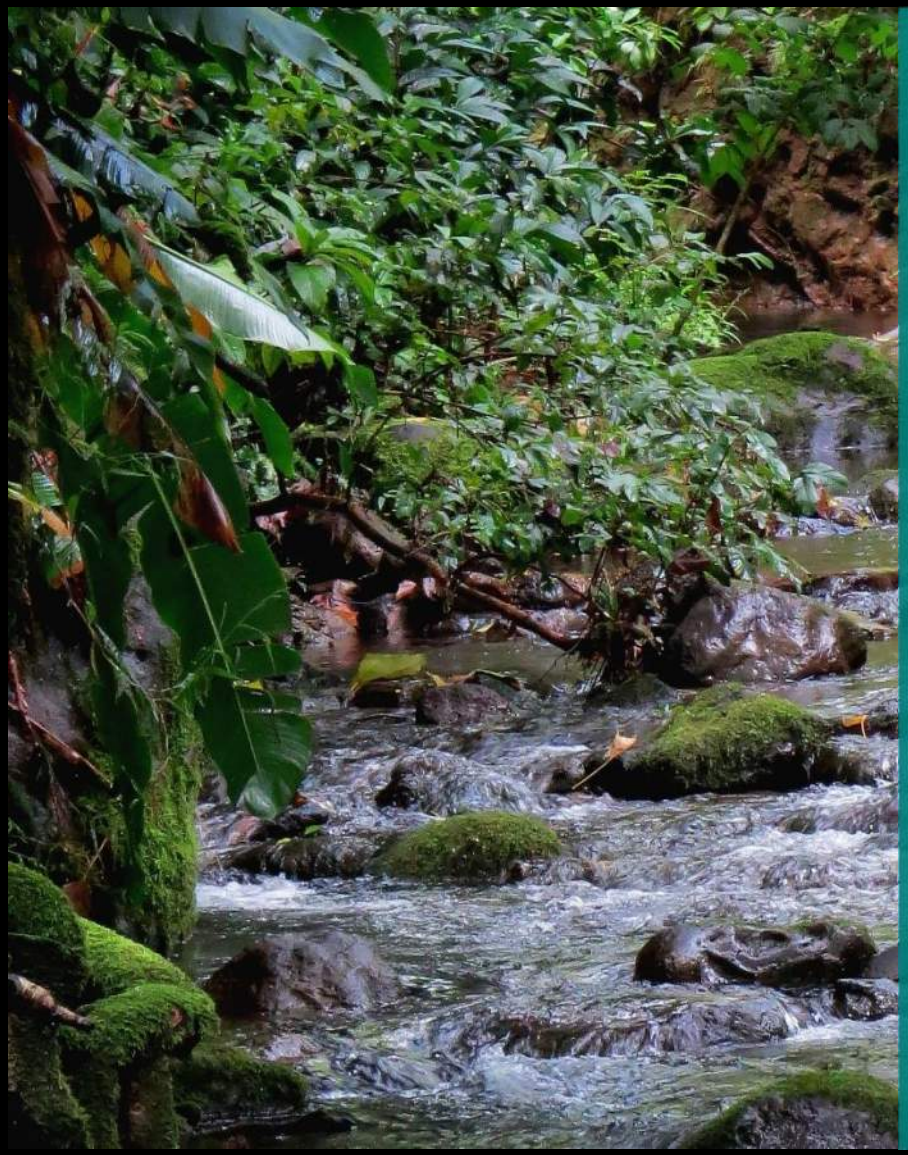


STAKEHOLDER ADVISORY GROUP

Board of Water Supply, City & County of Honolulu
July 18, 2024
Meeting 51

WELCOME & INTRODUCTIONS

DAVE EBERSOLD, FACILITATOR

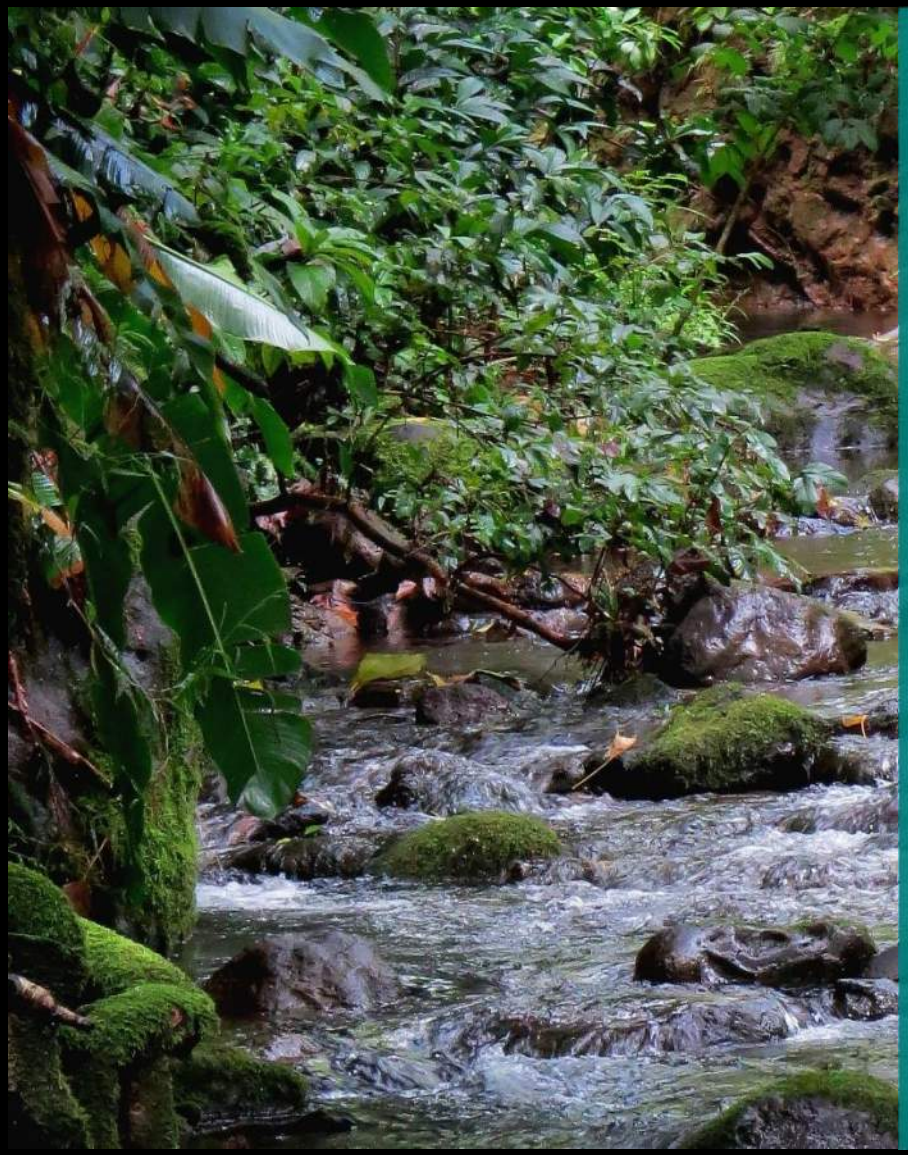
STAKEHOLDER ADVISORY GROUP MEETING 51

JULY 18, 2024

MEETING OBJECTIVES

- Seek input on Source Water Protection Plan
- Review current Water Master Plan and seek input on proposed updates
- Accept notes from meeting #50
- Learn about Public Safety Power Shutoff and BWS updates

PUBLIC COMMENT ON AGENDA ITEMS



SOURCE WATER PROTECTION PLAN

Marc Chun
Assistant Water Resources Program Administrator
Bill Fernandez
CDM Smith
July 18, 2024

PRESENTATION OBJECTIVES

- Review the development of the Source Water Protection Plan (SWPP) SWPP process and Best Management Practice (BMP) projects
- Discuss major takeaways identified throughout the development of the SWPP
- Seek Stakeholder Advisory Group input and recommendations for potential enhancements

WE'RE INTERESTED IN YOUR INPUT

Are there any BMPs or next steps that

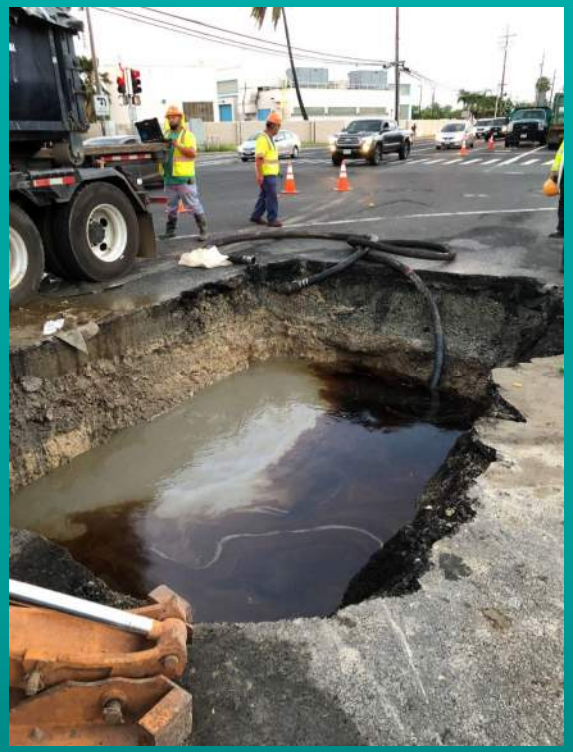
can be enhanced?

Are there any <u>other</u> potential threats, BMPs, or next steps

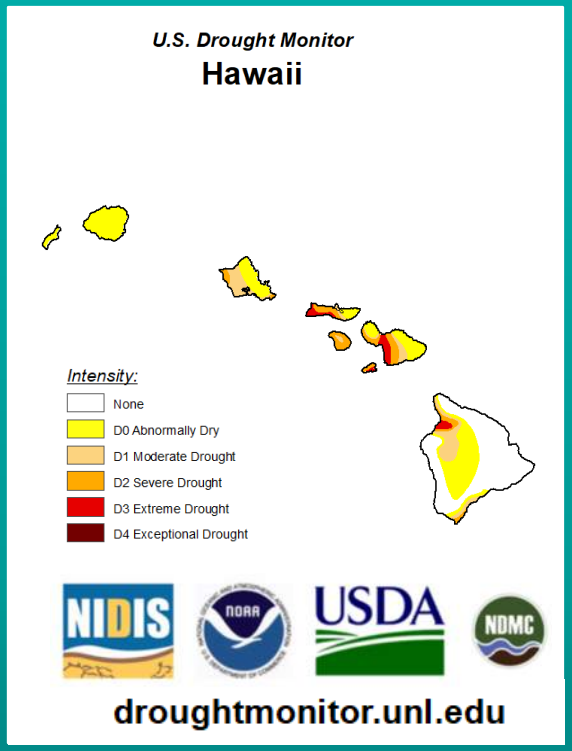
that we should consider?

SWPP DEVELOPMENT SUMMARY

GROUNDWATER QUALITY/QUANTITY CHALLENGES



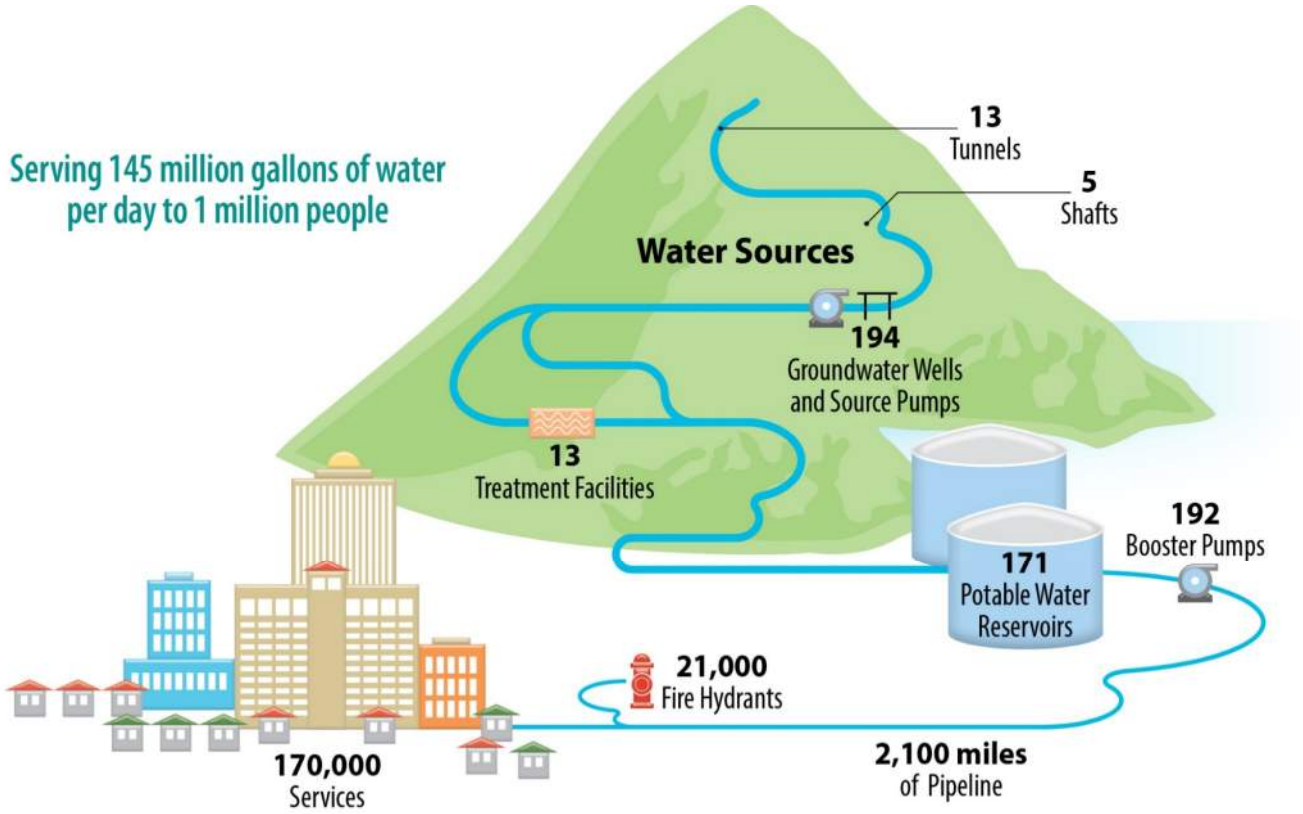
CONTAMINATION



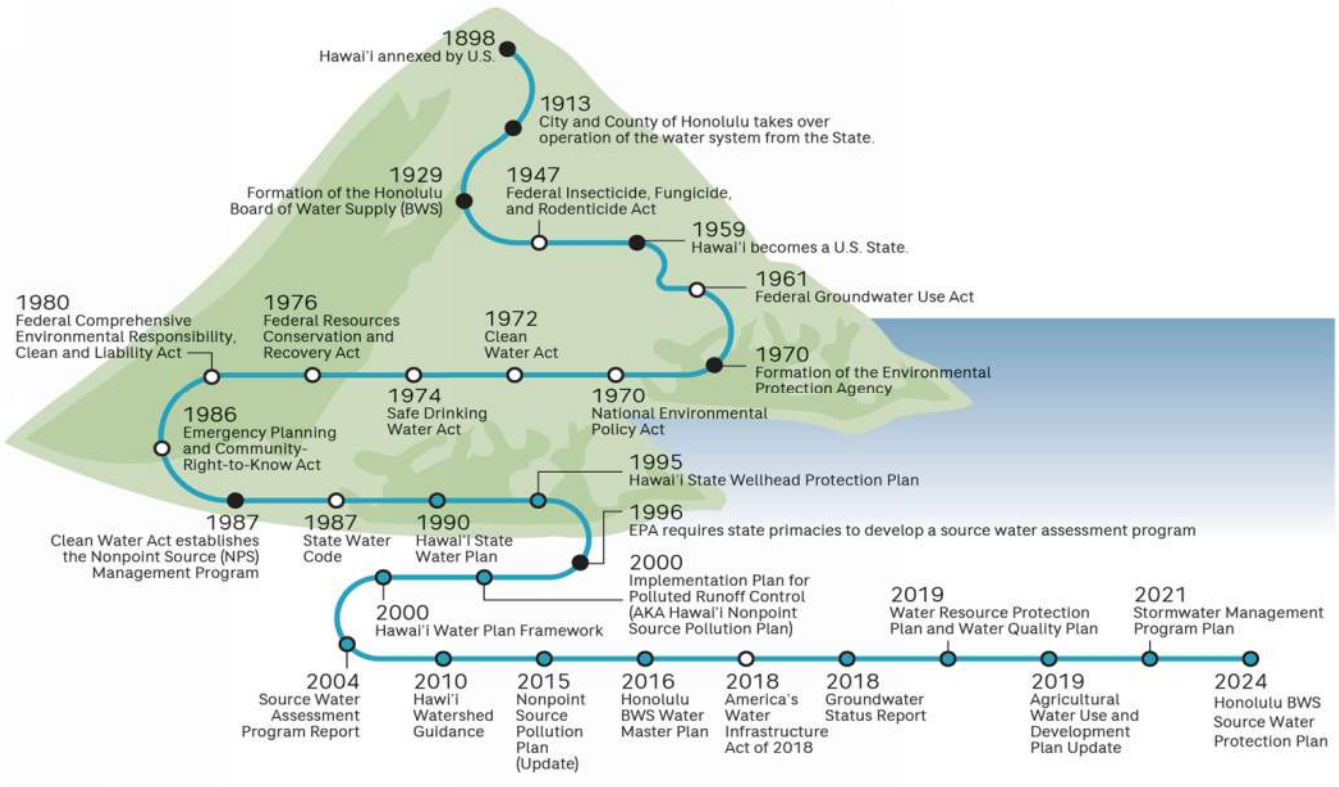
DROUGHT

CLIMATE CHANGE

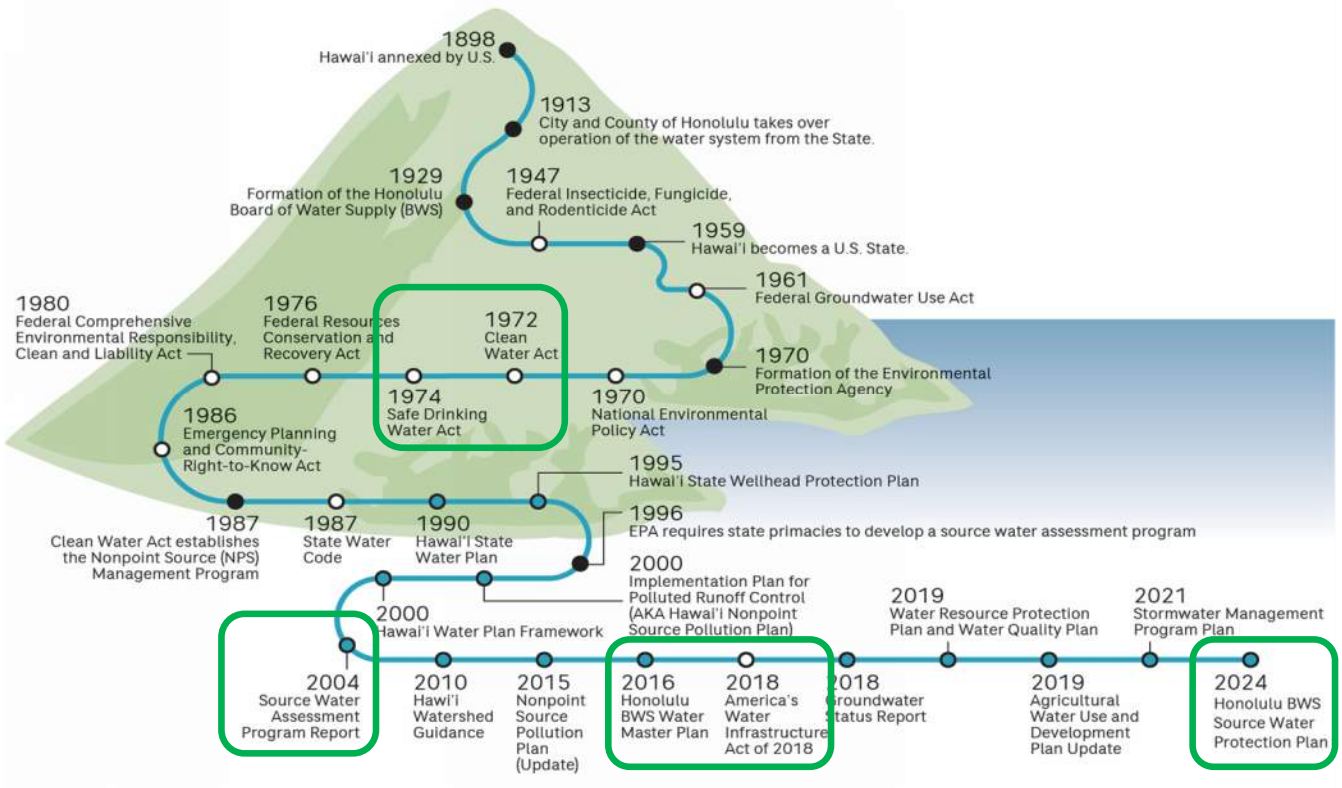
THE BWS WATER SYSTEM IS LARGE AND COMPLEX



LONG HISTORY OF SOURCE WATER PROTECTION BY FEDERAL AND STATE AGENCIES



LONG HISTORY OF SOURCE WATER PROTECTION BY FEDERAL AND STATE AGENCIES



BWS Monitoring Well Installation, February 2024
Source: Honolulu Star-Advertiser

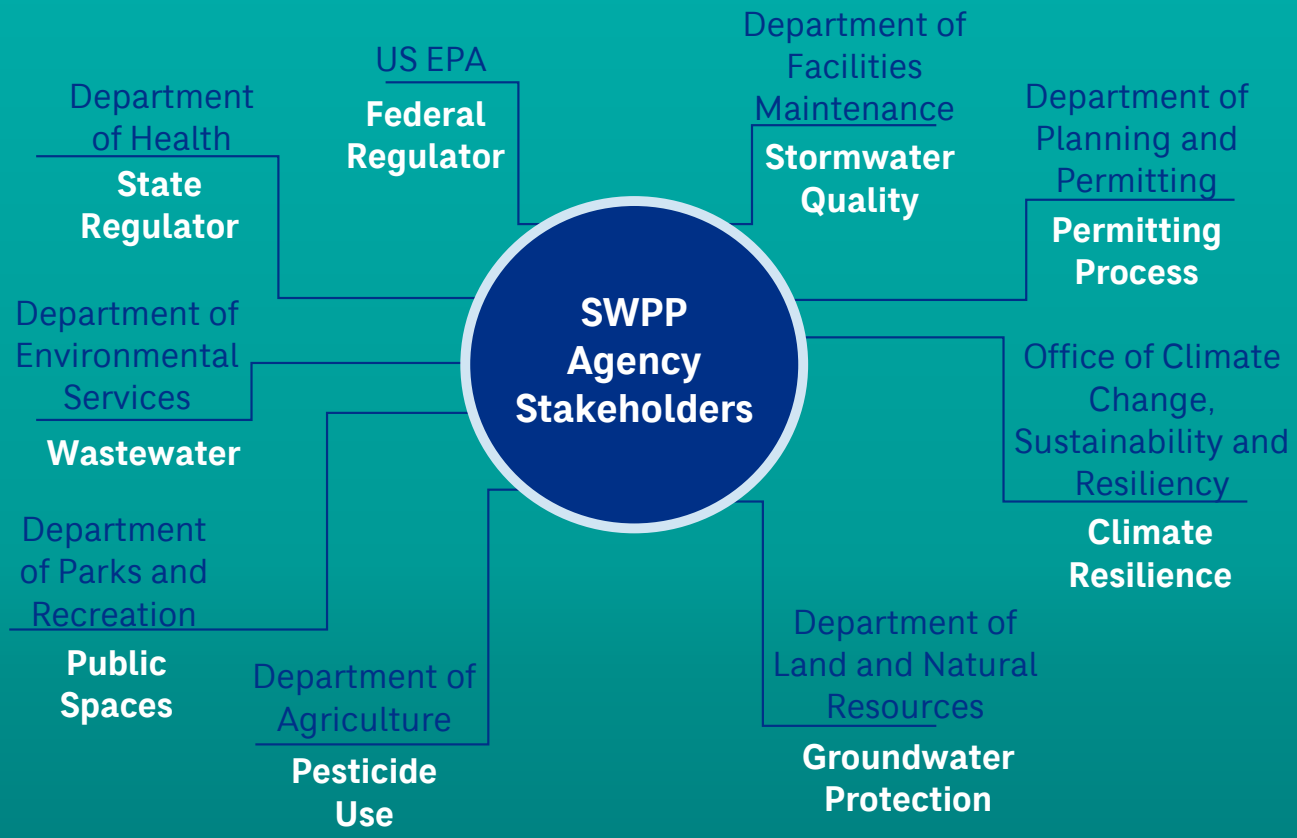
SWPP GUIDING PRINCIPLE

Prevention of sources from degradation is always preferable to mitigation and clean-up, thus **reducing risk** is the **foundation** of our Source Water Protection Plan

SWPP OBJECTIVES

1. **Proactively understand the risk** to sources by leveraging previous work
2. **Develop a framework of a long-term program** to guide and further BWS's initiative to protect drinking water aquifers supplying existing and future BWS water sources
3. **Understand BWS's regulatory** role in source water protection within the context of other agencies' roles and responsibilities
4. Assist BWS in fulfilling its responsibility to "**Protect the quality and/or quantity of water resources used or expected to be used**"
5. **Identify opportunities for interagency collaboration** in furtherance of the BWS's mission to provide safe, dependable, and affordable water now and into the future

SWPP AGENCY STAKEHOLDERS PROVIDED VALUABLE FEEDBACK



- 13 agency stakeholders participated in 5 meetings
- Project progress and deliverables reviewed, and feedback compiled
- Collaboration on BMP Projects critical

SWPP AGENCY STAKEHOLDER CONSENSUS

Mission	Funding	Collaboration	One Water	Reuse
All agency stakeholders see **protection of groundwater as part of their missions** and have projects to support	**Unprecedented funding available** at the Federal and State level to support source water protection projects and initiatives	Consensus that **source water protection requires collaboration** and joint efforts/projects – multi-beneficial objectives	**All waters are connected** – stormwater, wastewater, water reuse, groundwater	**Water reuse is encouraged** and promoted as a strategy to protect quantity

SWPP PLANNING PROCESS

Inter-Agency Communication and Coordination

Identify Risks and Potential Contaminating Activities (PCAs)

- Risk based on:
  - Proximity to BWS sources
  - Probability of contamination
  - Impact

Identify BMPs to Address Risk

- Review existing laws and regulatory responsibilities
- Evaluate existing BMPs
- Identify gaps
- Recommend additional BMPs

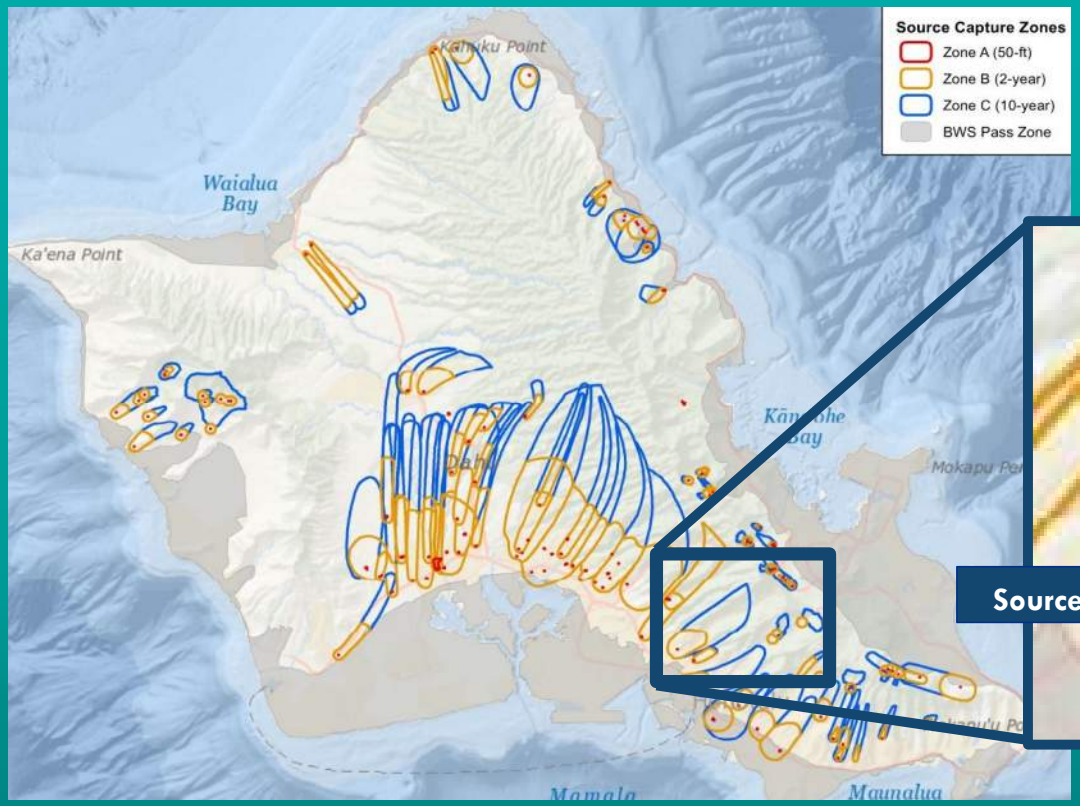
Compile into BMP Projects

- Compile BMP Projects based on:
  - PCA type
  - BMP category
  - Involved agencies

Prioritize BMP Projects

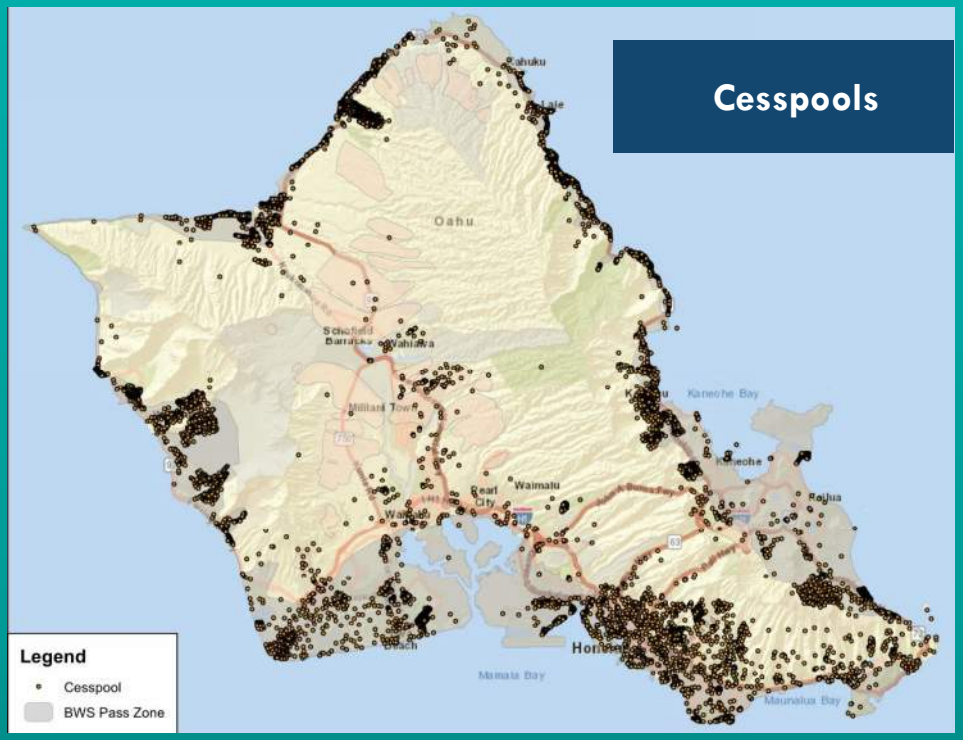
- Priority based on:
  - Implementability
  - Impact

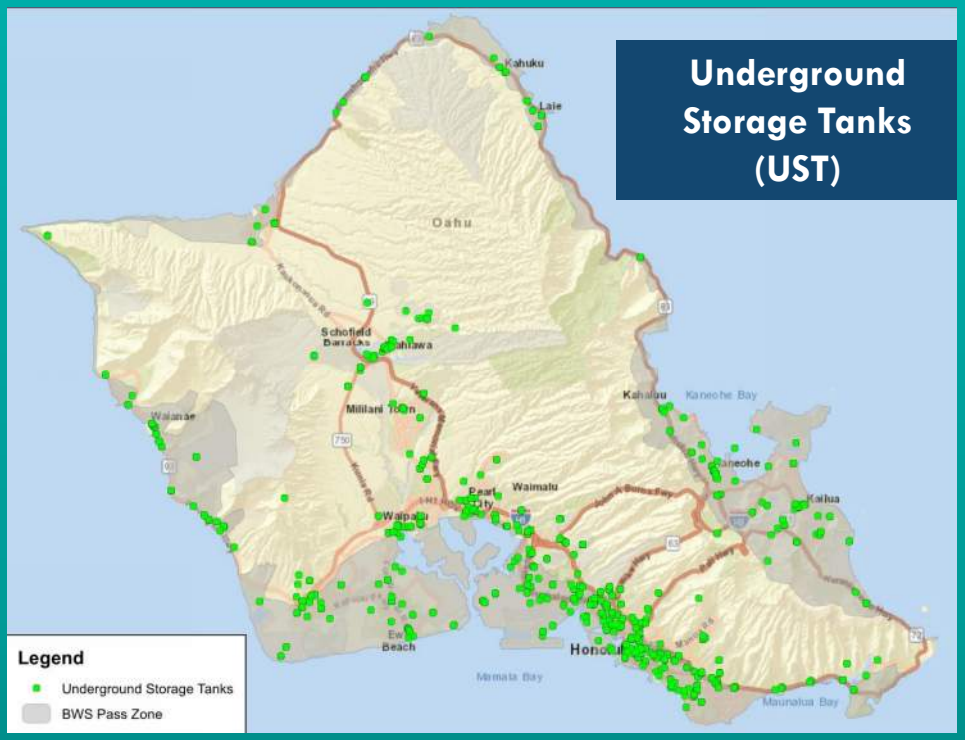
BWS SOURCE CAPTURE ZONES



Capture zones identify land areas that may contribute to source supply if contamination enters groundwater. Travel time is marked by 2-year and 10-year zones.

POTENTIALLY CONTAMINATING ACTIVITIES (PCAs)





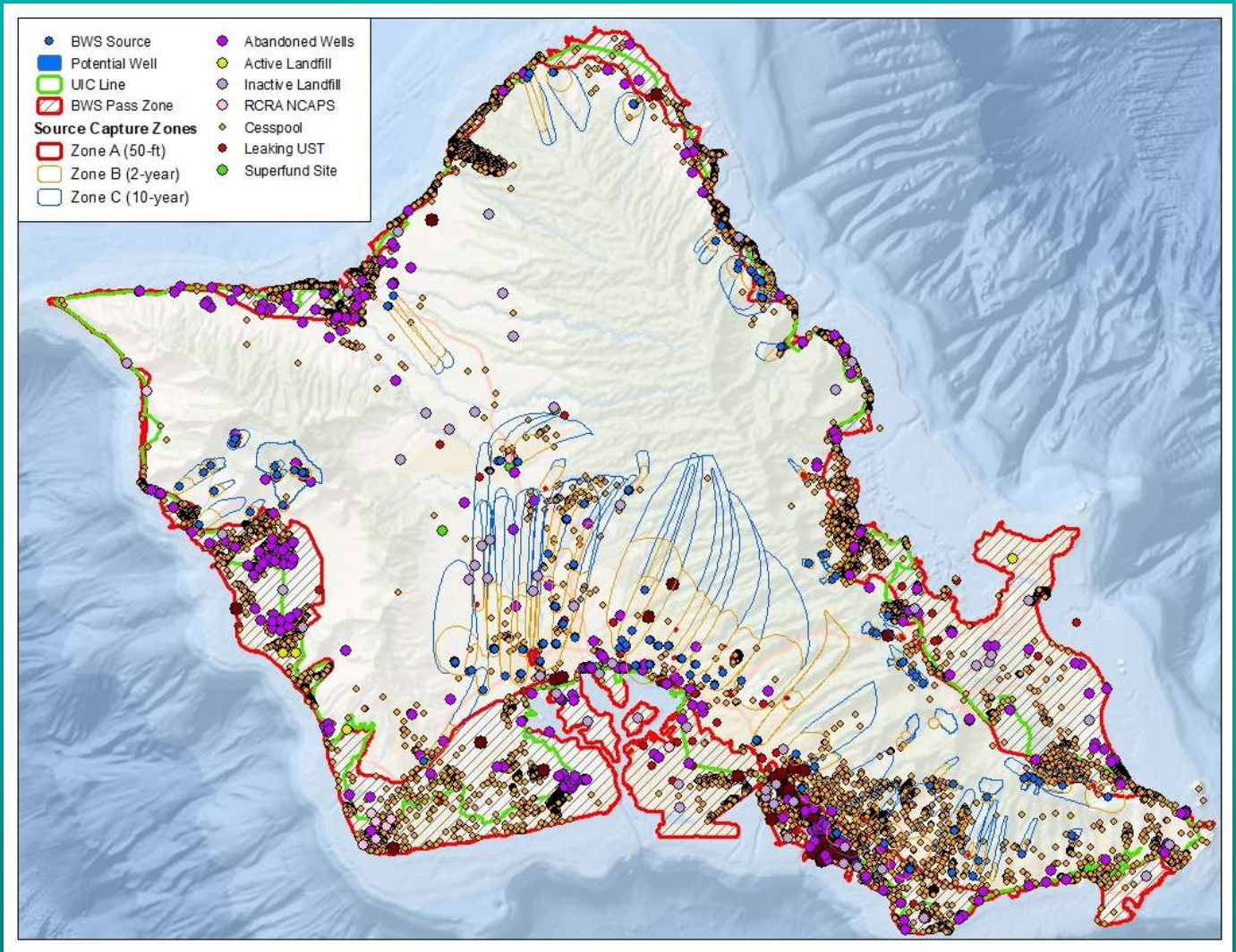
Other PCAs included Superfund and Resource Conservation and Recovery Act (RCRA) sites, abandoned wells, historical agricultural sites, chemical storage sites, historical landfills, etc.

slido

Please download and install the Slido app on all computers you use

Approximately how many PCAs do you think we've identified on the island?

ⓘ Start presenting to display the poll results on this slide.



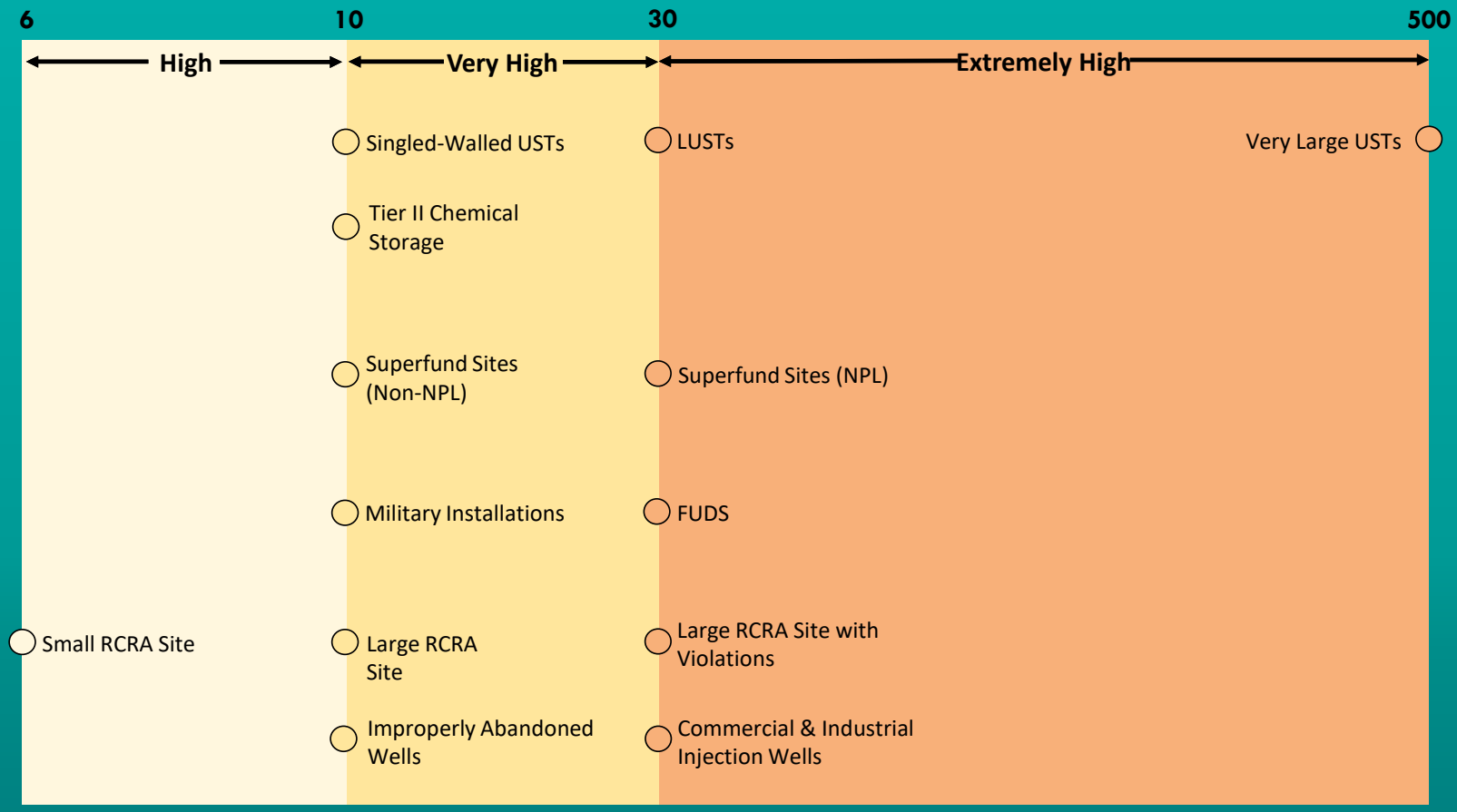
Approximately 19,400 PCAs identified on island with 2,700 located within the 10-year travel time of BWS sources

PCA SUMMARY

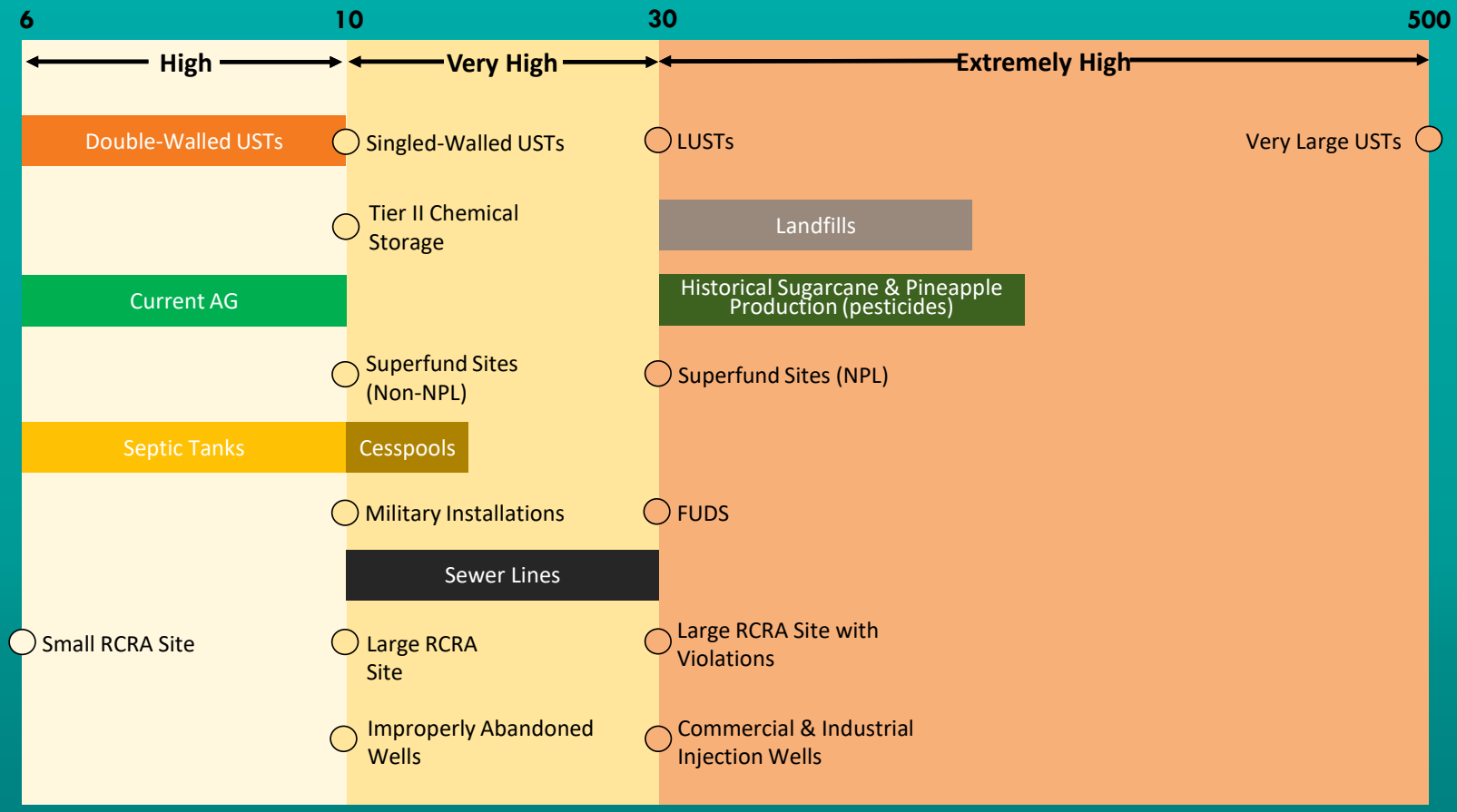
- Scores increase as relative risk increases
- Risk also based on proximity to wells:
  - Capture Zone (CZ) A: 50 ft
  - CZ B: 2-year travel
  - CZ C: 10-year travel

Category	Score Range	Type of PCAs	
Extremely High	30 - 500	• Large RCRA site with violations • National Priorities List (NPL) Superfund Sites • Leaking Underground Storage Tanks (LUSTs)	• Landfills / Dumps • Underground Injection of Commercial / Industrial Waste • Historical Pineapple / Sugarcane Areas
Very High	10 - 29	• Large RCRA Site • Airports • Military Installations • Formerly Used Defense Sites (FUDS) • Chemical Storage • Industrial Processing	• Dry Cleaners • Cesspools • Sewer Lines • Injection Wells • Improperly Abandoned Wells • Single-Walled USTs
High	6 - 9	• Small RCRA Site • Auto Repair Shops • Junk Yards • Waste Ponds	• Golf Courses • Septic Systems • Current Agriculture • Double-walled USTs
Medium	3 - 5	• Parks • Car Wash • Cemeteries • Lumber Stores	

SCORING FOR CERTAIN PCAs BASED ON SIZE

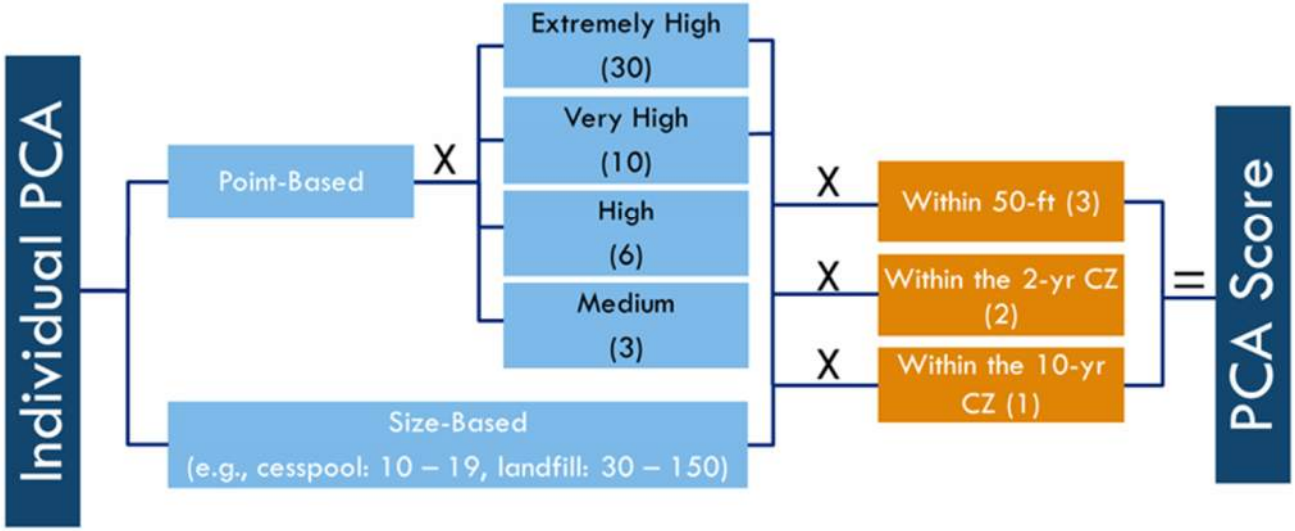


SCORING FOR CERTAIN PCAs BASED ON SIZE



PCA SCORING METHODOLOGY

Risk Score * Capture Zone Multiplier = PCA Score



Extremely high-risk PCAs (e.g., LUSTs, landfills) and BMP Projects were identified in areas beyond the 10-year capture zone.

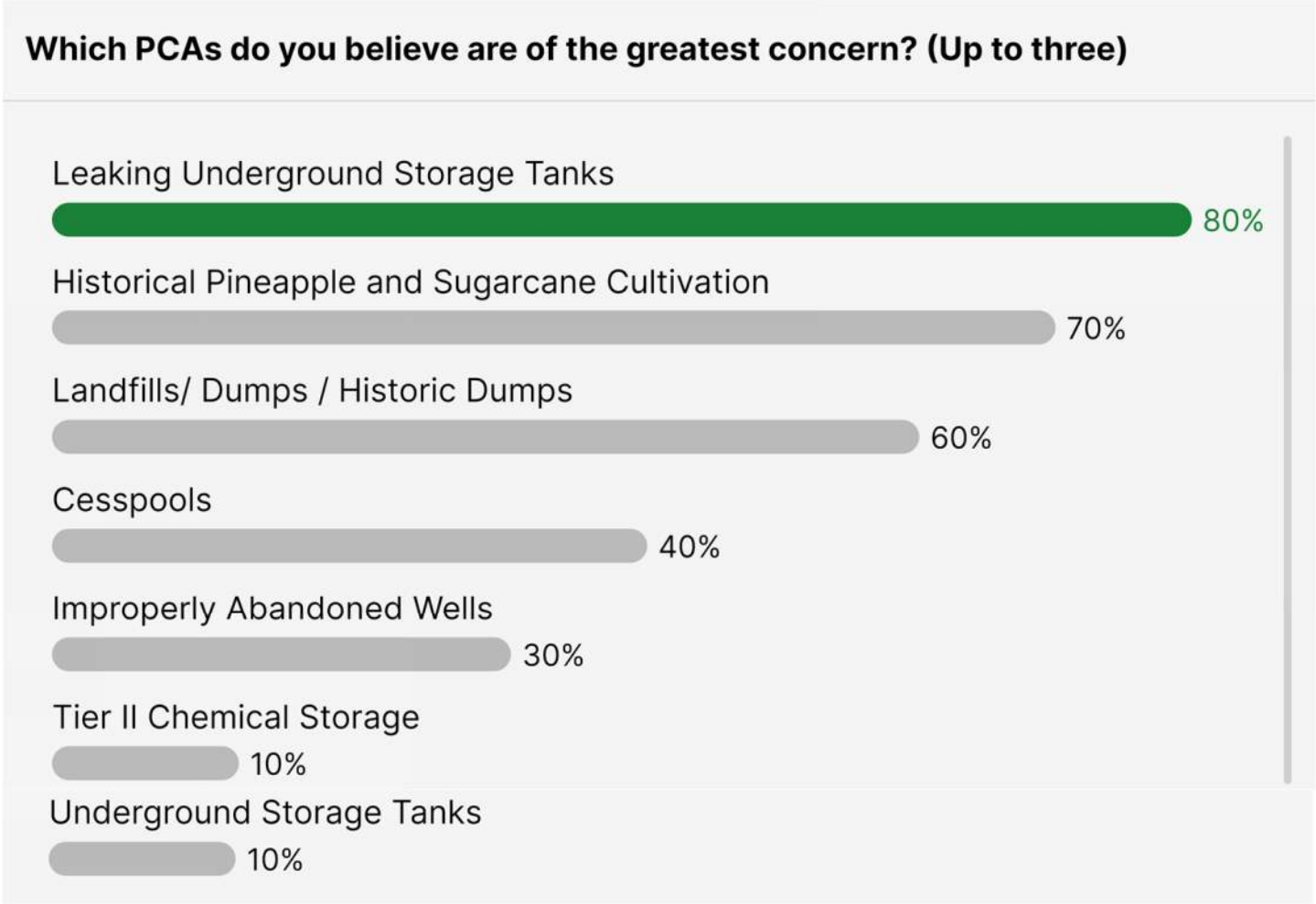
slido

Please download and install the Slido app on all computers you use

Which PCAs do you believe are of the greatest concern? (Up to three)

ⓘ Start presenting to display the poll results on this slide.

RESULTS FROM SWPP AGENCY STAKEHOLDER MEETING #5



PCAs DRIVING HIGHEST CAPTURE ZONE RISK SCORES

PCA	Number Within BWS No Pass Zone	Cumulative Score Across All Capture Zones
Historical Pineapple & Sugarcane Cultivation	121,700 acres	20,520
Landfill/dump/ historic dump	34	4,040
Tier II Chemical Storage Facility	396	2,800
Cesspools	2,738	2,192
Improperly Abandoned Wells	149	1,750
USTs	337	1,354
LUSTs	47	1,110

REGULATORY RESPONSIBILITIES MATRIX PURPOSE

- RRM first requested in SWPP Stakeholder Meeting #1
- Understand the boundaries of agencies' responsibilities with respect to groundwater protection
- Identify where agencies' responsibilities may overlap
- Identify gaps that need to be addressed
  - Where agencies are not currently informed but would like to be
  - Where interdepartmental communication can be enhanced

ORIGINATOR

ORIGINATING LEGAL AUTHORITY, OVERSIGHT

REGULATOR

PERMITTING / ENFORCEMENT

CONSULTATION REQUIRED

REVIEW FOR CONSISTENCY/COMPLIANCE

INFORMED

INFORMATIONAL-ONLY NOTIFICATION

DATA SHARING AND STORAGE

DEVELOP REGULATORY RESPONSIBILITIES MATRIX (RRM) TO UNDERSTAND AGENCY ROLES AND RESPONSIBILITIES

Environmental Policies, Regulations, and Enforcement Programs	Federal			STATE						
	EPA			Department of Health					DLNR	
	Office of Water	Office of Chemical Safety and Pollution Prevention	Office of Land & Emergency Mgt	Safe Drinking Water Branch	Clean Water Branch	Wastewater Branch	Solid and Hazardous Waste Branch	HEER Office	Commission on Water Resources Management	Hawaii Departn Transpo
Environmental Policies and Acts										
Safe Drinking Water Act	O			R					I	
Clean Water Act	O				R				I	
National Environmental Policy Act (NEPA)			O						I	
Hawaii Environmental Policy Act (HEPA)									I	
Emergency Planning and Community Right-to-Know Act (EPCRA)		O					R	R / I		
Hawaii Emergency Planning and Community Right-to-Know Act (HEPCRA)		O					R	R / I		
Resource Conservation Recovery Act (RCRA) - Hazardous Waste		O	O				R	I		
			O				R	R / I		
					R				I	
				R					I	
								I	I	
							R / I	R / I	I	
				R		R			I	
						R / I			I	

RRM increases transparency regarding agencies' roles and responsibilities, goals, and projects, e.g., where agencies would like to be informed (and are not currently informed)

RECOMMENDED BEST MANAGEMENT PRACTICES (BMPs)

BMP CATEGORIES

BMPs are actions that can be taken to reduce human impact on land and water resources.

- Regulatory or voluntary
- Mitigate contamination
- Manage publicly or privately owned lands
- Non-structural BMPs:

Education and Outreach

MOU or MOA

Regulation or Standard

Enforcement

Programs

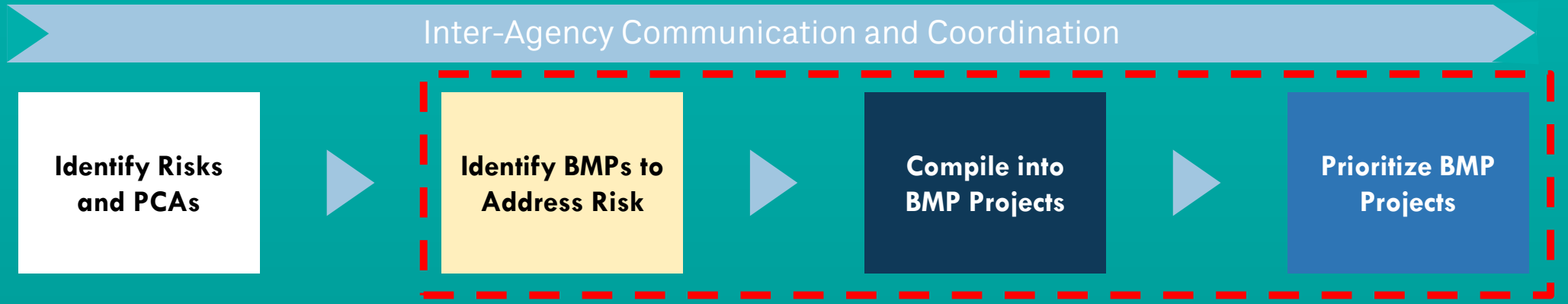
Inter-Agency Coordination

Data Collection, Storage, and Sharing

Physical Controls

Funding Support

CREATION OF BMP PROJECTS



Over 60 additional recommended BMPs identified and grouped into 20 BMP Projects

BMP Projects could improve inter-agency communications and may be more likely to receive funding and remove competition for funding.

ADDRESSING INDIVIDUAL WASTEWATER SYSTEMS (IWS) WITH WASTEWATER BRANCH (WWB) AND DEPARTMENT OF ENVIRONMENTAL SERVICES (ENV)


Source: Texas A&M

Current BMPs

BWS Rules & Regulations:

- IWS must be approved by the BWS manager

Hawai'i Administrative Rules (HAR):

- 1,000-ft from potable water sources
- 0.25-mile from any new injection well to drinking water source
- WWB Director may impose more stringent requirements

Gaps

- For large / multiple on the same property, minimum distances may not be sufficient
- Unclear when subject to 1,000-ft or 0.25-mile minimum distance from supply source
- Variance procedures undocumented
- Information on regional sewage system plans still in development

Potential BMPs

- **Document the variance procedures**
- **Clarify on DOH website which are subject to the 1,000-ft or 0.25-mile buffer**
- **Permit review process to confirm future sewer plans with ENV**

ADDRESSING LUSTs/USTs WITH HAZARD EVALUATION AND EMERGENCY RESPONSE (HEER) AND SOLID AND HAZARDOUS WASTE BRANCH (SHWB)


Source: Michigan Department of Environment, Great Lakes, and Energy

Current BMPs

- Leak monitoring and monthly inspection requirements
- Secondary containment required for single-walled USTs by July 15, 2028
- Inventory and spill notification requirements from UST owner to HEER
- LUST notification procedures from Safe Drinking Water Branch (SDWB) to community water systems

Gaps

- Single-walled USTs remain in BWS capture zones and are more likely to have a release that goes undetected
- Communication and data sharing between agencies regarding USTs could be improved

Potential BMPs

- **Inform, educate, and encourage compliance for 2028 tank replacement**
- **HEER to notify BWS of possible releases in capture zones during the initial assessment**
- **HEER to notify BWS of releases in interconnected systems and adjacent private wells**

ADDRESSING IMPROPERLY ABANDONED WELLS WITH COMMISSION ON WATER RESOURCE MANAGEMENT (CWRM)


Source: Las Vegas Valley Groundwater Management Program

Current BMPs

BWS Rules & Regulations:

- Power to deem well as abandoned
- Owners must seal wells in a manner which will protect the aquifer

CWRM abandoned well determination program and sealing requirements

Gaps

- Abandoned wells remain in BWS capture zones
- Limited locations exist for monitoring aquifer water quality and groundwater table
- Owners may not have the funding to address abandoned wells

Potential BMPs

- **Establish a phased, interagency program to locate and seal or repurpose abandoned wells into groundwater monitoring wells**
- **BWS to provide support locating and converting/sealing abandoned wells, as needed.**

ADDRESSING CESSPOOLS WITH DOH WASTEWATER BRANCH (WWB)

Current BMPs

Act 125
- Convert all cesspools by 2050

BWS Rules & Regulation:
- IWS must be approved by the manager

HAR:
- 1,000-ft minimum distance from potable water sources

Gaps

- Process and frequency of updating cesspool database is unknown
- Legacy cesspools remain within 1,000 feet of BWS sources
- Extent of Per- And Polyfluoroalkyl Substances (PFAS) contamination from cesspools is unknown

Potential BMPs

- **Understand how and how often the cesspool database is updated**
- **Recommend the prioritization of cesspools within 1,000 feet of a BWS source for conversion**
- **Recommend a PFAS load assessment**

ADDRESSING PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS) WITH DOH

Current BMPs

- Proposed Maximum Contaminant Levels for certain PFAS contaminants
- Updated Toxics Release Inventory regulations
- Toxic Substances Control Act Reporting and Recordkeeping Requirements
- Emergency Planning and Community Right-to-Know Act and the Pollution Prevention Act
- DOH recycled water application restrictions

Gaps

- Extent of PFAS contamination from industrial activities is unknown
- Extent of PFAS contamination from cesspools and recycled water is unknown

Potential BMPs

- **Conduct a sampling program downstream of potential contaminated areas**
- **Identify a strategy to manage overall levels in the aquifer**
- **Update the Groundwater Status Report and conduct load assessment for various commercial/industrial type facilities**
- **Conduct a full load assessment of the Honouliuli Recycled Water Plant.**

ADDRESSING POTENTIAL CONTAMINATION FROM PESTICIDE USE WITH DEPARTMENT OF AGRICULTURE (DOA) AND DOH


Source: Hawai'i News Now

Current BMPs

- House Concurrent (HCR) Resolution 129 investigation and evaluation legislative report
- 2014 Statewide Pesticide Sampling Pilot Project DOH
- 2019 Water Quality Plan
- Granular Activated Carbon Treatment in place

Gaps

- The extent of impacts from historical pineapple and sugarcane activities is unknown
- Evolving pesticide and herbicide products

Potential BMPs

- **Consider installing sentinel wells upgradient of supply wells near known contaminated areas**
- **DOA could share information on new products and their proposed areas of use**
- **Advocate for a study on the impacts of different combinations of pesticides**
- **Update the Groundwater Status Report**

ADDRESSING NATIONAL PRIORITIES LIST (NPL) AND NON-NPL SUPERFUND SITES WITH ENVIRONMENTAL PROTECTION AGENCY (EPA) AND DOH

Source: The Encyclopedia of Greater Philadelphia

Current BMPs

- Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Superfund Cleanup Process
- EPA educational brochure for the Site Redevelopment Profile of the Del Monte Corp superfund site

Gaps

- Funding constraints limit Superfund remediation research
- Communication between agencies regarding cleanup actions at Superfund sites could be improved

Potential BMPs

- **Request guidance on actions for Superfund Sites**
- **DOH and University of Hawai‘i could pursue Superfund Research Program funding**
- **EPA could share investigative data, remediation plans, and public communication materials**
- **HEER and SDWB to clarify Non-NPL management responsibilities**

ADDRESSING HISTORICAL LANDFILLS WITH SOLID AND HAZARDOUS WASTE BRANCH (SHWB)


Source: Honolulu Civil Beat

Current BMPs

Landfill Construction Standards:

- Impermeable liner
- Secondary liner
- Measures to drain and collect leachate
- Capping of inactive landfills

Solid Waste Management Control 11-58.1-16(3):

- Regular groundwater monitoring

Gaps

- Missing data on historical landfills
- Unknown if historical landfills have released leachate into the soil and groundwater

Potential BMPs

- **Request available investigative/ environmental data from SHWB**
- **Further investigation of historical landfills**

MAJOR TAKEAWAYS AND NEXT STEPS

MAJOR TAKEAWAYS

- **Inter-Agency Coordination:** Source water protection requires collaboration, which creates opportunities for multi-benefit initiatives
- **Data Sharing:** It is beneficial from a source water protection view that agencies maintain GIS-ready data to be shared, that is periodically updated
- **Public Communications:** Better understand where their water supply comes from, the importance of protecting O'ahu's, and the role they play in that protection
- **Aquifer-wide Concerns:** PCAs can impact non-BWS supply and water resources
- **Utilization of Funding:** Collaboration can increase efficiency

IMPLEMENTATION OF THE SWPP AND NEXT STEPS

- Assign point person/position from each SWPP agency stakeholder to participate in continued SWP collaboration
- Hold recurring SWP meetings with point persons to discuss milestones and implementation of recommended BMP Projects
- Continue to identify opportunities for BMP Projects through use of the RRM

HOW CAN THE STAKEHOLDER ADVISORY GROUP SUPPORT SWPP IMPLEMENTATION?

- Provide feedback on today's presentation
- Support source water protection projects in your communities
- Source water protection is everyone's responsibility – keep an eye out for any potential threats!
- As the SWPP advances, updates will be provided to the Stakeholder Advisory Group

STAKEHOLDER ADVISORY GROUP FEEDBACK AND RECOMMENDATIONS

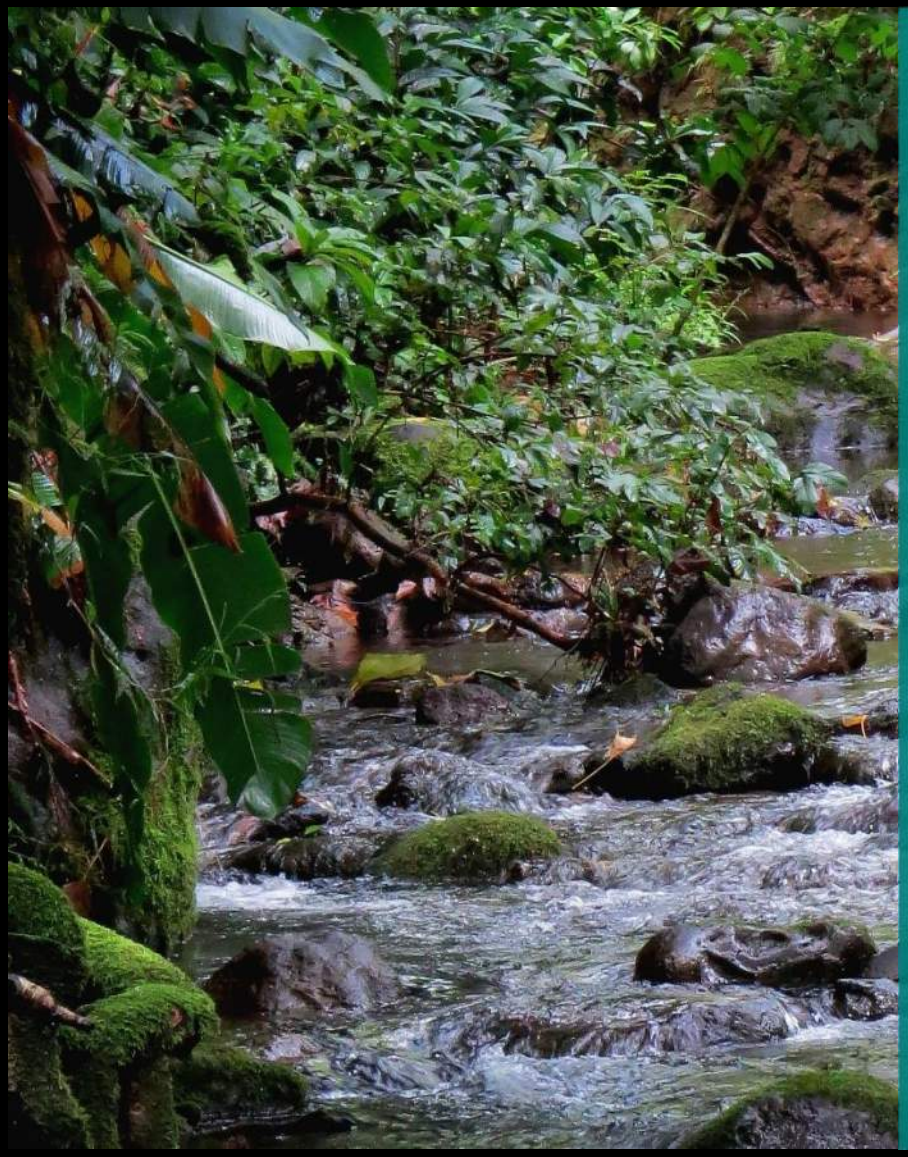
Are there any BMPs or next steps that *can be enhanced*?

Are there any <u>other</u> potential threats, BMPs, or next steps *that we should consider*?

QUESTIONS?

MAHALO

WWW.BOARDOFWATERSUPPLY.COM

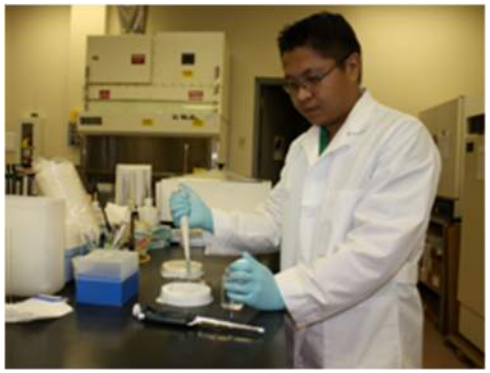


WATER MASTER PLAN OVERVIEW

Barry Usagawa
Water Resources Program Administrator
Dave Ebersold
CDM Smith
July 18, 2024


A Long-Term
Water Master Plan
For Our Water Future

WE ARE ALL **WATER** STEWARDS






We sustain, capture, treat, move, store and deliver **145,000,000 gallons** of water every day

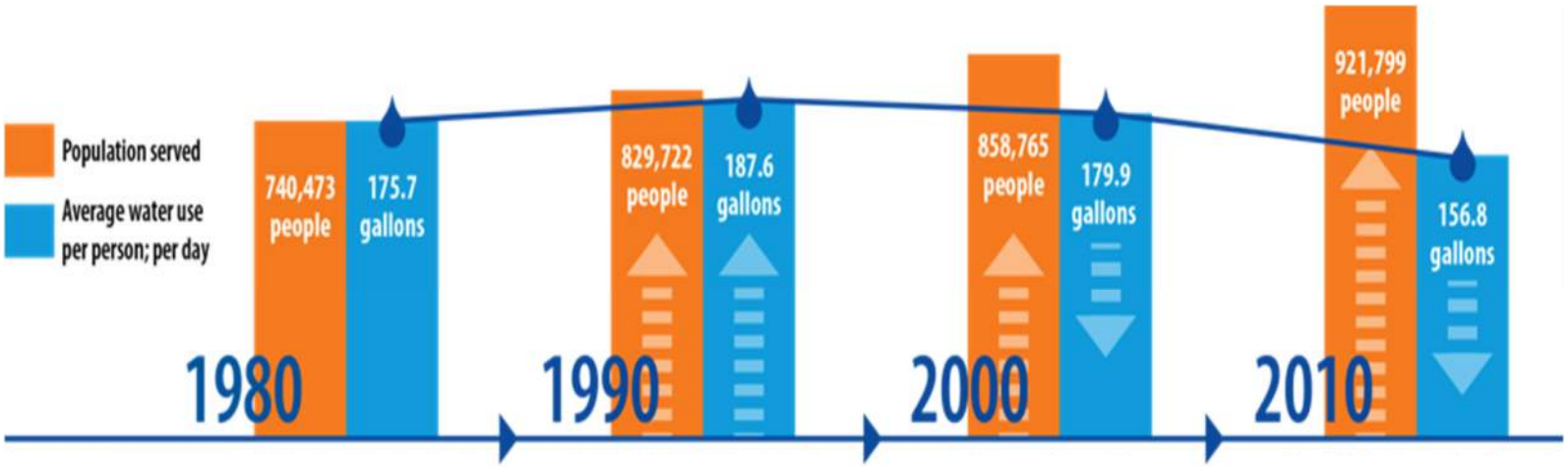
We work with partners to
protect the source in our watersheds

Wai‘anae High School students installing stream gauge


We **take only what is needed** and do not waste it
Aquifer in the Hālawa Shaft


We produce 8 million gallons of
recycled water every day
to use for irrigation and industry
instead of drinking water

O‘ahu’s Conservation Success Story



10 billion gallons per year are now saved for other uses today vs.1990

Are we prepared to provide safe, dependable, and affordable water for **the next generation?**

Water Master Plan

SUMMARY

Board of Water Supply
City and County of Honolulu

Water for Life, Ka Wai Ola

JULY 2016

The BWS Water Master Plan…

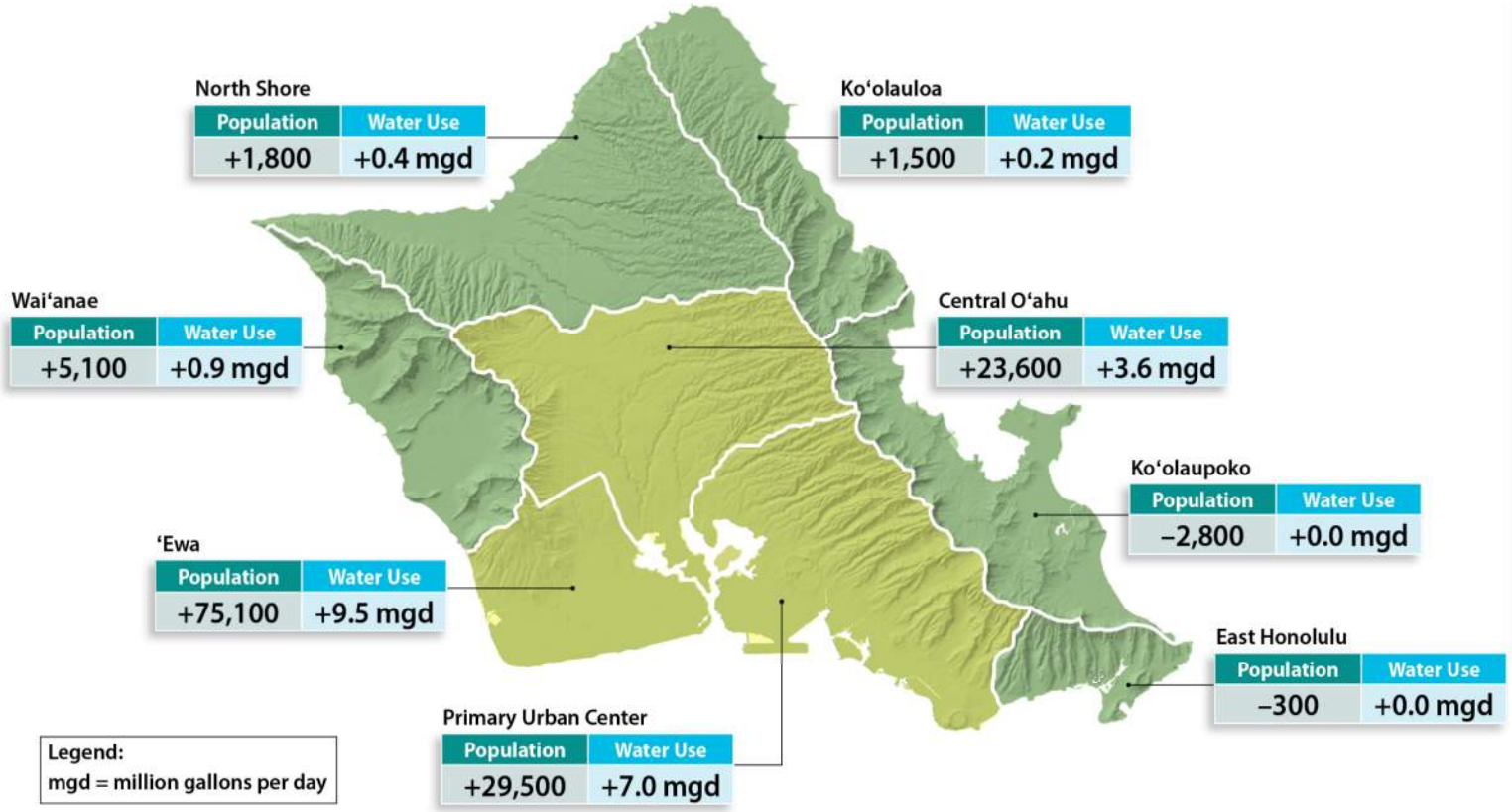
… **Looks ahead** 30 years

… **Evaluates** the entire water system

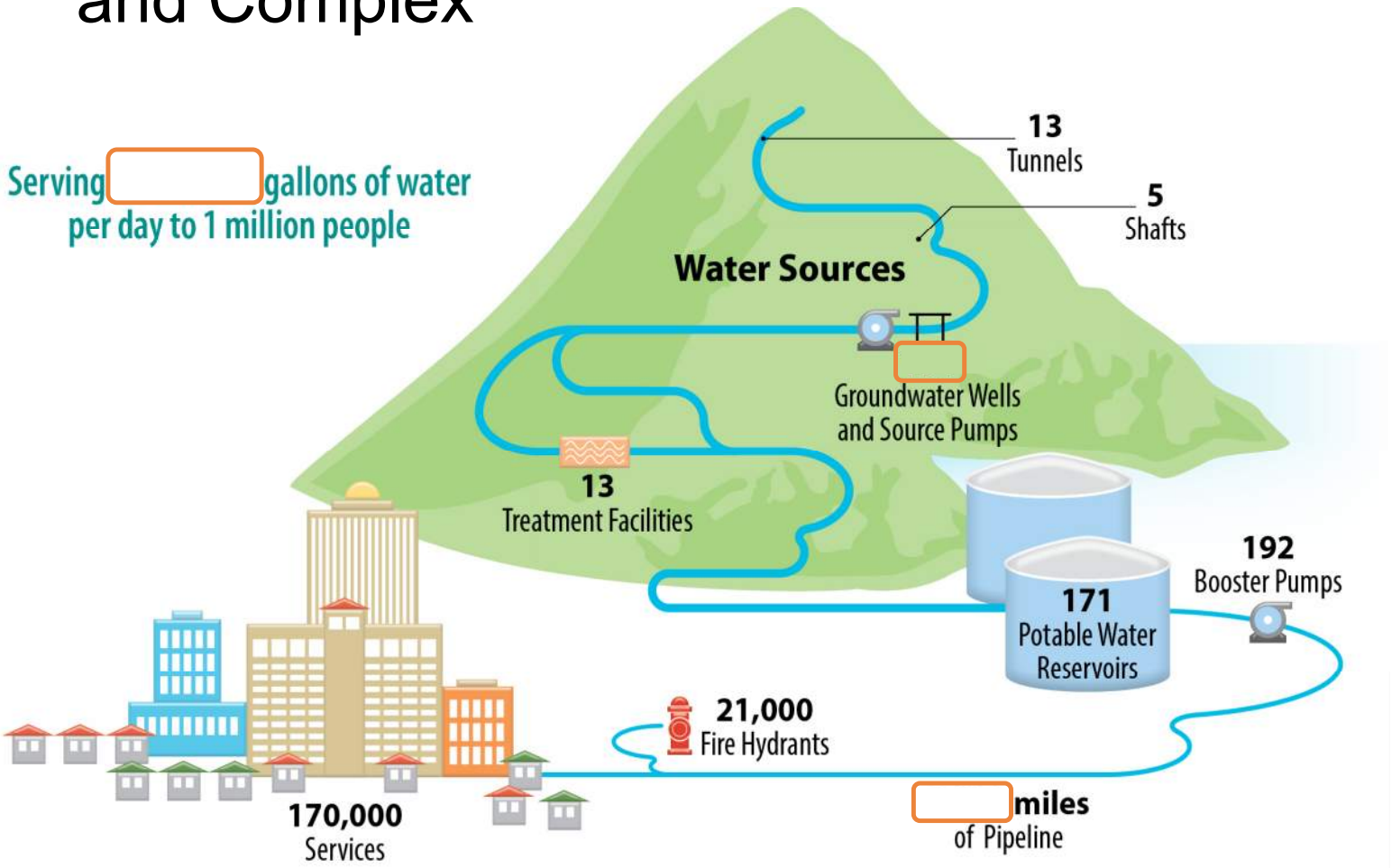
… **Identifies** necessary improvements

… **Balances needs with costs** of providing water to our customers

Changes in Population and Water Use Projections by **2040**



The BWS Water System is Large and Complex



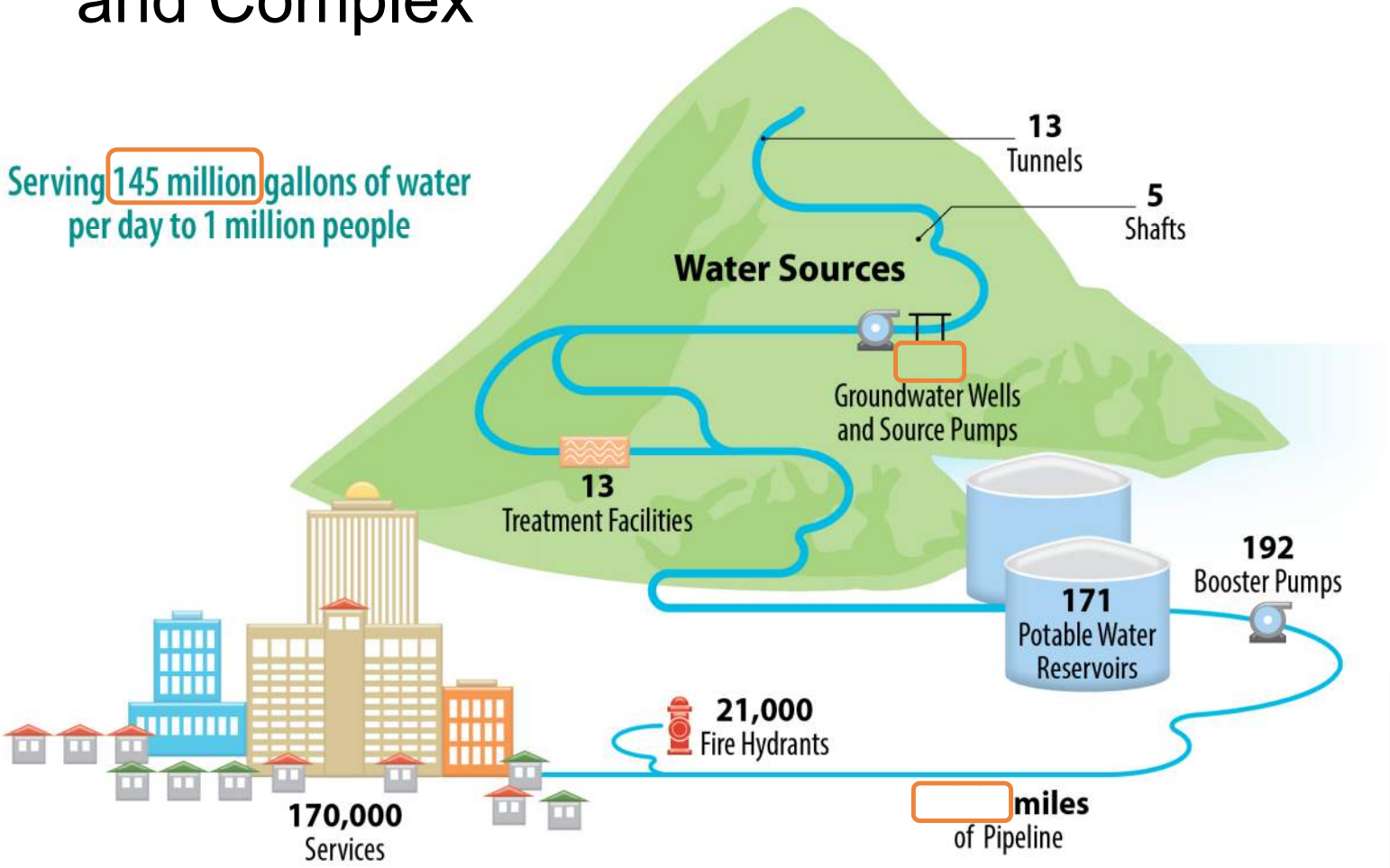
slido

Please download and install the Slido app on all computers you use

On average, how much water does BWS serve to its customers every day?

ⓘ Start presenting to display the poll results on this slide.

The BWS Water System is Large and Complex



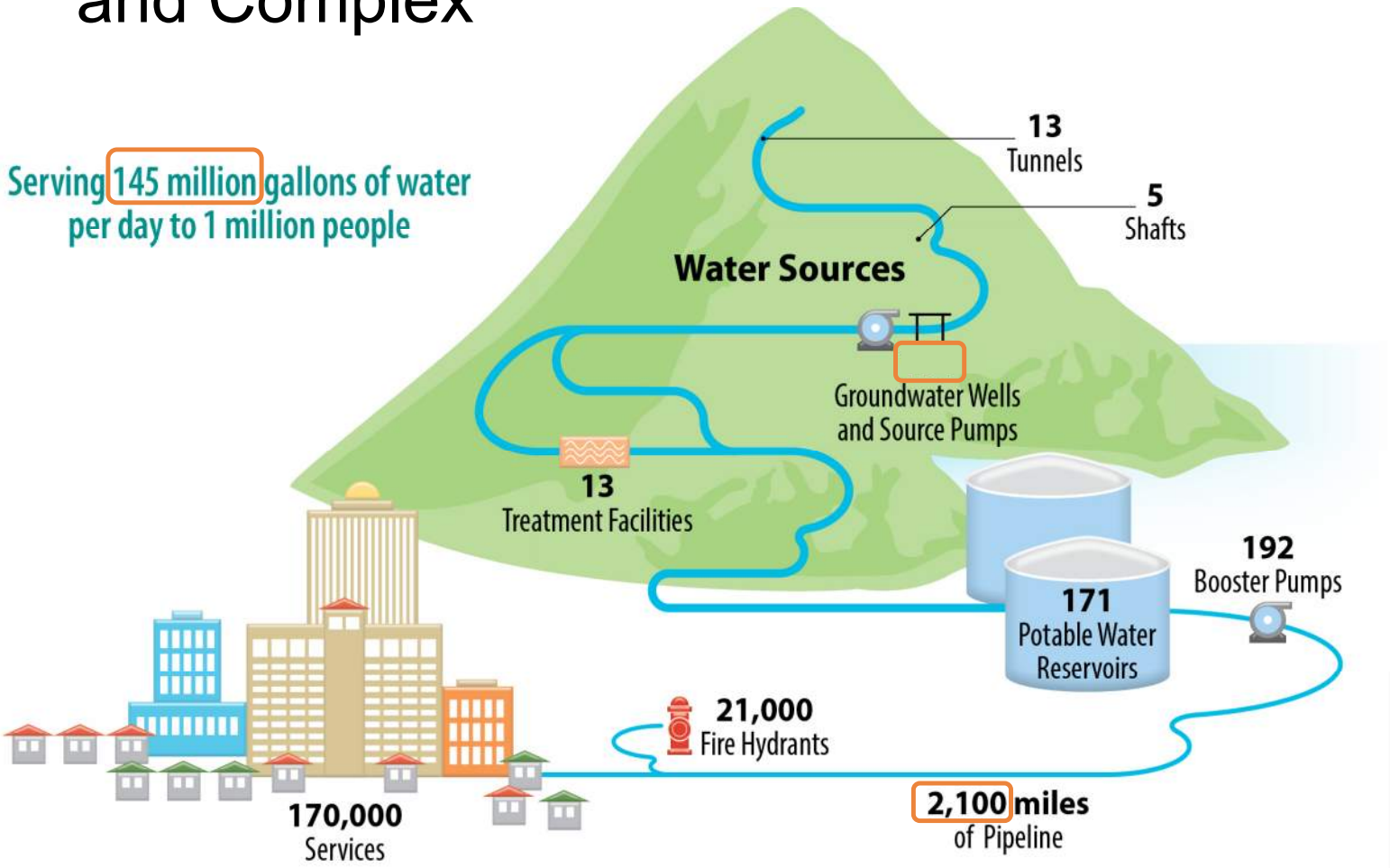
slido

Please download and install the Slido app on all computers you use

How many miles of pipe are in the BWS system?

ⓘ Start presenting to display the poll results on this slide.

The BWS Water System is Large and Complex



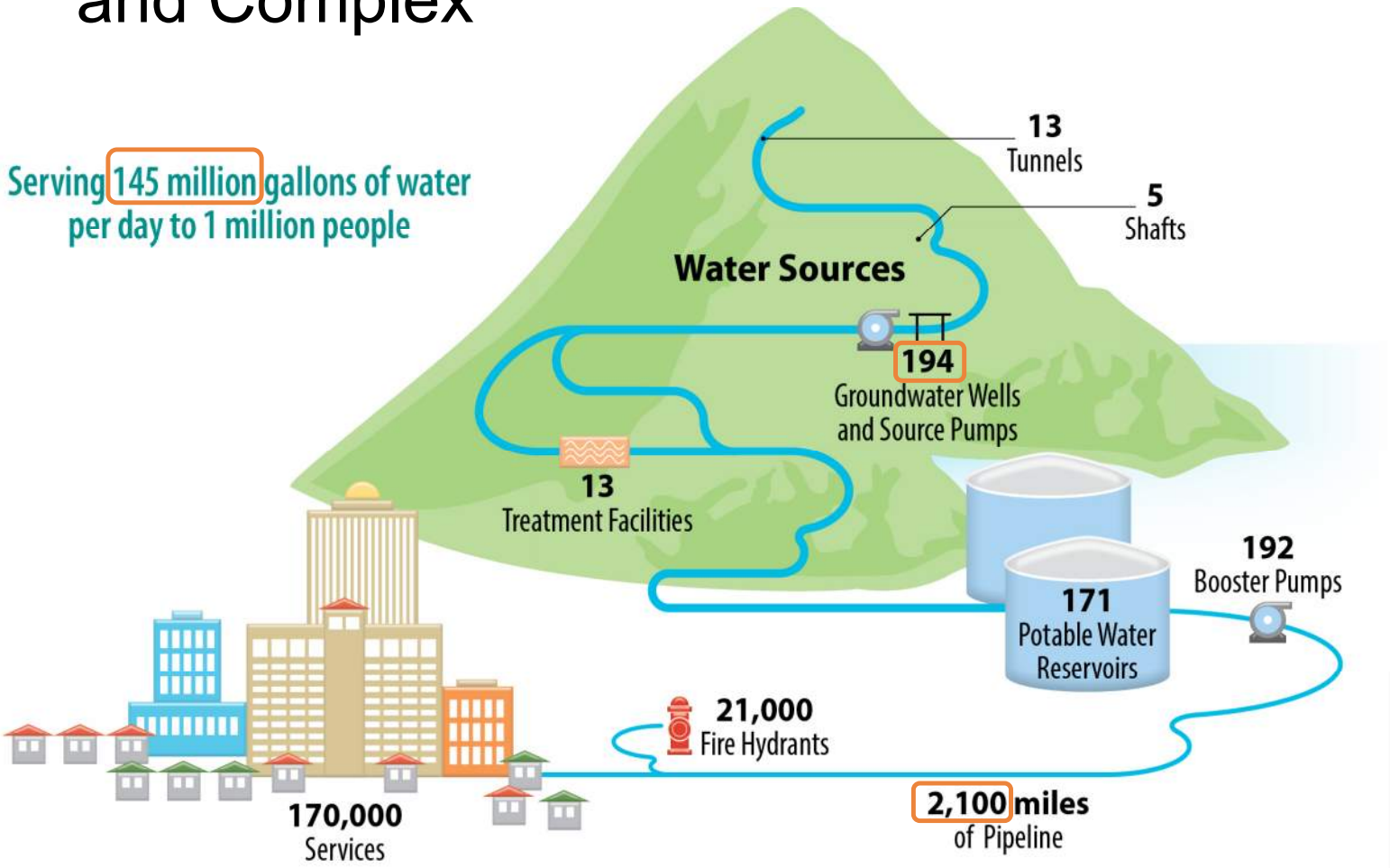
slido

Please download and install the Slido app on all computers you use

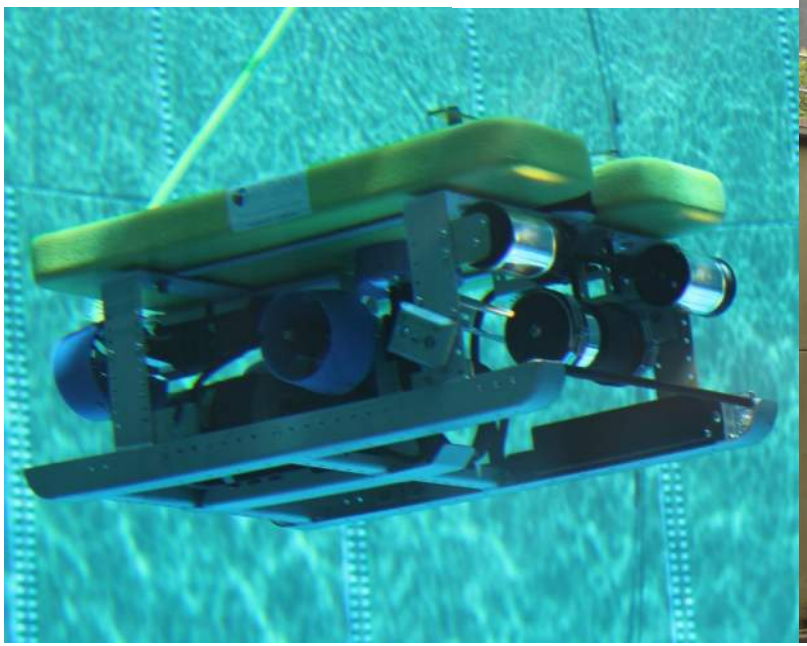
How many groundwater wells and source pumps does BWS rely upon?

ⓘ Start presenting to display the poll results on this slide.

The BWS Water System is Large and Complex



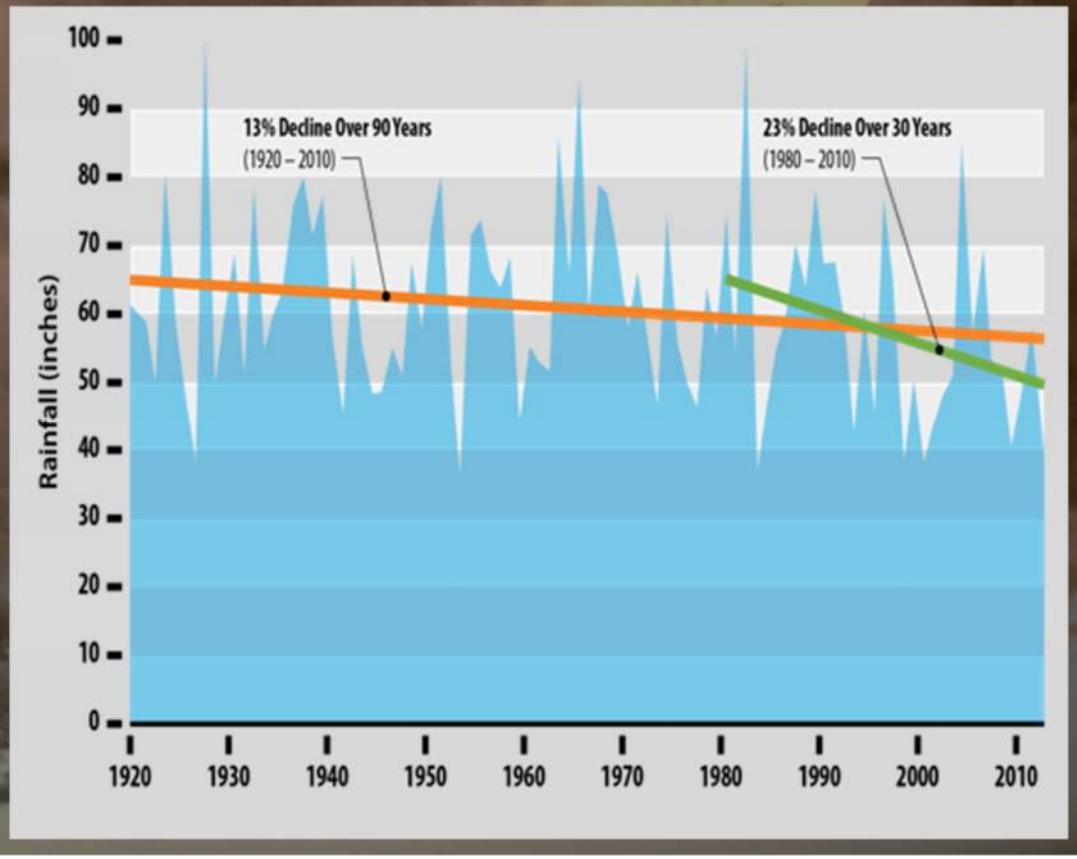
We conducted a comprehensive **condition assessment** of our water infrastructure




Some good news about
water main breaks: their
number has been steadily
decreasing

We analyzed the entire system **for its capacity** to handle the water needed for the **2040 population**

Climate change and other trends were factored into the plan's recommendations



Major **recommendations** of the **Water Master Plan**

Develop **new drinking water supplies** for ‘Ewa-Waipahu and Honolulu

Double the amount of non-potable water produced today

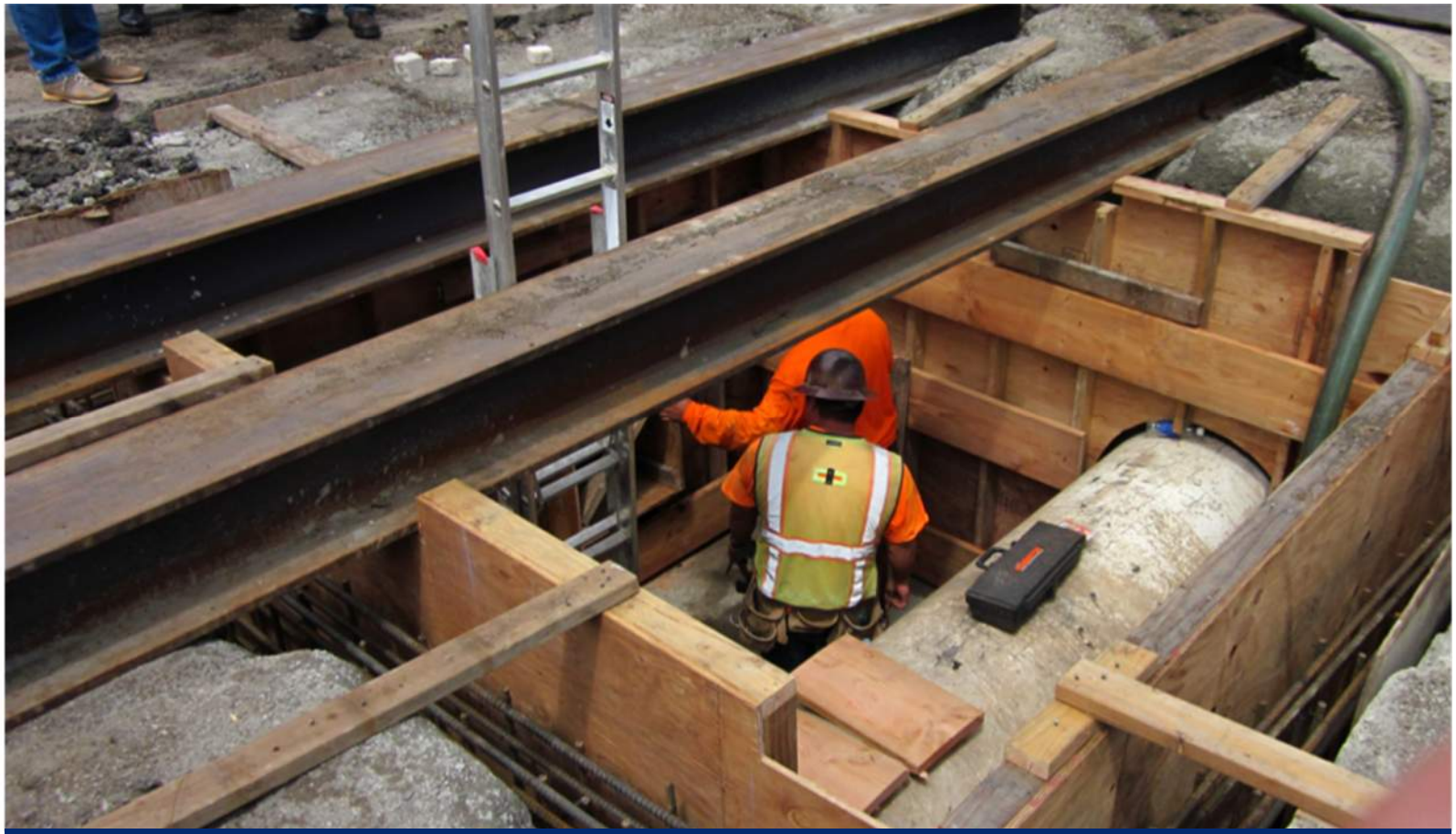
Most of our pumps are in
good condition

Rehabilitate some and **build new ones** where needed

About 90 percent of our **171 reservoirs** are in good condition

Build additional storage in **‘Ewa-Waipahu, Honolulu, and Wai‘anae** areas

Replace two reservoirs



Renew/replace **high priority pipelines** and install **new pipelines** to add capacity in areas of greatest growth

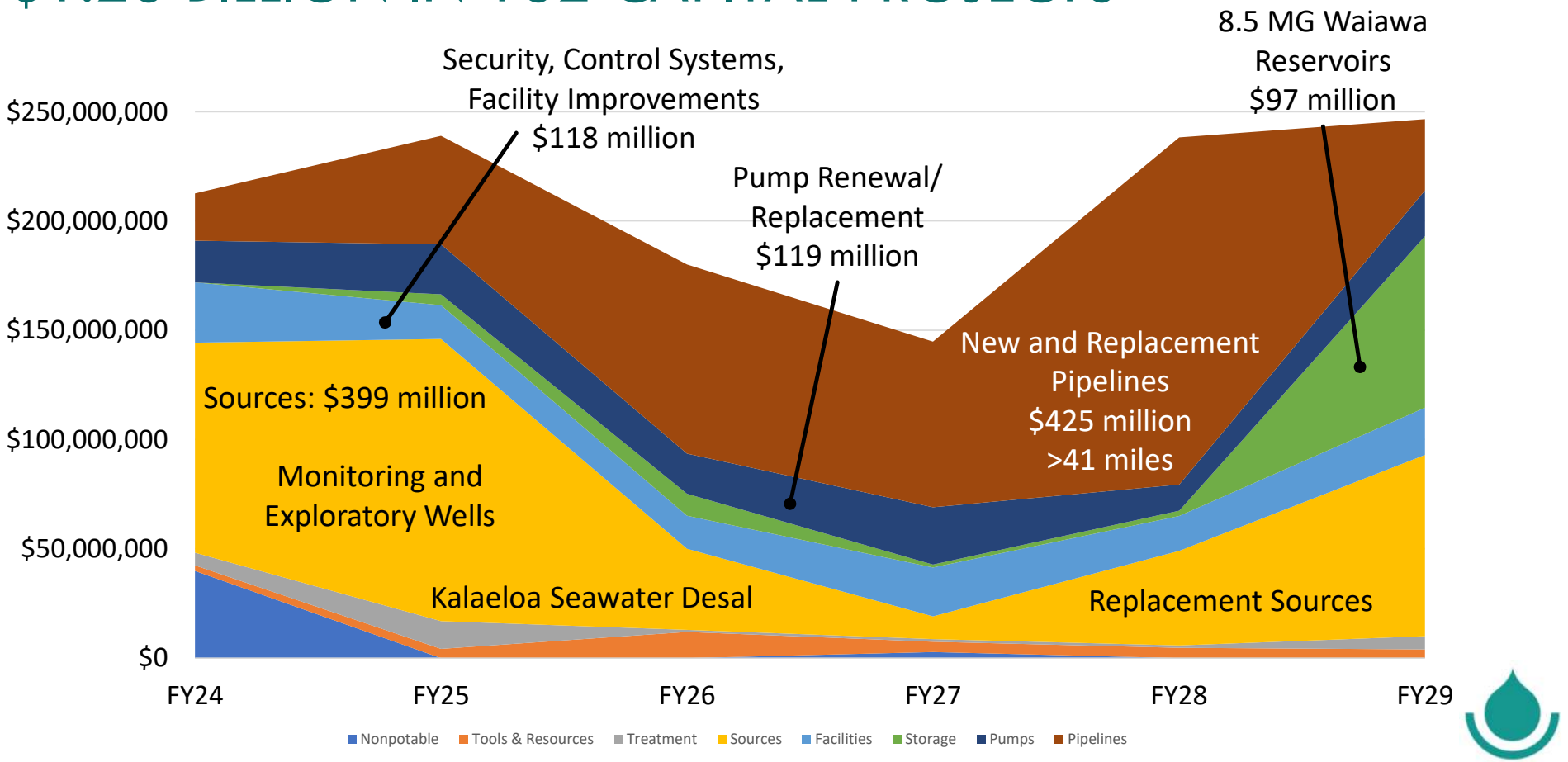

Continue the current capital improvement
budget of $80 million per year
and then **ramp up as needed**

Next Steps:

30-Year Capital Improvement Program

It will define and sequence **projects**, including cost estimates

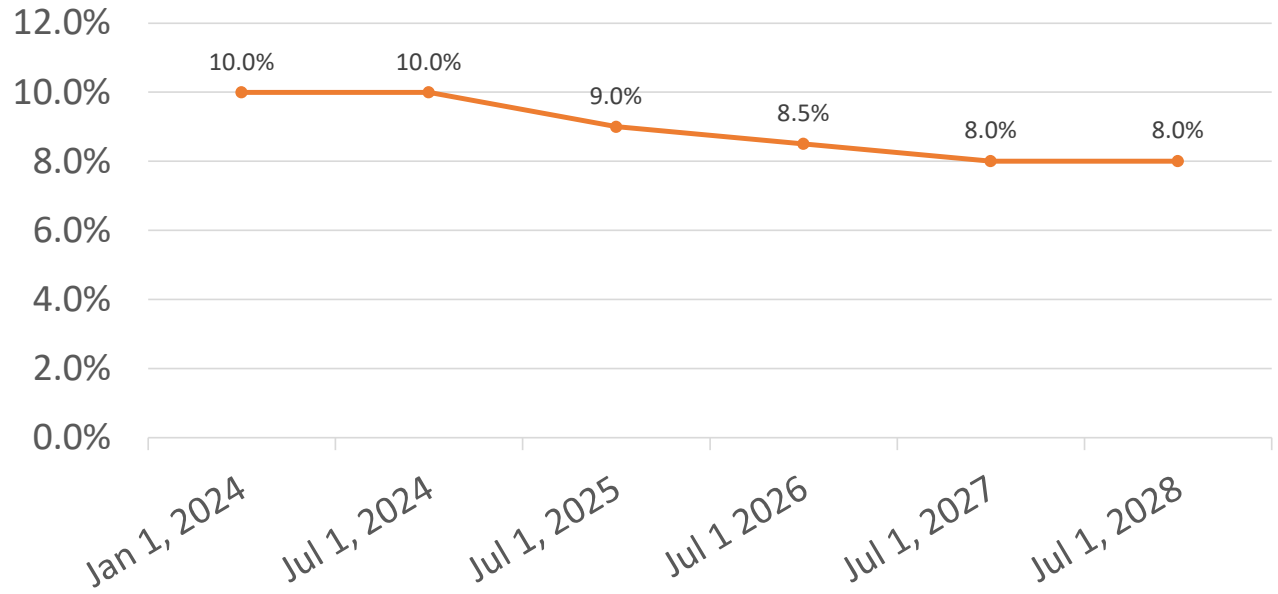
WHAT THE RATE INCREASES WILL PAY FOR $1.26 BILLION IN 132 CAPITAL PROJECTS



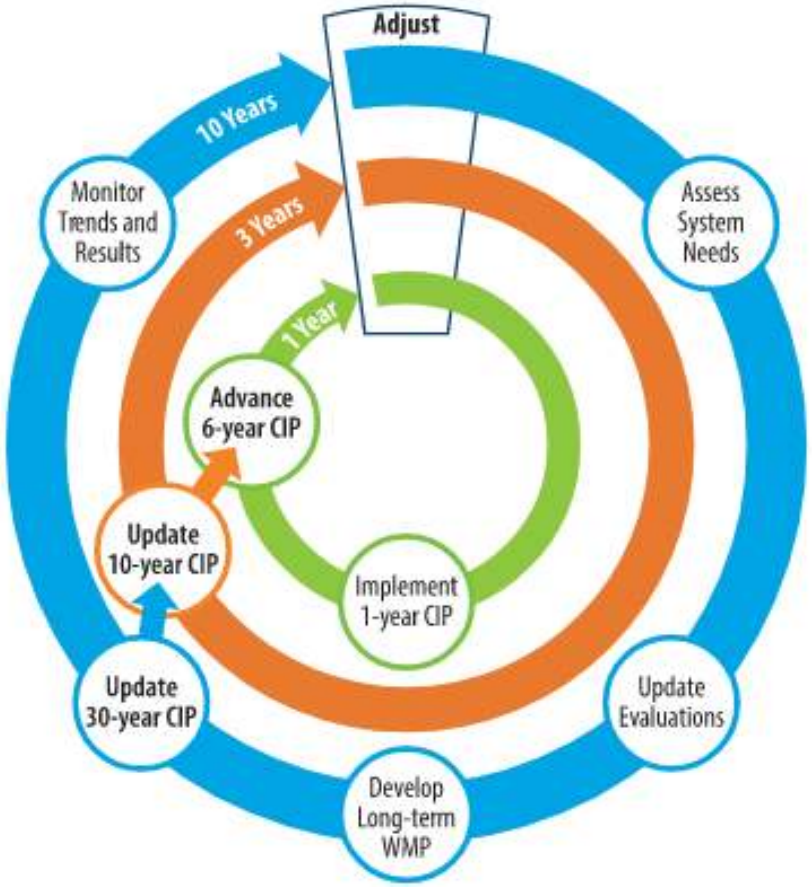
A **Financial Plan and Rate Study** may result in adjustments to water rates

WATER RATES BEING PROPOSED FOR 5 ½-YEAR PERIOD BEGINNING JANUARY 2024
JANUARY 2024 – JUNE 2029

BWS planned for rate increases every year

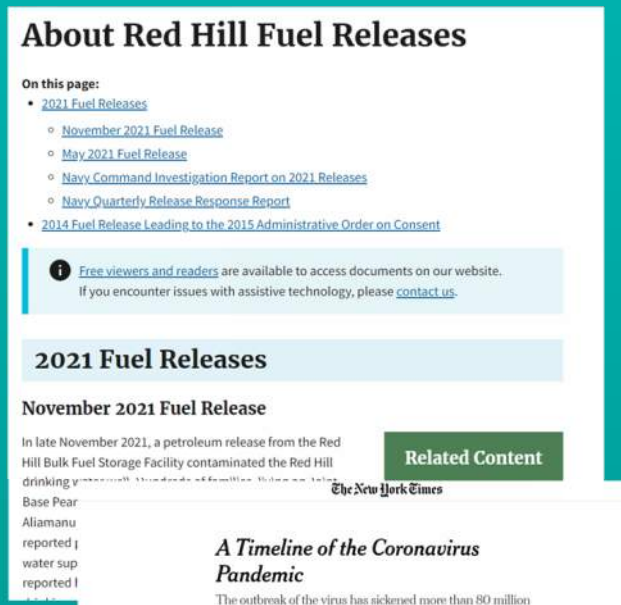


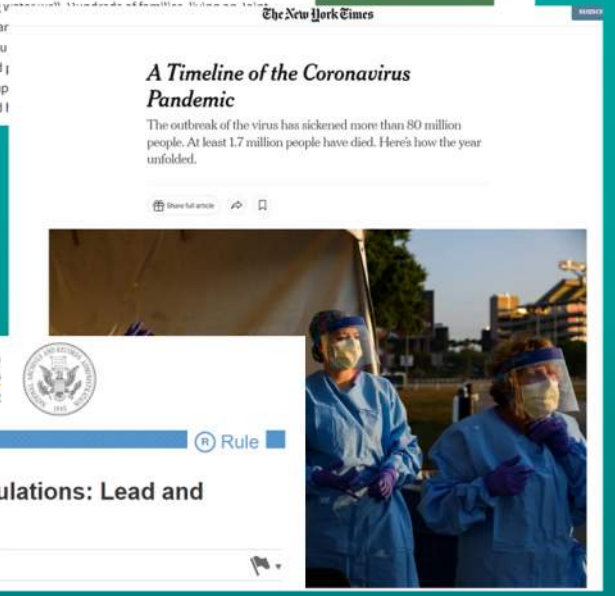
ITS TIME TO UPDATE OUR WATER MASTER PLAN



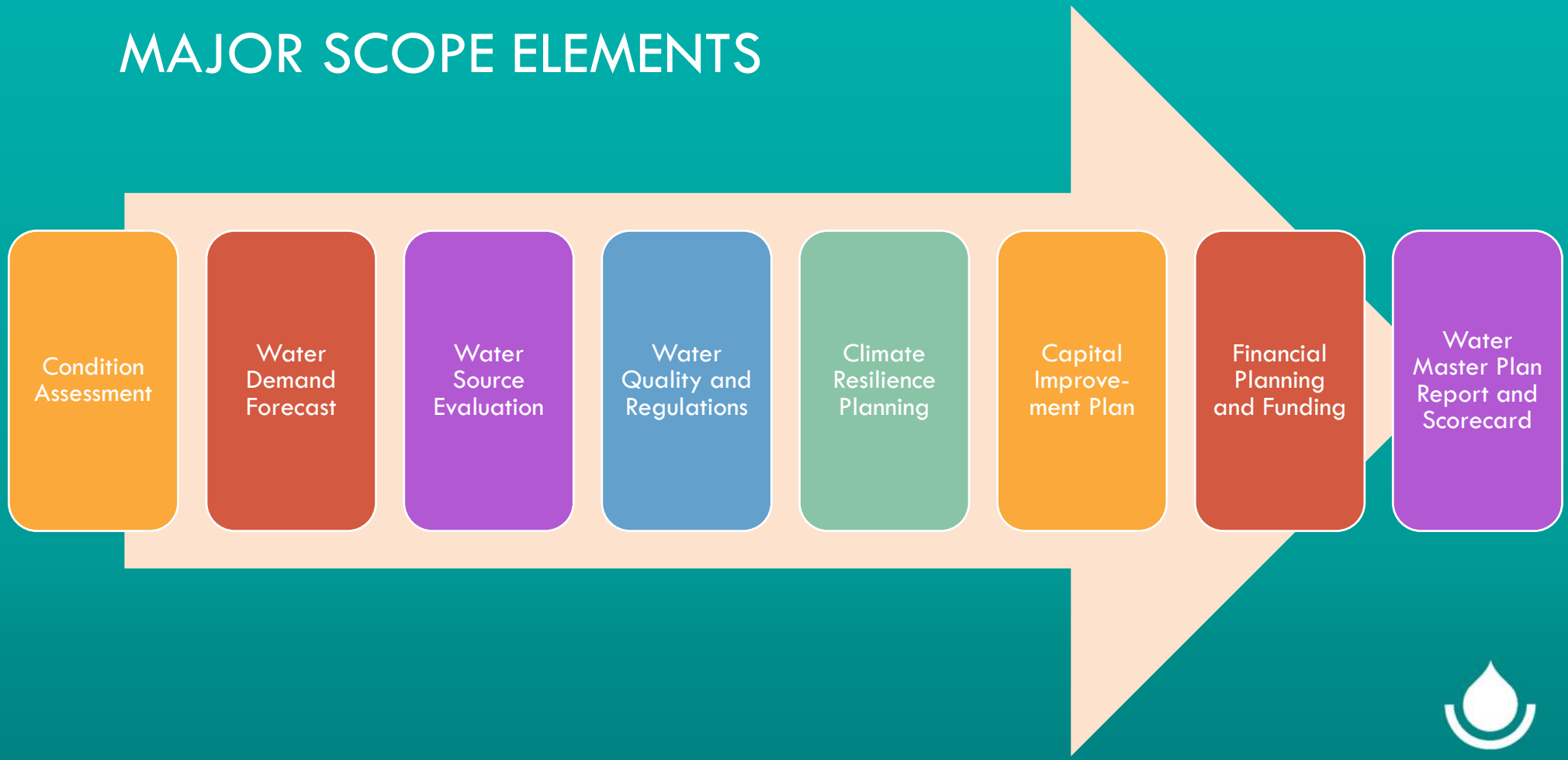
WHAT HAS CHANGED SINCE 2016?

- COVID impacted demands and revenue
- Red Hill contamination
- Focusing more on sources & diversification
- Changing operational strategies – Conservation
- Climate change adaptation, in stream flow standards
- New regulations (PFAS, LCRR/LCRI)





MAJOR SCOPE ELEMENTS



CONDITION ASSESSMENT OBJECTIVE: EVALUATE DEGRADATION RATES OF VERTICAL ASSETS

- Begin with subset of 15 reservoirs
- Perform visual structural inspection and drone survey
- Compare to results from previous evaluation
- Determine recommendations and next steps

Why Update? Understanding the rate of degradation will improve maintenance and replacement timing making sure that BWS gets the most out of its' assets

GOAL: REDUCE UNACCOUNTED-FOR WATER

5-Year Average by Fiscal Year	Non-Revenue Water
2015-2019	13.79%
2016-2020	14.00%
2017-2021	14.40%
2018-2022	14.99%
2019-2023	15.49%

- Evaluate source meters and data transmission to the Control System
- Evaluate information flow from customer meters to the Billing Database

Why Evaluate? Minimizing unaccounted-for water reduces costs and risks to BWS, supports sustainability, and contributes to fair billing.

DEVELOP INFORMATION TECHNOLOGY (IT) AND OPERATIONAL TECHNOLOGY (OT) STRATEGY

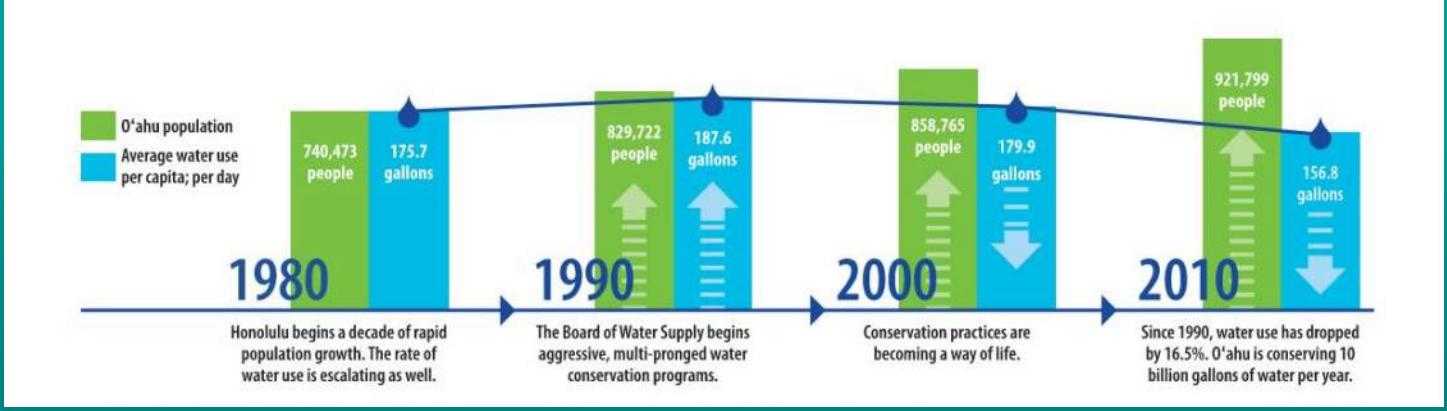
- Evaluate IT and OT systems
- Define needs including system use cases
- Assess criticality levels and perform gap analysis
- Develop high level plan to reach objectives

Why? IT and OT systems are increasingly complex and critical to Utility operations.

UPDATE THE WATER DEMAND FORECAST

- Evaluate overall demands and by area
- Evaluate impacts of climate change on future demands
- Consider how expansion of Water Sensible Conservation Rebate and additional conservation programs could impact demands

Why update the demand forecast? Per capita demand and population projections have changed post-Covid impacting long-term infrastructure

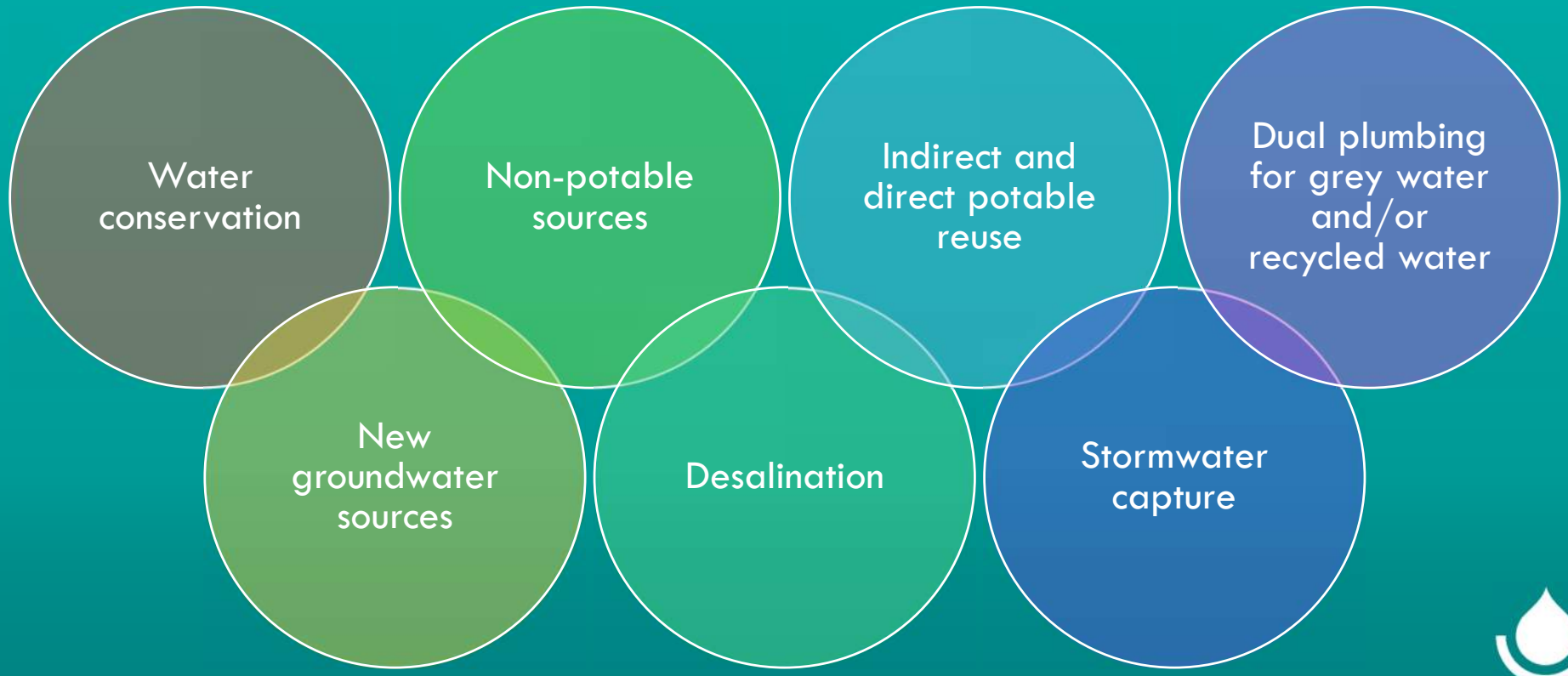


WATER SOURCE EVALUATION

- Detailed evaluation of chlorides and pumping rates for 15 sources based on criticality to meeting system demands and existing water quality conditions
- Complete the updates of Water Shortage Plans
- Coordinate with One Water to align project evaluations, future planning needs, and collaboration for project implementation

Why update? Increasing source reliability is critical in response to decreasing source quality and quantity

EVALUATE ADDITIONAL AND ALTERNATIVE SUPPLIES

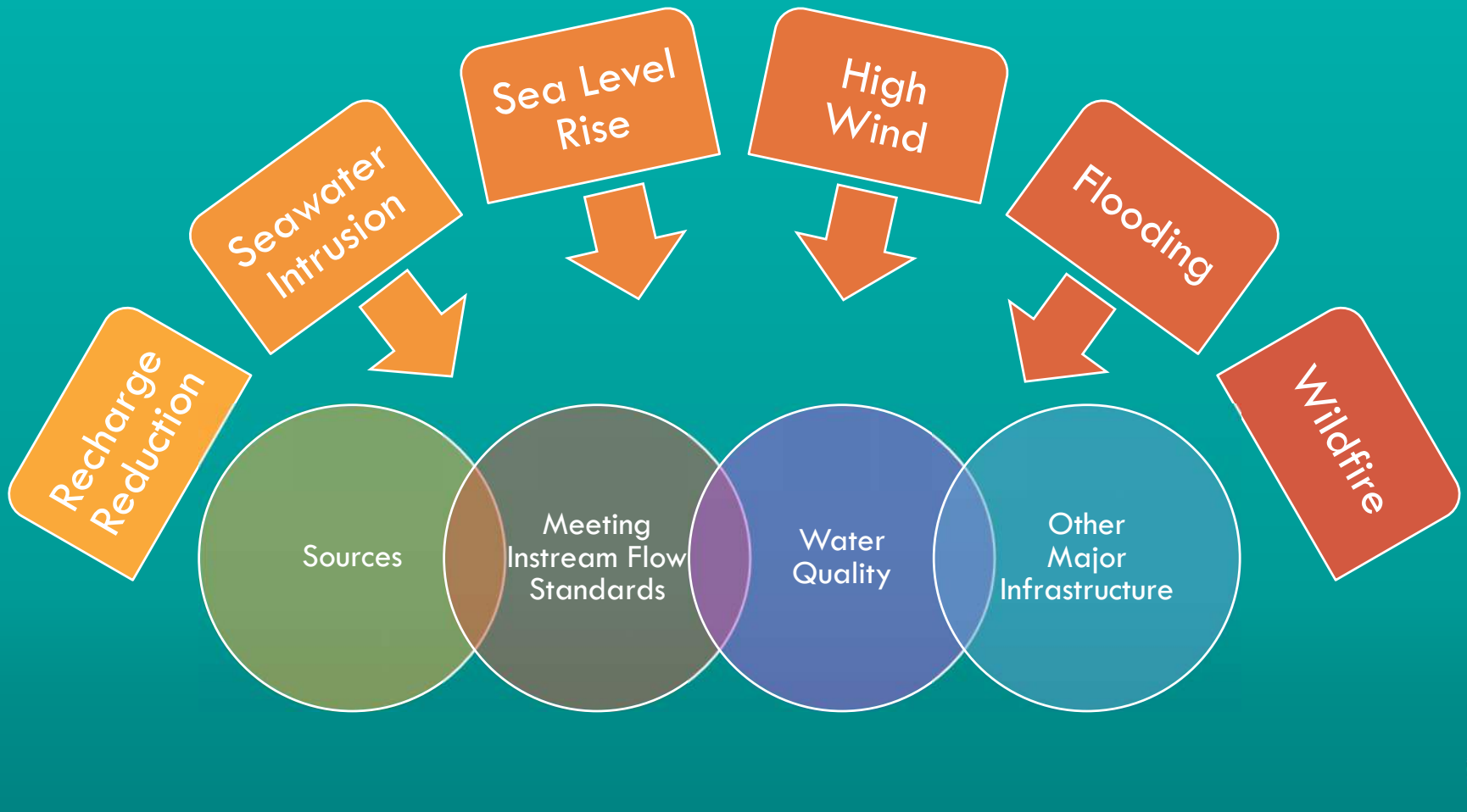


DRINKING WATER REGULATIONS ARE CONTINUALLY EVOLVING

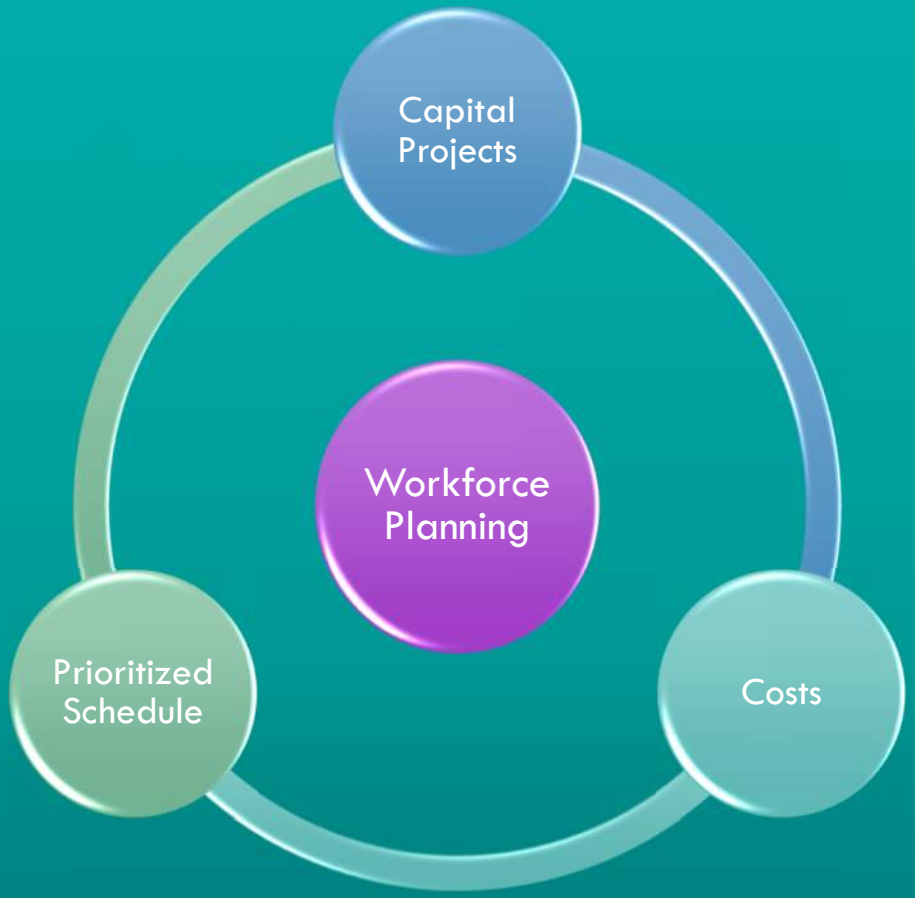
- Lead and Copper Rule Revisions (LCRR)
- Lead and Copper Rule Improvements (LCRI) pending finalization
- Per- and polyfluoralkyl substances (PFAS)
- 1,2,3-trichloropropane (TCP)
- Hexavalent chromium
- Other contaminants of potential concern

WATER QUALITY EVALUATIONS WILL BE COORDINATED ACROSS MULTIPLE BWS EFFORTS

CLIMATE RESILIENCE PLANNING



CAPITAL IMPROVEMENT PLANNING



FINANCIAL PLANNING AND FUNDING

- Funding opportunities
- Financial Plan
- Water System Facilities Charge
- Funding Application Support

Why Update? The financial and cost world continues to change quickly. BWS needs to ensure its' finances remain stable, reliable and affordable for customers.

ONGOING
PUBLIC COMMUNICATIONS

Water Master Plan Quarterly Update

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

Board of Water Supply
City and County of Honolulu

Volume 2 • Issue 2 • June 2016

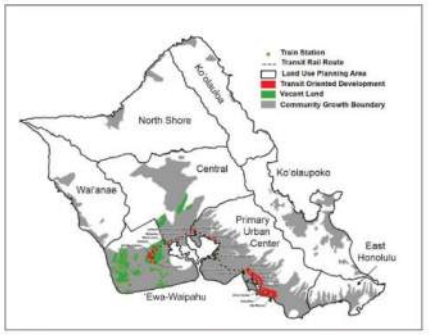
The Draft Water Master Plan is approximately 85% complete. A public draft will be ready this summer.

A Lens Into the Future

Looking Ahead

An important part of the BWS Water Master Plan (WMP) is the Water System Analysis (WSA), which assesses the water system's ability to provide safe and dependable water throughout the 30-year planning period of the WMP. The WSA combines water system data with population forecasts and projections for customers' water use around the island. The evaluation tells us when and where the existing system will need improvements to meet the future demands of a growing population.

Combined with technical studies and research, engineering review and evaluation, the WSA provides a lens into the future. One component of the WSA is a computerized hydraulic model that integrates these and other details to identify gaps in the BWS water system.



Population growth projections reflect land use within planning areas established by the Honolulu Department of Planning and Permitting.

continued on page 2

Looking Beyond Infrastructure

Now that we know the likely magnitude and locations of new demands, the next step is to consider the options, timing, and best solutions to increase water supplies where they are needed. In keeping with our commitment to diversified and resilient solutions, the BWS will also be looking at non-infrastructure alternatives to bridge the gaps between demand and supply.

Some possibilities include:

CONSERVE
Reduce water demands in growing areas with advanced conservation measures such as ultra-efficient plumbing, sub-meters, rain catchment.

RECHARGE
Reinforce watershed partnerships; capture stormwater at Nu'uanu dams for aquifer recharge.

REUSE
Satellite recycled treatment plant for irrigation of Ala Wai Golf Course will offset use of potable water.

The BWS Hydraulic Model Makes Data Come to Life

Hydraulic models are used to analyze the system for flows, water pressures, and reservoir tank-refill cycles. The data we get back from the model helps us understand what will happen in the future as the population grows and determine how best to meet the projected conditions.

The BWS Hydraulic Modelling Team used computer software to create a powerful model that makes thousands of data points come to life and realistically simulate how the existing water system works, and – more importantly – assess how facilities will perform in the future under a variety of real-life scenarios. This sophisticated tool has enabled the WMP team to make reliable recommendations for capital improvement projects for the near-term and far into the future.

Good Data In …

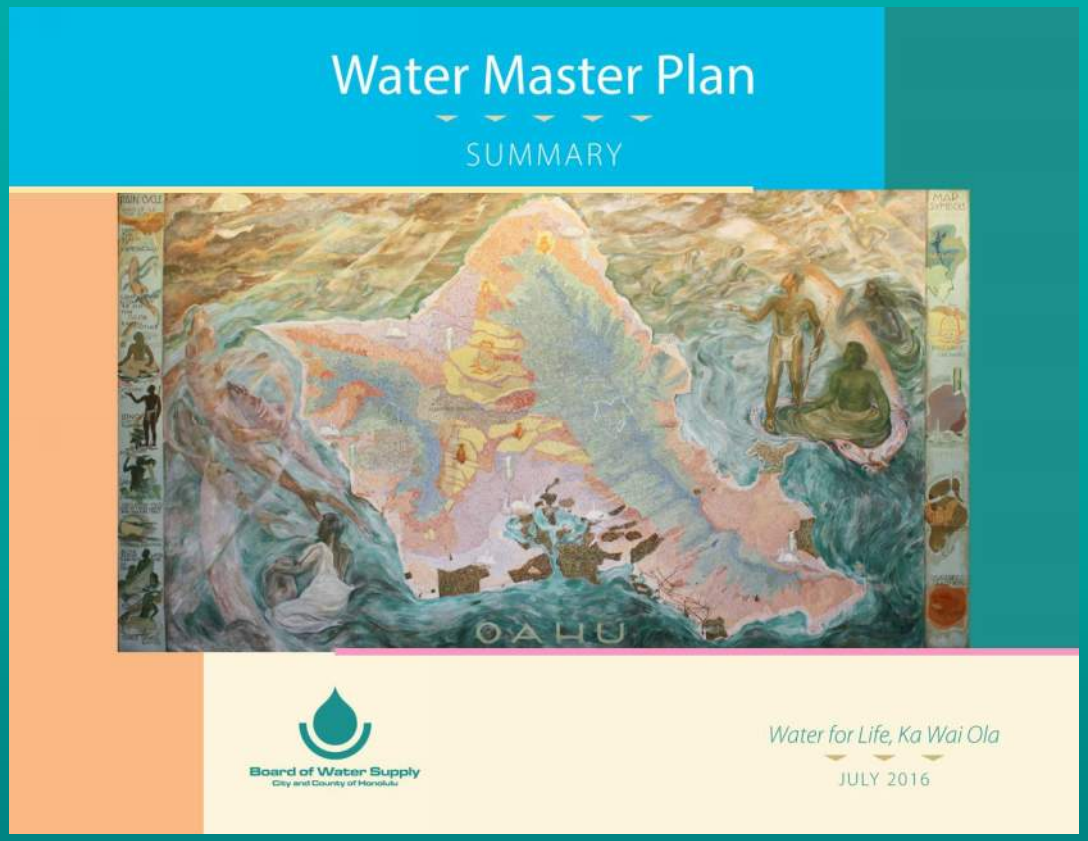
The Hydraulic Modelling Team used extensive, detailed data about the water system as "inputs" for the model.

Data inputs included accurate features of water infrastructure and their use, including:

- Pipes – diameters, lengths, elevations, materials, and ages
- Pump stations – size of each pump, what controls on/off e.g. pressure downstream
- Reservoirs – locations and elevations, sizes
- Tunnel and shaft configurations
- Historical customer billing records and customer meter locations
- Average water demands and daily patterns in water use (that differ by land use type)

continued on page 2

WATER MASTER PLAN REPORT AND SCORECARD

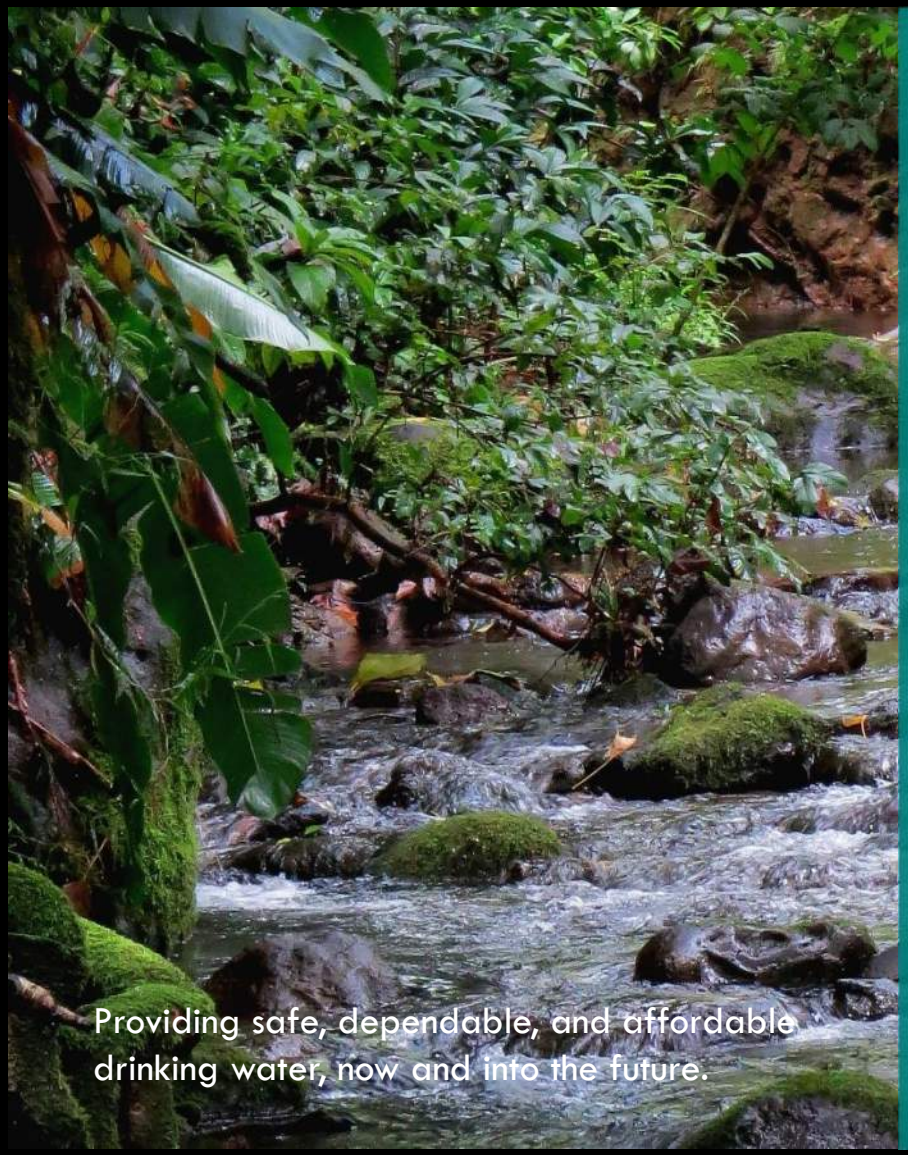


UPDATE SCORECARD TO MONITOR PERFORMANCE AND IDENTIFY IMPROVEMENT OPPORTUNITIES

PLAN	Total Number of Metrics	Met/on track to meet 🟢	Miss by <10% of goal 🟡	Miss by > 10% of Goal 🔴
2021 Summary	**33**	**19**	**4**	**10**

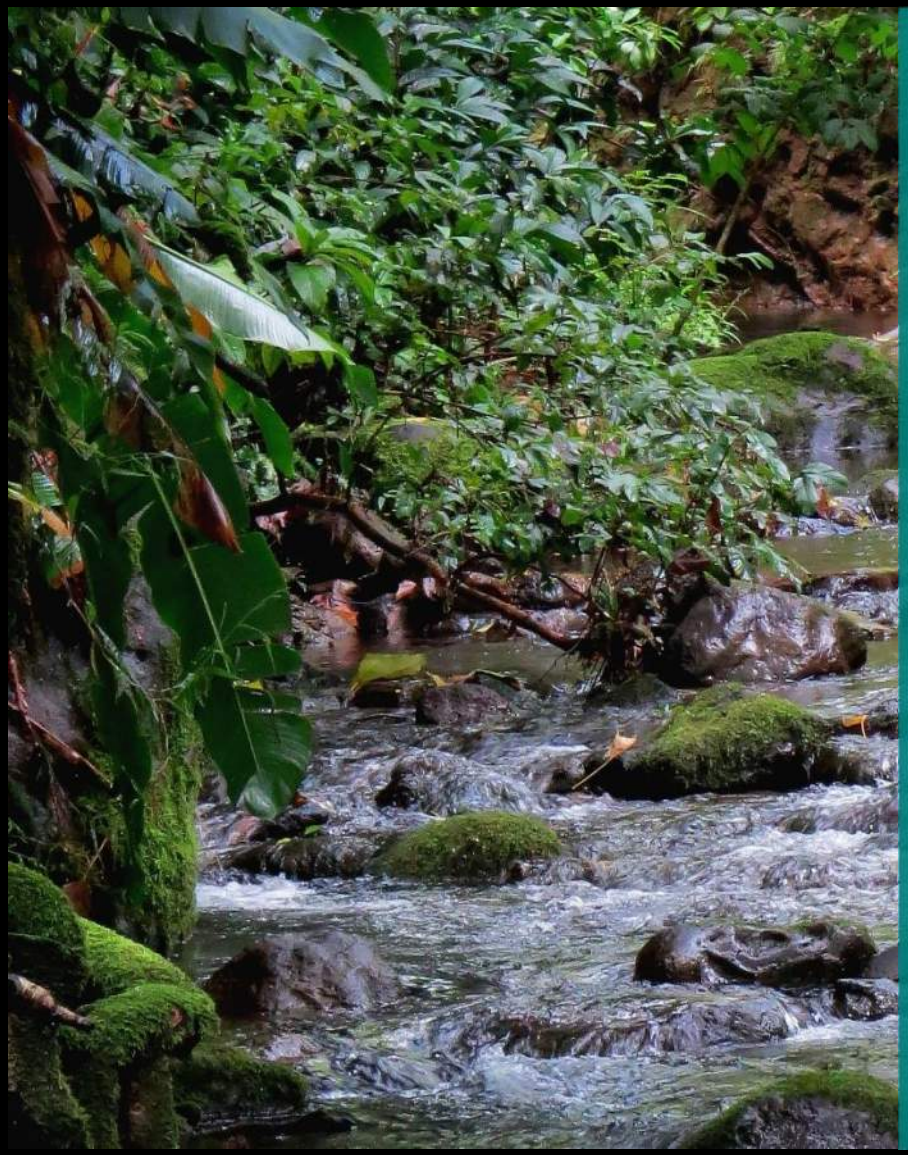
YOUR INPUT IS VALUED

- Thinking back on the last Water Master Plan, is there anything that we should have done differently?
- Are there any issues that we have not covered that you think it is important for the WMP Update to address?



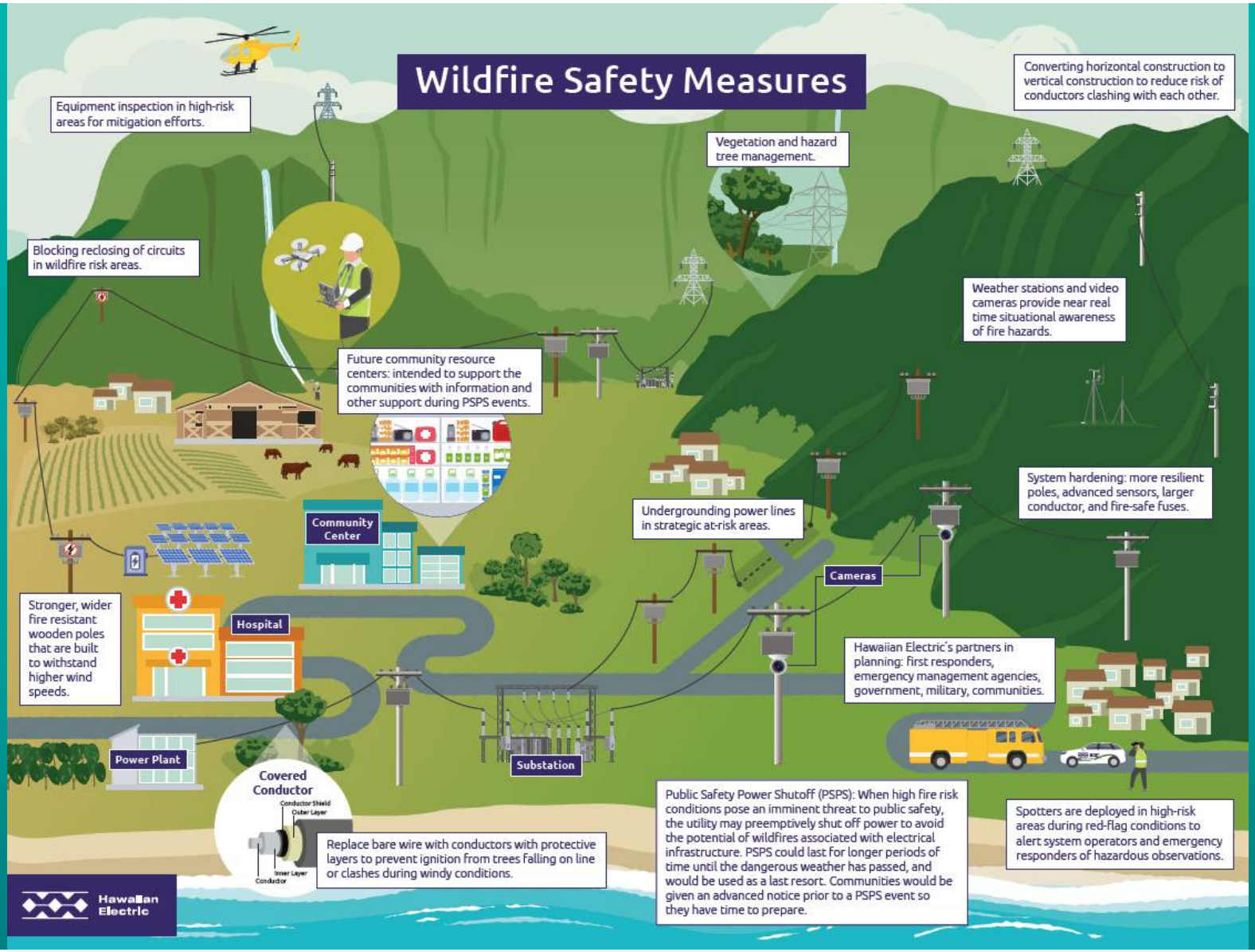
Providing safe, dependable, and affordable drinking water, now and into the future.

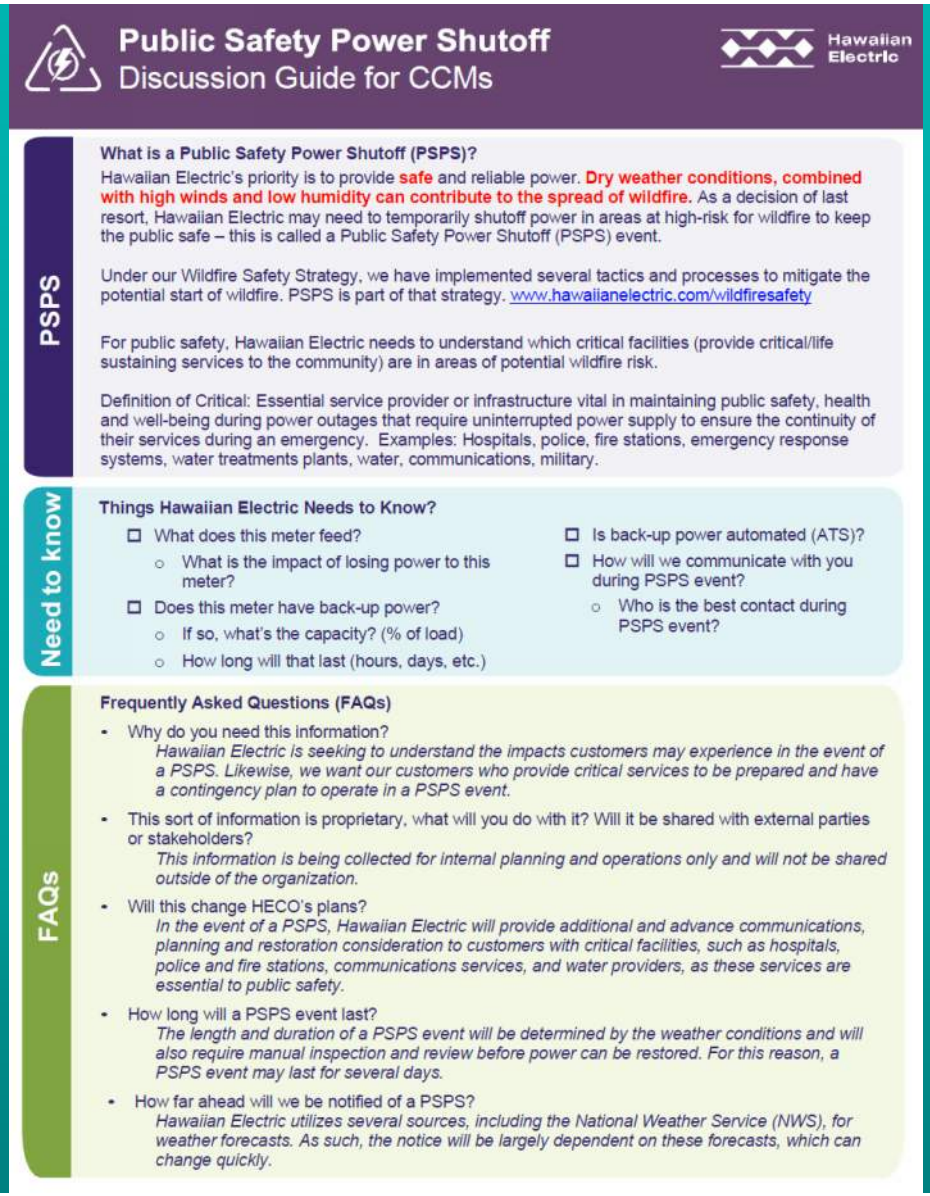
Mahalo!



PUBLIC SAFETY POWER SHUT OFF

Ernest Lau
Manager and Chief Engineer
July 18, 2024
boardofwatersupply.com


Wildfire Safety Measures
Converting horizontal construction to vertical construction to reduce risk of conductors clashing with each other.
Equipment inspection in high-risk areas for mitigation efforts.
Vegetation and hazard tree management.
Blocking reclosing of circuits in wildfire risk areas.
Weather stations and video cameras provide near real time situational awareness of fire hazards.
Future community resource centers: intended to support the communities with information and other support during PSPS events.
Community Center
Undergrounding power lines in strategic at-risk areas.
System hardening: more resilient poles, advanced sensors, larger conductor, and fire-safe fuses.
Cameras
Stronger, wider fire resistant wooden poles that are built to withstand higher wind speeds.
Hospital
Hawaiian Electric's partners in planning: first responders, emergency management agencies, government, military, communities.
Power Plant
Substation
Covered Conductor
Conductor Shield
Outer Layer
Inner Layer
Conductor
Replace bare wire with conductors with protective layers to prevent ignition from trees falling on line or clashes during windy conditions.
Public Safety Power Shutoff (PSPS): When high fire risk conditions pose an imminent threat to public safety, the utility may preemptively shut off power to avoid the potential of wildfires associated with electrical infrastructure. PSPS could last for longer periods of time until the dangerous weather has passed, and would be used as a last resort. Communities would be given an advanced notice prior to a PSPS event so they have time to prepare.
Spotters are deployed in high-risk areas during red-flag conditions to alert system operators and emergency responders of hazardous observations.
Hawaiian Electric



Public Safety Power Shutoff
Discussion Guide for CCMs

Hawaiian Electric

PSPS

What is a Public Safety Power Shutoff (PSPS)?

Hawaiian Electric's priority is to provide safe and reliable power. **Dry weather conditions, combined with high winds and low humidity can contribute to the spread of wildfire.** As a decision of last resort, Hawaiian Electric may need to temporarily shutoff power in areas at high-risk for wildfire to keep the public safe – this is called a Public Safety Power Shutoff (PSPS) event.

Under our Wildfire Safety Strategy, we have implemented several tactics and processes to mitigate the potential start of wildfire. PSPS is part of that strategy. www.hawaiianelectric.com/wildfiresafety

For public safety, Hawaiian Electric needs to understand which critical facilities (provide critical/life sustaining services to the community) are in areas of potential wildfire risk.

Definition of Critical: Essential service provider or infrastructure vital in maintaining public safety, health and well-being during power outages that require uninterrupted power supply to ensure the continuity of their services during an emergency. Examples: Hospitals, police, fire stations, emergency response systems, water treatments plants, water, communications, military.

Need to know

Things Hawaiian Electric Needs to Know?

- ☐ What does this meter feed?
  - What is the impact of losing power to this meter?
- ☐ Does this meter have back-up power?
  - If so, what's the capacity? (% of load)
  - How long will that last (hours, days, etc.)
- ☐ Is back-up power automated (ATS)?
- ☐ How will we communicate with you during PSPS event?
  - Who is the best contact during PSPS event?

FAQs

Frequently Asked Questions (FAQs)

- Why do you need this information?
  Hawaiian Electric is seeking to understand the impacts customers may experience in the event of a PSPS. Likewise, we want our customers who provide critical services to be prepared and have a contingency plan to operate in a PSPS event.
- This sort of information is proprietary, what will you do with it? Will it be shared with external parties or stakeholders?
  This information is being collected for internal planning and operations only and will not be shared outside of the organization.
- Will this change HECO's plans?
  In the event of a PSPS, Hawaiian Electric will provide additional and advance communications, planning and restoration consideration to customers with critical facilities, such as hospitals, police and fire stations, communications services, and water providers, as these services are essential to public safety.
- How long will a PSPS event last?
  The length and duration of a PSPS event will be determined by the weather conditions and will also require manual inspection and review before power can be restored. For this reason, a PSPS event may last for several days.
- How far ahead will we be notified of a PSPS?
  Hawaiian Electric utilizes several sources, including the National Weather Service (NWS), for weather forecasts. As such, the notice will be largely dependent on these forecasts, which can change quickly.

NOTE: We must understand that a PSPS is not a "natural disaster" in the same way we think of, and plan for, a Wildfire. It is a pre-planned power outage, and it does not preclude/prevent the actual "disaster" (Fire or Wildfire, in this case) from happening.

Planning for a PSPS is **NOT** Planning for a Wildland Fire.

https://www.hawaiianelectric.com/safety-and-outages/wildfire-safety/public-safety-power-shutoff

Our interim pre-emptive power shutoff process

Activating incident management teams

We will activate the Incident Management Team (IMT) upon issuance of red or yellow flag conditions by the National Weather Service. Notification will be issued to alert customers of these conditions.

We will deploy our spotters to visually observe elevated risk locations (e.g., power lines and facilities) for any unsafe conditions.

Monitoring the weather

During yellow or red flag watches and warnings issued by the National Weather Service, we will monitor severe weather conditions by leveraging publicly available weather data.

Turning the power off

Power will only be shut off as a last line of defense, and only if weather conditions (i.e., at certain wind speeds and in red flag warning) pose an imminent threat to public safety.

The IMT will coordinate with public safety partner agencies to ensure community safety throughout the event, and notifications issued to customers of imminent power shutoffs.

Turning power back on

Once fire weather threat is at safe levels, visual inspections of infrastructure will occur in preparation for restoration once it is safe to do so.

How long outages last will be based on the actual weather conditions and time needed to safely restore power. Notifications issued upon restoration of power.

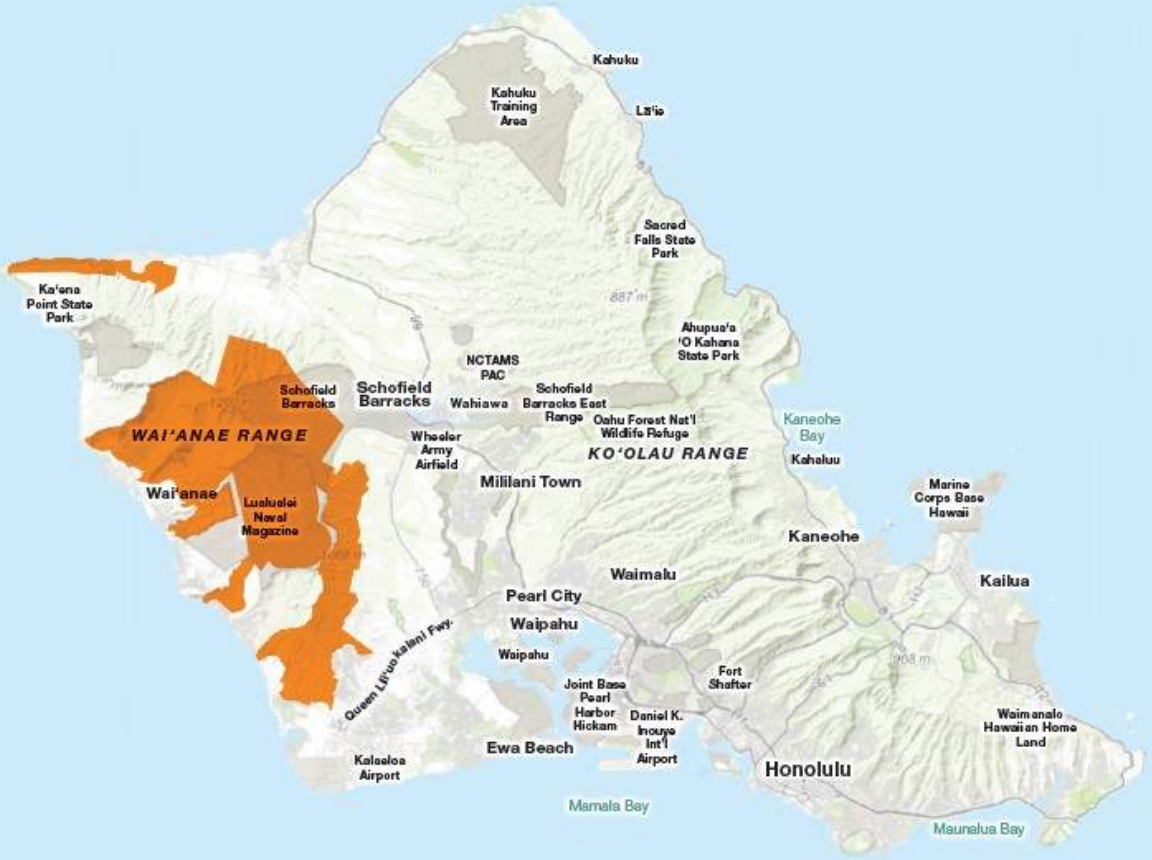
General notification issued to customers of elevated risk period (i.e., Summer months)

What happens before, during and after Public Safety Power Shutoff

	PSPS Alert	Happening	Restoration begins	Restoration complete
WHEN:	**24–48 hours** before a possible PSPS 	**During** a PSPS 	When it's safe 	PSPS is over 
WHAT:	Weather data, including statements from the National Weather Service, indicate conditions for heightened wildfire risk, and we are considering a PSPS. **We'll do our best to provide advance notice, but if conditions are suddenly hazardous we may have to shut off your power with little or no notice.** Activate your emergency plan, keep your home survival kit handy and pay attention to notifications from Hawaiian Electric and its emergency partners.	Power is shut off only in high wildfire risk areas for the safety of the community. We'll do everything we can to provide regular updates across multiple media platforms during the event.	Once the fire weather threat has ended, crews will begin patrolling, looking for downed lines and other hazardous conditions. Crews will restore power once it's safe, which may take hours or even days depending on the location and extent of damage.	The immediate threat has passed and power has been restored. But we'll continue to monitor conditions so we can keep our customers and communities safe.
HOW YOU MAY HEAR FROM US:	**Email, Text, Hawaiian Electric Mobile App, Public Safety Notification, Social Media, Hawaiian Electric Website, News Media (TV, radio, websites)**			

Hawaiian Electric

PSPS Map — O‘ahu

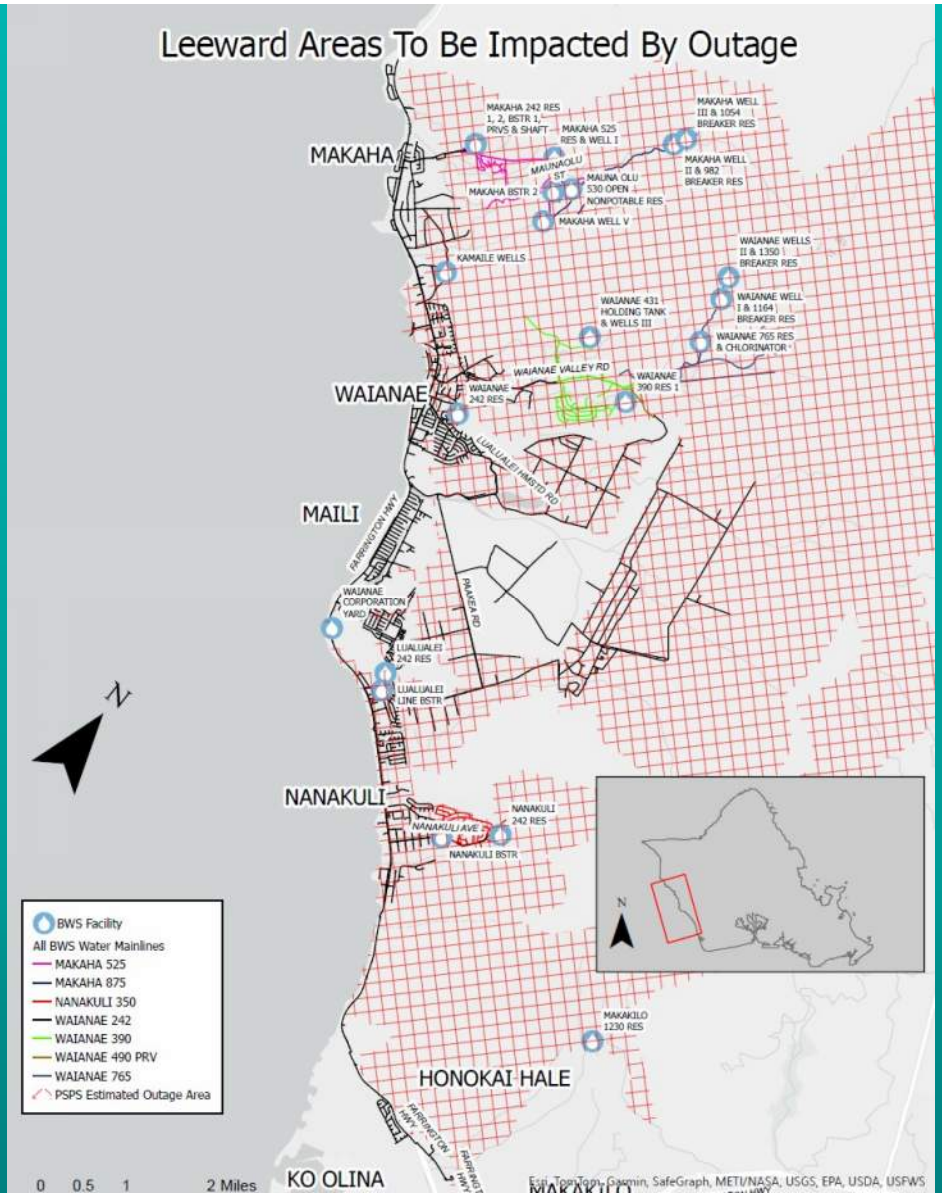


PSPS Estimated Outage Areas

Hawaiian Electric

WHAT DOES PSPS MEAN FOR BWS?

Leeward Areas To Be Impacted By Outage



BWS HAS LIMITED CAPACITY TO MAINTAIN WATER SERVICE W/O POWER

Portable Generators

Fire Pumpers

BWS Customer* Counts by System

Water system	Count
Makaha 525	48
Makaha 875	82
Nanakuli 350	358
Waianae 242	9,172
Waianae 390	626
Waianae 490 PRV	11
Waianae 765	9
Unassigned (in leeward area)	4
TOTAL	**10,310**

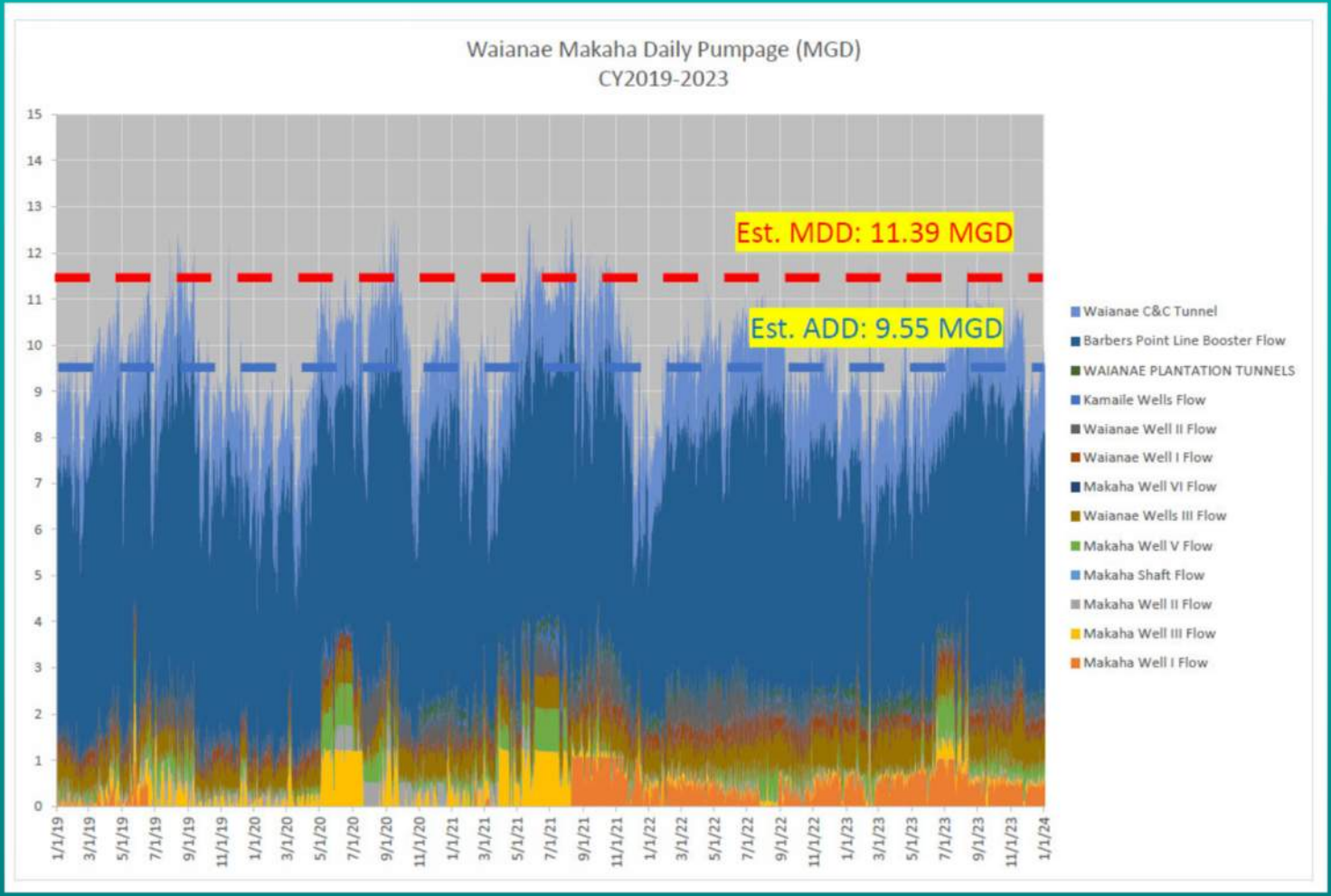
Service Type	Count
Single Family Dwelling	9,439
Non-Residential	557
Non-Potable	1
Multi-Family Dwelling	256
Hydrant	7
Automatic Fire Sprinkler	50
TOTAL	**10,310**

*Customer does not = Person/Headcount

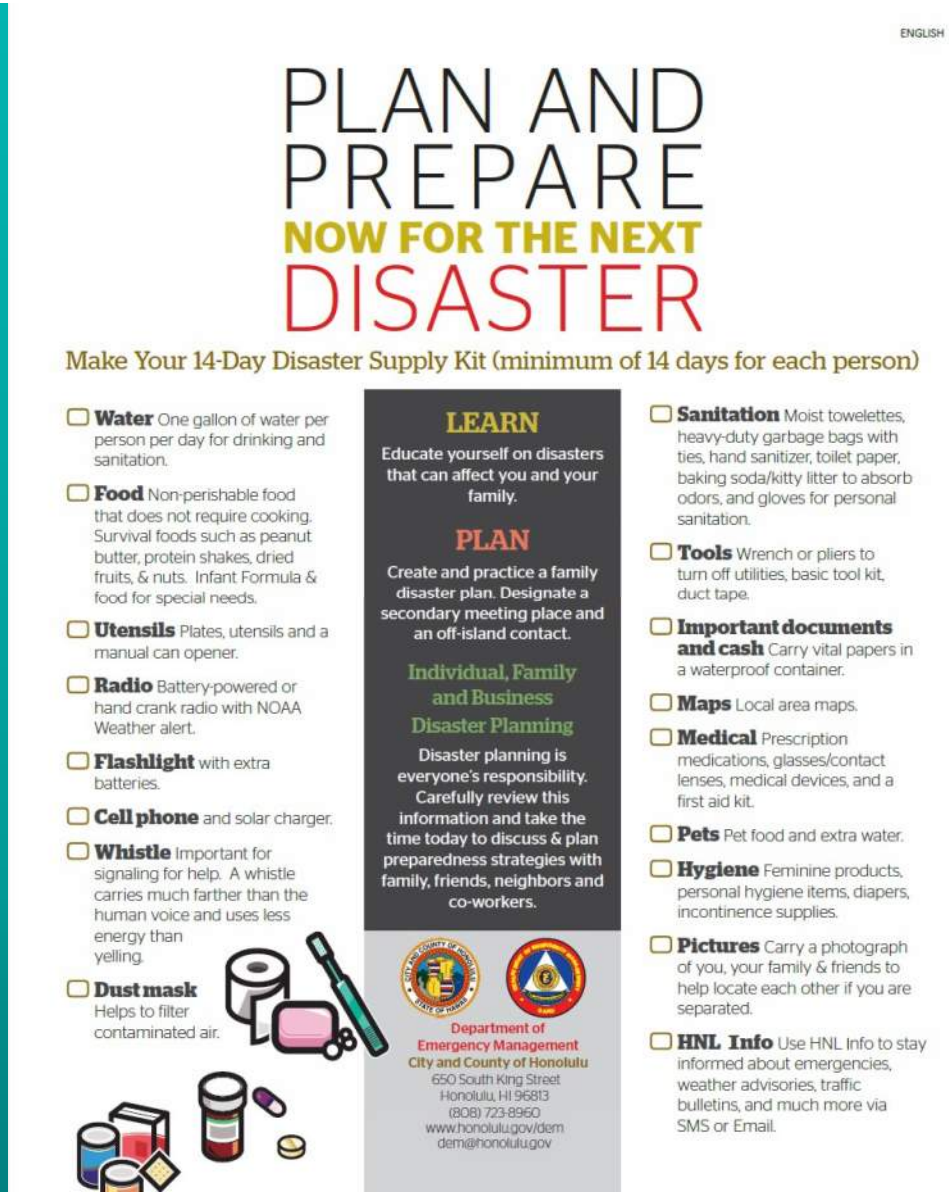
According to the US Census Bureau, there are 52,829 people living on the Leeward Coast

WAIANAE-MAKAHA DAILY PRODUCTION

(MILLIONS OF GALLONS PER DAY – MGD)



WHAT IS YOUR ROLE IN A PSPS?



ENGLISH

PLAN AND PREPARE NOW FOR THE NEXT DISASTER

Make Your 14-Day Disaster Supply Kit (minimum of 14 days for each person)

- ☐ **Water** One gallon of water per person per day for drinking and sanitation.
- ☐ **Food** Non-perishable food that does not require cooking. Survival foods such as peanut butter, protein shakes, dried fruits, & nuts. Infant Formula & food for special needs.
- ☐ **Utensils** Plates, utensils and a manual can opener.
- ☐ **Radio** Battery-powered or hand crank radio with NOAA Weather alert.
- ☐ **Flashlight** with extra batteries.
- ☐ **Cell phone** and solar charger.
- ☐ **Whistle** Important for signaling for help. A whistle carries much farther than the human voice and uses less energy than yelling.
- ☐ **Dust mask** Helps to filter contaminated air.

LEARN

Educate yourself on disasters that can affect you and your family.

PLAN

Create and practice a family disaster plan. Designate a secondary meeting place and an off-island contact.

Individual, Family and Business Disaster Planning

Disaster planning is everyone's responsibility. Carefully review this information and take the time today to discuss & plan preparedness strategies with family, friends, neighbors and co-workers.

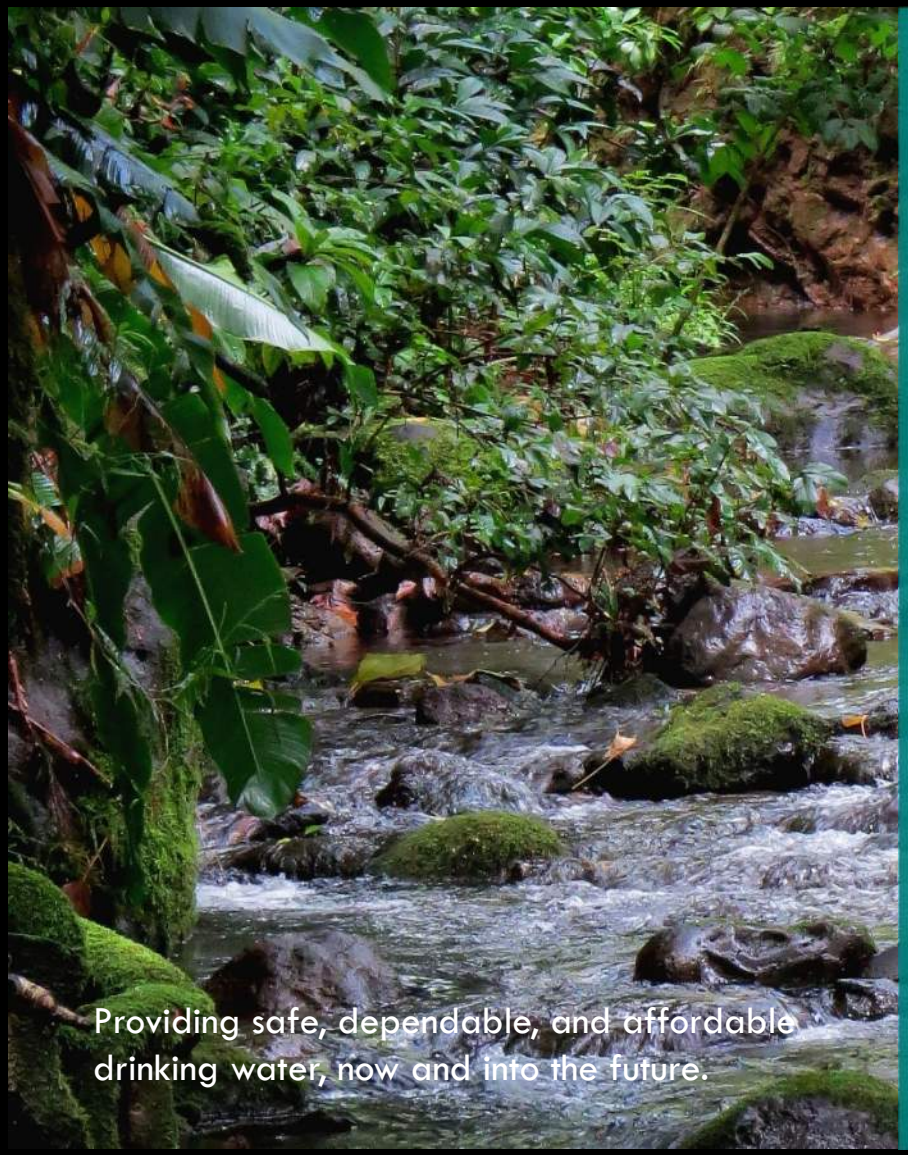
Department of Emergency Management
City and County of Honolulu
650 South King Street
Honolulu, HI 96813
(808) 723-8960
www.honolulu.gov/dem
dem@honolulu.gov

- ☐ **Sanitation** Moist towelettes, heavy-duty garbage bags with ties, hand sanitizer, toilet paper, baking soda/kitty litter to absorb odors, and gloves for personal sanitation.
- ☐ **Tools** Wrench or pliers to turn off utilities, basic tool kit, duct tape.
- ☐ **Important documents and cash** Carry vital papers in a waterproof container.
- ☐ **Maps** Local area maps.
- ☐ **Medical** Prescription medications, glasses/contact lenses, medical devices, and a first aid kit.
- ☐ **Pets** Pet food and extra water.
- ☐ **Hygiene** Feminine products, personal hygiene items, diapers, incontinence supplies.
- ☐ **Pictures** Carry a photograph of you, your family & friends to help locate each other if you are separated.
- ☐ **HNL Info** Use HNL Info to stay informed about emergencies, weather advisories, traffic bulletins, and much more via SMS or Email.

Website Information on PSPS

www.boardofwatersupply.com

www.hawaiianelectric.com/safety-and-outages/wildfire-safety/public-safety-power-shutoff



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

Mahalo!

BOARD OF WATER SUPPLY

Public Safety Power Shut Off

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

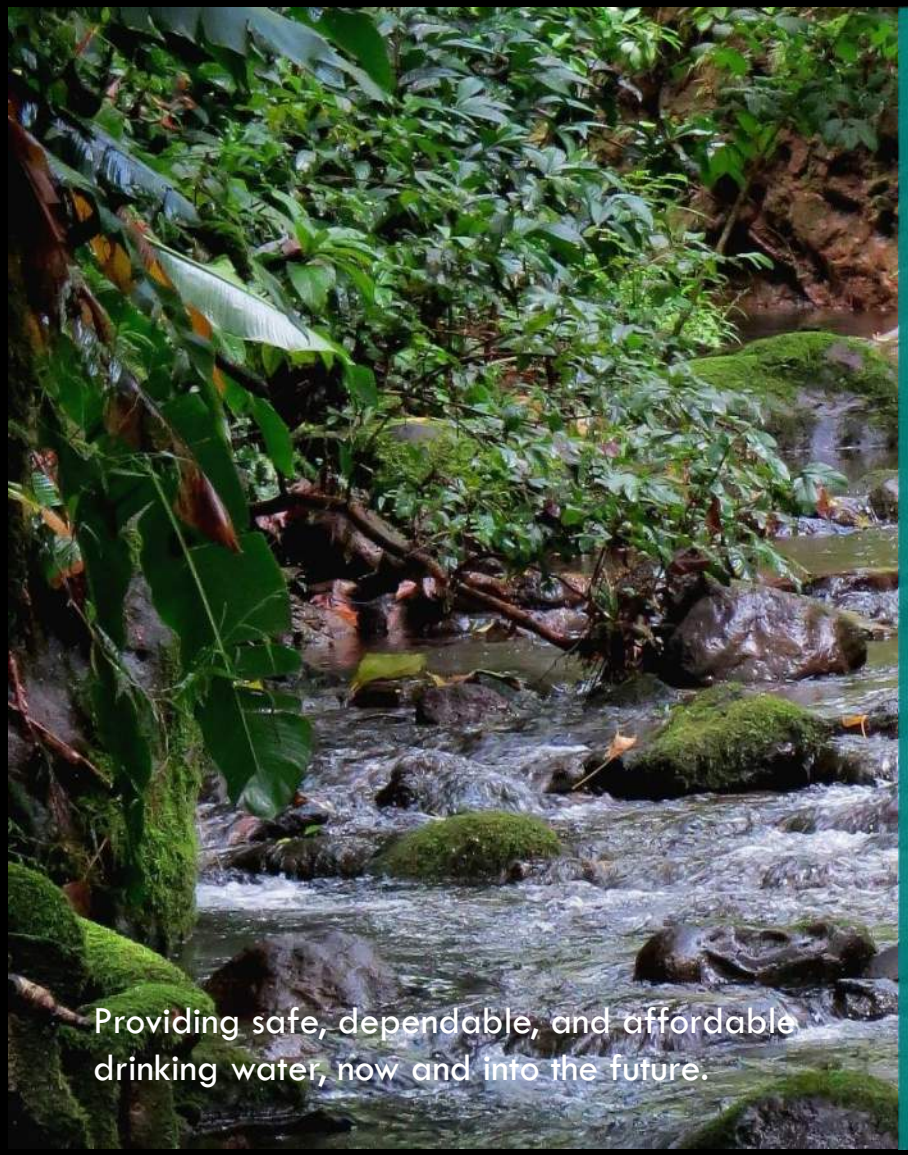
boardofwatersupply.com for more information

May 15, 2024

UPCOMING STAKEHOLDER ADVISORY GROUP MEETINGS

2024

- Thursday, October 17, 2024



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