BOARD OF WATER SUPPLY

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February 12, 2018

Mr. Omer Shalev
United States Environmental Protection Agency
Region IX
Underground Storage Tank Program Office
75 Hawthorne Street (LND-4-3)
San Francisco, California 94105

and

Ms. Roxanne Kwan
Solid and Hazardous Waste Branch
State of Hawaii
Department of Health
2827 Waimano Home Road
Pearl City, Hawaii 96782

Dear Mr. Shalev and Ms. Kwan:

Subject: Board of Water Supply (BWS) Comments on the Red Hill Administrative Order on Consent (AOC) Statement of Work (SOW) Section 3 Tank Upgrade Alternatives (TUA) Report dated December 8, 2017

The Honolulu Board of Water Supply (BWS) offers the following comments on the above referenced report. This letter supplements our letter of September 12, 2017 regarding the stakeholder meeting discussion of this work at the United States Environmental Protection Agency's (EPA) offices in San Francisco on August 31, 2017.

We offer the following comments.

1. The subject report presents six upgrade alternatives, and rates them according to 18 attributes. The report does not rank the six alternatives, nor does it provide guidance on their relative importance. The report simply addresses each alternative in light of each attribute and provides subjective, qualitative ratings. Unfortunately, this precludes any means to communicate to the public or decision makers the relative importance (weight) that some attributes should be given. For instance, a reader of the attribute matrix will see that all six alternatives are rated equally for Reliability (Attribute 8), and might therefore conclude that all

alternatives are equally reliable. However, the tank-in-tank alternative (3A) is clearly more reliable than, for instance, Alternative 1A as demonstrated by millions of tank-years of experience with secondary containment. The increased reliability associated with true secondary containment (Alternative 3A) is of paramount importance to the protection of the aquifer, but this is not conveyed by the subject report. (See also Note 1a and Note 4 of our September 12, 2017 letter.)

2. Similarly, the subject report could lead the public or decision-maker to conclude that all alternatives are rated equally for testable (Attribute 2) and inspectable (Attribute 3), and incorrectly conclude that all alternatives are equally testable and inspectable. (See also Note 1b of our September 12, 2017 letter.)

3. The subject report states that the six final alternatives were selected by stakeholders during the December 2015 scoping meeting. **The BWS was not invited and thus did not participate in those scoping meetings and was not involved in this selection, and therefore the term *stakeholders* in this context should not be interpreted to include the BWS.** The BWS has always maintained that relocation should be among the alternatives. (See also Note 2 of our September 12, 2017 letter.)

4. After reviewing the report, the BWS remains convinced that single wall alternatives (1A, 1B, 1D) are not sufficiently reliable given the history of leaks at the site and the significance of the risk to the aquifer. Notwithstanding proposed improvements associated with tank, inspection, repair and maintenance (TIRM), we do not find any of these single wall alternatives to be acceptable.

5. Throughout the subject report, the composite wall options 2A and 2B are described as providing *secondary containment*, and are rated equal to option 3A (tank-in-tank) in that regard (Attribute 10). Secondary containment implies an interstitial space that can be monitored for leaks through the primary liner, and the ability to reroute and capture any such leaks with high confidence. An interstice works best when any leaked fuel entering that space is free to flow to a drain and associated leak detection instrumentation. However, the composite wall options 2A and 2B rely on filling the space between the liners with grout or precast concrete to provide structural support according to the subject report. This is not the same as a double wall design that has an interstitial space. The BWS remains concerned that the structural filler will impede the drainage of leaked fuel through the primary liner. (In fact there is evidence that this type of blockage prevented the original telltale system from working properly.) As such, the composite wall options 2A and 2B do not qualify as secondary containment

tank alternatives, and should not be rated or portrayed as such. (See also Note 1b of our September 12, 2017 letter.)

6. The subject report introduces the new idea of a composite wall upgrade (Alternatives 2A and 2B) with the interstitial space incorporating a polymer fabric (GSE MineDrain Geocomposite) backed by precast concrete panels that would need to be inserted into the interstice. Previously the proposed interstitial space was filled with a cast-in-place structural grout. BWS is not aware of any successful implementation or testing of either of these concepts, and the Navy has provided no evidence of their viability.

7. Alternative 3A (tank-in-tank) as described in the subject report is fundamentally different from 2A and 2B in terms of the reliability of secondary containment. Except for the bottom dome, Option 3A incorporates a 5-feet wide, open interstice that can be inspected as required and will capture any leaks through the primary liner with high confidence. Unlike options 2A and 2B, the relative reliability of the 3A tank-in-tank concept has been proven effective in facilities throughout the country.

8. As stated in our September 12, 2017 letter, the ratings in the report are subjective and therefore different stakeholders would be expected to rate the alternative differently for any given rating. (See also Note 1c and Note 3 of our September 12, 2017 letter.) For instance, the BWS takes exception to many of the ratings, including the following:

    - All alternatives are rated equally for Attributes 2 and 3 (testable and inspectable, respectively). However, the tank-in-tank alternative (3A) is clearly the superior option for both of these attributes.

    - Attribute 7 rates alternatives as if they have been implemented and shown to successfully prevent leaks elsewhere. Alternate 2A receives the highest rating, yet the text describes an option of using a drainage mat with precast panels in the interstice; we are not aware of any previous implementation of this system. The supporting text cites Red Hill itself as an example of *successful* implementation for the single-wall options, which is both questionable and contradicts the *elsewhere* definition.

    - As described in Item 5 above, the composite wall alternatives (2A, 2B) should not be ranked as highly as the tank-in-tank (3A) in terms of providing secondary containment (Attribute 10).

- We note that Attribute 14, reliance of the alternative on inspection and repair of the existing liner, is "upside-down" with respect to all other attributes in the sense that a rating of *Meets Criteria* is less desirable than one of *Does Not Meet Criteria*.

9. After reviewing the subject report, the BWS remains convinced that, other than tank relocation, only the tank-in-tank option 3A could reliably protect the aquifer. It is the only option of the six that incorporates a tried-and-true secondary containment system that incorporates an open interstitial space to detect and capture leaked fuel with high confidence.

Overall, the BWS is concerned that the rating system as presented herein disproportionately favors Option 1A over all other TUAs. BWS continues to advocate that tank relocation should be included in the analysis and views the tank within a tank option as the most protective if the Navy wants to continue storing fuel above the aquifer.

Thank you for the opportunity to comment. If you have any questions, please feel free to call Erwin Kawata at 808-748-5080.

Very truly yours,

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

cc: Mr. Steve Linder
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