

N00204.AR.004865
NAS PENSACOLA
5090.3a

RESPONSES TO FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
COMMENTS DRAFT SAMPLING AND ANALYSIS PLAN WETLAND SEDIMENT SAMPLING
OPERABLE UNIT 16 SITE 41 NAS PENSACOLA FL
02/22/2013
NAVFAC SOUTHERN

**RESPONSES TO FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION (FDEP)
COMMENTS
DRAFT SAMPLING AND ANALYSIS PLAN (SAP)
WETLAND SEDIMENT SAMPLING, OPERABLE UNIT 16 — SITE 41
NAVAL AIR STATION PENSACOLA
PENSACOLA, FLORIDA
(Comments Received via electronic mail on December 18, 2012)
FEBRUARY 22, 2013**

The Department has reviewed the Draft Sampling and Analysis Plan (SAP), Wetland Sediment Sampling, Operable Unit 16 — Site 41, Naval Air Station Pensacola, dated September 2012 (received September 28, 2012) prepared and submitted by Resolution Consultants. The Department requests that sediment toxicity testing be conducted to determine chronic toxicity to the test organisms. This would entail 28-day tests for the marine and estuarine amphipod *Leptocheirus plumulosus* (EPA 600/R-01/020) and 42-day tests (Test Method 100.4) for the freshwater amphipod *Hyaella azteca* (EPS 600/R-99/064). The 14-day acute toxicity tests proposed for both test organisms will provide only survival as an assessment endpoint, although with *Hyaella azteca*, growth will be measured and may be evaluated as a secondary sublethal assessment endpoint. According to *A Guidance Manual to Support the Assessment of Contaminated Sediments in Freshwater Ecosystems Volume III — Interpretation of the Results of Sediment Quality Investigations* (Ingersoll and MacDonald, 2002) "The longer-term tests in which growth and survival are measured tended to be more sensitive than shorter-term tests, with acute chronic ratios on the order of six indicated *Hyaella azteca*. Based on these analyses, if only one of these tests were performed, it would be desirable to conduct chronic (i.e., 28- to 42-day) sediment toxicity tests with *Hyaella azteca* measuring survival and growth (as length) instead of 10- to 14-day tests with *Hyaella azteca*, *Chironomus tentans*, or *Chironomus riparius*."

Response:

The chronic tests recommended by the reviewer may be appropriate for sites in the initial phases of investigation, but since the RI has been completed and finalized using shorter durations (7 to 28 day toxicity tests), it is critical that the same test organisms and durations be used to ensure that consistent decisions be made during the FS process. The 14-day acute toxicity tests proposed for both test organisms will provide survival as an assessment endpoint, although with *Hyaella azteca*, growth will be measured and may be evaluated as a secondary sublethal assessment endpoint.

**RESPONSES TO FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION (FDEP)
COMMENTS provided by Ligia Mora-Applegate
DRAFT SAMPLING AND ANALYSIS PLAN (SAP)
WETLAND SEDIMENT SAMPLING, OPERABLE UNIT 16 — SITE 41
NAVAL AIR STATION PENSACOLA
PENSACOLA, FLORIDA
(Comments Received via electronic mail on December 18, 2012)
FEBRUARY 22, 2013**

The Navy combined the Wetlands at the NAS Pensacola Facility into a single Operable Unit (OU 16), Site 41. Site 41 encompasses approximately 81 wetlands or wetland complexes, both tidal and nontidal that are within the base boundary. These wetlands are either palustrine or estuarine and drain into Bayou Grande or Pensacola Bay.

Sections 11.3 and 11.5 are not clear in describing how the Preliminary Remediation Goals (PRGs) that will be used as the overall ecological Project Action Limits (PALs) will be developed. It was agreed during the March 27 — 28, 2012 meeting that new toxicity data would be used as part of the development of the new PRGs and therefore the PALs and this statement appears to be invalidated by stating that "the PRGs will be used as the overall ecological PAL, if it was calculated as part of the FS."

Additional parameters such as iron in wetland 4D and DDT in wetland 6 need to be tested.

As previously discussed, the sampling plan appears reasonable and the approach to data analysis also appears reasonable; however I would like to emphasize that the Probably Effect Levels (PELs) should only be used as a not-to-exceed values.

Response:

Project Action Levels

The site-specific PRGs are the no-observed effects concentration (NOEC) or the lowest observed effects concentration (LOEC) developed based on site-specific toxicity tests and detected chemical concentrations from data collected as part of the RI. These PRGs, in addition to reference concentrations, and other available ecological criteria were evaluated for development of the current PALs to ensure that the laboratory methodology, to the extent practicable, would achieve these conservative values. Based on the results of data collected during the proposed investigation, the site-specific PRGs may be updated. Sections 11.3 and 11.5 document ecological PRGs, and their derivation is described in Appendix A of the Feasibility Study Report.

During the May 9, 2012, Partnering meeting, the team agreed to compare results to PELs or PECs for the evaluation. It was noted that TECs and TELs would not be used because this investigation is not a screening level assessment and that the sites are past that stage in the risk assessment process.

Iron in Wetland 4D

The Navy agrees that iron floc is observed in Wetland 3; however, Wetland 3 is being addressed under OU 1 and Wetland 3 is not part of this investigation. Iron was not identified at Wetland 4D for further sampling in sediment in the SAP. This finding was based on the COC refinement presented as Appendix A in the Feasibility Study Report. A site-specific no

observed effects concentration (NOEC) for freshwater wetlands of 246,000 milligrams per kilogram (mg/kg) was calculated for iron based on site-specific results in Wetland 3 (041M0302) at a location with no lethal or sublethal toxicity. The NOEC was discussed in the March 2012 meeting. Concentrations of iron reported in sediment are less than the NOECs, and therefore, iron was eliminated for further consideration. As discussed during partnering meetings, in the memorandum and in the response above, the scope of the memorandum was limited to sediment sampling, so surface water and other media were not discussed in the memorandum and are beyond the scope of this follow-up work for the Feasibility Study, unless information indicates that partnering team decisions regarding those media should be reconsidered.

If performed, toxicity testing will address the mixture of contaminants in the samples and would not exclude iron. Consequently, separately analyzing samples for iron was not proposed.

DDT in Wetland 6

As stated in the Final Remediation Investigation Report, November 2007, Wetland 6 was eliminated from further sampling during the Phase III investigation because it is a channelized ditch within the NAS Pensacola storm water drainage system which receives continual impacts from storm water and is actively maintained by base maintenance personnel. As shown on Figure 11-1 from the Remedial Investigation Report, storm water from across the southeastern portion of NAS Pensacola discharges to Wetland 6.

In the May 2012 Partnering meeting, a participant was concerned with the source of DDT. Total DDT was detected above its basewide concentration of 110 ppb at only 2 of 12 locations. The highest location was 260 ppb at 041M060101 and the second highest was 52 ppb at 041M060301. The fate and transport analysis for Wetland 6 did not indicate that OU 6 soil or groundwater was a source of the DDT in sediment. Detected DDT concentrations are not indicative of a spill and are likely from routine spraying of pesticides along the ditch. Food chain models do not indicate a risk to upper trophic level receptors from DDT. The concern for sampling was to identify a source and evaluate potential migration rather than ecological risk. The Navy has cleared this partially lined and channelized ditch, and clearing activities to maintain the ditch will be performed by base personnel as needed to maintain flow in the future. Consequently, the Navy disagrees with adding Wetland 6 to the SAP.

**RESPONSES TO UNIVERSITY OF FLORIDA COMMENTS
DRAFT SAMPLING AND ANALYSIS PLAN (SAP)
WETLAND SEDIMENT SAMPLING, OPERABLE UNIT 16 — SITE 41
NAVAL AIR STATION PENSACOLA
PENSACOLA, FLORIDA
(Comments Received via electronic mail on December 18, 2012)
FEBRUARY 22, 2013**

Comment 1:

In the final Remedial Investigation (RI; August 2005), iron was listed as a contaminant of potential concern (COPC) in surface water and sediment for Wetland 4D. During a site visit on September 20, 2012, it was noted that iron continues to be a concern for this wetland. We recommend that proposed additional sampling in Wetland 4D include iron to better determine the extent of iron contamination in sediment and surface water.

Response 1:

The Navy agrees that iron floc is observed in Wetland 3; however, Wetland 3 is being addressed under OU 1 and Wetland 3 is not part of this investigation. Iron was not identified at Wetland 4D for further sampling in sediment in the SAP. This finding was based on the COC refinement presented as Appendix A in the Feasibility Study Report. A site-specific no observed effects concentration (NOEC) for freshwater wetlands of 246,000 milligrams per kilogram (mg/kg) was calculated for iron based on site-specific results in Wetland 3 (041M0302) at a location with no lethal or sublethal toxicity. The NOEC was discussed in the March 2012 meeting. Concentrations of iron reported in sediment are less than the NOECs, and therefore, iron was eliminated for further consideration. As discussed during partnering meetings, in the memorandum and in the response above, the scope of the memorandum was limited to sediment sampling, so surface water and other media were not discussed in the memorandum and are beyond the scope of this follow-up work for the Feasibility Study, unless information indicates that partnering team decisions regarding those media should be reconsidered.

If performed, toxicity testing will address the mixture of contaminants in the samples and would not exclude iron. Consequently, separately analyzing samples for iron was not proposed.

As discussed during partnering meetings and in the memorandum, the scope of the memorandum was limited to sediment sampling, so surface water and other media were not discussed in the memorandum and are beyond the scope of this follow-up work for the Feasibility Study.

Comment 2:

During a Partnering Meeting on March 27-28, 2012, field verification was proposed for Wetland 6 to determine if additional sampling for DDT is necessary (Appendix A). A site visit on September 20, 2012 verified fish and piscivorous birds are present in this wetland. Further sampling to delineate the extent of contamination appears necessary to determine whether DDT is of concern to higher trophic levels species foraging in Wetland 6.

Response 2:

As stated in the Final Remediation Investigation Report, November 2007, Wetland 6 was eliminated from further sampling during the Phase III investigation because it is a channelized ditch within the NAS Pensacola storm water drainage system which receives

continual impacts from storm water and is actively maintained by base maintenance personnel. As shown on Figure 11-1 from the Remedial Investigation Report, storm water from across the southeastern portion of NAS Pensacola discharges to Wetland 6.

In the May 2012 Partnering meeting, a participant was concerned with the source of DDT. Total DDT was detected above its basewide concentration of 110 ppb at only 2 of 12 locations. The highest location was 260 ppb at 041M060101 and the second highest was 52 ppb at 041M060301. The fate and transport analysis for Wetland 6 did not indicate that OU 6 soil or groundwater was a source of the DDT in sediment. Detected DDT concentrations are not indicative of a spill and are likely from routine spraying of pesticides along the ditch. Food chain models do not indicate a risk to upper trophic level receptors from DDT.

The concern for sampling was to identify a source and evaluate potential migration rather than ecological risk. The Navy has cleared this partially lined and channelized ditch, and clearing activities to maintain the ditch will be performed by base personnel as needed to maintain flow in the future. Consequently, the Navy disagrees with adding Wetland 6 to the SAP.

Comment 3:

Worksheet 11 states that twice the mean detected concentration in the reference area will be utilized as an upper-end estimate of background concentrations at the site. The upper-end of the range of background concentrations is usually defined as the lower of twice the mean or the maximum detected concentration. This methodology prevents an overestimation of the upper limit of background that could result from a few elevated reference samples.

Response 3:

Background was established as part of the Final RI Report for NAS Pensacola wetlands, including substantial input from EPA, FDEP and other stakeholders as part of the partnering process with the Navy as well as the comment and response process typically used to finalize RI Reports. Consequently, revisiting background determinations and/or comparison methods as part of this sampling and analysis plan is beyond the scope of the memorandum.

Comment 4:

The use of PALs in Sections 11.3 and 11.5 is unclear (Worksheet 11). The document states that site-specific preliminary remedial goals (PRGs) will be reassessed using chemistry and toxicity data collected during this sampling event. However, it also states that if a PRG was calculated as part of the feasibility study (FS), the PRG from the FS will be utilized as the PAL. The PALs are then utilized to determine the extent of contamination. At the March 2012 Partnering Meeting (Appendix A), both the University of Florida and the US EPA expressed concern regarding the interpretation of toxicity testing and derivation of the PRGs in the FS. It was also agreed in a Partnering Meeting on May 9, 2012 (Appendix B) that the old toxicity testing data would not be utilized for determining ecological toxicity at the site. These values should not be proposed for determining the extent of contamination in the SAP.

Response 4:

The site-specific PRGs are the no-observed effects concentration (NOEC) or the lowest observed effects concentration (LOEC) based on site-specific conditions and detected concentrations. The PRGs, reference concentrations, and other available ecological criteria were evaluated for development of the current PALs. Based on the data collected during the proposed investigation, the site-specific PRGs may be updated. The Navy agrees that the old toxicity test data will not be used with the proposed data for determining ecological toxicity at the site. Worksheet #11 will be reworded to show that new PRGs will be calculated as new data is obtained throughout the investigation.

Comment 5:

The sediment screening level hierarchy (page WS 11-5) proposes to utilize the FDEP probable effect levels (PELs) for delineation purposes. Usually the threshold effect levels (TELs) are utilized for screening as well as delineation purposes. Use of the PEL for delineation could result in an average wetland contaminant concentration that exceeds the TEL.

Response 5:

An RI Report has already been developed for NAS Pensacola wetlands, including substantial input from EPA, FDEP and other stakeholders as part of the partnering process with the Navy as well as the comment and response process typically used to finalize RI Reports. Consequently, findings in the RI Report and subsequent discussions were integrated into the sampling and analysis memorandum. It was noted the TECs and TELs would not be used because this investigation is not a screening level assessment as the sites are past that stage in the risk assessment process. The sampling approach was discussed with the partnering team while the memorandum was being developed.

Comment 6:

Only three samples are proposed per reference wetland for a total of six freshwater and six estuarine reference samples. Six samples are not adequate to determine upper background concentrations with any certainty. The small number of proposed background samples is likely to result in a data set that will overestimate upper background concentrations. We recommend two additional samples per wetland for a total of ten samples per environment.

Response 6:

Two additional samples per reference wetland will be added.

Comment 7:

Sample 041M3306 in Wetland 33 (Figure 17-12) is the only sample proposed outside of a wetland boundary. It is unclear why a proposed reference sample does not actually lie within the boundaries of a wetland. Further explanation is necessary to clarify the placement of this sample.

Response 7:

Sample location will be changed to inside Wetland 33 boundary.

Comment 8:

The duration of the proposed sediment toxicity tests is unclear. However, the draft *Response to USEPA Technical Comments* (dated July 30, 2012) suggests the tests will be shortened to a 14-day exposure period for both *Leptocheirus* and *Hyaella*. It is important to note that 14-day toxicity testing for these species does not include reproduction. We recommend a chronic exposure period (28-60 days) to include reproductive endpoints as well as growth and survival. Reproductive endpoints may be more sensitive to some contaminants, and therefore contaminant concentrations protective of growth and mortality may not be protective of reproductive effects. Chronic reproductive endpoints are indicative of population level effects and should be evaluated unless there is evidence that reproduction is not the most sensitive endpoint for the contaminants of concern.

Response 8:

The chronic tests recommended by the reviewer may be appropriate for sites in the initial phases of investigation, but since the RI has been completed and finalized using shorter durations (7 to 28 day toxicity tests), it is critical that the same test organism and duration be used to ensure that consistent decisions be made during the FS process. The 14-day acute toxicity tests proposed for both test organisms will provide survival as an assessment endpoint, although with *Hyaella azteca*, growth will be measured and may be evaluated as a secondary sublethal assessment endpoint.

Comment 9:

Page WS 11-4 states the PRGs in the FS were derived from the higher of the reference/background concentration, sediment screening levels, and sediment refinement levels. The PRGs were actually the higher of the reference/background, sediment screening levels, sediment refinement levels, and site-specific toxicity levels developed from sediment toxicity testing.

Response 9:

Section 11.3, page 11-4 will be reworded to state that PRGs were developed as part of the FS and the overall PRG was the highest value among the reference/background concentrations, sediment refinement levels, and site-specific NOEC or LOEC.

**RESPONSES TO U.S. ENVIRONMENTAL PROTECTION AGENCY COMMENTS
DRAFT SAMPLING AND ANALYSIS PLAN (SAP)
WETLAND SEDIMENT SAMPLING, OPERABLE UNIT 16 — SITE 41
NAVAL AIR STATION PENSACOLA
PENSACOLA, FLORIDA
(Comments Received via electronic mail on December 18, 2012)
FEBRUARY 22, 2013**

REVIEW FINDINGS

EPA's review focused on two aspects the overall technical aspects of the sampling approach and also the quality assurance aspects of the sampling approach. The review comments are divided between these aspects with each aspect having general, specific and minor/editorial sections. There are some issues that overlap aspects though an effort was made to not duplicate comments. EPA has also provided a checklist used to guide the review of the quality assurance (QA) section. It should be noted that QA issues raised in the technical review have not necessarily been indicated in this checklist.

Overall, the sampling approach presented in the SAP is mostly consistent with previous reviews and scoping sessions; however, several inconsistencies were identified. Inconsistencies are described in technical review specific comments below while several overarching concerns are presented in the technical review general comments.

The first technical review general concern is the exclusion of iron from the SAP analyte list for Wetlands 4D, 15, 18A and 18B. These wetlands receive runoff and ground water discharge from the OU1 landfill where iron has been identified as a chemical of concern. Further, the results of the ecological risk assessments (ERAs) for Wetlands 4D, 15, 18A and 18B located in the Final Remedial Investigation Report (RI Report)¹ revealed that iron was identified as a chemical of potential concern (COPC) in surface water and sediment following the refinement step of the ERAs for these wetlands. Field observations further confirms the potential impacts to wetlands receiving drainage from the OU1 landfill, yet, iron was then discounted altogether as a risk driver at the four wetlands based on the FS Tech Memo. This concern is addressed in further detail below.

EPA raises a second technical review general concern that Wetland 6 has not been included for further sampling in the SAP even though participants discussed this wetland for potential sampling during scoping meetings with regards to the detections of a dichlorodiphenyltrichloroethane (DDT) in sediment and migration of this pesticide to the downgradient Wetland 64 complex. This concern is addressed in further detail below.

¹ Final Remedial Investigation Report, Site 41 — Operable Unit 16 — NAS Pensacola Wetlands, dated August 2005, revised November 2007.

TECHNICAL REVIEW OF SAMPLING APPROACH

I. GENERAL COMMENTS

Comment 1:

Conversations held during the scoping meeting in March 2012 indicated that Wetland 3 is currently serving as a treatment wetland for the elevated levels of iron discharging from OU1 landfill ground water. EPA also understands from the scoping meeting that the focus of future sampling within Site 41 is for sediment. However, during a field visit on September 20, 2012, EPA observed orange floc in Wetland 3 and along the western back of Wetland 4D which indicates that iron is likely discharging from Wetland 3 to Wetland 4D. EPA also observed orange floc in Wetland 18B, yet iron is not included for further sampling at any of the wetlands which receive ground water discharge or runoff from the OU1 landfill. Based on a review of the RI Report, iron was identified as a COPC in surface water and sediment in Wetland 4D based on the refinement step of the ERA. The RI Report also identified iron as a COPC in surface water and sediment for OU1 Wetlands 15, 18A, and 18B. The conceptual site models presented in the SAP for OU1 Wetlands 4D, 15, 18A and 18B all indicate that the potential release mechanisms to these wetlands are migration pathways associated with the OU1 landfill; however, iron is not identified for further sampling at any of the OU1 wetlands in surface water or sediment. Because iron has historically exceeded the applicable or relevant and appropriate requirements (ARARs) in Wetland 3 and was identified in all OU1 Wetlands as a COPC in surface water and sediment following the refinement step of the ERA, EPA requests that iron be included for further sampling in the SAP to include all OU1 Wetland surface water and sediment.

Response 1:

The Navy agrees that iron floc is observed in Wetland 3; however, Wetland 3 is being addressed under OU 1 and Wetland 3 is not part of this investigation. As noted in the comment above, iron was not identified for further sampling in sediment in the SAP. This finding was based on the COC refinement presented as Appendix A in the Feasibility Study Report. A site-specific no observed effects concentration (NOEC) for freshwater wetlands of 246,000 milligrams per kilogram (mg/kg) was calculated for iron based on site-specific toxicity results in Wetland 3 (041M0302) at a location with no lethal or sublethal toxicity. Additionally, a site-specific iron NOEC for estuarine wetlands of 20,800 milligrams per kilogram (mg/kg) was calculated. The NOEC was discussed in the March 2012 meeting. Concentrations of iron reported in sediment are less than the NOECs, and therefore, iron was eliminated for further consideration. As discussed during partnering meetings, in the memorandum and in the response above, the scope of the memorandum was limited to sediment sampling, so surface water and other media were not discussed in the memorandum and are beyond the scope of this follow-up work for the Feasibility Study, unless information indicates that partnering team decisions regarding those media should be reconsidered.

Comment 2:

The SAP indicates that only sediment will be sampled for chemical analyses while only water quality parameters are being analyzed for surface water (e.g., pH, specific conductance, salinity, temperature, and dissolved oxygen). The basis for only sampling sediment for chemical analyses has not been provided. EPA previously recommended² during the technical review of the sampling approach³ that additional water samples be collected because the historic samples are so dated, as far back as 1994. Both EPA and the Florida Department of Environmental Protection (FDEP) have suggested the addition of investigating this medium in prior meetings and through written comments. In addition, the food-chain modeling (FCM) presented in Appendix C of the SAP indicates the aquatic receptors are exposed to surface water and sediment through ingestion, further supporting the need to collect surface water samples. Include surface water samples for chemical analysis as part of the SAP; it is not necessary to collect water samples at every sediment sampling location; water samples could be collected at a subset of stations.

Response 2:

As stated in the planning meetings, the primary receptor to be evaluated during this assessment is benthic invertebrates. In addition, depending upon the season, surface water is not present at some of the wetlands (e.g., Wetland 18A and 4B). Surface water quality parameters such as pH, specific conductance, salinity, temperature, and dissolved oxygen are documented when sediment samples are collected only when surface water is present using water quality meters. As stated in Section 11.3, Page WS 11-3, pH will be collected at all wetlands if surface water is present. Wetlands 15, 12, and 5A may have limited areas of surface water, while Wetlands 18B, 64 complex, 1B and 4D are typically submerged. The RI Report did not recommend additional surface water evaluation as surface water is not a media that will be assessed in the Feasibility Study, and the scope of the memorandum was limited to sediment. The utility of surface water data in making remedial decisions for the OU is unclear; therefore, the Navy does not propose to sample surface water. References to aquatic receptors in the food chain models were inadvertently included in Appendix C. Those references will be removed.

Comment 3:

Throughout the SAP discrepancies exist regarding the analyte list to be included for chemical analysis for each site. For some sites, specific metals and specific organic compounds are being proposed for analysis while for other wetlands a full scan of metals and full scan of semivolatile organic compounds (SVOCs) are proposed for analysis in sediment samples. For example, in Worksheet 10 on page WS 10-12 sediment samples at Wetland 5A will be analyzed for "metals" plus tin, polychlorinated biphenyl compounds (PCBs), polycyclic aromatic hydrocarbons (PAHs), bis(2-ethylhexyl)phthalate (BEHP), and pesticides dichlorodiphenyldichloroethane (DDD), dichlorodiphenyldichloroethylene (DDE), and dichlorodiphenyltrichloroethane (DDT); however it is unclear if "metals" suggest analyzing for the full scan of metals. In Worksheet 18 on page WS18-3, it appears that sediment samples at 5A will be analyzed for the whole target analyte list (TAL) for metals and target compound list (TCL) for SVOCs which include more

² EPA's June 28, 2012 Review of the of the Technical Memorandum, Sampling Approach for Collection of Additional Sediment Samples, Operable Unit 16, Site 41 Combined Wetlands Naval Air Station Pensacola, Pensacola, Florida, April 2012.

³ Technical Memorandum, Sampling Approach for Collection of Additional Sediment Samples, Operable Unit 16, Site 41 Combined Wetlands, Naval Air Station Pensacola, Pensacola, Florida, April 2012.

constituents than stated in Worksheet 10, page WS 10-12. Another example involves Wetland 12 (Worksheet #10, page WS 10-16) where the conceptual site model indicates that pesticides are of concern in sediment, yet worksheet 18 (Page WS18-4) shows that only pesticides DDD, DDE, and DDT are being included for analysis. The SAP requires consistency between worksheets 10 and 18 to ensure clear justification for selecting an abbreviated list of analytes for most wetlands yet including full scan analyses for others when determining the vertical and horizontal extent of contamination.

Response 3:

The analyte list to be included for chemical analysis will be checked for accuracy between worksheets 10 and 18, and lists will be revised for consistency if needed.

Comment 4:

The SAP does not address any sampling at Wetland 6 even though the scoping sessions and field observations support the need for additional sediment sampling at this wetland. According to the scoping meetings held in March and May of 2012, the meeting minutes in Appendix A and B of the SAP, and field observations of the wetland on September 20, 2012, Wetland 6 was still proposed as a potential candidate for sampling. Wetland 6 has been historically associated with elevated DDT concentrations in sediment and this wetland discharges directly into the Wetland 64 complex. On the March 2012 scoping meeting the Navy indicated they would consider Wetland 6 for resampling pending field verification of potential sources (see Appendix A for this documentation). During the May 2012 scoping a participant inquired to see if field verification of potential DDT sources to Wetland 6 had been completed. The Navy indicated no sampling was proposed for Wetland 6, but a final decision would be made pending field verification (see Appendix B). Further, the Navy indicated that based on some drawings, it appeared that sediment was excavated from the wetland; however, the Navy agreed to take some photos of the area to see if any sediment is present. They also stated that samples in the ditch may be included in the SAP to confirm that DDT is not migrating to the downgradient Wetland 64 complex. It should be noted that EPA and the FDEP visited Wetland 6 on September 20, 2012, and observed that Wetland 6 is only partially lined by cement tiles with the rest of the drainage composed of exposed sediment. Furthermore, during this visit Wetland 6 had flowing water and little vegetation, but the area appeared to serve as a habitat for fish, crab, frogs and birds that feed on aquatic prey. Based on the scoping sessions and field observations, EPA requests that Wetland 6 be included for further sampling in the SAP.

Response 4:

As stated in the Final Remediation Investigation Report, November 2007, Wetland 6 was eliminated from further sampling during the Phase III investigation because it is a channelized ditch within the NAS Pensacola storm water drainage system which receives continual impacts from storm water and is actively maintained by base maintenance personnel. As shown on Figure 11-1 from the Remedial Investigation Report, storm water from across the southeastern portion of NAS Pensacola discharges to Wetland 6. In the May 2012 Partnering meeting, a participant was concerned with the source of DDT. Total DDT was detected above its basewide concentration of 110 ppb at only 2 of 12 locations. The highest location was 260 ppb at 041M060101 and the second highest was 52 ppb at 041M060301. The fate and transport analysis for Wetland 6 did not indicate that OU 6 soil or groundwater was a source of the DDT in sediment. Detected DDT concentrations are not indicative of a spill and are likely from routine spraying of pesticides along the ditch. Food chain models do not indicate a risk to upper trophic level receptors from DDT.

The concern for sampling was to identify a source and evaluate potential migration rather than ecological risk. The Navy has cleared this partially lined and channelized ditch, and clearing activities to maintain the ditch will be performed by base personnel as needed to maintain flow in the future. Consequently, the Navy disagrees with adding Wetland 6 to the SAP.

Comment 5:

The SAP will include the analysis of acid volatile sulfide and simultaneously extracted metals (AVS/SEM) to support the evaluation of potential bioavailability of metals in sediment. However, the SAP does not specifically explain how the results of AVS/SEM will be used and how they will be interpreted. During the May 9, 2012 partnering call, EPA inquired how the AVS/SEM results would be utilized in the ecological evaluation and the Navy contractor indicated that if certain metals exceed preliminary remedial goals (PRGs), the AVS/SEM results would be used to demonstrate whether those metals are bioavailable or not. If the AVS/SEM data indicate the metals are not bioavailable, this information would be used to support that toxicity testing would not be needed. Inclusion of the rationale for conducting AVS/SEM as reflected in the meeting minutes for the May 9, 2012 (Appendix B of the SAP, page 6) should be included in SAP to clearly explain the rationale and for the AVS/SEM sampling and analyses. It must be noted that AVS/SEM is a predictive tool for the toxicity of five divalent metals (i.e., cadmium, nickel, copper, lead and zinc) in sediment. Silver has also been included as a SEM. The AVS/SEM approach does not account for the toxicity of chemicals that may be present in the sediment. Therefore, its usefulness at the site may be limited, unless the above six metals are the only chemicals of concern for the particular wetlands.

Response 5:

AVS-SEM is a tool to assess the bioavailability of some metals. If the metals are not bioavailable, the Team will be consulted to determine if toxicity testing may not be needed (as described in Worksheet 11). Findings in the RI Report as well as subsequent discussions with partnering team participants and PRGs were integrated to develop the sampling and analysis memorandum. During the May 9, 2012 Partnering Meeting, the team discussed PRGs for this evaluation. It was noted that this investigation is not a screening level assessment and that the sites are past that stage in the risk assessment process.

Comment 6:

The conceptual site models (CSMs) Figures 10-2 through 10-9 (pages WS 10-5 through WS 10-18) are incomplete as the CSMs assume that benthic invertebrates are the only receptors at risk. Because benthic invertebrates are a food for fish and fish are a source of food for birds and mammals, these latter receptors also need to be addressed by the CSMs, in both the text and within the associated figures. Further, due to the presence of iron in surface water at concentrations above applicable or relevant and appropriate requirements (ARARs), aquatic receptors such as fish and aquatic invertebrates also are receptors to be addressed in the CSMs. Revise CSMs to include all possible aquatic and terrestrial receptors in support of the SAP; the CSMs can always be revised as part of the ecological risk evaluation once data are available that support excluding the evaluation of specific receptors.

Response 6:

Upper trophic levels were evaluated during the Remedial Investigation and except for Wetland 48, FCM impacts were not shown. The primary focus of this sampling event is protection of the benthic invertebrates. The Navy will add upper trophic receptors to the Wetland 48 conceptual site model. As part of this Feasibility Study, the conceptual site model will note that evaluating upper trophic level receptors will be contingent upon the following: 1) Identifying concentrations that are greater than historical concentrations, and 2) the extent of contamination is not an isolated area.

Comment 7:

A portion of EPA's Uniform Federal Policy for Quality Assurance Plans Guidance (UFP-QAPP guidance) has been updated; specifically Part 2A Work book of the UFP-QAPP guidance was revised in March of 2012⁴. The original 37 work sheets have now been optimized into 27 work sheets. It is recommended, though not required, that the most current version of the UFP-QAPP work sheets be used on work plans.

Response 7:

NAVFAC uses the Navy's 37 worksheet format which meets the requirements of the UFP-QAPP instruction.

Comment 8:

The SAP references the Wetland 64 complex throughout the document; however, that the complex comprises Wetlands 7, 8 and 64 is not described in the main text of the SAP. Although the complex is illustrated in Figure 10-7 and described in Appendix A, a description of the Wetland 64 complex should be included in the main body of the SAP to promote clarity that this area really comprises three wetlands. This could be accomplished in the existing Section 10.4.2, Wetland 64 Complex.

Response 8:

A description of the Wetland 64 complex will be added to Section 10.4.2 to state that the complex comprises Wetlands 7, 8, and 64.

Comment 9:

Based on a review of the Final RI in support of the review of the SAP, Wetland W2 was identified as a wetland that is recommended for further sampling. Wetland W2 is located northeast of the airfield and it does not appear to have been fully sampled. Three samples were taken on the branch that leads from Redoubt Bayou south to the corner of the L shape of Wetland W2 however the western extent of the wetland has not been sampled to determine potential impacts from Sites 5 and 6 and 16a. It is recommended that the western reach of Wetland W2 that is adjacent to the airfield and Sites 5, 6, and 16a be sampled to determine if these Sites may have impacted this wetland.

⁴ Uniform Federal Policy for Quality Assurance Project Plans Evaluating, Assessing, and Documenting Environmental Data Collection and Use Programs, Part 2A: UFP-QAPP Workbook, March 2012. <http://www.epa.gov/fedfac/documents/qualityassurance.htm>.



Note:

Green dots are previous samples

Source:

Final Remedial Investigation Report, Site 41 — Operable Unit 16 — NAS Pensacola Wetlands, dated August 2005, revised November 2007

Response 9:

The Navy agrees to add Wetland W2 and sample sediment at the western reach of the wetland. The fate and transport analysis in Section 15 of the Remedial Investigation report evaluated Sites 5 and 16 as possible sources for Wetland W2. The surface soil to sediment pathway was validated for the following parameters: aluminum, barium, beryllium, cobalt, iron, selenium, vanadium, aldrin, benzo(b)fluoranthene, and indeno(1,2,3cd)pyrene. The groundwater to surface water pathway was validated for manganese and the groundwater to sediment pathway was validated for aluminum, beryllium, iron, and vanadium.

II. SPECIFIC COMMENTS

Comment 1:

Sampling and Analysis Plan (SAP) Worksheet #6, Communication Pathways, pages WS 6-1 through WS 6-3.

- a. The header on pages WS 6-1 through 6-3 indicate that this worksheet is SAP Worksheet #7 when it should read Worksheet #6.

Response a:

Worksheet number will be changed.

- b. Communication drivers are not included for issues associated with toxicity tests, data validation, and data verification. Document the issues and associated information requirements in Worksheet #6 to promote clarity on the communication pathways for these activities.

Response b:

Hydrosphere Research, the toxicity laboratory, has been listed as part of the communication pathway in multiple locations on this worksheet. For clarification, the text will be modified to add the words "toxicity laboratory" or "toxicity tests" wherever laboratory or analytical communication drivers are indicated.

Comment 2:

Sampling and Analysis Plan (SAP) Worksheet #10, Conceptual Site Model

- a. Section 10.2 Previous Investigation Findings, Page WS 10-4: During the May 2012 scoping meeting, participants agreed on two items to be included in the SAP: 1) the rationale for only focusing only benthic receptors and 2) a decision tree would be included to address how the issue of high concentrations of chemicals like DDT will be addressed if detected (e.g., a food chain model). Neither of these items is reflected in the SAP. The SAP should be revised to include these two items.

Response a:

Benthic receptors are the focus for this investigation. Except for Wetland 48, previous investigation did not show possible food chain model effects in upper trophic level organisms. If concentrations are higher than detected in previous phases, food chain models will be completed.

- b. Section 10.3.2 Wetland 4D, Page WS 10-5: This section indicates that Wetland 4D receives freshwater from surface water discharges from Wetland 3 from the west, but iron is not proposed for sampling. Wetland 3 is known to be impacted by very elevated levels of iron as noted in the RI and observed in the field on September 20, 2012, wetland. Further, iron was identified as a COPC in surface water and sediment at Wetland 4D following the refinement step of the ERA in the Final RI. EPA requests sampling for iron in surface water and sediment for Wetland 4D at the western bank area to evaluate the potential impacts on surface water discharge from Wetland 3.

Response b:

The Navy agrees that iron floc is observed in Wetland 3; however, Wetland 3 is being addressed under OU 1 and Wetland 3 is not part of this investigation. Iron was not identified at Wetland 4D for further sampling in sediment in the SAP. This finding was based on the COC refinement presented as Appendix A in the Feasibility Study Report. A site-specific no observed effects concentration (NOEC) for freshwater wetlands of 246,000 milligrams per kilogram (mg/kg) was calculated for iron based on site-specific results in Wetland 3 (041M0302) at a location with no lethal or sublethal toxicity. The NOEC was discussed in the March 2012 meeting. Concentrations of iron reported in sediment are less than the NOECs, and therefore, iron was eliminated for further consideration. As discussed during partnering meetings, in the memorandum and in the response above, the scope of the memorandum was limited to sediment sampling, so surface water and other media were not discussed in the memorandum and are beyond the scope of this follow-up work for the Feasibility Study, unless information indicates that partnering team decisions regarding those media should be reconsidered. If performed, toxicity testing will address the mixture of contaminants in the samples and would not exclude iron. Consequently, separately analyzing samples for iron was not proposed.

As discussed in the response to General Comments 1 and 2, during meetings, and in the sampling and analysis memorandum, the scope of the memorandum was limited to sediment sampling, so surface water and other media are beyond the scope of the follow-up work proposed for the Feasibility Study, unless information indicates that partnering team decisions regarding those media should be reconsidered.

- c. Section 10.3.3 Wetland 15, Page WS 10-8: This section indicates that the potential primary release mechanisms at Wetland 15 may include runoff and shallow-ground water outflow from OU1 landfill and the golf course. The RI identified iron as a concern in ground water from OU1 landfill as well as a surface water and sediment COPC at Wetland 15 following the refinement step of the ERA, thus, it is unclear why iron is not included in the analytical suite proposed for Wetland 15. Include iron in the analytical suite for this wetland for both surface water and sediment or provide additional detail why iron is no longer considered a concern for this wetland. In addition, it is recommended that pH also be measured at this wetland to describe the acidity or alkalinity of the surface water.

Response c:

Based on the results of the OU 1 Remedial Investigation Report, Wetland 3 was included in the OU 1 Feasibility Study Report for the prevention of further contamination of surface water in Wetland 3. Wetland 3 was the only OU 1 wetland identified for additional action.

Iron was eliminated in Wetland 15 as a COC in Appendix A, Ecological PRG Calculations of the Site 41 Feasibility Study report because the maximum reported concentration (223,000 mg/kg) just slightly exceeded the PRG (220,000 mg/kg), and other concentrations were less than the PRG. The pH levels from Wetland 15 ranged from 6.01-6.98 S.U.

As discussed in the response to General Comments 1 and 2, during partnering meetings, and in the sampling and analysis memorandum, the scope of the memorandum was limited to sediment sampling, so surface water and other media are beyond the scope of the follow-up work proposed for the Feasibility Study, unless information indicates that partnering team decisions regarding those media should be reconsidered.

As stated in Section 11.3, Page WS 11-3, pH will be collected at all wetlands if surface water is present. Please see the response to General Comment 2.

- d. Section 10.3.4 Wetland 18A, Page WS 10-8: This section indicates that the potential primary release mechanisms may include runoff and shallow-ground water outflow from OU1 landfill seeping into the wetland. The RI identified iron as a concern in ground water from OU1 landfill as well as surface water and sediment COPCs at Wetland 18A following the refinement step of the ERA. Thus, it is unclear why iron is not included in the analytical suite proposed for Wetland 18A. Include in the analytical suite for this wetland for both surface water and sediment or provide additional detail why iron is no longer considered a concern for this wetland.

Response d:

Based on the results of the OU 1 Remedial Investigation Report, Wetland 3 was included in the OU 1 Feasibility Study Report for the prevention of further contamination of surface water in Wetland 3. Wetland 3 was the only OU 1 wetland identified for additional action.

Iron was eliminated as a COC at Wetland 18A as shown in Appendix A, Ecological PRG Calculations of the Site 41 Feasibility Study Report. Reported concentrations of iron in sediment were below the freshwater sediment NOEC of 246,000 mg/kg. As discussed in the response to General Comments 1 and 2, during partnering meetings, and in the sampling and analysis memorandum, the scope of the memorandum was limited to sediment sampling, so surface water and other media are beyond the scope of the follow-up work proposed for the Feasibility Study, unless information indicates that partnering team decisions regarding those media should be reconsidered.

- e. Section 10.3.5 Wetland 18B, Page WS 10-10: This section indicates that the potential primary release mechanisms may include OU1 landfill constituents via inflow from Wetland 18A. The RI identified iron as a concern in ground water from OU1 landfill as well as surface water and sediment COPCs at Wetland 18B following the refinement step of the ERA. Thus, it is unclear why iron is not included in the analytical suite proposed for Wetland 18B. Include in the analytical suite for both surface water and sediment for this wetland or provide additional detail why iron is no longer considered a concern for this wetland.

Response e:

Based on the results of the OU 1 Remedial Investigation Report, Wetland 3 was included in the OU 1 Feasibility Study Report for the prevention of further contamination of surface water in Wetland 3. Wetland 3 was the only OU 1 wetland identified for additional action.

Iron was eliminated as a COC at Wetland 18B as shown in Appendix A, Ecological PRG Calculations of the Site 41 Feasibility Study Report. Detected concentrations of iron in sediment were below the estuarine sediment NOEC of 20,800 mg/kg. As discussed in the response to General Comments 1 and 2, during partnering meetings, and in the sampling and analysis memorandum, the scope of the memorandum was limited to sediment sampling, so surface water and other media are beyond the scope of the follow-up work proposed for the Feasibility Study, unless information indicates that partnering team decisions regarding those media should be reconsidered.

- f. Section 10.4.2 Wetland 64 Complex, Page WS-10-14: This section utilizes the acronym SIM however; it has not been spelled out previously. To promote clarity in the document it is recommended that all acronyms be spelled out upon first mention.

Response f:

The acronym SIM will be defined in the text.

- g. Section 10.6 Wetland 48 Conceptual Site Model, Page WS-10-16: This section indicates that although a jet fuel spill occurred in 1983 that has likely impacted the site, a discussion associated with possible sources that may be the cause of the elevated pesticide concentrations (e.g., DDD, DDE, and DDT) and metals has not been provided (e.g., historical weed control along fence line, etc.). Further, this section states that the primary release mechanisms include surface water and groundwater transport from Site 37 fuel farm and former fuel spill, however, a surface release is not consider surface water transport. Figure 10-9 also shows surface water runoff as a release mechanism when the figure actually is showing surface runoff from the jet fuel spill area to surface water. This section should discuss the uncertainties associated with the conceptual understanding of the site and revise the CSM in figure 10-9 to include possible sources of pesticide and metals contamination. In addition, to promote clarity, this section should describe the primary release mechanisms as surface runoff and ground water transport. Further this section needs to include a discussion of the data gaps that will be addressed by the proposed sampling activities as has been done on CSM discussions in previous sections.

Response g:

As stated in Section 10.6, Page WS 10-16, although the jet fuel spill may have impacted the site (Wetland 48), the DDT source is unknown. The primary release mechanisms will be described as surface runoff and ground water transport. The data gaps that will be addressed by the proposed sampling activities are the horizontal and vertical extent of contamination. As discussed in the response to General Comments 1 and 2, during partnering meetings, and in the sampling and analysis memorandum, the scope of the memorandum was limited to sediment sampling, so surface water and other media are beyond the scope of the follow-up work proposed for the Feasibility Study, unless information indicates that partnering team decisions regarding those media should be reconsidered.

Comment 3:

SAP Worksheet #11, Project Quality Objectives/Systematic Planning Process Statements

- a. Section 11.3 Inputs to Problem Resolution, Page WS 11-2: According to Section 11.1 Problem Statement (Page WS 11-1), data are needed to further characterize the horizontal and/or vertical extent of contamination in sediments, and that information should be used to update an assessment of ecological and human risk. However, according to section 11.3 data will be used for ecological screening and potentially may be used for food chain modeling; this section does include using the data for human risk assessment. Further, neither Section 11.3 nor other sections of the SAP include how the ecological risk assessment, food-chain evaluations, or human health risk assessment will be conducted. Revise the SAP to address how the data collected will be used for these evaluations and assessments.

Response a:

The Navy will present the sediment chemistry data to the Team to allow for a consensus on whether additional toxicity testing, food-chain models, and/or human health risk assessment are required. Human health risk assessment will be added to the SAP where appropriate, including a new decision rule in Worksheet #11. Appendix C of the SAP provides the food chain model and methodology. A decision tree will be added to the SAP.

- b. Section 11.3 Inputs to Problem Resolution, Page WS 11-3: According to Section 11.3, AVS/SEM analysis will be used to evaluate the potential bioavailability of metals in sediment; however, this section does not specify which metals to which this method applies. According to EPA risk assessment guidance for evaluating metals⁵ the proposed method for predicting the direct toxicity of mixtures of cationic metals in sediments to benthic organisms using the sum of (Σ)SEM-AVS approach is limited to six cationic metals (cadmium, copper, lead, nickel, silver and zinc). It is recommended that Section 11.3 be revised to specify which metals the AVS/SEM method will address in the SAP. Further, this section does not explain how the AVS/SEM results will be used in the ecological risk evaluation. It is recommended that the rationale for conducting AVS/SEM as reflected in the meeting minutes for the May 9, 2012 (Page 6 of Appendix B of the SAP) be included in SAP to clearly explain the rationale for the AVS/SEM sampling and analyses.

Response b:

Section 11.3 will be revised to specify which metals the AVS/SEM method will address. The rationale, as presented in the May 9, 2012 meeting minutes, will be added to Section 11.3 of the SAP to clarify why the AVS/SEM method will be conducted.

- c. Section 11.3 Inputs to Problem Resolution, Page WS 11-3: The SAP indicates that sediment samples will be analyzed for organic carbon yet it is unclear why the organic carbon content of the sediment is not being considered when evaluating SEM/AVS data. Organic carbon is important with the partitioning phase in sediments. The SAP should clarify why organic carbon is not being considered in the evaluation of the SEM/AVS data, or consider using the organic carbon (foc) (e.g., (Σ SEM-AVS)/foc).

⁵ EPA's Framework for Metals Risk Assessment EPA 120/R-07/001, March 2007.

Response c:

Findings in the RI Report as well as subsequent discussions with partnering team participants and PRGs and use of AVS/SEM were integrated to develop the sampling and analysis memorandum. The SAP will be clarified regarding use of TOC normalization.

- d. Section 11.5 Analytical Approach, Page WS 11-7: Decision Rule #5 to support the analytical approach states that if concentrations of bioaccumulative contaminants are greater than historic maximum sediment concentrations in the 2007 RI, then food chain models may be conducted. This suggests that there may be instances where food chain models will not be conducted even though concentrations of bioaccumulative contaminants are greater than the historic maximum, but a decision rule or approach has not been provided to support this condition. The SAP should clarify the condition where a food-chain model would not be conducted even if the historic maximum is exceeded in the proposed sampling effort.

Response d:

Section 11.5, Page WS 11-7, Decision Rule #5 will be clarified to indicate that evaluating upper trophic level receptors will be contingent upon the following: 1) identifying concentrations that are greater than historical concentrations, and 2) the extent of contamination is not limited to an isolated area or potential hot spot. If those conditions are met, food chain models will be used. Otherwise, food chain models will not be used. The site data will be presented to the Team and concurrence on additional sampling or no further action will be received.

- e. Section 11.5.1 Sediment Toxicity Testing, Page WS 11-7: The last paragraph on Page WS 11-7 and continuing on to Page WS 11-8 is unclear as to the purpose of lab control samples. Early in the paragraph it is stated that lab control samples are used to see if the test method is acceptable; however, later, paragraph indicates that laboratory controls are used to determine if toxicity is significantly different from the toxicity results obtained from the testing laboratory. It appears that relative toxicity should be evaluated against reference locations rather than lab control samples. Address this discrepancy by differentiating the purpose of laboratory control samples from reference samples in this section. Further, this section states that "the laboratory will compare freshwater testing results to results for sediments collected from designated reference areas to determine if the toxicity observed differs from toxicity that may occur in areas that are not affected by the wetland being evaluated"; however, previously it was stated that only sediment samples will be collected. It appears that this section may be referring to sediments collected from freshwater sediments which will be compared to reference areas. Finally, this section does not discuss the analytical parameters that will be used on the samples collected for toxicity. According to agreements at the March 27 and 28, 2012 technical meeting, those samples used for toxicity testing should receive full scan analyses. Address this discrepancy concerning how the results of the reference wetlands will be used in evaluating potential sediment toxicity and state that for those samples requiring toxicity tests that here will also be full scan analyses.

Response e:

There is no discrepancy in Section 11.5.1. Freshwater samples refer to the freshwater sediment samples in the text. The word "sediment" will be added to the text to avoid any future confusion. Additionally, laboratory controls in toxicity testing are not used in the same way as laboratory controls in analytical testing. The methods cited will be used, including methods for using laboratory controls. As explained in the text, toxicity test results from the site will be compared to laboratory controls as well as to the results from reference areas. This will be clarified as needed. As stated in Section 11.3, Whole-Sediment Toxicity Testing, if toxicity testing is to be conducted, full scan analyses (except for VOCs) will be performed.

- f. Section 11.6 Performance Criteria, Page WS 11-8: This section only describes performance criteria and does not include acceptance criteria. To be complete, acceptance criteria need to be addressed.

Response f: Acceptance criteria are in Worksheets #12 and #18. Final usability will be determined by the Team.

- g. Section 11.6 Performance Criteria, Page WS 11-10: The section subtitled "Managing Laboratory Sampling Error" states that control of potential laboratory error and sampling error will be minimized using spikes, blanks, and duplicates. However, a reference to the information that how these samples will be used to manage laboratory sampling error has not been provided. To understand how laboratory sampling error will be managed, this section requires further clarification either with a specific reference where the appropriate protocol can be located or include a discussion on how laboratory sampling error will be managed.

Response g:

Laboratory error will be assessed using blanks and sampling error will be assessed using duplicates.

Comment 4:

SAP Worksheet #13, Secondary Data Criteria and Limitations Table, Page WS 13-1: This table shows that there are no limitations on the use of historical data when comparing this data to new data. However, limitations may exist especially if historical data is so old that the analytical methods may have changed or detection limits have become more sensitive to name a few. Limitations of using historical data in the comparison to new data are recommended since uncertainties may be high in use of data dating back as far as 1994.

Response 4:

The Navy disagrees that there are limitations on use of historical data in comparison with the new data. Historical data was used to develop the COCs for the wetlands as well as the selection of sampling locations. Although the detection limits may have changed, reported concentrations and exceedances of historical screening values do not change. Consequently, there are no limitations to using the detected concentrations. The Navy agrees that changes may occur when evaluating results reported as not detected.

Comment 5:

SAP Worksheet #14, Summary of Project Tasks, Page WS 14-1: This worksheet is incomplete because it does not include the following information:

- a. Project deliverables/reports for each field task are not described. Note the only deliverable identified is an Addendum to the Remedial Investigation; however, additional deliverables and their location are not identified (e.g., calibration logs, health and safety certifications, etc.)
- b. Planned start dates for each task have not been presented.
- c. Toxicity Testing has not been included as a possible project task.
- d. Data review and handling of toxicity test data is not provided.
- e. Data qualifiers proposed to be used are not identified.
- f. Project report preparers and recipients are not identified.

Response 5:

In accordance with the EPA Part 2A UFP-QAPP Workbook, this worksheet is to provide a brief overview. The Navy believes the information is adequately documented and may be found throughout the SAP.

- a. **Worksheet #29 provides the requested information.**
- b. **Worksheet #16 provides this information.**
- c. **Analytical laboratory tasks include toxicity testing.**
- d. **Analytical laboratory tasks include toxicity testing.**
- e. **Proposed data qualifiers are provided in Worksheets #34-36**
- f. **Text will be modified to clarify report preparers and recipients.**

Comment 6:

SAP Worksheet #15, Reference Limits and Evaluation Tables, Page WS 15-1: This worksheet does not appear to address EPA's concerns raised on several project action limits presented in the SAP memo. EPA's comment 21 on the SAP Memo indicated that several of the preliminary remediation goals (PRGs) identified for sediment was not considered protective for screening the sediment results. EPA recommended changing the PRGs for iron, antimony, DDD, DDE and, DDT and endosulfan sulfate; however, the SAP does not reflect this. The table below shows the differences in the SAP PRGs and EPA's recommended PRGs. EPA requests that the SAP consider using the EPA recommended PRGs or include an explanation for not changing the values to those proposed by EPA. Further, project action levels are typically presented in dry-weight, thus it is important that the results collected are also expressed in dry-weight. It is recommended that a footnote be provided where applicable that clarifies if the project action limits are presented in wet weight or dry weight.

Contaminant	SAP Project Action Level (mg/kg)	EPA Recommended Level (mg/kg)	Notes
Iron	246,000	40,000	Toxic effects of Iron are dependent on media pH. The recommended refinement value of 40,000 mg/kg represents a severe effects level (SEL).
Antimony	27.7	25	The SAP project action level is similar to EPA's recommended level the selected value of 27.7 mg/kg was determined from the toxicity tests, which have been deemed unusable.
DDD, DDE, DDT	0.05, 0.04, 0.02	0.063	Refinement value recommended applying to total DDT which reflects the sum of DDD, DDE and DDT.
Endosulfan sulfate	0.0072	0.0054	Recommended refinement value for total endosulfan.

Response 6:

The rationale for using EPA's newly recommended levels is not entirely clear. The SAP Project Action Levels for iron, total DDT and endosulfan sulfate are based on empirical site data.

Iron — The PAL for iron is a calculated PRG presented in Appendix A of the Feasibility Study Report. The PRG is a site-specific no observed effects concentration (NOEC) for freshwater wetlands of 246,000 milligrams per kilogram (mg/kg). The data are from a location in Wetland 3 (041M0302) at a location with no lethal or sublethal toxicity.

Antimony — The Navy disagrees that the toxicity test results are unusable. The antimony PRG is the LOEC developed based on the site-specific chemistry and toxicity data. The toxicity data showed a growth effect when compared to control but the location had high species diversity.

DDD, DDE and DDT — The PALs presented above for DDD, DDE, and DDT were developed as a basewide level for NAS Pensacola. Instead of the individual contaminants, a total DDT of 0.110 mg/kg (established basewide level) will be used as a PAL. The text will be revised accordingly.

Endosulfan sulfate — The PAL for endosulfan sulfate is a site-specific lowest observed effects concentration (LOEC).

As discussed, the PRGs will be evaluated based on the results of the proposed sampling event and the Team will be consulted to determine whether toxicity testing will be performed.

Footnote 1 to Worksheet #15 states that physical characteristics such as moisture content will affect the actual detection limits achieved, meaning the that results will be reported on a dry weight basis. However, this footnote will be modified for clarification.

Comment 7:

SAP Worksheet #15, Reference Limits and Evaluation Tables, Page WS 15-13: The SAP has not included the input parameters for the FCM for bioaccumulative compounds in worksheet 15. EPA provided to the Navy input parameters for the green heron and the mink for the FCM as part of the technical review of the sampling approach. Although this information appears to be represented in Appendix C of the SAP, this appendix is not referenced anywhere in the SAP. Include Appendix C information in the SAP Worksheet 15.

Response 7:

Input parameters for the FCM may be used, but the use of the FCM is contingent upon findings and decisions based on those findings. FCM input parameters were included in the Final RI report and were included in the SAP to facilitate review. The FCM input parameters in Appendix C will be referenced on Worksheet #11.

Comment 8:

SAP Worksheet #17: Sampling Design and Rationale, Page WS 17-1

- a. As stated previously in specific comments on SAP Worksheet #10, Section 10.3 Operable Unit 1 Conceptual Site Models, EPA raised a concern that iron in ground water from OU1 landfill may be impacting downgradient wetlands (4D, 15, 18A and 18B). The relevant sections of worksheet 17 for Wetlands 4D, 15, 18A and 18B should be revised to address additional analysis of iron in surface water and sediment or provide clear rationale in Worksheet #10 why iron does not require further evaluation in these wetlands. Note that this comment also applies to SAP Worksheet #18: Location-Specific Sampling Methods/SOP Requirements Table, Page WS 18-1.

Response a:

Based on the technical memorandum provided in Appendix A of the Feasibility Study Report, iron was not identified as an ecological or human health COC. Therefore, no further sampling was proposed for surface water or sediment. The memorandum was the basis for the discussions at the March 2012 meeting. Surface water is not present during some seasons at Wetland 18A, the RI Report did not recommend additional surface water evaluation, and the utility of surface water data in making remedial decisions is unclear, so the Navy does not propose to sample surface water. As discussed during various partnering meetings, in the memorandum and in other responses, the scope of the memorandum was limited to sediment sampling, so surface water and other media are not considered to be within the scope of this follow-up work for the Feasibility Study.

- b. Fish tissue analyses have previously been performed at the site (i.e., Wetland 64) and PCB1260 was detected in the tissues at concentrations which exceeded recommended Canadian tissue guidelines. DDTx was also present in the fish but the levels did not exceed any recommended guidelines. It is recommended that the SAP include fish sampling and analysis in the current sampling approach, if it is determined that fish are present in the wetlands where fish sampling was previously performed.

Response b:

Bioaccumulation was assessed during the RI and was documented in the Final RI report. As discussed in General Comment 2, the scope of the sampling and analysis memorandum was specifically limited to sediment and was coordinated with the partnering team. As indicated in EPA's Specific Comment 8b above, DDTx was reported in fish tissue, but the Final RI report did not recommend additional habitat evaluation for fish species or fish tissue sampling and analysis. The Navy disagrees that habitat evaluation and fish sampling and analysis should be performed.

Comment 9:

Worksheet #18: this Worksheet should list the sampling type and method used to collect each sample however the specific SOP to be used or sample type (e.g., hand auger, duplicate, etc.) is not listed. Although this worksheet refers the reader to Worksheet #21 for SOPs, Worksheet 21 is a master list of SOPs and is not specific to a sample. Include the sampling type and sampling method for each sample to promote clarity to the field personnel responsible for collecting the samples. Note this requirement is clearly outlined in the revised March 2012 worksheets at: <http://www.epa.gov/fedfac/documents/qualityassurance.htm>

Response 9:

The only media being sampled is sediment and the Navy believes that the sediment sampling SOP in Worksheet #21 sufficiently conveys the required information.

Comment 10:

SAP Worksheet #28: Laboratory QC Samples Table, Page WS 28-1: This table does not include the quality control (QC) samples associated with toxicity testing. The table must include lab control samples and/or reference samples. Revise Worksheet 28 to address this concern and to ensure completeness.

Response 10:

Laboratory QC samples for toxicity testing will be added to Worksheet #28.

Comment 11:

Figure 17-3: Wetland 15, Sample Locations, Page WS 17-4: The proposed sampling will focus on the presumed surface-water runoff point on the south end of the wetland, and will broaden coverage within the wetland to better characterize nature and extent. However, there are no samples to confirm the contaminant concentrations in sediment of the surface water feature in Figure 17-3 in conjunction with the proposed sampling. To ensure temporal data is available from both the wetland sediment and from the overland flow area, EPA wishes to include a sample at former location 041M1504 or a sediment location on the southern bank of the surface water feature.

Response 11:

A new sediment sample location will be added at the southern bank of the surface water feature on Figure 17-3.

III. EDITORIAL COMMENTS

Comment 1:

Table of Contents, Page viii

The following discrepancies are noted in the acronym and abbreviation list:

- a. OU is defined as "operating unit"; correct to operable unit.
- b. SIM is listed twice; the second listing is incorrect and should be removed.
- c. PAH is defined as polycyclic aromatic hydrocarbons and then is defined as polynuclear hydrocarbons for the acronym SIM-PAH. Please use one term to describe PAHs either polynuclear or polycyclic aromatic hydrocarbons.

Response 1:

The above discrepancies will be corrected.

Comment 2:

SAP Worksheet #11, Page WS 11-8: The first complete sentence at the top of Page WS 11-8 states that the testing laboratory will compare their results to laboratory controls in accordance with the specified methods to determine if toxicity is significantly differs from their laboratory controls. Revise the end of the sentence to state "to determine if toxicity is significantly different from laboratory controls."

Response 2:

The end of the sentence will be revised "to determine if toxicity is significantly different from laboratory controls and reference wetlands."

Comment 3:

SAP Worksheet #24: Analytical Instrument Calibration Table, Page WS 25-1: Each page includes a pagination error. The pagination shows WS 25-1, WS 25-2, WS 24-1, WS 24-2 and WS 24-3 when the pagination should be WS 24-1 through WS 24-5. Correct these pages to reflect the correct pagination.

Response 3:

These pages will be changed to reflect the correct pagination.

Comment 4:

SAP Worksheet 19: The header for Worksheet #19 indicates the worksheet is worksheet #20.

Response 4:

The header for Worksheet #19 will be changed to the correct number.

QUALITY ASSURANCE REVIEW OF SAMPLING APPROACH

The following comments are oriented toward the Quality Assurance (Checklist Review) Aspects of the sampling approach.

I. GENERAL COMMENTS

Comment 1:

The rationale presented in the Sampling and Analysis Plan (SAP) for the proposed number, depths, analytes, and locations of sediment samples at each wetland is insufficiently detailed. For example, it is unclear how the number and maximum depths of the samples were selected, and how the locations of these samples are based on the previously collected samples. It is also unclear if additional sampling will be conducted if the step-out samples or deepest samples yield results above action limits. In addition, Worksheet #17 indicates that samples 041M1518, 041M1519, and 041M1520 at Wetland 15 are horizontal step-out samples to be analyzed for arsenic, but these samples appear to be step-outs for the previous sample location (041M1503) and not the proposed primary samples (see Figure 17-3). Therefore, these step-out samples should be analyzed regardless of the results of the primary samples for Wetland 15. Lastly, it is unclear why analysis of polycyclic aromatic hydrocarbons (PAHs) is only proposed for samples collected in the northwest area of Wetland 5A, as indicated by the samples identified for this analysis at Wetland 5A in Worksheet #18 (e.g., locations 5A-09 through 5A-14), rather than all of Wetland 5A. Revise the SAP to provide greater detail for the rationale for the proposed number, depths, and locations of sediment samples and associated analytes for each wetland.

Response 1:

Findings in the RI Report as well as subsequent discussions with partnering team participants were integrated to develop the sampling and analysis memorandum. During the May 9, 2012 Partnering meeting and other partnering meetings, the team discussed the evaluation and approach. The locations were selected to assess the horizontal extent of contamination. Additional step out samples beyond what is presented in the SAP are not currently planned. The 0 to 4 inch depth sample will assess the current site conditions and the potential for excess risk. The deeper intervals 4-12 inch and 12-24 inch will assess the vertical extent of contamination and will be used for remedial volume development for consideration in the FS. Intervals deeper than 24 inches are not considered necessary for remedial volume calculation. The Navy will consider the contaminant depths and choose an appropriate array of alternatives to address the contamination.

PAHs will be added to the analyses at all the sediment sample locations in Wetland 5A.

Comment 2:

It is unclear if aluminum will be analyzed in samples from Wetland 18A. Section 10.3.4 states that aluminum will be analyzed to help evaluate geochemical relationships of inorganic compounds, but Worksheets #17 and #18 do not include aluminum as an analyte for Wetland 18A. Revise the SAP to clarify if aluminum will be analyzed in samples from Wetland 18A.

Response 2:

Aluminum will be added to the list of analytes for Wetlands 18A and 18B in Worksheets #17 and #18.

Comment 3:

Quality control (QC) samples (e.g., matrix spike/matrix spike duplicates [MS/MSDs], field duplicates [FDs], and equipment blanks) are inconsistently identified for certain analyses and sampling phases. For example, Worksheets #12 and #20 do not indicate QC samples will be collected for total organic carbon (TOC) and acid volatile sulfide/simultaneously extracted metals (AVS/SEM) analyses. However, Worksheet #28 includes the evaluation of MS/MSDs for TOC and AVS/SEM analyses (e.g., MS/MSDs for metals and mercury and an MS for the AVS/SEM analysis). In addition, it is unclear why no QC samples are identified for Phase III sampling in Worksheet #20. Revise the SAP to consistently indicate whether MS/MSDs will be collected for TOC and AVS/SEM analyses, and to discuss why QC samples are not indicated for Phase III sampling.

Response 3:

Worksheet #28 identifies the quality control samples the laboratory will run as part of their standard operating procedure. However, as stated on Worksheets #34-36, TOC and AVS/SEM will be used as a tool to assess sediment chemistry and data validation will be limited to the following elements: holding times, blank analysis, and laboratory control samples. Therefore, MS/MSD samples will not be collected or identified in the field. QC samples will be added to the Phase III event. Field QC samples are not planned for toxicity analysis. The toxicity laboratory will perform QC in accordance with their SOP.

Comment 4:

The SAP does not provide sufficient detail regarding the management of the project files. The SAP should indicate where the project files will be stored (i.e., physical location) during the project, who will manage them, and the minimum length of time the files will be kept before archival. In addition, the SAP should clearly define where and the length of time that project files will be archived. Worksheet #14 indicates that files will eventually be transferred to the Navy, but Worksheet #29 states that some files will be stored at a third party secure professional document storage firm long-term. It is unclear what the term "long-term" means and if these files will ultimately be returned to the Navy. Lastly, the SAP indicates data will be entered and uploaded into two databases, but does not indicate that data will be verified once entered/uploaded. Revise the SAP to consistently describe the management of project files and provide greater detail.

Response 4:

The Navy disagrees. Worksheet #29 was completed in accordance with EPA Part 2A UFP-QAPP. The files will be managed and maintained in accordance with contractual obligations specified in the contract.

Electronic data are verified prior to loading into the databases and this will be clarified in Worksheets #34-36.

Comment 5:

Some of the standard operating procedures (SOPs) referenced in the SAP have not been provided. Worksheet #23 references the analytical SOP titled *Test Method for Particle-size of Soils (Sieve and Hydrometer Analyses)*, Revision 1, dated March 5, 2008 from Geotechnics, but this SOP is not provided in Appendix F. Also, Worksheet #21 references the SOP FT1100 *Field Measurement of Hydrogen Ion Activity (pH)*, dated March 31, 2008 (Effective December 3, 2008), but this SOP is not included in Appendix D. Revise the SAP to include these SOPs.

Response 5:

The SAP will be revised to include any referenced SOPs that were omitted.

Comment 6:

There are several inconsistencies between the numbers of samples and QC samples presented in Worksheets #18 and #20. For example, it is unclear why equipment blanks are the only QC samples identified in Worksheet #18 for Phase II and Reference sampling. Field duplicates and MS/MSDs for these two sampling events are identified in Worksheet #20. In addition Worksheet #20 identifies 18 primary samples to be analyzed for Target Analyte List (TAL) Metals, but Worksheet #18 identifies 12 samples for analysis of TAL Metals. Also, it is noted that 153 primary samples are listed for grain size analysis and 29 primary samples are listed for TOC analysis in Worksheet #20, but Worksheet #18 lists both analyses for every sample to be collected in Phase I, which appears to be a total of 147 samples in Worksheet #18. Lastly, Worksheet #18 identifies five MS/MSDs for Phase I analyses of pesticides in accordance with the frequency of MS/MSDs presented in the SAP, but Worksheet #20 indicates four MS/MSDs will be collected. Revise Worksheets #18 and #20 to ensure the numbers of samples are consistent with the samples presented in Worksheet #18.

Response 6:

Phase II and Phase III sampling is contingent upon the Phase I results and, because it is uncertain which and locations and parameters will be analyzed, QC samples cannot be identified in Worksheet #18 at this time, as stated in footnote 2. Worksheet #20 will provide a footnote to clarify that QC samples for Phase II and Phase III are worst-case estimates because exact quantities will be contingent upon Phase I results. Worksheet #18 lumps together tests from various wetlands to meet the QC sample frequency identified in the footnotes.

Comment 7:

It is unclear how the AVS/SEM results will be used in this investigation. Worksheet #11 indicates that if AVS is greater than the sum of SEM, metals are not indicated as bioavailable, but if the sum of SEM is greater than AVS, there is a potential for bioavailability of heavy metals into aquatic biota. However, there is no discussion of AVS/SEM results in the decision criteria and no action levels are established in Worksheet #15 for these analytes. In addition, the relationship between bioavailability and toxicity of metals is unclear. Revise the SAP to clarify how AVS/SEM results will be used in the decision process for this investigation.

Response 7:

The SAP will be revised to clarify how AVS/SEM results will be used in the decision process for this investigation.

Comment 8:

The SAP discusses "contaminants of potential concern" and "chemicals of potential concern". It is unclear if these terms refer to the same list of chemicals. Revise the SAP to use consistent nomenclature or clarify the difference.

Response 8:

The RI and Risk Assessment have been completed. Therefore, the SAP will be revised to use the term chemicals of concern (COC).

Comment 9:

The discussion of toxicity testing in the SAP is insufficiently detailed. For example, no QC samples, measurement performance criteria, or action levels are established in the SAP. In addition, it is unclear how toxicity data will be verified and validated. Revise the SAP to provide additional details for how the toxicity testing will be assessed.

Response 9:

The toxicity laboratory standard operating procedure is provided in Attachment F. Worksheet #28 will be modified to provide laboratory QC sample measurement performance criteria. External verification and validation is not planned due to the nature of toxicity testing results and presentation, which are mostly statistical comparisons in accordance with the toxicity testing methods and SOP.

II. SPECIFIC COMMENTS

Comment 1:

SAP Worksheet No. 1, Title and Approval Page: The corresponding dates associated with the approval signatures are missing. Revise Worksheet #1 to include approval signatures dates.

Response 1:

Worksheet #1 will be revised accordingly.

Comment 2:

SAP Worksheet No. 2, SAP Identifying Information, Pages WS 2-1 through WS 2-2: This worksheet does not include the necessary scoping session dates. Revise Worksheet #2 to include the scoping session dates.

Response 2:

The scoping session dates are provided on the third line on pages WS 9-1 and WS 9-2.

Comment 3

SAP Worksheet No. 6, Communication Pathways, Pages WS 6-1 through WS 6-3: This worksheet is insufficiently detailed as follows:

- a. It is unclear who has the authority to stop work due to safety issues (e.g., field team leader, field team members, etc.).
- b. It is unclear how the communications described in this worksheet will be documented and maintained.
- c. This worksheet indicates that EPA will be notified of significant corrective actions, but does not specify the timeframe for this notification.
- d. This worksheet does not indicate that EPA will be notified of significant changes to SAP procedures in the field.
- e. In addition, the top right heading for Worksheet #6 says SAP Worksheet #7.

Revise this worksheet to address the above deficiencies.

Response 3:

The worksheet will be modified to correct the header discrepancy. The Navy RPM will notify EPA and FDEP of significant corrective actions or change to SAP procedures within 5 working days.

Comment 4:

SAP Worksheet No. 11, Project Quality Objectives/Systematic Planning Process Statements, Page WS 11-4: The text indicates that a value of half the limit of quantitation (LOQ) will be used for non-detects in the calculation of background concentrations. However, substituting a specific fraction of the LOQ for analytes that are non-detect is not recommended. The most conservative approach would be to substitute the LOQ for non-detect results. Alternatively, a non-parametric approach as provided in statistical software packages could be used to establish a more accurate value for non-detect results. Revise the SAP to propose one of the approaches described above, or to provide justification for the current approach.

Response 4:

Background was established as part of the Final RI Report for NAS Pensacola wetlands, including substantial input from EPA, FDEP and other stakeholders as part of the partnering process with the Navy as well as the comment and response process typically used to finalize RI Reports. Consequently, revisiting background determinations and/or comparison methods as part of this sampling and analysis plan is beyond the scope of the memorandum.

Comment 5:

SAP Worksheet No. 11, Project Quality Objectives/Systematic Planning Process Statements, Pages WS 11-6 to WS 11-7: Decision Rule #4 indicates that the determination for conducting sediment toxicity sampling will be based on the results of the chemical analyses and exceedances of project action limits (PALs), and that the results will be presented to the Partnering team before implementation. Because the number of samples and chemical exceedances, the magnitude of exceedances, and the spatial distribution of exceedances that will trigger the sediment toxicity sampling is unclear, the SAP should clarify that regulatory approval is required prior to implementation. Revise this section to clarify this information.

Response 5:

Decision Rule #4 will be clarified to state that regulatory concurrence will be received before implementation.

Comment 6:

SAP Worksheet No. 12, Field Quality Control Samples, Page WS 12-1: The footnotes indicate that duplicate values with concentrations less than five times the LOQ will be evaluated by the absolute difference between FD and parent sample, and that this difference should be less than two times the LOQ for non-metals, and less than four times the LOQ for metals. It is unclear why a larger precision allowance is made for metals. Revise the SAP to discuss why the precision of metals will be evaluated using a limit of four times the LOQ rather than the limit for non-metals.

Response 6:

Worksheet #12 will be modified for clarification.

Comment 7:

SAP Worksheet No. 15, Reference Limits and Evaluations Tables, Pages WS 15-1 to WS 15-13: The footnotes state that LOQs and limits of detection (LODs) exceed PALs, but the partnering team has agreed to accept the data as long as results below the LOQ are reported J-flagged as estimated and the uncertainty associated with these results is discussed in the report. However, the SAP does not discuss the analytes that have detection limits (DLs) greater than the PALs (e.g., 2,4,5-trichlorophenol, 2,4,6-trichlorophenol, 2,4-dichlorophenol, and 2-chlorophenol). The SAP should discuss the uncertainty for using these data where the PAL is less than the DL and if this level of uncertainty will allow project data quality objectives (DQOs) to be met (e.g., analytes are not site contaminants of concern), or whether alternate methods were considered to achieve lower detection limits. Revise the SAP to discuss this uncertainty, why it was deemed acceptable to meet the DQOs, and whether alternative procedures were considered to lower the detection limits.

Response 7:

Other than PAHs, the semivolatile COCs carried forward into the FS were as follows: 2,4-dimethylphenol, 2-methylphenol, 4-methylphenyl, phenol, bis(2-ethylhexyl)phthalate, carbazole, and dibenzofuran. Laboratory detection limits for all of these semivolatile compounds are below their corresponding project action levels. The remaining semivolatile compounds are being analyzed only when toxicity testing is being performed.

Comment 8:

SAP Worksheet No. 15, Reference Limits and Evaluations Tables, Pages WS 15-1 to WS 15-13: PALs are not identified for many analytes and it is unclear how these compounds will be evaluated. Revise the SAP to discuss how compounds without PALs will be evaluated.

Response 8:

PALs have been established for all COCs. If full scan analysis except for VOCs is performed with toxicity tests, PALs can be developed for the remaining compounds if necessary.

Comment 9:

SAP Worksheet No. 15, Reference Limits and Evaluations Tables, Pages WS 15-11 to WS 15-12: It is unclear why aluminum is listed as a Pesticide/ Polychlorinated Biphenyl (PCB) in this table with different detection limits (e.g., LOQ of 10 mg/kg) than the detection limits identified on the following page (e.g., LOQ of 2 mg/kg) for saltwater sediment. Revise the SAP to resolve this discrepancy.

Response 9:

Aluminum will be removed from page WS 15-11.

Comment 10:

SAP Worksheet No. 22, Field Equipment Calibration, Maintenance, Testing, and Inspection, Page WS 22-1: This worksheet does not include the acceptance criteria for the equipment to be used for field measurements of salinity and temperature in surface water discussed in Worksheet #14 (page 14-2). Revise Worksheet #22 to include this equipment.

Response 10:

Comment noted. Worksheet #22 will be modified.

Comment 11:

SAP Worksheet No. 24, Analytical Instrument Calibration Table, Pages WS 25-1 to WS 25-2: This table includes a DDT breakdown check for semivolatile organic compounds (SVOCs)/PAHs via selective ion monitoring (SIM), but does not include the degradation breakdown check for DDT and endrin required by Method 8081. Also, it is noted that the first two page numbers in this worksheet are 25-1 and 25-2, instead of 24-1 and 24-2. Revise Worksheet #24 to include the frequency, acceptance criteria, and corrective actions for the DDT and endrin breakdown check for Method 8081, and to correct the page numbering.

Response 11:

Comment noted. Worksheet #24 will be modified.

Comment 12:

SAP Worksheet No. 28, Laboratory QC Samples Table, Page WS 28-2: The second column confirmation measurement performance criteria (MPC) have not been provided for the pesticides and PCBs analyses by Methods 8081B and 8082A. Revise this table to include the second column confirmation frequency, MPC, and corrective actions.

Response 12:

Comment noted. Worksheet #28 will be modified.

Comment 13:

SAP Worksheet No. 28, Laboratory QC Samples Table, Pages WS 28-3 to WS 28-8: These tables indicate that a post digest spike (PDS) will be performed when a serial dilution fails or all analyte concentrations are less than 50 times the LOD and the acceptance limits are 75 to 125% for Methods 6020A and 6010C. However, Methods 6010C and 6020A indicate that a PDS should be performed when MS/MSD recoveries are unacceptable, and the acceptance criteria for the PDS should be 80 to 120%. Revise this worksheet to indicate that a PDS will be analyzed whenever MS/MSDs do not meet acceptance limits and use the method criteria from 6010C and 6020A.

Response 13:

Comment noted. Worksheet #28 will be modified.

Comment 14:

SAP Worksheet No. 28, Laboratory QC Samples Table, Pages WS 28-1 to WS 28-10: It does not appear that all of the laboratory statistically derived QC acceptance limits have been provided. Although the SOPs provide some of these limits, all QC acceptance limits should be provided to ensure the laboratories can meet the criteria in this SAP. Revise the SAP to include laboratory statistically derived QC acceptance limits for all analytes.

Response 14:

QC acceptance limits are stated in the laboratory SOPs and worksheet #28 for non-Department of Defense Environmental Laboratory Accreditation Program (DoD ELAP) accredited tests. Laboratory QC acceptance limits for DoD ELAP accredited tests will be provided as an Appendix.

Comment 15:

SAP Worksheet No. 31, Planned Project Assessments Table, Page WS 31-1: This worksheet indicates that no audits will occur. It is unclear why audits of field sampling procedures and the laboratories performing the analyses for this investigation have not been proposed. It is recommended that laboratory audits are conducted to ensure the laboratories can produce data of sufficient quality. Additionally, it is recommended that at a minimum, one field audit is conducted at beginning of sampling activities to ensure procedures are properly implemented throughout the field effort. Revise the SAP to indicate that audits will be performed for the laboratories and at the beginning of sampling activities, and provide audit checklists indicating the items to be evaluated. Alternatively, provide a justification for the lack of field and/or laboratory audits if they will not be conducted.

Response 15:

Comment noted. Field audits will be addressed on Worksheet #31. The analytical laboratories are accredited by DoD Environmental Laboratory Accreditation Program. The toxicity laboratory is accredited by the State of Florida under the National Environmental Laboratory Accreditation Program (NELAP). The laboratories will not be audited.

Comment 16:

SAP Worksheets No. 34-36, Data Verification and Validation (Steps I and IIa/IIb) Process Table, Pages WS 36-1 to WS 36-3: This table indicates that data validation will be performed using method specific criteria, the Department of Defense Quality Systems Manual [QSM] requirements, the National Functional Guidelines (NFG) for Organic and Inorganic data review (dated October 1999 and October 2004, respectively), and the criteria presented in Worksheets #12, #19, and #28 of this SAP. Since multiple sources will be used for data validation procedures, a data validation checklist describing how samples will be qualified (e.g., the qualifiers that will be used, when samples will be qualified estimated/rejected, and if individual or all samples in a batch will be qualified) should be provided. Further, it is noted that outdated versions of the NFG are referenced. Revise the SAP to provide data validation checklists, and to indicate that the most recent versions of the NFG will be used.

Response 16:

Acceptance limits cited in the SAP will be used to assess the measurement performance criteria (MPC). National Functional Guidelines will be used as a guidance on applying qualifiers when MPC are not met and data qualifiers, provided on the last row of Worksheets #34-36, will be applied. Checklists will not be used for validation because it will be performed using a combination of electronic automated data review and data package review. All findings will be documented on an Excel spreadsheet and in the data validation report. Text will be revised to incorporate newer versions of National Functional Guidelines.

Comment 17:

SAP Worksheets No. 34-36, Data Verification and Validation (Steps I and IIa/IIb) Process Table, Pages WS 36-1 to WS 36-3: It is unclear if the validation personnel will be independent from data generation. Revise the SAP to clarify that the personnel performing data validation are independent from the data generation activities.

Response 17:

The last column of Worksheets #34-36 indicates that chemistry validation will be external to the data generation activities. External verification and validation of toxicity tests is not planned due to the nature of toxicity testing results and presentation, which are mostly statistical comparisons in accordance with the toxicity testing methods and SOP. The worksheets will be clarified.

Comment 18:

SAP Worksheets No. 34-36, Data Verification and Validation (Steps I and IIa/IIb) Process Table, Page WS 36-3: Three data qualifiers are presented as representing estimated data (I, IJ, and J), but it is unclear how these qualifiers differ. Revise this worksheet to clarify the difference between these three qualifiers and how each is applied to data.

Response 18:

Both the I and J qualifiers indicate an estimated value. The I-qualifier, applied by the laboratory, is defined by Florida Department of Environmental Protection as the result is an estimated value between the detection limit and the quantitation limit. The I-qualifier, applied by the laboratory, will remain on the result to provide the end user additional information that the value is estimated below the quantitation limit. The J-qualifier will be applied during validation to indicate a value is estimated. This information will be provided in the validation report.

Comment 19:

SAP Worksheet No. 37, Usability Assessment, Page WS 37-4: The text states that there may be reason to use rejected data in a weight-of-evidence argument, especially when the rejected data supplements data that have not been rejected. However, rejected data are not quantifiable and should never be used for decision making. Revise the SAP to indicate that rejected data will not be used for making decisions.

Response 19:

Data usability will be a decision by the Team. Rejected data will be evaluated and may be used in circumstances identified by the Team.

III. MINOR COMMENTS

Comment 1:

SAP Worksheet No. 14, Summary of Project Tasks, Page WS 14-2: The Surface Water Measurements section references SOP FT 100, which is not provided in Appendix D or discussed elsewhere. Revise the SAP to resolve this discrepancy.

Response 1:

SOP FT 100 will be changed to SOP FT 1000 in the SAP to resolve the discrepancy.

Comment 2:

SAP Worksheet No. 23, Analytical SOP References Table, Page WS 23-2: The acronym for inductively coupled plasma atomic emission spectrometry is incorrectly presented as ICP-MS. Revise this acronym to ICP-AES.

Response 2:

The acronym for inductively coupled plasma atomic emission spectrometry will be revised in Worksheet 23.