

BOARD OF WATER SUPPLY

CITY AND COUNTY OF HONOLULU
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HONOLULU, HI 96843



May 26, 2017

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and

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Subject: Board of Water Supply (BWS) Comments to the Red Hill Administrative Order on Consent (AOC) Statement of Work (SOW) Section 8.2: Risk/Vulnerability Assessment and the Navy Transmittal Letter Dated April 13, 2017

Dear Messrs. Pallarino and Chang:

The BWS has reviewed the subject documents and offers the following comments below. This letter supplements our earlier correspondence regarding Risk/Vulnerability Assessment (Task 8), as cited in the last section of this letter (Lau, 2016 and Lau, 2017).

RISK Comment 1 – Transmittal Letter: The fourth paragraph of the cover letter states that the Risk/Vulnerability scope will be completed in four phases, and that “As agreed by the parties, the Phase 1 report will satisfy Section 8.3 requirements of the Red Hill AOC SOW...”. The BWS notes that the scope considered in Section 8.3 of the AOC SOW Phase I includes six general areas to be considered for inclusion in the risk assessment. Those general areas include a) a risk matrix; b) probability of catastrophic events (seismic events, leaks); c) completed hydrology studies; d) probability of mechanical and human errors; e) effectiveness of risk mitigation and protective measures; and f) a comparison of risks and benefits between the current facility and alternative fuel storage facilities. Phase I of the currently proposed scope, as described

in the latest SOW, is limited to only internal events (but excluding fire and flooding), and this includes only Area d and part of Area a. This represents a significant scope reduction from that anticipated during the drafting of the AOC and therefore this reduction will potentially underestimate the risk of the Red Hill facility. For these reasons BWS would like to see at least fire placed back into the risk assessment and that Areas A through D included in the risk analysis.

RISK Comment 2 – Transmittal Letter: The second paragraph of the subject letter states that “The most significant agreement from scoping was the upgrading of the Risk/Vulnerability Assessment to a Quantitative Risk and Vulnerability Assessment (QRVA) due to its ability to provide a more in-depth, rigorous, and repeatable approach to assessing risk”. It had been the understanding of the BWS that a quantitative risk assessment had always been the intent, and that the submitted scope does not represent an “upgrade” to what had always been anticipated.

RISK Comment 3 – Transmittal Letter: Paragraph three of the subject letter implies that the full risk assessment, ultimately including some, but not all, of the six general areas identified in Comment 1 and the AOC SOW, will not be completed for perhaps seven years. This timeframe is significantly longer than the BWS anticipated, and we are concerned that key decisions on tank upgrades or relocation will not be informed by this work or any quantitative understanding of comparative risks.

RISK Comment 4 – SOW: The first paragraph of the executive summary states that “The Quantitative Risk and Vulnerability Assessment (QRVA) will assess the level of risk the Red Hill Bulk Fuel Storage Facility (RHBFSF) may pose to the surrounding groundwater to inform the Government in subsequent development of best available practicable technology (BAPT) decisions.” The BWS believes this overstates the value of what is currently being proposed, which only goes as far as evaluating the risk of future leaks through the walls of tanks, piping and equipment of the facility assuming no upgrades; the proposed scope would not address risks to the surrounding groundwater and would not compare best available upgrade or relocation alternatives.

RISK Comment 5 – SOW: The third paragraph of the executive summary states that “The report from the first phase will be submitted 18 months from the approval of this scope of work, in compliance with the RHBFSF AOC SOW Section 8.3.” As described in Comment 1 of this letter, the scope of the first phase of the proposed work scope addresses only a small part of the potential scope of risk assessment anticipated in the AOC SOW.

RISK Comment 6 – SOW: Page 2 of the SOW states that the focus will be on Risk Level 2, which is defined on the same page as “Frequency (and Annual Probability) of Uncontrolled Release of Fuel Inventory (by Volume Range) Outside the RHBFSF Property Boundaries that Could Impact Red Hill Groundwater Shaft Water Quality.” Risk assessment discussed in earlier stakeholder meetings seemed to be better described as a Level 1 assessment, and the boundary description provided later in

Section 2.3 and Appendix Section A.2.2.1 of the current SOW is unclear. Tracking uncontrolled releases outside the Navy property boundaries would presumably address the fate of the product, including engineering analysis of the potential migration paths through the concrete shells and surrounding rock to the property boundary. Is this anticipated, or are the Level 2 boundaries all within the facility itself?

RISK Comment 7 – SOW: Page 2 of the SOW states that the Phase I scope would include internal events (but not flood or fire) described as “Equipment or structural failures in both frontline and support systems, human errors, etc.” The BWS would like to know precisely what is included in the “etc.” and in particular whether this includes potential leaks due to corrosion and weld defects of the tank liners, pipelines or associated equipment?

RISK Comment 8 – SOW: Page 5 of the SOW lists the documents requested from the Navy to assemble the risk model.

- The BWS notes that Item 10 of the document request list is operating logs from the facility. The BWS believes this should explicitly include inventory reconciliation measurements, which we understand are taken and recorded every four hours for all tanks in service.
- The BWS notes that no documents regarding corrosion measurements and ongoing thinning of steel liners, nozzles, and piping have not been explicitly requested. The SOW also does not mention documents regarding weld defect depths. Is this an indication that the risk assessment will not address the risk of leaks due to through-thickness corrosion, from weld defects, or both? BWS recommends that the proposed risk assessment include degradation due to corrosion and weld defects. We recommend that all corrosion measurement and weld defect records be added to this list.


RISK Comment 9 – SOW: Page 7 of the SOW states “Any documented component-specific degradation model information provided by the Navy or AOC stakeholders via the communication channel presented in Figure 2-2 will be evaluated and considered for application in the QRVA.” The BWS would like to know whether the Navy intends to include ongoing corrosion and weld defect information as a “specific degradation model.”

RISK Comment 10 – SOW: Page 26 of the SOW states “While no such case studies are included in the baseline QRVA included within this SOW, the application of a mature QRVA could be applied to support case study evaluation of risk reduction alternatives in the future, and throughout the remaining life of the facility.” The BWS understands that this is a specific verification that, at this time, there is no plan to use the Section 8 risk assessment to evaluate tank upgrade or relocation alternatives.

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If you have any questions, please feel free to contact me at 808-748-5061.

Very truly yours,


for ERNEST Y. W. LAU, P.E.
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References Cited

Lau, E. Y. W. (2016). Letter to Mr. Bob Pallarino, United States Environmental Protection Agency (EPA), Mr. Steven Y.K. Chang, State of Hawaii, Department of Health regarding: Board of Water Supply (BWS) Comments Discussed with the United States Environmental Protection Agency (EPA) and Hawaii Department of Health (DOH) at the October 4 and 5, 2016 meeting to discuss the Work Plans Developed under Sections 2, 3, 4, and 8 of the Red Hill Fuel Facility Administrative Order on Consent (AOC) Statement of Work (SOW), November 4.

Lau, E. Y. W. (2017). Letter to Mr. Bob Pallarino, United States Environmental Protection Agency (EPA), Mr. Steven Y.K. Chang, State of Hawaii, Department of Health regarding: Board of Water Supply (BWS) Comments Pertaining to the Environmental Protection Agency (EPA) and Hawaii Department of Health (DOH) February 15, 2017 Administrative Order on Consent (AOC) Section 2, 3, 4, 5, and 8 Meeting, March 9.