Red Hill Bulk Fuel Storage Facility Informational Briefing

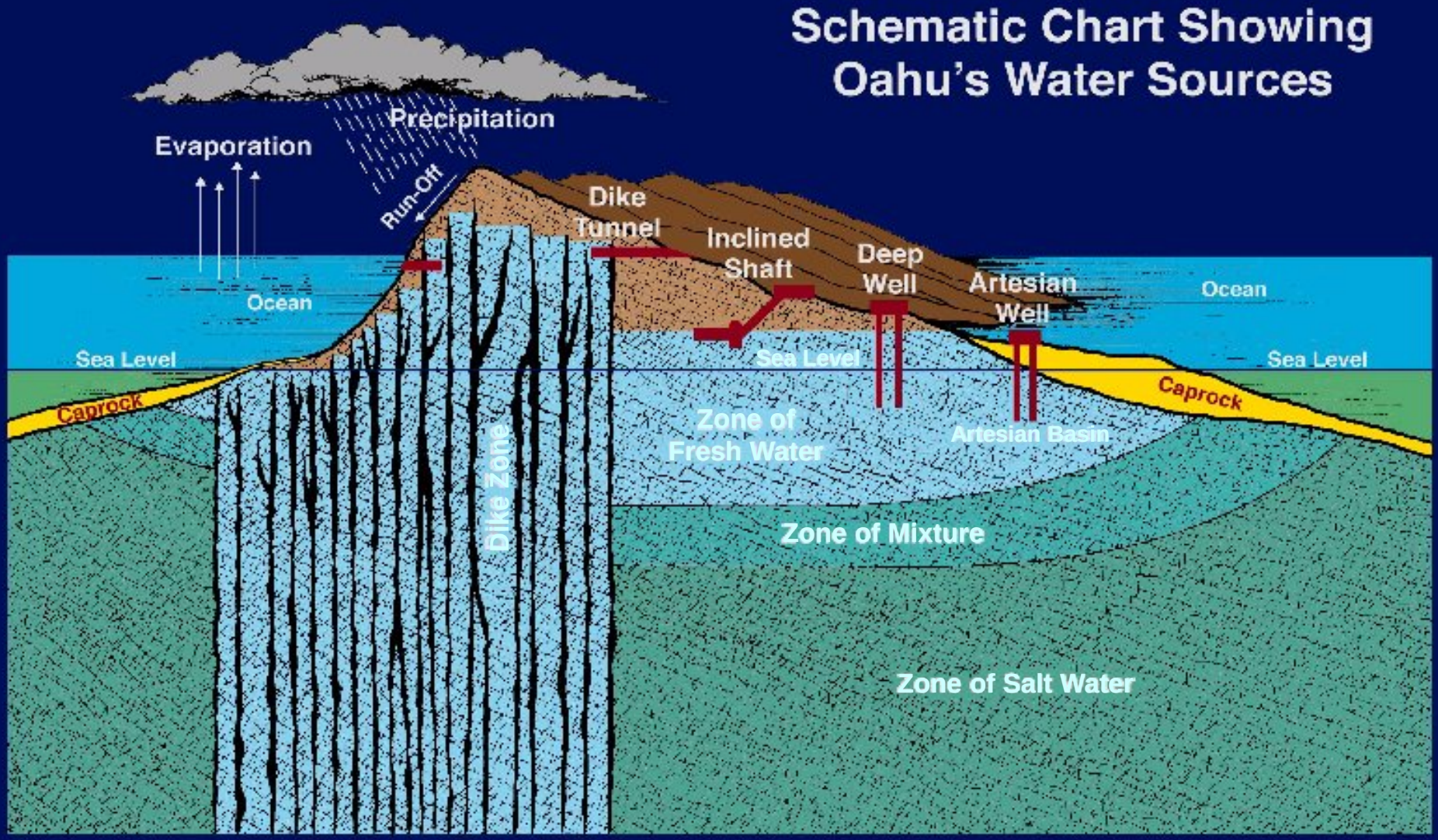
Honolulu City Council

Committee on Public Infrastructure, Technology and Sustainability Meeting

January 23, 2019

Today's Discussion

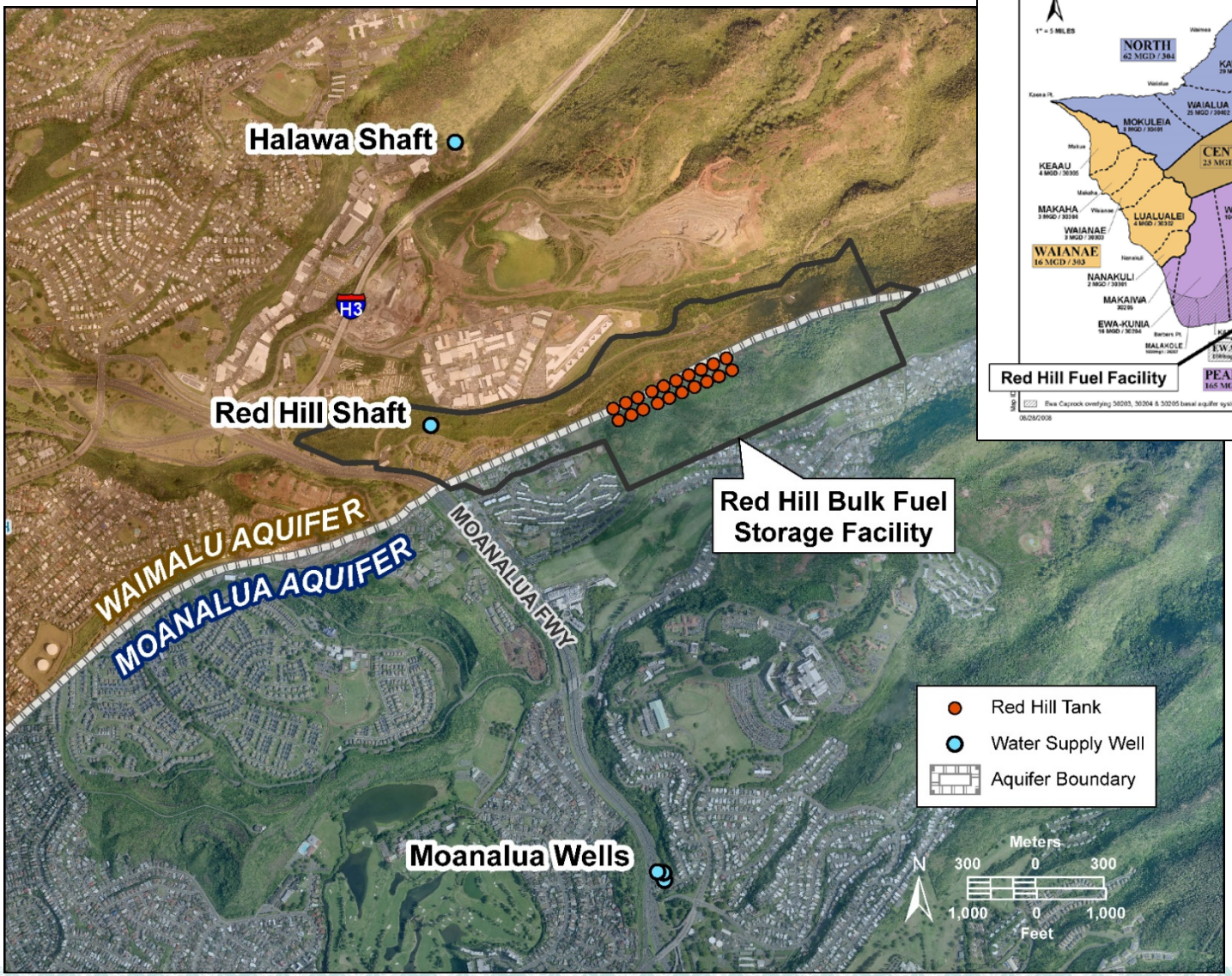
- Review BWS understanding of data and information to date
  - Navy proposed Tank Upgrade Alternative (TUA) Way Forward
  - Tank 14 coupons
  - Interim groundwater model report
- BWS support of Council Resolution 18-266

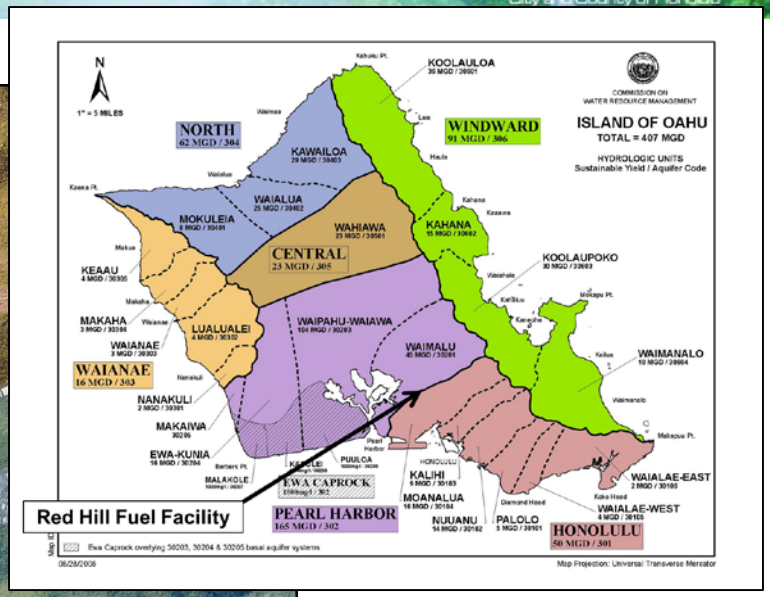

Schematic Chart Showing
Oahu's Water Sources
Precipitation
Evaporation
Run-Off
Dike
Tunnel
Inclined
Shaft
Deep
Well
Artesian
Well
Ocean
Ocean
Sea Level
Sea Level
Sea Level
Caprock
Caprock
Zone of
Fresh Water
Artesian Basin
Dike Zone
Zone of Mixture
Zone of Salt Water

WATER FOR LIFE

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

Board of Water Supply
City and County of Honolulu

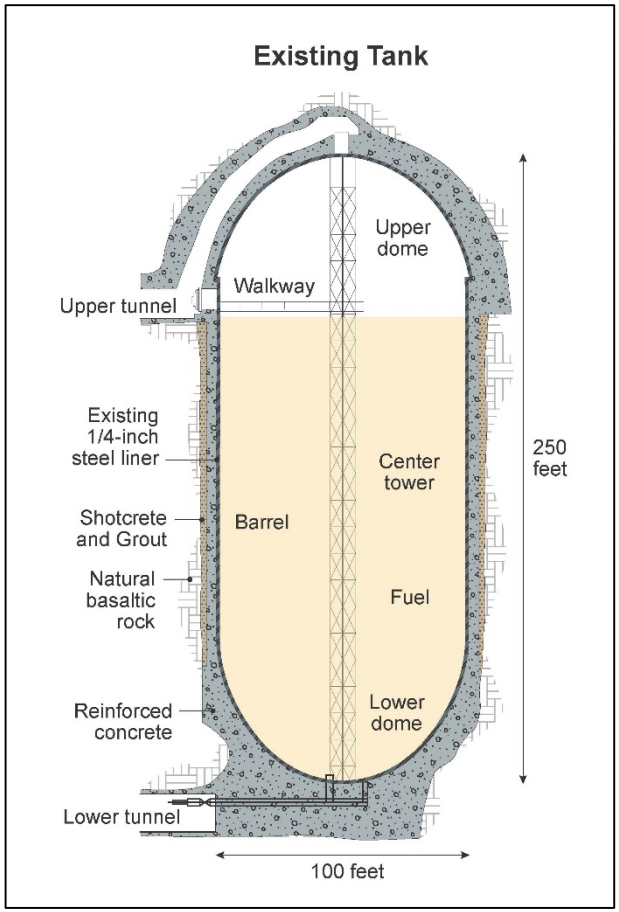


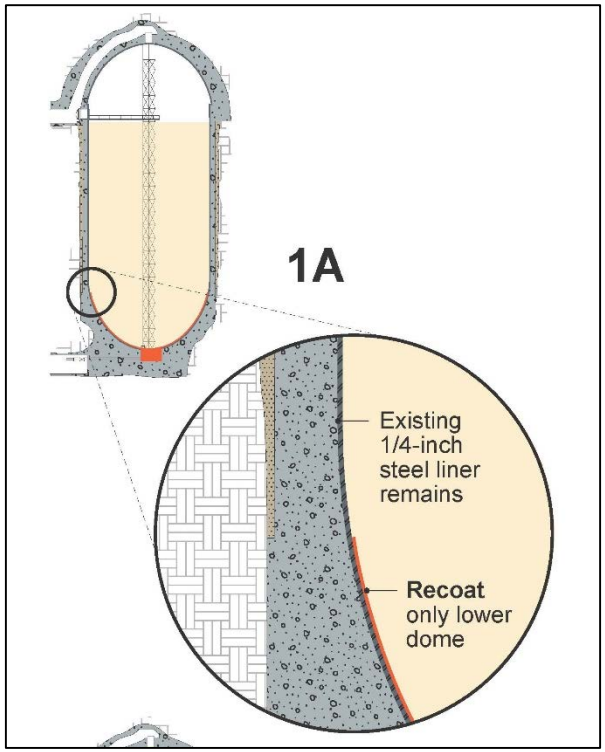


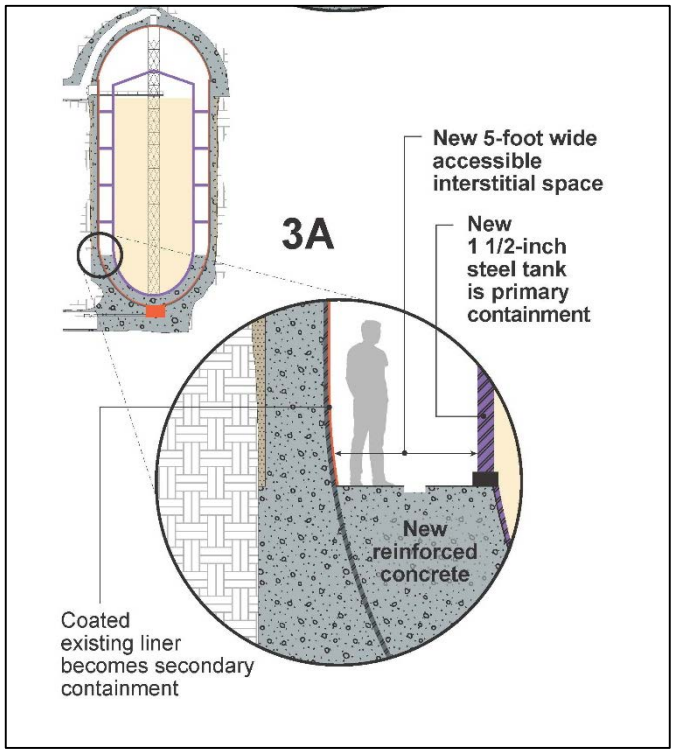
Council Resolution 18-266

- Urges EPA and DOH to reject a single walled tank upgrade for Red Hill
- Cites concerns with
  - Rust on the backside of the existing steel liner
  - Proposed TUA way forward before regulatory agency review of the data and completion of all studies
  - Interim report suggesting that a 700,000 gallon release would not cause any impacts to Navy's Red Hill Shaft.
- Resolution 18-266 expresses the Council's viewpoints and position on Red Hill

Single wall v. Secondary containment







Secondary containment affords the best protection from leaks both large and small.

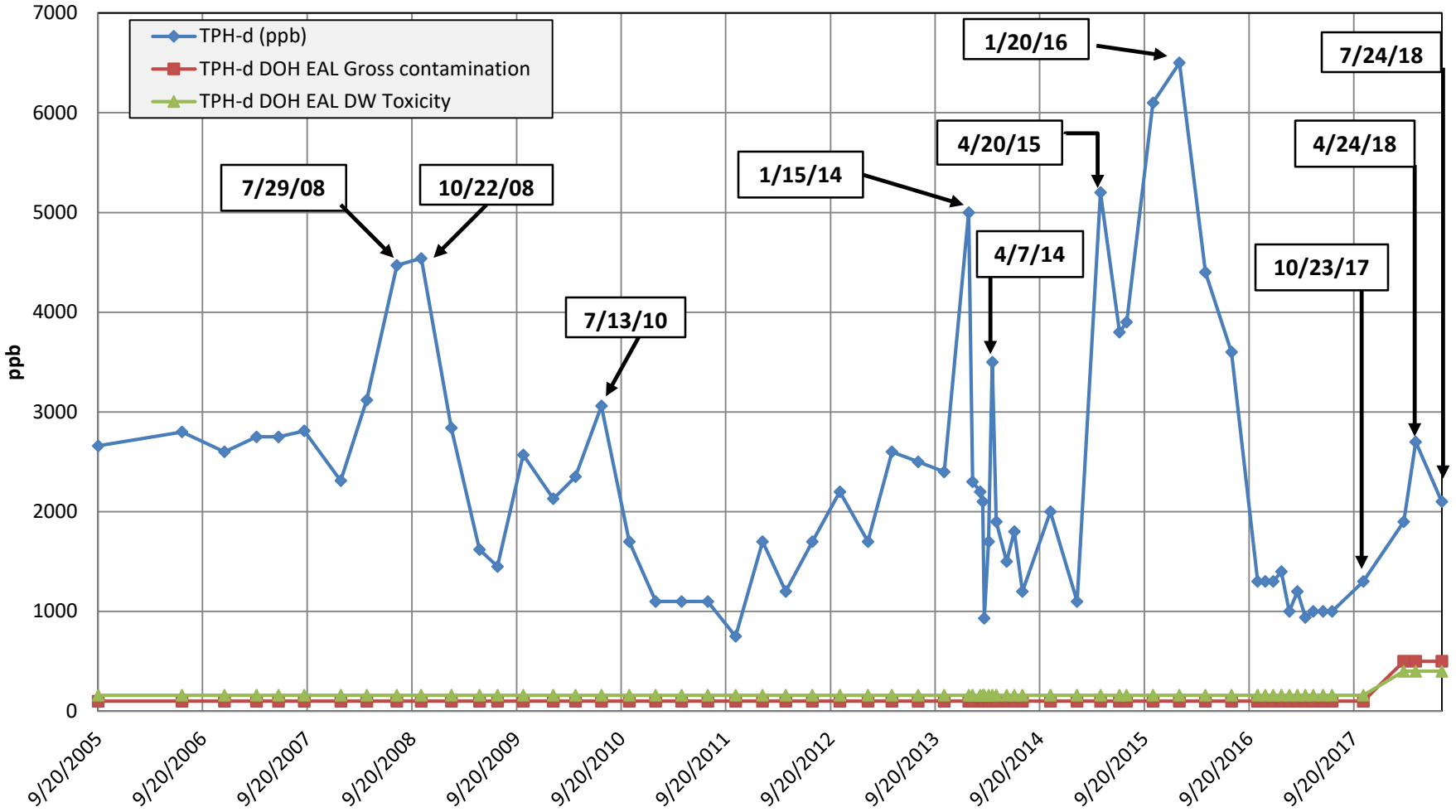
Concerns with Resolution 18-266

- Resolution appears to undermine the regulators and the step by step, science based process of the Administrative Order.
- Appears to rely on information that is not accurate.
- Tests confirm tanks are not leaking. Steel linings inspected to confirm tank integrity.
- Other protections in place environmental testing, soil vapor testing, monitoring wells, etc. to affirm Red Hill tank integrity.
- Steel lining NOT worse than anticipated.

Red Hill Facts

- Oahu's sole-source groundwater aquifer provides critical drinking water supplies and cannot be replaced.
- Enormous amount of fuel stored 100 feet over a major drinking water resource.
- Petroleum chemicals detected in groundwater and rocks underneath the tanks.

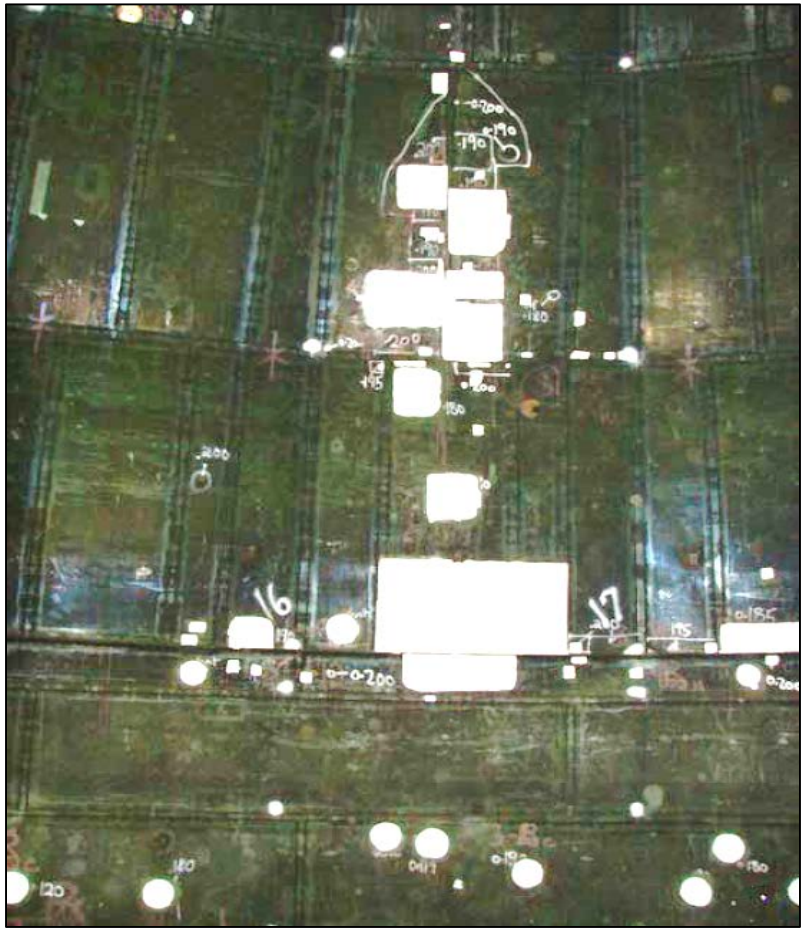
Groundwater Contamination underneath Red Hill Tank at RHMW02 as of **July 2018** (2018 Q3)



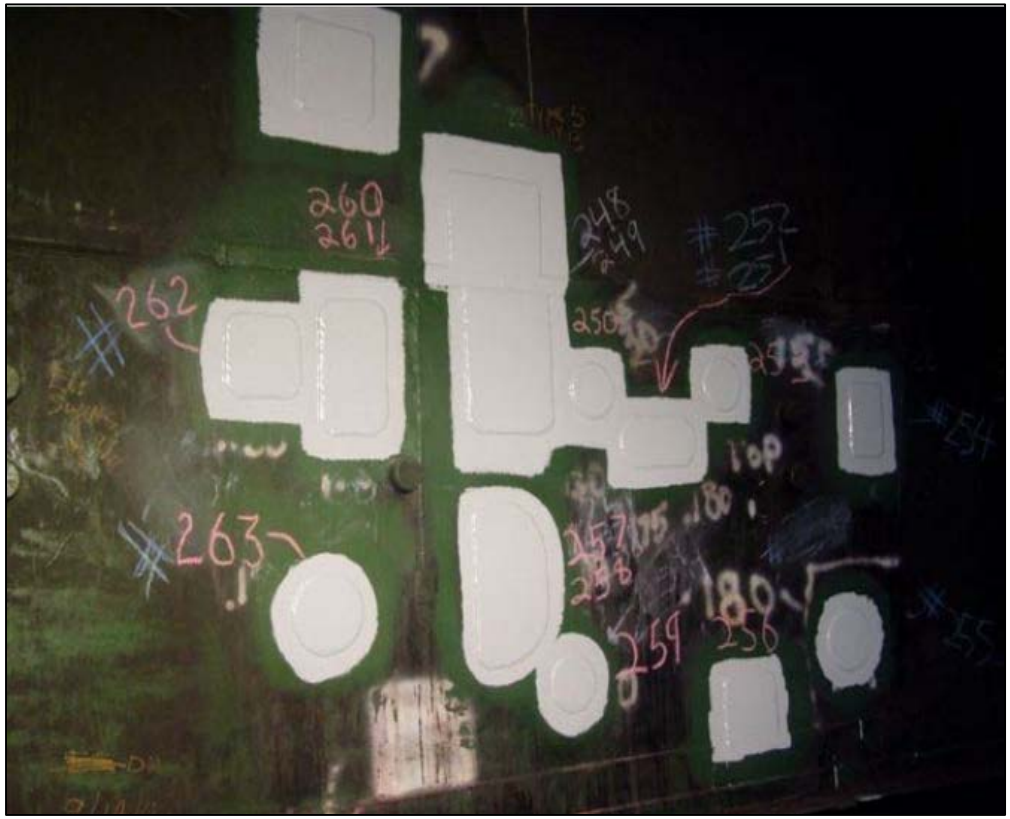
Tank 14 Coupon Inspection

- Concrete Tank Cannot Contain Fuels
  - Concrete was never was meant to contain fuel that why it was designed with ¼-inch steel liner
  - Concrete is porous, shrinks and cracks over time – not effective fuel barrier
  - Porous nature of concrete is demonstrated by 2014 leak and staining underneath most tanks
- Fuel Release Depends on Integrity of ¼-inch 75-year old steel liner
  - Liner outside surface cannot be protected from corrosion – it cannot be maintained, repaired, or painted
  - BWS concerned that thinnest areas of liner (from rust or other defects) will lead to a through wall hole
  - Navy has **not** demonstrated that that they can find **all** areas that need repairing (are thinner than 0.160-inches)

Existing methods cannot possibly find and fix every thinned area in need of repair in the tank due to Tank's enormous size.



Typical Patch Plate Repairs on Tank 6, Dunkin & Bush, Inc. Report on Tank 6 As Built Repairs, Contract Number N62742-03-C-1402. June 2007 (Navy, 2016).



Typical patch plate repairs in Tank 15 Dunkin & Bush Inc., Report on Tank 15 Phase 2 As Built Repairs, Contract number N62742-03-C1402, Clean and Repair Tanks 1, 6, 15, and 16, at Red Hill Fleet and Industrial Supply Center, Pearl Harbor, Hawaii, Dunkin & Bush, Inc., March, 2006 (Navy, 2016).

2014 Release is NOT the Only Release

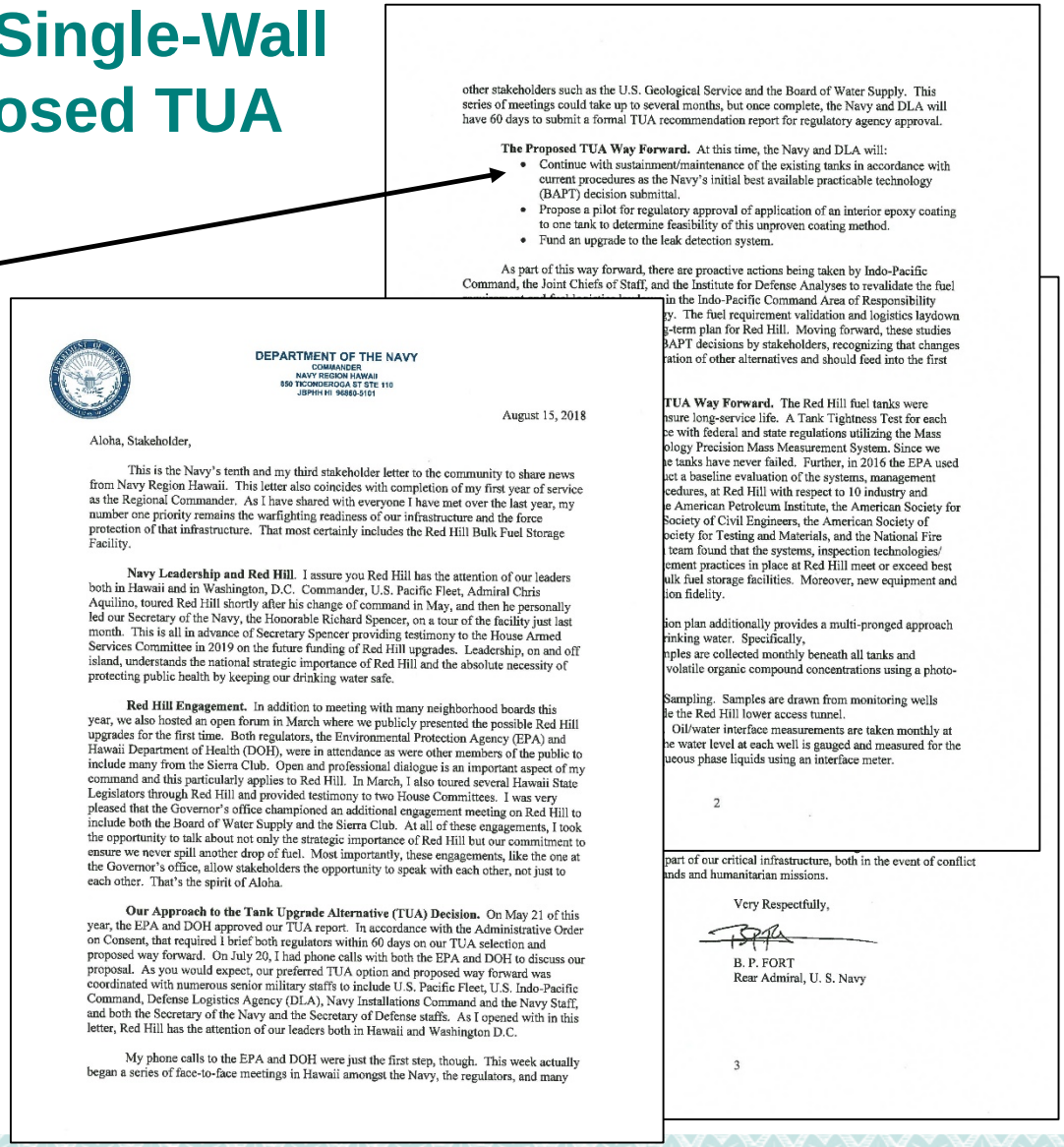
- A release from Tank 6 was reported by the Navy in 2002 (Navy, 2002).
- Tanks 15 and 16 also had fuel releases after 1988 (Navy, 2014).
- Navy TIRM report indicate that Tank 5, Tank 10, Tank 17, Tank 19, Tank 20 underwent inspections after 1988 that identified through-wall corrosion and therefore possibly leaks below the detection limit (Navy, 2016).
- The groundwater data from 2005 to present show petroleum chemical contaminants in groundwater samples.
- Petroleum staining found in cores taken before 2014 beneath 19 of 20 tanks (AMEC, 2002).
- Navy's Red Hill Facility Groundwater Protection Plan (GWPP) report documents leaks from various tanks from 1940s – 1980s (Navy, 2008).

Navy Identifies Existing Single-Wall Tank (TUA 1A) as Proposed TUA Way Forward

"The Proposed TUA Way Forward. At this time, the Navy and DLA will:

- Continue with sustainment / maintenance of the existing tanks in accordance with current procedures as the Navy's initial best available practicable technology (BAPT) decision submittal."

Ref:
https://www.cnic.navy.mil/regions/cnrh/om/environmental/red-hill-tank.html



other stakeholders such as the U.S. Geological Service and the Board of Water Supply. This series of meetings could take up to several months, but once complete, the Navy and DLA will have 60 days to submit a formal TUA recommendation report for regulatory agency approval.

The Proposed TUA Way Forward. At this time, the Navy and DLA will:

- Continue with sustainment/maintenance of the existing tanks in accordance with current procedures as the Navy's initial best available practicable technology (BAPT) decision submittal.
- Propose a pilot for regulatory approval of application of an interior epoxy coating to one tank to determine feasibility of this unproven coating method.
- Fund an upgrade to the leak detection system.

As part of this way forward, there are proactive actions being taken by Indo-Pacific Command, the Joint Chiefs of Staff, and the Institute for Defense Analyses to revalidate the fuel

TUA Way Forward. The Red Hill fuel tanks were

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part of our critical infrastructure, both in the event of conflict
nds and humanitarian missions.

Very Respectfully,

B. P. FORT
Rear Admiral, U. S. Navy

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COMMANDER
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August 15, 2018

Aloha, Stakeholder,

This is the Navy's tenth and my third stakeholder letter to the community to share news from Navy Region Hawaii. This letter also coincides with completion of my first year of service as the Regional Commander. As I have shared with everyone I have met over the last year, my number one priority remains the warfighting readiness of our infrastructure and the force protection of that infrastructure. That most certainly includes the Red Hill Bulk Fuel Storage Facility.

Navy Leadership and Red Hill. I assure you Red Hill has the attention of our leaders both in Hawaii and in Washington, D.C. Commander, U.S. Pacific Fleet, Admiral Chris Aquilino, toured Red Hill shortly after his change of command in May, and then he personally led our Secretary of the Navy, the Honorable Richard Spencer, on a tour of the facility just last month. This is all in advance of Secretary Spencer providing testimony to the House Armed Services Committee in 2019 on the future funding of Red Hill upgrades. Leadership, on and off island, understands the national strategic importance of Red Hill and the absolute necessity of protecting public health by keeping our drinking water safe.

Red Hill Engagement. In addition to meeting with many neighborhood boards this year, we also hosted an open forum in March where we publicly presented the possible Red Hill upgrades for the first time. Both regulators, the Environmental Protection Agency (EPA) and Hawaii Department of Health (DOH), were in attendance as were other members of the public to include many from the Sierra Club. Open and professional dialogue is an important aspect of my command and this particularly applies to Red Hill. In March, I also toured several Hawaii State Legislators through Red Hill and provided testimony to two House Committees. I was very pleased that the Governor's office championed an additional engagement meeting on Red Hill to include both the Board of Water Supply and the Sierra Club. At all of these engagements, I took the opportunity to talk about not only the strategic importance of Red Hill but our commitment to ensure we never spill another drop of fuel. Most importantly, these engagements, like the one at the Governor's office, allow stakeholders the opportunity to speak with each other, not just to each other. That's the spirit of Aloha.

Our Approach to the Tank Upgrade Alternative (TUA) Decision. On May 21 of this year, the EPA and DOH approved our TUA report. In accordance with the Administrative Order on Consent, that required I brief both regulators within 60 days on our TUA selection and proposed way forward. On July 20, I had phone calls with both the EPA and DOH to discuss our proposal. As you would expect, our preferred TUA option and proposed way forward was coordinated with numerous senior military staffs to include U.S. Pacific Fleet, U.S. Indo-Pacific Command, Defense Logistics Agency (DLA), Navy Installations Command and the Navy Staff, and both the Secretary of the Navy and the Secretary of Defense staffs. As I opened with in this letter, Red Hill has the attention of our leaders both in Hawaii and Washington D.C.

My phone calls to the EPA and DOH were just the first step, though. This week actually began a series of face-to-face meetings in Hawaii amongst the Navy, the regulators, and many

Existing Single Wall Tank (TUA 1A) as the Navy's TUA Way Forward

- Proposed TUA Way Forward is relying on interim and preliminary studies.
  - Laboratory analysis of Tank 14 coupons not yet available to SMEs for review and comment.
  - Interim groundwater flow model report.
  - Risk and vulnerability study not yet complete.

Existing Single Wall Tank (TUA 1A) as the Navy's TUA Way Forward – cont.

- Installing new leak detection technology does not prevent releases to aquifer.
- Citing human error with Tank 5 repairs does not stop tank deterioration that required the repair in the first place.
- Secondary containment or tank relocation away from the aquifer affords the best protection of the aquifer.

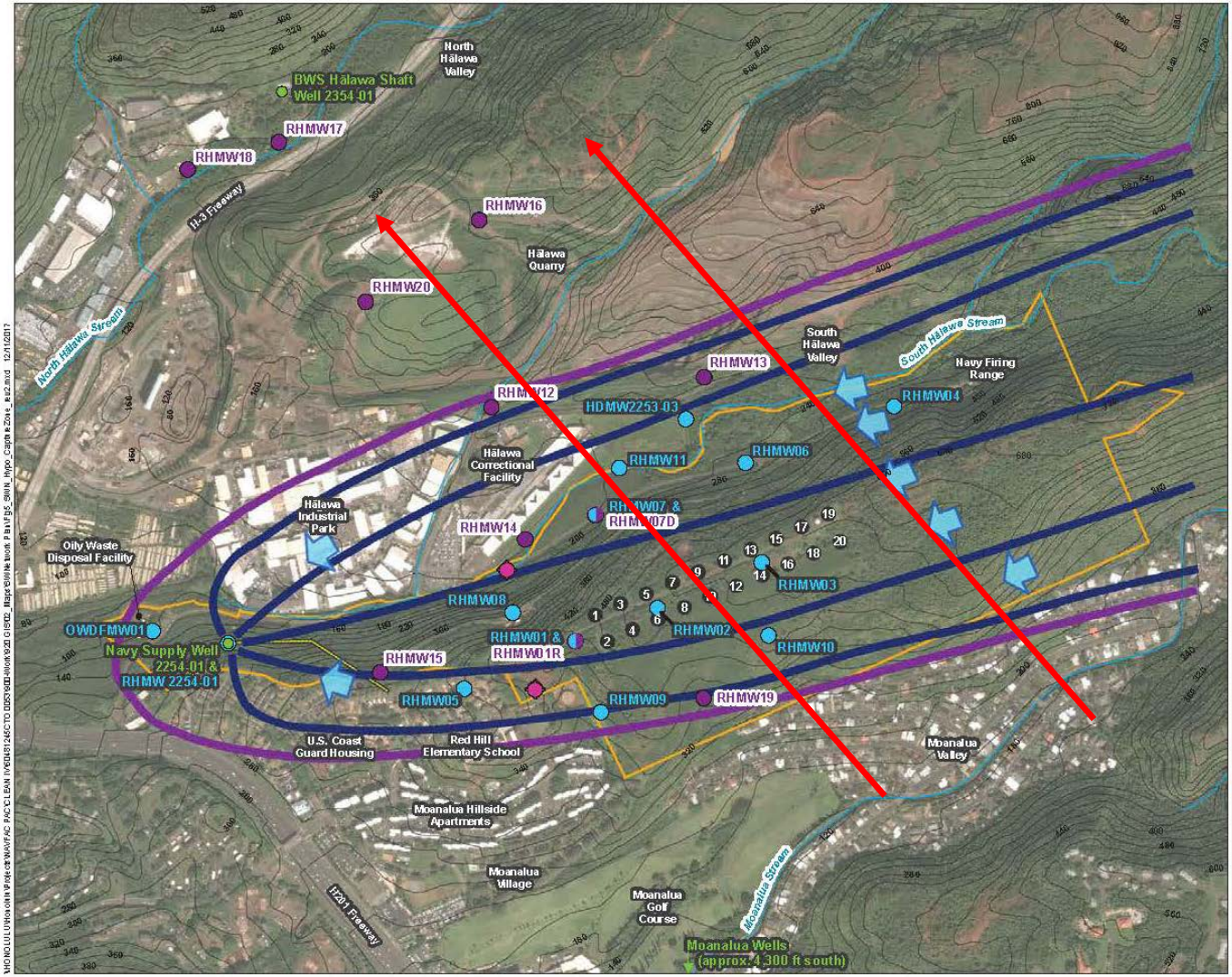
Interim Groundwater Model Report

- Navy's TUA Way Forward (TUA 1A) is relying on interim groundwater flow report that contains conclusions that have been considered to be faulty and incorrect by EPA, DOH, and BWS.
- Tank relocation away from the aquifer is the safest option.
- If the Navy wants to store millions of gallons of fuel 100 feet above the aquifer, secondary containment affords the best protection of the aquifer.

BWS Review – GW Flow

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

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



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

BWS Review – GW Flow – cont.

Navy Interim GW model calculation of groundwater levels at Navy monitoring wells (blue line) does not match with measurements collected in the field (yellow line)

BWS: Lack of correlation between observed and model simulation means the model is not calibrated. This is a fundamental requirement of a good model and it's ability to produce reliable results. DOH and EPA share this same concern.

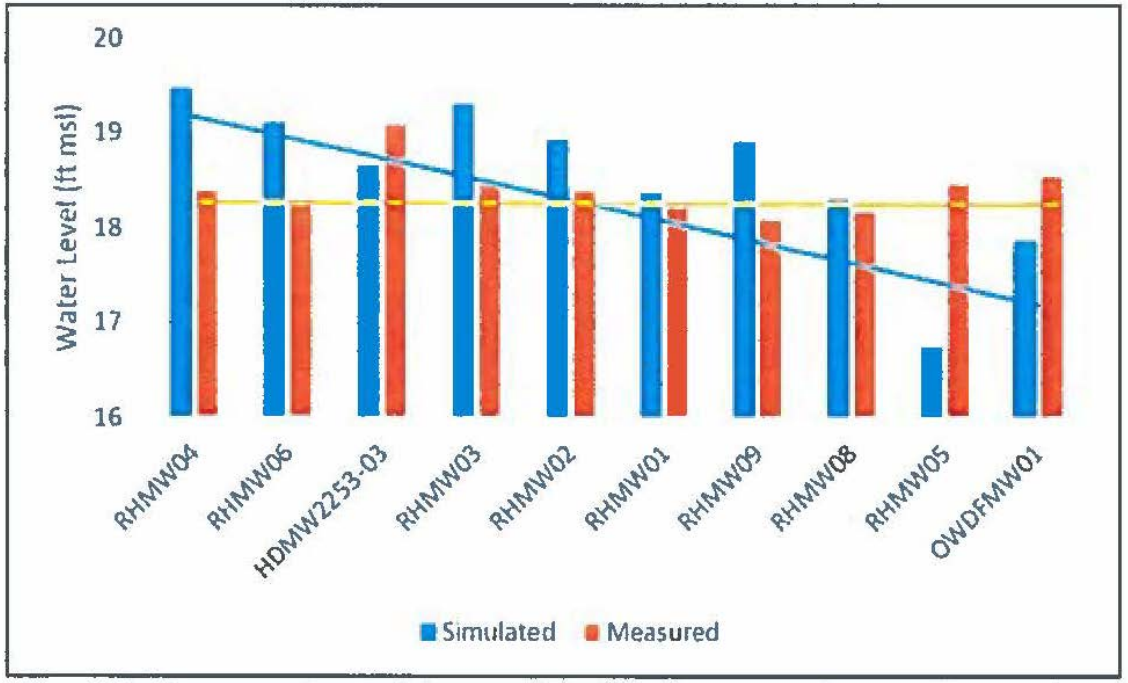


Figure 1. A comparison of the simulated and measured groundwater elevations in the RHMNW. RHMW07 is excluded from this graph since the water level in this well is very anomalous. The Red Hill Shaft (2254-01) is also excluded due to questions about the top of casing reference. Ref. Hawaii Department of Health memorandum to G. Fenix Grange from Robert Whittier re: Comments on the Progress of the Red Hill Groundwater Flow Model, February 20, 2018.

∴ Model not calibrated.

Summary

- If secondary containment (i.e. tank within a tank) is not selected then relocation should be strongly considered.
- Adequate supply of safe drinking water is critical to our economy.
- Question: Is the Navy listening and adopting our recommendations?
- BWS providing AOC input to inform the parties on what we believe they need to know – not what they want to hear.

Summary – cont.

- Facility is over 75 years old and continues to age.
- ¼-inch steel plates keeping fuel in the tanks continues to rust.
- Fuel contamination already present in groundwater and rocks underneath facility.
- Large volume of fuel stored 100 ft. above aquifer poses unacceptable risk to drinking water.

Questions/ Discussion