

March 2024 Response To Comments (DOH and EPA) – Updated Consolidation and Optimization of the Groundwater Sampling Programs, Red Hill Bulk Fuel Storage Facility

Reviewer: DOH/EPA

Detailed Responses to EPA’s March 04, 2024 Letter regarding comments to Consolidation and Optimization of the Groundwater Sampling Programs (Dec 2023)

Item #	Section No.	Comments
1.		EPA requests that the Navy resume per- and polyfluoroalkyl (PFAS) groundwater sampling. Details will be provided under separate cover.

Response: The Navy has forwarded your request for continued PFAS testing to higher echelons within the Navy for their decision, and your patience is appreciated as we work to provide answers to your comment.

2.		Appendix A of the May 2023 Plan indicated that the Navy discontinued sampling at multiple locations without RA concurrence. The Navy should resume sampling these locations. Moving forward, the Navy must coordinate with the RAs before removing specific analytes, discontinuing sampling at specific locations, or implementing other substantive revisions to the Red Hill Consolidated Sampling Program.
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Response: Two (2) OWDF wells (OWDFMW03A and OWDFMW08A) were added to the Consolidated Sampling Program to provide improved sampling coverage and to evaluate potential uncontrolled migration of fuel-related COPCs to the northwest of Red Hill Shaft.

These wells were added to Figure 1 and Table 2 along with the wells that were recently completed. OWDFMW03A and OWDFMW08A are adjacent to the Facility property boundary and are screened relatively closer to the basal water table (top of screen at -19.86 msl and -6.54 msl, respectively compared to the approximate basal water table surface of 17 to 18 ft msl in the study area) than OWDFMW06A and OWDFMW07A (top of screens set to -72.81 and -103.89 ft msl).

3.		Further coordination is needed on the appropriate sampling frequency for select analytes, including PFAS analytes, trimethylbenzenes, 2-(2-butoxyethoxy) ethanol, 1-(2-methoxyethoxy)-ethanol, and additional potential contaminants.
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Response: The Consolidated Groundwater Sampling Plan (CGSP) now includes monthly analysis for 1,2,4- and 1,3,5- trimethylbenzenes for which the Navy’s primary lab is properly certified. No labs are currently certified by the DoD Environmental Laboratory Accreditation Program (ELAP) for other tri- and all tetra-methylbenzene analysis. 2-(2-methoxyethoxy)-ethanol has been and will continue to be sampled quarterly. A footnote indicating “As additional contaminants of concern (COCs) are identified (cleaning agents, additives, etc.), analytes will be added to the Red Hill Consolidated Sampling Program.” has been added to Table 1.

The Navy has forwarded your request for continued PFAS testing to higher echelons within the Navy for their decision, and your patience is appreciated as we work to provide answers to your comment.

4.		The Navy should provide a sampling protocol for light nonaqueous phase liquid (LNAPL), commit to collecting a LNAPL sample if observed, and coordinate analysis with the RAs.
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Response: Instructions have been added to Sections 3.1 and 3.2 to describe how LNAPL will be sampled, analyzed, and evaluated, if it is observed in bailer samples. The observation of LNAPL in bailer samples has been added to Section 3.4.5 as a line of evidence for response actions. Section 3.6 has been revised to indicate that bailer samples will be collected prior to low-flow sampling with the rationale that if LNAPL or a sheen is observed, the groundwater sample will not be collected. Instead, the sheen or LNAPL in the bailer sample will be analyzed for fingerprinting by Saturated Hydrocarbon analysis (fuel forensics method).

5.		EPA reiterates its request that the Navy both clarify the decision criteria for silica gel cleanup (SGC) use, and report pre-SGC data to the RAs and the public.
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Response: SGC and pre-SGC results have been and will continue to be reported in EDMS and Safe Waters. CGSP, Table 1 was revised to indicate that SGC will be conducted for TPH-d and TPH-o detections.

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6.		The Navy should commit to uploading Oily Waste Disposal Facility data to EDMS.
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Response: The Navy will take action through the Environmental Restoration, Navy (ER,N) program, which will upload final validated data to EDMS that does not contain CUI, such as well coordinates. To make the information understandable to the public, we will include a fact sheet that summarizes the data along with the validated data. Our intent is to brief the public during regularly scheduled Restoration Advisory Board meetings, but between the meetings the public will be able to view the fact sheet and validated data on the Safe Harbors webpage.

7.		In the Revised Plan and future plans, the Navy should keep Figure 1 current by including all existing and all proposed RA-approved wells that will be part of the Navy’s Consolidated Sampling Program.
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Response: Figure 1 includes all existing wells that are part of the Navy’s Consolidated Sampling Program. There have been and will continue to be periodic SME meetings to discuss future well locations, and plans such as the “Sentinel and Monitoring Well Installation Work Plan” will be developed accordingly. Section 3.5 indicates that as new wells are installed, they will be included in the Consolidated Sampling Program.

8.		<p>In the Revised Plan and future plans, the Navy should keep “Table 1: Consolidated Groundwater Sampling Program” current by including:</p> <ol style="list-style-type: none"> a. Additional recommended analytes and associated analytical methods, b. Contaminants of potential concern the Navy identifies during its investigation, c. Current DOH Environmental Action Levels (EALs), and d. Applicable EPA Regional Screening Levels, or EPA Maximum Contaminant Levels <p>EPA also notes that Table 1, Footnote C in the Revised Plan states that sampling would be discontinued at locations after one year’s worth of sampling show levels below DOH EALs. See Comment 2 above about coordinating changes to the sampling program with the RAs.</p>
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Response:

- The CGSP includes additional recommended analytes:
 - Method 8260 analysis for 1,2,4- and 1,3,5- tri-methylbenzenes for which the Navy’s primary lab is properly certified. No labs are currently certified by the DoD Environmental Laboratory Accreditation Program (ELAP) for other tri- and all tetra-methylbenzene analysis.
 - Pertinent fuel additives and lead scavengers are included, such as 2,2 MEE that will be sampled on a quarterly basis.
 - TEH by Method 8015M is included and will be sampled quarterly.
- A footnote indicating “As additional contaminants of concern (COCs) are identified (cleaning agents, additives, etc.), analytes will be added to the Red Hill Consolidated Sampling Program.” has been added to Table 1.
- MCLs and RSLs were added to Table 1 and footnotes were added to provide specific references for screening levels (revision dates, etc.).
- The Table 1 footnote “Discontinued if one year’s worth of sampling show levels are below DOH EALs [Environmental Action Levels].” has been removed. That sampling will continue for new wells and will be restarted for those wells that had discontinued its use.

9.		In the Revised Plan and future plans, the Navy should provide details on the volume of water to be purged when low-flow groundwater samples are collected, the water quality parameters to be measured, and the water quality measurements to be stabilized before purging is complete.
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Response: Sample collection methods including purging and stabilization of water quality parameters are detailed in Section 3.6.

10.		Section 2.6 of the Revised Plan commits to following RA guidance. The EPA guidance referenced in Footnote 3 is relevant for wells with no LNAPL and sites with an approved Conceptual Site Model (CSM) and established Data Quality Objectives (DQOs). Please update the CSM and DQOs in the pending Red Hill QAPP and SAP or equivalent portions of the Site Assessment Plan, and ensure that low-flow sampling is not used at wells that contain LNAPL.
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Response: CGSP Section 2.6 is now Section 3.6. Section 3.6 has been revised to indicate that bailer samples will be collected prior to low-flow sampling with the rationale that if LNAPL or a sheen is observed, the groundwater sample will not be collected. Instead, the sheen or LNAPL in the bailer sample will be analyzed for fingerprinting by Saturated Hydrocarbon analysis (fuel forensics method). The Site Assessment Plan will also contain similar procedures for sampling LNAPL.

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GENERAL COMMENT	Integration of PFAS and Petroleum Sampling	The Revised Plan makes no commitment to include PFAS data in its evaluation of Red Hill contaminant risk or fate and transport. This exclusion raises concerns that the PFAS and petroleum data will be “siloed” between programs and not holistically evaluated. Changes in the extent of PFAS contamination in Red Hill groundwater may therefore not be understood in a timely manner. The Navy should holistically evaluate all available PFAS data when considering Red Hill contaminant risk and fate and transport, ensuring that all data is promptly provided to the RAs and the public via existing Red Hill data platforms.
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Response: The Navy will take action through the ER,N program to provide final PFAS and OWDF validated data and boring logs without well coordinates to the RAs via EDMS. Validated data will also be posted to the JBPHH Safe Waters webpage

March 2024 Response To Comments (DOH and EPA) – Updated Consolidation and Optimization of the Groundwater Sampling Programs, Red Hill Bulk Fuel Storage Facility

Reviewer: DOH/EPA

Detailed Responses to January 29, 2024 DOH Comments to Consolidation and Optimization of the Groundwater Sampling Programs (Dec 2023)

1.	Section 2.1, Page 2	It is stated that field tests (e.g., headspace monitoring, fuel product thickness gauging, collection of field parameters during purging, etc.) will be conducted; however, there are no details as to how data will be reported to the RAs, what metrics will be used to evaluate whether there is potential contaminant plume migration during reduced flow conditions, and what actions will be taken if field measurements indicate the possibility of fugitive contamination. Provide these details in the revised submittal.
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Response: The sections have been renumbered in this revised plan. Text has been added to section 3.1: “Details on reporting and data evaluation procedures for field parameters are provided in Section 3.4.” See response to DOH Comment #2 below for additional details.

2.	Section 2.4, Page 7	<p>a. It is stated that twice-per-month field parameter data will be tabulated and compared against historical data to identify trends. It is then stated that this data will be provided to the RAs through EDMS (Electronic Data Management System); however, it is unclear how a trend analysis will be reported through EDMS. In what format will this be provided and exactly where will it be located in EDMS? In addition, please include a specified naming convention for these files (e.g., YYYYMMDD_trend analysis_parameter).</p> <p>b. The evaluation of the bailer head space reading, observations in the bailer sample, and identified trends in field parameter data should be included as lines of evidence indicating fugitive migration of contamination, as these data are the only real time indicators.</p>
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Response: Sections 3.4.1 and 3.4.2 describe how field test data, including trends, will be reported to the regulators via EDMS. The sections also provide a description of trend evaluation of selected field parameters and selected natural attenuation parameters and how that may provide data to assess plume stability/mobility as well as biodegradation.

Bailer headspace reading, observations in the bailer sample, and identified trends in field parameter data are included as lines of evidence in Section 3.4.5, item #5.

3.	Section 2.4, Page 8	<p>a. It is stated that verified field observations or validated laboratory data will be used to identify potential fugitive contamination migration; however, if unvalidated laboratory data indicates potential fugitive contaminant migration, then appropriate actions should be taken immediately as a conservative measure, not only when the validated data have been received. If the data are corrected following validation and no longer indicate potential fugitive migration, then the appropriate actions taken may be discontinued.</p> <p>b. Specify exactly what “appropriate actions” will be taken should one of the lines of evidence indicate that fugitive contamination migration may be occurring and presents an unacceptable risk to human health and/or the environment.</p>
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Response: Text was revised in this section (renumbered 3.4.4) to indicate that unvalidated COPCs will be used to evaluate trends and for decision-making regarding response actions. Trend deliverables will be revised once validated and response actions will be revised, if necessary.

Text has been added to indicate response actions (Section 3.4.5). If data indicates uncontrolled fuel related contaminant migration presents an unacceptable risk to human health and/or the environment. The Navy believes that each case should have its own response actions based on the data and location, rather than a broad solution applicable to every situation. These site/condition-specific solutions are best made in consultation with the RAs. As such, the plan has been revised to indicate the types of actions that could be undertaken in accordance with local, State, and Federal regulations. This may include specific immediate actions, such as increasing RHS pumping and GAC-filtered discharge rate to increase groundwater containment within the vicinity of RHS, increased sampling frequency (at the subject well and/or surrounding wells), or installing a pump and treat (or pump and containerize) system. Further evaluation of potential other remedial response actions could be developed by conduct a remedial alternatives analysis in accordance with the Section 18.5.12 of the DOH Technical Guidance Manual (TGM).

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4.	Section 2.5, Pages 8 and 9	Figure 1 is included three times. Revise accordingly.
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Response: Duplicates of Figure 1 have been removed from the document.

5.	Section 2.6, Page 10	As the agitation of the water column may cause a loss of volatiles, please state whether it is possible to collect a bailer sample with a dedicated pump in a monitoring well, or if it will need to be removed prior to collecting the bailer sample.
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Response: In Section 3.6, text states that the bailer sample will be collected without removing the sampling pump.

6.	Section 2.6, Page 11	<ul style="list-style-type: none"> a. Clarify whether the bailer sample will be collected prior to, during, or after low flow sampling, and provide the rationale for this. In addition, include details on the collection of the head space measurement. b. Provide details regarding the collection of low-flow groundwater samples instead of only referencing DOH and EPA recommended methodology (e.g., at what point will the samples be collected following purging, flow rate, etc.). c. Include screen interval, as well as the pump depth, for each of the groundwater monitoring wells.
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Response: Sections have been renumbered. Section 3.6 has been revised to indicate that bailer samples will be collected prior to low-flow sampling with the rationale that if LNAPL or a sheen is observed, the groundwater sample will not be collected. Instead, the sheen or LNAPL in the bailer sample will be analyzed for fingerprinting by Saturated Hydrocarbon analysis (fuel forensics method). Details of headspace measurements have been included including bailer jar headspace monitoring in Section 3.3.2.

Details of low-flow groundwater sampling methodology have been included in the text in Section 3.6.

Table 3 has been added that includes the screened interval and pump depth in feet below top of casing, for all wells.

7.	Appendix A, Page 13	The oily waste disposal wells (OWDF) should continue to be sampled under the Updated Consolidated Groundwater Sampling Plan to monitor for fugitive migration, in particular at least one of the OWDF groundwater monitoring wells to the west of RHS (e.g., OWDFMW03A, OWDFMW06A, or OWDFMW07A).
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Response: The Navy has included OWDFMW03A and OWDFMW8A to evaluate potential uncontrolled migration of fuel-related COPCs to the northwest of RHS. OWDFMW03A and OWDFMW08A are adjacent to the Facility property boundary and are screened relatively closer to the basal water table (top of screen at -19.86 msl and -6.54 msl, respectively compared to the approximate basal water table surface of 17 to 18 ft msl in the study area) than OWDFMW06A and OWDFMW07A (top of screens set to -72.81 and -103.89 ft msl). See Table 2, and Figure 1.

GENERAL COMMENT		We note that the Updated Consolidated Groundwater Sampling Plan does not address many of the RAs' comments provided in our July 31, 2023 letter. The DOH views the Updated Consolidated Groundwater Sampling Plan as an interim document until the Site Assessment Plan required for underground storage tank system closure, or the applicable portion of the Site Assessment Plan, is in place. Because the Navy does not plan to submit a Site Assessment Plan until June 2024, responses to the RAs' July 31, 2023 comments should be included in the next iteration of the Consolidated Groundwater Sampling Plan. The RAs may also provide additional comments on the Updated Consolidated Groundwater Sampling Plan under a separate cover that fall beyond the scope of the Navy's request to reduce RHS pumping. All of these comments must be adequately addressed before the Site Assessment Plan can be approved.
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Response: The following section provides specific responses to the RAs' July 31, 2023 comments.

March 2024 Response To Comments (DOH and EPA) – Updated Consolidation and Optimization of the Groundwater Sampling Programs, Red Hill Bulk Fuel Storage Facility

Reviewer: DOH/EPA

Detailed Responses to July 31, 2023 DOH/EPA Comments to Consolidation and Optimization of the Groundwater Sampling Programs (May 2023)

Item #	Section No.	Comments
GENERAL COMMENT		<p>Under the 2015 Administrative Order on Consent (2015 AOC), Attachment A, Section 7, the Navy is required to monitor and characterize the flow of groundwater and monitor possible contaminant migration around the Red Hill Bulk Fuel Storage Facility (RHBFSF). In accordance with Item 7 of the 2015 AOC (page 9), deliverables required by the 2015 AOC shall be submitted to the RAs for approval or modification. We therefore consider this a draft proposal subject to the RAs' approval prior to implementation. The RAs expect the Navy to continue sampling based on the previously approved Notice of Interest, long-term monitoring, and plume delineation sampling programs until the Consolidation Plan is revised to address the deficiencies mentioned below, and all parties approve the revised Consolidation Plan.</p> <p>The Consolidation Plan does not discuss increased groundwater sampling frequency, parameters, and analytical and sampling methods during the pipeline repacking, main tank and tank bottoms defueling, and pipeline unpacking activities. During the Red Hill Remediation Roundtable on June 8, 2023, the Navy indicated that increased sampling frequency would be discussed in the <i>Groundwater Protection Plan Update – Defueling Revision</i> (GWPP), dated June 26, 2023. Please reference the GWPP in the Consolidation Plan and state the GWPP includes changes the Navy will make to the Consolidation Plan during repacking, main tank and bottoms defueling, and pipeline unpacking activities.</p>

Response: The NOI sampling requirements expired on November 13, 2022, per the NOI extension letter sent to the Navy dated September 12, 2022. The AOC RA-approved long-term monitoring (LTM) plan (*Sampling and Analysis Plan, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Revision 01*) requires a quarterly sampling frequency and specific COPCs. The Consolidated Groundwater Sampling Plan (CGSP) maintains those LTM requirements. The Navy believes that the additional analytes from the expired NOI and more frequent sampling than quarterly is beneficial for assessing the aquifer below the RHBFSF. The CGSP reflects this and includes analytes in addition to those required previously by the NOI.

Increased sampling required by Defueling was covered by the Groundwater Protection Plan (GWPP) Update, Defueling Revision.

1.	Section 2.1, Sampling Program Integration, PDF Page 2 and Table 4, Sampling Matrix, PDF Page 6	<p>According to the Consolidation Plan transmittal letter, dated May 18, 2023, “[t]his plan consolidates all monitoring requirements associated with the 2021 fuel releases, the 29 November 2022 aqueous film forming foam (AFFF) release, and the original quarterly monitoring performed under the 2015 Administrative Order on Consent (AOC).” While the Consolidation Plan does include limited sampling of nine wells and the Red Hill Shaft for per- and polyfluoroalkyl substances (PFAS), it does not include sampling and analysis protocols for monitoring PFAS throughout the RHBFSF. Given the Navy’s commitment to address the RHBFSF PFAS investigation and response under an integrated process of both the Federal Facilities Agreement and 2015 AOC, the Consolidation Plan should include PFAS sample locations throughout the Red Hill well network to delineate the extent of PFAS at the site. Additionally, the RAs have yet to receive the Adit 6 removal action completion report that documents responses to PFAS releases, identifies data gaps, and uses this information to propose specific wells for sampling.</p>
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Response: The Navy has forwarded your recommendations and request for continued PFAS testing to higher echelons within the Navy for their decision, and your patience is appreciated as we work to provide answers to your comment.

The Red Hill Bulk Fuel Storage Facility Adit 6 AFFF Release Report was submitted on 6 February 2024.

2.	Section 2.1, Sampling Program Integration, PDF Page 2	<p>The Navy shall submit tabulated results in spreadsheet format and laboratory reports, validated or not, within 45 calendar days after sample shipment to the lab or 7 days after receipt of analytical results from the laboratory, whichever occurs first. Additionally, the Navy and Defense Logistics Agency (DLA) shall submit validated tabulated results in spreadsheet format and laboratory reports within 30 calendar days after receipt of analytical results from the laboratory.</p>
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Response: See Section 3.3.2 for text addressing comment 2. Results meeting the specified turnaround times will be made available in EDMS laboratory reports. Spreadsheets of validated results will be submitted in EDMS weekly.

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Item #	Section No.	Comments
3.	Section 2.2, Revised Analyte List	<p>a. PDF Page 2: In Section 2.2., also include “the 40 PFAS analytes associated with EPA Method 1633,” tri- and tetra-methylbenzenes, 2-(2-methoxyethoxy) ethanol, 2-(2-butoxyethoxy) ethanol, and other constituents associated with fuel additives, lead scavengers, and cleaning agents. Total extractable hydrocarbons (TEH) have typically been reported as part of the laboratory’s analysis of groundwater samples by 8015M. Please include the reporting of TEH. Many of these analytes are already included on Table 1 but should also be briefly discussed here. Clarify whether silica gel cleanup (SGC) will be used. If so, document the decision criteria the Navy will use to employ SGC, and state the pre-SGC data will be reported to regulators and the public.</p> <p>b. PDF Page 2: A backup analytical laboratory capable of meeting the identified turn-around times for reporting preliminary analytical results for all analytical and preparation methods should be identified. The backup analytical laboratory should be able to prepare data packages that include, at a minimum:</p> <ul style="list-style-type: none"> • Case narrative • Analytical results • Sample management record • Quality assurance/quality control information • Raw analytical data in ASCII (digital chromatogram) and Electronic Data Deliverable (EDD) files <p>c. PDF Page 3: Include an additional section or subsection that describes the steps to be taken in the event that evidence of petroleum product is observed during groundwater sampling or installation of new monitoring wells (e.g., observed sheen, petroleum odor, elevated field measurements, etc.). This should include deploying sheen samplers and the collection of a Liquid Non-Aqueous Phase Liquid (LNAPL) sample for laboratory analysis, where feasible. If an LNAPL sample is collected, prior to conducting laboratory analysis of the sample(s), the Navy and DLA must receive concurrence from the RAs regarding the appropriate laboratory analytical methods. These analytical methods will likely include but are not limited to:</p> <ul style="list-style-type: none"> • USEPA Method 8015M (gas chromatography-flame ionization detection [GC-FID]) • USEPA Method 8270E (semivolatile organic compounds [SVOCs] via gas chromatography-mass spectrometry [GC/MS]) • USEPA Method 8270M-Alkylated polycyclic aromatic hydrocarbons (PAHs) (GC/MS-selected ion monitoring [SIM]) • USEPA Method 8260M-Paraffins, Isoparaffins, Aromatics, Naphthenes, and Olefins (PIANO) (forensic method) <p>Note that, based on the results of the analysis, a more detailed investigation may be required. This would likely include comparing current analytical results to historic results, as well as evaluating Tentatively Identified Compounds, biogenic metabolites, etc. with respect to the site’s operational history.</p>

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Response:

In response to comment 3a, In Section 3.2:

- The Navy has forwarded your recommendations and request for continued PFAS testing to higher echelons within the Navy for their decision, and your patience is appreciated as we work to provide answers to your comment.
- The CGSP includes Method 8260 analysis for 1,2,4- and 1,3,5- tri-methylbenzenes for which the Navy's primary lab is properly certified. No labs are currently certified by the DoD Environmental Laboratory Accreditation Program (ELAP) for other tri- and all tetra-methylbenzene analysis.
- Pertinent fuel additives and lead scavengers are included in the CGSP, including 2,2 MEE that will be sampled on a quarterly basis.
- TEH by Method 8015M is included in the CGSP and will be sampled quarterly.
- Table 1 was revised to indicate that SGC will be conducted for TPH-d and TPH-o detections.

In response to comment 3b, in Section 3.1, the text has been added:

Finally, the Navy has contracted primary and secondary laboratories that are certified by the Department of Defense (DoD) Environmental Laboratory Accreditation Program (ELAP) for all analyses in the program and capable of providing the requested data packages within the required turnaround time.

In response to comment 3c, in Sections 3.1 and 3.2, text has been added to describe how LNAPL will be sampled, analyzed, and evaluated, if it were observed in bailer samples. In addition, the observation of LNAPL in bailer samples has been added to Section 3.4.5 as a line of evidence for response actions.

4.	Table 1, Consolidated Groundwater Monitoring Program (Fuel), PDF Page 4	<p>a. The following revisions need to be made:</p> <ul style="list-style-type: none"> • Include EPA Maximum Contaminant Levels and Regional Screening Levels (updated May 4, 2023). • Change the volatile organic compounds (VOC) analytical method to specify that EPA Method 8260 will be done via GC/MS. • Update the VOC analyte list to include methylbenzenes, especially tri- and tetra-methylbenzenes. • Specify that the PAHs analytical method EPA Method 8270 will include GC/MS - SIM. • Include periodic laboratory analysis of field parameters, particularly dissolved-oxygen content, for verification. • Footnotes: <ul style="list-style-type: none"> ○ Delete, "Discontinued if one year's worth of sampling show levels are below DOH EALs [Environmental Action Levels]." The Navy must receive the RAs' approval prior to removing analytes. ○ Add, "As additional contaminants of concern (COCs) are identified (cleaning agents, additives, etc.), analytes will be added to the Red Hill Consolidated Sampling Program." ○ Include the specific references for screening levels (revision dates, etc.). <p>b. Add total extractable hydrocarbons (TEH) via EPA Method 8015M.</p>
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Response:

The Navy has revised the CGSP to reflect the requested items:

- MCLs and RSLs from the latest version from the EPA, including the specific references for all screening levels are in Table 1.
- The analyte list has been updated to include 1,2,4- and 1,3,5 tri-methylbenzene.
- The CGSP has been updated to specify that EPA Method 8260 includes GC/MS and EPA Method 8270 includes GC/MS SIM.
- Some field parameters cannot be laboratory tested due to the 15-minute hold time requirement (temperature, pH, dissolved oxygen, and oxidation/reduction potential). Specific Conductance and Total Dissolved Solids are the only two remaining field parameters for which labs are DoD ELAP certified. These parameters have been added to Table 1 and will be sampled quarterly.
- Footnotes:
 - The footnote “Discontinued if one year’s worth of sampling show levels are below DOH EALs [Environmental Action Levels].” has been removed. That sampling will continue for new wells and will be restarted for those wells that had discontinued its use.
 - A footnote indicating “As additional contaminants of concern (COCs) are identified (cleaning agents, additives, etc.), analytes will be added to the Red Hill Consolidated Sampling Program.” has been added.
 - Specific references for screening levels (revision dates, etc.) have been added.
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The Navy is uncertain why total extractable hydrocarbons (TEH) via EPA Method 8015M is requested, as the CGSP already indicates using that method for TPH-g, d, and o and providing the calculated total TPH. However, we have added TEH to our analyte list.

5.	Table 2, Consolidated Groundwater Monitoring Program (PFAS), PDF Page 5	Make the following revisions: <ul style="list-style-type: none"> • Include EPA’s Regional Screening Levels (updated May 4, 2023). • Use the DOH’s current EALs (updated April 2023).
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Response: The Navy has forwarded your recommendations and request for continued PFAS testing to higher echelons within the Navy for their decision, and your patience is appreciated as we work to provide answers to your comment.

6.	Section 2.3, Optimize Sampling Frequency	a. PDF Page 6: Section 1 states “the Navy is consolidating Notice of Interest (NOI), Groundwater Long-Term Monitoring (GW LTM), delineation and sentinel wells, and per- and polyfluoroalkyl substances (PFAS) groundwater sampling programs into one comprehensive, optimized groundwater sampling program.” Section 2.3 discusses changing weekly NOI sampling to monthly and performing quarterly LTM sampling under the consolidated sampling program. However, neither section documents the current sampling frequency for GW LTM, delineation and sentinel wells, and PFAS groundwater sampling. Add a table that shows the current frequency of all groundwater monitoring. Clarify in Section 2.3 whether or not the Navy is proposing changes in frequency to GW LTM, delineation and sentinel well, and/or PFAS groundwater sampling.
		b. Table 4, PDF Page 6: In a letter submitted to EPA, dated April 10, 2023, the Navy committed to conducting a one-time sampling event of the Red Hill Shaft using drinking water test methods by June 30, 2023. In addition to sampling of the Red Hill Shaft via EPA Method 1633 as part of the monthly PFAS groundwater monitoring program, the Navy shall also collect and analyze a drinking water sample using drinking water test methods 533 and 537.1 and provide the validated analytical results to EPA and DOH.

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Response: The Executive Summary was revised to read: “The Navy has consolidated the previous weekly Notice of Interest (NOI), quarterly Groundwater Long-Term Monitoring (GW LTM), and twice-a-month delineation and sentinel well sampling into one comprehensive, optimized groundwater sampling program.” Section 3.3 provides details on the proposed sampling frequency, which includes continuing quarterly GW LTM sampling requirements, twice per month sampling of additional analytes during periods of reduced pumping, and inclusion of any new groundwater wells into the analyses after their initial sampling upon completion.

One-time sampling of the entry point to the Red Hill Shaft pre-chlorination spigot using the specified drinking water test methods was conducted on August 2023 and results are in EDMS.

The Navy has forwarded your recommendations and request for continued PFAS testing to higher echelons within the Navy for their decision, and your patience is appreciated as we work to provide answers to your comment.

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7.	Section 2.3, Optimize Monitoring Locations, PDF Page 7 and Figure 1, Groundwater Monitoring Well Sampling Locations, PDF Page 7	<p>Continue to sample all existing wells until the Navy meets with stakeholders to discuss the objectives of existing and proposed wells. The RAs disagree with deprioritizing most sampling locations because the existing well network is sparse, and there is an incomplete understanding of contaminant fate and transport from RHBFSF, as the original well locations were selected to meet very specific data collection objectives. In addition, there is concern that data from wells “in another sampling program” are not being utilized to evaluate the fate and transport of RHBFSF contaminants. The RAs are also concerned that many approved well locations are not being utilized and that new proposed locations do not fully meet the objectives for the approved locations.</p> <p>In 2022, subject matter experts (SMEs) from EPA, DOH, Honolulu Board of Water Supply (BWS), U.S. Geological Survey (USGS), Commission on Water Resource Management (CWRM), and Navy worked together to propose and prioritize new wells in locations that would meet specific objectives. Those objectives included:</p> <ul style="list-style-type: none"> • Delineate RHBFSF contaminant plumes • Assess groundwater flow patterns • Understand geology/lithology • Collect water quality data • Evaluate hydraulic data in response to pumping of the BWS Halawa Shaft • Monitor for early detection of potential contaminant migration toward the BWS Halawa Shaft <p>Understanding that field truthing and access constraints could hinder the construction of wells in specific locations, the SMEs created a figure with zones that would meet specific objectives. The Navy could alter a proposed well location, as long as the new location was within the zone where the well objective would still be met. However, over the past year, the Navy has moved proposed wells far from the originally approved locations, omitted important proposed wells from recent figures, and added new wells with unclear objectives.</p> <p>Figure 1 does not include the approved well locations and does not show which wells will be excluded from the Consolidation Plan. Update Figure 1 to show all existing wells and all RA-approved proposed wells. Use different symbology for wells the Navy is requesting not to sample under the Consolidation Plan.</p> <p>Also, revise Section 2.4 after meeting with SMEs from the RAs, BWS, USGS, and CWRM to identify data gaps and ensure the monitoring well network will meet data quality objectives, as requested in the RAs’ letter, “Sentinel and Monitoring Well Installation Work Plan Addendum,” dated June 26, 2023. This meeting should occur at the earliest practicable date.</p> <p>In addition, include all data generated from the installation and sampling of groundwater monitoring wells at the Oily Waste Disposal Facility in the Navy’s Environmental Data Management System. This data includes, but is not limited to, boring logs, analytical laboratory reports, tabulated data, chromatograms, geotechnical data, and EDD files. The use of this data when evaluating risk, contaminant fate and transport, and delineation of RHBFSF contamination will likely aid in providing a more thorough understanding of site conditions.</p>

Response: There have been and will continue to be periodic SME meetings to discuss future well locations, and plans such as the “Sentinel and Monitoring Well Installation Work Plan” will be developed accordingly. Those are separate efforts, and details will not be included in this CGSP. Section 3.5 indicates that as new wells are installed, they will be included in the Consolidated Sampling Program. Figure 1 has been updated to reflect which wells are included in the CGSP.

Two (2) OWDF wells (OWDFMW03A and OWDFMW08A) were added to the Consolidated Sampling Program to provide improved sampling coverage. These wells were added to Figure 1 and Table 2 along with the wells that were recently completed. Appendix A was revised.

The Navy will take action through the Environmental Restoration, Navy (ER,N) program to upload validated OWDF data and information to EDMS that does not contain CUI, such as well coordinates.

March 2024 Response To Comments (DOH and EPA) – Updated Consolidation and Optimization of the Groundwater Sampling Programs, Red Hill Bulk Fuel Storage Facility

Reviewer: DOH/EPA

Item #	Section No.	Comments
8.	Section 2.4, Optimize Monitoring Locations, PDF Page 7	<p>a. Include Public Water System sampling point 360001 (pre-chlorination spigot) at the Red Hill Shaft as an additional sampling location under the consolidated groundwater monitoring program to promote the consistency and repeatability of sampling and monitoring data. This sampling location was included under the previous NOI associated with the May 2021 release; however, it has not been included in the sampling program since November 24, 2021.</p> <p>b. Well redevelopment may be necessary to obtain water samples that best represent natural undisturbed hydrogeological conditions. Based on field observations and measurements collected during groundwater sampling, it is recommended that an assessment of each well be performed to determine whether it would be beneficial to redevelop the well. The assessment should include, but not be limited to, an evaluation of acceptable well turbidity, identification of potential sediment build-up, and a determination of whether chemical or biological material may be present within the well. Information surrounding well development parameters may be found in Procedure I-C-2, Monitoring Well Development, of the 2015 <i>Final Project Procedures Manual, United States Navy Environmental Restoration Manual, NAVFAC Pacific</i>.</p>

Response: The pre-chlorination spigot location was included as an additional sampling location. The CGSP was revised to provide instructions on how to evaluate whether further well development is necessary and to re-develop wells as required in Section 4 of the CGSP.

9.	Appendix A, Justification for Monitoring Location Changes, PDF Page 11	As mentioned above and in the RAs' June 26, 2023 letter, there should be a working meeting with the RAs and other stakeholders to discuss the objectives of wells and identify data gaps at the earliest date practicable. Continue sampling all wells until approval has been received from the RAs regarding the proposed changes.
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Response: There have been and will continue to be periodic SME meetings to discuss future well locations, and plans such as the "Sentinel and Monitoring Well Installation Work Plan will be developed accordingly. Those are separate efforts, and details will not be included in this CGSP. As new wells are installed, they will be included in the CGSP as referenced in Section 3.5.