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MCRD PARRIS ISLAND
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EMAIL REGARDING U S EPA REGION IV RESPONSE TO U S NAVY RESPONSE TO COMMENTS ON SAMPLING AND ANALYSIS PLAN FOR FISH TISSUE COLLECTION AT SITE 3 CAUSEWAY LANDFILL WITH ATTACHMENTS MCRD PARRIS ISLAND SC
10/23/2009
U S EPA REGION IV

From:	Llamas.Lila@epamail.epa.gov
To:	Sladic, Mark
Cc:	Susan Byrd; Charles CIV NAVFAC SE Cook; heber pittman; Stacey French; Zimmerman, Greg; Whitten, Mike; mac mcrae; Churchill, Peggy; timharrington (email)(timothy.j.harrington@usmc.mil); llamas.lila@epa.gov
Subject:	RE: LAST TIME - MCRD PI SITE 3 updated redline RTC for fish tissue collection SAP
Date:	Friday, October 23, 2009 1:06:35 PM
Attachments:	UFP SAP for Fish Tissue D1 EPA+DHEC RTC (8MS).doc

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Hi Folks,

The RTCs attached hereto are acceptable, but you still need to get the language changes accurately reflected in the revised SAP for it to be approved. In the past we have had issues with RTCs not getting transferred accurately into the revised document. So please proceed with caution.

Field work can proceed without finalization of the document provided all technical changes have been provided to and discussed with the field crew and labs.

As a final reminder, if the need arises in the field to propose any changes to the SAP other than those already addressed in the Draft SAP as a potential modification, the issues should be discussed with the Parris Island Team before approval, if at all possible.

Mark/crew - Good luck on Monday and next week!

Lila

From: "Sladic, Mark" <Mark.Sladic@tetratech.com>

To: Stacey French <frenchsl@dhec.sc.gov>, Lila Llamas/R4/USEPA/US@EPA, Charles CIV NAVFAC SE Cook
<charles.cook2@navy.mil>, mac mcrae <mmcrae@TechLawInc.com>, "Zimmerman, Greg"
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<timothy.j.harrington@usmc.mil>

Cc: Susan Byrd <BYRDSK@dhec.sc.gov>, "Whitten, Mike" <Mike.Whitten@tetratech.com>

Date: 10/22/2009 12:00 PM

Subject: RE: LAST TIME - MCRD PI SITE 3 updated redline RTC for fish tissue collection SAP

Good morning again, everyone. We have one more small indulgence to ask. We made three very small (word) changes to RTC 11, one of which is repeated in RTC 24. SCDHEC blessed the RTC prior to these changes, but

now the changes are necessary for EPA approval. I do not believe that the changes impact the intent of any of the previous EPA or SCDHEC statements, so hopefully we can now get concurrent approval from everyone.

We are again confirming at this time that we will be mobilizing to MCRD PI on Monday (26 October). Thanks to everyone for their continued patience and contributions towards finalizing this. MS

-----Original Message-----
From: Stacey French [mailto:frenchsl@dhec.sc.gov]
Sent: Wednesday, October 21, 2009 3:42 PM
To: LilaLlamas; Charles CIV NAVFAC SE Cook; mac mcrae; Zimmerman, Greg; Sladic, Mark; Churchill, Peggy; heber pittman; timharrington (email)(timothy.j.harrington@usmc.mil)
Cc: Susan Byrd; Whitten, Mike
Subject: RE: MCRD PI SITE 3 updated redline RTC for fish tissue collection SAP

Good afternoon team
Since Meredith is out, Susan and I took a look at the redline version on the RTCs. The Department can concur on the RTCs as written and with the proposed language changes to be added to the SAP.

If any there are any changes made to this version of the RTCs the Department will need to review those changes before we can concur with the RTCs.

As Meredith mentioned in here email yesterday, the Department does not feel that the resolution of RTCs should affect the Navy going into the field to collect samples on Monday.

(See attached file: UFP SAP for Fish Tissue D1 EPA+DHEC RTC (8MS).doc)

RTCs will be included in the SAP, as they are part of the administrative record (this includes the 10/13/09 e version of comments sent by the Department).

Response to SCDHEC Comments on
Quality Assurance Project Plan
Site 3 – Causeway Landfill Fish Tissue Risk Assessment (QAPP) for the Marine Corps Recruit Depot (MCRD), Parris Island, South Carolina
(September 2009)

General Comments

1. **Comment:** Please discuss the impact of UXO 4 and the golf course on the reference location.

   Response: For the target parameters (mercury, copper, PCBs, DDT) we don't expect any significant impact. The reference location drains a significant geographical area, of which only a small part of the golf course intrudes - although most of UXO 4 would drain through here. For the key contaminant, mercury, we wouldn't expect mercury to occur on the UXO site or golf course. PCBs would also not likely result from a munitions site or operation of a golf course. Copper would not be anticipated to occur on a golf course, and copper use as copper jacketing on certain munitions was not common until after World War II, by which time MCRD has quit using UXO 4 (1937). DDT might have had a slightly higher application rate on the golf course, but across the entire drainage area, the application on average should provide pretty fair anthropogenic data. Our fish expert, Mike Whitten, has discussed the area with Dr. Warren from our TRC. Dr. Warren has sampled sediment in the area, and has not found and widespread copper contamination. No modifications to the SAP are proposed based on this response.

Specific Comments

2. Page 45 of 91 Fish Tissue Sampling

   This section states, "The right fillet of one fish from each target species (both from the pond and from the reference location) will be submitted as a duplicate," which seems to indicate 4 duplicate samples will be taken. However, SAP Worksheet #18 (page 57 of 91) only shows three duplicate sample numbers. Please clarify.

   Response:

   It was initially intended that 3 field duplicate fish tissue samples be collected at a rate of 1 per 10 samples. Two duplicates were to be collected from the 3rd Battalion Pond (16 original samples) and 1 duplicate was to be collected from the reference location (8 original samples). Since 2 duplicates were to be collected from the pond, it was decided to collect 1 top predator and 1 bottom feeder as duplicates. The 1 duplicate sample from the reference location would be either a top predator or a bottom feeder. The QAPP has been revised to clarify that only 3 duplicate samples will be collected.

Response to USEPA Comments on
Quality Assurance Project Plan
Site 3 – Causeway Landfill Fish Tissue Risk Assessment (QAPP) for the Marine Corps Recruit Depot (MCRD), Parris Island, South Carolina
(September 2009)

Lila Llamas
USEPA Region 4
Federal Facilities Branch
Superfund Division
Atlanta Federal Center
61 Forsyth Street, SW
Atlanta, Georgia 30303-8960

General Comments

1. **Comment:** Given the extensive detail in the document, including the appendices, it was not reasonable to expect complete review within the limited accelerated review timeframe requested. In order to meet the timeframe, comments are being submitted now, in an attempt to address any major obvious issues, however, please recognize a detailed technical review was not possible in the timeframe allotted. This is especially true, given submittal of the document during the fiscal year end activities. Since EPA understands the Navy intends to move forward with the field work to meet their deadlines, at this time EPA does not intend to complete the detailed review. However, as the process is implemented, issues may arise. At that point EPA expects the Navy will still address any concerns raised by EPA. In the future, in order to avoid proceeding at such risk, EPA requests the Navy submit documents early enough to allow for the allotted review times established and agreed upon by all parties in the Site Management Plan.

   Response: The Navy appreciates U.S. EPA's willingness to submit comments on the Site 3 QAPP in an attempt to meet the accelerated review timeframe and understands that additional issues may arise as the process is implemented.

Specific Comments

2. **Comment:** Executive Summary, Page 2, paragraph 4 – EPA believes the term "estimate" is more representative of what modeling does, as opposed to "calculate". Please modify the next to last sentence to read "… sediment-to-fish models used to estimate fish tissue concentrations…" or "… sediment-to-fish models used to calculate estimated fish tissue concentrations". EPA would prefer this same change be made throughout the document. Please do a search and replace for all occurrences where models are referred to as being used to "calculate" fish tissue concentrations.

   Response: The QAPP has been revised throughout to indicate that the sediment-to-fish models are used to estimate fish tissue concentrations.

3. **Comment:** Executive Summary, Page 3, last paragraph – To better reflect the agreement reached by consensus please modify the paragraph to replace the word "also" with "only". To the end of the paragraph add the following sentence: "Since fishers may take fish from the pond which were present prior to implementation of the interim remedy, or which may have come into the pond after being exposed to contamination elsewhere, the sampling plan has been designed to reflect that potential consumption, as opposed to consumption of fish exposed only to post-remedy conditions. This is appropriate for

determination of risk from fish consumption. However, since the sampling has not been designed to reflect only post-remedy conditions, and may reflect contaminants that are not Site 3 related, or that are not post-remedy chemicals of potential concern, the data will not be used to require any further action for Site 3 sediment, surface water, etc."

Response: **The subject paragraph will be replaced with the following paragraphs:**

"Once the fish tissue samples are collected and analyzed, the sample results will be evaluated in a HHRA to be completed as part of a revised Technical Memorandum. US EPA and SCDHEC require different limitations on the use of the data collected by implementation of this SAP. USEPA will only consider these sample results to evaluate the need for Institutional Controls (IC), as fish restrictions for the 3rd Battalion Pond and risk communication to the people that fish in the 3rd Battalion Pond.

USEPA's concern is that since fishers may take fish from the pond which were present prior to implementation of the interim remedy, or which may have come into the pond after being exposed to contamination elsewhere, the sampling plan has been designed to reflect that type of potential consumption, as opposed to consumption of fish exposed only to post-remedy conditions. This is appropriate for determination of risk from fish consumption. However, since the sampling has not been designed to reflect only post-remedy conditions, and may reflect contaminants that are not Site 3 related, or that are not post-remedy chemicals of potential concern for sediment or surface water, USEPA will not support the use of the data to require any further remedial action other than ICs for Site 3 sediment, surface water, etc

However, SCDHEC disagrees that it is even possible to design a sampling plan to reflect only post remedy conditions, because:

1. **The 2001 and 2003 sediment sampling events were not designed to determine whether COPCs were released pre- or post-remedy,**
2. **It is impossible to determine if contamination is pre- or post-remedy since contamination does still exist, as indicated by:**
    - **COC selection in the previous revisions of the Technical Memorandum,**
    - **Remedy design that provided for waste to remain in place,**
    - **Consideration that the remedy was not designed to prevent future contaminant migration via infiltration.**

SCDHEC notes that prior risk assessments based on post-remedy data have exceeded human health screening for fish ingestion, for some exposure scenarios. Therefore, SCDHEC reserves their right to evaluate all information provided in the revised Technical Memorandum to determine if further remedial action is required."

4. **Comment:** SAP Worksheet #3 – Distribution List, page 12 - Please change the EPA RPM's email address to delete "Koroma-". Please do this everywhere the email address is listed throughout the document. This same comment was made on the draft MMRP SAP. Therefore it appears a master list is generating this same error repeatedly. Please update the master list(s) as well.

Response: **The QAPP has been revised as requested. The only master list is that maintained by the Team facilitator.**

5. **Comment:** SAP Worksheet #3 – Distribution List on Page 12 of 91 indicate that some of the project roles (i.e., field operations leader and site safety officer) have yet to be determined (TBD). To ensure completeness and accuracy, revise the Quality Assurance Project Plan Site 3 – Causeway Landfill Fish Tissue Risk Assessment dated 2009, herein referred to as the Uniform Federal Policy SAP (UFP SAP), by updating the TBD designation in the relevant worksheets of the final revision by identifying the appropriate staff personnel as needed.

   Response: Due to the period of time between submittal of the Draft QAPP and finalization of the QAPP, it is not uncommon for the draft documents to indicate TBD for field staff. In this case, we can now confirm that Mike Whitten of TtNUS's Aiken, South Carolina office will serve as both FOL and SSO and the QAPP has been revised accordingly.

6. **Comment:** SAP Worksheet #6, Procedure column – First row - Please add to the end "The TtNUS TOM must first get approval from the PI Team, unless otherwise noted in the SAP or agreed to via consensus up front." Third row- Please add to the end "Navy inform PI Team immediately." Fourth row – Please add to the last sentence "…change, after consulting with the PI Team for consensus, except where already approved in the SAP." Fifth row – Please add to the end "Navy to notify the PI Team immediately." Sixth row – Please add to the end "TtNUS to notify the PI Team immediately."

   Response: For the first row, the following has been added:

   "The TtNUS TOM will make immediate email notification to the PI Team. To the extent practical, Navy/TtNUS will work with the Team if any objections or concerns are identified by Team Members prior to implementation."

   All other WS 6 revisions have been made as suggested.

7. **Comment:** SAP Worksheet#7, Page 18 – Please provide the names and corresponding Education and/or Experience Qualifications for both positions. Page 19 – Please correct typos in the last two rows to be "… Navy RPM…".

   Response: Mike Whitten of TtNUS's Aiken, South Carolina office will serve as both FOL and SSO. Mr. Whitten has an M.S. in Environmental Science and 20 years of environmental experience. The QAPP has been revised accordingly.

   The typo in the last two rows has been corrected to read "…Navy RPM…".

8. **Comment:** SAP Worksheet #9.1, Page 21, Consensus Decisions, First Bullet – Please add to the end "EPA agreed to the study goal and COPCs provided the results would only be used to make decisions regarding the need for ICs in the form of fish restrictions and risk communication. The results are not to be used to require any further action on Site 3 sediments, surface water, etc."

   Response: The following language has been added at the end of the first bullet:

   "USEPA agreed to the study goal and COPCs provided the results would only be used to make decisions regarding the need for ICs in the form of fish restrictions and for risk communication. USEPA will not support use of the data to require any

further remedial action other than ICs on Site 3 sediments, surface water, etc, because the investigation is not being developed in a way which would support other goals.

SCDHEC will consider at all information presented in the Final Tech Memo to make the decision as to whether any further action is needed, and specifically will not support the need for restrictions on the consumption of fish based on the limited data that will be collected in accordance with this SAP."

9. **Comment:** SAP Worksheet #9.1, Page 22, Consensus Decisions, Last Sentence – Please add the word "draft" before minutes. In future SAPs, finalize the minutes before drafting the SAP and ensure consensus items are captured in the minutes so they can be included as written and agreed upon at the time. Also see comment above regarding email.

   Response: The last sentence of Worksheet #9.1 has been revised to read as follows:

   The draft minutes of the May 18 to 20, 2009 meeting are included in this SAP as Appendix A-1.

10. **Comment:** SAP Worksheet #9.2, page 23 – See comment above regarding email.

    Response: The QAPP has been revised as requested.

11. **Comment:** SAP Worksheet #9.2, page 24 – Modify the Title line to read "Comments/Decisions Cont'd". Modify this section to read as follows:

    "Sediment-to-fish tissue models were used in the development of the draft Technical Memorandum (TtNUS, July 2008) to estimate fish tissue concentrations resulting from exposure of fish to measured contaminant concentrations in post-remedy sediment samples. Results indicated potentially unacceptable risk. Comments were received on the models used and an alternative model for determining mercury concentrations in fish was recommended by USEPA. DHEC recommended sampling 3rd Battalion Pond.

    The EPA recommended model and other changes to the modeling procedures will be implemented and the results presented in the revised Tech Memo. The estimated fish tissue concentrations derived by the use of these models and based on post-remedy sediment samples will be used in calculating risks as would be generated by post remedy conditions and reported as such. The associated uncertainties will be discussed in the uncertainties section of the revised Tech Memo.

    Once fish tissue sampling has been completed, the measured fish tissue concentrations will be used to calculate potential risks to human receptors resulting from consumption of fish from the 3rd Battalion Pond, which may contain fish exposed to pre-remedy conditions, as well as conditions and contaminants external to the pond and removed from Site 3.

    The draft minutes of the conference call are included in this SAP as Appendix A."

    Response: Worksheet #9.2 will be revised so that there are only two sections following the list of participants – Comments/Decisions and Action Items. The Comments/Decisions section will be revised to include the language provided

below and to delete the 2 paragraphs currently presented as Consensus Decisions. The missing action items listed in the draft meeting minutes provided in Appendix A-2 will be added to Worksheet #9.2.

The Comments/Decisions section has been modified to include the following paragraphs:

"Sediment-to-fish tissue models, using the 2001 and 2003 sediment data, were used in the development of the draft Technical Memorandum (TtNUS, July 2008) to estimate fish tissue concentrations resulting from exposure of fish to measured contaminant concentrations in post-remedy sediment samples. Draft results indicated slightly elevated risk. Comments were received on the models used and an alternative model for estimating mercury concentrations in fish was recommended by USEPA. (SCDHEC has ~~and NAVFAC have~~ concerns that application of the model recommended by USEPA would result in risk that would be overestimated due to non-representative assumptions [i.e., limited interview of one individual to represent subsistence fisher ingestion rates]. In addition, SCDHEC believes ~~and NAVFAC believe~~ that it is unlikely that fish would be exposed exclusively to post-remedy contamination. The fisher receptor would also have to collect only species whose home range throughout its life stages was exclusive to the boundaries of the post remedy sediments.)

The USEPA recommended model and other changes to the modeling procedures will be implemented and the results presented in the revised Tech Memo. The estimated fish tissue concentrations derived by the use of these models and based on post-remedy sediment samples will be compared to the same screening values indicated in this SAP to meet CERCLA requirements. If the screening values are exceeded, the Navy will take a conservative position and state that post-remedy sediment concentrations could be contributing to unacceptable levels of contamination in fish with respect to human consumption and decide to accept actual fish tissue sample results for the purpose of making decisions pertaining to ICs and for the purpose of risk communication. SCDHEC also believes that fish tissue sampling is supported because the RI states that if fishing use increases, then risk should be reevaluated. DHEC feels that although there are concerns with the limited interview of one individual, it does seem that fish consumption has increased, and therefore fish tissue samples were necessary for due diligence for this individual.

Once fish tissue sampling has been completed, the measured fish tissue concentrations will be used to calculate potential risks to human receptors resulting from consumption of fish from the 3rd Battalion Pond, which, in addition to post-remedy exposed fish, may contain fish exposed to pre-remedy conditions, as well as conditions and contaminants external to the pond and removed from Site 3.

In the uncertainties section of the HHRA in the revised Technical Memorandum, the estimated fish tissue concentrations will be compared against actual fish tissue concentrations in tabular form and the uncertainties associated with both approaches will be discussed.

The draft minutes of the conference call are included in this SAP as Appendix A-2."

The Table of Contents has been revised to indicate that Appendix A is Draft Meeting Minutes.

12. **Comment:** SAP Worksheet #10, page27, Last paragraph and Page 28 first full paragraph – Delete these two paragraphs and replace them with the three main paragraphs in the comment above. Page 29 – Modify the last sentence to read "… decision pertaining to ICs that would be presented in the Final ROD for Site 3 and to communicate risk to the local fishers."

    Response: The last sentence in the next to last paragraph and the entire last paragraph in Section 10.2 have been deleted, and replaced with the four main paragraphs in the response above. The recommended change on Page 29 has been made.

13. **Comment:** SAP Worksheet #10, page 35, Table 10-2 – There is a more current version of the EPA Regional Screening Levels (RSLs) than the June 2008 version referenced in Footnote 2. The footnote also incorrectly cites Oak Ridge National Laboratory as the source of the data. EPA should be cited as the source for the RSLs, and the correct citation should be April 2009. Please update the SAP accordingly.

    Response: Both Table 10-1 and Table 10-2 have been revised to show that the source of the Regional Screening Levels is USEPA, May 2009. As always, the most current Regional Screening Levels available will be used in preparation of the Final Technical memorandum, which may be a different version than that available during QAPP generation.

14. **Comment:** SAP Worksheet #11, page 36, Section 11.2, Bullet number 1 – Modify the last sentence to read "… sediment-to-fish tissue modeling to estimate fish tissue concentration which will be used to generate a risk associated with post remedy conditions and can be further discussed in the uncertainties section." Page 37, Bullet number 5 – Modify the last sentence to read "… collected at 3rd Battalion Pond can be contributed to local background/anthropogenic conditions."

    Response: The first sentence in Bullet Number 1 in Section 11.2 has been revised to read "Previously collected data including original RI data (TtNUS, November 1999) and Draft Technical Memorandum post-remedy sediment data (TtNUS, July 2008) were used to identify target contaminants. The last sentence of this bullet has been deleted.

    The last sentence in the fifth bullet on Page 37 has been revised to read "The 3rd Battalion Pond fish tissue samples results will be compared to the reference location fish tissue sample results"

15. **Comment:** SAP Worksheet #11, page 38, Section 11.4 – The section describes the method for screening of site data against the reference concentration. The reference location screening should not include screening of PCBs, since there should not be any background and/or anthropogenic component of PCB contamination that is related to widespread common uses. Please clarify this point in the text. (However, the analysis of reference locations and duplicates for PCBs may still provide information which could be discussed in the uncertainties section of the HHRA if there is a presence in the reference samples. Blanks will also clarify these are not lab contaminants. So, although PCBs will not be screened against for the reference locations, it would still be beneficial to analyze for them.)

<u>Response:</u> We believe that the background screening for PCBs should remain. The following text will be added to Section 11.4. "Parris Island has a history of applying oil to dirt roads , which would be a widespread, common use, and could have also occurred at Site 3. In addition, whether site related (i.e., MCRD common use) or not, PCBs can be widespread in the environment and should not be discounted from anthropogenic measurement."

16. **<u>Comment:</u>** SAP Worksheet #11, page 39, Section 11.5 – A target number of fish (samples) to be collected was discussed agreed upon by the PI Team and should be accepted as sufficient, regardless of outcome. The use of VSP should have occurred up front (as suggested numerous times by EPA for development of SAPs) if it were to be used to determine acceptance criteria. Decisions should be made based on the results from this SAP, regardless of whether statistical assumptions 1-4 hold true or not and regardless of whether the reference location and pond results have the same standard deviations.

    <u>Response:</u> The results of the VSP were included to confirm the development of a sampling plan derived from other methods. The results of the fish tissue sampling agreed to by the PI Team will be used to make decisions. No changes to the QAPP are proposed.

    It is not apparent that the entire Team would support the application of VSP as a primary mechanism for sampling plan design. EPA has offered to provide the Team with an introduction/presentation to VSP, we have accepted, but no activity has yet occurred.

17. **<u>Comment:</u>** SAP Worksheet #s 12 & 14 – The Navy may decide field duplicates are not necessary, since there is really no opportunity for variation in the taking of fish in the field. EPA recognizes in SAP Worksheet #12 the lab has QC samples for all analytical groups to validate laboratory analysis. If it is decided to not take field duplicates, a confirmation should be made that sufficient fish are being collected from both the pond and the reference location to perform all the analysis being required. With respect to QC analysis, please explain whether or not any of the QC analysis will be conducted on fish tissues from the reference location, or how those 8 field samples count in the mix of 16 pond samples and 8 reference samples with respect to the 1 per 20 QC samples. Also, explain if QC samples need to specify top feeders or bottom feeders for comparison purposes in the 1 per 20 count.

    <u>Response:</u>

    It was initially intended that 3 field duplicate fish tissue samples be collected at a rate of 1 per 10 samples. Two duplicates were to be collected from the 3rd Battalion Pond (16 original samples) and 1 duplicate was to be collected from the reference location (8 original samples). Since 2 duplicates were to be collected from the pond, it was decided to collect 1 top predator and 1 bottom feeder as duplicates. The 1 duplicate sample from the reference location would be either a top predator or a bottom feeder. The QAPP has been revised to clarify that only 3 duplicate samples will be collected.

    Worksheet #12 has been revised to indicate that the Matrix Spike and Matrix Spike Duplicate Samples listed in the worksheet will be performed on 1 per 20 field samples collected (1 per 16 3rd Battalion Pond Samples and 1 per 8 Reference

Location Samples). There is no distinction as to whether the samples will be top predators or bottom feeders.

18. **Comment:** SAP Worksheet #14, Fish Tissue Sampling, page 44, first sentence – Modify the sentence to read "…collected at 3rd Battalion Pond can be contributed to local background/anthropogenic conditions."

    Response: The referenced sentence (last sentence in the first paragraph in the section - Fish Tissue Sampling – Worksheet #14) has been revised to read "The 3rd Battalion Pond fish tissue samples results will be compared to the reference location fish tissue sample results."

19. **Comment:** SAP Worksheet #14 – In the text for Summary of Project Tasks, Fish Sampling, the first paragraph on Page 45 of 91 indicates once the whole fish arrives at the laboratory, the fish will be filleted, with the left fillet submitted for laboratory analysis. The text further states the right fillet of one fish from each target species (both from the pond and from the reference location) will be submitted as a duplicate. Since two (2) target species (top predator and bottom feeder) each will be collected from both the pond and the reference location, the worksheet implies a total of four (4) right fillets, two (2) from the pond and two (2) from the reference locations will be submitted as duplicates. However, SAP Worksheet #18 – Sampling Locations and Methods/SOP Requirements Table on Page 57 of 91 and SAP Worksheet #20 – Field Quality Control Sample Summary Table on Page 59 of 91 indicate a total of three (3) field duplicates will be collected. Given this comment and the comment pertaining to Worksheet #12, revise the UFP SAP to address the discrepancy in the reported number of duplicate samples to be collected.

    Response:

    It was initially intended that 3 field duplicate fish tissue samples be collected at a rate of 1 per 10 samples. Two duplicates were to be collected from the 3rd Battalion Pond (16 original samples) and 1 duplicate was to be collected from the reference location (8 original samples). Since 2 duplicates were to be collected from the pond, it was decided to collect 1 top predator and 1 bottom feeder as duplicates. The 1 duplicate sample from the reference location would be either a top predator or a bottom feeder. The QAPP has been revised to clarify that only 3 duplicate samples will be collected.

20. **Comment:** SAP Worksheet #16 – The Project Schedule/Timeframe Table (optional format) on Page 50 of 91 does not present the most current project schedule. During the most recent MCRD Parris Island Project Team Meeting held in Columbia, South Carolina on September 15-16, 2009 it was agreed upon by the project team to accelerate the schedule based upon Tier II requests for an accelerated project schedule. To ensure completeness and accuracy revise the UFP SAP by updating the worksheet of the final version with the project schedule as agreed to by the Project Team.

    Response: The schedule was developed and the QAPP distributed prior to the generation of the accelerated schedule. The Final QAPP revision will include up-to-date schedule information.

21. **Comment:** SAP Worksheet #17, page 53, first paragraph – Please modify the last sentence to read "… whether COPCs in fish collected from the 3rd Battalion Pond can be contributed to local background/anthropogenic conditions."

Response:

The last sentence in the fourth paragraph in the section on Target Species (Worksheet #17) has been revised to read "The 3rd Battalion Pond fish tissue samples results will be compared to the reference location fish tissue sample results."

22. **Comment:** SAP Worksheet #19 – In the text of Sampling Design and Rationale, the first sentence in the first paragraph in the subsection titled Sampling Locations on Page 53 of 91 states "Figure 17-1 shows that there are two fishing piers located along the Site 3 Causeway Landfill (one in each lobe of the pond near the culverts) and boat launches are located in the northern portion of each lobe". A review of Figure 17.1, Sampling Locations, revealed that the two fishing piers are not shown in the figure as indicated in the worksheet however, the culverts are depicted. Also, the boat launches referenced in the worksheet are not shown to be located in the northern portion of each lobe. To provide a point of reference relative to the four (4) sample lobes of the 3rd Battalion Pond revise the figure to include the locations of the two fishing piers and boat launches.

Response: MCRD Parris Island pointed out during the revision of Figure 17-1 that there are actually 3 fishing piers and 2 boat launches along the shores of the 3rd Battalion Pond. Figure 17-1 has been revised to show the locations of all of the fishing piers and boat launches. The first sentence of this section of the QAPP has been revised to read as follows:

Figure 17-1 shows that there are two fishing piers located along the Site 3 Causeway Landfill (one in each lobe of the pond near the culverts) and one pier in the northern portion of the eastern lobe. Boat launches are located in the northern portion of each lobe.

23. **Comment:** SAP Worksheet #30 – EPA Region 4 is familiar with the SGS lab selected for PCB analysis, their procedures and abilities. However, Katahdin is not a familiar lab to EPA Region 4. The Navy NFESC certification letter in Appendix F indicates the approval period expires September 30, 2008. EPA suggests requesting the most recent MDL study be reviewed as an indicator of their recent experience and capabilities with respect to the services they will be providing, prior to the initiation of field work.

Response: Katahdin is currently certified by NFESC as indicated in the e-mail that is included in Appendix F. The letter accompanying the e-mail was inadvertently included in Appendix F and will be removed from the Final QAPP.

24. **Comment:**: Appendix B, page B-1 – Please modify the last sentence of the third paragraph to read as follows, "… by recreational and subsistence fishers will be included in the risk assessment to represent potential risk contributed to post remedy conditions, and may be further discussed in the uncertainties section.

Response: The third paragraph on page B-1 has been revised to read as follows:

"Theoretical partitioning of post-remedy sediment contaminants to fish and subsequent consumption of fish by recreational and subsistence users using the

USEPA recommended models will be conducted. The estimated fish tissue concentrations derived by the use of these models and based on post-remedy samples will be compared to the same screening values indicated in this SAP to meet CERCLA requirements. If the screening values are exceeded, the Navy will take a conservative position and state that post-remedy sediment concentrations could be contributing to unacceptable levels of contamination in fish with respect to human consumption and decide to accept actual fish tissue sample results for the purpose of making decisions pertaining to ICs and for the purpose of risk communication.

The following paragraphs will be added following the revised third paragraph:

Once fish tissue sampling has been completed, the measured fish tissue concentrations will be used to calculate potential risks to human receptors resulting from consumption of fish from the 3rd Battalion Pond, which may contain fish exposed to pre-remedy conditions, as well as conditions and contaminants external to the pond and removed from Site 3.

In the uncertainties section of the HHRA in the revised Technical Memorandum, the estimated fish tissue concentrations will be compared against actual fish tissue concentrations in tabular form and the uncertainties associated with both approaches will be discussed.

The uncertainties section of the HHRA will state that SCDHEC believes that risk attributable to fish only exposed to pre-remedy conditions is unlikely as the life span for most of the species sampled is less than the amount of time that has elapsed since the remedy was implemented. In addition, SCDHEC believes ~~and NAVFAC believe~~ that it is unlikely that fish would be exposed exclusively to post-remedy contamination. The fisher receptor would also have to collect only species whose home range throughout its life stages was exclusive to the boundaries of the post remedy sediments. These factors could result in an overestimation of risk due to fish consumption.

25. **Comment:** Appendix B, page B-2, Section B.1 – In the last paragraph delete the word "Sediment". It is assumed this was a typo. No sediment samples are to be taken.

Response: The word sediment was a typo and was changed to "Fish". Note that this entire section was rewritten in response to the next comment.

26. **Comment:** Appendix B, Section B.1 – The discussion in this Appendix does not appear to address how screening site data against the reference data will be conducted. Discussion should be added to Section B.1— Selection of COPCs.

Response: Section B.1 – Selection of COPCs has been revised to read as follows:

The selection of COPCs is a qualitative screening process used to limit the number of chemicals quantitatively evaluated in the baseline HHRA to those site-related constituents that dominate overall potential risks.

Post-remedy sediment data were used to select sediment COPCs that were then analyzed for in the fish tissue samples collected in October 2009. If fish tissue samples had not been collected, the post-remedy sediment data would have been used to evaluate the risks associated with fish consumption via the theoretical partitioning of contaminants found in the sediment into fish tissue and the ultimate consumption of fish by recreational users. Because fish that exist in the pond

would be expected to be exposed to sediment in all areas of the pond, data compiled from sediment samples collected from the pond during the 2001 and 2003 field investigations were used in the selection of sediment COPCs. To determine risks associated with releases from the site and not from background/anthropogenic sources, the 2001/2003 sediment data were screened against background/typical facility pesticide concentrations in sediment (Appendix D). If the maximum concentration detected in the sediment samples exceeded the background/typical facility pesticide concentration, the chemical was then screened against the screening level.

In general, a chemical was initially selected as a sediment COPC and ultimately identified as a parameter for the fish tissue analytical program if the maximum detected sediment concentration exceeded the background/typical facility pesticide concentration in sediment and the calculated fish tissue concentration exceeded the screening level.

U.S. EPA Region 4 considers bioaccumulative chemicals to include those designated in Bioaccumulation Testing and Interpretation for the Purpose of Sediment Quality Assessment (U.S. EPA, February 2000), except for PAHs. U.S. EPA Region 4 considers the potential toxicity of PAHs via bioaccumulation in the food web to be generally negligible unless PAHs are present at extremely high concentrations [i.e., percent levels (10,000 mg/kg)] in soil or sediment. Since PAHs were not detected at such high concentrations in the Pond Side Area 1 sediments at Site 3, and PAH concentrations in fish are usually low because fish rapidly metabolize PAHs (Eisler, April 2000), PAHs were not evaluated for the consumption of fish by recreational users pathway.

Maximum fish tissue concentrations for each parameter analyzed in the 2009 fish tissue samples will be compared to the appropriate fish tissue screening level to select COPCs that will be evaluated in this HHRA. To compensate for releases from background/anthropogenic sources, the maximum concentrations from the 2009 3rd Battalion Pond fish tissue data will be compared to two times the mean concentrations of the fish tissue data collected from General's Landing Creek (reference location). In general, a chemical will be selected as a fish tissue COPC and retained for further quantitative risk evaluation if the maximum detected fish tissue concentrations in the 3rd Battalion Pond fish tissue samples exceed two times the mean reference fish tissue concentrations and the appropriate screening levels. Chemicals present in the 3rd Battalion Pond fish tissue samples at concentrations greater than the screening levels but less than two times the mean reference location fish tissue concentrations will not be considered to be representative of risks associated with Site 3 sediment.

Fish tissues samples will be analyzed for PCB congeners, which are described in PCBs: Cancer Dose-Response Assessment and Application to Environmental Mixtures (EPA, September 1996). PCB congeners are classified as either dioxin-like or nondioxin-like. The following methodology will be used to evaluate PCB congeners and dioxin-like PCB congeners in this HHRA:

- **The concentrations reported for the PCB congeners will be summed for each sample and the maximum total concentration will be compared to the screening criteria for total PCBs.**

- **To evaluate the dioxin-like PCB congeners, it will be first necessary to apply toxicity equivalency factors (TEFs) to the individual dioxin-like PCB congener concentrations as specified in the EPA guidance. The individual dioxin-like PCB congener concentrations will multiplied by the TEFs to produce a dioxin-**

like toxic equivalent concentration (TEQ). The individual TEQs will be summed for each sample and the maximum total dioxin-like TEQ will be compared to the screening criteria for 2,3,7,8-TCDD.

27. **Comment:** Appendix B, Table B-2 – This table presents the exposure parameters to be used in the risk calculations. EPA previously submitted comments pertaining to this Table. However, a record of the resolution to those comments cannot be located. Therefore, EPA is still investigating the appropriateness of the contents of the table, especially with respect to Exposure Duration and averaging time for non-carcinogens. It seems apparent the averaging time for the adult military recreational fisher should be 2,190 days. EPA hopes to be prepared to address the remainder at question by the time the RTC/redline meeting is held. Please make the necessary changes.

Response: The averaging time for the adult military recreational fisher was incorrect and should be 2,190 days. Table B-2 has been corrected.

The exposure duration of 70 years for the Adult Recreational and Subsistence Users is based on Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories. EPA-823-B-00-007, Office of Water, Washington, DC. Note that the screening values that are presented for use in the Final Technical Memorandum are based on this Exposure Duration of 70 years.

28. **Comment:** Appendices D and E – Insufficient time was allowed to fully review these Appendices. Therefore, it is unclear exactly what will be done to prepare samples at Katahdin before shipment to SGS, and whether the appropriate coordination has occurred between the two labs. While field SOPs indicate the fish can be shipped in ice or dry ice, EPA recommends once the samples have been prepared, resulting in a into a powder form, shipment occur with dry ice only. It is unclear what requirements SGS has for accepting samples. Since SGS works closely with EPA, they may also require shipment with dry ice only. Therefore, the labs should coordinate SOPs to clearly indicate what level of sample prep Katahdin will perfom before shipment to SGS, and based on that level of sample prep, what shipping requirements SGS has in order for Katahdin samples to meet acceptance criteria. This should be accomplished before field work begins.

Response: The following information [based on State's Bureau of Water sampling protocol, USEPA Region 4 SOP for Tissue Sample Handling and Processing (SESDPROC-602-R0, May 31, 2007) and discussion with the laboratories] has been added to Site-Specific Fish Tissue Sampling SOP included in Appendix D of the QAPP and will be provided to the laboratories (along with schedule, etc.) before sampling begins:

"Standard fillets will be taken from the left side of each fish for contaminant analysis. Standard fillets are skin on and scales off with the belly flap included. When filleting, care must be taken to ensure fish entrails are not punctured and visible bones are removed. Fish are filleted on clean, decontaminated surfaces (cleaned and rinsed first with deionized water and then with isopropyl alcohol when the species or the station changes). The right side of selected fish will be filleted, processed, and analyzed as a field duplicate.

The sex of each fish is determined during filleting and recorded.

Fat deposits, visible bones, and viscera are removed from the fillet with a stainless steel knife and deionized water. This stainless steel knife is cleaned and rinsed

first with deionized water and then with isopropyl alcohol when the species or the station changes.

The fillets from each fish are weighed and the weights recorded. The stainless steel platform scale pan is cleaned and rinsed first with deionized water and then with isopropyl alcohol when the species or the station changes. Fillets are weighed to the nearest gram with the platform scales.

After weighing, the individual fillets are homogenized in a stainless steel blender in accordance with USEPA Region 4 SOP for Tissue Sample Handling and Processing (SESDPROC-602-R0, May 31, 2007). Dry ice will be used as needed in accordance with the SOP to prepare the homogenized sample. 50 grams of the processed fillet will be frozen and shipped to SGS North America, Inc. within 2 days of processing for PCB analysis.

According to the USEPA Region SOP, shipped samples shall conform to all U.S. Department of Transportation and/or International Air Transportation Association (IATA) hazardous materials shipping requirements. Tissue samples are shipped on dry ice unless otherwise noted. The container should have as little air space as possible.

The remaining processed fillet will be analyzed by Katahdin Analytical Services for copper, mercury, 4,4'-DDD, 4,4'-DDE, and 4,4'-DDT." Any excess of each fillet shall be kept frozen by KAS in case the samples arrive at SGS in a manner which renders them unacceptable. In addition, the Quality Control Procedures in the SOP should be noted and followed, addressing a variety of blanks which should be processed."