



Stakeholder Advisory Group

**Board of Water Supply
City & County of Honolulu**

**Thursday, January 21, 2021
Meeting #37 - Virtual**

WATER FOR LIFE

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



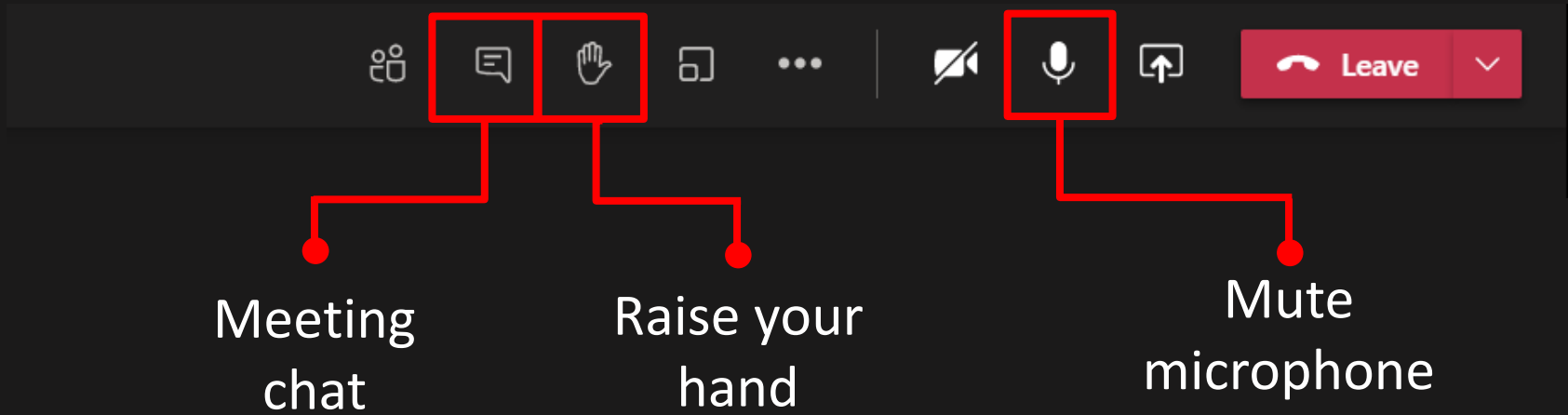
Board of Water Supply
City and County of Honolulu

Dave Ebersold


Facilitator

WELCOME

3 Important Controls



Virtual Meeting Best Practices

- 💧 Please stay muted unless you are speaking
- 💧 Use  or meeting chat to let us know you want to ask a question
- 💧 If you don't have the "raise hand" function or meeting chat, unmute your mic/phone and speak
- 💧 Speak one person at a time
- 💧 Expect something to go wrong
- 💧 Remember that patience is a virtue

Meeting Objectives

- ✔ Accept notes from meeting #36.
- ✔ Hear Updates from BWS.
- ✔ Discuss and receive input on update of the Long Range Financial Plan and assessment of impacts from COVID-19.
- ✔ Learn details of the Drought Response and Recovery Plan and give us your feedback.

WATER FOR LIFE

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



Board of Water Supply
City and County of Honolulu

Public Comments on Agenda Items



Action

Review and accept notes from

- 💧 Stakeholder Advisory Group Meeting #36 held on Thursday, October 15, 2020

WATER FOR LIFE

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



Board of Water Supply
City and County of Honolulu

Ernest Lau

BWS Manager and Chief Engineer

BWS UPDATES

Red Hill Contested Case Hearing

- 📅 February 1-5, 2021
- 💧 For information go to <https://health.hawaii.gov>



One Water Included in Unanimously Approved Bill 65

- 💧 One Water climate resilience policy, principles and procedures
 1. Establish a One Water Panel
 2. Develop an interagency MOU
 3. Incorporate One Water climate resilience in the city's plans
 4. Develop checklist of strategic and tactical actions
 5. Prioritize, sequence and implement One Water climate resilience initiatives
 6. Identify and implement One Water projects to promote innovative and scalable concepts
 7. Develop coordinating mechanism for private developments to align investment with city plans, regulations and infrastructure capacity



Resilience Office

Office of Climate Change, Sustainability and Resiliency



Matthew J. Gonser, AICP, CFM
Chief Resilience Officer & Executive Director

WATER FOR LIFE

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



Board of Water Supply
City and County of Honolulu

Mahalo!

Questions & Answers





Joe Cooper

BWS Waterworks Controller

Dave Ebersold

CDM Smith

LONG RANGE FINANCIAL PLAN UPDATE 2021

Updating the Long Range Financial Plan

- Provides the financial framework to support the BWS's 30-year Water Master Plan
- Developed with extensive input from Stakeholder Advisory Group
- Adopted by BWS Board February 2018



Why Update the LRFP Now?

- Compare actual conditions to what was planned
- Evaluate impacts of COVID-19 global pandemic and implement appropriate adjustments
- Commitment to “Live within our means”

LRFP Update Process

Revise Baseline

Update model to actual conditions and make adjustments



Update LRFP Scenarios

Evaluate previous scenarios against revised baseline



Evaluate COVID-19 Impacts

Evaluate changes in revenues and expenses, consider recovery scenarios



Conclusions and Recommendations

Provide recommendations for on-going management and future planning

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Evaluate COVID-19 Impacts

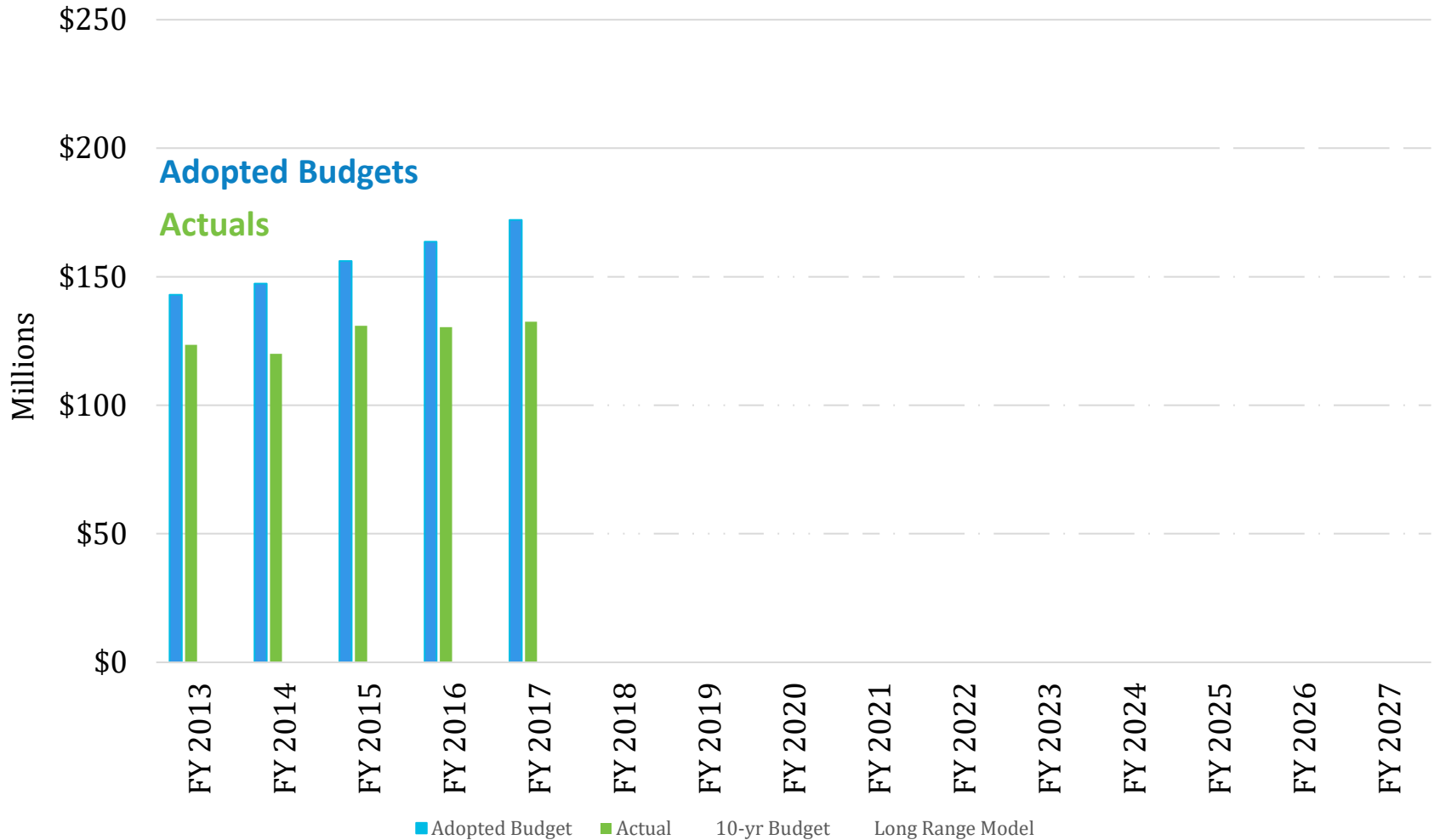
Evaluate changes in revenues and expenses, consider recovery scenarios



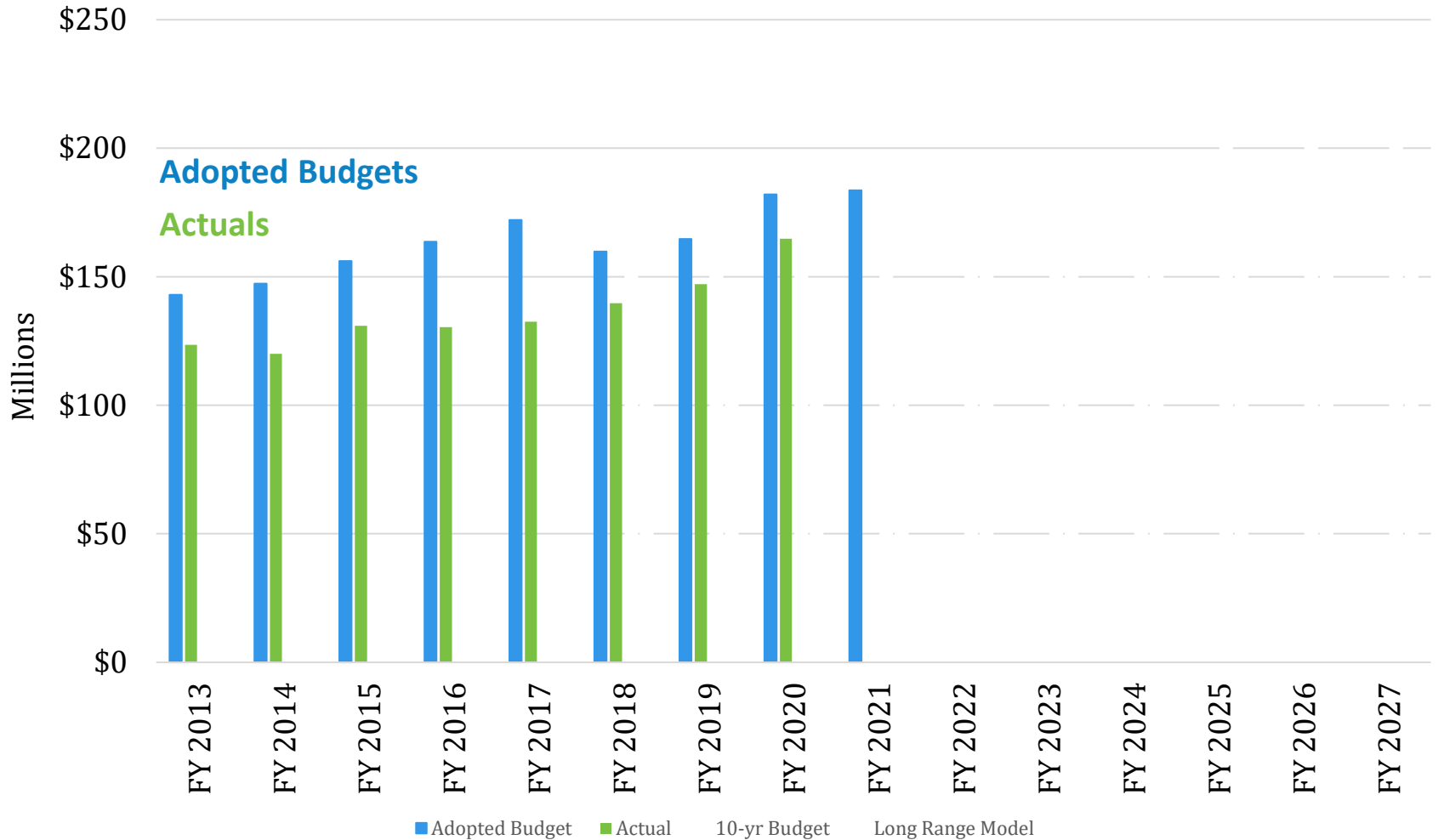
Conclusions and Recommendations

Provide recommendations for on-going management and future planning

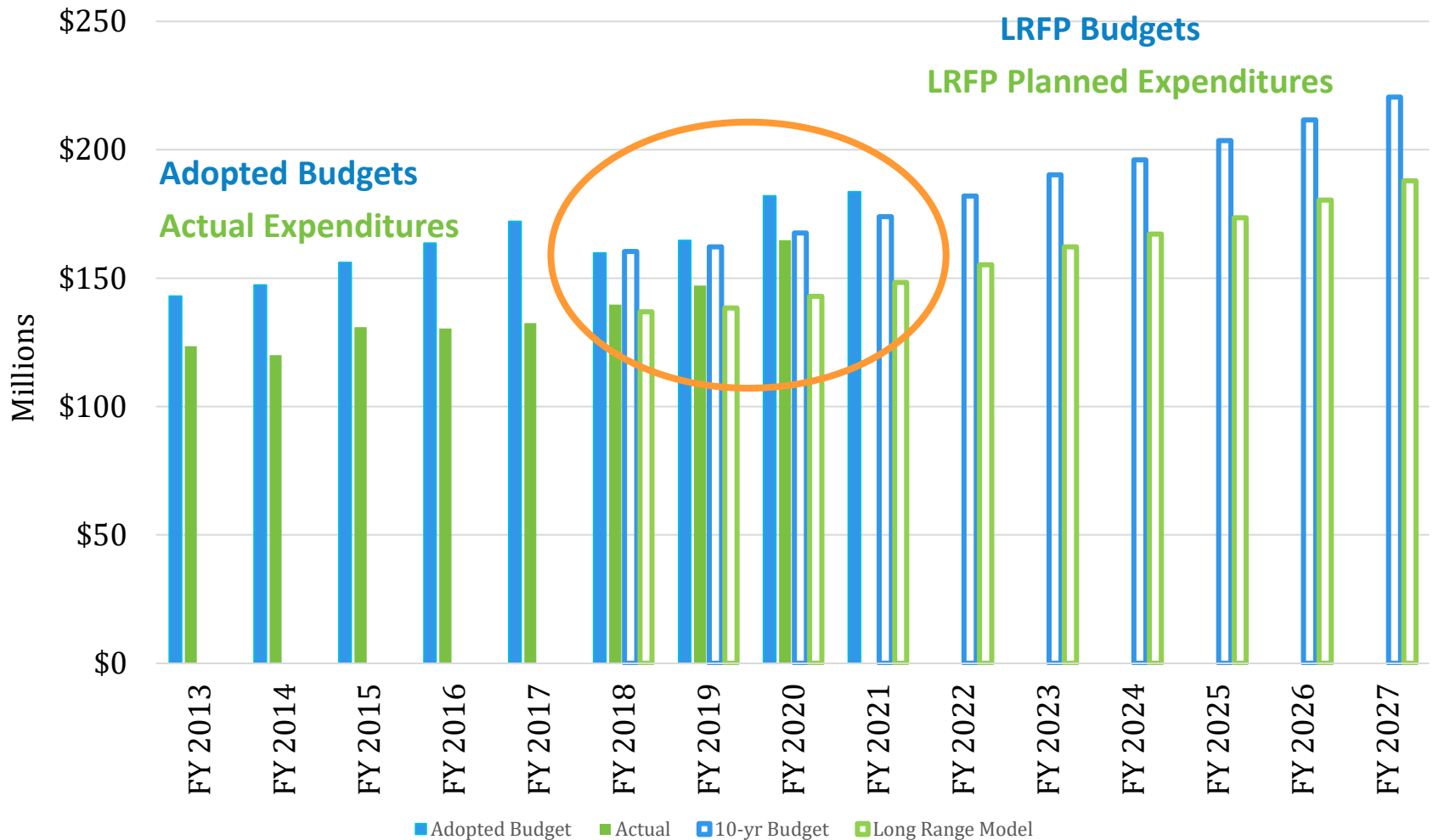
Operations & Maintenance Expenses



Operations & Maintenance Expenses



Operations & Maintenance Expenses



Actual Operations & Maintenance Expenditures Exceed LRFP

	FY 2018	FY 2019	FY 2020	FY 2021
Adopted Budget	\$159.8	\$164.6	\$182.0	\$183.6
Actual Expenditures	\$139.7	\$147.1	\$164.8	NA
LRFP Planned Expenditures	\$136.9	\$138.4	\$142.9	\$148.4
Difference Actual – LRFP Planned	\$2.9	\$8.7	\$21.8	NA

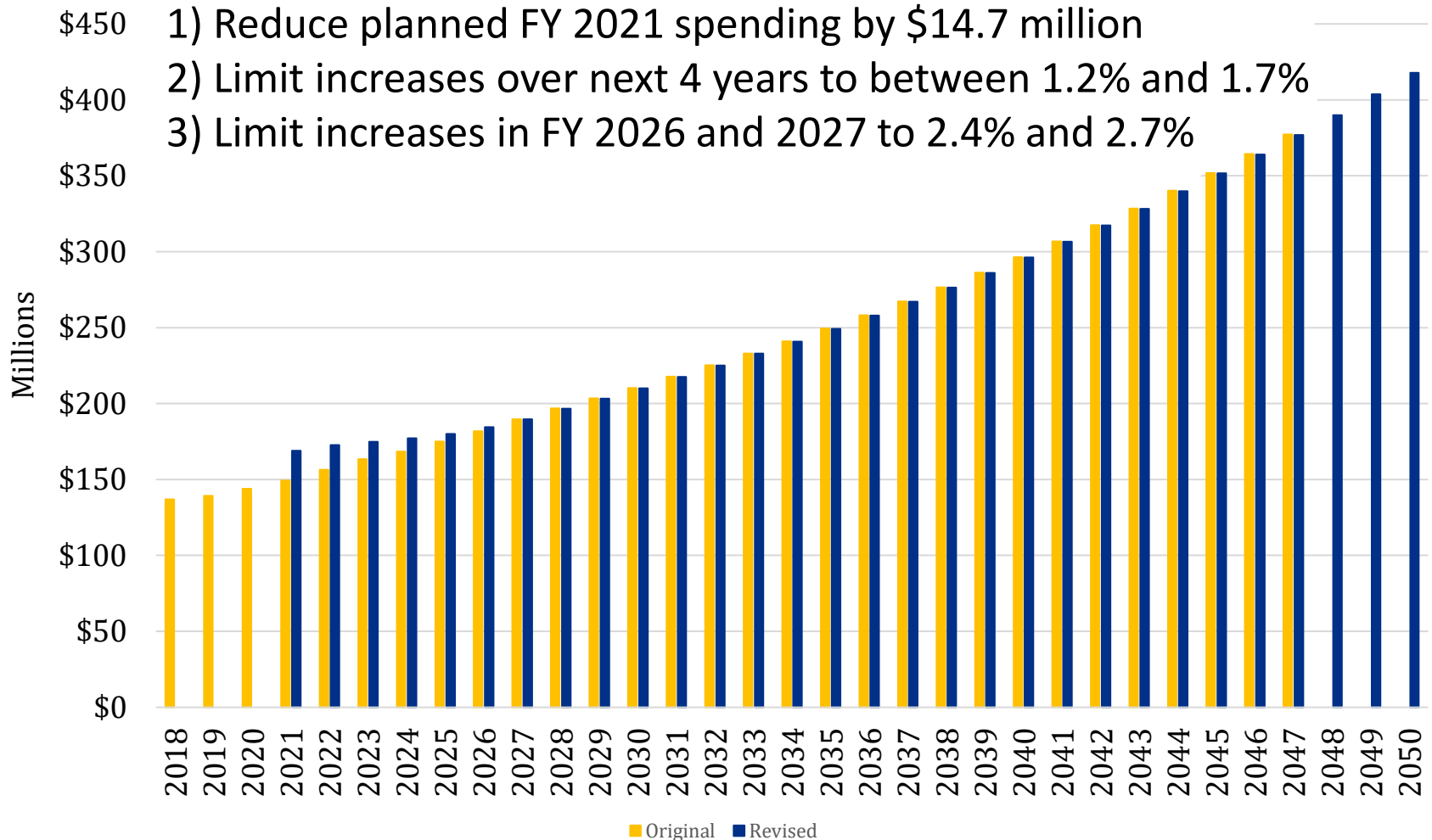
(1) May 26, 2020
\$ million

Drivers of FY 2020 O&M Budget Increases

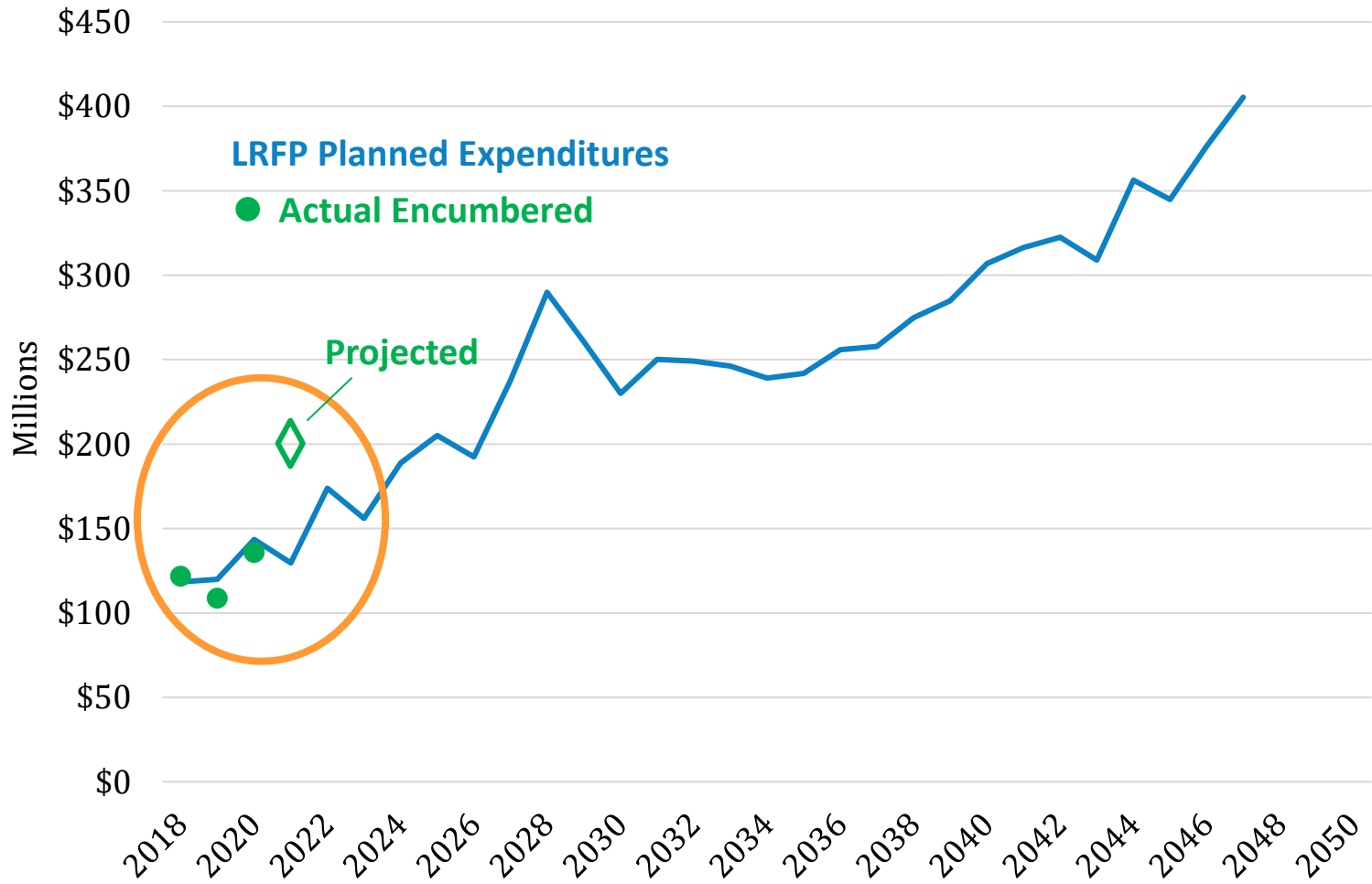
Item	Amount (million)
Materials, Supplies & Services	
Replace RO Line for Recycled Water System	\$2.2
TCP Advanced Treatment Study	\$2.0
AWIA Risk and Resiliency Assessment, Water Resource Protection	\$2.0
Increase in Emergency Road Repairs	\$1.5
Consultant Services for Instrumentation & Control System Upgrades	\$1.2
Equipment	
More for New and Replacement Vehicles	\$1.2
2 Mobile Generators, Eligible for 75% FEMA Reimbursement	\$0.7
Fixed Charges	
Increase in Employee Retirement System Costs	\$1.8
Increase in Electricity Costs	\$2.0
Total	\$14.6

Revised Baseline Realigns O&M Budget with LRF

- 1) Reduce planned FY 2021 spending by \$14.7 million
- 2) Limit increases over next 4 years to between 1.2% and 1.7%
- 3) Limit increases in FY 2026 and 2027 to 2.4% and 2.7%



Capital Project Encumbrances



Actual Capital Encumbrances Expected to Exceed LRFM

	FY 2018	FY 2019	FY 2020	FY 2021
Adopted Capital Budget	\$144.3	\$138.4	\$166.3	\$201.6 (1)
Encumbered Capital	\$121.7	\$108.6	\$135.8	NA
Long Range Model	\$118.4	\$119.9	\$143.6	\$129.7
Difference = Encumbered – Long Range Model	\$3.3	-\$11.4	-\$7.8	NA

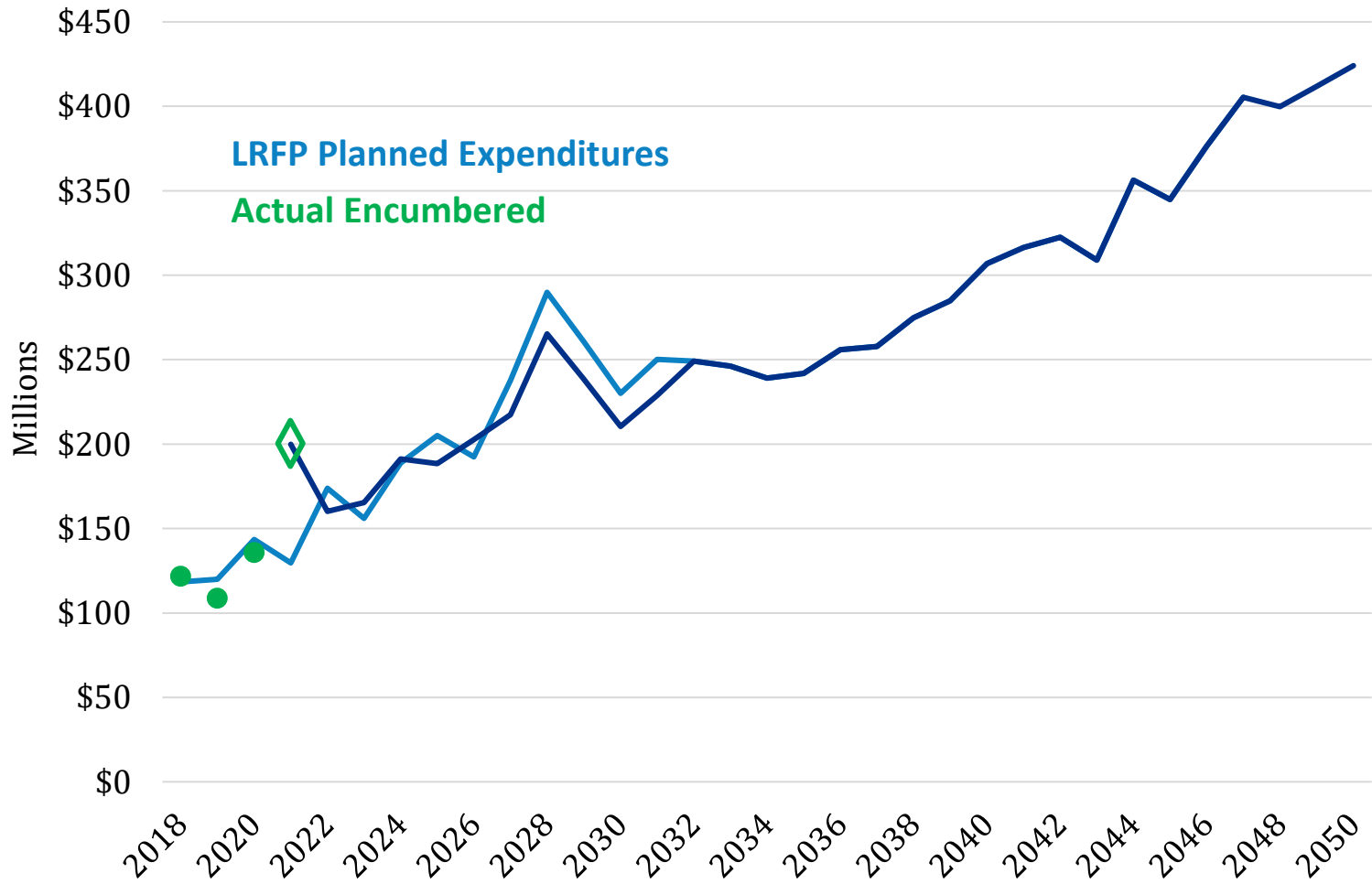
(1) September 28, 2020
\$ million

CIP Budget Increased to \$201.6 million

Project	Amount (million)	Comments
Manana Base Yard Secondary Laboratory and Control Center	\$3.3	Expedited with hopes of using CARES funds
Lanikai Water System Improvement Project Part II	\$4.6	Accelerated to avoid construction conflicts in FY 2022
Kalawahine 180 Reservoir Project	\$21.3	New connecting pipelines
Haiku Stairs Design	-\$0.1	No longer needed
Contract Adjustment Account	\$2.3	Adjustments for inflation, minor cost variations
Total	\$31.5*	

* May not total due to rounding

Adjustments to CIP to Realign with LRF



CIP Adjustments Total 2% over 10 Years

Fiscal Year	Original	Revised	Difference
2021	\$129.7	\$199.9	\$70.2
2022	\$173.8	\$160.3	(\$13.5)
2023	\$156.0	\$165.4	\$9.4
2024	\$188.8	\$191.2	\$2.3
2025	\$205.1	\$188.4	(\$16.6)
2026	\$192.5	\$202.7	\$10.2
2027	\$237.7	\$217.4	(\$20.3)
2028	\$289.9	\$265.2	(\$24.8)
2029	\$260.8	\$238.5	(\$22.3)
2030	\$230.1	\$210.5	(\$19.6)
2031	\$250.2	\$228.8	(\$21.4)
Total	\$2,314.7	\$2,268.3	(\$46.4)

\$ million

Sources of Funding for Capital Projects

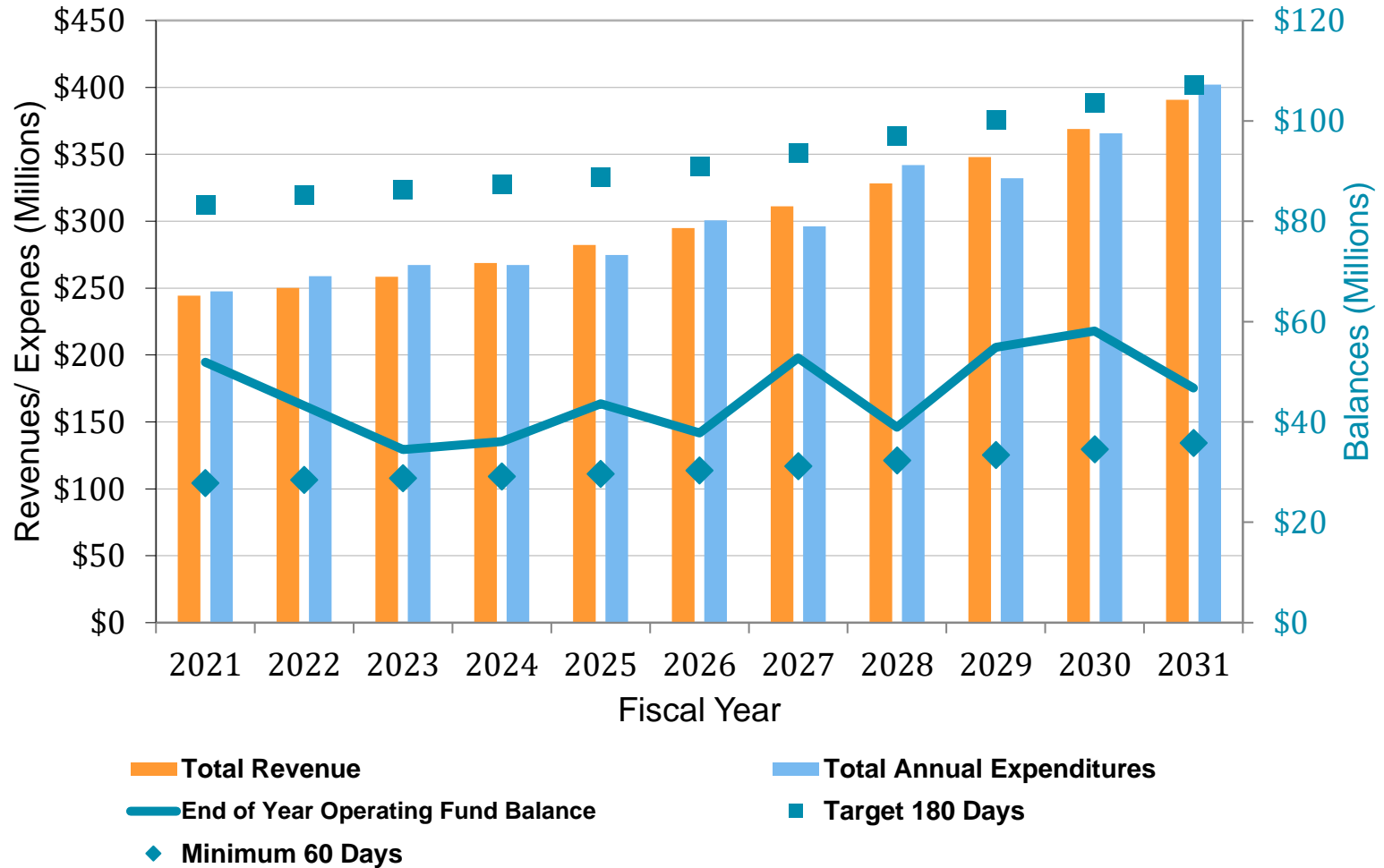
Item	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031
Carryover of Prior Year	\$16	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Cash	\$52.4	\$54.2	\$56.1	\$48.7	\$46.1	\$60.3	\$43.2	\$73.1	\$46.4	\$63.1	\$84.4
Bond Issue	\$65.0	\$65.0	\$70.0	\$115.4	\$125.0	\$125.0	\$155.0	\$175.0	\$175.0	\$130.0	\$125.0
State Revolving Loan*	\$12.0	\$9.0	\$19.0	\$19.6	\$10.0	\$10.0	\$12.0	\$10.0	\$10.0	\$10.0	\$12.0
WSFC Funds**	\$54.9	\$32.4	\$20.6	\$8.0	\$8.0	\$8.0	\$8.0	\$8.0	\$8.0	\$8.0	\$8.0
Total Sources	\$184.2	\$160.6	\$165.8	\$191.7	\$189.1	\$203.3	\$218.2	\$266.1	\$239.4	\$211.1	\$229.4

*May include Drinking Water and Clean Water SRF

** Last updated in 1993

\$ million

Revised Baseline 10-Year Forecast



LRFP Update Process

Revise Baseline

Update model to actual conditions and make adjustments



Update LRFP Scenarios

Evaluate previous scenarios against revised baseline



Evaluate COVID-19 Impacts

Evaluate changes in revenues and expenses, consider recovery scenarios



Conclusions and Recommendations

Provide recommendations for on-going management and future planning

No Significant Changes to 6 Scenarios



Aggressive
Conservation



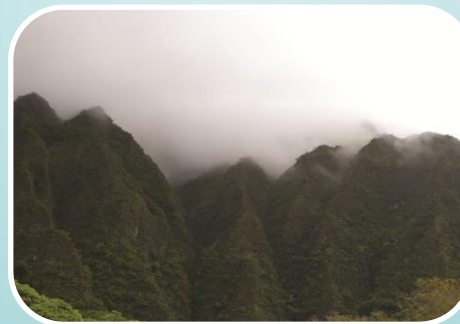
Aggressive
Growth



Natural
Disaster



Source Water
Contamination



Climate
Change



Economic
Downturn

Conclusions from Long Range Trend Analysis

- Monitoring using Water Master Plan scorecard and other available metrics important to assessing changing conditions
- Financial tools available to BWS appear adequate
- With commitment to Water Master Plan implementation and BWS's financial policies, high rate shock under any scenario not anticipated

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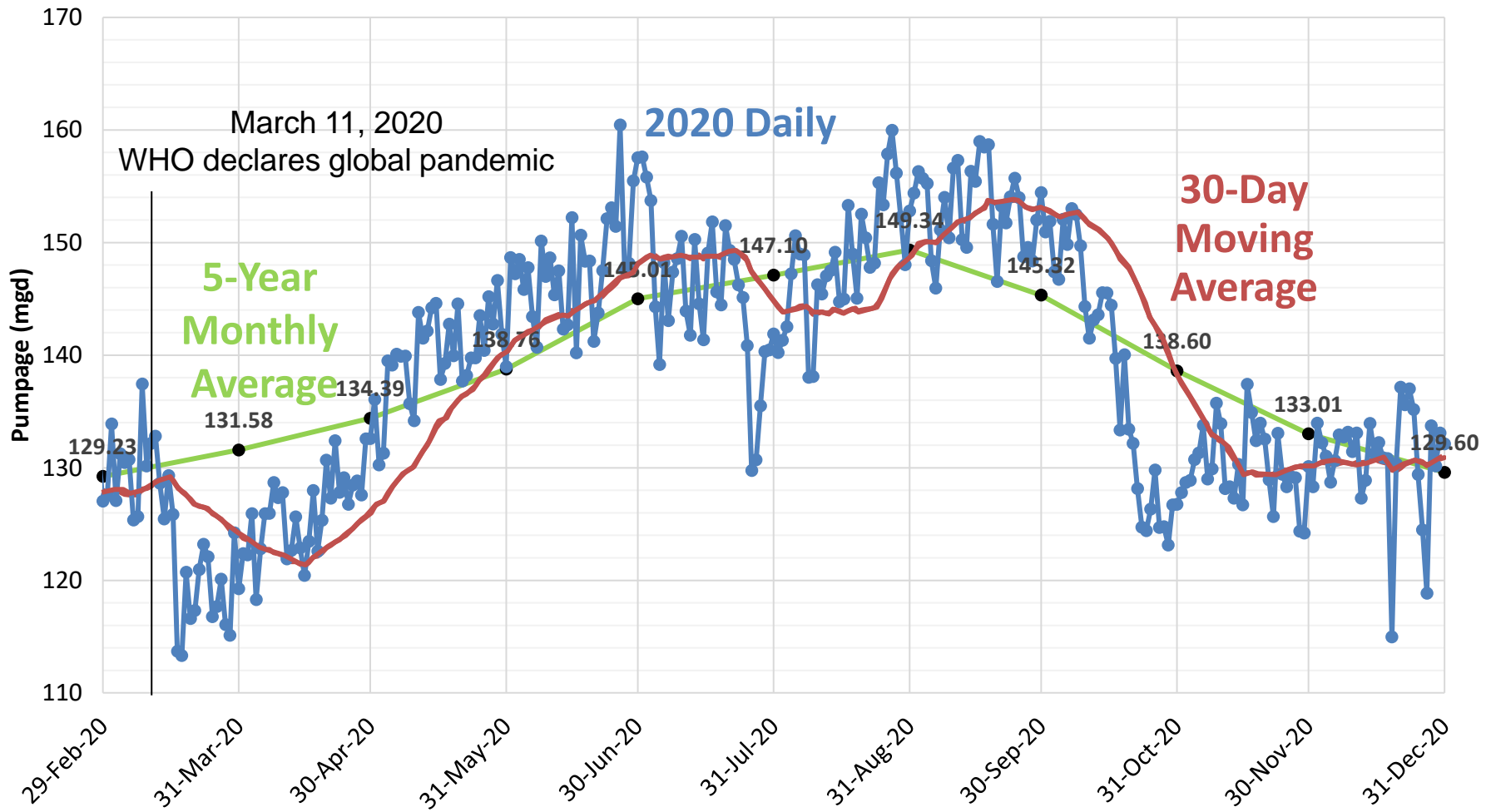
Evaluate changes in revenues and expenses, consider recovery scenarios



Conclusions and Recommendations

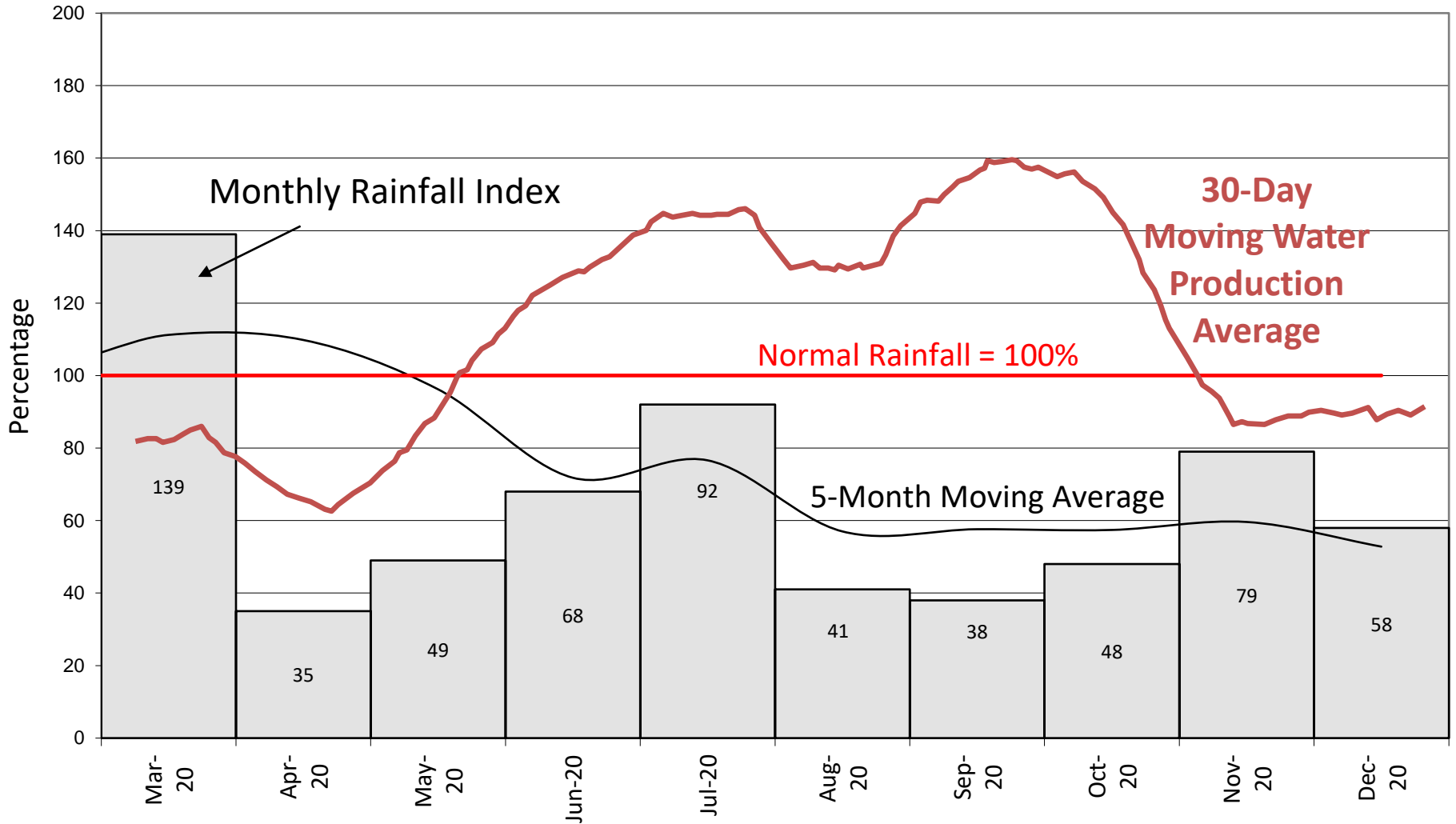
Provide recommendations for on-going management and future planning

Total Island Potable Water Production Since March 1, 2020

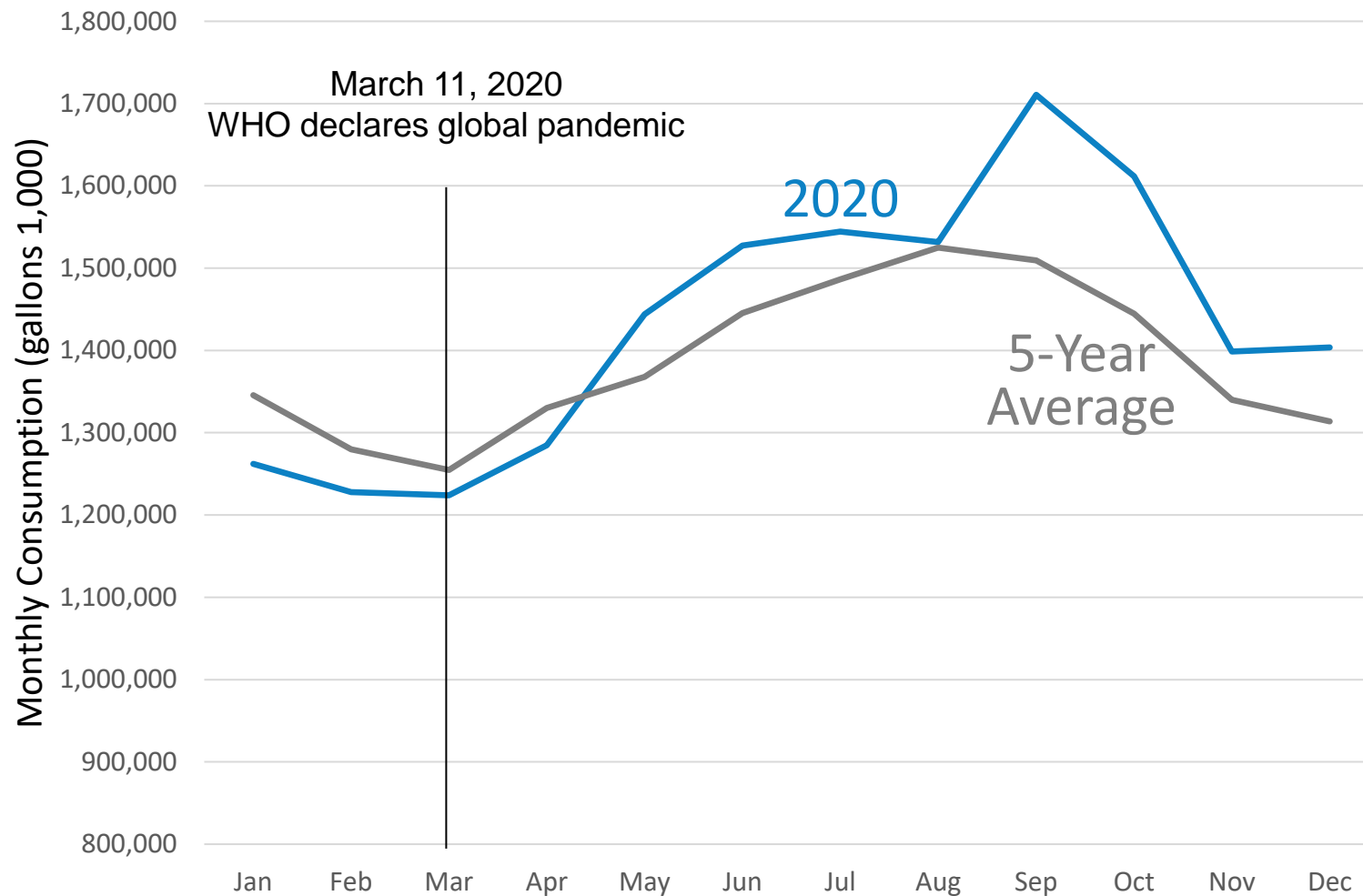


Rainfall Index

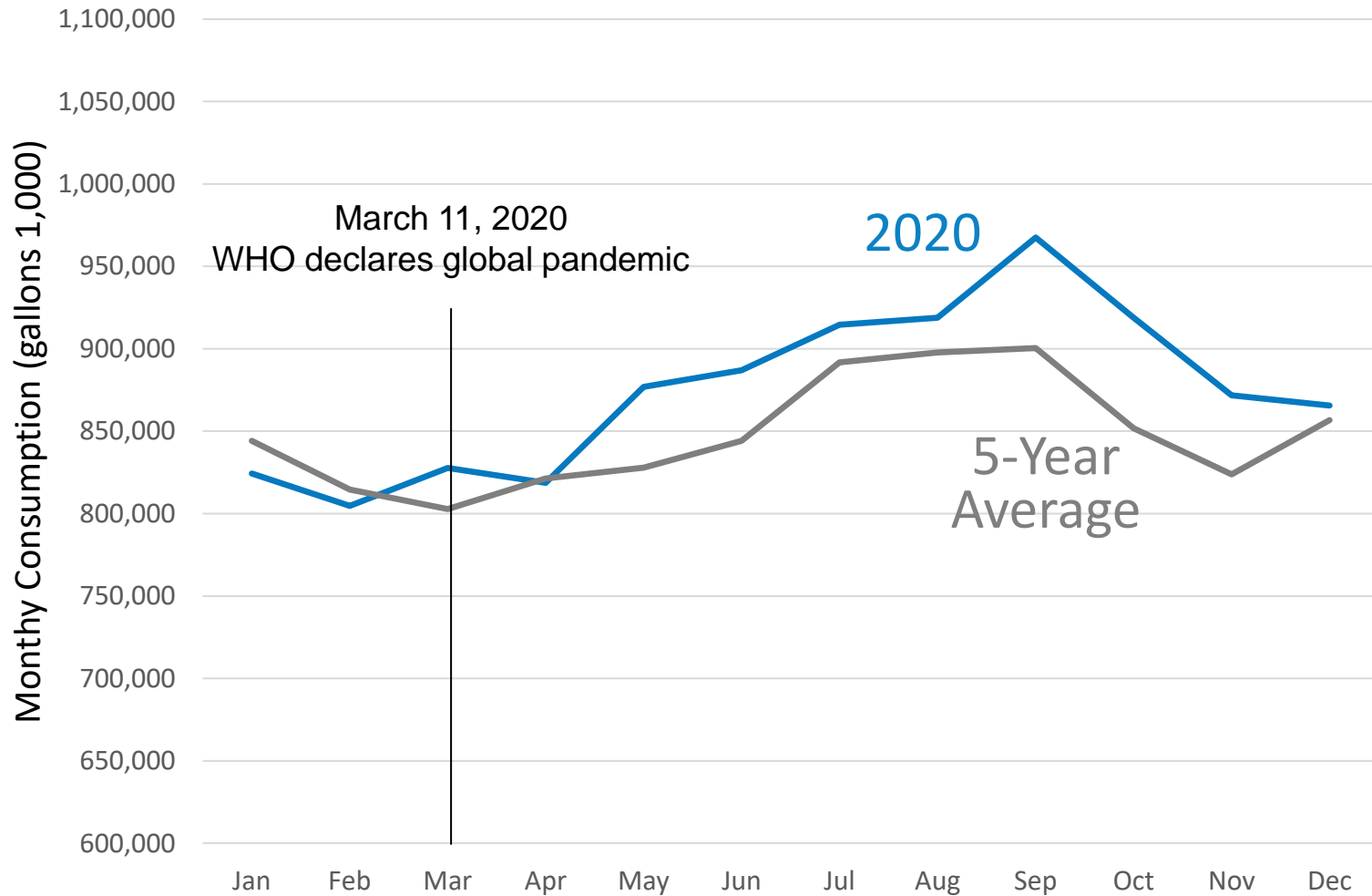
HONOLULU WATERSHED AREA Rainfall Intake



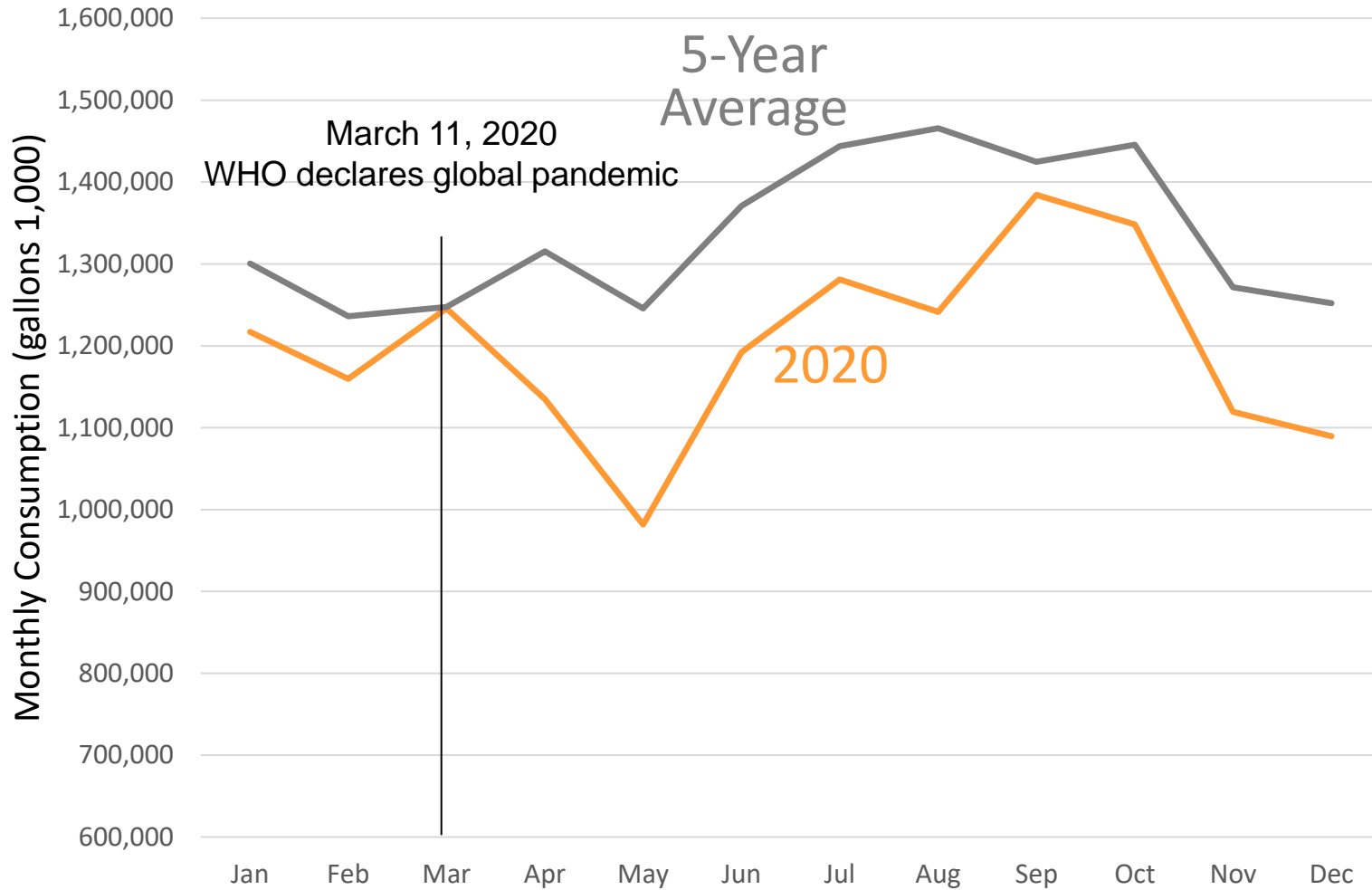
Single-Family Residential Consumption



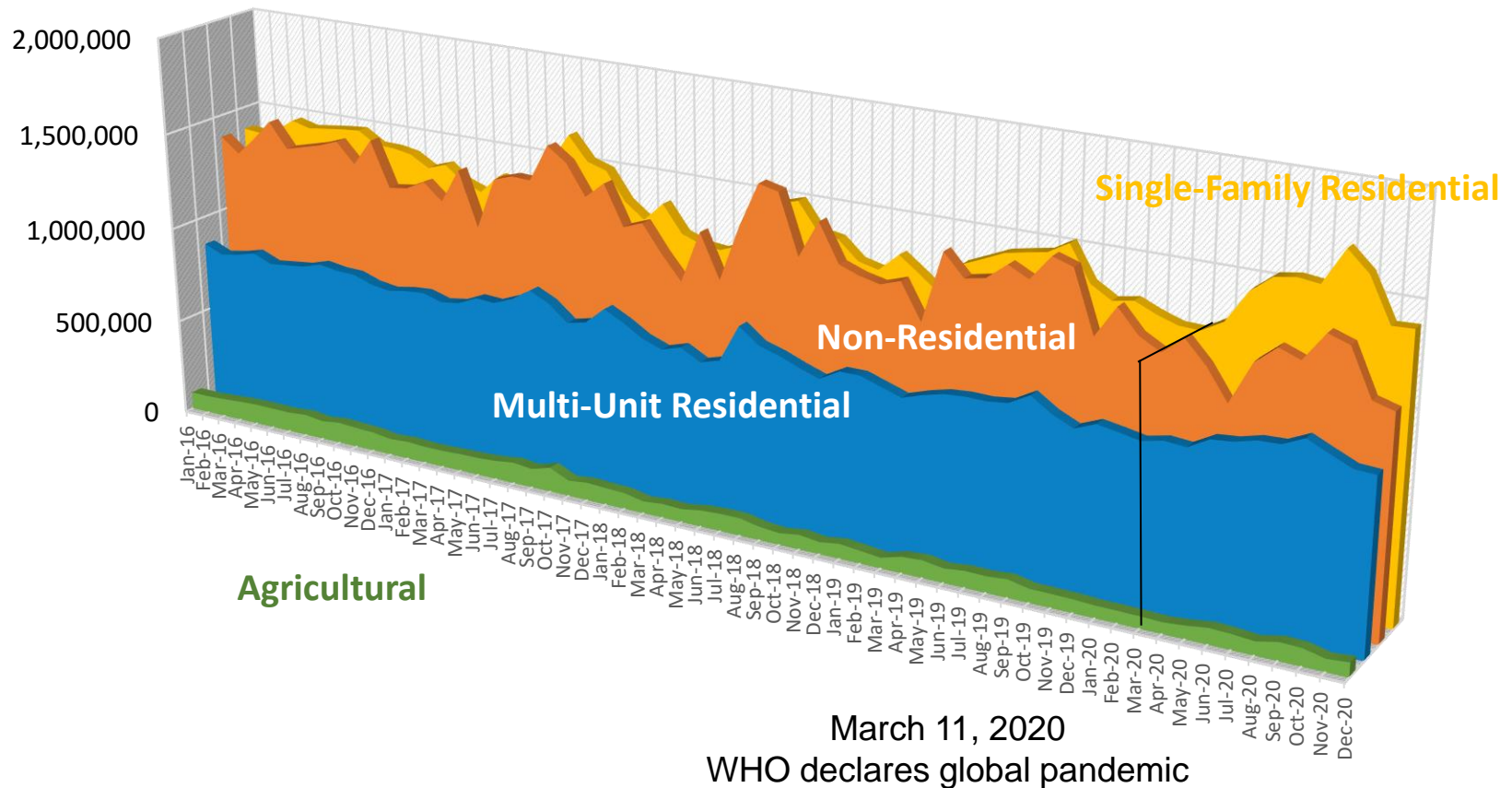
Multi-Unit Residential Consumption



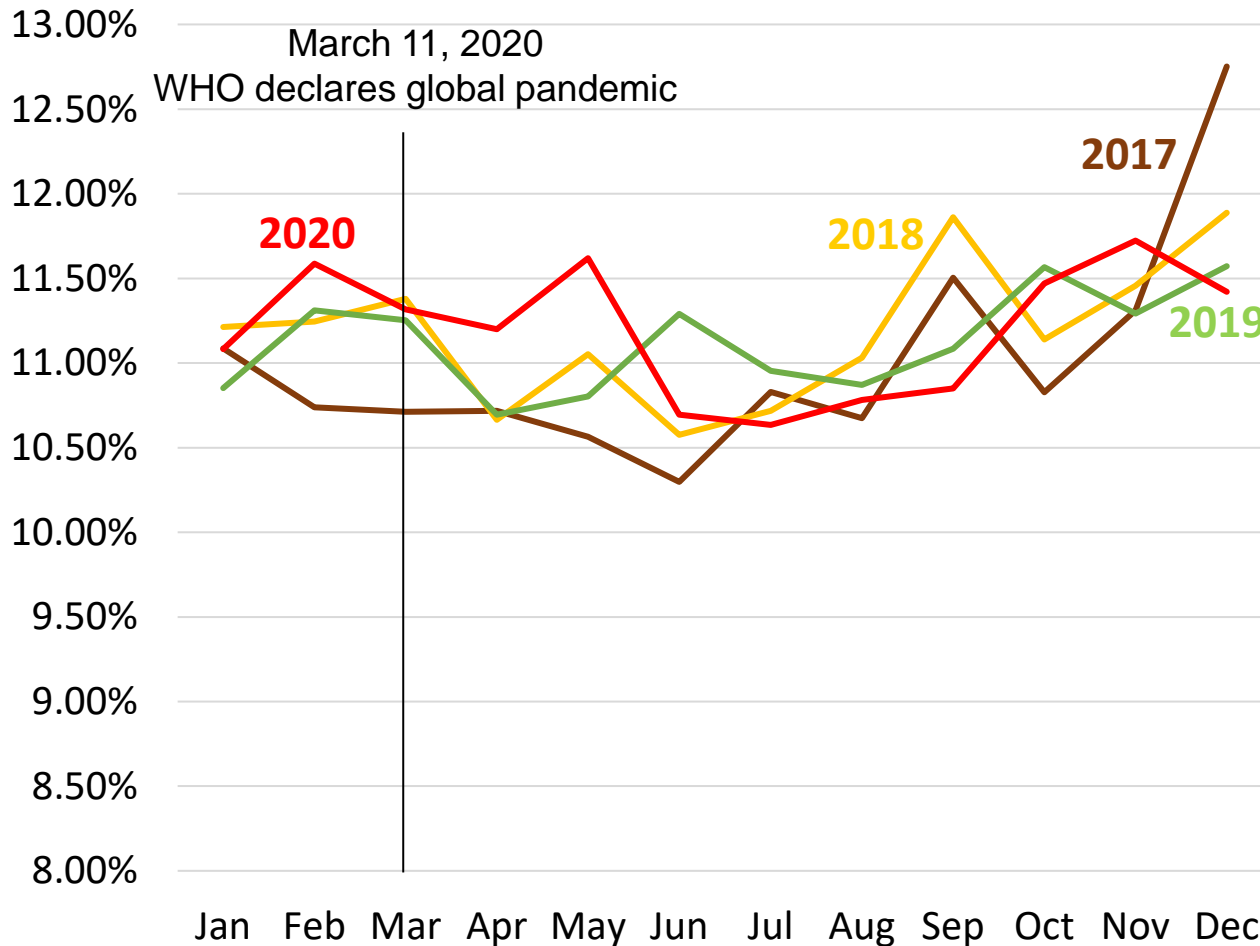
Non-Residential Consumption



Historical Water Consumption January 2016 – December 2020

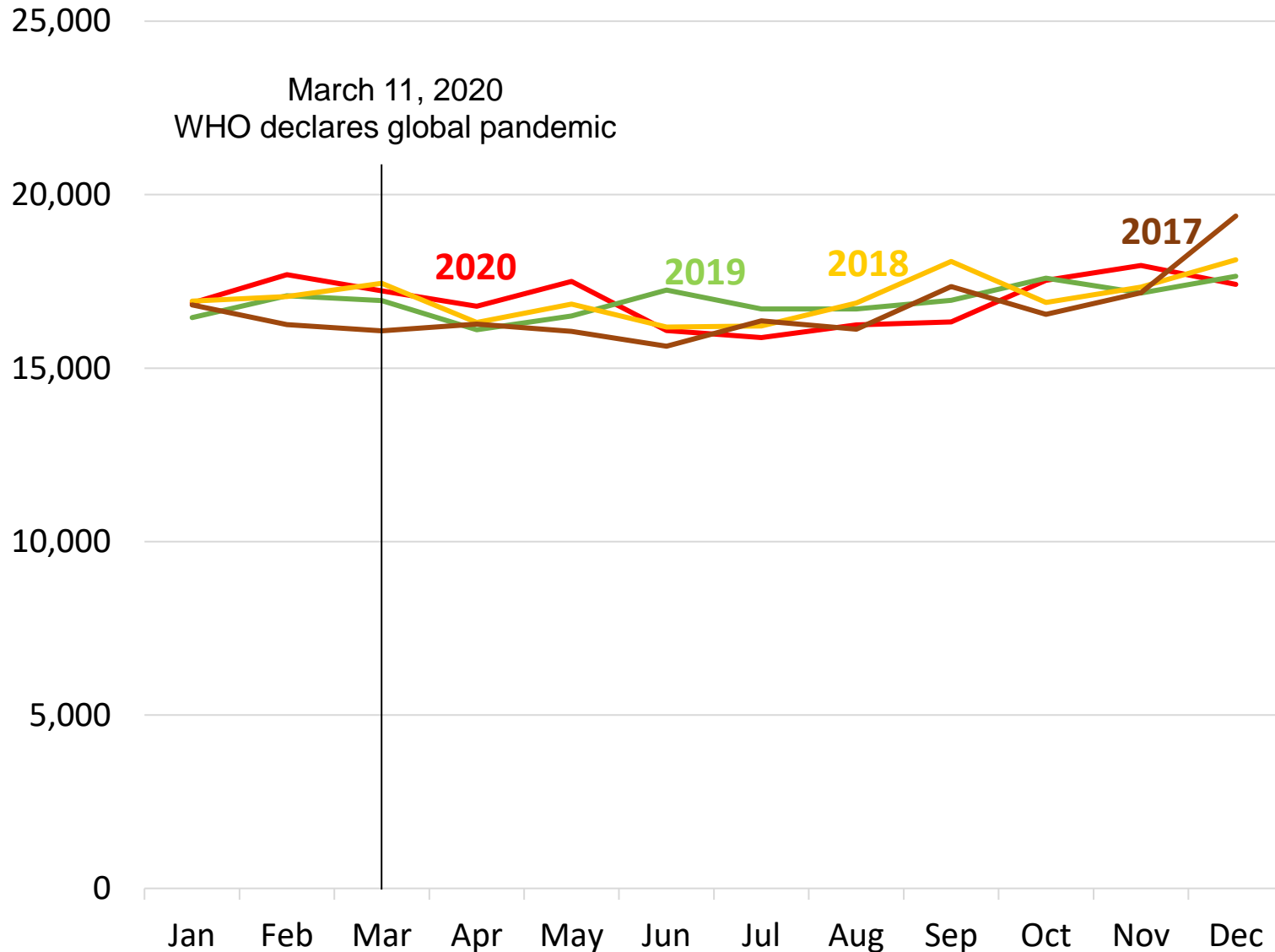


Percentage of Water Accounts 30 Days Past Due – 2017 to Present

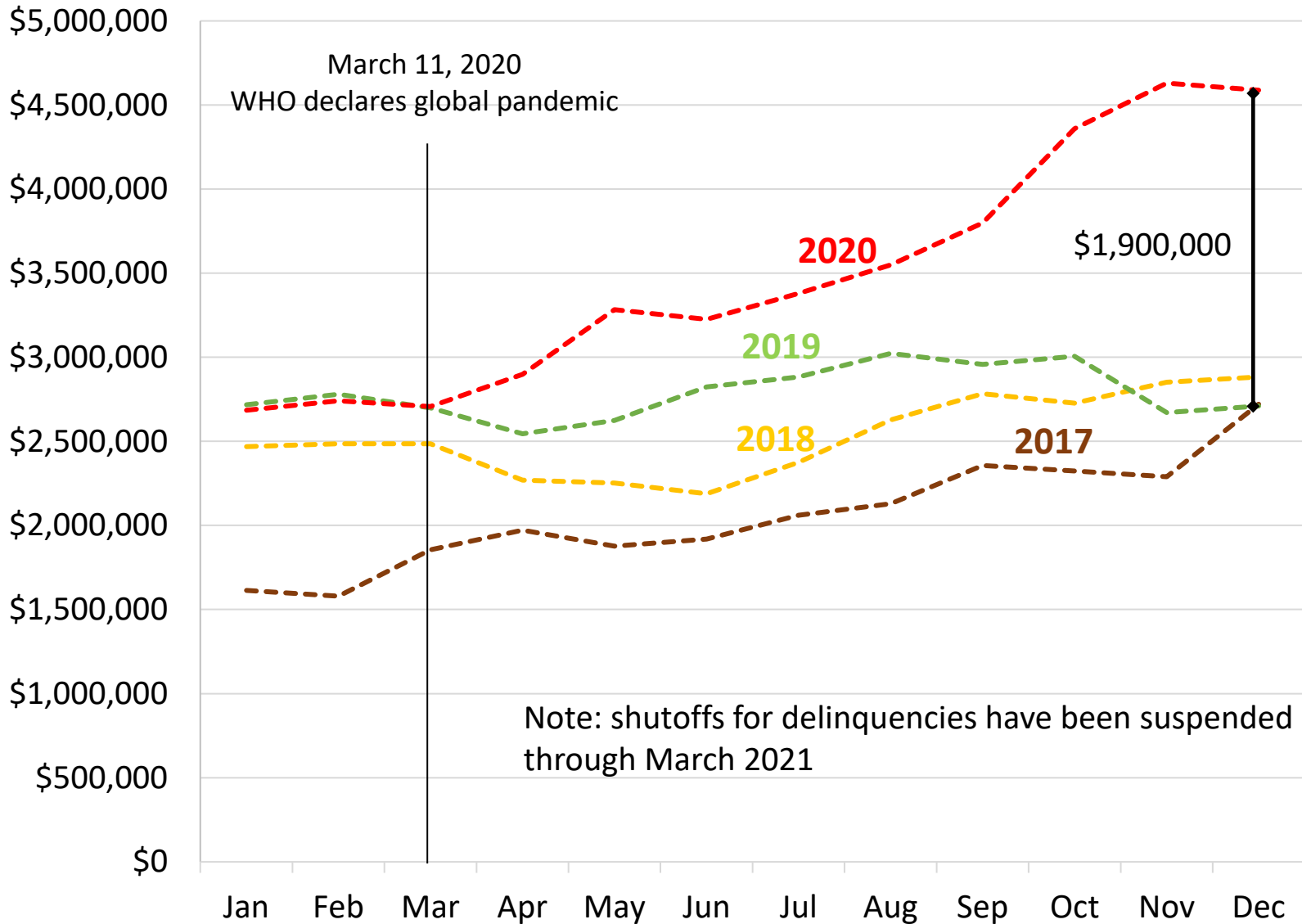


Note: BWS uncollectable accounts average 2015-2019 = 0.2% of operating revenue (\$459,490 annually)

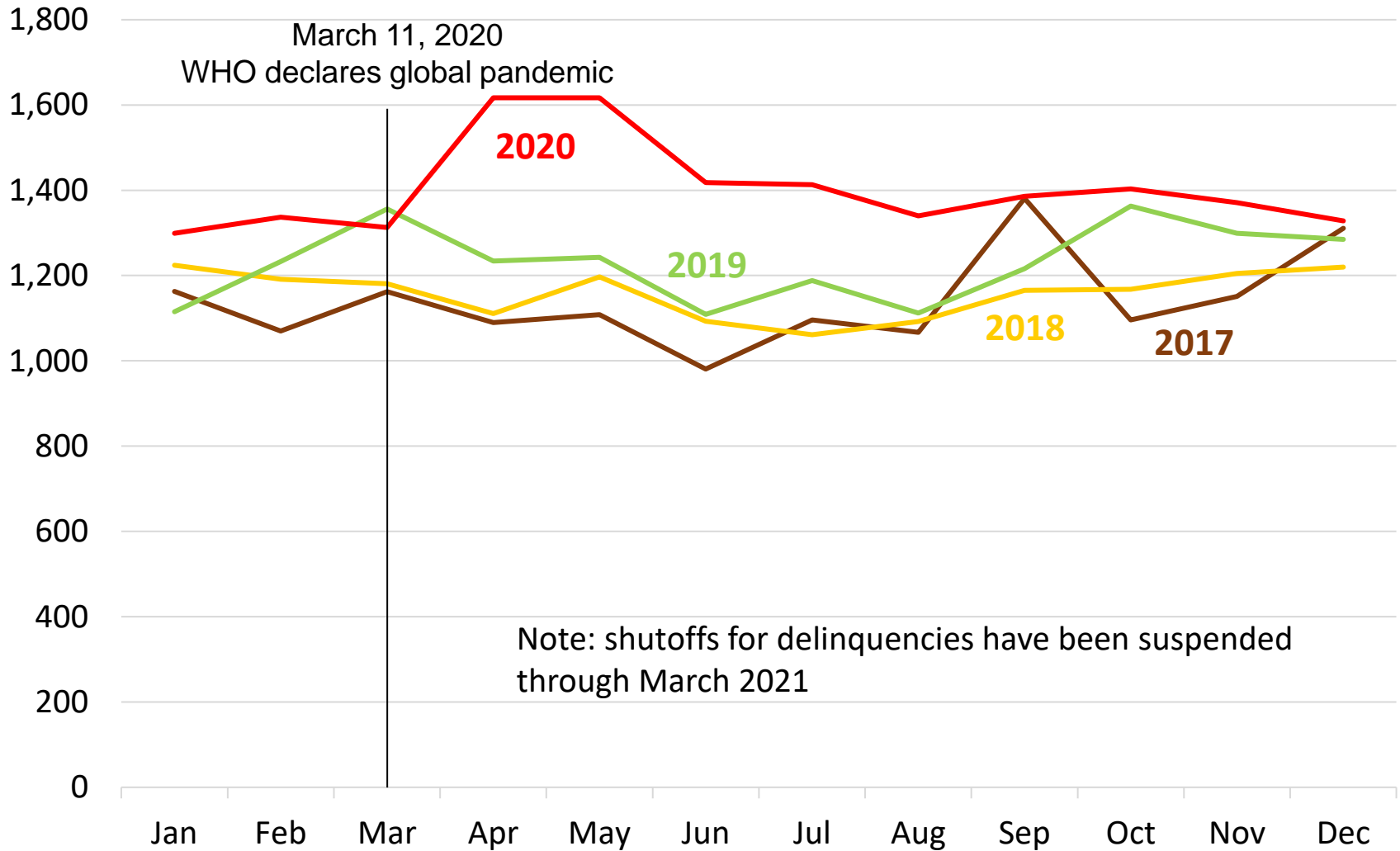
Monthly Residential Water Customer Delinquency – 2017 to Present (Number)



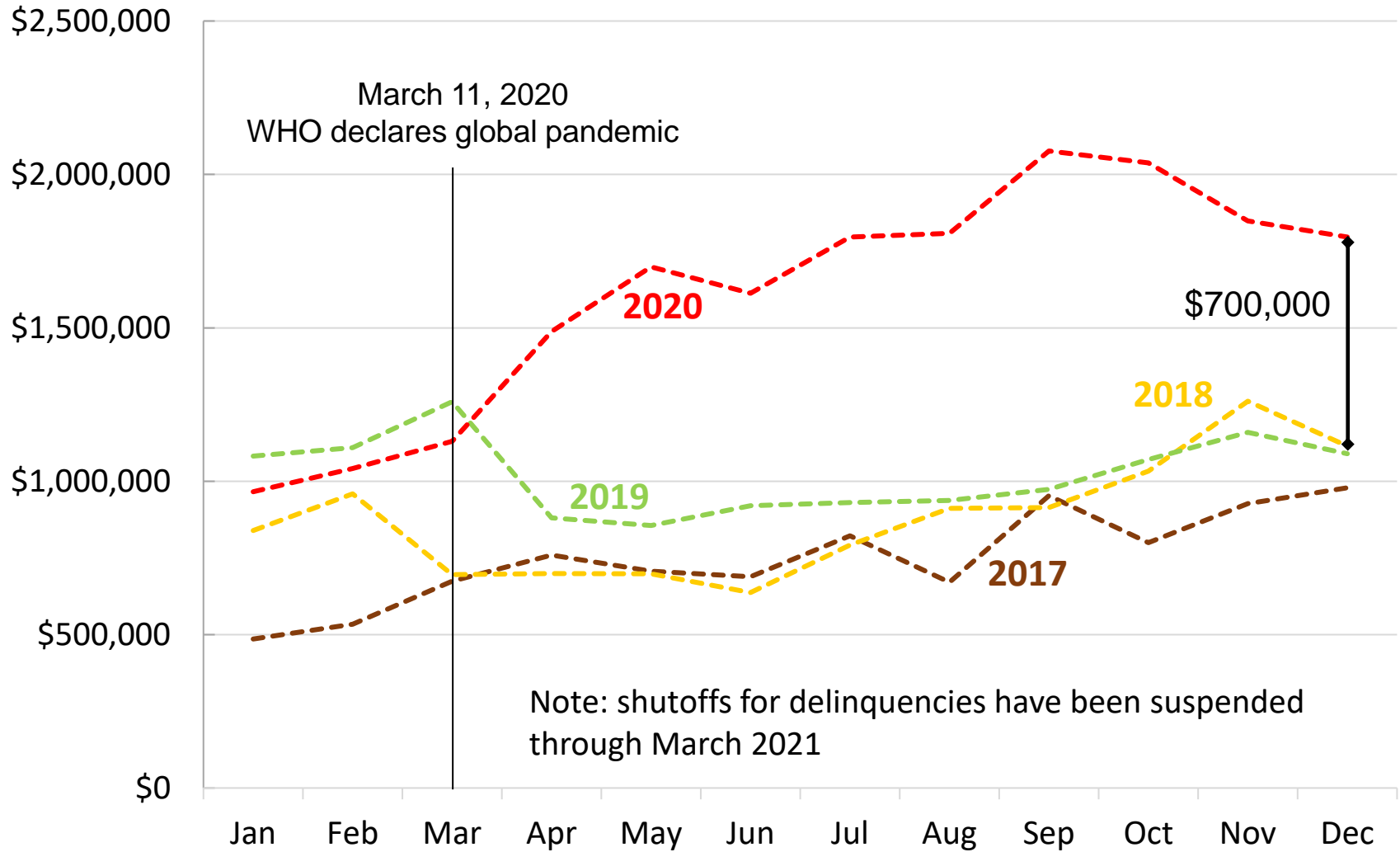
Monthly Residential Water Customer Delinquency – 2017 to Present (\$)



Monthly Commercial Water Customer Delinquency – 2017 to Present (Number)



Monthly Commercial Water Customer Delinquency – 2017 to Present (\$)



Considering a Range of 3 Scenarios Based on Ability to “Reopen” Tourism

Element	Optimistic	Moderate	Pessimistic
Test-based Reopening	Yes	Yes	Yes
Rapid Testing and Effective Contact Tracing	Yes	No	No
3 rd Wave	No	No	Yes
Vaccine	Imminently widely available	Widely available Summer 2021	Widely available late 2021

After UHERO Annual Forecast Update, December 2020

Stakeholder Advisory Group Input

October 15, 2020

- No concerns with scenarios were expressed, just nuances to consider in modeling.
- Need to factor in that some delinquent funds will never be repaid. BWS will lose money.
- To recover some or all of that money, BWS may be able to pursue economic relief funding that may not exist today.

Stakeholder Advisory Group Input

October 15, 2020 (Continued)

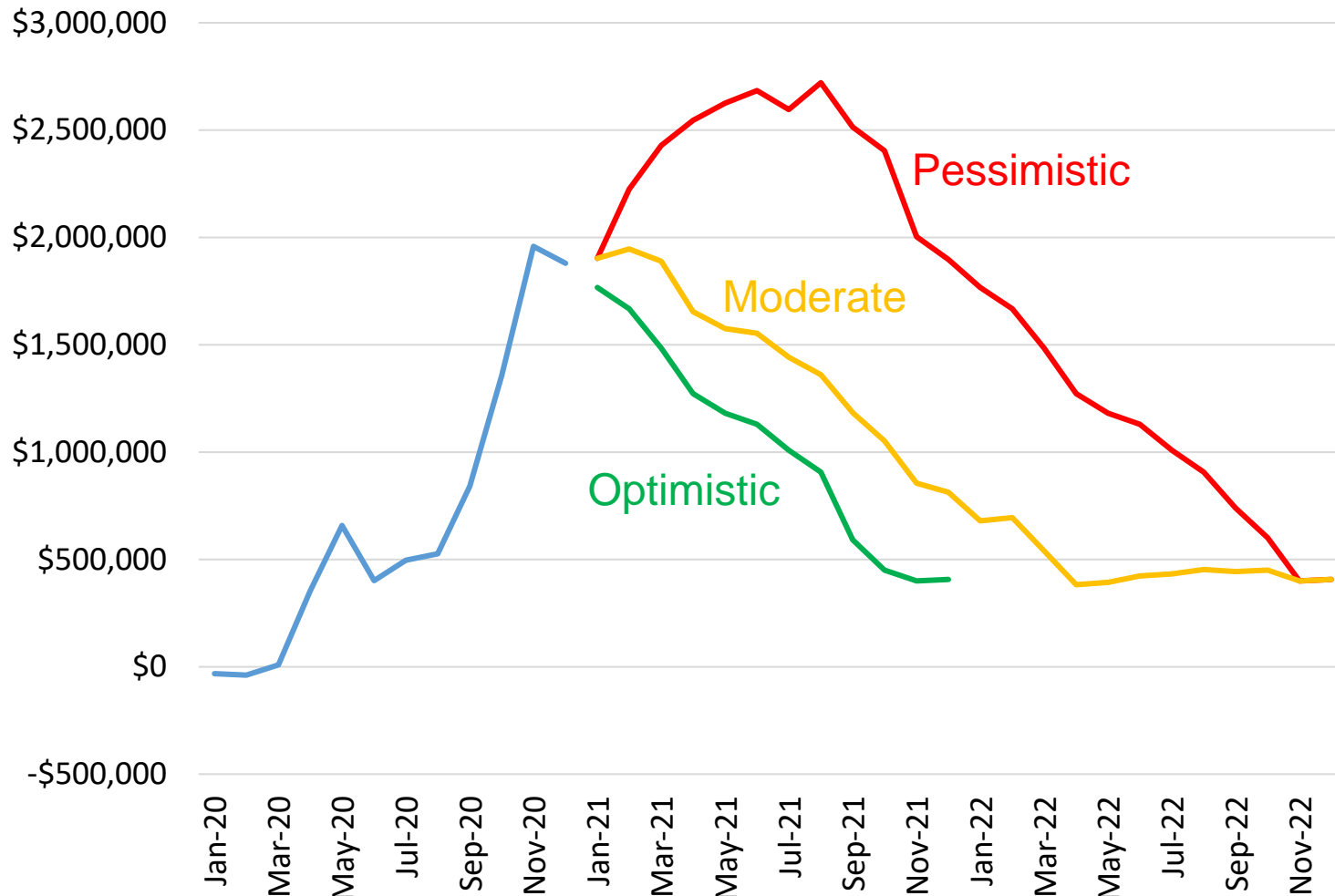
💧 Unintended Consequences

- People are gardening at home to put food on the table to save money on groceries.
- Their water bills increase.
- These become bills that are hard to pay, but can be delinquent, where paying for groceries cannot.
- Education on water conservation focused on home gardening will help these people reduce their water consumption without affecting the amount of food they can put on the table.

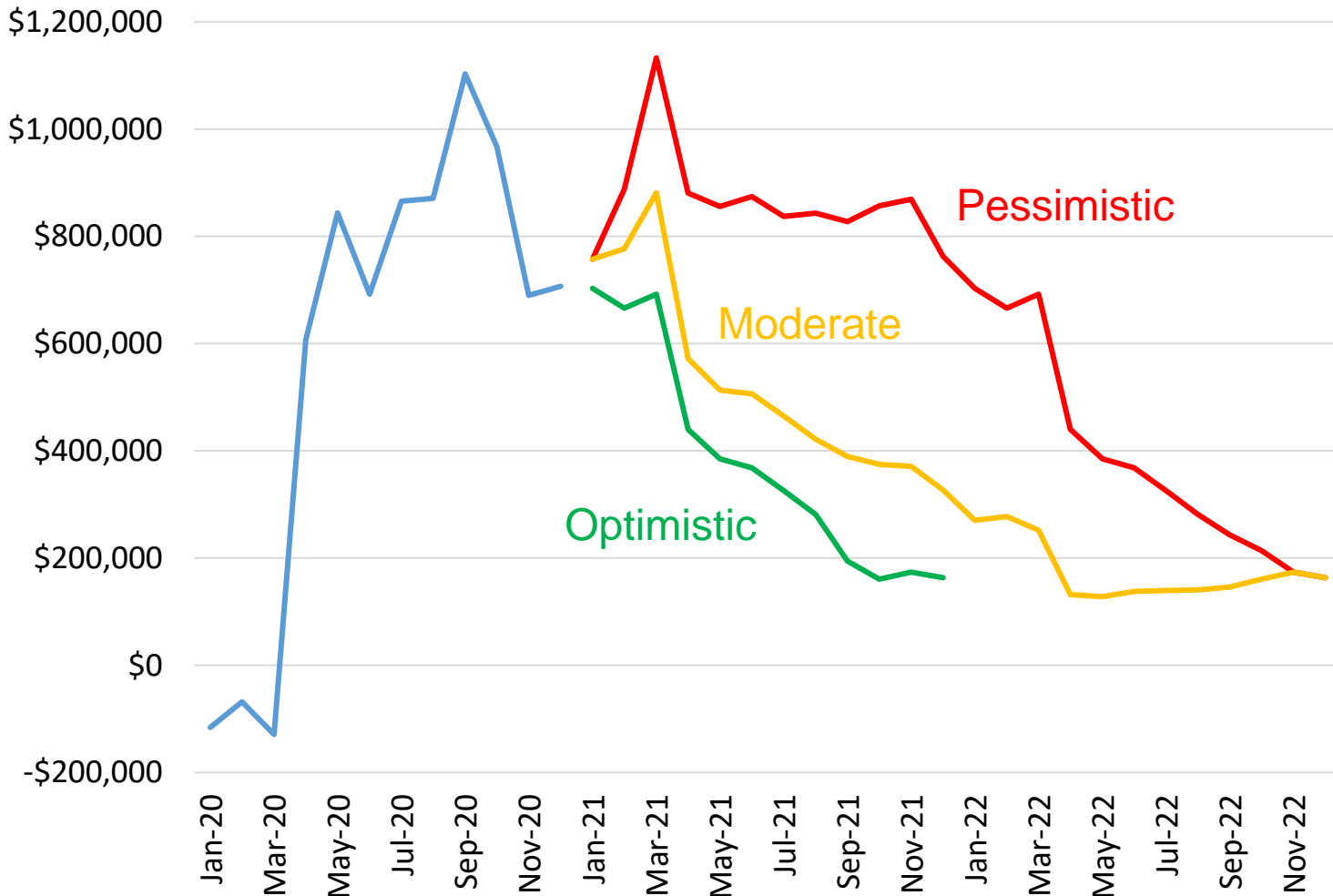
CARES Act – Emergency Rental Assistance (Signed Dec. 27, 2020)

- 💧 \$25 billion to assist households unable to pay rent and utilities
- 💧 Eligible household is a renter household with 1 or more individuals that:
 - Qualifies for unemployment or has experienced a reduction in household income, incurred significant cost, or experienced a financial hardship due to COVID-19
 - Demonstrates a risk of experiencing homelessness or housing instability, and
 - Has a household income at or below 80 percent of the area median

Residential Delinquency Scenarios due to COVID-19 (Baseline 2019)



Commercial Delinquency Scenarios due to COVID-19 (Baseline 2019)



Scenarios for Uncollectable Debt

Residential			
	Optimistic	Moderate	Pessimistic
Highest Amount of Delinquency	\$1,766,625	\$1,945,885	\$2,720,057
% Uncollectable	5%	10%	15%
\$ Uncollectable	\$88,331	\$194,589	\$408,009

Commercial			
	Optimistic	Moderate	Pessimistic
Highest Amount of Delinquency	\$703,214	\$881,238	\$1,113,020
% Uncollectable	5%	10%	15%
\$ Uncollectable	\$35,161	\$88,124	\$169,953

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Conclusions and Recommendations

Provide recommendations for on-going management and future planning

Conclusions and Recommendations

- 💧 Annual budgeting process should be calibrated with LRFPS
- 💧 LRFPS update resulted in revised baseline and commitment to “live within our means”
- 💧 Revised baseline can be accomplished under current rate schedule and LRFPS-anticipated revenue increases
- 💧 \$ currently collected from Water System Facilities Charge are insufficient to cover costs of growth-related projects
- 💧 Update of the Water System Facilities Charge should be completed

Conclusions and Recommendations (Continued)

- Reductions in non-residential demands have been offset by increases in residential demands, no overall impact to water use
- The overall delinquency rate has remained within historical range
- \$ value of residential delinquencies has increased as much as \$1.96 million (73%) compared to 2019
- \$ value of commercial delinquencies has increased as much as \$1.1 million (113%) compared to 2019
- Total delinquencies as of December 2020 are \$2.6 million, about 1.1 % of BWS's total annual budget

Conclusions and Recommendations (Continued)

- BWS has worked diligently with customers to establish payment plans, helping to control delinquency amounts
- Delinquencies result in relatively minor shifts in the timing of cashflows from month to month
- Projections of \$ that may become uncollectable are not expected to result in significant financial impacts
- Close monitoring of financial conditions should be continued to confirm conclusions
- Availability of stimulus funding remains uncertain

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Mahalo!

Questions & Answers



WATER FOR LIFE

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Barry Usagawa

BWS Water Resources Program Administrator

DROUGHT RESPONSE AND RECOVERY PLAN

Where Is The Rain?

2000 was a dry year, experts not sure if this is normal or change in weather pattern

By MARK ADAMS Staff Writer

WAILUKU — Rainfall figures for all of Maui County were well below normal in 2000. However, he was, very dry and January so far is shaping up like another parched month.

Whether the county is seeing a normal climate variation or a more dramatic pattern is anyone's guess, but it has caught weather watchers' attention.

"This is not years in a row without a normal weather pattern," said Thomas Johnson of Aloha Farms, who depends on the winter rains to keep pastures green for his cattle. "We're very worried about what's going to happen this year."

According to the weather service, January Maui County rainfall figures for 2000 were 50 to 85 percent below normal last year, while statewide land locations were down 75 percent. From Hialeah, normally one of the wetter spots on the island, was 15 percent below normal.

Rainfall at Kahoolawe Airport is 0.22 inch, the lowest since the 0.10 inch in 1976. At Ulapahala, 0.34 inch of rain occurred, the lowest figure since 1994.

And as for this month, 0.03 inch of rain.

See DROUGHT on the next page.



HOW DRY WAS IT?

The table includes preliminary rainfall data (in inches) from the National Weather Service.

	2000	Normal
Halei	40.05	65.00
Kahoolawe	30.02	40.00
Kaunoi	30.70	20.00
Hilo	0.72	55.00
Kula	11.95	30.00
Maui	36.24	44.10
Lahaina	14.25	35.50
Waipahoehoe	9.47	25.00
Waipahoehoe	12.50	25.00

Volunteer Herbert Yamamoto (right) is seen here participating in a...



TELEPHONE 422-1111 FAX 422-1111 THE NEWS 1100 SOUTH MAUI AVENUE 422-1111

Dry times call for conservation

Residents of some districts are urged to reduce water use

Water users in Maui are urged to conserve water as the island's water supply is low.

The Maui Water Board is urging residents to conserve water as the island's water supply is low.

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In 1953, drought struck Hawaii, Kauai, Maui and Oahu. 867 head of cattle died. Pineapple production on Molokai was reduced by 30 percent. Annual rainfall was 40 percent less than normal.

Big Island residents asked to cut down on their water use

By COLLEEN MARSHALL
West Hawaii Today

Department of Water Supply officials are asking customers to reduce daily water consumption levels by 10 percent because of drought conditions across the Big Island.

Clyde Young, acting chief of operations, said the department put conser-

Drought emergency called for Upcountry

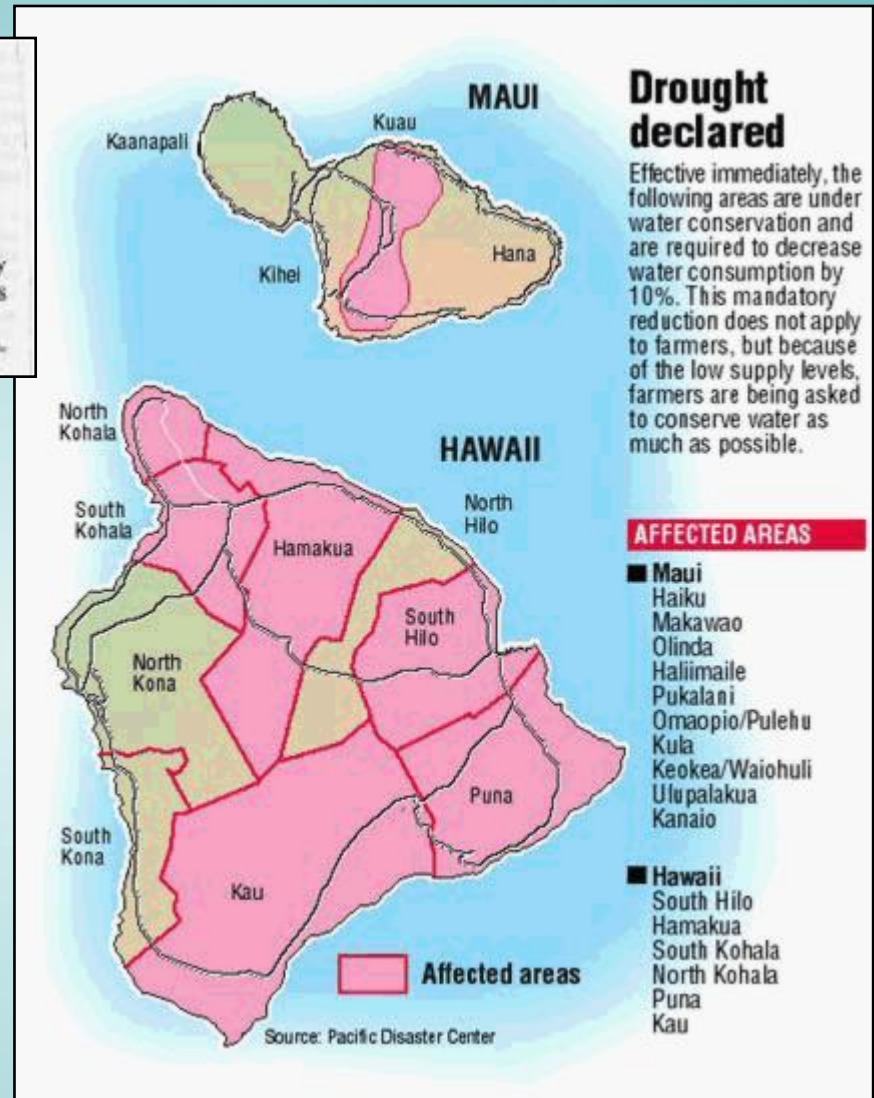
Unusually dry winter forces voluntary cutbacks in water use

By MARK ROANE
Staff Writer

WAIALEALE — Even as the fall rains begin to fall, the drought is still in effect.

David Cressick, "But whether the rain's coming back or not is anybody's guess."

The main effect of the drought emergency declaration is that it allows the Water Department to begin pumping standing water in Hamakua ponds, adding an additional 1.5 million gallons of water a day to the state. The rate Hamakua makes water on



Drought declared

Effective immediately, the following areas are under water conservation and are required to decrease water consumption by 10%. This mandatory reduction does not apply to farmers, but because of the low supply levels, farmers are being asked to conserve water as much as possible.

In 1962, the State declared a drought disaster for the islands of Hawaii and Maui. Crops were damaged, cattle died, and fire hazards were severe. Losses for the year totaled \$200,000.

E. Maui stream flows fall to record lows in January

USGS report prompts water board to meet

WAILUKU — With the U.S. Geological Survey declaring this stream short in East Maui, more than 100,000 people in January, the Maui Water Board is called a special meeting to review the situation.

The low rainfall in the series of dry years is a record with all the gauges in the watershed below-normal for the year 2009.

The first Maui Inland system, which has a 1.5-

million gallons a day is well below normal, Maui County Water Director David Crowl said.

A series of blowups over the past weekend pumped up the flow in the EMI Waialeale Basin to 1.25 million gallons a day, but it fell back to 1.1 million

gallons a day in February.

The USGS released a report Monday stating that January 2011 set a record for the lowest flow in January, at 50 percent of the average for the month for all the years dating back to 1967.

Data from the river indicates the daily dry, with no more than 20 recorded at any point.

USGS estimates percent of normal, with rainfall noted at no more

Haleakala just 1.13 inches, or 17 percent of average for the month, while other gauges in the USGS system, or 25 percent of average.

Midway to the time when East Maui's water reserves are expected to be exhausted by August, water supply is expected to be cut off for the winter. Despite a plan that called for cutting in late November and last weekend a rain

For Maui farmers, the dry conditions are a continuing cause for concern, but some growers, Craig Kahanamoku said, it's not just the past year.

See DRY on Page A4

Where's The Rain?

Preliminary rainfall data for January 2011 from the National Weather Service show all areas of Maui were well below the norm for the month. This map shows the preliminary rainfall at each gauge, followed by the norm or average rainfall for the month.



The Maui Water Board.



Mayor: Drought an emergency on Molokai

State declaration would free funds for extra pumping

By MARK ADAMS Staff Writer

WAILUKU — Mayor David Ikin is calling upon the governor to de-

clare a drought emergency on the island of Molokai to free up state funds for extra pumping and to ease storage restrictions.

After several dry years, not all of the island's water is available for use. Rainfall for the month of January 2011 was just 15 percent of normal, and the state, with just 0.50 of an inch of rain, is well below the norm.

From 1980 to 1981, the State declared a drought disaster for Hawaii and Maui. Damages to agriculture and cattle industries totaled \$1.4 million. Two years later, drought struck again, reducing crop production in Waimea and Kamuela, Hawaii by 80 percent.

Farmers taking water problems to Legislature

By Ivo Danziger
Pacific Business News

Hawaii's farmers have a number of urgent needs this legislative session, but perhaps none more pressing than agriculture's most basic requirement — water.

With water shortages and drought a problem for farmers statewide, the Hawaii Farm Bureau Federation is bringing forward several bills to address the problem.

Three years ago, the Legislature gave its approval for the state Department of Agriculture to conduct a state agriculture water audit to determine the industry's water needs, but no funding was included with the passage of the bill. Bills in both the House and Senate will ask legislators to allocate funding for the plan this year.

to build a pipeline from Omaopio Tank to Keokea for drought-stricken upcountry Maui. While federal funding has been released, \$2 million in state funds is required to complete the project.

Two other bills, House Bill 214 and SB 624, call for tax credits to encourage farmers and ranchers to build their own water storage facilities, especially in areas where water is not easily accessible.

Department of Agriculture Deputy Director Tish Uyelana says encouraging farmers to build their own water storage facilities through a series of tax credits makes sense. Not only would it help to mitigate future drought problems, but it would also save money for those farmers who are now hooked into county water systems.

more expensive water."

Uyelana says, "If they could get some tax credits, they could then build their own systems."

Another issue vital for farmers this year is continuing support for research. With the vast majority of Hawaii's farmers running small operations, access to the latest technologies and keeping up with what is happening in world markets is only possible

ucts, market and product management research and research on innovative farm management practices are just some of the crucial areas needing further funding.

Deep budget cuts to the university's tropical agriculture and human resources college — \$5.5 million in general fund reductions since 1995 — have meant losing both

through Hawaii's Human Hawaii. Seven Legislators Hawaii's funding Biotech high-val

Farmers' losses add up as drought carries on

BY GARY T. KUBOTA
Star-Bulletin

'We're trying to hang on as long as we can, but the way it's going, I don't know.'

Leahina Watahaka



Photos Courtesy:
The Honolulu Star-Bulletin



In 1996, a drought emergency was declared for Hawaii, Maui and Molokai. Losses to agriculture and cattle industries reached \$9.4 million.

Challenging times for Hawaii cattle ranchers

By Pritha Natarajan
Pacific Business News

It's the best and worst of times for the local cattle-ranching industry.

Ranchers are trying to make the best out of a 10-year high in cattle prices while reeling under production losses due to a four-year drought.

Today there are more than 800 cattle operations in the state, with more than 70 percent of the industry concentrated on the Big Island. Hawaii's ranches use more than 1.3 million acres, or a quarter of the state's total land area.

But a four-year drought on the islands of Maui and Hawaii has harshly affected ranches, causing a 25 percent reduction in cow herd, says Corky Bryan, president of Hawaii Cattleman's Council.

The industry generated \$19 million in sales last year, up from \$16.8 million in 1999. But the figures are off from the early 1990s, when annual sales reached \$30 million.

Pacific Business News, in a series on ranching in Hawaii, plans to look at operations statewide. The focus will be on the different strategies ranchers have had to adopt to keep King Kamehameha III's legacy alive in the islands.

The drought comes at a time when ranches are slowly getting back on track financially after being forced to change traditional business methods, Bryan adds. The Hawaii Meat Co. closed its packing house and feed lots during the early 1990s, putting an end to locally packaged beef for the retail market.

"We were counting on the peak in the price cycle to help our operations but the drought has negated all our price gains," Bryan says.

Local ranches once supplied about 30 percent of the total retail and wholesale beef market, according to the Hawaii Cattleman's Council. Now, local ranches supply less than 5 percent of the state's total beef consumption.

With the closure of the biggest packing house in Hawaii, it has become cheaper for retailers and hotels to ship beef from the mainland.

Local ranchers were forced to consider several alternatives to stay in business, according to a study by the University of Hawaii.

One alternative was to package premium island beef at a higher cost. The second alternative was to export calves to the mainland and sell them to feedlots there for the beef market.

Few ranches were successful in developing niche markets for island beef, and most of them chose to ship calves to the mainland. Nearly 80 percent of the island's calves are sent to markets outside of the state. The change proved to be financially beneficial as well.

"I think most ranchers are a lot better off this way," Bryan says. "They are getting more money this way."

The advantages — cheaper land and pas-

Ranch prays for rain to keep cattle business alive

First in a series of stories examining the cattle ranching

By Pritha Natarajan
Pacific Business News

For the James in Kula, Maui, 1 week.

The forecast means two more cattle at approx day instead of 10.

That doesn't looking at the everyday. In Kula drought conditions years and have a grade year-round farmers import c

"At 30 cents basic to keep th

O'ahu wells drying up fast

Board urges customers to conserve water

By Dan Nakano

ADVERTISING STAFF WRITER

The Honolulu Board of Water Supply is asking its customers to cut back on water use and is seeking a 10 percent voluntary cut from its 100 biggest users, includ-

ing city and state agencies, Hawaiian Electric Co., hotels, golf courses and high schools, as Hawaii's struggles through its longest drought recorded.

The agency made a similar plea for conservation last year, but records show it

wasn't effective. Overall, O'ahu water users sucked up even more water last summer after the call for voluntary consumption — as much as 13 million gallons more per day than during the same period the year before.

And troubling signals con-

tinued. In the worst weeks this summer, water use has been up as much as 8 million gallons more over 2000 figures.

The water level in five of Honolulu's seven main monitoring stations has fallen so low that officials list them in the "alert" stage — and the remaining two are soon to follow.

Water officials on O'ahu can't figure out why water

users are not responding, despite their public service announcements calling for conservation and the widely reported news that the island is in a fourth straight year of drought.

And they worry that continued dry weather and high water use could trigger a return to the mandatory rationing days of 1984.

"In the past, people have

always complied when we've asked them to voluntarily cut back," said Chester Lao, head of the water board's hydrology-geology section. "I don't know why we're not getting as much cooperation as we're seeking."

Officials speculate that people are using more water to combat their dying plants

See WATER, A7

Hawaii farmers praying for rain

The costs of drought are climbing, making restrictions possible

By Gary Kubota

Maui Correspondent

Dry conditions throughout the state are causing millions of dollars in agricultural losses and could lead to mandatory water restrictions on Oahu this summer.

"It wouldn't surprise me at all," said Chester Lao, head of the hydrology geology section of the Board of Water Supply on Oahu.

"We've got to watch it."

Lao said that in the last 100 years, Oahu has never had lower-than-normal rainfall four years in a row. He said while there has been some rainfall in the past two weeks, Oahu did not get enough rain this winter to recharge water levels.

Lao said one of the new monitoring wells on Oahu has been put on "alert" status, and some of the others are likely to follow as the inland enters into the dry season of summer.

Please see Drought, A8

Oahu's drying up

A look at four rainfall conditions at some sites across Oahu



	Year to date*	Year
1 Waianae	3.71	10.20
2 Waipahoehoe	5.56	14.50
3 Punaluu	1.25	16.00
4 Punaluu	13.15	52.00
5 Waipahoehoe	8.37	22.40
6 Waipahoehoe	7.26	23.50
7 Hawaii Kai	9.89	33.90

*January-April, 2000. ©2000 H. I. J. News

In July 2000, Governor Cayetano issued a statewide declaration of drought. In March 2001, U.S. Department of Agriculture Secretary Ann M. Veneman declared the counties primary disaster areas due to drought.

Rains helped, but drought conditions remain

By STARR WEDEMEYER
West Hawaii Today

Waimea ranchers still are chasing grass to sustain the cattle industry during drought conditions even after the drenching rains of last week's Kona storm.

The storm brought in 2 1/2 to 4 1/2 inches of rain in Waimea, a temporary relief for ranchers. Parker Ranch's Corky Bryan said.

"The rain was worth millions of dollars and will let us breathe for a while," he said, however, "the drought isn't broken."

If there is no rain for a while, ranchers will be back in the predicament of the last four years, he added.

Typical Waimea weather patterns call for one dry year and then a catch up with rainfall in the next year, said Monty Richards of Kahua Ranch.

That has not been the case recently, he said, and "the last four years has been the worst."

Richards said, looking over rolling green pastures from his office, one might ask, "What drought?"

However, lower elevation pastures resemble a desert from virtually no rainfall, Richards said.

"The Kona storm brought three inches to Kahua Ranch and did help the dry pastures in the elevations, Richards said.

Richards said he is unsure of how long pasture could sustain moisture with that amount of rainfall because the ground has been very dry.

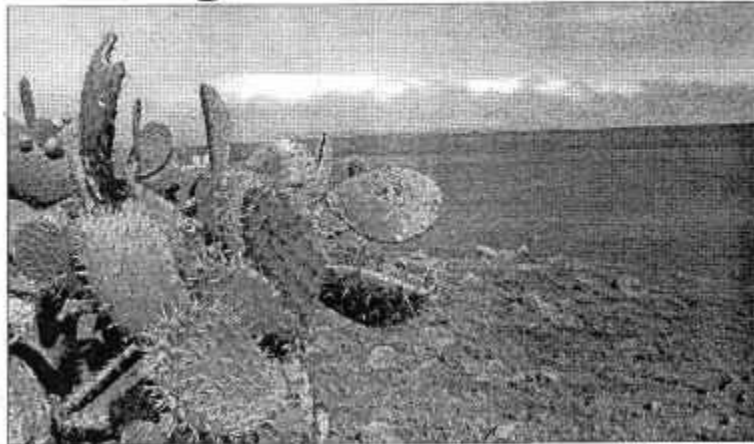
According to the Kahua Ranch rain gauge area in North Kohala receives an average of two inches of rain per year, ranging from two at the lower elevations to 125 inches at the highest elevation, Richards said.

Richards and Bryan said distribution of rain is more important than the amount.

"If we had two inches of rainfall every day we wouldn't have to worry," Bryan said.

Parker Ranch and Kahua Ranch's problem is the long-standing drought has been a lack of pasture grass to feed cattle.

"We chase grass where ever it is," Bryan said. Parker Ranch moves their cattle from dry pastures within Parker Ranch and down to Naalehu to find a healthy supply of pasture grass.



Land in Waimea remains parched, despite last week's rains.

—BARON SEKIYA—WH

Kahua Ranch moves cattle about every two days to cope with the drought, Richards said.

From years of drought creating not enough feed to sustain them, the herd is down by 20-40 percent, Richards said.

Ranchers say rains welcome

By Hugh Clark

AWAIIANER BIG ISLAND BUREAU

KAHUA, Hawaii—Veteran Big Island rancher Herbert "Monty" Richards believes his family spread at Kahua is slowly coming out of a record four-year drought.

"There is a smile on my face," Richards said this week after returning from a

survey of his 8,400 acres. "There is some green grass (in the pasture) I haven't seen for a long time."

After decades of operating the historic North Kohala ranch, Richards called the drought the worst he could remember. The toll was a 20 percent or greater reduction in his cattle herd, which now includes 1,700 mother cows — the standard used to

measure herd sizes at Hawaii ranches. In turn, there are fewer calves and they weigh less.

"There is still a terrible income flow because of the drought babies," he said of the underweight calves he and other ranchers were forced to ship to Mainland pastures and feedlots to cope with the drought.

"Everybody is happy now,"

said Richards, who expects it will take another three months of "decent rain" to finish the rebound and up to three years to rebuild herd sizes.

Nearly three-quarters of Hawaii's cattle are raised on the Big Island, with the rest on Maui and Kauai.

On Kauai, which produces a little more than 7 percent of the state's beef,

the outlook is most positive because the drought never set in there.

Donn "Curly" Carswell of Princeville Ranch has extended his mother herd count to 220 — a 20 percent boost while some ranchers on other islands have lost up to 25 percent of their cattle.

"We've been pretty lucky on Kauai compared with the rest of the state," he said.

Carswell is considering a so-called "natural beef program" to build market demand for grass-fed beef that never leaves the state. Currently, most cattle is shipped to pastures in Canada and the Northwest.

Drought conditions on Maui, where about 13 percent of the state's beef is

See RAIN, B5

Usually Kahua has about 4,000 cattle, Richards

starr@westhawaii.com

In the winter of 2001-2002, many areas of the state received normal or near-normal rainfall.

Drought

"Just a Matter of Time"



Hawaii Drought Monitor – Jan. 14, 2021

United States Drought Monitor

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[Summary](#)

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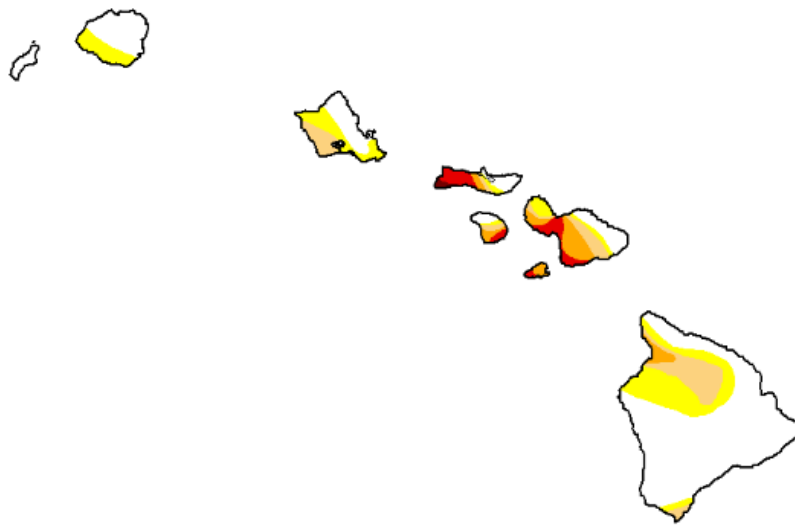
[Conditions & Outlooks](#)

[En Español](#)

[NADM](#)

Hawaii

[Current Map](#) > [Hawaii](#)



Map released: Thurs. January 14, 2021

Data valid: January 12, 2021 at 7 a.m. EST

Intensity:

- None
- D0 (Abnormally Dry)
- D1 (Moderate Drought)
- D2 (Severe Drought)
- D3 (Extreme Drought)
- D4 (Exceptional Drought)
- No Data

Author(s):

Deborah Bathke, National Drought Mitigation Center

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying [text summary](#) for forecast statements.

Map Download

No text:



Legend:



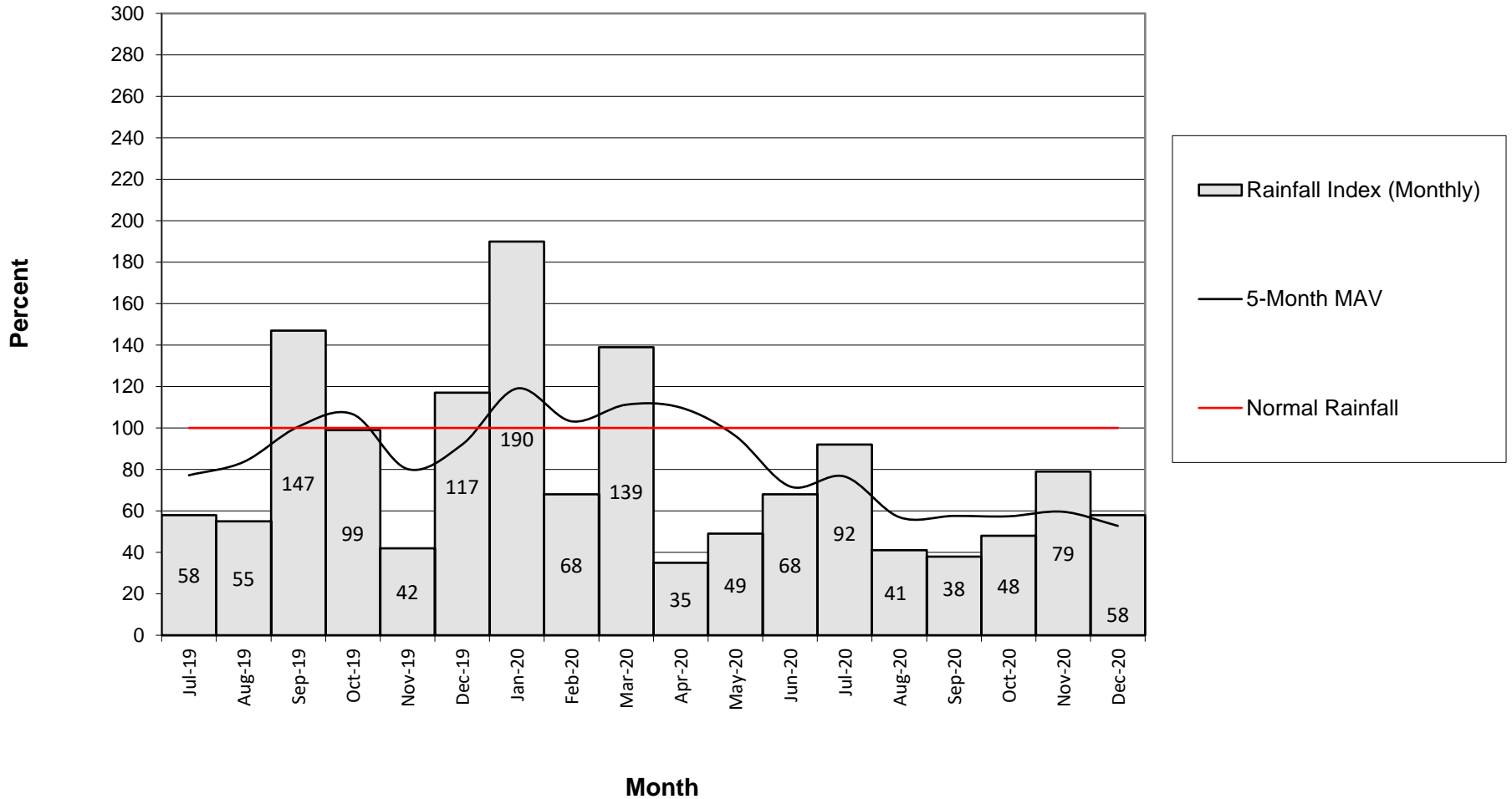
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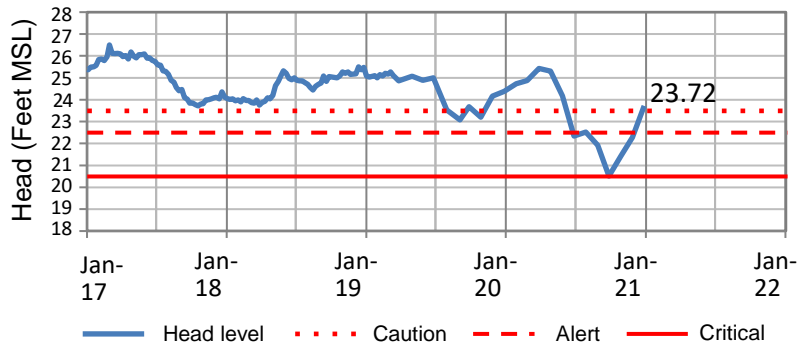
Monthly Rainfall Index

60% of Normal April-Dec 2020

HONOLULU WATERSHED AREA
Rainfall Intake

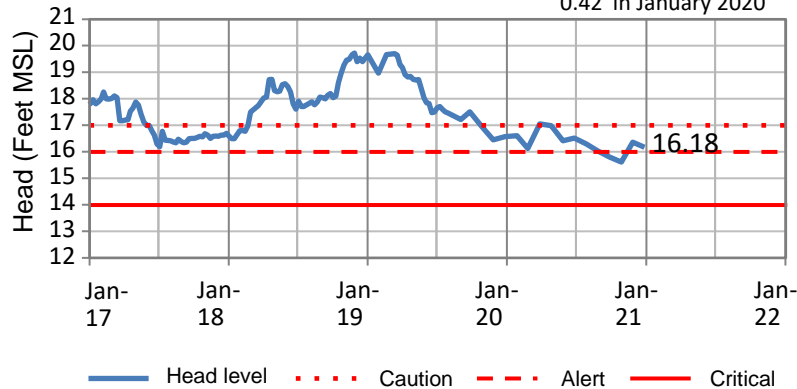


Kaimuki 01/04/21

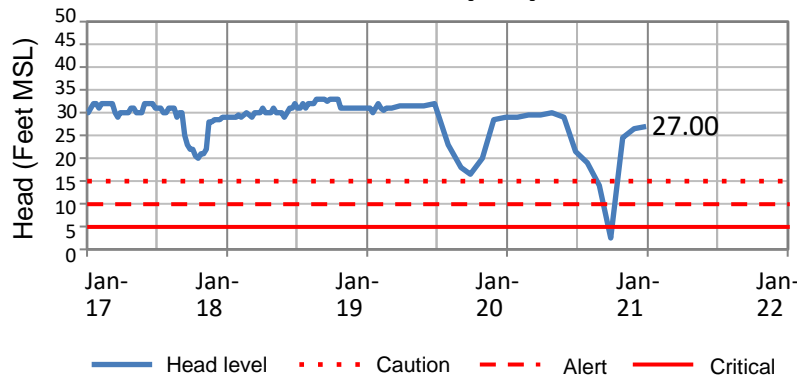


Punaluu 01/07/21

Benchmark decreased by 0.42' in January 2020

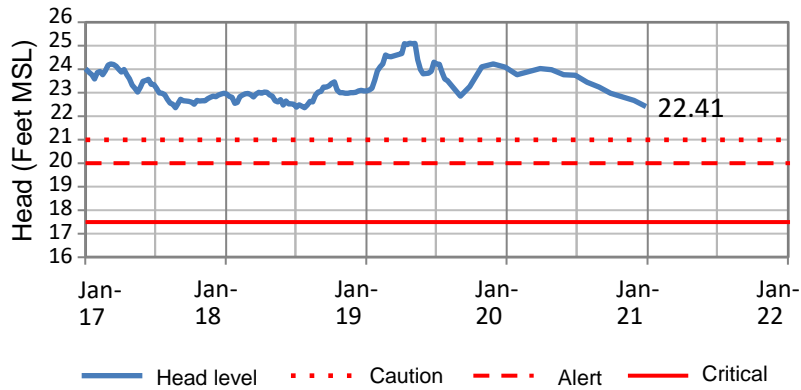


Waihee Tunnel 01/07/21

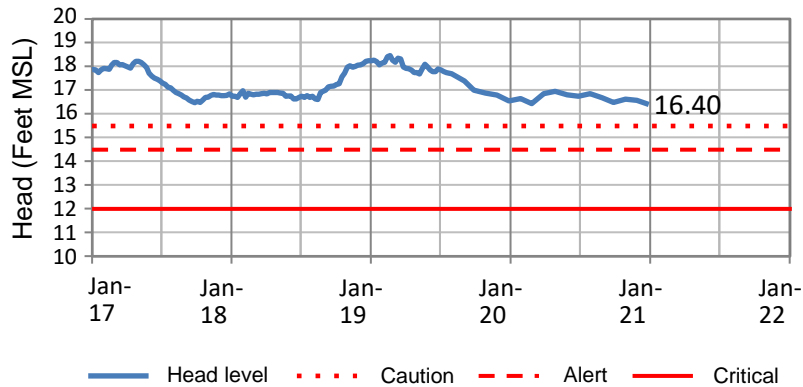


Current Groundwater Levels and Low Groundwater Triggers

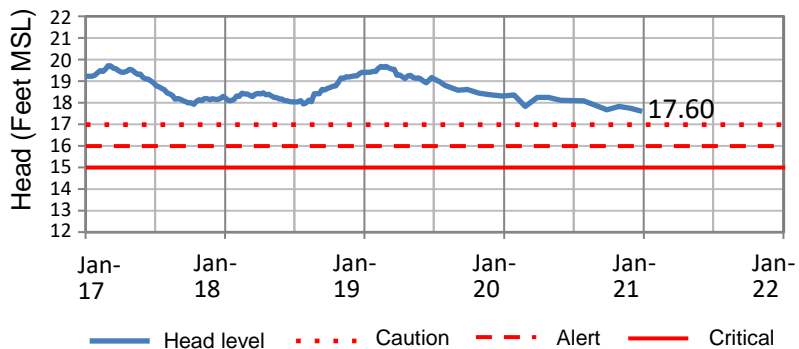
Beretania 01/04/21



Halawa 01/08/21



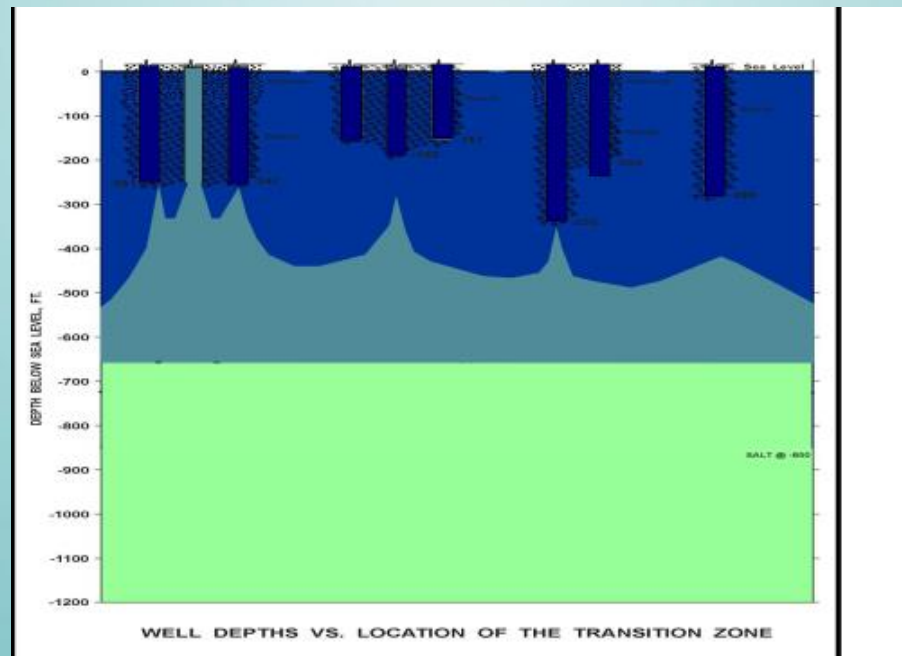
Waipahu 01/06/21



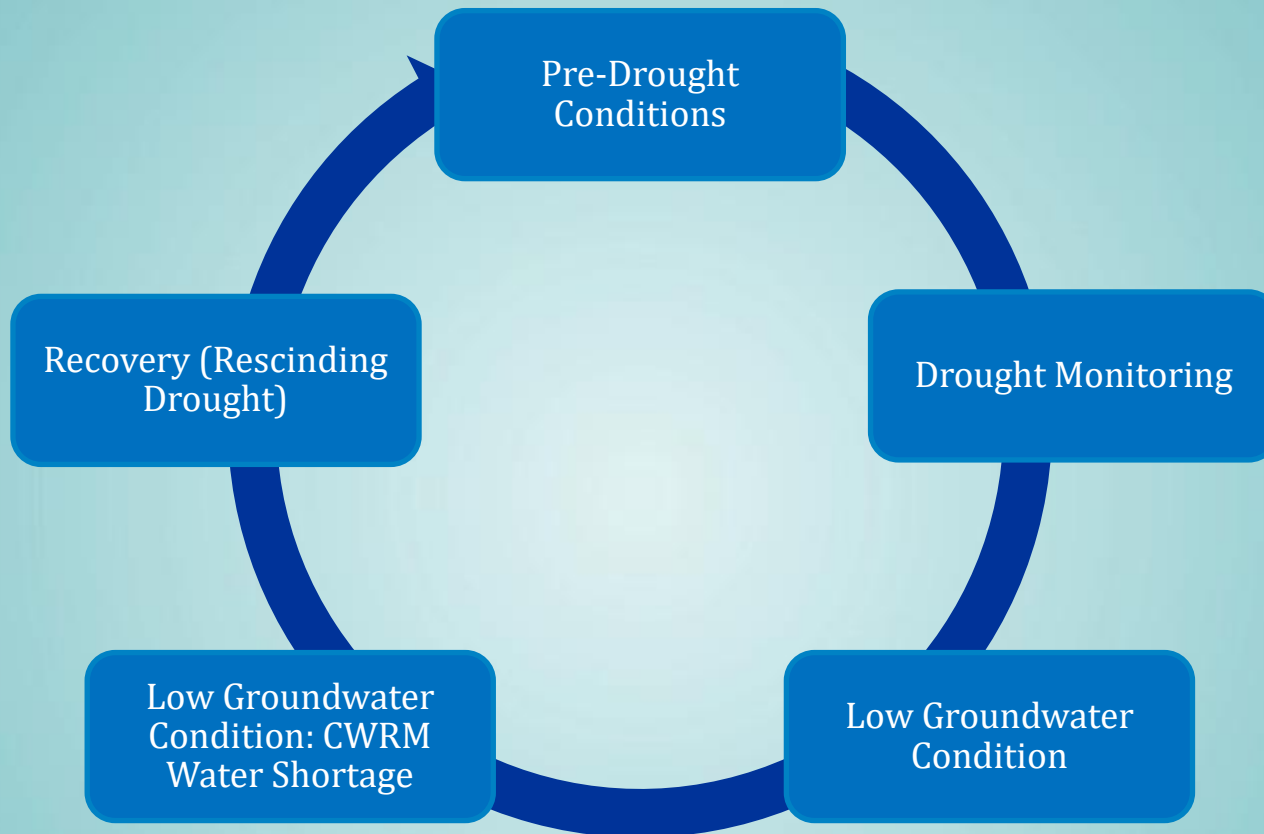
Current Groundwater Levels and Low Groundwater Triggers

Purpose: Protect Groundwater Sources of Supply

- 💧 Prevent source water quality degradation from saltwater intrusion
- 💧 Reduce potable water use during drought
- 💧 Ensure aquifer recovery post-drought to prevent long-term declining groundwater level trends



Drought Phases

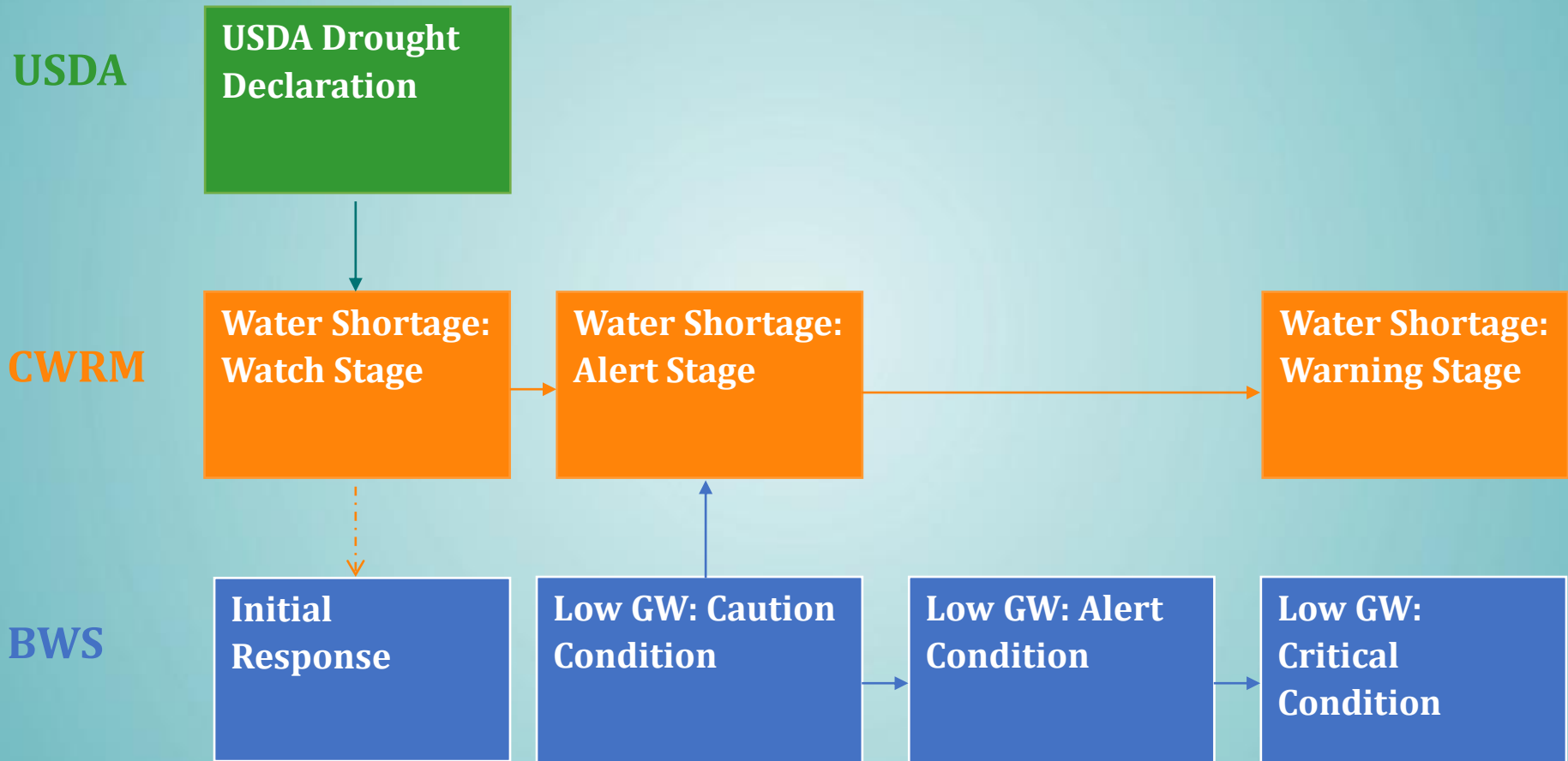


Drought effects such as prolonged reduced rainfall, high temperatures, increased water demand and unhealthy forested watersheds can lead to reduced aquifer recharge and a Low Groundwater Condition

Drought and Low Groundwater Declarations by Agency

Drought Declaration	Area of Effect	Declared By	When Declared	Effects of Declaration
USDA Secretarial Disaster Declaration	Portion of County	USDA	Requested by the Governor – minimum 8 consecutive weeks at D2 Level Drought	Opens federal funding and resources for farmers. BWS implements Drought Monitoring procedures
County Drought Declaration	County	Mayor	Recommended by O’ahu Drought Committee	Aimed to help address county-specific impacts. BWS implements Drought Monitoring procedures
State Drought Declaration	State	Governor	Recommended by Hawai’i Drought Council (HDC)	Opens state funding and resources to affected parties. BWS implements Drought Monitoring procedures
Low Groundwater Condition	By distinct area or county-wide	BWS	Triggers at BWS index wells	BWS may declare low groundwater condition procedures & implement voluntary and/or mandatory conservation measures
Water Shortage	Aquifer Sector	CWRM	Triggers for CWRM monitoring wells	If BWS conservation measures are ineffective, CWRM imposes mandatory restrictions on all well permittees

Agency Drought Declarations and BWS Low Groundwater Conditions



Water Emergency Committee

- ◆ Chair: BWS Deputy Manager & Chief Engineer
- ◆ Vice-Chair: Water Resources Division Program Administrator
 - Water Resources Technical Advisory Staff
 - ◆ *Water Conservation Branch Head*
 - ◆ *Hydrology-Geology Branch Head*

- ◆ Members
 - Water System Operations Program Administrator
 - Field Operations Program Administrator
 - Customer Care Program Administrator
 - Finance Program Administrator
 - Capital Projects Program Administrator
 - IT Program Administrator
 - Communications Office, Chief Information Officer

Low Groundwater Condition Triggers

Low Groundwater Condition	Water Level Trigger	Chloride Content Trigger*
Caution	Three or more index well water levels fall below their respective Caution Level	Chloride content rises between 8 ppm and 12 ppm over three consecutive months
Alert	Three or more index well water levels fall below their respective Alert Level	Chloride content rises between 12 ppm and 16 ppm over three consecutive months
Critical	Three or more index well water levels fall below their respective Critical Level	Chloride content rises over 16 ppm over three consecutive months

BWS Response Objectives, Strategies and Tactics

Objectives

Protect sources of supply

Avoid excessively lowering ambient GW table

Avoid excessive salt water intrusion, mineralization, degradation

Prevent interference with operations of other wells

Strategies

Strategy 1 - Limit excessive head levels drops in designated GW Control Areas

Strategy 2 - Limit chloride content rises over the short term

Tactics

Data collection

Conservation outreach

Inter-agency coordination

Voluntary conservation measures

Mandatory conservation measures

Water allotments and flow restrictors

Non-residential conservation targets

Irrigation schedule

Optimize well operation

Engage critical customers

Public outreach and education

Public communication

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



Board of Water Supply
City and County of Honolulu

Mahalo!

Questions & Answers



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



Board of Water Supply
City and County of Honolulu

Dave Ebersold

Facilitator

SUMMARY AND NEXT STEPS

2021 Meeting Dates

💧 **Thursday, April 22 - NEXT**

💧 **Thursday, July 15**

💧 **Thursday, October 21**

All meetings start at 4pm



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Board of Water Supply
City and County of Honolulu

Mahalo!

Questions & Answers

