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MCRD PARRIS ISLAND
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LETTER REGARDING U S EPA REGION IV COMMENTS ON THE DRAFT SAMPLING AND ANALYSIS PLAN FOR THE REMEDIAL INVESTIGATION AT OPERABLE UNIT 12 (OU 12)
SITE 54 MCRD PARRIS ISLAND SC
5/13/2013
U S EPA REGION IV

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

May 13, 2013

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Naval Air Station, JAX
Navy Facilities Engineering SE
Installation Restoration, SC IPT
Attn: Mr. Dan Owens
PO Box 30
North Ajax Street, Bldg 135
Jacksonville, Florida 32212-0030

AND

Commanding General
Marine Corps Recruit Depot
Natural Resources & Environmental Affairs Office
Attn: Mr. Tim Harrington
PO Box 5028
Parris Island, South Carolina 29905-9001

Dear Mr. Owens and Mr. Harrington:

The U.S. Environmental Protection Agency (EPA) has completed its review of the Draft OU12/Site 54 Old Waste Water Treatment Plant) and Building 615 (Former Armory) Remedial Investigation Sampling and Analysis Plan, Marine Corps Recruit Depot (MCRD), Parris Island, South Carolina (March 2013). The review resulted in the comments listed in the enclosed document. In the comments reference to "the Navy" means the Navy and MCRD. Please feel free to contact EPA regarding any questions you may have regarding these comments. I can be reached at 404-562-9969.

Sincerely,

Lila Llamas

Lila Llamas, Senior RPM
Federal Facilities Branch
Superfund Division

Enclosure

cc: Ms. Meredith Amick, SCDHEC
Ms. Peggy Churchill, TtNus

EPA COMMENTS
DRAFT SAMPLING AND ANALYSIS PLAN (FIELD SAMPLING PLAN AND QUALITY ASSURANCE PROJECT PLAN) REMEDIAL INVESTIGATION SITE 54 (OLD WASTE WATER TREATMENT PLANT) AND BUILDING 615 (FORMER ARMORY)
MARCH 2013

MCRD PARRIS ISLAND,
SOUTH CAROLINA

GENERAL COMMENTS:

1. The Draft Sampling and Analysis Plan (Field Sampling Plan and Quality Assurance Project Plan) Remedial Investigation Site 54 (Old Wastewater Treatment Plant) and Building 615 (Former Armory), dated March 2013 (Draft SAP) addresses not only the two facilities included in the title, but also Outfall 555 from the Preliminary Assessment/Site Investigation Report for Site 14 – Storm Water Outfalls (PA/SI). As such, a team agreement has been reached to address this collection of sites as one Operable Unit (OU). The OU number assigned to this collection of sites is OU12. Please modify the Draft SAP to include in the title and to reference throughout the document as appropriate, this work as applying to OU12, including all of these sites mentioned above.

2. The OU12 Draft SAP includes plans to collect water level measurements from manholes associated with the storm water system at Site 54 to determine if the storm water system is below the water table and if the system is tidally influenced, yet does not propose sampling of storm water or storm water drain sediments during the investigation.

   The Site 14 PA/SI recommends Remedial Investigation of Site 14 exceedances in conjunction with Site 54, including but not limited to, ecological concerns associated with pesticides in storm water (as well as sediments). It is unclear why water and sediment samples from manholes within the storm water system are not planned for collection during non rain events to address this pathway in the Draft SAP and to resolve the question of ecological criteria exceedances in storm water from the Site 14 PA/SI Report as recommended.

   Additionally, the Site 14 PA/SI Report indicated exceedances of either/both ecological and/or human health criteria for other contaminants in the Outfall 555 sediments, including lead, pesticides, PAHs, and volatile organic compounds (VOCs), the source of which could be evident in samples taken from the storm water pipes during non-rain events, which may not have been evident during rain events due to dilution and volatilization. It is unclear why water and sediment samples from manholes within the storm water system are not planned for collection during non rain events to evaluate the storm water drain system as a possible source and/or conduit for these other contaminants found in Outfall 555 sediments, to more completely address this potential pathway in the Draft SAP, and to resolve the question of ecological and human health criteria exceedances in sediment from the Site 14 PA/SI Report as recommended.

   According to the OU12 Draft SAP, Section 10.3.4, Preliminary Assessment/Site Investigation – Outfall 555 (page 36 of the Site 54 Draft SAP) "the residual material (storm water and sediment) in the piping associated with Outfall 555" is recommended by Tetra Tech to be sampled; and slide 11

in Appendix D, Data Quality Objectives Presentation, dated February 13, 2013, also includes the recommendation that the RI for Site 54 include manhole samples. In order to determine the potential source(s) of Lead, Pesticides, PAHs, and VOCs at Outfall 555 and to resolve the exceedances documented in the Site 14 PA/SI Report, it is strongly recommended that samples from the manholes within the storm water system be collected at this time. Further, this potential migration pathway of contamination within the storm sewer should be addressed in SAP Worksheet #10, Conceptual Site Model, to support the objective of the Site 54 RIWP presented in the executive summary which is "to determine the nature and extent of potential source materials" that may be present in sediment. In turn, this would require changes to multiple Work Sheets throughout the Draft SAP. EPA understands that at this time the Navy does not wish to sample the storm water drain system, in the hope that results from the water level measurements and the remainder of the site investigation will result in data which will alleviate the need to sample the storm water drain system. The Navy should recognize that if EPA's concerns are not fully addressed and satisfied, this additional investigation will likely be necessary.

SPECIFIC COMMENTS:

3. **Draft SAP Worksheet #1 – Approval Page, Page 2**

   The Draft Sampling and Analysis Plan (Field Sampling Plan and Quality Assurance Project Plan) Remedial Investigation Site 54 (Old Wastewater Treatment Plant) and Building 615 (Former Armory), dated March 2013 (Draft SAP) includes two (2) approval pages. One page indicates a preparation date of December 7, 2012 (header is dated March 2013) and the preparation date for the second page is January 7, 2013 (page header is dated January 2013). For clarity and completeness ensure the Draft Final SAP addresses this issue presenting the most recent version of the approval page.

4. **Executive Summary, Page 3; Section 10.3; and Figure 10-4**

   The April 3, 2003 Site 54 sediment sampling historical actions that are attributed to TechLaw 2003 in this section and in Section 10.3 Previous Investigations and Actions, Pages 33 and 34, and in Figure 10-4 Previous Sample Locations, Page 43 are incorrect. The correct reference to the previous investigations and actions attributed to TechLaw 2002/2003 should be attributed to Parallax, 2003.

5. **Executive Summary, Page 4**

   The text in the second paragraph states metals including lead and mercury were identified as contaminants of potential concern (COPCs) in sediment at outfall 555 during the Site 14 Storm Sewer Outfalls PA/SI. However, the last sentence in this paragraph states that only the metal lead will require further investigation to determine the extent of contamination in the sediment. The text does not state why mercury identified as COPCs in sediment during the PA/SI was not carried forward through to the remedial investigation (RI). For clarity and completeness, revise this section of the Draft SAP to address this issue.

6. **Executive Summary, Page 4**

   The second paragraph apparently incorrectly summarizes the additional sampling recommendations as presented in the Site 14 PA/SI (pending final review). The Site 14 PA/SI Section 8.2 indicates that

based on the results of the PA/SI a Remedial Investigation is recommended, presumably to address the exceedances and COPCs identified summarily in Section 8.1 and/or Table 8-1. PA/SI Section 8.1 identifies Outfall 555 Ecological COPCs to include metals (lead), pesticides, and VOCs in sediment; and pesticides in storm water. PA/SI Section 8.1 identifies Outfall 555 Human Health and Background Exceedances by Pesticides, PAHs, and VOCs in sediment; with no HH exceedances of concern in storm water. The executive summary of the Draft SAP omits Pesticides from the list of human health exceedances and does not clearly indicate the exceedances were in sediments; and states that further investigation was recommended to determine the source and extent of metals (lead), VOCs, and pesticide contamination in sediment. However, according to the recommendations presented in Section 8 of the PA/SI as discussed above, further investigation is recommended to address the source and extent of metals (lead), pesticides, VOCs, and PAH contamination in sediment as well as pesticides in storm water. In addition, the Draft PA/SI recommended that that an upgradient investigation of the piping of Outfall 555. Address the discrepancies between the recommendations presented in the Draft SAP and the PA/SI for Outfall 555.

7. **Draft SAP Worksheet #2 – SAP Identifying Information, Page 12**

Please identify the OU number as OU12 and include Outfall 555 as one of the sites in the OU.

The information presented in No. 4 on this page states a Data Quality Objectives (DQOs) Conference Call was held on February 13, 2013. However, the Draft SAP Worksheet #9 – Project Scoping Session Participants Sheet, Page 31, states a March 21, 2013 Scoping Session meeting was also held. Revise the information presented under No. 4 to include the March 21, 2013 scoping session meeting date.

8. **Draft SAP Worksheet #6 – Communication Pathways, Page 23**

The EPA is not part of the lines of communication for any significant changes in scope or significant corrective actions that may occur while in the field. To avoid any remobilization, it is recommended that the regulatory agencies are included in these communication drivers and that the procedure is for the Navy Project Manager to notify the EPA and the South Caroline Department of Health and Environmental Control of any significant corrective actions taken. Include the regulatory agencies in the communication pathways for corrective actions that may occur in the field.

9. **Draft SAP Worksheet #9 – Project Scoping Session Participants Sheet, Page 29**

The scoping meetings summary states that the former dry cleaner location was discussed. It was noted that Lisa Donohoe from the Marine Corp Recruit Depot (MCRD) is working with the museum to determine the location of the dry cleaner. However, the remainder of the Draft SAP does not summarize whether any pertinent information was obtained from the museum regarding the location of the former dry cleaner location. To support sampling for potential sources of contamination at OU12, information should be provided on the results of the museum research.

10. **Draft SAP Worksheet #9 – Project Scoping Session Participants Sheet, Page 30**

For the March 21, 2013 Scoping Session meeting, the spelling of the name of the MCRD Parris Island Tier II representative, Tim Herrington is incorrect. The correct spelling is Tim Harrington. Revise the Draft SAP accordingly.

11. Draft SAP Worksheet #9 – Project Scoping Session Participants Sheet, Page 31

Please add to the scoping meeting summary that EPA requested the sanitary sewer lines in the OU12 area be added to Figure 17-1 in order to be able to determine if additional samples are needed or if the samples currently planned are in the most appropriate location. However, the Draft SAP did not include sanitary sewer system information either in the text or on any figure. In a subsequent Team meeting discussion EPA reemphasized the importance of the sanitary sewer line information and suggest if the information was not readily available additional potential sources of the information such as demolition records for the former Armory, etc. be searched. To support consensus on sampling locations for potential sources of contamination at OU12, information requested should be provided. Otherwise, based on results of the investigation, additional samples may be necessary. Revise the Draft SAP to include the requested information.

Also, for the March 21, 2013 Scoping Session meeting, EPA consultant Mac McRae is listed as having attending the scoping session is incorrect. However, EPA consultant Mac McRae did not participate in the March 21, 2013 scoping session as indicated in the worksheet. Revise the Draft SAP worksheet accordingly.

12. Draft SAP Worksheet #10 – Conceptual Site Model, Section 10.3.2, Site 54 Interim Remedial Action, Page 34

The fifth bulleted item in this section states that soil samples were collected from the open excavation, with the backhoe from 11 locations during the Site 54 Interim Remedial Action (Kemron 2005). However, the first paragraph on Page 4 of the Executive summary states that 12 soil samples were collected during the interim remedial actions conducted at Site 54. Additionally, Figure 10-4 Previous Sample Locations, Page 43 depicts 12 soil sample locations. Based on review of the Kemron report, 11 samples were taken from the vault area and 1 sample was taken from a distance removed to represent background for a total of 12 sample locations. Revise the Draft SAP to address this discrepancy in the number of reported soil samples that were collected during the Site 54 Interim Remedial Actions.

13. Draft SAP Worksheet #10 – Conceptual Site Model, Section 10.3.3, Contaminated Watershed Source Document, Page 35

The discussion of VOC exceedances in sediment samples collected from Outfall 555 does not include the maximum TCE concentration which measured 5,800 micrograms per kilogram (µg/kg) and also exceeded human health and ecological screening criteria. For completeness, revise this section of the worksheet to list all the VOC exceedances measured in sediment at Outfall 555.

Furthermore, this section states that "the levels at which cVOCs were measured in the sediment at Outfall 555 (cis-1,2-DCE at 680000 µg/kg, tran-1,2-DCE at 26000 µg/kg, and VC at 64000 µg/kg) would not be expected to persist from an upgradient source" however; the basis for this statement is unclear. Clarification is warranted to describe why the elevated levels of cVOCs detected in Outfall 555 sediment would not be expected to persist from an upgradient source. Speak to the term "upgradient" relative to the Contaminated Watershed Source Document versus upgradient from the sediments at Outfall 555 within OU12. Modify the Draft SAP to address this issue.

14. **Draft SAP Worksheet #10 – Conceptual Site Model, Section 10.3.4, Preliminary Assessment/Site Investigation – Outfall 555, Page 36**

Before the last paragraph in the section, add a paragraph discussing the Outfall 555 exceedances of Human Health Criteria/background in sediment, including pesticides, PAHs, and VOCs. Also discuss Ecological Criteria/background exceedances in sediments including lead, pesticides, and VOCs; and in storm water including pesticides.

Then add a summary statement regarding the HH exceedances to the end of the last paragraph in the section.

15. **Draft SAP Worksheet #10 – Conceptual Site Model, Section 10.4.2, Contaminant Migration Pathways, Pages 37 and 38**

This section discusses the release mechanism and contaminant migration pathways to the marsh sediments. The Draft SAP states that Site 54 received industrial and domestic waste water. However, the location of the industrial and domestic waste water sewer piping is currently not known. Additionally, the location(s) or areas where cleaning operations took place in Building 615 are not known, wherein drains to the sewer system may have been located. This section does not currently discuss potential releases from the industrial or domestic sewer piping system associated with Building 615 and/or that coming from other buildings to the Site 54 Waste Water Treatment Plant that could have resulted from leaks in the piping to the subsurface. The uncertainty regarding potential release mechanism and migration pathway from leaking sewer pipes is not identified in the conceptual site model (CSM).

Furthermore, this section has not discussed the potential for contaminants to enter into the storm sewer system as a result of contaminated ground water leaking into the system during high water table conditions or at locations where the storm drain is lower than the water table in general. These phenomena occurred at Site 45 but have not been addressed as a potential source/pathway at OU12.

For completeness, this section should address these contaminant migration pathways and provide rationale on whether the pathways may be complete or not. Also include a description of the depth of the storm water sewer system relative to the depth of typical high water conditions, and the integrity of the storm sewer system, to support a complete conceptual understanding of how VOCs and other contaminants may have entered the system to result in VOCs and other contaminants at Outfall 555. EPA understands the Draft SAP also calls for water level measurements in the storm water pipes/manholes which will further refine this CSM. Revise the Draft SAP to address these issues.

Finally, in the last paragraph of the section add ", storm drain," after "soils" and before "or marsh".

16. **Draft SAP Worksheet #10, Figure 10-4, Previous Sample Locations and Figure 10-5, Conceptual Site Model, Pages 37 and 38**

Both Figures 10-4 and 10-5 do not show the sanitary sewer system. Please include the sanitary sewer system on these figures to allow for a more complete understanding of the environmental setting relative to potential contaminant migration pathways. In addition, include arrows that show the generalized ground water flow direction.

Also, explain why, since Outfall 555 has human health exceedances in sediments, the description of hypothetical residents and adult visitors do not include exposure to sediments.

17. **Draft SAP Worksheet #11 – Project Quality Objectives/Systematic Planning Process Statements, Section 11.1, Problem Statement, Page 45**

This section states it is possible that the ecological contaminants of potential concern (COPCs) identified in sediment at Outfall 555 resulted from the historical practices at Site 54, former Building 615 and/or the former Dry Cleaning Shop. The elevated levels of VOCs measured in Outfall 555 sediment samples **also exceeded the human health** screening criteria and therefore is also a problem warranting additional investigation. Furthermore, ecological COPCs were identified for **storm water** at outfall 555. Revise the text in this section to indicate **ecological and human health COPCs** identified in **sediment and/or storm water** at Outfall 555 possibly resulted from the historical practices at Site 54, former Building 615 and/or the former Dry Cleaning Shop.

Furthermore, EPA recommends the problem statement also be revised to address the potential sanitary sewer leaks and contaminated groundwater intrusion into the storm water system migration pathways discussed in the Worksheet 10 - CSM Migration Pathways comments above. EPA also recommends the Navy address the Pesticide ecological COPCs in storm water at Outfall 555. The Navy has expressed a desire to not investigate the storm water drain system at this time, other than water level measurements, and has apparently decided not to address the storm water ecological COPCs. The Navy also has not yet provided sanitary sewer pipes/drains on figures as requested. The Navy should discuss and explain their position in the Draft SAP text prior to specifying the problem statement. If the Navy decides to retain the problem statement and plan for investigation as-is (with the exception of the changes specified in the comment paragraph above) and if sanitary sewer pipes/drains are not depicted on figures, the Navy should also include in the Draft SAP text that they recognize a second phase of investigation may be necessary as a result.

However, should the Navy decide to address all potential migration pathways and if sanitary sewer lines are provided as requested by EPA, additional changes may be necessary to the remainder of the Draft SAP Worksheets.

18. **Draft SAP Worksheet #11, Section 11.2 Information Inputs, Page 45**

The second bullet does not include PCBs as an analyte for groundwater. The Navy should recognize that if significant levels of PCBs are found in soils, groundwater will need to be analyzed for PCBs.

The third bullet indicates that target analytes for investigating sediment include semi-volatile organic compounds (SVOCs) however, it is unclear if the SVOC analysis will also include polycyclic aromatic hydrocarbons (PAHs). It is recommended that the SVOC analysis include PAHs since PAHs were identified as chemicals of potential concern (COPCs) detected in sediment at outfall 555.

There is no bullet for storm water, or sediments in the storm water drain, although pesticides have been identified as Storm Water COPCs at Outfall 555. If the storm water system is not addressed, an additional phase of investigation may be necessary.

19. Draft SAP Worksheet #11, Section 11.3 Study Area Boundaries, Page 48-49

This section does not include sediment and water data inside the storm water sewer line as part of the study area. Clarify why samples from the storm water sewer are not considered as part of the study area boundary since VOCs have been detected in sediment at Outfall 555. If they are not included a second phase of investigation may be necessary.

Also, as designed, the Navy should not state that the OU12 investigation does includes soil and groundwater directly associated with the former Dry Cleaning Shop, since its whereabouts is unknown and no attempt to locate it is made as part of the Draft SAP. Please remove references to the Dry Cleaner in the last paragraph of the section.

20. Draft SAP Worksheet #11 – Project Quality Objectives/Systematic Planning Process Statements, Section 11.3.1, Groundwater, Page 49

The text in the first paragraph states the groundwater population of interest is primarily the top 5 feet of the surficial aquifer that may have been impacted by leaching of contamination from historical site activities. As previously commented, the CSM does not identify potential releases from sewer piping to the subsurface. Since VOCs have been identified as COPCs, investigation of the deeper surficial aquifer zones is also a concern. Revise the Draft SAP to address this issue by recognizing the potential for VOC contamination to exist at depth.

21. Draft SAP Worksheet#11, Decision Rules, Page 51

Several of the decisions rules that are presented are somewhat vague and ambiguous and do not define the logic for how the data will be used to draw conclusions from the study findings. Decisions rules should be prepared in a manner that provides a specific rule that defines how a decision maker would choose among alternative actions. For decision problems, the analytic approach may involve developing a decision rule that incorporates some type of Action Level or background levels and also incorporate qualitative information that may help support the decision rules. Comments on specific decision rules are summarized below.

a. **Decision Rule #1: Determine the Source of Contamination, Page 51:** The decision rule for identifying a source at Outfall 555 does not define the logic for how the data will be used to draw conclusions that a source of sediment contamination at Outfall 555 has been identified. The decision rule does not define a metric to be used or other information that would support the decision that a source of contaminated sediments has been identified at Outfall 555. During the DQO scoping it was clarified that the Team would have to reach consensus that the source(s) had been identified. Sources could be a highly contaminated portion of a groundwater plume, or highly contaminated soils in that portion of the plume, sediments in a storm water drain, highly contaminated soils near/adjacent to sediments or storm drains, etc.; plumes or soils could be located near or adjacent to the sediments or could be located up-pipe in/near the storm water or sanitary sewer system(s). All of these potential sources (and any others that may be relative) should be considered when evaluating whether the source(s) have been identified. Team consensus will be necessary to determine the source(s) have been identified. Otherwise, the second portion of the rule applies and the Partnering Team will have to decide what additional data must be gathered in order for the Team to reach consensus on the Source(s) being identified.

Revise the decision rule to indicate Partnering Team Consensus will be required to determine the source(s) have been identified.

b. **Decision Rule #2: Nature of Contamination, Page 51:** This decision rule states that if sufficient data are collected that characterizes the nature of the sediment, soil, surface water, and groundwater contamination related to site operations, then no more characterization data will be collected. However, the decision rule does not provide the logic for supporting the conclusion that "no more characterization data are needed." Revise the decision rule to provide the logic for how the data will be used to draw the conclusion that sufficient data have been collected to characterize extent. It would be helpful to refer to the conceptual site model to support this decision rule.

c. **Decision Rule #3: Extent of Contamination, Page 51:** This decision rule states that "if elevated levels of contaminants are fully delineated in sediment, soil, surface water, and groundwater, then no additional data collection will be required." However, the rule does not define the logic for how the data will be used to determine that the data are "elevated" or define the logic that no additional data collection will be required. Revise the decision rule to provide the logic for how the data will be used to draw the conclusion that contaminant levels are elevated and the logic for concluding that sufficient data have been collected to characterize extent. Use of metrics is encouraged when revising the decision rule.

22. <u>Draft SAP Worksheet #13 – Secondary Data Criteria and Limitations Table, Page 54</u>

This Table references the Site 3 RFI Report and PA/SI Report for Site 14 NPAO Background Data Set. Neither of these are appropriate. The decision was made to use the background data set from Marine Corps Air Station (MCAS) Beaufort, South Carolina for all future site decisions. The sediment samples being taken are from distances well removed from the outfall and may or may not be related to outfall contamination. Additionally, the NPAO data set was to be used to help differentiate sample results taken immediately adjacent to outfalls with respect to typical anthropogenic contributions at outfalls. This is not necessarily the case in the OU12 SAP. Modify the worksheet to reference the MCAS Beaufort background data set.

This table does not include the historical data collected during the site assessment by Parralax in 2003, the data collected by Kemron as part of the 2005 interim remedial action of the vault, and data included in the Contaminated Watershed Source Document published in 2012, or the data from Site 14 PA/SI for Outfall 555 and 551. It is recommended that these historical studies be included in Worksheet #13 and explain that the purpose of this data is to assist in the determination of the nature and extent of contamination; portions of the site do not include current samples because the previous data was being considered. In addition, explain whether there are any limitations to using this data.

23. <u>Draft SAP Worksheet #14 – Summary of Project Tasks, Page 55</u>

Worksheet #14 does not include mapping of sanitary sewer lines. Since the sewer lines may influence contaminant migration, include mapping of the sanitary sewer lines (and any connection to storm water sewer lines) as part of the OU12 Draft SAP as requested by EPA.

24. Draft SAP Worksheet #15 – Reference Limits and Evaluation Table, Soil PCBs, Page 78

EPA has informed the Navy that in cases where PCB contamination is historical and weathering of the PCBs is likely, congener analysis should be performed. Complete congener analysis should be performed on at least 10% of the samples, but no less than 5 samples, whichever is greater. The 10% should be targeted for a range of highly contaminated, significantly contaminated, and mildly contaminated samples to allow for correlation to Total Arochlor data. (A recent Region 4 PCB Issue paper has been finalized and may be releasable for use in understanding EPA's expectations for and use of congener analysis. Once confirmation has been obtained that the Issue Paper is ready for release, a copy will be provided to the Navy for use in developing RTCs.) Modify the Draft SAP Worksheet 15 to address and include congener analysis. EPA suggests the Navy may wish to collect sufficient soil from each location to perform the congener analysis, but then hold the soil sample frozen until a final decision as to which samples should be analyzed for PCB congeners can be made.

If it is determined that based on soil results groundwater has to be sampled and analyzed for PCBs, the same congener analysis requirement would apply to groundwater.

25. Draft SAP Worksheet #17 – Sampling Design and Rationale, Page 101

For purposes of this review, it is assumed the Navy will not be investigating the storm sewer systems as requested by EPA during this phase of the investigation. Also, once sanitary sewer line information has been provided on figures, either additional or fewer samples may be necessary and sample locations may need to change. Otherwise, an additional phase of sampling may be necessary.

26. Draft SAP Worksheet #17 – Sampling Design and Rationale, Groundwater Sampling Page 101

This section discusses the proposed sampling locations for groundwater. However, as previously commented, there is uncertainty regarding potential release mechanism and migration pathway from leaking sewer pipes which was not identified in the CSM). As such, this uncertainty results in a data gap in the currently proposed investigation of nature and extent of groundwater contamination at Site 54. In order to manage the uncertainty installation of an additional shallow and deep well cluster is recommended for the area between Building 615 and the Old Wastewater Treatment Plant concrete vault. Additionally, installation of a deep well nested with proposed shallow well location TW-3 located within the Building 615 footprint is also recommended to investigate potential contaminant releases from within the building. Revise this section of the Draft SAP and Figure 17-1, Proposed Sample Locations, Page 103 to address this issue.

27. Draft SAP Worksheet #17, Figure 17-1, Proposed Sample Locations, Page 103

Figure 17-1 does not include all relevant features such as the sanitary sewer system. In addition, the legend indicates that the yellow circles denote a "storm water feature" however; it is unclear what feature is being referenced. Clarify with more specificity the storm water features that are illustrated in Figure 17-1 by describing whether the feature is a manhole or a storm grate. Further, based on a general understanding of ground water flow conditions at the site it is recommended that arrows are included in Figure 17-1 that illustrate the generalized ground water flow direction.

Please note that the sampling design for OU12 is not very robust considering all the potential migration pathways and sites, so if elevated levels of contaminants are found, additional sampling will likely be necessary to delineate extent. Decision Rule # 3 will be followed (as modified based on comments).

28. Draft SAP Worksheet #19, Analytical SOP Requirements Table, Page 112

Based on EPA's requirement for 10% or no less than 5 PCB Congener Analysis (see comment for WS #15 above) the appropriate Analytical and Preparation Method/SOP Reference should be added for PCB Congener analysis. Consequently, perhaps Two 4-oz glass jars of soil should be collected at each location to be prepared and frozen for holding until a final decision can be made regarding which samples get the additional congener analysis. The separate jar would allow one jar to be sent to a lab for Arochlor analysis, and another jar sent to a specialized lab for congener analysis. Alternatively, the Navy may propose which samples should get congener analysis in their RTCs for EPA review and approval, if appropriate.

Also update Worksheet #23, #24, #25, and #28 as appropriate.

29. Draft SAP Worksheet #20, Field Quality Control Sample Summary Table, Page 114

Please explain why there are no QC samples for the PCB analytical group in soils. Please modify the Draft SAP if appropriate.

Furthermore, according to Worksheet #18, Sampling Locations and Methods/SOP Requirements Table, Page 107 to 109, all nine well samples will be analyzed for VOCs yet Worksheet #20 indicates that only 4 samples will be analyzed for VOCs. Further, Worksheet #20 indicates that for groundwater there will be only 4 samples locations for VOC analysis and zero quality control samples which would total up to 4 samples sent to the lab; however, the worksheet indicates there will be a total of 16 samples sent to the lab for VOC analysis. Correct the discrepancies in this table to be consistent with Worksheet #18 and ensure adequate quality control samples are accounted for.

30. Draft SAP Worksheet #30, Anaytical Services Table, Page 148

Please identify the lab that will be used for PCB congener analysis.

31. Draft SAP Appendix A, Project Screening Level Backup Tables

The residential screening levels are obtained from the May 2012 version of the EPA's Regional Screening Levels Table however; a more current version is available and is dated November 2012. Ensure that none of the screening levels have changed and revise accordingly. Also ensure the most recent version is used at the time of/when writing the report.