BWS Comments #3 – 11/26/14

Red Hill Scope of Work
Regulatory Agencies' Must Haves

Technical

1. **Secondary containment and lining systems**
    a. Install current state-of-the art secondary containment and lining technology to comply with 40 CFR 280 and 281.

2. **Release detection, prevention and tank tightness testing**
    a. Install current state-of-the-art release detection and tank tightness technology to comply with 40CFR 280.
    b. Comply with all release detection methods and requirements in accordance with 40CFR 280 including § 280.43 (detect 0.1 gallon per hour from any portion of tank) and the following criteria.
        i. Once every 30 days, use an automatic tank gauging system able to detect a leak rate of one gallon per hour or less. At least every three years, combine automatic tank gauging with bulk tank tightness test that can detect a 0.2 gallon per hour leak rate
        ii. All bulk tank tightness testing must be capable of detecting leak rates with a probability of detection of 0.95 and a probability of false alarm of 0.05.
        iii. Underground piping of UST systems with field-constructed tanks meet the release detection requirements for hydrant piping described for Airport Hydrant Fuel Distribution Systems.
    c. Meet all corrosion protection, spill, and overfill requirements in accordance with 40CFR 280 including the new tank and piping performance standards described in § 280.20.
    d. Cathodically protect all tanks in accordance with a code of practice developed by a nationally recognized association or independent testing laboratory and meets the following criteria.
        i. Field installed cathodic protection systems must be designed by a corrosion expert; designed to allow for the determination of current operating status for impressed current systems; and operated and maintained in accordance with § 280.31.
        ii. All Tanks must be assessed to ensure they are structurally sound and free of corrosion holes prior to adding cathodic protection. The assessment must be by internal inspection or another method the implementing agency determines adequately assesses the tank for structural soundness and corrosion holes.
        iii. Internal lining is not allowed for meeting the corrosion protection upgrade requirement.

3. **Drinking water and groundwater contingency and monitoring plans**
    a. Refine existing plans to address plausible scenarios involving the contamination of existing drinking water production wells / shafts from past and any future releases at the Red Hill facility.

b. Install a network of groundwater monitoring wells equidistant between the Red Hill Facility and all existing municipal potable water wells/shafts and sample them quarterly to detect and monitor contaminant migration toward these sources including migration occurring within and beyond the boundary of the Facility.
c. Graphically plot and track all water quality data collected at the Facility by monitor well location and by contaminants detected. Analyze the graphs for water quality data trends, correlation with past fuel releases, interrelationships between wells and groundwater flow, need for the installation of additional monitor wells, changes to sampling frequency and testing sensitivity and scheduling changes.
d. Conduct a scientific peer review and evaluation of the sampling and test methods and detection limits presently used by the Navy and develop a uniform standardized groundwater testing protocol.
e. Analyze all water samples for all constituents, water sampling, laboratory quality control requirements and method reporting limits specified under the following test methods.
    i. EPA 1671
    ii. EPA 200.7
    iii. EPA 200.8
    iv. EPA 245.1
    v. EPA 300.0
    vi. EPA 504.1
    vii. EPA 505
    viii. EPA 524.2
    ix. EPA 524.3
    x. EPA 525.2
    xi. EPA 625
    xii. EPA 625/ EPA 8270
    xiii. EPA 8015
    xiv. EPA 8260B
    xv. SM 2320B
    xvi. SM 2510B
    xvii. SM 2540C
    xviii. SM 4500-H+B
    xix. SM 8015B
f. Conduct all tests using current and approved EPA Safe Drinking Water Act (SDWA) and approved test methods or EPA authorized and approved equivalent test methods.
g. All laboratories performing water testing must be certified to perform drinking water analyses by the State of Hawaii Department of Health (DOH), the National Environmental Laboratory Accreditation Program (TNI), the laboratory's home state, California and Arizona and approved by EPA, DOH and BWS. The laboratory shall also be UCMR3 approved by EPA for all List 1 and List 2 methods.
h. Conduct a health effects study to assess the toxicological impact of low level concentrations of petroleum chemicals in ground water and sources of drinking water; determine the acute and chronic human health significance of these low level concentrations in drinking water applying scientifically valid health risk and safety analysis methodologies; and perform critical, weight-of evidence assessments related to estimations of health risks and safety for humans exposed to chemicals in drinking water, residents and the environment.

4. **Conceptual and numerical groundwater and vadose models to predict flow and contaminant transport**

    a. Refine existing models using available and new data to predict transport of contaminants in the groundwater and vadose zones from past and future releases.
    b. Determine the rate and direction of the ground water contaminant movement and assess the impact on neighboring potable water wells and include ground water monitoring well contaminant data in the assessment to determine the overall condition of the aquifer.
    c. Perform the modeling studies in coordination with EPA, DOH, BWS, U.S. Geological Survey and the State of Hawaii Commission on Water Resources Management (CWRM).

5. **Investigate and remediate past releases**
    a. Investigate the impact of past fuel releases and remove or treat in place hydrocarbon contamination released from the Red Hill facility in a manner that does not exacerbate current contaminant movement or jeopardize the integrity of the Red Hill fuel storage infrastructure.
    b. Conduct a site characterization to define and understand the nature and extent of past fuel release contamination in the groundwater underneath and beyond the boundaries of the Red Hill Facility that includes but not be limited to the following steps.
        i. Identify and characterize the horizontal and vertical extent of plumes and other dissolved contaminants in ground water.
            1. Velocity of contaminant movement
            2. Concentrations of hazardous constituents
            3. Factors influencing plume movement (environmental setting)
            4. Extrapolation of future movement (modeling)
        ii. Soil contamination (unsaturated vadose zone characterization)
            1. Horizontal/vertical extent of contamination
            2. Soil/contaminant properties (environmental setting)
            3. Concentrations of hazardous constituents
            4. Extrapolation of future movement (modeling)
        iii. Graphically display and model all results
            1. Isopleth maps showing concentrations of contaminants laterally/vertically away from source
            2. Line/bar graphs to show concentrations of contaminants away from source
            3. Vertical profiles (cross sections)
            4. Lateral/vertical extent of contaminant and /or plume direction
            5. Three-dimensional data plots to show lateral and vertical extent of contaminant plumes
        iv. Examine impacts to Potential Receptors
            1. Identify potentially affected human populations
            2. Identify potentially affected environmental systems
            3. Propose plan to fully describe human populations/environmental systems

4. Determine where interim measures/presumptive remedies can be used
5. Assess impact to human populations and adjacent land use
6. Examine demographic profiles (age, sensitive subgroups, etc.)

v. Assess impacts to groundwater use
1. Drinking (residential/municipals wells, etc.)
2. Industrial use
3. One-mile radius

vi. Assess impacts to surface water use
1. Drinking (municipal intakes, etc.)
2. Recreation
3. 1.5-mile radius
4. Access to facility

vii. Examine environmental system impacts
1. Local ecology
2. Surface water/wetland biota
3. Endangered/threatened species

c. Mitigate existing contamination underneath the tanks starting with the area adjacent to Red Hill ground water monitor well #2 to contain and prevent contamination from extending beyond the current location.

6. **Tank Integrity, Inspection and Repair**
   a. Implement tank inspection and repair procedures utilizing current state-of-the-art technology within the next five years
   b. Corrosion and metal fatigue control – Refine procedures in order to control corrosion and metal fatigue.

7. Catastrophic Release Prevention and Emergency Response
   a. Develop a catastrophic release emergency response plan in coordination with the City and County of Honolulu Department of Emergency Management, the Hawaii Emergency Management Agency and the Honolulu Board of Water Supply.
   b. Reinforce the facility to mitigate the potential of large releases and risk of groundwater contamination resulting from a large seismic event.
   c. Install oil tight and high pressure doors in the lower access tunnel and a 24/7 surveillance, emergency alarm and automatic fuel containment system.

Procedural

1. **Commenting on proposed workplans and draft deliverables** – The regulatory agencies will be given an opportunity to review draft deliverables and workplans in a manner allowing for sufficient time to provide comments and allow for changes in planned work and contracts.

2. **Approval of final workplans and final deliverables** – The Navy will obtain approval of final workplans and deliverables from the regulatory agencies.

3. **Schedule –** Establish an enforceable schedule for implementation of the AOC, including the completion of deliverables.

4. **Creation of a Document Repository** –Create a repository of key ongoing and historic environmental related documents for Red Hill.

5. **Technical Advisory Committee** – Establish a committee of interested stakeholders (including the regulatory agencies, the Navy, the Honolulu Board of Water Supply, and others) that provides a forum for technical discussion and compliance oversight of the work under and in accordance with the AOC and the opportunity to review and comment on deliverables.