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FISC WILLIAMSBURG
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U S NAVY RESPONSES TO U S EPA REGION III COMMENTS ON DRAFT TIER II
SAMPLING AND ANALYSIS PLAN FOR AREA OF CONCERN 8 (AOC 8) AREA SOUTH OF
SITE 7 REMEDIAL INVESTIGATION FISC WILLIAMSBURG VA
1/3/2013
NAVFAC MID ATLANTIC

Response to Comments

Remedial Investigation

Sampling and Analysis Plan

AOC 8 – Area South of Site 7

Naval Weapons Station Yorktown Cheatham Annex
Williamsburg, VA
January 3, 2013

Comments received by email on October 10, 2012 from Susanne Haug, Environmental Protection Agency, Region 3.

EPA Comment #1: Please make similar changes to the report regarding comparison of on-site concentrations to maximum background concentrations (when the 95th percent UTL is exceeded) as was agreed to for recent SAPs such as Site 4.

Navy Response: As discussed with the team as part of resolving the comments on the CAX Site 4 UFP-SAP, the intention of the Decision Tree (Figure 6) presented in the UFP-SAP is that comparison of COPC/COC concentrations to background 95% UTL data (or any other background-related criteria) will be conducted independently of the evaluation of potential risk through the completion of the human health and ecological risk assessments. Only in cases where potential human health or ecological risk is identified *and* comparison of site data to the background 95% UTLs indicates UTL exceedances, would further evaluation of the data with respect to consistency with background conditions be considered. In other words, should further evaluation methods (such as evaluating the magnitude of the 95% UTL exceedance and/or comparing to maximum background concentrations) be employed, they would only be utilized following the completion of the risk assessments. Therefore, the final step in the decision logic (Section 2.3.2, last bullet under “Human Health Decision Logic” and “Ecological Decision Logic”) was revised to state:

- If the COC concentrations exceed the background 95 percent UTLs, further evaluation will be conducted to consider whether the COC concentrations are consistent with background conditions or if they represent a release such that further action is warranted.

And the 2nd to last box in the decision logic (Figure 6) was revised to state:

Conduct further evaluation to consider whether the COC concentrations are consistent with background conditions or if they represent a release such that further action is warranted.

In addition, the text label for the arrow from this box directed to the left will be revised to read “COC concentrations not indicative of a CERCLA-related release” and the arrow directed to the right to read “COC concentrations indicative of a CERCLA-related release.”

EPA Comment #2: PAGE 22 - The third bullet should be clarified to indicate that 95th percent UCL groundwater concentrations from wells located in the most contaminated portion of the groundwater plume will be used to estimate potential risks.

Navy Response: The third bullet was revised as follows:

If COPCs are identified, human health risks will be evaluated for exposure to the COPCs identified in groundwater for future industrial workers, residents, and construction workers. The **95% UCL of the** mean groundwater concentration from the wells located in the most contaminated portion of the groundwater plume (if a plume is identified) will be used as the exposure concentration for the risk calculations. If all risks are within acceptable USEPA risk levels, no further action or assessment based on human health will be required for groundwater.

EPA Comment #3: The laboratory performing the analyses should be required to report Tentatively Identified Compounds (TICs). TIC reporting will allow for a more complete and comprehensive characterization of contamination at AOC 8.

Navy Response: The purpose of the RI is to collect additional data to supplement the current SI dataset in order to adequately characterize AOC 8 and evaluate potential risks to human health and the environment. As such, the investigation is not a release assessment. Therefore, the analytical suite will consist of constituents already established to be present at the site and TIC analysis is not appropriate.

EPA Comment #4: The submitted laboratory accreditation expired on March 31, 2012.

Navy Response: Tables A2-a through A2-c and Appendix D of the UFP-SAP were revised to include the updated laboratory accreditation references and documentation; the laboratory's accreditation is good through 2014.

EPA Comment #5: Because the data collected from the proposed soil and groundwater samples will be used in the remedial investigation and the variability that can occur between samples of these media, limiting the analyses to PAHs, PCBs, and inorganics in soil and VOCs and metals in groundwater is not supported. The analyses of the proposed samples need to include the original list of contaminants used in the former SI process.

Navy Response: During the 2008 Site Inspection (SI), soil and groundwater samples were analyzed for full suite (VOCs, SVOCs, pesticides, PCBs, explosives, and metals). The analytical results (included herein as Attachment 1) identified detections of 1 VOC, PAHs, pesticides, one PCB, and metals in surface soil, 2 VOCs, pesticides, one PCB, and metals in subsurface soil, and one VOC and metals in groundwater. Following a comparison to conservative screening values (Ecological Screening Values [ESVs] and USEPA Regional Screening Levels [RSLs] for residential soil, the Final SI Report (CH2M HILL, 2012) concluded that one PAH, one pesticide, one PCB, and 4 metals in surface soil; one pesticide, one PCB, and one metal in subsurface soil; and 1 VOC and 3 total and 5 dissolved metals in groundwater were detected at concentrations above the conservative screening values. Of these constituents that exceeded the conservative screening values, 1 PAH, 1 PCB, and 2 metals in surface soil and 1 VOC and 1 metal in groundwater were identified as COPCs (i.e., potential risk may exist due to exposure to these constituents).

As stated in *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA* (USEPA, 1988), Section 2.2.2,

“Before the activities necessary to conduct an RI/FS can be planned, it is important to compile the available data that have previously been collected for a site. These data can be used to determine the additional work that needs to be conducted both in the field and within the community. A thorough search of existing data should help avoid duplication of previous efforts and lead to a remedial investigation that is more focused and, therefore, more efficient in its expenditure of resources.”

Following this guidance, since the SI sampling provided adequate spatial coverage to assess what COPCs exist, the RI will include analysis of a focused list of analytes based on the SI exceedances. It is the principal objective of the RI to refine the delineation, not continue determining what COPCs are present, since they were identified during the 2008 SI. Upon evaluation of the 2008 SI analytical results, the CAX Partnering Team agreed during the two scoping sessions (documented in Sections 2.1.1 and 2.1.2 of the UFP-SAP) to analyze the RI surface and subsurface soil samples for PAHs, PCBs and metals, and groundwater for VOCs and metals in order to fulfill this purpose. No changes were made to the UFP-SAP.

EPA Comment #6: The text indicates there is “...a slope where debris outcrops...” The text and figures need to identify the location of this slope and the debris outcrop. This will assist in determining if surface sediment, subsurface sediment, pore water, and/or surface water samples from the York River are needed for this remedial investigation (RI). This will also assist in identifying this as a potential migration pathway (Section 2.2.5) or quantifying the assumption (Section 2.3.3) that there is no buried debris outside the berm. The location of the debris outcrops can also be used to ensure the previous and proposed sampling locations include this area as a potential source of contamination.

Navy Response: The debris “outcrop” is better described as visible debris within the side of the berm, rather than an outcrop or large cut in the side of the berm where debris is exposed. This debris is located within the bermed area of the northern disposal area and no debris outcrops outside of the AOC 8 study area, which is defined by the site berm (see attached Figure 1). As such, any potential migration of contamination from surface water runoff in this area will be directed back to the site and ultimately infiltrate into the ground or evaporate within the site boundary. As a result, the presence of this area of visible debris within the berm provides no basis for the collection of surface sediment, subsurface sediment, pore water, and/or surface water samples from the York River to complete this RI.

The figures presented in the UFP-SAP have been revised to include the approximate location of the debris within the berm and the UFP-SAP text has been revised to state “..... a slope where debris **outcrops is visible within the side of the berm**”. In addition, based on the location of this debris, and the locations of the test pits excavated during the 2008 SI, the 2008 SI soil sample locations (as depicted on Figure 4 of the UFP-SAP) have adequately characterized this area as a potential source of contamination.

EPA Comment #7: Section 2.2.6 on page 20 states that potential ecological receptors exposed to surface soil at AOC 8 include lower trophic level terrestrial receptors (plants and soil invertebrates). The section further states that due to the small area of the site that contains debris (source areas), exposures to upper trophic level receptors (such as birds and mammals) are not considered significant. This approach is not acceptable to BTAG. Section 2.2.1 on page 18 states that the site is 1.5 acres, which is within the home range for small mammals and some birds. Therefore, food chain risk should be evaluated for receptors with small home ranges (e.g., short-tailed shrew [Blarina brevicauda] shrew and American robin [Turdus migratorius]) to more fully assess this exposure pathway.

Navy Response: While the total site size may be 1.5 acres, only about 0.25 acres of the site has surface debris (Figure 2); this area expands to about 0.7 acres if buried debris is also considered (Figure 5). As outlined in the 2008 SI (CH2M HILL, 2012), these areas are too small for significant exposures to occur for upper-trophic-level populations, the focus of assessment endpoints. The UFP-SAP was revised as follows to clarify the size of the source area at AOC 8:

Due to the small size of areas on the site that contain debris (**the source areas, comprised of about 0.7 acres of the 1.5 acre site**), exposures to upper trophic level receptors (such as birds and mammals) are not considered significant.

EPA Comment #8: Section 2.3.1 on page 21 states that while AOC 8 is located adjacent to the York River, no surface water or sediment sampling is recommended because the location and the height of the berm prevents the transport of site-related contaminants into the York River. In addition, the only potential risk identified in the groundwater sample collected closest to the York River, during the Site Inspection, was arsenic, which may not be representative of current arsenic concentrations because the groundwater samples were not collected from permanent monitoring wells. Because permanent monitoring wells are proposed for this investigation, the decision on whether to collect surface water and sediment from the York River should be based on the results of samples from these wells. As part of the RI, the discharge areas for groundwater should be identified so any future sampling could be properly located.

Navy Response: The decision on whether to collect additional RI data (including surface water and sediment from the York River or groundwater discharge data) will be based on an evaluation of the existing and proposed data (as outlined in the UFP-SAP). If this evaluation indicates additional RI data are needed to adequately fulfill the objectives of the RI, an addendum to this UFP-SAP will be prepared and submitted for Partnering Team review, prior to the completion of the RI Report. Section 2.3.1 (Project Statement and Objectives) was revised as follows:

The objective of the RI is to collect additional data to supplement the current SI dataset to **fill spatial data gaps and identify migration pathways in order to** adequately characterize AOC 8 and evaluate potential risks to human health and ecological receptors. Field activities will include delineating the lateral extent of the two burial areas, collecting additional soil samples, and collecting groundwater samples from

permanent monitoring wells to adequately characterize the site. All test pit and soil data evaluated in the SI (CH2M HILL, 2012) and all data collected as part of this RI will be used to support an HHRA and ERA. While AOC 8 is located adjacent to the York River, no surface water or sediment sampling is recommended **at this time** because the location and the height of the berm along the eastern boundary (**Figure 3**) prevents the transport of site-related contaminants into the York River from surface runoff. In addition, the only potential risk identified in the groundwater sample collected closest to the York River, during the SI, was due to arsenic concentrations; however, these results may not be representative of current arsenic concentrations because the groundwater samples were not collected from permanent monitoring wells. **If, following the evaluation of the RI data, it is determined additional RI data (i.e., surface water and sediment samples from the York River or groundwater discharge data) are needed to adequately fulfill the objectives of the RI, an addendum to this UFP-SAP will be prepared and submitted for Partnering Team review, prior to the completion of the RI Report.**

EPA Comment #9: In the Ecological Decision Logic portion of Section 2.3.2, bullet one, the phrase "... (HQ) exceeds 1..." needs to change to "... (HQ) equals or exceeds 1..." Also, the initial and final COPCs for plants and invertebrates need to be based on maximum concentrations, not mean values.

Navy Response: The requested change relating to HQs was made to the SAP. Initial COPCs (Step 2) for plants and invertebrates will be based upon maximum concentrations. Final COPCs (Step 3A) will consider mean and 95% UCL soil concentrations, per Navy ERA guidance.

EPA Comment #10: Section 2.3.2 on page 21 states that if analytes are undetected or if any detected analytes are below the Project Action Limits (PALs), then it will be assumed that the nature and concentrations of these constituents do not pose an unacceptable risk, and no further action will be necessary. If analytes are detected above the project-specific PALs then a quantitative human health and ecological risk assessment will be conducted. Section 2.3.4 on page 26 states that the PALs are residential soil levels for human health and ecological screening levels for plants and soil invertebrates. All detected chemicals must be evaluated in the ERA to assess impacts to ecological receptors. The comparison to PALs does not consider the potential for food chain risk.

Navy Response: All detected chemicals in ecologically relevant media (e.g., surface soil) will be evaluated in the ERA. Regarding the potential for food chain risk, please see the response to Comment 7.

EPA Comment #11: Section 2.3.2 on page 23 states that mean groundwater concentrations will be compared with surface water screening values. For the initial evaluation, maximum concentrations must be compared with surface water screening values (representing future potential risk). The contaminant concentrations in the wells closest to the groundwater discharge point should also be evaluated to assess the potential for risk and the need to further evaluate the groundwater / surface water pathway.

Navy Response: For the initial evaluation (Step 2), maximum groundwater concentrations will be used. Subsequent evaluations (Step 3A), if necessary, may consider subsets of the available data, as suggested in the comment, and central tendency estimates of concentrations.

EPA Comment #12: The first bullet on page 23 indicates that if COPC concentrations exceed the background 95 percent UTL, further evaluation will be needed. In the screening level ecological risk assessment, comparing site data to the background 95 percent UCL is appropriate, not the UTL or maximum base background concentrations. (It warrants reiterating that in the risk assessment, the potential for risk cannot be eliminated due to background concentrations.)

Navy Response: Background concentrations, as agreed to by the Partnering Team during the background study, are 95% UTL values, which will be used in the assessment. These comparisons will be conducted as part of Step 3A, if necessary, per Navy ERA guidance.

EPA Comment #13: Section 2.3.3 states that it is unlikely that buried debris exists below the groundwater table, which is estimated to be less than 30 feet bgs. Information should be provided to support this statement, otherwise it should be removed.

Navy Response: The statement that it is unlikely that buried debris exists below the groundwater table was based on typical excavation and disposal practices in sandy soils. While it is unlikely that native material from the Site was excavated below groundwater for disposal purposes, this text was deleted from the UFP-SAP. In addition, depth to groundwater data will be collected from the monitoring wells installed as part of the RI. While it is not irrefutable, the depth to groundwater data can infer the likely maximum depth of debris at the site.

EPA Comment #14: Section 2.3.3 on page 24 states that 10 surface soil samples (0 to 6 inches) will be collected from AOC 8 (Figure 7) and analyzed for polycyclic aromatic hydrocarbons, polychlorinated biphenyls (PCBs), and inorganic constituents to supplement the existing surface soil data. Subsurface soil samples will be collected in the same locations. Information should be provided to justify the locations of proposed soil samples (fill spatial data gaps, migration pathways). The information provided in Table 2-6 is not specific enough to determine why some samples are being collected. It is unclear why three soil samples will be collected north of the study area.

Navy Response: The proposed soil sample locations were selected by the CAX Partnering Team to supplement the current SI dataset to fill spatial data gaps and identify migration pathways in order to adequately characterize AOC 8 and evaluate potential risks to human health and ecological receptors (changes to the UFP-SAP made as shown in the response to EPA Comment #8 above). The three samples north of the study area were proposed to confirm that no soil contamination exists outside of the bermed area adjacent to where buried debris, within the berm is the most extensive. Table 2-6 was revised as follows:

TABLE 2-6
AOC 8 Proposed Sampling Scheme and Associated Rationale

Media	Sample Count	Analysis	Rationale	
Surface Soil	11	3	PAHs, PCBs, inorganic constituents, TOC, pH, grain size	Collected to determine if site related contaminants exist outside current site study area. The data will also be used to determine the nature and extent of contamination and support an HHRA and ERA.
		3	PAHs, PCBs, inorganic constituents, TOC, pH, grain size	Collected to determine the nature and extent of contamination within the vicinity of the burial area south of the site entrance road (no samples were previously collected from this area; therefore there is a spatial data gap in this area). The data will also be used to determine the nature and extent of contamination and support an HHRA and ERA.
		2	PAHs, PCBs, inorganic constituents, TOC, pH, grain size	Collected to determine if site related contaminants exist outside the buried debris area at the end of the site entrance road (no samples were previously collected from this area; therefore there is a spatial data gap in this area). The data will also be used to determine the nature and extent of contamination and support an HHRA and ERA.
		1	PAHs, PCBs, inorganic constituents, TOC, pH, grain size	Collected to determine if site related contaminants are migrating from the area immediately downgradient of the soil sample location where benzo(b)fluoranthene, Endrin aldehyde, and arsenic concentrations were detected in surface soil, above residential RSL or ecological screening values during the 2008 SI. The data will also be used to determine the nature and extent of contamination and support an HHRA and ERA.
		1	PAHs, PCBs, inorganic constituents, hexavalent chromium, TOC, pH, grain size	Collected to determine if site related contaminants are migrating from the area immediately downgradient of the 2008 test pit location, where the most extensive buried debris was identified. The data will also be used to determine the nature and extent of contamination and support an HHRA and ERA. Hexavalent chromium data will be used to determine the valency of high chromium concentrations detected during the 2008 SI in order to refine the HHRA.
		1	Total and hexavalent chromium	Collected to determine the valency of high chromium concentrations detected during the 2008 SI in order to refine the HHRA.
Subsurface Soil	10	3	PAHs, PCBs, inorganic constituents, pH	Collected to determine if site related contaminants exist outside current site study area. The data will also be used to determine the nature and extent of contamination and support an HHRA and ERA.
		3	PAHs, PCBs, inorganic constituents, pH	Collected to determine the nature and extent of contamination within the vicinity of the burial area south of the site entrance road (no samples were previously collected from this area; therefore there is a spatial data gap in this area). The data will also be used to determine the nature and extent of contamination and support an HHRA and ERA.

TABLE 2-6

AOC 8 Proposed Sampling Scheme and Associated Rationale

		2	PAHs, PCBs, inorganic constituents, pH	Collected to determine if site related contaminants exist outside the buried debris area at the end of the site entrance road (no samples were previously collected from this area; therefore there is a spatial data gap in this area). The data will also be used to determine the nature and extent of contamination and support an HHRA and ERA.
		1	PAHs, PCBs, inorganic constituents, pH	Collected to determine if site related contaminants are migrating from the area immediately downgradient of the soil sample location where benzo(b)fluoranthene, Endrin aldehyde, and arsenic concentrations were detected in surface soil, above residential RSL or ecological screening values during the 2008 SI. The data will also be used to determine the nature and extent of contamination and support an HHRA and ERA.
		1	PAHs, PCBs, inorganic constituents, pH	Collected to determine if site related contaminants are migrating from the area immediately downgradient of the 2008 test pit location, where the most extensive buried debris was identified. The data will also be used to determine the nature and extent of contamination and support an HHRA and ERA.
Groundwater	6	2	VOCs, total and dissolved inorganic constituents, nitrate, nitrite, sulfate, sulfide, alkalinity, methane, ethane, and ethane	Collected to determine if groundwater contaminant concentrations exist outside the debris disposal areas (no groundwater samples were previously collected from outside the buried debris; therefore there is a spatial data gap in this area).The data will also be used to assist in determining the degradation and mobility of VOCs and metals and support an HHRA and ERA.
		1	VOCs, total and dissolved inorganic constituents, nitrate, nitrite, sulfate, sulfide, alkalinity, methane, ethane, and ethane	Collected to determine if groundwater contaminant concentrations exist in the vicinity of the 2008 test pit location, where the most extensive buried debris was identified. The data will also be used to assist in determining the degradation and mobility of VOCs and metals and support an HHRA and ERA.
		1	VOCs, total and dissolved inorganic constituents, nitrate, nitrite, sulfate, sulfide, alkalinity, methane, ethane, and ethane	Collected to confirm groundwater contaminant concentrations detected during the 2008 SI (in the immediate vicinity of the 2008 SI groundwater sample where low level PCE concentrations were detected). The data will also be used to assist in determining the degradation and mobility of VOCs and metals and support an HHRA and ERA.
		2	VOCs, total and dissolved inorganic constituents, nitrate, nitrite, sulfate, sulfide, alkalinity, methane, ethane, and ethane	Collected to determine if groundwater contaminant concentrations are migrating into the York River at concentrations that may pose risk to human health or the environment. The data will also be used to assist in determining the degradation and mobility of VOCs and metals and support an HHRA and ERA.

EPA Comment #15: Section 2.3.3 on page 24 states that the analytical results collected as part of the 2008 Site Inspection indicated that there were no semi-volatile organic chemicals, pesticides, or PCBs detected in groundwater; therefore, no additional sampling is required for these contaminant groups. Because this data is nearly five years old, it is unclear that this conclusion is supported. In addition, this same section states that these results may not be representative of current groundwater concentrations because they were collected using direct push technology rather than permanent monitoring wells. For these reasons, groundwater should be analyzed for the full suite of contaminants.

Navy Response: Given the type of debris and the estimated date of disposal (sometime between 1942 and 1955, based on historical aerial photographs and the nature of the debris found during test pitting activities), the groundwater sample results indicate that site-related contaminants have not leached into the groundwater, despite the likely more than five decade time frame since disposal activities ceased and the relatively short distance beneath the waste material and the water table. Therefore, since the results of 2008 SI groundwater sampling show no SVOC, pesticide, PCB, or explosives detections in groundwater (see Attachment 1), no further investigation or evaluation is warranted for these constituents.

The UFP-SAP does state that the VOC and inorganic constituent results may not be representative of current groundwater *concentrations* because they were collected using DPT rather than permanent monitoring wells. However, this statement was intended to provide a rationale as to why the 2008 SI VOC and inorganic constituent data should not be further evaluated in the RI, not to indicate that all of the 2008 SI groundwater data are not representative of current groundwater conditions. The statement is based on the well-known potential for DPT groundwater sampling techniques to impact specifically VOC and inorganic constituent *concentrations* (e.g., the

effects of increased sample turbidity and aquifer disturbance with DPT), and does not provide a rationale for including SVOCs, pesticides, or PCBs as analytes in RI groundwater samples. All references to the VOC and inorganic constituents not being representative of groundwater conditions were revised to include this rationale:

Although groundwater samples were analyzed for VOCs and inorganic constituents during the SI, these results will not be used in the RI because the groundwater samples were not collected from permanent monitoring wells and may not be representative of current VOC and inorganic concentrations in groundwater (due to the effects of increased sample turbidity and aquifer disturbance with DPT).

EPA Comment #16: On page 25 the text indicates that the partnering team established a surface and subsurface soil pesticide threshold (50 µg/kg) for routine basewide pesticide application. Information should be provided to support the selection of this as a threshold value. Currently, insufficient information is provided to support this value.

Navy Response: The selection of the 50 µg/kg value as the pesticide threshold for routine basewide pesticide application was established and agreed upon by the CAX Partnering Team during the November 2011 Partnering Meeting, as a result of the EPA RPM's discussions with BTAG. Originally, the CAX Partnering Team discussed using a higher threshold level (1 ppm); however, BTAG did not agree with this value and said background from routine spraying tends to be less than 50 µg/kg. As a result, the CAX Partnering team chose 50 µg/kg as the threshold value. No changes were made to the UFP-SAP.

EPA Comment #17: On page 26, the text indicates that no additional sampling to that proposed in this document is needed to adequately assess the potential risk to ecological receptors. Insufficient information is available to determine if sampling will be needed in the York River. Furthermore, the results of this sampling may indicate the need for additional sampling.

Navy Response: Please see the response to EPA Comment #8.

EPA Comment #18: On page 26, in Section 2.3.4, item 3 indicates that groundwater concentrations will be compared to marine surface water screening values and BTAG marine screening values. The text needs to clarify the salinity range in the York River to ensure the appropriate screening values are being used.

Navy Response: The range of salinity in the York River in the Yorktown/CAX area (as measured at Gloucester Point [VIMS, 2012]) is between 16 and 24 ppt, which is in the marine range (>10 ppt). The groundwater PAL text was revised as follows:

3. Groundwater: USEPA Adjusted tap water RSLs and federal MCLs for human health and literature-based marine surface water screening values and BTAG marine screening values to conservatively evaluate potential risks to ecological receptors from groundwater discharge to surface water. Marine screening values will be used because the salinity of the York River in the vicinity of CAX (as measured at Gloucester Point [VIMS, 2012]) is between 16 and 24 ppt, which is in the marine range (>10 ppt).

EPA Comment #19: Page 26, Section 2.3.5: The text needs to clarify how the test pits will address the debris outcrops identified in Section 2.2.1.

Navy Response: As discussed in the response to Comment #6, there is debris visible within the bermed area along the northern portion of the site; however, the debris is contained within the berm and confined to the site. As a result, the test pitting activities conducted during the 2008 SI have sufficiently delineated the debris in this area. No changes were made to the SAP.

EPA Comment #20: Page 33, Section 2.5: The text states "...the Team discussed and agreed to the proposed sampling locations for AOC 8." As stated above, the text needs to provide the supporting rationale for the proposed sample locations shown on Figure 7.

Navy Response: Please see the response to EPA Comment #14.

EPA Comment #21: Page 36, Section 3.1.2: Under Soil Sampling, the text indicates that one surface soil sample will be analyzed for hexavalent chromium and one additional soil sample will be analyzed for total and hexavalent chromium. Because of the variability of contaminant concentrations in soil, these single samples are not likely adequate. Additional information is needed to support this approach or the approach must be revised.

Navy Response: The EPA and VDEQ (including their associated technical support) discussed and agreed to this approach (collecting two samples for chromium speciation comparison) for other investigations currently being conducted at CAX. Chromium is generally found in natural soil in the trivalent form, unless activities at the site have resulted in the release or formation of hexavalent chromium. There is no known source of hexavalent chromium at AOC 8, as evident by the fact that total chromium concentrations in subsurface soil do not exceed the base background 95% UTL; therefore, trivalent chromium is the form of chromium expected to be present at the site. In addition, the chromium concentrations that exceeded the base background 95% UTL in surface soil are only slightly above the base background 95% UTL and are likely attributable to background conditions. As outlined in the January 2012 Scoping Session section of this UFP-SAP (Section 2.1.2), the CAX Partnering Team agreed that since the hexavalent chromium samples will be collected from those areas where chromium concentrations were the greatest during the 2008 SI, two samples for chromium speciation are sufficient for chromium speciation and to refine the human health risk assessment.

It should be noted that the two surface soil samples from AOC 8 that will be collected for hexavalent chromium analysis will be collected near SI locations SO04 and SO06. The sample to be collected near SI location SO04 is already being analyzed for inorganic constituents, so an additional total chromium analysis is not needed since chromium is already included in the total inorganic constituent list. The sample by SO06 was added to provide a second chromium speciation sample, and it will be also be analyzed for total chromium for comparison purposes. Therefore, two surface soil samples will include both total and hexavalent chromium analyses.