

**BOARD OF WATER SUPPLY
KA 'OIHANA WAI
CITY AND COUNTY OF HONOLULU**

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September 26, 2024

Ms. Dawn N. S. Chang
Chairperson
State of Hawai'i
Department of Land and Natural Resources
Commission on Water Resource Management
P.O. Box 621
Honolulu, Hawai'i 96809

Dear Chairperson Chang:

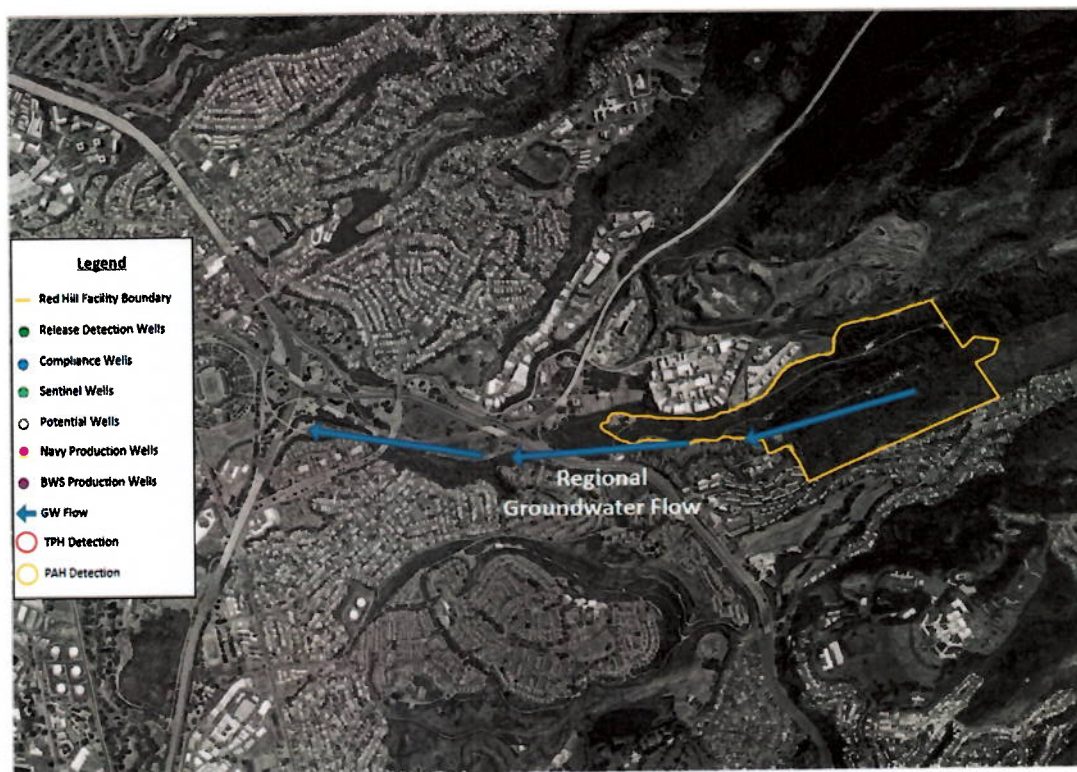
Subject: Honolulu Board of Water Supply (BWS) Comments Related to U.S Navy
Presentation to the Commission on Water Resource Management
(CWRM) Meeting on September 17, 2024

The BWS respectfully offers the following comments to the Navy Closure Task Force – Red Hill (NCTF-RH) presentation given by Rear Admiral Mark F. Williams and Commander Ben Dunn presented to the CWRM Members on September 17, 2024. Enclosed is a copy of the Navy's slide presentation for reference. The BWS found two important facts either not mentioned or misrepresented in the NCTF-RH presentation and wanted to make sure you and the CWRM Board were aware of the following.

1. To date, the BWS has not been given the opportunity to review the Navy's latest (2024) groundwater flow model report (GWFM). Despite Navy indications that the BWS is a consulted stakeholder and despite numerous requests to the Navy and the regulatory agencies—the U.S. Environmental Protection Agency (EPA) and Hawai'i Department of Health (DOH)—the Navy has not provided a copy of the Navy's 2024 GWFM Report to the BWS for review. Our understanding is that the latest draft of the GWFM report was submitted to the EPA and DOH on July 22, 2024. We further understand that another updated version of the GWFM report is to be (or has been) issued to the regulatory agencies this week. As you may know, the 2015 Red Hill Administrative Order on Consent (AOC) expressly identifies the BWS as a subject matter expert (SME) and in conjunction with our

involvement attending meetings and reviewing 2015 AOC reports and work plans. The BWS has provided over 150 letters to the Navy and regulatory agencies commenting on various Red Hill deliverables, including the Navy's groundwater modeling efforts. In lieu of being able to review this revised 2024 draft GWFM report, the BWS must rely on the only Navy modeling report that is available to the public, this is the 2020 Navy GWFM Report. While this report was ultimately disapproved by EPA and DOH, and the BWS agreed with many of the reasons the GWFM Report was rejected, the 2020 Report did include Navy particle tracking results documenting certain groundwater particle paths that show groundwater flow from the Red Hill facility toward BWS pumping wells to the northwest, including the BWS Hālawā Shaft, Aiea Wells, and Hālawā Wells. This flow path and direction is consistent with current understanding of groundwater levels and direction to the west further supporting our decision to shut down these pumping sources following the Navy's fuel releases at Red Hill in 2021.

2. On Slide 5 of the slide presentation, the Navy provided the following figure that depicts an interpretation of regional groundwater flow direction to the southwest.



The Navy stated that this interpretation of regional groundwater flow direction is from a 2004 United States Geological Survey (USGS) report. The Navy did not provide a citation for this report, so the BWS is unable to review the source document, but this understanding of regional ground water flow direction is

incomplete and outdated, and the Navy is aware of this. In a letter from DOH to the Navy in 2019, the DOH provided the following graphic to depict the known ground water flow direction in the vicinity of Red Hill, which is also to the north and northwest even when Red Hill Shaft is pumping and Hālawā Shaft is off, which represents current conditions (DOH, 2019).

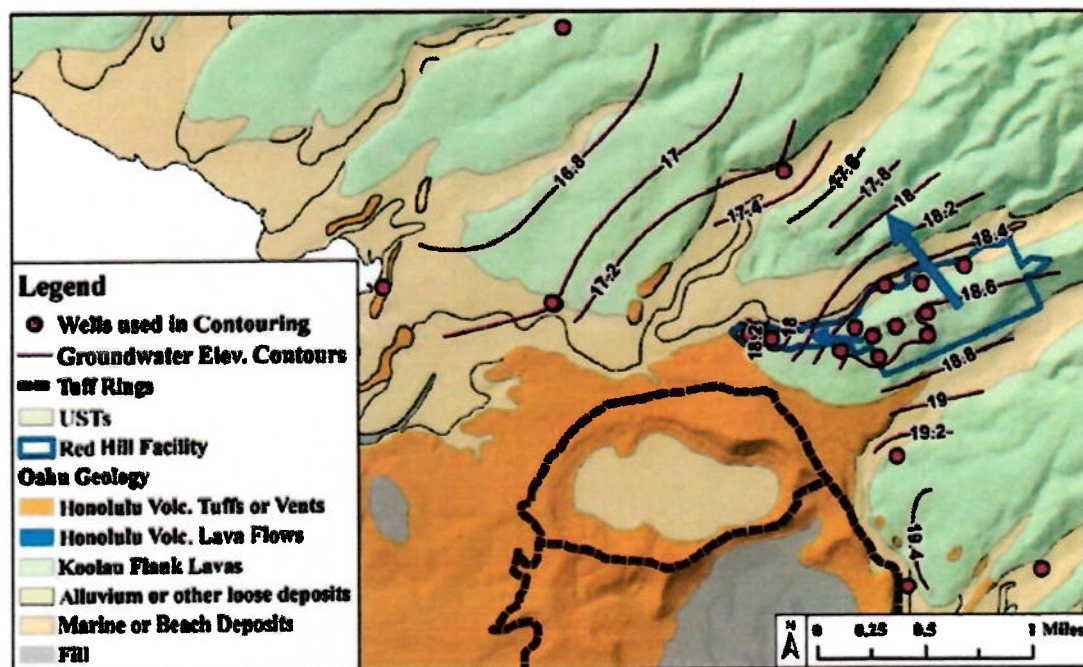


Figure 5. Groundwater elevation contours for the Moanalua/Red Hill/Halawa region when the Red Hill Shaft is pumping at a normal rate and the Halawa Shaft has been off for 9 days. Arrows indicate the implied groundwater flow direction based on the groundwater elevation contours. Data are taken from Figure 6-10 in the Red Hill CSM (DON, 2018a)

The DOH analysis in this letter outlined the following points of major disagreement between the regulatory agencies SMEs and the Navy regarding the Navy Conceptual Site Model (CSM) and initial numerical GWFM:

1. The disparity between the measured and modeled groundwater gradient along the axis of Red Hill Ridge and its implications for a reliable CSM and numerical groundwater flow model;
2. The absence of supporting field data for the CSM-assumed primary groundwater flow direction toward the southwest and away from Hālawā Shaft (one of the key receptors of concern); and,
3. Lack of consideration of groundwater flow toward the northwest without providing a compelling rationale.

The BWS cannot confirm whether and to what extent the above disagreements still exist because we have been unable to review the Navy's 2024 GWFM report. Our working

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assumption is that these disagreements persist, because the Navy continues to hold out to the public a groundwater flow direction that is only to the southwest and does not appear to contemplate the component of groundwater flow that the BWS and regulatory agencies understand to be directed to the north and northwest, directly toward critical BWS groundwater pumping sources.

Thank you for the opportunity to clarify these key facts. If you have any questions, please contact Mr. Erwin Kawata, BWS Deputy Manager at (808) 748-5066.

Very truly yours,



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

Enclosure – Navy Presentation Slides, CWRM Meeting, September 17, 2024

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Mr. Nā'ālehu Anthony, BWS Board Chair

References

Department of Health, Safe Drinking Water Branch (DOH). 2019. Health Evaluation of Groundwater Flow Paths in the Moanalua, Red Hill, and Hālawā Regions, Revision 2 by Whitter, RB., Thomas, D.M., and Becket, G.D. July 11.

Red Hill Update CWRM



Navy Closure Task Force–Red Hill 17 SEPTEMBER 2024



Apple



Android



Agenda

SAFE. DELIBERATE. ENGAGED. COMMITTED.

- Operational Update
- NCTF-RH Dashboard
- Groundwater Network
- Potential New Wells
- Groundwater Sampling
- Groundwater Flow Model
- Environmental Remediation
- Upcoming Engagements



Operational Update

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Late June/early July: completion of sludge removal from tanks 7 & 8



Late May: start of tank ventilation & air quality monitoring



September: ventilation operations begin for tanks 5 & 6



Beneficial reuse of water preparations are being made



NCTF-RH Dashboard

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[AIR QUALITY MONITORING](#)



[SLUDGE & RESIDUAL FUEL REMOVAL](#)



[TANK CLEANING PROGRESS](#)



[VIDEOS](#)



[PHOTOS](#)

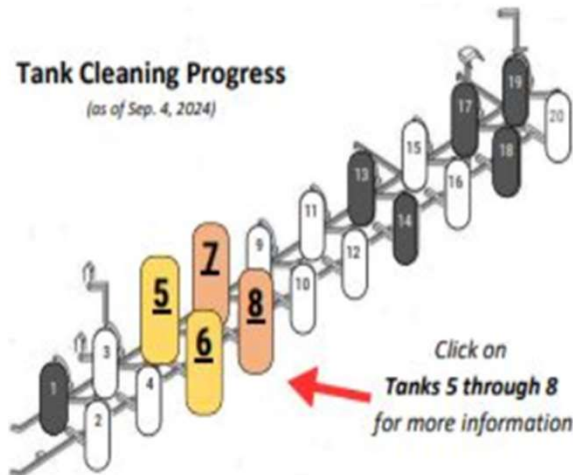


[CONTACT US](#)

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Tank Cleaning Progress

(as of Sep. 4, 2024)



- Step 1 – Preparation** (Approx. 2-3 months):
 - Isolate tank and disconnect piping
 - Install tank ventilation equipment and inject water to soften sludge
 - Remove flowable sludge
 - Begin tank ventilation with forced air
- Step 2 – Remove Solid Sludge** (Approx. 2-3 months):
 - Inspect and repair central tower and catwalk
 - Install center tower elevator; load test tower and catwalk
 - Remove solid sludge
- Step 3 – Pressure Washing** (Approx. 1-2 months):
 - Set up pressure washing system and
 - Pressure wash with 3% Simple Green
 - Rinse, continuously removing rinsate
 - Dry tank interior and validate cleanliness; submit cleaning report
 - Receive regulatory agency final approval that tank is clean
- Step 4 – Tank Decommission** (Approx. 1-2 Months):
 - Remove booms and infrastructure
 - Install permanent lockable steel hatch at the entrance

These tanks out of service prior to defueling.



SLUDGE AND RESIDUAL FUEL REMOVAL

00264.4

GALLONS RESIDUAL FUEL REMOVED

4,000 gallons of residual fuel are spread throughout nearly 10 miles of pipeline in low points, valves, and other isolated areas.

**As of Sep. 4, 2024*

00078.0

GALLONS SLUDGE REMOVED

Sludge is removed by lowering personnel to the bottom of the tank where it is manually shoveled out and put into drums. The drums are sealed and sent off the island for disposal at a permitted waste disposal facility on the continental U.S.

[SLUDGE REMOVAL VIDEO](#)

[BACK TO TOP](#)

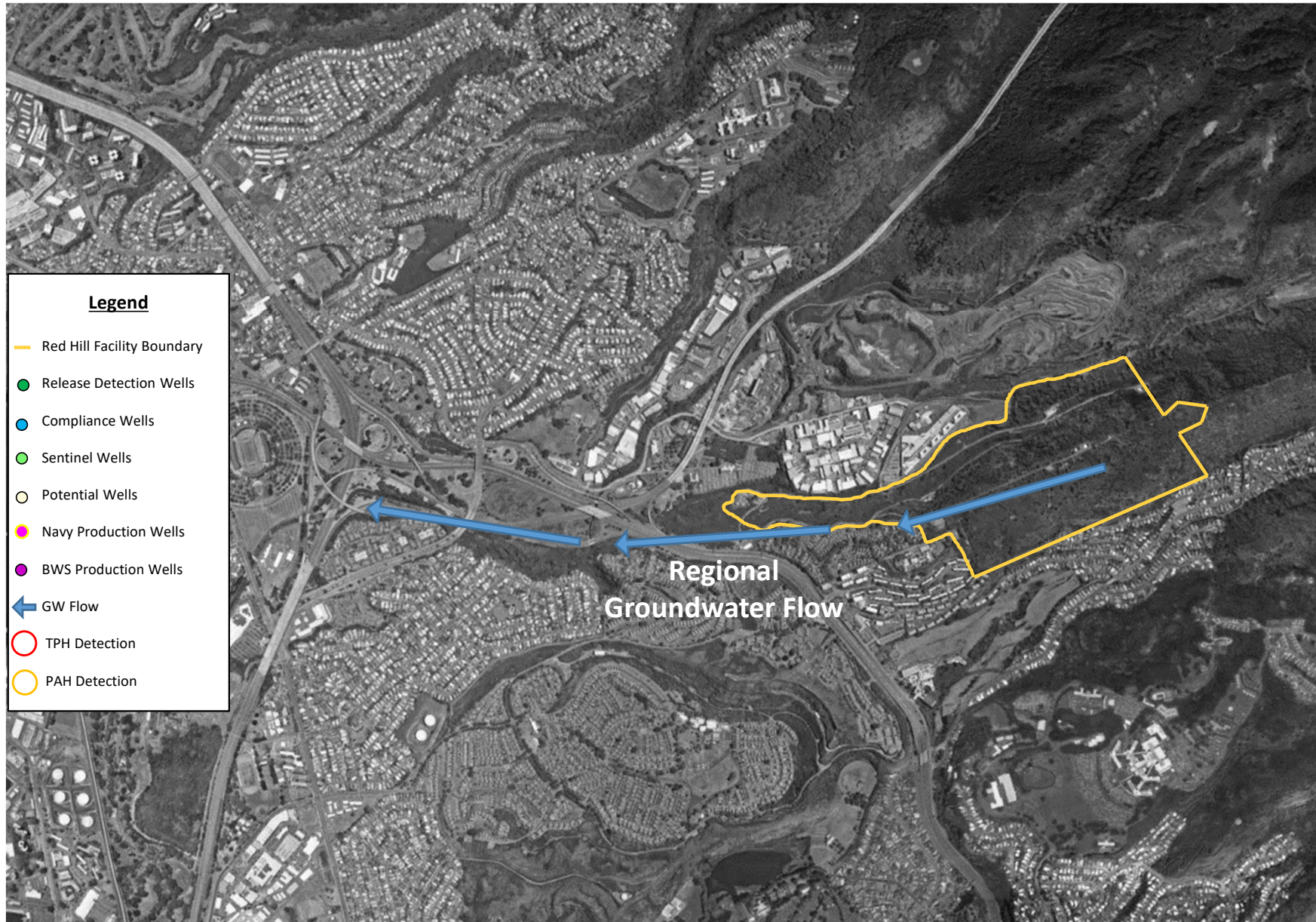
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Groundwater Flow

Groundwater Network Layers of Protection

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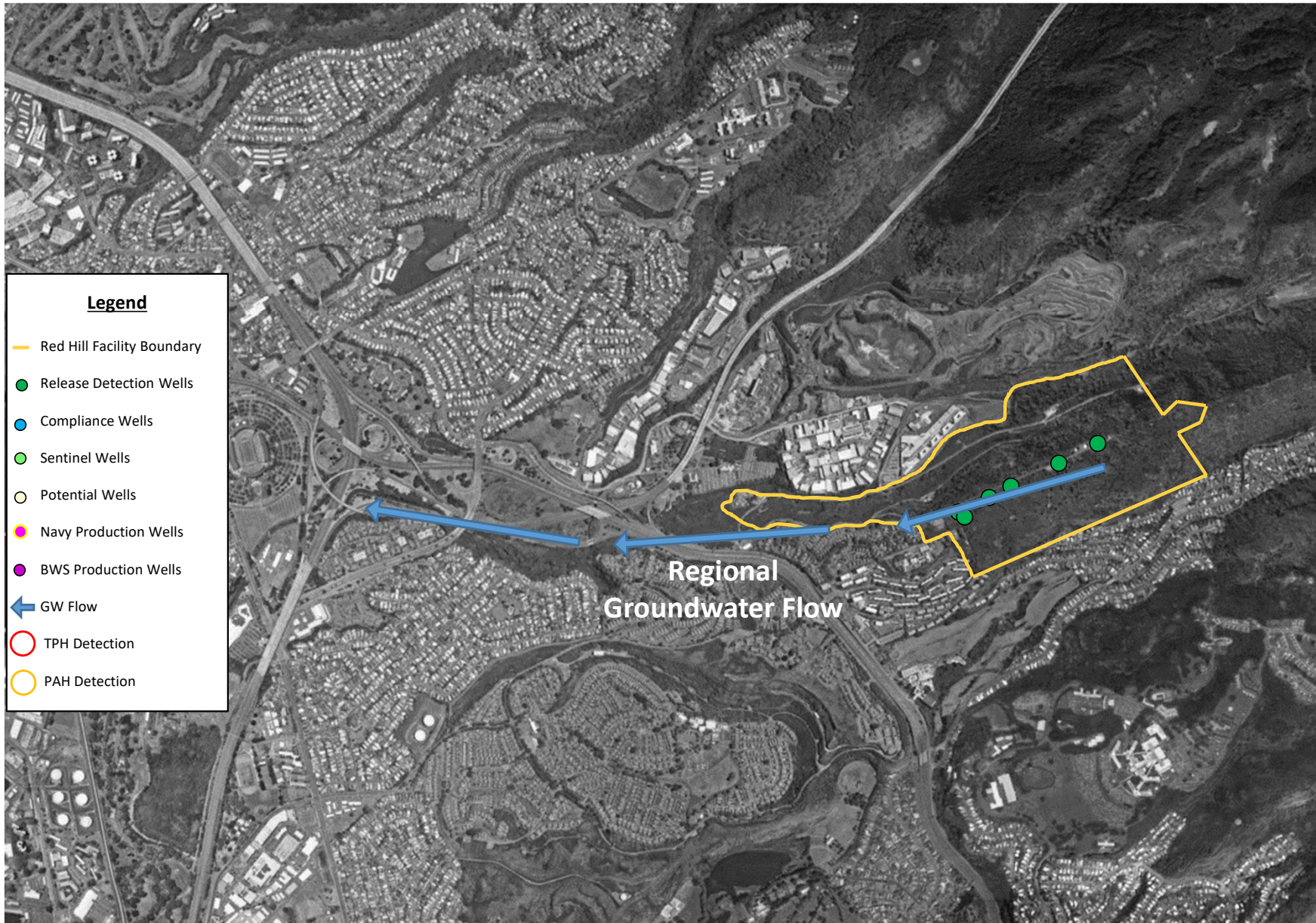




Release Detection Wells

Groundwater Network Layers of Protection

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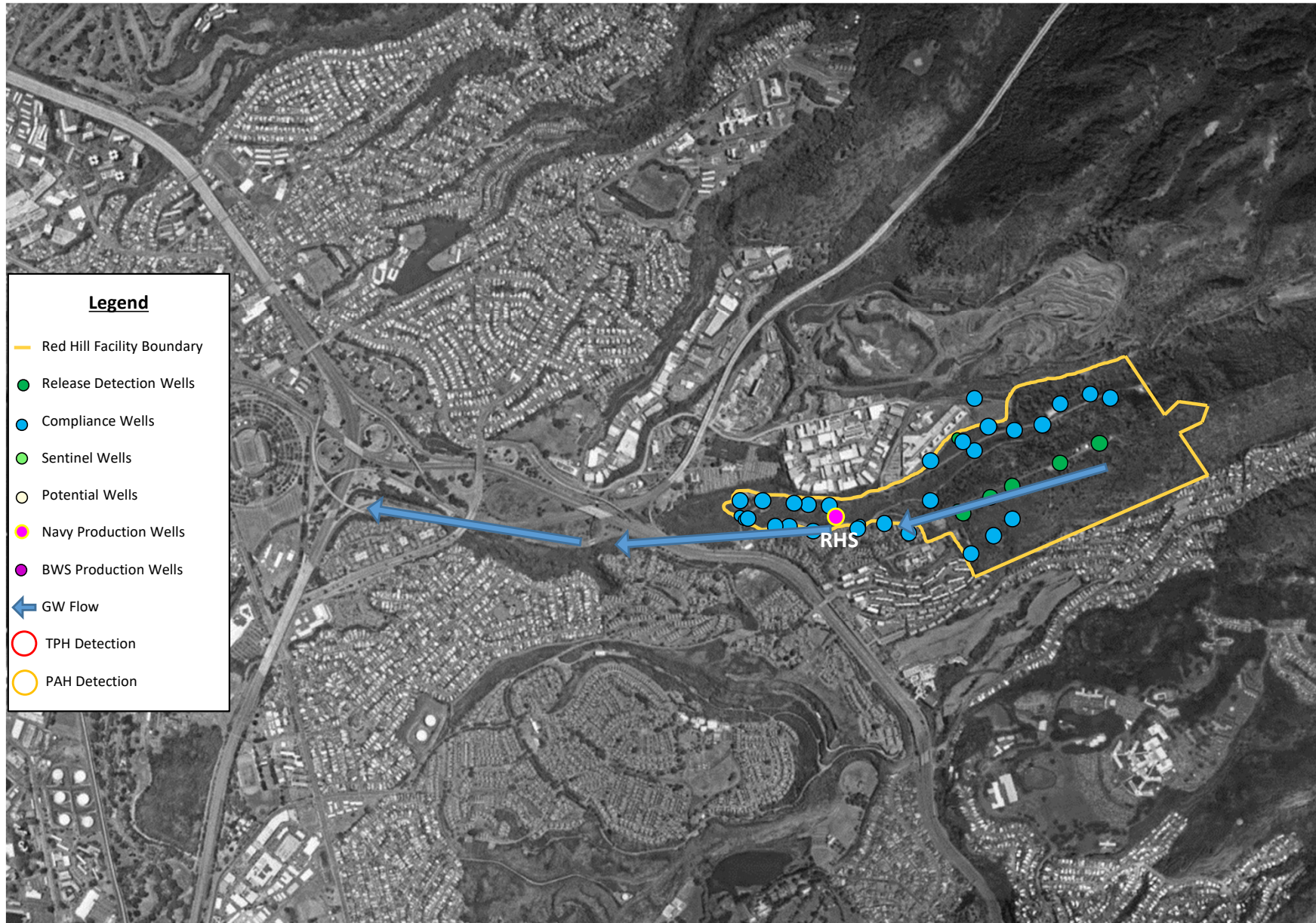




Compliance Wells

Groundwater Network Layers of Protection

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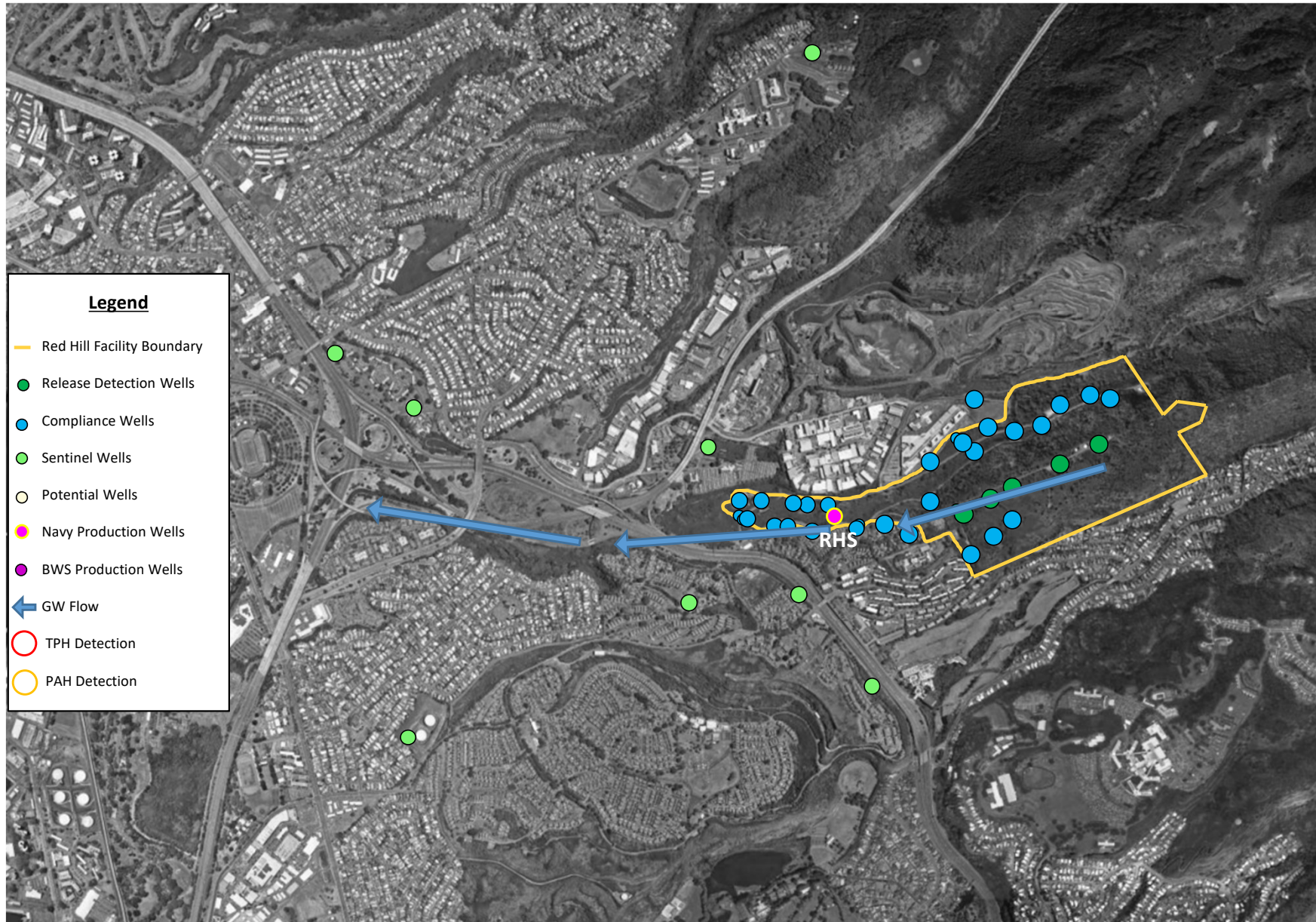




Sentinel Wells

Groundwater Network Layers of Protection

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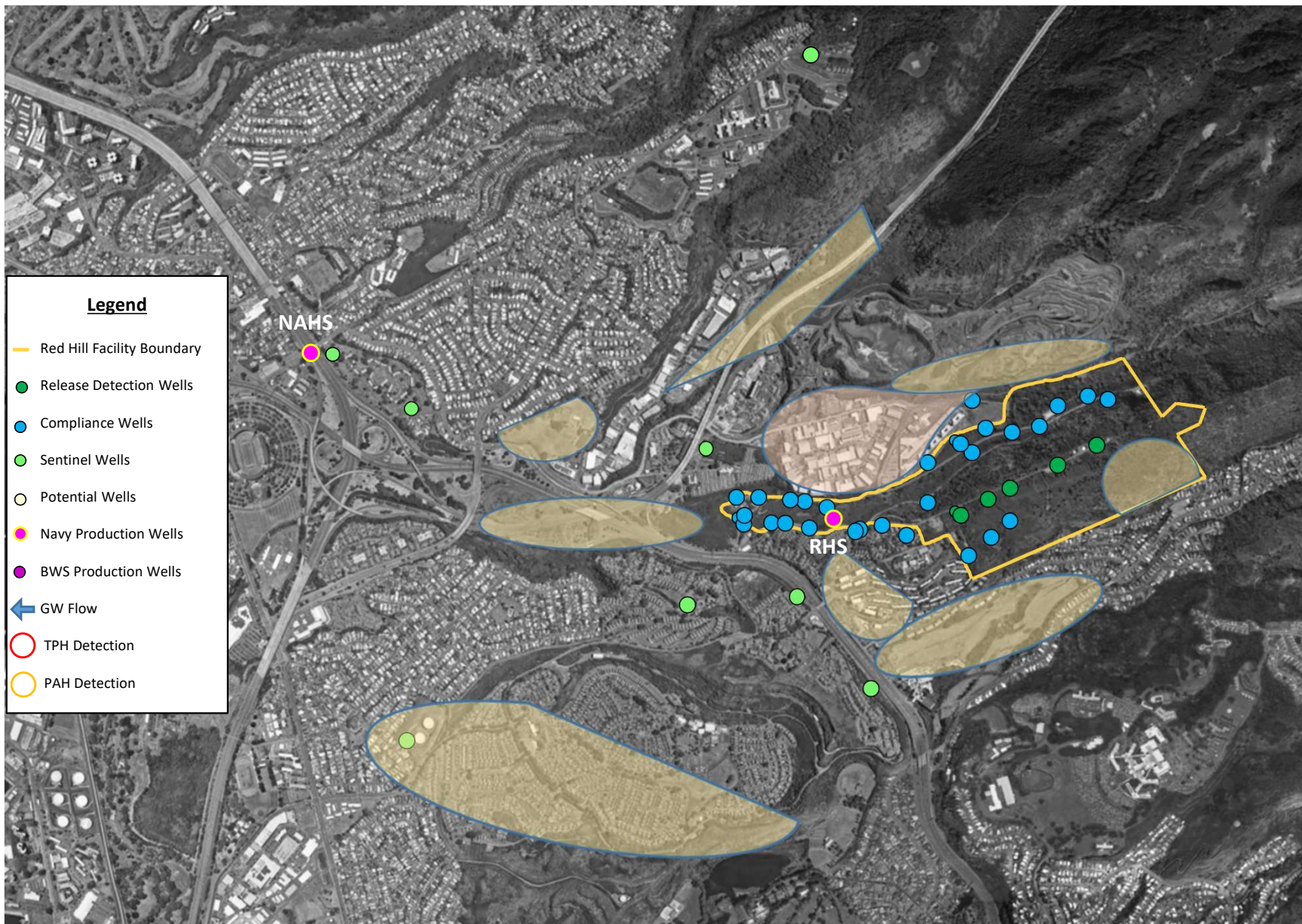




Potential New Wells

Groundwater Network Layers of Protection

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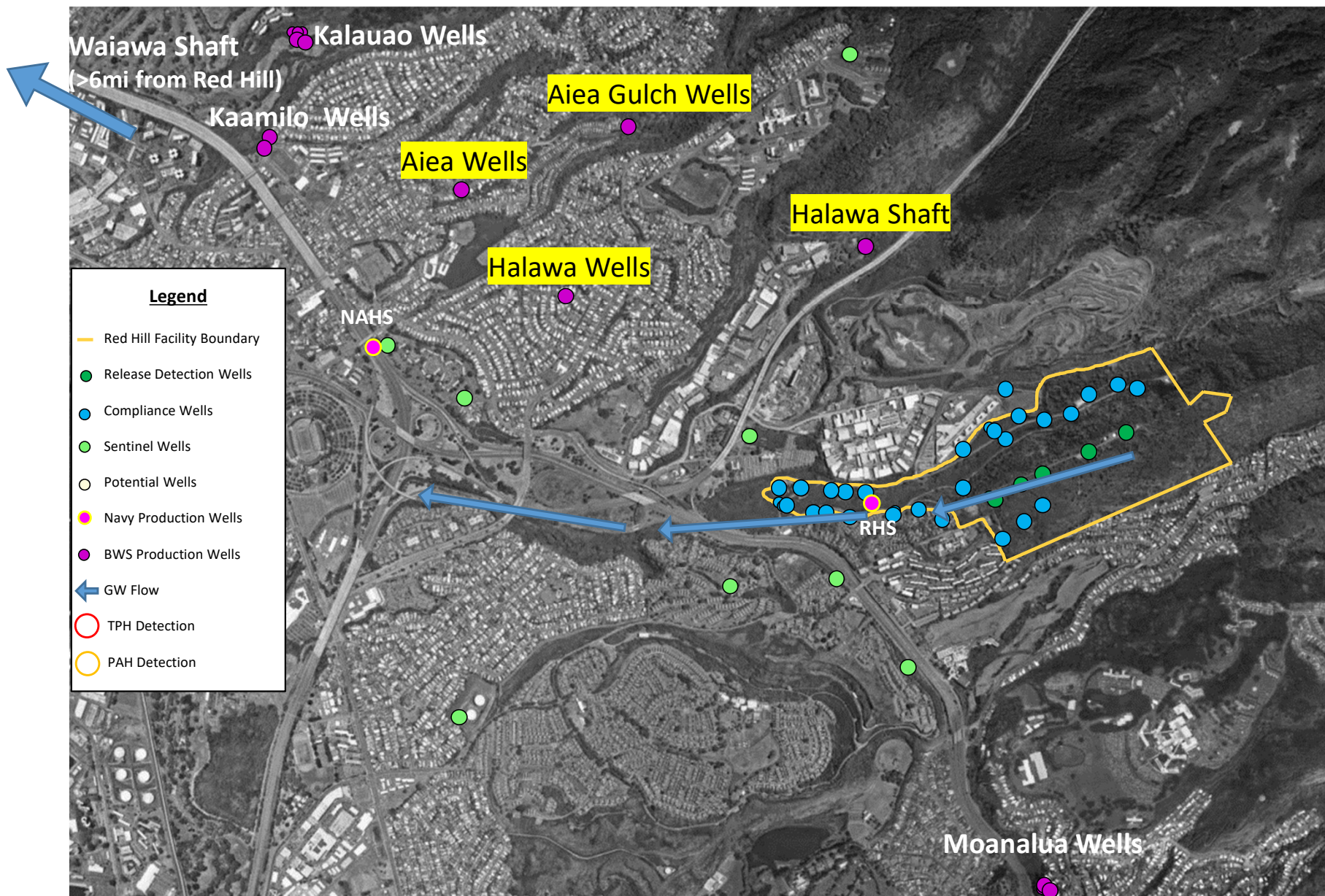




BWS Production Wells

Groundwater Network Layers of Protection

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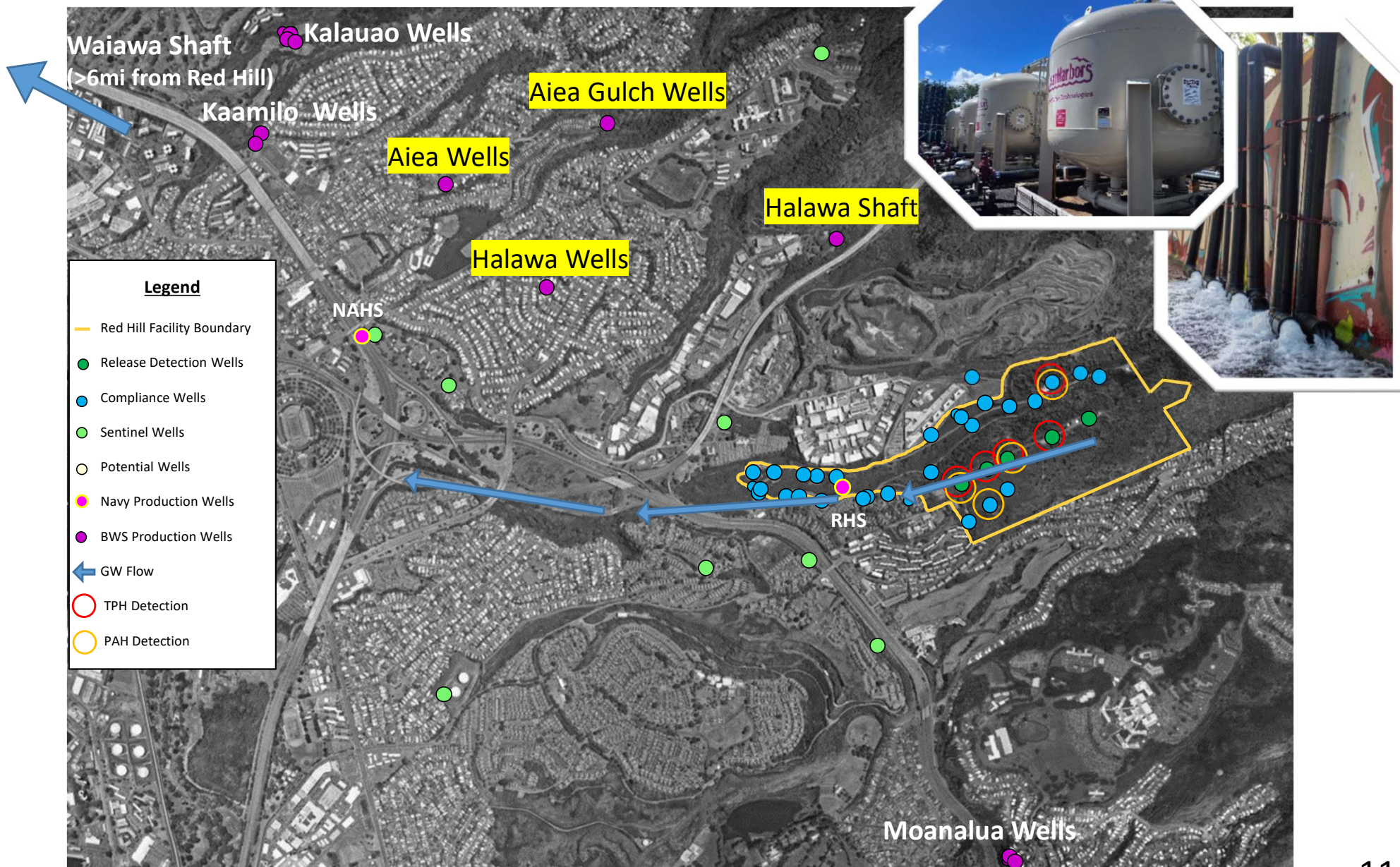




Navy Results

Groundwater Network Layers of Protection

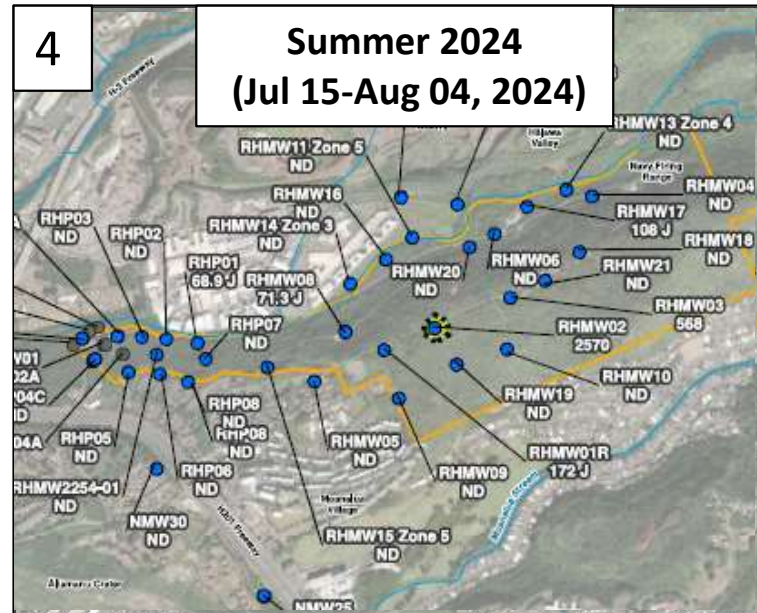
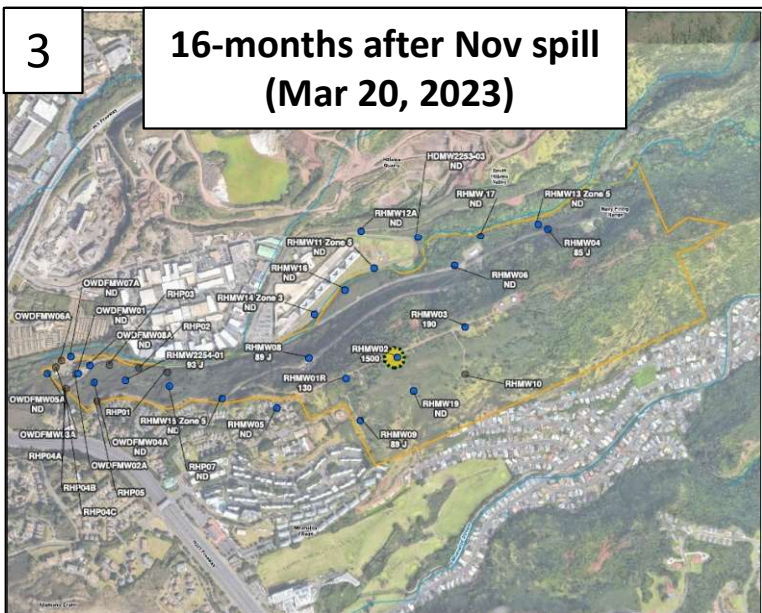
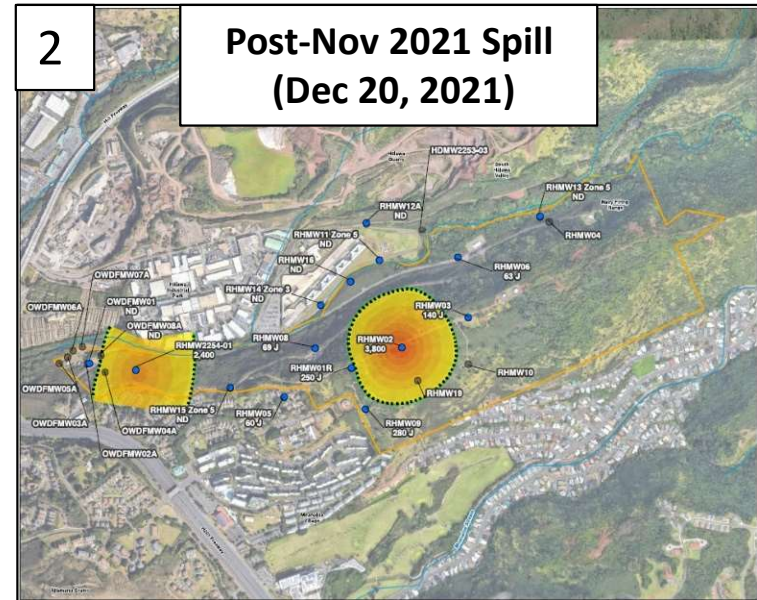
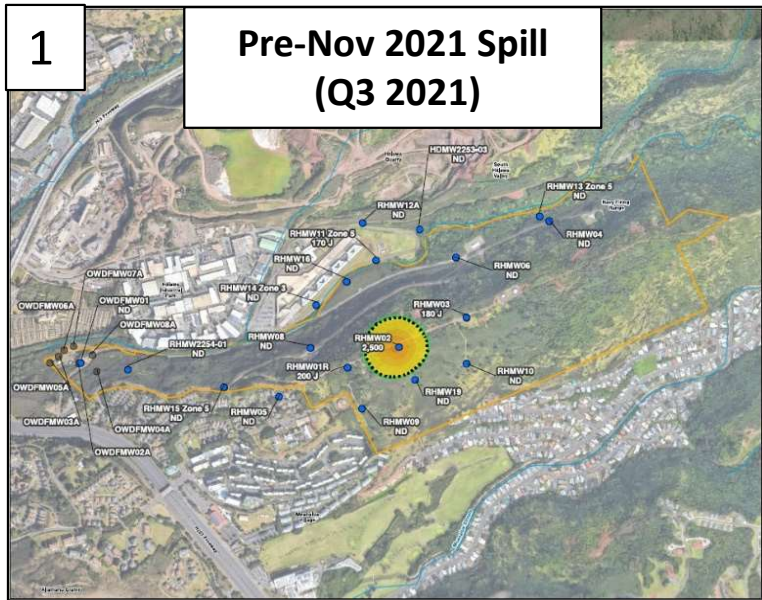
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Contaminant Mapping (TPH-d): 2021–2024

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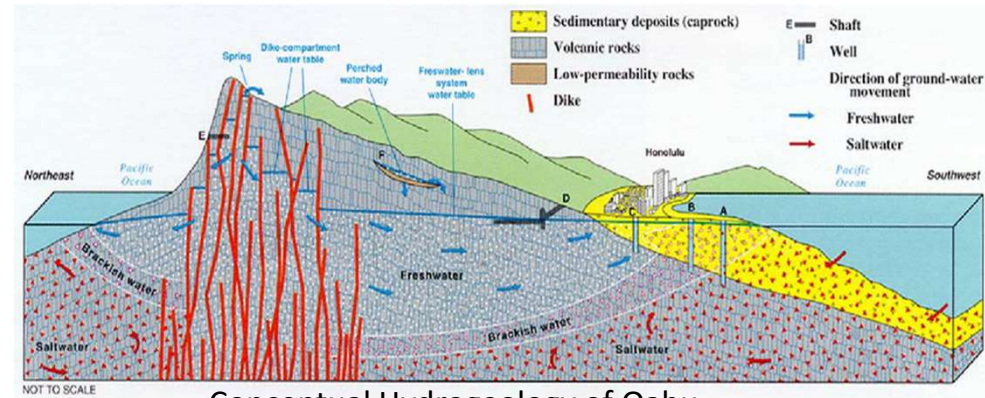


Groundwater Flow Model

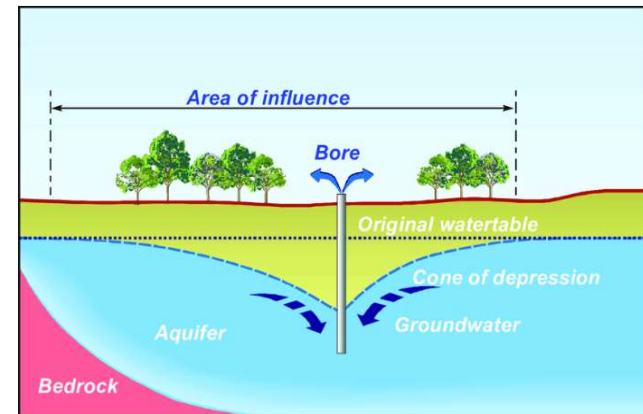
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Composite model:

- Geological Conceptual Site Model
 - Estimation of the geologic material distribution
- Groundwater Flow Model
 - Estimates flow direction and flow rates of groundwater
- Vadose Zone Model
 - Studies processes that occur in the geology between the land surface and groundwater table
- Contaminant Fate and Transport Model
 - Estimates migration pathways of contaminants
 - Estimates how natural processes affect concentrations

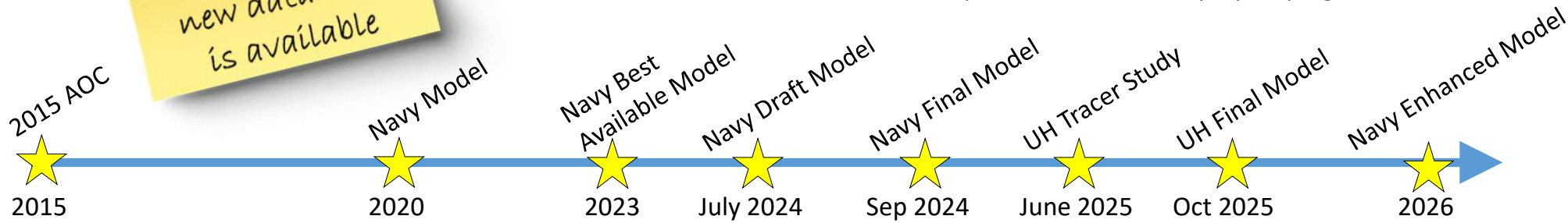


Conceptual Hydrogeology of Oahu



Capture Zone created by a pumping well

GWFM is a dynamic model that incorporates new data as it is available





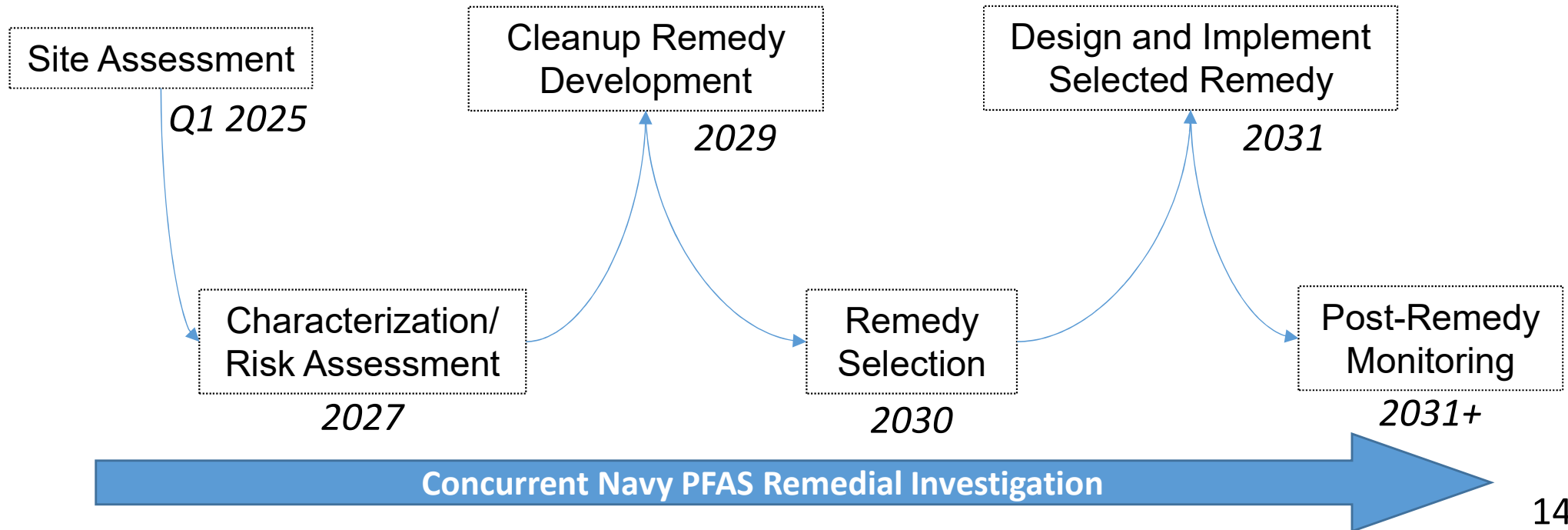
Environmental Remediation

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Remediation began in 2021 and will continue until complete

- Site Assessment Purpose: determine if historic releases (known and unknown) have impacted the facility
 - Will meet all regulatory requirements
 - Sampling and analysis to determine presence or absence of a release
- Deliberate, data-driven process

General Process Flow



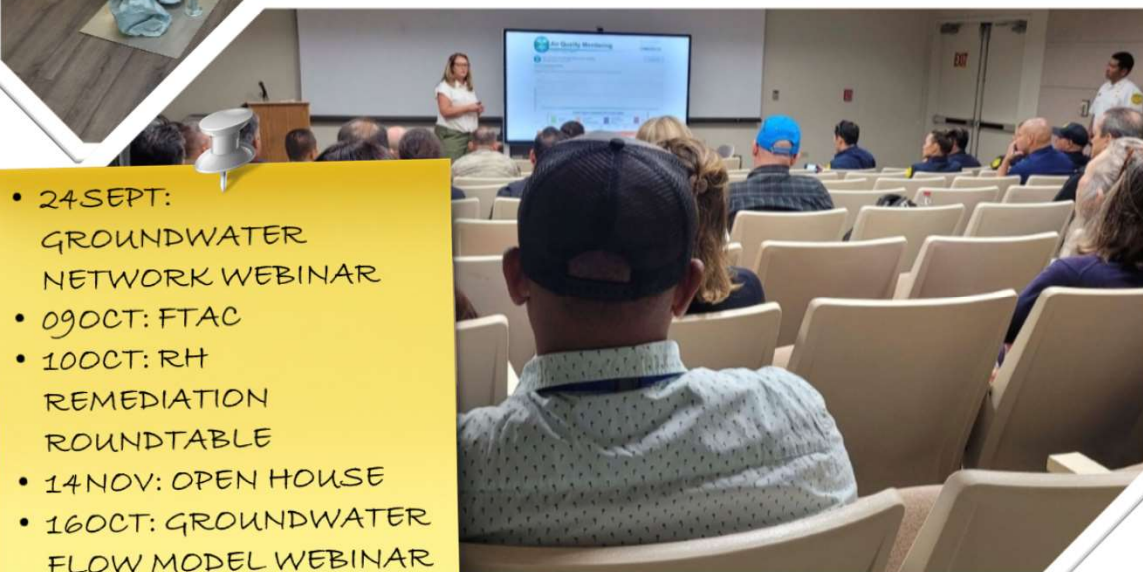


Upcoming Public Engagements

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LET'S TALK RED HILL
With Rear Adm. Marc Williams
Navy Closure Task Force - Red Hill



- 24 SEPT: GROUNDWATER NETWORK WEBINAR
- 09 OCT: FTAC
- 10 OCT: RH REMEDIATION ROUNDTABLE
- 14 NOV: OPEN HOUSE
- 16 OCT: GROUNDWATER FLOW MODEL WEBINAR





Navy's Commitment

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The Navy's priority is protection of Oahu's aquifer now and into the future. Protecting the aquifer protects all people.

The Navy is committed to ensuring JBPHH's water distribution system continues to meet state and federal standards and the water remains safe for consumption.