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LETTER AND U S NAVY RESPONSE TO U S EPA REGION I AND RHODE ISLAND  
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT COMMENTS REGARDING DRAFT  
FINAL SAMPLING AND ANALYSIS PLAN DATA GAPS INVESTIGATION FOR SITE 10 TANK  
FARM 2 NS NEWPORT RI  
08/17/2011  
TETRA TECH NUS



## TETRA TECH

C-NAVY-08-11-4542W

August 17, 2011

Project Number 112G03019

Ms. Kimberlee Keckler, Remedial Project Manager  
U.S. EPA Region I  
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Boston, Massachusetts 02109-3912

Ms. Pamela Crump, Project Manager  
Office of Waste Management  
Rhode Island Department of Environmental Management  
235 Promenade St.  
Providence, Rhode Island 02908-5767

Reference: CLEAN Contract No. N62470-08-D-1001  
Contract Task Order No. WE30

Subject: Transmittal of Draft Final Sampling and Analysis Plan  
Data Gaps Investigation  
Site 10: Tank Farm 2, NAVSTA Newport, Rhode Island

Dear Ms. Keckler, Ms. Crump:

On behalf of Mr. Roberto Pagtalunan, U.S. Navy NAVFAC, Tetra Tech is providing to you each three copies (hard copy and electronic) of the draft final document referenced above for your review and comment. Attached to this draft final document are the responses to the EPA and RIDEM comments on the draft document.

In accordance with the FFA, we request that we receive concurrence or resolution of comments on this document by September 19, 2011, which is 30 days from the submittal date.

If you have any questions regarding this material, please do not hesitate to contact me.

Very truly yours,

Dabra I Seiken, CG  
Project Manager

DIS/lh

Encl.

c: T. Johnston, TtNUS (w/encl - cd only)  
P. Steinberg, Mabbett & Assoc. (w/encl - 2)  
K. Munney, USF&W (w/encl - cd only)  
R. Pagtalunan (w/encl - 2)  
S. Parker, TtNUS (w/encl. - 1)  
D. Ward, NAVSTA (w/encl. - 1)  
G. Glenn, TtNUS (w/o encl.)  
Site File, c/o G. Wagner, TtNUS (w/encl - cd only)  
File G03019-3.2 (w/o encl.) File G03019-8.0 (w/encl.)

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**NAVY’S RESPONSES TO THE U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)  
COMMENTS (DATED JUNE 3, 2011) ON THE DRAFT SAMPLING AND ANALYSIS  
PLAN (SAP), DATA GAPS ASSESSMENT, TANK FARM 2, NAVAL STATION  
NEWPORT, RHODE ISLAND**

Navy responses to the EPAs comments on the Draft SAP, Tank Farm 2, Naval Station Newport, Rhode Island (February, 2011) are presented below. The EPA comments are presented first (regular font) followed by the Navy’s responses (in bold).

**Letter Comment**

Soil removal was required at Tank Farm 4 or 5 to remove lead-contaminated soil impacted by battery storage and maintenance activities. Do any such facilities exist at Tank Farm 2? If so, investigation of that area should also be included in this SAP as a Category 1 area.

**Response: There is a battery backup area at Building 218. Building 218 (and Building 219) have working transformers. Although power to these buildings is presently shut off, it can be readily restored. Installation Restoration (IR) funding cannot be used to investigate/remediate active utilities.**

**Specific Comments**

Page

Comment

1) p. 4, Executive Summary a) In the penultimate sentence in the first full paragraph, please correct *inches* to *feet*.

**Response: The correction has been made.**

b) In the third full paragraph a Remedial Investigation Report is mentioned. Section 11.4.1 only discusses a SASE report. Please clarify the intent.

**Response: The SASE report will be prepared if risk screening of Category 1 data indicate a CERCLA risk assessment is not warranted. A Remedial Investigation Report will be prepared for the Category 1 Areas if the risk screening indicates a CERCLA risk assessment is warranted. The following sentence has been added to the end of Section 11.4.1 (Category 1 Decision Rule): “In this instance, the risk assessment will be performed and a Remedial Investigation (RI) report will be prepared.**

2) p. 10, Worksheet #5 Please change the organization chart to Kymberlee Keckler as the EPA RPM as in Worksheet #3.

**Response: The change has been made.**

3) p. 18, Worksheet #9 Regarding the comments for the November 17, 2010 scoping session, please determine if utilities are active because if they are not, sampling at the transformers should be included in this sampling plan.

**Response: Building 218 (and Building 219) have working transformers. Although power to these buildings is presently shut off, it can be readily restored. Installation Restoration (IR) funding cannot be used to investigate/ remediate active utilities.**

4) p. 19, Worksheet #9 Please correct the projected date of sampling to July 2011.

**Response: Navy will correct the year of projected date of sampling on one of the pages from 2010 to 2011. Due to delays, the projected date of sampling (Category 1 areas) is now November- December 2011 and Worksheet #9. Please also note that the Category 2 sampling will occur at a date to be determined. Worksheet #9 has been updated accordingly.**

5) p. 21, §10.3 The text at the bottom of the page discusses the discharge location of the tank ring drains stating the discharges are currently regulated and discharge to outfall #8. Please indicate where the ring drains previously discharged and if that/those locations have been previously investigated or when they will be investigated in this sampling program.

**Response: The ring drains did not drain/ discharge on Tank Farm 2. The ring drains previously drained directly to the OWS at the fuel loading area (FLA) prior to discharge to Narragansett Bay at RIPDES Outfall #008. This system was then modified by the Navy so that the ring drain water passed through tanks 9 and 10 at Tank Farm 1 prior to the OWS at the FLA and Outfall #008. This detail has been added to this section of the SAP.**

6) p. 33, §11.2.3 The last paragraph states that non-detected results greater than the PSLs will be treated as values less than the PSL for decision-making. Because the purpose of the sampling is to screen the site, the screening criteria should be selected to conservatively capture potential contamination rather than to eliminate potential contamination of concern. Therefore, this sampling and analysis program should be designed accordingly and non-detected results greater than the PSLs should be treated as exceedances or at a minimum as data gaps. Please edit the document accordingly.

**Response: The screening criteria and analytical methods were selected to conservatively capture potential contamination. Nonetheless, some chemicals have PSLs below the value associated with non-detects (the LOD or EDL). If a chemical has been previously detected in any medium at the site, or is detected at least at one location during this investigation, then it is more likely to be**

present at concentrations between the LOD and the PSL than if it has never been detected at the site. Accordingly, the first sentence in the referenced paragraph has been changed to the following:

**“For the purpose of making the decision identified in Section 11.4, non-detected results with associated values greater than the PSL will be treated as values that are less than the PSL if the chemical was not detected in site media during this investigation or in previous investigations; otherwise, such results will be assigned a value equal to one-half the LOD (or, for dioxins, one-half the EDL).”**

Regardless of the screening results, the project team may still determine that non-detects with associated values above the PSL create a data gap. As stated in the same referenced paragraph, the “limitations on data usability due to unmet sensitivity goals will be evaluated”, and the data usability assessment “will evaluate whether the inability to detect or quantify an analyte at levels equal to or less than the PSL has an adverse effect on decision making.” If so, the project team is to determine what steps should be taken. As stated in the Performance Criteria section (11.5.1), “The project team will review the data as part of the data usability assessment described in Worksheet #37. If any significant data gaps are identified, the Project Team will determine the next appropriate step.” To clarify further, the last sentence in the referenced paragraph in Section 11.2.3 has been changed to “... will evaluate whether the inability to detect or quantify an analyte at levels equal to or less than the PSL creates a data gap that has an adverse effect on decision making.”

Related to this comment is the issue of the appropriateness of the screening criteria selected for this project and used to determine the PSLs (lowest criteria for each chemical). The EPA protection of groundwater soil screening levels were originally included as screening criteria because they may be used during a risk assessment in the evaluation of the potential for chemical migration from soil to groundwater. However, these screening criteria would not be used to screen for contaminants of potential concern that are used to determine potential human health risks for site media. Therefore, they are not appropriate for the risk screening purposes of this project or for determining the analytical methods needed and so have been removed. The effect will be to eliminate some of the chemicals for which the PSL is lower than the LOD.

7) p. 34, §11.3

Please clarify how the boundaries for the four Category 1 AOCs were established and transferred to the field. Data previously collected would have provided little insight regarding the boundaries because no

exceedances of screening values were reported.

**Response: Boundaries were based upon mapped areas of the AOC as provided in the Site Investigation and Remedial Action Report ((TtEC, 2006). The boundaries in the SIRAR were based upon aerial photography. Section 11.3 has been clarified to this point.**

8) p. 34, §11.3.1

Regarding the third paragraph that discusses groundwater impacts, it is not apparent from review of Figures 2 and 3 that relevant groundwater monitoring wells are located in positions that would detect contamination from the Category 1 AOCs. Therefore, supplemental groundwater monitoring wells is necessary to confirm the absence of groundwater impacts from the Category 1 AOCs especially where the soil screening level concentrations are exceeded.

**Response: Figures 2 and 3 have been updated to show the groundwater elevation contours that show groundwater monitoring wells around the Category 1 AOCs. The contours show that the wells are downgradient of the AOCs. Supplemental groundwater monitoring is therefore not necessary.**

9) p. 35, §11.4.1

No site-specific background data are available for PAHs and dioxins for the site and it is not appropriate to eliminate contaminants at this stage of investigation based on literature background values. Decisions for these contaminants in the Category 1 AOCs should be made without consideration to background and if background concentrations appear to be potentially relevant then further discussions and actions potentially including conducting a background study would be appropriate.

**Response: The background dataset from the literature provided for PAHs and dioxins will not be used at this time to eliminate contaminants. The Draft Final SAP has been amended to reflect this change.**

10) p. 45, Worksheet 15a

This worksheet identifies RIDEM's upper concentration limit (UCL) as the project screening level for a number of the listed analytes. The UCL was selected as the lowest applicable RIDEM criterion primarily because no specific leachability or direct exposure value was available in the RIDEM regulations. However, RIDEM's requirement to achieve an excess lifetime cancer risk of no more than  $1 \times 10^{-6}$  and a cumulative excess lifetime cancer risk of no more than  $1 \times 10^{-5}$  must be satisfied for Category 2 locations. Similarly, the non-cancer thresholds for RIDEM must also be satisfied. It is not apparent that the UCL concentrations especially when applied to surface soil achieve these thresholds and therefore they may not be acceptable project screening levels especially if multiple contaminants are present. A more in-depth analysis appears warranted depending on the results of the analyses.

**Response: Comment noted. Please also see response to RIDEM comments #10 and #16 where Navy agrees to use EPA MCLs, RIDEM RDECs and Eco SSLs in determining PSLs for Category 2.**

- 11) p. 79, Worksheet #27 Please correct the typos in the last sentence under Field Duplicates. Change *TF4* to *TF2* in two places. Also correct the example under Rinsate Blanks: *081* should be *0811*.

**Response: The corrections have been made.**

- 12) p. 97, Worksheet #30 Please correct the following methods to be consistent with the methods specified in Worksheet #19: change *8015D* to *8015C* in two places; and delete *6010C*.

**Response: The changes have been made.**

- 13) p. 105, Worksheet #36 Please correct the following methods to be consistent with the methods specified in Worksheet #19: change *8015D* to *8015C*; and delete *6010C*.

**Response: The changes have been made.**

- 14) Figure 4 To be complete, this conceptual model should also include airborne migration of sludge burning byproducts, although the potential impacts of that, if any, are not investigated in the scope of this SAP.

**Response: This pathway has been added to the figure.**

- 15) Figure 5 The earlier sampling locations have been sampled only with Petroflag screening, so those results do little to characterize the AOC for PAHs, dioxins, and metals. Also, there is concerned that most proposed sample locations (five of seven) are actually outside of the AOC boundary, therefore the proposed sampling plan would have only two locations within the AOC where analyses are available for the contaminants of concern. This is not acceptable to EPA. Please add sampling locations in the center of each of the four grid squares to better characterize soil within the AOC boundary. Use those four samples plus TF2-SB1006 to characterize the AOC and consider holding the proposed peripheral samples until the analytical results for the five samples within the AOC have been assessed to determine if analysis of the peripheral samples is required to define the extent of contamination.

**Response: Four additional sampling locations have been added, as suggested.**

- 16) Figure 6 The same concerns expressed for AOC-001 in Figure 5 are present for the sampling plan for AOC-003. The only previous sampling results are for Petroflag screening and DRO analysis. Therefore, please add

sample locations at the center of each grid square and at the center of the AOC. Those three locations plus locations TF2-SB1008 and TF2-SB1011 should be used to characterize this AOC. Consider holding the proposed peripheral samples until the analytical results for the five samples within the AOC have been assessed to determine whether analysis of the peripheral samples is required to define the extent of contamination.

**Response: Three additional sampling locations have been added, as suggested.**

17) Appendix A, Table A-1a) This table has a column labeled “Exceedances,” but there is no indication provided as to what criteria were exceeded. Please indicate what the exceedance criteria were for each area discussed.

**Response: Tables A3.1 through A3.13 include criteria that were used for comparison. To clarify, a note has been added to Table A-1.**

b) Several areas are said to have had significant staining, but they have not been identified as areas where open burning occurred and are not proposed for further sampling. Please clarify how which areas had open burning and which did not was determined. Aerial photography alone is not definitive enough to rule out open burning. Why wouldn't the same operations have been performed at each of the tanks? What is different about the tanks where open burning has been identified?

**Response: Aerial photography is not being used to rule out open burning. It was previously used as one line of evidence to identify potential AOCs. Throughout the years, numerous lines of evidence were used by the Navy and DESC in an effort to search for potential releases of contaminants to the environment. There is no indication that burning occurred in locations other than those selected for investigation in the SAP.**

18) Appendix A, Table A-3.1 This table indicates that well GZ-226 was sampled on March 11, 2005, but Table A-2 does not include GZ-226 in the list of wells sampled March-May 2005. Please correct.

**Response: The correction has been made.**

19) Appendix A-4

This appendix suggests literature-based background concentrations for PAHs and dioxins in soil for use at Tank Farm 2. The proposed values for PAHs are based on samples collected from urban areas much larger and more densely populated than that in the vicinity of Tank Farm 2. Further, the proposed background values result in a potential cumulative risk for industrial exposure in excess of RIDEM's criterion of  $1 \times 10^{-5}$  excess lifetime cancer risk based on Regional Screening Level

concentrations. Decisions for these contaminants in the Category 1 AOCs should be made without consideration to background and if background concentrations appear to be potentially relevant, then further discussions and potentially a background study would be appropriate.

**Response: It is agreed that decisions for these contaminants in the Category 1 AOCs will be made at this time without consideration to background. The text has been updated to reflect this and Appendix A-4 has been removed. If background appears to be relevant, further discussions will occur.**

20) Appendix B, Table B-2 There is inconsistency between this table and Table B-1. Table B-1 assumes residential exposure, but Table B-2 assumes industrial/commercial exposure only. Please explain this difference or make the exposures consistent.

**Response: For risk assessment purposes, the Category 1 PSLs are based upon residential exposure so data will be sufficient to perform a CERCLA risk-assessment for these areas. Category 2 areas are regulated under RIDEM and a CERCLA risk-assessment will not be performed in these areas. Please note that based upon RIDEM comments, PSLs for Category 2 areas have been modified in the Draft Final SAP.**

21) Appendix E-2, p. L-2-2 At the bottom of the page, reference is made to 4°C, but the SAP indicates that 6°C is the target sample temperature. Please correct.

**Response: The reference has been changed to “≤ 6 °C”.**

**NAVY'S RESPONSES TO THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT (RIDEM) COMMENTS (DATED APRIL 12, 2011) ON THE DRAFT SAMPLING AND ANALYSIS PLAN (SAP), DATA GAPS ASSESSMENT, TANK FARM 2, NAVAL STATION NEWPORT, RHODE ISLAND**

Navy responses to the RIDEMs comments on the Draft SAP, Tank Farm 2, Naval Station Newport, Rhode Island (February, 2011) are presented below. The RIDEM comments are presented first (regular font) followed by the Navy's responses (in bold).

**General Comments:**

1. Releases from tanks and other sources have been documented at the site. Please implement the work as outlined in the 2007 Work Plan submitted as an attachment to RIDEM's response to comments for Tank Farm 3 submitted on March 23, 2011.

**Response: The 2007 work plan referenced above is a rough draft email copy of a work plan with no indication that it was finalized or agreed upon. The major components contemplated in the 2007 rough draft work plan are:**

- 1) **Investigation of the petroleum distribution piping and associated pipe chambers.**
- 2) **Investigation of potential sludge pits.**

**Please note that investigations contemplated in the 2007 email work plan were previously performed:**

- 1) **The investigation of the petroleum distribution piping and associated pipe chambers was previously completed by DESC and is documented in GZA's May 1998 Site Investigation Report. Also see response to #7 below.**
- 2) **The investigation of potential sludge pits (and their remediation) was completed by DESC and is documented in TtECs 2006 Site Investigation and Remedial Action Report (SIRAR).**

**Both of these investigations were performed under RIDEM regulations and RIDEM oversight. Identified releases were investigated/ remediated. There are no outstanding RIDEM comments on these reports. The Navy considers the investigations of the piping and pipe chambers and the suspected sludge pits to be complete.**

2. Please submit, as part of the response to comments, a series of figures containing cross sections and plan views of the site, showing the location of soil and groundwater sample results (TPH, total SVOCs, etc.) and historical presence of free product including sheens.

**Response: Navy does not find it warranted to prepare a series of figures, as requested. However, it should be noted that if RIDEM wants to generate such figures, the necessary information that would be required has been included in the SAP. Analytical data is provided in Appendix A; boring logs in Appendix H, and historic LNAPL detections in Appendix A (Tables 3.1 to 3.13). In addition, RIDEM has all of the reports on Tank Farm**

**2 that the Navy used to develop this SAP, so if RIDEM requires additional information not included in the SAP; it is available in RIDEM files.**

3. Free product was observed flowing into the drainage sump pit at the bottom of the pump chamber for Tank 23. Please include an inspection of the pump chambers, including sumps, for signs of a release as well as any other potential sources of contamination. Please modify this SAP accordingly.

**Response: Navy does not have documentation of observation of product flowing into the drainage sump for the pump chamber at Tank 23. DESC has investigated possible contamination adjacent to and downgradient of the pump chamber for Tank 23. Monitoring well GZ 305 and GZ-216 are downgradient (groundwater flows westerly beneath this portion of the site) of the pump chamber and there were no exceedances of groundwater screening criteria in these locations. Furthermore, there was no TPH detected in a soil sample collected from B-4 adjacent to the sump. (see Table A.3.5 in Appendix A of the SAP). Therefore, it appears that there was no impact from this pump chamber, and oil that may have existed in the chamber was cleaned out twice, as discussed in the next paragraph.**

**The tanks, and the piping that connects the tanks, and appurtenances at Tank Farm 2 have been cleaned/inspected twice. The Tank Closure Report (GZA, 1998) documents tank cleaning that included cleaning of pumps, interior pipelines, vaults (including oil water separators inside the vaults). The Remedial Action Report (FwEC, 2002) documents cleaning done under an approved work plan. During this second phase of cleaning USTs, piping chambers and vaults were cleaned again and inspected. In addition, as documented in the Site Investigation Report (GZA, 1998) and the Work Plan for Site Closure (FwEC, 2003), each pump chambers has at least one groundwater monitoring well adjacent to it and has soil samples collected adjacent to it. One release in the vicinity of Tank 25 was addressed and is documented in the SIRAR (TtEC, 2006). Data from the groundwater samples collected from these wells and the soil collected near the vaults do not indicate a release that has not been addressed. The data indicate the pump chambers have been adequately characterized, inspected, cleaned and remediated. All of the above referenced reports are on file with RIDEM and RIDEM oversaw these activities.**

4. Please propose in this SAP to collect a representative number of samples from along the fence line to be analyzed for TPH, lead and arsenic. At a minimum, collect one sample from each side of the fence (north, south, east, and west).

**Response: No indication of a release along the fence line has been found. Navy does not plan to sample along the fence line.**

5. Firefighting foams were known to contain chlorinated compounds. Foam Storage Buildings 105 and 104 are located west of the southern access road and north of the eastern access road, respectively. Please add these buildings to the areas to be investigated and sampled for releases of chlorinated organic compounds and lead.

**Response:** Navy researched these locations and these buildings are not on Tank Farm 2. Both of these buildings were historically constructed for fire protection. They used to house fire fighting and foam *equipment* which hung from the ceiling. This equipment was quickly mobilized onto trucks in the event of a fire. Building 104 is no longer owned by the Navy but was transferred to the Town of Portsmouth in the early 1980s. In the mid-1980s, Building A105 was also used to store drums of hazardous waste. Building A105 was subsequently cleaned and closed per RIDEM requirements.

6. The fuel distribution line/bottom sediment and water lines that transverse the tank farm contain a number of gate boxes or control valves. Please modify this SAP to include the investigation and sampling of these areas.

**Response:** The gate boxes/ control valves, along with the fuel distribution lines, have been investigated and remediated. As documented in GZA's May 1998 Site Investigation Report, a soil investigation was conducted along the pipelines in 1997 with the completion of soil borings B-1 through B-35 and additional soil samples collected during advancement of borings for monitoring well installations (Figure 2 of SAP). This investigation included borings at/near the gate boxes and control valves (Figure 2), and at regular intervals along the pipeline. B-series borings were completed to a depth of 10-12 feet and a soil sample was collected immediately below the distribution line and analyzed for TPH. Soil samples from boring for wells were collected from various depths. The analytical data are summarized in Appendix A of the SAP.

Not only have the pipelines and gate boxes been investigated they have also been cleaned/inspected and grouted twice. Navy considers investigation and remediation of the fuel distribution pipeline and gate boxes/ control valves complete. The tanks and the piping that connects the tanks and appurtenances have been cleaned/inspected twice. Please also see the Navy's response to general comment 1.

7. All figures show the Newport Naval Cable TV area as outside the Tank Farm 2 property boundaries. However, this area is considered part of the Tank Farm 2 property. Please revise the figures to show this area within the Tank Farm 2 property boundaries.

**Response:** The Newport Naval Cable TV Area is not part of Tank Farm 2. Revisions to the figures are not needed.

8. Based upon the location of the JP-5 soil piles as shown in Figure 2, the area of the JP-5 soil piles extends to the access road located to the east. According to the figures showing test pit locations in this area in the *Draft Site Investigation and Remedial Action Report for Tank Farm 2 (July 2006)*, the test pits do not appear to cover the entire area, particularly in the northern section. Please explain this discrepancy and investigate as necessary.

**Response:** The location of the JP-5 soil pile, as shown on Figure 2, does not extend across the access road to the east. The entire area is covered.

During the SIRAR, the test pits excavated by DESC in the JP-5 soil pile area included the areas AOC-022, -026, -033, -034, -035, and -036. The investigation/ remediation were

performed under a RIDEM approved work plan. To cover large areas of the AOCs, long linear test pits were excavated. Soil samples from those AOCs were analyzed for gasoline-range fuel oil (GRO) in addition to the usual diesel-range fuel oil (DRO) because the presence of a JP-5 pile noted in an aerial photograph.

GZA subsequently installed monitoring well GZ-215 in this area. Soil and groundwater samples have been collect in this area and the groundwater has been gauged for LNAPL. The results are provided in the SAP (Appendix A, table A-3.13). There have been no exceedances of applicable screening criteria or the cleanup goal in this area and no indications that greater contamination is present. No further investigation is warranted.

9. As noted in previous comments on the *Work Plan for Site Closure of Tank Farm 2 (Sep 2003)*, buoys were stored on the northern end of the site. The buoys and associated submarine netting were known to contain anti-corrosive grease as well as lead paint. Please indicate if this area was investigated and if not, please revise this SAP to include sampling in this area for TPH and lead.

**Response: This area has not been investigated by the Navy and has not been reported as an area that was investigated by the DESC. A release from this area has not been documented. Sampling in the buoy storage areas is not planned.**

10. The *Site Investigation and Remedial Action Report* does not appear to contain the results of the investigation and sampling of the catch basins and drainage swales as per DLA's response to RIDEM's comment #26 on May 23, 2005. If this sampling was conducted, please include the results in this SAP, and in the response to comments. If the sampling was not conducted, please modify this SAP to include the investigation and sampling of these areas.

**Response: The investigation described in DLA's response to RIDEM's comment #26 does not appear to have been performed. Navy agrees to discuss this issue further with RIDEM.**

#### **Specific Comments:**

1. Page 4, Executive Summary; 2<sup>nd</sup> Paragraph, 4<sup>th</sup> and 5<sup>th</sup> sentences.

*"Soil samples will be collected using a drill rig or direct-push methods, at depths of 0 to 1, 2 to 4 and 8 to 10 inches. Groundwater samples will not be collected in these areas because groundwater has been monitored, and results did not suggest contamination migration from soil to groundwater."*

Please change "inches" to "feet". RIDEM requests that soil samples be taken in the 0 to 2 foot interval. In addition, please collect sub-surface soils at depths exhibiting the highest evidence of field contamination. Please collect continuous split-spoon samples two feet into the historical low water table. Also, please collect groundwater samples at these areas.

**Response: The referenced listing of "inches" has been changed to "feet".**

The referenced text refers to areas within Category 1, where soil data potentially will be used for CERCLA-type risk assessment. In order to provide data that would be usable for risk assessment, the soil depth intervals of interest are those set forth by USEPA policy for risk assessment to define surface soil (0 to 1 foot bgs) and subsurface soil (1 to 10 feet bgs or to top of bedrock, whichever is shallower). Soil samples will be collected from the 0 to 1, 2 to 4 and 8 to 10 foot intervals, assuming bedrock is deeper than 10 feet, to provide representative data for surface and subsurface soil.

Continuous split-spoon samples will be taken from the ground surface to the bottom of the boring (10-feet). If visual or olfactory evidence of contamination in an interval that was not targeted for analysis, the sample interval may be adjusted in the field to collect the sample from the interval suspected of contamination.

**Groundwater sampling is not warranted at this time.**

2. Page 4, Executive Summary; 3<sup>rd</sup> paragraph.

*“New monitoring wells will be installed and sampled and existing monitoring wells will be sampled. Monitoring wells will be gauged for NAPL. Soil samples will also be collected from each new boring.”*

Please collect continuous split-spoons to two feet into the historical low water table for each new boring. Please collect samples from the zones which exhibit the highest field evidence of contamination. If no field evidence of contamination exists, please collect the soil sample at the soil/groundwater interface.

**Response: The Navy agrees to collect soil samples two feet past the historic low water table, as based on the water table elevation data available to the Navy, or to refusal, whichever comes first. Details about the depth intervals for soil sample collection are not provided in the Executive Summary for brevity reasons, but they are provided in Worksheets #17, and #18. Continuous split-spoon or direct push sampling will be conducted. Two soil samples will be collected – one from the 2-foot sample interval with the highest total VOC (tVOC) concentration in soil headspace measured in the field with a PID, and the second from the 2-foot sample interval directly above the water table.**

3. Page 9, SAP Worksheet #2 – SAP Identifying Information; Bullet #5.

Two of the documents listed here were a source of confusion. The *Draft Condensed Work Plan for Soil and Groundwater Sampling, Tank Farm 2 (TtEC, May 2005)* is a response to RIDEM comments on the *Draft Condensed Work Plan for Soil and Groundwater Sampling, Tank Farm 2 (TtEC, Feb 2005)*. Also, the *Technical Memorandum – Plan for Sampling at Tank Farm 2* is not an actual memorandum and instead should be labeled as an email dated December 14, 2010 titled “Tank Farm 2 Summary of issues for SAP” (including Table A-1). Please update this worksheet accordingly.

**Response: The February 2005 work plan has been removed from the list. The title of the Memorandum has been changed as requested.**

4. Page 13, Worksheet #6, Communication Pathways.

Please add an additional row to Worksheet #6 stating the following: *“Both agencies will be notified 48 hours prior to commencement of field activities, 24 hours prior to any change in schedule, and Tetra Tech will provide weekly field updates via email. This weekly update shall include at a minimum the activities performed that week and a schedule of activities to be performed the following week.”*

Also in the 4<sup>th</sup> row under “Procedure”, after *“PM informs RPM by phone within 24 hrs, if warranted”*, please add *“after obtaining approval from both agencies.”*

**Response: The purpose of Worksheet #6 is communication between the Navy and Tetra Tech. However, in order to put in writing how communication with the regulators will occur, the following row has been added to Worksheet #6:**

<b>Regulatory Agency Interface</b>	<b>Tetra Tech PM</b>	<b>Dabra Seiken</b>	<b>978-474-8400</b>	<b>PM will notify the EPA and RIDEM RPMs at least 48 hours prior to commencement of field activities and 24 hours prior to a change in schedule. PM will provide regulators with weekly field updates via e-mail, including activities performed that week and a schedule of planned activities for the following week. PM will notify regulators via e-mail within 48 hours after receipt of a signed concurrence letter from the Navy RPM to change the scope of work, and prior to execution of the work.</b>
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**The request to add the text to row #4 is not appropriate. Row #4 contemplates changes to the scope of work between the Navy and Tetra Tech. Changes regarding the scope of work are between the Navy and the Navy’s contractor.**

5. Page 20, Section 10.1, Site Location and Background; Numbered bullets.

As stated in previous comments by RIDEM on the *Draft Work Plan for Site Closure, Tank Farm 2 (Sep 2003)*, a number of areas of potential concern were identified by RIDEM. These include:

- The Foamite Building;
- The Gasoline Storage Area;
- Structures along the eastern fence line (southern end);
- A structure west of the north access road;
- Numerous buildings, structures, etc. on the northwestern corner of the site;
- Potential UICs associated with the piping and drainage network; and
- The area of disturbed soil along the eastern fenceline.

Also, east of the southern gate was a series of buildings, which over time were modified and used for a variety of activities, including: Naval Contractor Buildings, Public Works Garage, and Naval Gas Station. Potential areas of concern associated with this complex include underground storage tanks for heating, underground gasoline and diesel storage tanks, discharges of solvents and waste oils associated with maintenance activities, etc.

DLA has stated that these areas are not the responsibility of DESC and will be addressed by the Navy. Therefore, please add these above listed areas of concern to Figure 2 and fully investigate and sample as necessary in this SAP.

**Response: Navy does not agree to sampling the areas listed above as part of the SAP for Tank Farm 2 but agrees to discussions regarding these areas with the RIDEM.**

6. Page 23, Section 10.5.3, Soil Boring Sampling; 2<sup>nd</sup> paragraph, 3<sup>rd</sup> sentence.

*“One soil sample was taken from each boring at a depth of approximately 10 to 12 feet, which is just under the 10-foot deep concrete lined utility trench that houses the fuel distribution lines (Figure 2).”*

Please provide engineering plans, as built drawings, etc. to verify that the bottom depth of the concrete lined utility trench is 10-feet.

**Response: No plans are available. See the Site Investigation Report (GZA, May 1998) for the reference.**

7. Page 25, Section 10.5.5, Soil Testing & Excavation; 3<sup>rd</sup> paragraph.

According to the *Site Investigation and Remedial Action Report (TiEC, July 2006)*, page 2-2, soil samples were collected around former transformer Buildings 218 and 219. Results of laboratory analysis showed levels of PCBs in two samples near Building 219 to be higher than RDEC and ICDEC standards of 10 ppm. Also, one lead sample result near Building 218 exceeded the RDEC criteria of 150 ppm. In previous responses to RIDEM’s comments, the DLA stated that these areas will be addressed by the Navy. Please include these areas of concern to the SAP, with all historical analytical data, and show the locations of Buildings 218 and 219 on Figures 2 and 8.

**Response: These buildings have working transformers. Although power to these buildings is presently shut off, it can be restored if site work requires power. Installation Restoration (IR) funding cannot be used to investigate/ remediate active utilities.**

8. Page 28, Section 10.7, Areas Requiring Further Investigation; Whole Section.

As stated on p. 2-11 of the *Draft Site Investigation and Remedial Action Report (July 2006)*, the following areas remained above the RIDEM Direct Exposure Criteria:

Sample Location	Criteria Exceeded	GPS Coordinate of Sample		Associated Samples
		Northing	Easting	
Building 219 North Wall	RDEC/ICDEC PCB	181623.312	388846.884	TF2-B219-1
Building 219 West Wall	RDEC/ICDEC PCB	181610.988	388830.611	TF2-B219-4
Building 218 Battery Storage Area North Wall	RDEC LEAD	182808.09	3888656.771	TF2-B218-PB7
AOC-26 (JP-5 soil piles)	RDEC TPH	182357.014 182361.84	389012.618 389018.162	TF2-026-2 TF2-026-3
Soils below Tank 25 Vent	RDEC SVOCS	181431.518	388509.233	TF2-tank-25-2

In this section of the SAP, please propose additional sampling in the areas around Buildings 218 and 219, in AOC-26, around Tank 25 and any other areas which exceed RIDEM's residential or leachability criteria.

**Response:** The response about sampling around Building 218 and 219 is provided in the Navy's response to comment #7, above. Residential direct exposure criteria (DECs) do not apply to Category 2 areas under the current and planned future property use. During work plan development/ implementation for the petroleum areas of the site, RIDEM agreed to use the cleanup criteria of the RIDEM industrial/commercial DEC. During soil excavation, DESC remediated beyond this conservative soil action level, and to the residential DEC, when practicable.

Per DEM –DSR-01-93 (Rules and Regulations for the Investigation and Remediation of Hazardous Material Releases [Remediation Regulations]) soil objectives include Direct Exposure Criteria (DECs) and leachability criteria. The remediation regulations (Rule 8.02) indicate that the industrial/commercial DEC may be applied to 2-feet if four conditions are met.

- Access to the property is limited to workers or temporary visitors
- The current and reasonably foreseeable future human exposure to soils at the site is not expected below 2-feet bgs.
- The site activity is limited to industrial/ commercial use
- An environmental land use restriction is in effect that limits use to industrial/commercial.

Bullets one and two above currently apply to the site. The Navy plans to meet bullets three and four by placing land use restrictions on the site to limit its use to industrial /commercial. Therefore, according to the Remediation Regulations, the industrial/commercial DECs apply between the ground surface and 2-feet below ground surface and the Upper Concentration Limits (UCLs) apply for soil below 2-feet.

There are no exceedances of the above referenced soil criteria or RIDEMs Method 1 GB leachability criteria in AOC-26 and Tank 25.

9. Page 32, Section 11.2.2, Laboratory Chemical Data; 2<sup>nd</sup> bullet.

Please ensure that the extractable TPH range covers all of the fuels that were stored at the site (marine diesel, F-76, Navy Special, etc.) Please run all GCs to C-44 and/or baseline and quantify all petroleum hydrocarbons using standards.

**Response: SW-846 method 8015C provides for a DRO range of C10-C28. The SAP provides for an extended extractable TPH (ExTPH) carbon range of C9-C36. This is the same range as was used for Tank Farms 4 and 5. In addition, the SAP calls for PAH analysis which will quantitate the individual components of the heavier petroleum, if present. This approach is considered more than adequate to characterize potential contamination from heavier petroleum.**

10. Page 32, Section 11.2.3, Project Screening Levels; Whole Section.

Please include RIDEM's Residential Direct Exposure Criteria (RDEC), Leachability Criteria, Product requirements and GB Groundwater Criteria in the determination of "PSLs" for the Category 1 areas. Also, please include TPH, PCBs and lead in the list of contaminants to be analyzed for in both Category 1 and Category 2 areas. Please change the criteria for Category 2 from RIDEM's ICDEC to RDEC, and include EPA's MCLs and ECO SSLs.

**Response: TPH is not an appropriate analyte for Category 1 areas. Data collected for Category 1 potentially will be used for CERCLA-type risk assessment. Site petroleum-related chemicals that may pose human health or ecological risk will be captured by the PAH analysis.**

**RIDEM criteria are not used in determining PSLs, but if a CERCLA risk is determined in Category 1 area(s), RIDEM criteria will be considered potential ARARs.**

**PCBs are not by-products of combustion and will not be analyzed for in Category 1 areas. Lead is already in the analyte list for Category 1 areas.**

**The Category 2 areas are being investigated due to historical NAPL in groundwater around three former USTs. PCBs oils or gasoline were not stored in these USTs. Navy does not believe that lead or PCBs analysis is warranted.**

**At RIDEMs request, Navy will use RIDEM's RDECs, EPA MCLs and EPA ECO SSLs for determining PSLs in Category 2 areas.**

11. Figure No. 2, Site Plan:

According to Figure No. 3 which shows the Tank Farm 2 site boundaries, this site includes the area in the north-west corner near Tank Farm 1. Please expand Figure No. 2 to include this area of the site, and depict any known structures, pipelines, etc. Please investigate these areas as stated above in Comment # 5.

Figure No. 2 is difficult to read. Please provide Figure No. 2 as a large fold-out map, and include the locations of AOCs 001, 003, 004 and 005.

**Response: Please see Navy's response to Comment #5. Figure 2 has been provided as a large, fold-out map in the Draft Final SAP.**

12. Figure No. 3, Northern Portion of the Site, Category 1 AOCs.

It is difficult to determine where the AOCs are in relation to the visible structures. Please update Figure No. 3 with a more focused background.

**Response: The current aerial photograph that is used as the background in Figure 3 cannot be brought more into focus because of the scale.**

13. Figure No. 5, Planned Soil Sampling Locations, Category 1/AOC-001.

Please add two additional sampling locations near the north-west and south-west corners of the grid, or explain why these locations were not included.

**Response: Samples are being collected within the AOC following a 15x15 foot grid-pattern, as discussed in Worksheet #17 of the SAP. Under this method, any locations on the 15x15 foot grid that fall outside of the sampling boundary are not a sampling location, which is why there is no sampling location in the NW and SW corner.**

14. Figure Nos. 5-7, Planned Soil Sampling Locations, AOCs 001, 003, 004 & 005.

For all AOCs, please adjust the proposed grid pattern to allow samples to be taken in close proximity to those which previously exhibited elevated levels of contamination. Also, please include provisions in the SAP to require additional sampling to track contamination. To aid in tracking areas of contamination, please use field sampling techniques such as Petroflag in addition to laboratory samples.

**Response: In response to EPA's comments #15 and 16, additional sample locations are proposed inside the mapped AOC at AOC-001 and AOC-003.**

**Sampling at the same locations that were previously sampled was considered. However, using a randomized method of selecting sample locations is more appropriate for delineation of this type of potential release. The method proposed increases the density and spatial distribution of samples compared to the previous investigation in 2006.**

**Soil in the AOCs were previously explored by the DESC using Petroflag™, which analyzes for TPH. TPH is not an appropriate analyte for Category 1 areas. Data collected for Category 1 potentially will be used for CERCLA-type risk assessment. Site petroleum-related chemicals that may pose human health or ecological risk will be captured by the PAH analysis. Navy will not be using Petroflag™ again, but is instead using laboratory analysis of soil sampled on a grid pattern. The grid insures lateral coverage of the AOC and multiple sampling depths ensure vertical coverage of these areas.**

15. Figure No. 8, Proposed Sample Location Map.

Similar to Figure No. 2, this figure is difficult to read. Please provide Figure No. 3 as a large fold-out map.

**Response: Figure 3 has been provided as a large, fold-out map in the Draft Final SAP.**

16. Appendix B, Determination of Soil PSLs, Tables B-1, B-2 and B-3

Please modify these tables to include the following:

- TPH, PCBs and Lead in Categories 1 & 2;
- RIDEM's residential, leachability and groundwater criteria in Category 1;
- EPA's MCLs and ECO SSLs in Category 2;
- TPH for groundwater in Category 2; and,
- Presence of product in groundwater or soil for Category 1 & 2.

Please combine GROs and DROs and compare to residential TPH and UCLs. Please note that RIDEM considers surface soil for both Categories 1 & 2 to be 0-2 ft. The residential criteria for Category 1 is from the surface (0 ft) to the top of the water table.

Please note in a footnote that the requirements of RIDEM's Site Remediation, LUST, UIC, Groundwater, and Oil Pollution Control Regulations are applicable to both the PSLs and the overall investigation of the site.

**Response: TPH is not an appropriate analyte for Category 1 areas. Data collected for Category 1 potentially will be used for CERCLA-type risk assessment. Site petroleum-related chemicals that may pose human health or ecological risk will be captured by the PAH analysis.**

**RIDEM criteria are not used in determining PSLs, but if a CERCLA risk is determined, RIDEM criteria will be considered potential ARARs.**

**PCBs are not by-products of combustion and will not be analyzed for in Category 1 areas. Lead is already in the analyte list for Category 1 areas.**

**The Category 2 areas are being investigated due to historical NAPL in groundwater around three former USTs. PCBs oils or gasoline were not stored in these USTs. Navy does not believe that lead or PCBs analysis is warranted.**

**Navy agrees to use EPA MCLs and Eco SSLs in determining PSLs for Category 2.**

**Navy intends to add GRO and ExTPH results for comparison to screening criteria. A footnote has been added.**

**There is no groundwater table in Appendix B.**

17. Appendix C, Tetra Tech and EPA SOPs.

Please gauge the monitoring wells for NAPL using an oil/water interface probe and a bailer prior to and after development/purging.

Please be advised that in accordance with RIDEM's Groundwater Regulations, all monitoring wells installed at the site must be designed to allow for the free movement of contamination into the wells. These tanks were used to store Navy Special and black oil. As such, a filter pack of standard sand is inappropriate. Therefore, please specify that the filter pack for the monitoring wells will consist of course sand and gravel.

**Response: Appendix E-2, Section 2.0 & 3.0; the sections on well development and sampling have been expanded to include the gauging the monitoring wells for NAPL using an oil/water interface probe and/or a bailer prior to and after development.**

**The filter pack material is sized to the surrounding formation and the well screen is sized to the filter pack. These techniques will result in a sand pack that reduces the entrance of formation material into the well, allows for free flow of groundwater and dissolved contaminants, and can encourage the flow of NAPL (if present) to the well. However, if NAPL transmissivity is not high, NAPL cannot be forced to be mobile or to migrate into a monitoring well. Because it is sized to the formation, the size of the filter pack cannot be pre-determined. During well construction Navy will have several well screens and filter pack combinations available so the better combination can be used in building the wells.**