

NAVFAC

Naval Facilities Engineering Systems Command

NAVFAC SOUTHEAST

Red Hill Crisis Response

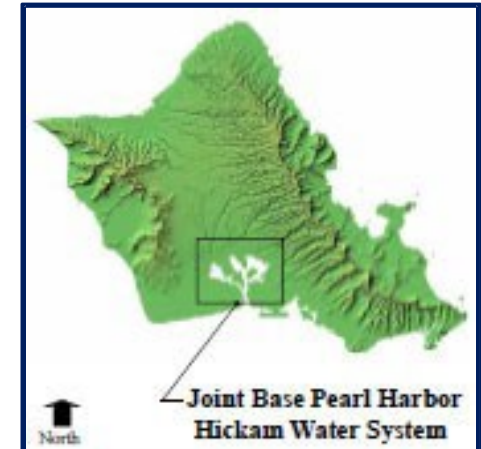
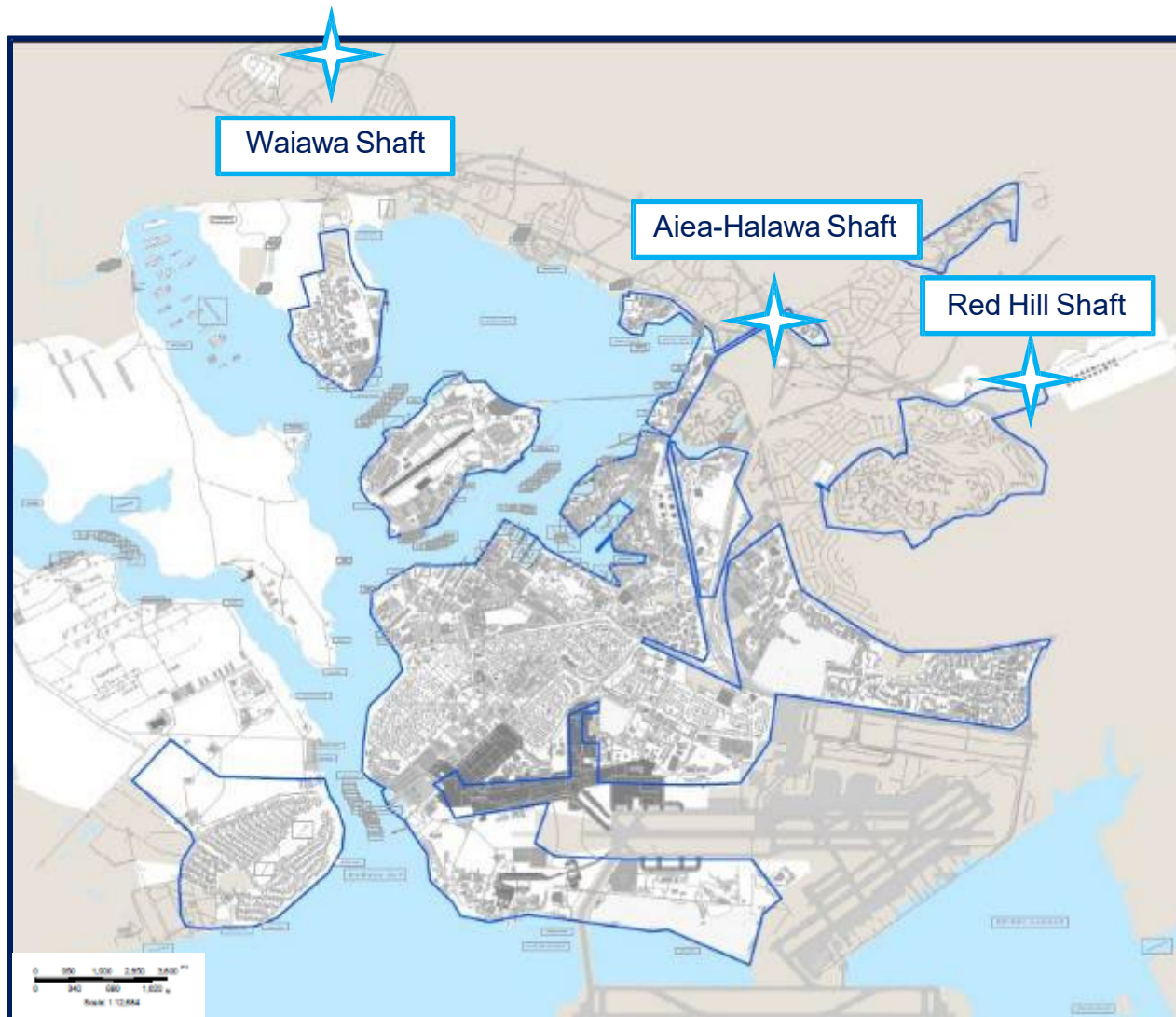
SAME Jacksonville Post

18 Jan 2023

Scene Setter

- Impacted over 10,000 military families and 100 military/civilian organizational consumers
- The response was unprecedented in scope, complexity and cost
- Most challenging C3 environment in my 26-year career
- CPF EXORD directed a whole-of-Navy response
- NAVFAC tasked to restore drinking water system and protect the aquifer
 - Established an Engineer Working Group
- Regulatory response: Joint and multi-agency response with no single lead
- Restoral of safe drinking water required extensive logistical and technical support from government, industry and academia
- Mobilized GCSC (Vectrus) and expanded CLEAN (AECOM)

Joint Base Pearl Harbor Hickam Water System



Quick Facts:

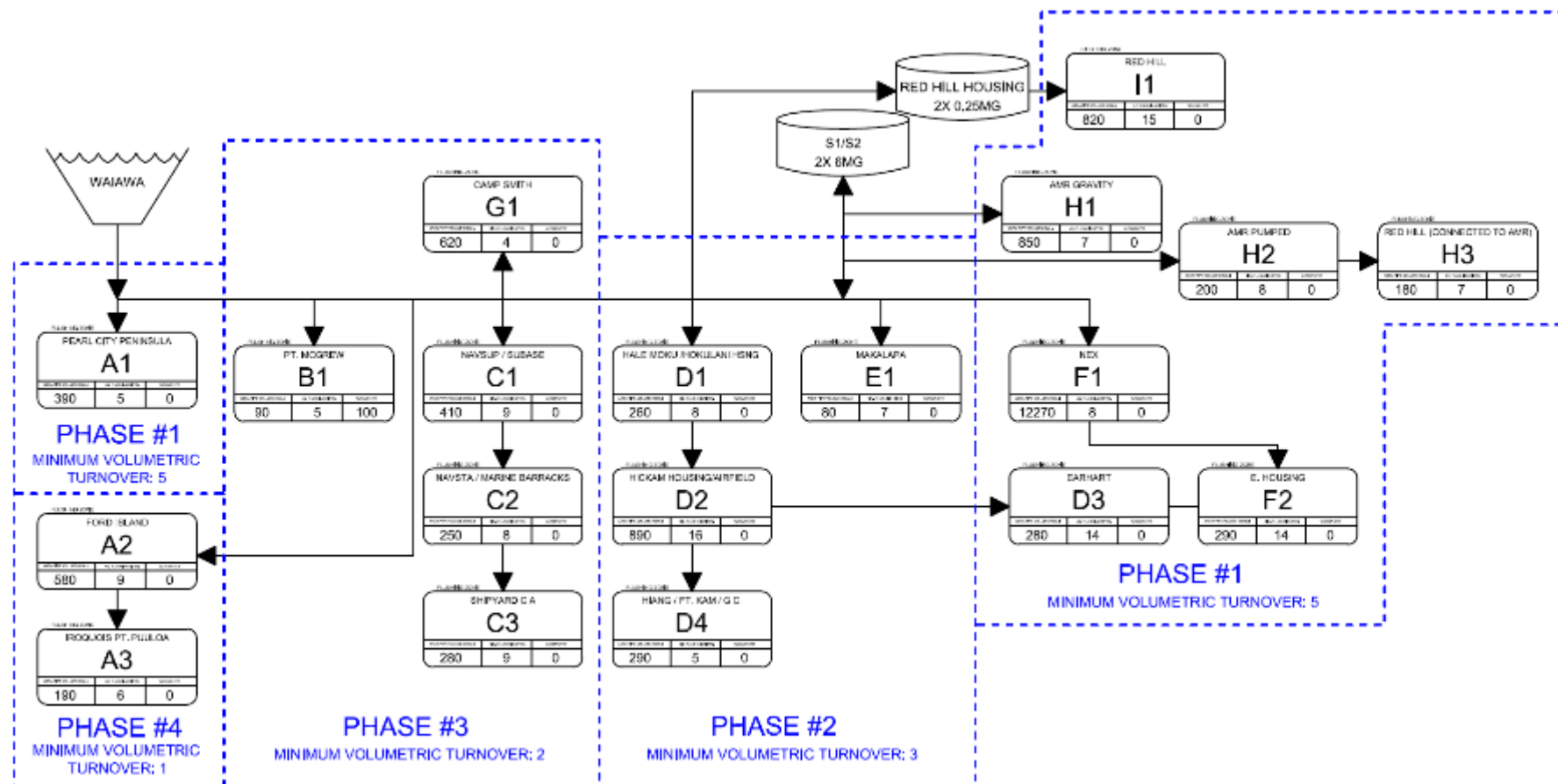
- 250 miles of distribution lines
- 15-20 MGD
- ~20 MG of storage

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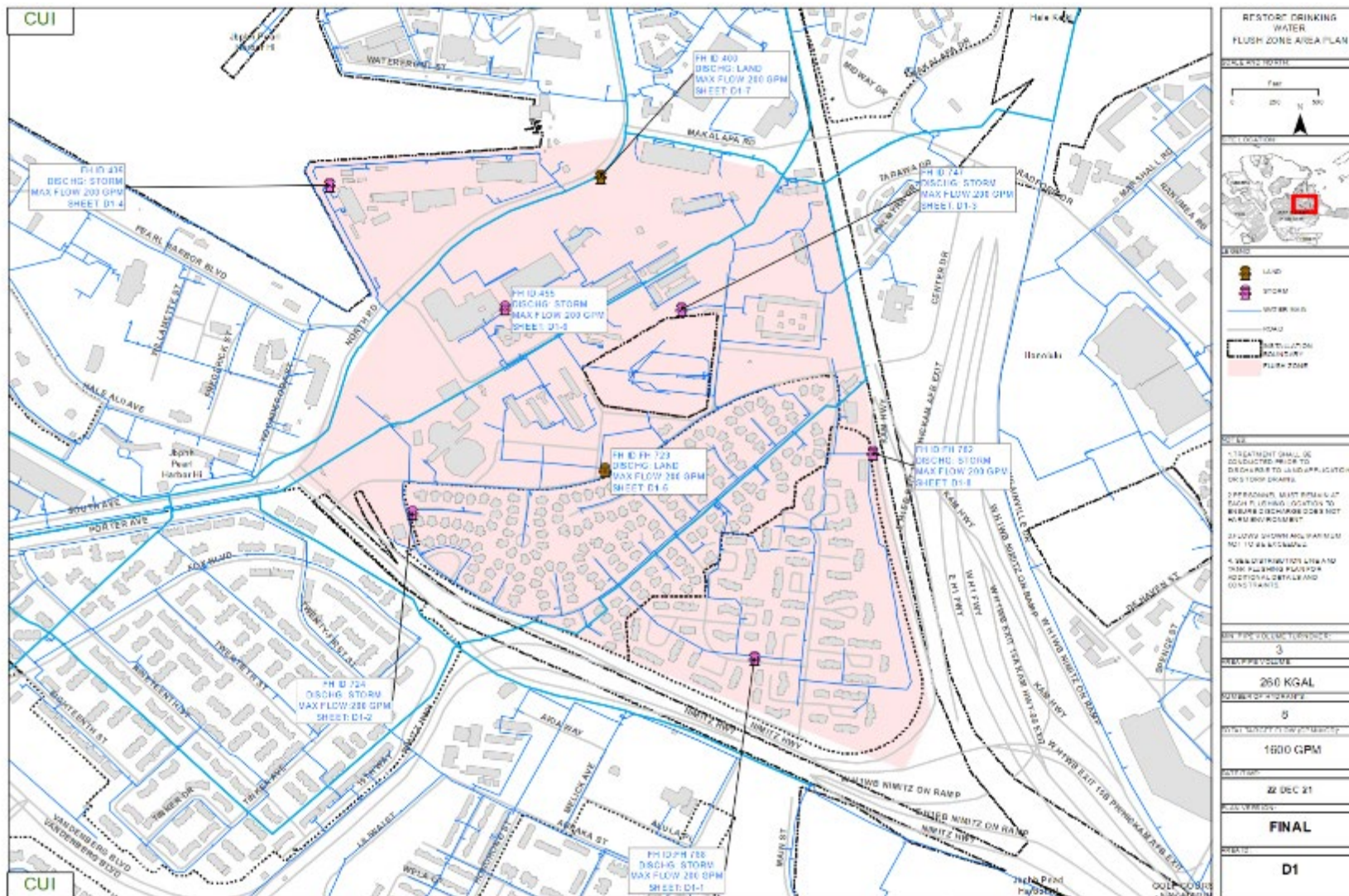


- **32" fuel line ruptured - May 21**
- **AFFF line broken - 20 Nov 21**
- **First report of petroleum smell in drinking water – 28 Nov 21**

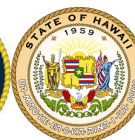
Distribution Flushing Plan



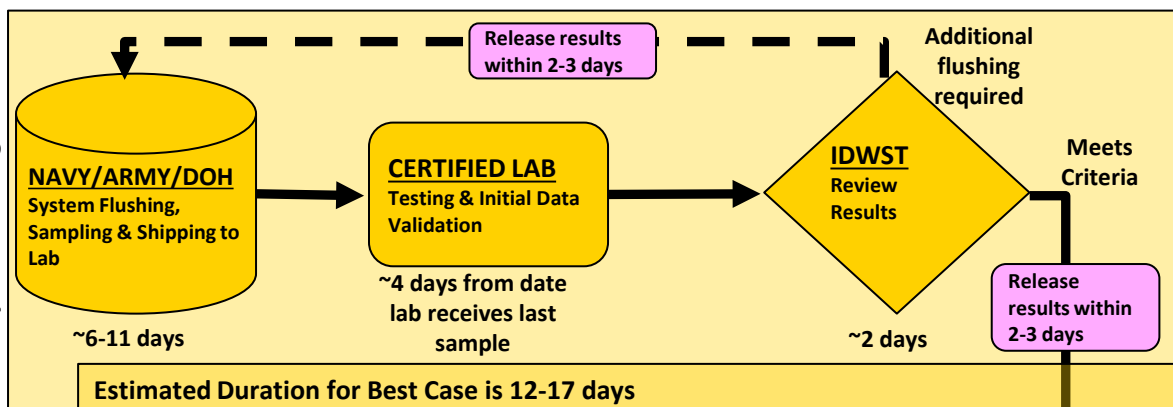
Distribution Flushing Plan



Process by Flushing Zone to Amend Health Advisory



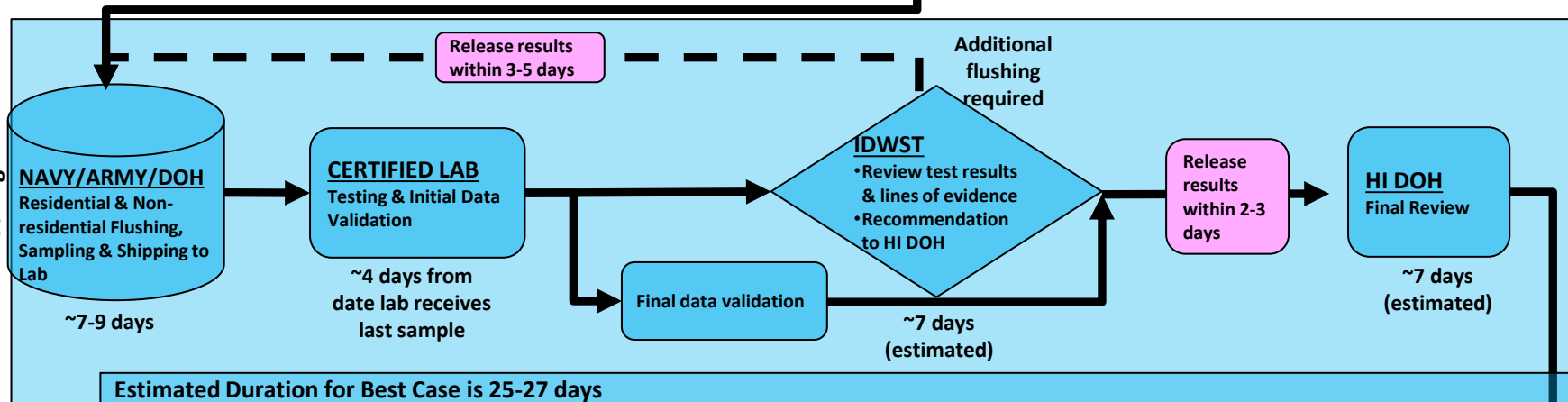
System Flushing



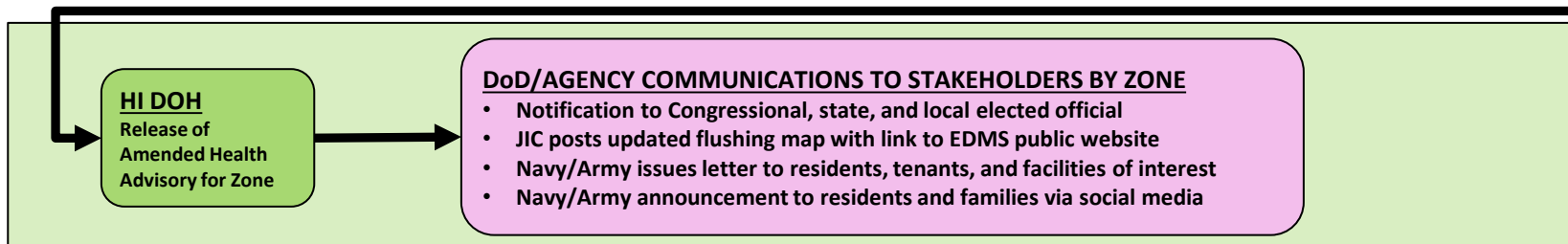
Special Notes:

- Best case duration from start of system flushing to start of residential/non-residential flushing is approximately 12-17 days per zone
- Residential/non-residential flushing will proceed upon IDWST preliminary review and concurrence
- Best case duration from start of residential/non-residential flushing to DOH release of amended health advisory is approximately 25-27 days per zone

Non-residential
Flushing



Communications



LOO 2: Restore Drinking Water – Sampling

Table 2: Summary of Drinking Water (Step 2b and 4) Analytical Methods, Analytes, Action Levels, and Method Detection Limits

Analytical Method	Analyte	CAS_RN	DOH SDWB / EPA MCL (µg/L)	DOH EAL (µg/L)	Incident Specific Parameter (µg/L)	Method Detection Limit (µg/L)
524.2	Benzene	71-43-2	5/5	5	5	0.5
524.2	Ethylbenzene	100-41-4	700/700	7.3	700	0.5
524.2	Toluene	108-88-3	1000/1000	9.8	1000	0.5
524.2	m,p-Xylenes	1330-20-7	10000/10000**	13	10000**	0.5**
524.2	o-Xylenes	95-47-6	10000/10000**	13	10000**	0.5**
525.2/ 525.3	1-Methylnaphthalene	90-12-0	—	10	2.1	
525.2/ 525.3	2-Methylnaphthalene	91-57-6	—	10	4.7	
525.2/ 525.3	Naphthalene	91-20-3	—	17	12	
200.8	Lead	7439-92-1	15*		15	1.0
8260	TPH-Gasoline	PCHG	—	300	≤200	200
8015	TPH-Diesel	PCHD	—	400	≤200	200
8015	TPH-Oil	MOIL	—	500	≤200	200
EPA Approved	Total Organic Carbon (TOC)	—	—	—	2000	1500
8021	Chlorine, free (field Test)	—	—	—	—	

Execution Overview

- Define sampling criteria (analytes, detection limits, methods, quantity, sources)
- Identify sampling locations (distribution and facility level)
- Compile sampling location data (maps and lists)
- Coordinate sampling logistics (notification, access, equipment, personnel)
- Collect samples (track progress, alternate sites)
- Sample analysis (shipping, tracking, lab capability, lab capacity)
- Report generation (format, data management, data quality)
- Data Review (KTR QC, EV QA, exceedance response)
- Final authority issues all-clear (Hawaii Department of Health)

Terminology

- **Analytical Testing Method** – Procedures used to measure the amount of particular contaminants in water samples.
- **Method Detection Limit (MDL)** – Minimum measured concentration of a substance that can be reported with 99% confidence distinguishable from method blank.
- **Environmental Action Level (EAL)** – Exceedance is considered sufficient to warrant regulatory or remedial action.
- **Maximum Contaminant Limit (MCL)** – Highest level of a contaminant that is allowed in drinking water.
- **Incident Specific Parameter (ISP)** – An agreed upon to water quality parameter typically well below the EAL.

Lessons Learned

- Prioritize and execute. Identify highest risk areas (Schools, CDCs, PPV, UH, Medical/Dental/Vet Clinics).
- Minimize changes to sampling criteria after execution begins. Be prepared to adjust.
- Authoritative data sources inaccurate or did not exist to build non-residential sampling location lists.
- Communication is critical. Know **WHAT** to communicate and **WHO** needs to know.
- Sampling within controlled access areas requires significant coordination (shipyards, industrial areas, classified spaces).

Call Center Flushing and Analysis: Single-Family Home



Ticket #

1-4



Zone

Zone D2

Address

134 19th Street

Flushing Date / Time

2/17/2022 10:00:00 AM

[Switch to Facility...](#)

2/17/2022 10:00:00 AM

2/17/2022 12:00:00 AM

[Record Arrival Time](#)[Record Departure Time](#)

Answer Call

Call Questions

Onsite Photos and Notes

Flushing Checklist

Sample Analysis

Conclusions

Answer Call Script

Good morning. Thank you for calling the Water Response Team. This is Loren Bates. Could you please answer a few questions so that I can better help you?

In case we get disconnected, may I please have your FULL NAME and a good CALLBACK PHONE number?

Do you have a TICKET NUMBER or may I have your ADDRESS?

Thank you for that information.

Can you please briefly describe the water quality issue?

Thank you for reporting your concern.

Call Notes

TEMP Callback Info

Name:



Phone:



Ticket:



Address:



Notes:

Tenant Contact Info

Name:

Jamie Simic

Phone:

808-782-9686

Ticket:

1-4

Address:

134 19th Street

Email:

Command:

Branch:

Rank:

Prop Mgr:

Logged By:

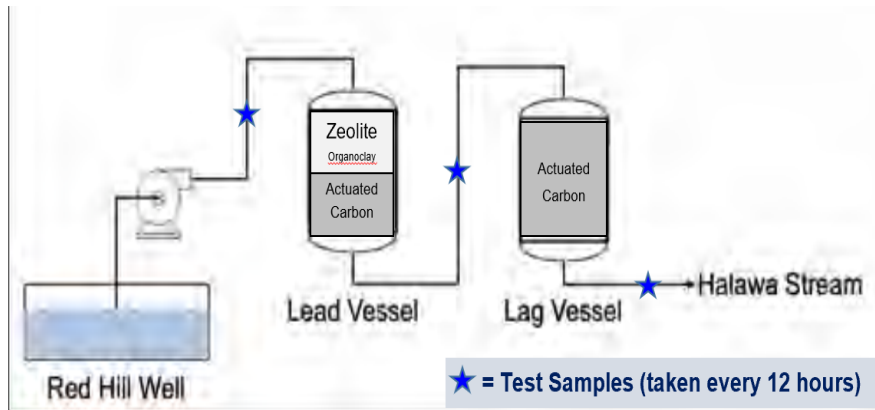
Michael Bishop

Created:

2/14/2022 4:37:04 PM

TICKET IS LOCKED[Save](#)[Next](#)

5 MGD GAC Water Treatment Plant



Purpose:

- Establish a Groundwater Capture Zone to counter the potential for contaminant migration away from Red Hill

Duration:

- Operated as an initial groundwater protection measure until further technical solutions are developed and implemented

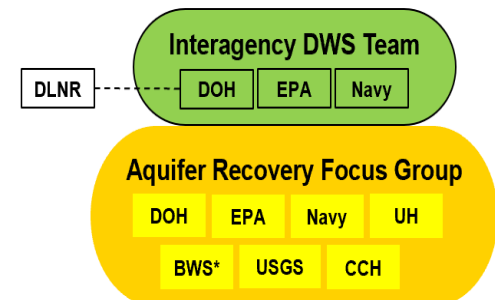
Plan Coordination:

- Interagency Drinking Water System Team with significant coordination with Hawaii Department of Land and Natural Resources
- Aquifer Recovery Focus Group
- 5 MGD Operations Plan approved by DoH and EPA

Monitoring for Environmental Protection:

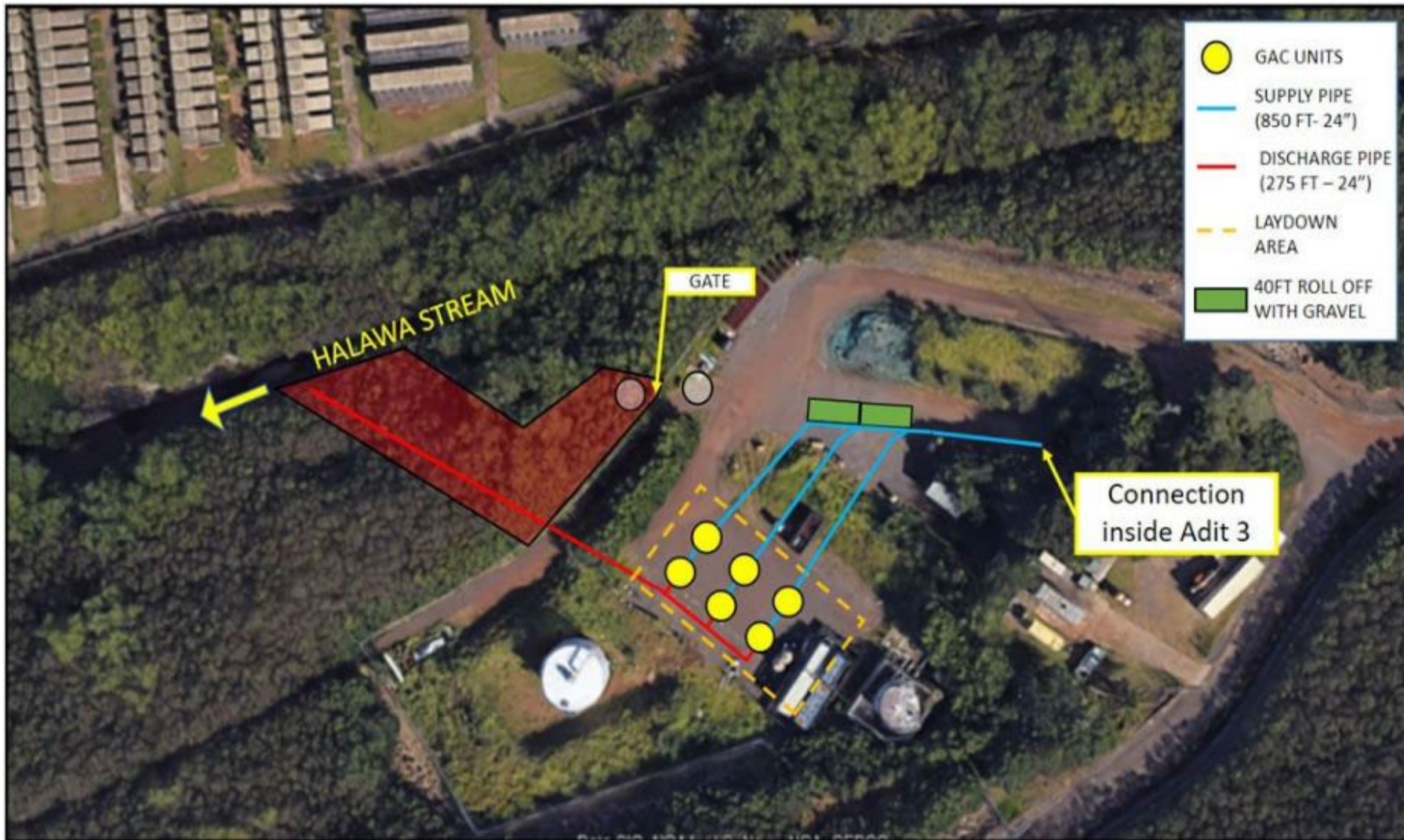
- Discharge monitoring per permit
- GAC system performance
- Monitoring of groundwater well network and stream ecology

Coordination & Collaboration Team



* Observation Role Only

LOO4 Setup



Summary

Logistics

- 5x volumetric flush of distribution system (54 million gallons)
- 10,000 homes & 2,000 non-residential facilities flushed
- Nearly 1,700 water samples collected, shipped, tested and validated

Personnel

- 100+ NAVFAC MILPERS/CIVPERS & 200+ contractors
- CBMU 303 deployed 50 Seabees for nearly 90 days
- Interagency (EPA, FEMA & HDOH) & full joint effort

Takeaways

- Drinking water 'threat assessment' and Casualty Procedure Playbook
- Industry capacity/acceleration could not be 'bought'
- The art of crisis communication versus public affairs
- Politics is always local