EPA and DOH made clear the TUA decision selected must “compare the relative environmental performance of each TUA alternative” and “demonstrate to the Regulatory Agencies’ satisfaction that groundwater and drinking water resources will be protected”.
- Hawaii Revised Statutes (HRS) § 342L-32(b)(1) also expressly provides that underground (fuel) storage tank (UST) systems “shall be ... upgraded ... and operated to prevent releases ... for the operational life of the tank or tank system.”

Tank Upgrade Alternatives

Adapted from Navy Red Hill AOC SOW Section 3.0 Tank Upgrade Alternatives (TUA), Red Hill Fuel Storage Facility NAVSUP FLC Pearl Harbor (PRL) Hawaii, Final Report December 2017
<https://www.epa.gov/red-hill/tank-upgrade-alternatives-red-hill>

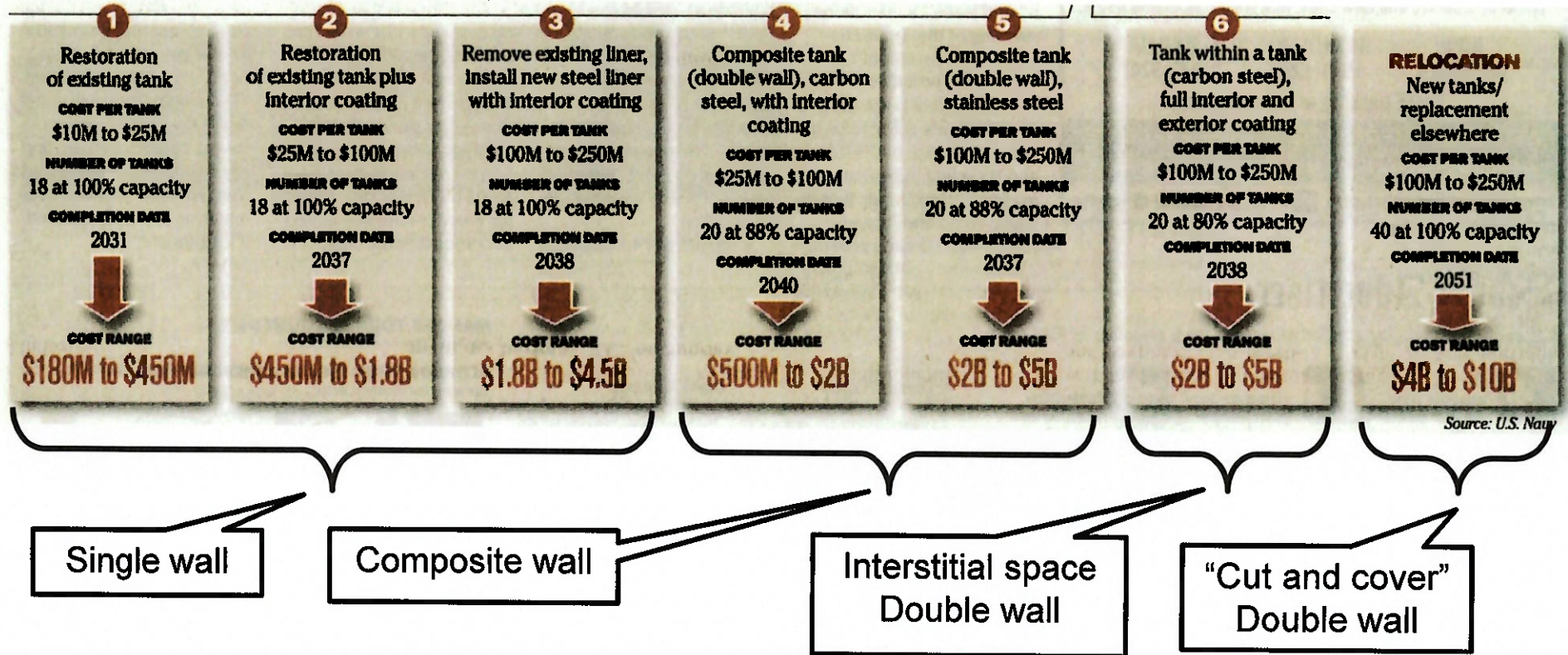


“Alternative 3A can be constructed in the field at Red Hill using practicable construction means and methods.” Ref. Navy Red Hill Tank Alternatives (TUA) Report, December 2017.



Tank Upgrade Alternatives

Source: Star Advertiser, March 19, 2018



“Alternative 3A can be constructed in the field at Red Hill using practicable construction means and methods.”

Ref. Navy Red Hill Tank Alternatives (TUA) Report, December 2017.

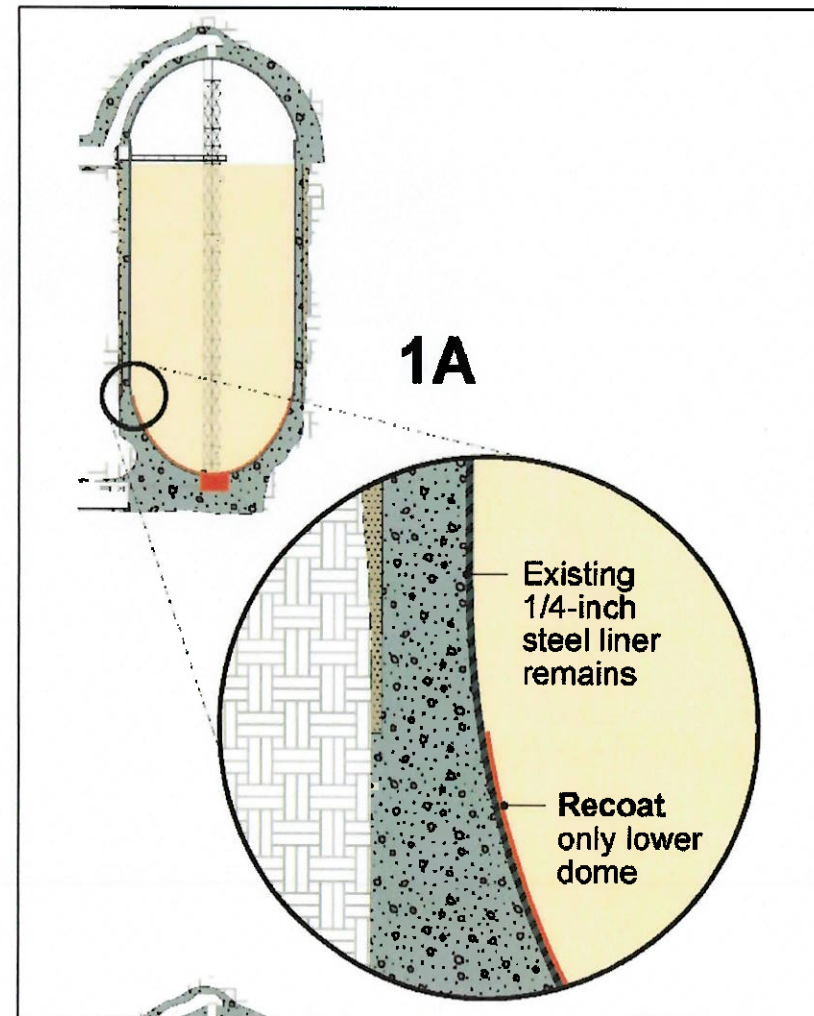
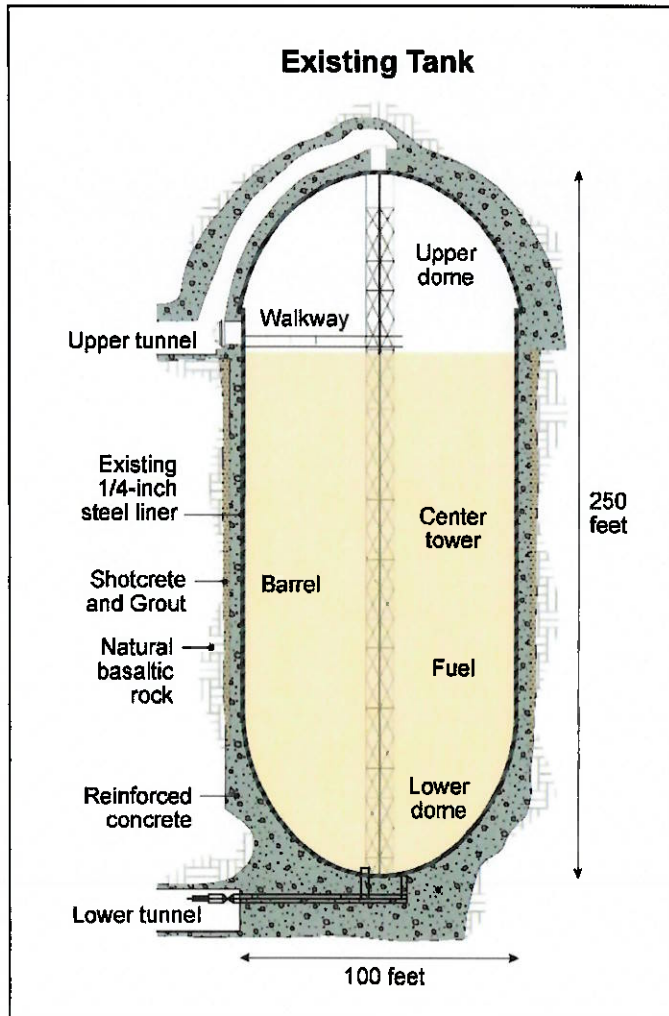


Navy's TUA Selection

- Retain the existing single-walled tanks and current practices (TUA Option 1A)
- “Implement “double-wall equivalency” or removal of fuel in the 2045 timeframe”
- “Determine feasibility for the potential construction of a water treatment plant or equivalent engineering controls”
- Implement other improvements including among others installing permanent leak detection equipment, conduct soil vapor monitoring, apply epoxy coating to the tank lower domes, install eight additional monitoring wells and conduct a pilot project to consider fully coating tank barrels



Existing Single-Wall Tank – Option 1A





Navy Statements on its TUA Selection

“Navy/DLA considers alternative 1A along with all other additional improvements, controls and measures as the best level of environmental protection for all release scenarios.”

“These measures thoroughly demonstrate Navy/DLA commitment to ensuring that safe drinking water from the Red Hill aquifer remains available to our military families and Oahu neighbors today and tomorrow.”

Ref: Red Hill Bulk Fuel Storage Facility Administrative Order on Consent Tank Upgrade Alternatives and Release Detection Document and cover letter, NAVFAC Hawaii, September 2019.





EPA and DOH Requesting Comments

- EPA and DOH invite interested parties and members of the public to review the Navy's TUA Decision Document and provide written comments
- EPA / DOH planning public hearing in November to solicit feedback prior to making a decision on the Navy's proposal
- Ultimately, EPA and DOH to decide whether or not to approve the Navy's TUA selection





What is “Double-Wall Equivalency”?

- According to the Navy:
 - “Double wall equivalency” is its current work with enhanced leak detection, tank tightness testing, groundwater monitoring, soil vapor monitoring, and measuring the height of the fuel in each tank as layers of protection working together to *“provide redundant elements of detection and capture, equivalent to typical provisions of a ‘double wall’ solution.”*
 - The Navy would also use a water treatment plant to create a “capture zone” around the Red Hill tank facility to prevent the spread of contamination to drinking water sources.



Concern with “Double Wall Equivalency”

- The objective is to prevent releases from the tanks to the environment by keeping the fuel in the tanks as required by Hawaii law and the AOC
- Leak detection, tank tightness testing, and soil vapor monitoring merely detect and/or measure what is already released to the environment
- Navy’s “double wall equivalency” relies upon a water treatment plant that does not exist and that the Navy has not committed to constructing nor proven that it works
- The Navy’s reliance on a potential water treatment plant assumes the plant can treat for any amount of fuel released



Navy Key Assumptions for TUA Choice

- After 1983, other than the 2014 release, available records indicate there have been no verified releases of fuel from Red Hill
- The 2014 release was caused by poor workmanship, ineffective quality control and quality assurance, and inadequate response procedures
- The Navy's nondestructive evaluation process is a reliable method for detecting corrosion in the tank liner
- In the unlikely occurrence of a major seismic event or other catastrophic release, all of the TUA options would perform in a similar manner





Data Does Not Support TUA Selection

- 2014 Release is **NOT** the Only Release
 - Tank 6 in 2002 (Navy, 2002)
 - Tanks 15 and 16 after 1988 (Navy, 2014)
 - The groundwater data from 2005 to present show petroleum chemical contaminants in groundwater samples
 - 1988 Inspections on Tank 5, Tank 10, Tank 17, Tank 19, Tank 20 identified through-wall corrosion and therefore possibly leaks below the detection limit (Navy, 2016)
 - Petroleum staining found in cores taken before 2014 beneath 19 of 20 tanks (AMEC, 2002)
 - Navy's Red Hill Facility Groundwater Protection Plan (GWPP) report documents leaks from various tanks from 1940s – 1980s (Navy, 2008)



Data Does Not Support TUA – cont.

- Steel liner samples collected from Tank 14 prove rusting (that leads to through-wall holes) is taking place on the side of the liner that cannot be inspected or maintained
 - Coating the interior surface of a tank does not stop corrosion from occurring on the back side of the liner
- Navy destructive testing report confirms:
 - Navy's nondestructive evaluation (NDE) method cannot accurately and reliably identify areas of the liner in need of repair before the next inspection
 - Navy's NDE both significantly overestimated (Samples 3 & 6) and underestimated (Samples 1 & 5) liner thickness
 - Navy's NDE only found 50% of the coupons in need of repair



Data Does Not Support TUA – cont.

- Navy risk assessment prepared by ABS Consulting calculated:
 - Greater than 27% probability of a sudden release of between 1,000 and 30,000 gallons of fuel each year
 - Greater than 34% chance of a sudden release of more than 120,000 gallons of fuel in the next 100 years
 - Greater than 5% probability of a sudden release of more than 1 million gallons of fuel in the next 100 years
 - For chronic, undetected releases, the expected fuel release is 5,803 gallons per year (facility-wide)
[For example: 25 years x 5,803 gallons/year = 145,075 gallons released]



Data Does Not Support TUA – cont.

- The Navy does not have a groundwater model that has been approved by regulators
- DOH evaluation of groundwater flow paths indicates:
 - Navy groundwater model unable to reproduce water levels measured in the field
 - Data supports groundwater flow to the Northwest (toward Halawa Shaft)
 - Navy data does not support the existence of deep subsurface features (valley fills) that prevent groundwater flow toward Halawa Shaft, suggesting the feature is not as deep as the Navy claims
- The Navy groundwater model does not recognize that groundwater can also flow from Red Hill toward BWS Halawa Shaft

WATER FOR LIFE

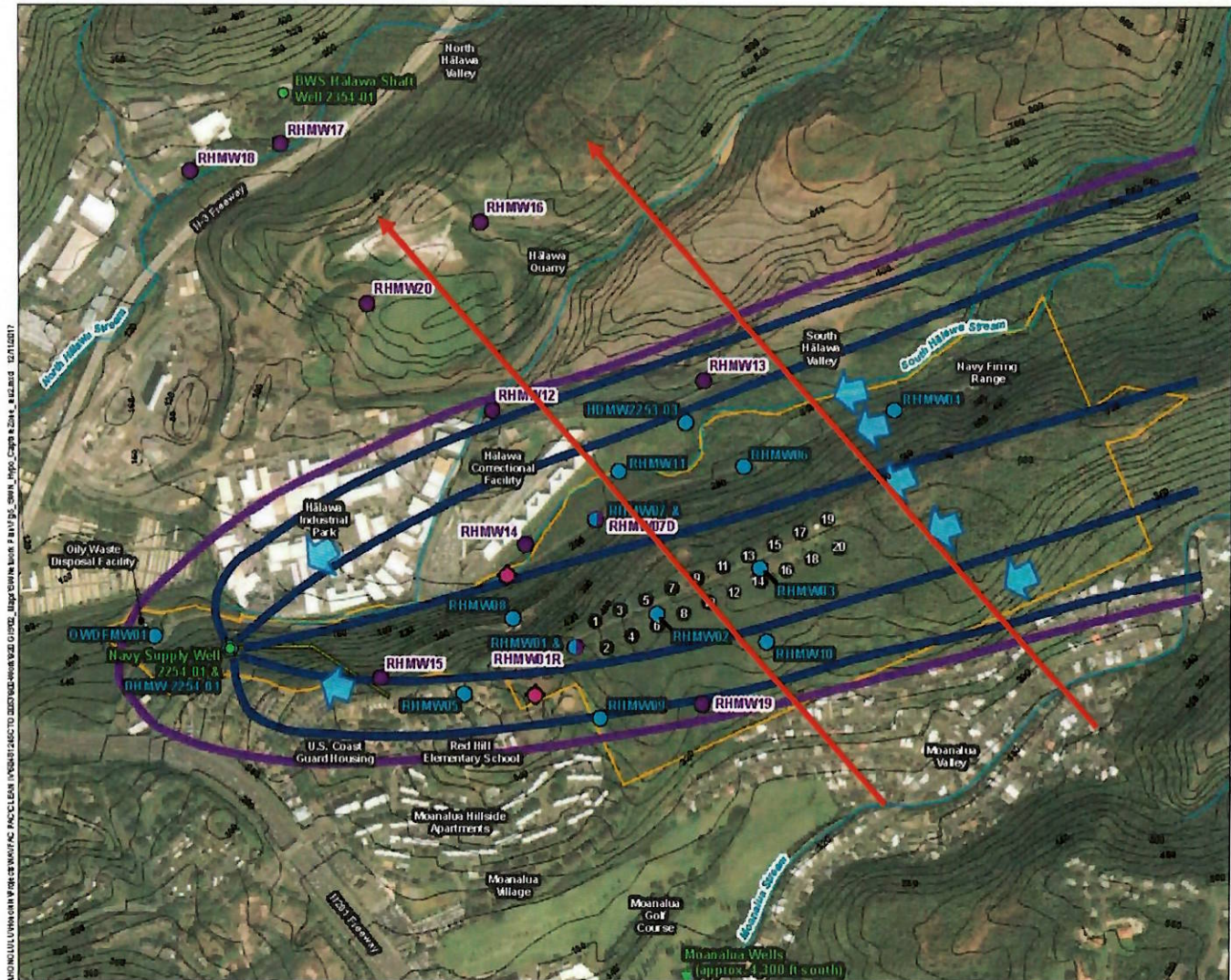
Safe, dependable, and affordable water now and into the future



Board of Water Supply
City and County of Honolulu

Navy presents that there is no GW flow from Red Hill to any BWS wells and that Red Hill Shaft captures all groundwater flow from beneath the tanks.

Pumping test data from 2017-18 show water level changes across the valleys. EPA and DOH have asked the Navy to look at this stating some of the field data contradict Navy interim groundwater model flow paths.



Ref. Sentinel Well Network Development Plan, Red Hill Bulk Fuel Storage Facility, Dec. 11, 2017



Critical Analyses Not Yet Finished

- Navy's conceptual site model, groundwater flow, contaminant fate and transport, and planned additional phases of the risk/vulnerability assessment studies are not yet complete and have not been approved by EPA/DOH
- Experts in hydrogeology, metallurgy, risk and contaminant fate and transport do not support Navy's interpretation of existing data nor its use in making the selection
- If TUA decision must be made now in the absence of data then, TUA decision should be conservative and much more stringent than the status quo (precautionary principle)



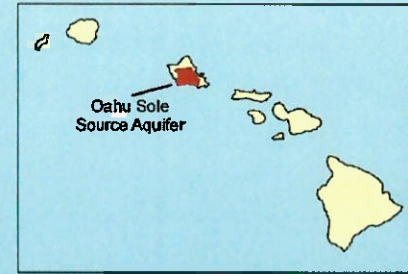
Oahu's Groundwater Aquifer

- Southern Oahu Basal Aquifer designated as a sole source aquifer by EPA on November 30, 1987
- EPA has determined that the Southern Oahu Basal Aquifer is the sole or principal source of drinking water and, if contaminated, this aquifer would create a significant hazard to public health



Oahu Sole Source Aquifer Designated Area

Hawaiian Islands



Notes and Explanation:

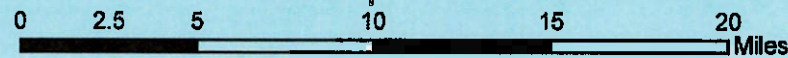
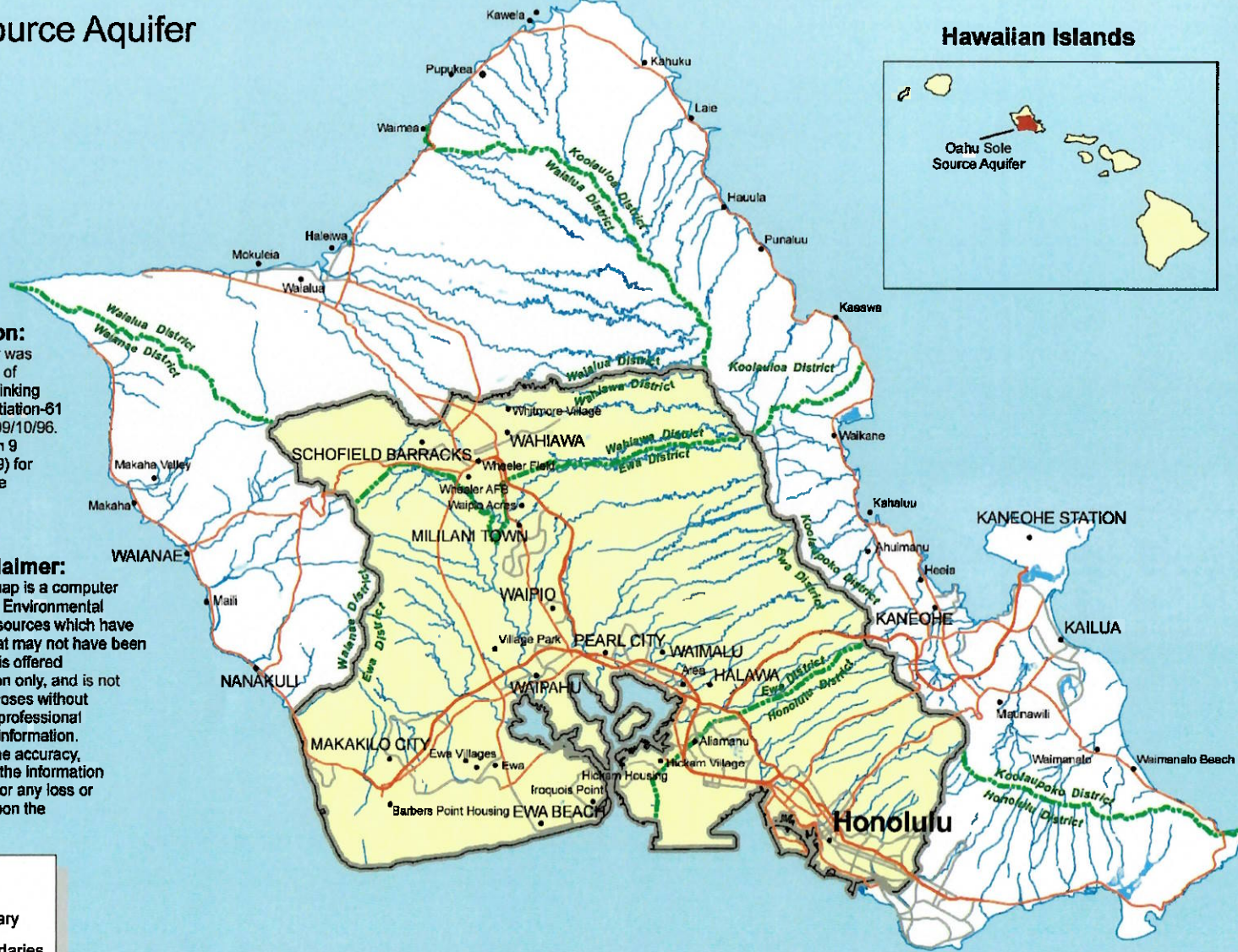
The Oahu Sole Source Aquifer was designated under the authority of Section 1424(e) of the Safe Drinking Water Act, Federal Register Citation-61 FR 47752, Publication Date - 09/10/96. Please contact US EPA Region 9 (Jamelya Curtis, 415-972-3529) for assistance in determining place locations with respect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

Map Status and Disclaimer:

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

Legend

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

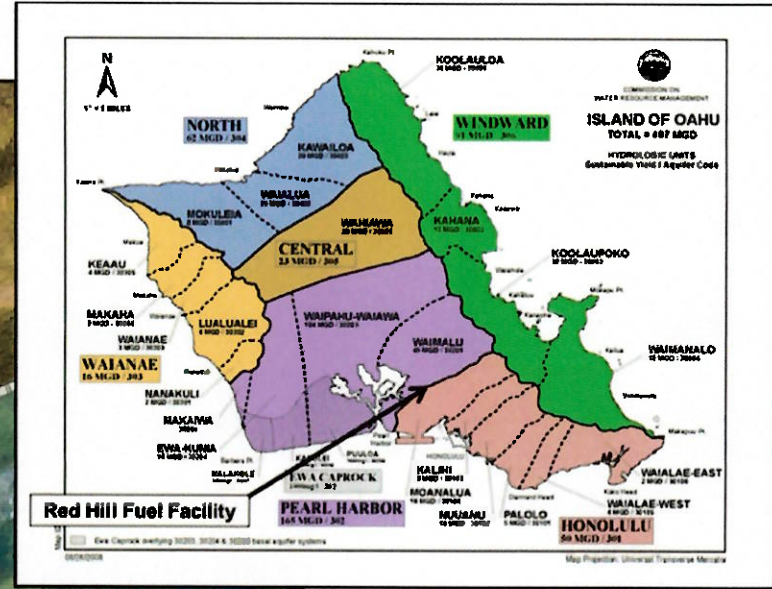
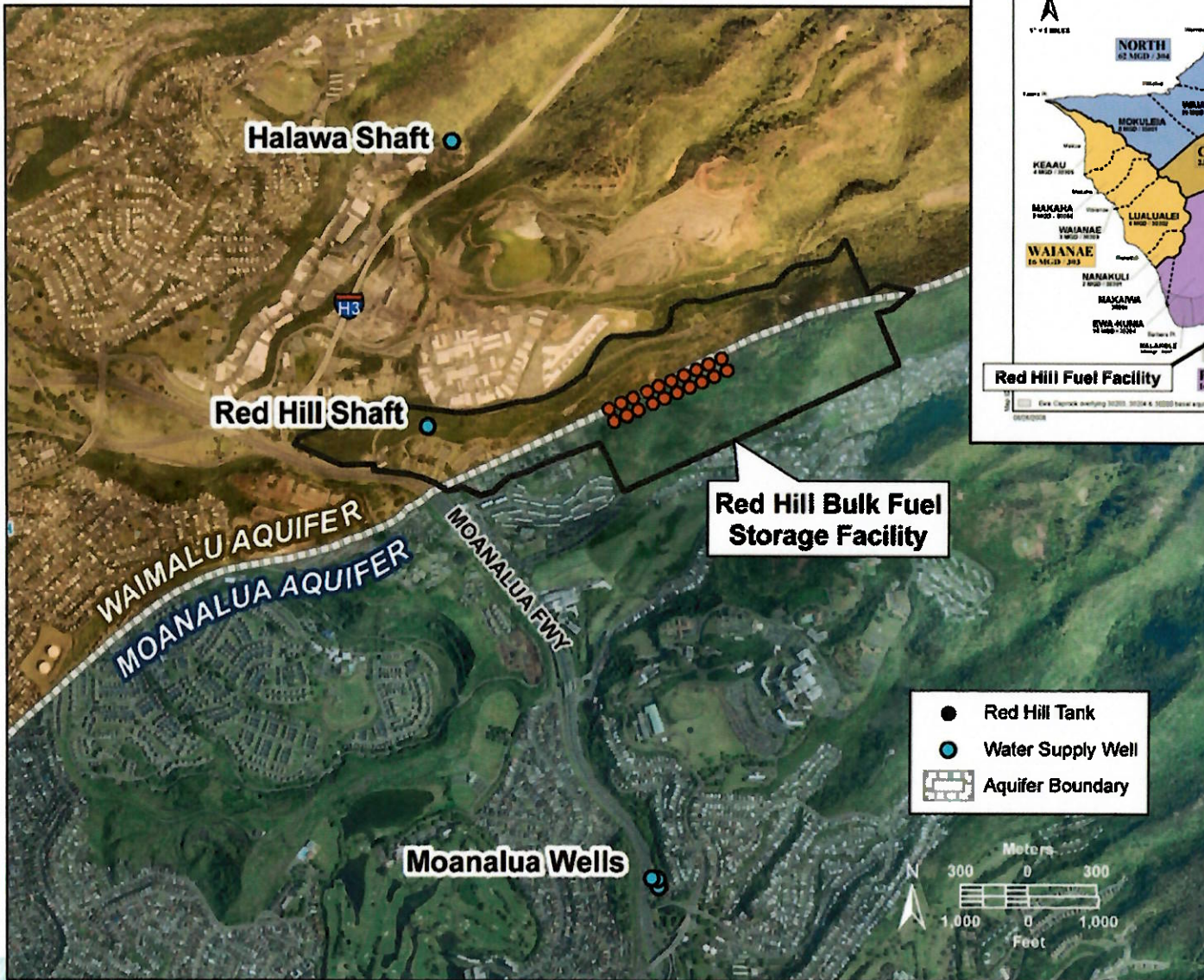


WATER FOR LIFE

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



Board of Water Supply
City and County of Honolulu



- Red Hill Tank
- Water Supply Well
- ▭ Aquifer Boundary



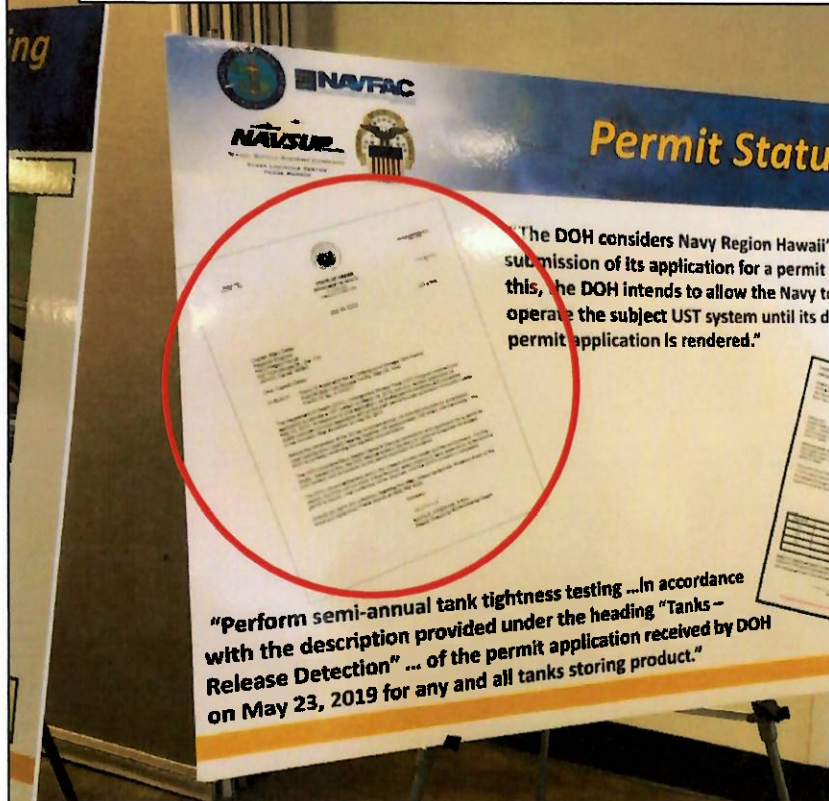


Oahu's Groundwater Aquifer – cont.

- Hawaii State Constitution, Article XI, Sections 1 and 7
 - The State and its political subdivisions shall conserve and protect Hawaii's natural beauty and all natural resources, including water
 - All public natural resources are held in trust by the State for the benefit of the people
 - The State has an obligation to protect the use of Hawaii's water resources for the benefit of its people
- There is no "Red Hill aquifer" available to "Oahu neighbors today and tomorrow"
- The aquifer is held in trust by the State for the benefit of the people

Red Hill UST Permit Status

Navy informational meeting poster, Oct. 15, 2019



“...the DOH intends to allow the Navy to continue to operate the subject UST system until its decision on the permit application is rendered.”

“...the DOH will not reach a final decision about whether to issue a permit or, in the event a permit is issued, what conditions will be attached, until the DOH's process is completed.” – Keith Kawaoka, Deputy Director of Environmental Health, July 16, 2019

DAVID Y. IGE
GOVERNOR OF HAWAII



BRUCE S. ANDERSON, Ph.D.
DIRECTOR OF HEALTH

STATE OF HAWAII
DEPARTMENT OF HEALTH
P. O. BOX 3378
HONOLULU, HI 96801-3378

In reply, please refer to
File

July 16, 2019

U0747RK

Captain Marc Delao
Regional Engineer
Navy Region Hawaii
850 Ticonderoga St., Ste. 110
JBPHH, Hawaii 96860

Dear Captain Delao:

SUBJECT: Status of Application for an Underground Storage Tank Permit
Red Hill Bulk Fuel Storage Facility, Red Hill, Aiea
Facility ID No. 9-102271

The Department of Health (DOH), Underground Storage Tank (UST) Program received your application to operate a UST system on March 14, 2019, and your revised application on May 23, 2019. In response to your application, we drafted permit conditions and requested public comment on your application and on the draft permit through publication of a public notice in the Honolulu Star-Advertiser on May 29, 2019.

Before the completion of the 30-day comment period, we received requests for a contested case hearing and a public hearing, together with approximately 156 letters with comments. The DOH is currently reviewing the requests and comments.

The DOH considers Navy Region Hawaii's (Navy's) submission of its application for a permit as timely. Based on this, the DOH intends to allow the Navy to continue to operate the subject UST system until its decision on the permit application is rendered.

The DOH will act deliberately and in the interest of public health and the environment. For this reason, the DOH will not reach a final decision about whether to issue a permit or, in the event a permit is issued, what conditions will be attached, until the DOH's process is completed.

Should you have any questions regarding this letter, please contact Ms. Roxanne Kwan of the Solid and Hazardous Waste Branch at (808) 586-4226.



Fuel Tank Advisory Committee Meeting – Oct. 17, 2019

- Navy discussed the TUA decision document
 - Discrepancies between what Navy presented and what is in the TUA document
- Committee expressed concerns with the single wall TUA selection and Navy's ability to implement the improvements in the report
- DOH issued the Navy a letter dated July 16, 2019 allowing the Navy to operate Red Hill pending final review of the permit application
- Public testimony expressed concerns with the Navy's single wall TUA selection and low confidence with the Navy's ability to prevent further releases in the future.

WATER FOR LIFE

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

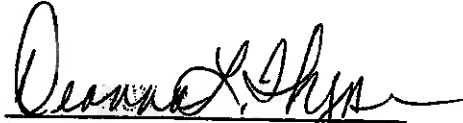


Board of Water Supply
City and County of Honolulu

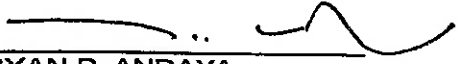
Questions/Discussion



The minutes of the Regular Meeting held on October 28, 2019 are respectfully submitted,


DEANNA L. THYSSEN

APPROVED:


BRYAN P. ANDAYA
Chair of the Board

NOV 25 2019

Date

THE MINUTES OF THE REGULAR MEETING HELD ON OCTOBER 28, 2019 WERE APPROVED AT THE NOVEMBER 25, 2019 BOARD MEETING			
	AYE	NO	COMMENT
BRYAN P. ANDAYA	X		
KAPUA SPROAT	X		
KAY C. MATSUI			ABSENT
RAY C. SOON			ABSENT
MAX J. SWORD			ABSENT
ROSS S. SASAMURA	X		
JADE T. BUTAY	X		