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Ms. Sue Haug
Remedial Project Manager
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USEPA, Region III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

Subject: Response to VDEQ Comments on *Draft Sampling and Analysis Plan, Sites 4, 9, and AOC 3 Site Investigation;* Naval Weapons Station Yorktown; Cheatham Annex; Williamsburg, Virginia

Dear Ms. Haug:

On behalf of the U.S. Department of the Navy's Naval Facilities Engineering Command (NAVFAC), CH2M HILL has prepared this letter is in response to your June 19, 2009 comments regarding the subject document.

Comments from EPA Toxicologist (Dawn Ioven)

1. Comment: ***SAP Worksheet #11:*** *In the last paragraph on page 57, the comparison of on-site data to background is briefly discussed. From this paragraph, I can't determine how background will be represented (UTL, UCL, mean, etc.). Further, in November 2008 and March 2009, U.S. EPA commented on a Background Work Plan submitted for the Yorktown site. I'm not sure if this background study will also be used for Cheatham Annex; if so, outstanding issues have not yet been resolved. I can't comment on this approach (comparison of on-site data to background) until I better understand how the screening will be conducted.*

Response: The Background Work Plan the EPA recently reviewed is applicable to both Weapons Station Yorktown and Cheatham Annex. During the April 30, 2009 Yorktown Partnering meeting, all EPA comments on the WP were resolved (refer to Rob Thomson, EPA Yorktown RPM). Prior to soil and groundwater UTL calculation, the EPA will review and agree upon the proposed approach.

All soil data is currently available for UTL calculation to begin. Groundwater data is expected to be available for discussion by October 2009. No background UTLs are currently available with which to screen the data; therefore, soil data will be screened against the 2003 CAX Soil Association 2 background UCLs and groundwater, sediment, and surface water data will be screened against the 1995 Yorktown background UCLs. Should the UTLs become available during data evaluation, they will be used in place of

UCLs. The following note has been added to the Executive Summary, Worksheet #10, and Worksheet #11: "(Note: The Yorktown and CAX Partnering Teams are currently in the process of combining Yorktown and CAX background datasets for all media (soil, groundwater, surface water and sediment) for the calculation of background upper tolerance limits (UTLs). If the approach for UTL calculation is approved prior to conducting data review, data will be compared to the new background UTLs in place of existing UCLs. For the purposes of this SAP, background comparison will reference UCLs.)". Reference to UCLs has been added throughout the document.

2. Comment: ***SAP Worksheet #15-1:*** *In this Reference and Evaluation Limit Table, residential RSLs and ecological screening values for soil are presented. In addition to these risk-based concentrations for direct contact, soil-to-gw screening levels should also be a consideration for soil. (This comment also applies to SAP Worksheet #15-2, 15-4, 15-5, 15-6, 15-7, 15-10, 15-11, 15-13, 15-14, 15-16, and 15-17.)*

Response: SSLs are listed on Worksheet #11 as a screening tool; however were omitted from associated Worksheet #15s. They have be added to SAP Worksheets #15-1, 15-2, 15-4, 15-5, 15-6, 15-7, 15-10, 15-11, 15-13, 15-14, 15-16, and 15-17. It should be noted a review of *Soil Screening Guidance: User's Guide* (EPA, 1996) suggests EPA intended the SSLs to be screening, qualitative, or semi-quantitative in nature, rather than exact values that accurately predict contaminant leachability. The guidance states the "SSLs alone do not trigger the need for response actions or define 'unacceptable' levels of contaminants in soil." Therefore, an exceedance of SSLs alone will not by itself dictate the need for additional investigation/action. SSLs will be used in conjunction with human health and ecological screening criteria, background UCLs, and site-specific groundwater data to determine the need for additional investigation or action. Worksheet #11, "What will the data be used for?" was updated to reflect this.

Comments from EPA BTAG (Peter Knight)

1. Comment: *Generally, this investigation does not adequately characterize the complete migration pathway for these sites as chemicals released from these sites have the potential to migrate to the York River. All complete migration pathways need to be evaluated as part of this investigation, including the Upstream Pond, Youth Pond, and the York River. Currently, only limited sampling in the Upstream Pond is proposed. Sampling needs to be adequate to determine if a release has occurred and migrated to these downstream areas. Please make the following changes (see attached figures):*

Upstream Pond:

a. *Is the proposed upgradient surface water / sediment sample at the channel outfall? If not, please move that sample to be at the channel outfall within fine sediment.*

Response: The proposed location of the upgradient surface water/sediment sample collected in association with Site 4 is intended to be collected at the Outfall 2 discharge. Figure 5 was updated to better reflect this. Additionally, the 4th bullet of Environmental Question #2 on Worksheet # 10a was revised to read: "Surface water and sediment samples will be collected from the Outfall 2 discharge point, drainage

swales, and Upstream Pond and analyzed for VOCs, SVOCs, pesticides, PCBs, and inorganics to determine if site-related disposal activities/releases are impacting Upstream Pond. The Outfall 2 sample location will be collected at the channel outfall within fine sediment; drainage swale sample locations shown on Figure 5 will be adjusted to investigate areas of staining if discovered."

b. *The two surface water / sediment samples proposed on the western part of Upstream Pond (part of AOC 3 sampling) appear to be outside the pond. Please update the figure to show these to be located in the pond.*

Response: Figure 7 was updated accordingly.

c. *Please explain how the location of the third AOC surface water / sediment sample was chosen.*

Response: The downgradient surface water/sediment sample is proposed to determine if there is a potential for contaminants to migrate from Site 4 and/or AOC 3 through the culverts to Youth Pond. The sample location is intended to bisect the two culverts.

d. *Please add the six locations shown in Attachment 1.*

   i. *The sample near the already proposed upstream sample need to be approximately 10 feet downstream from the already proposed sample within the flow path and within fine sediment.*

Response : This work plan outlines proposed sampling activities to be conducted as part of a Site Investigation for Sites 4, 9, and AOC 3. As such, the purpose of the investigation is to determine if a CERCLA release has occurred at the site, what types of constituents have been released, what media have been affected. Limited sampling is proposed in Upstream Pond to evaluate if a CERCLA release to surface water and sediment has occurred. The nature and extent of the release, if identified, and potential risks (human health and ecological) associated with site contaminants will be conducted as part of a Remedial Investigation if warranted for the site. Therefore, the downstream samples proposed within Upstream Pond were not added.

   ii. *The two samples closest to D Street need to be within the flow path to the culverts and within fine sediment.*

Response: The original sample location was adjusted to be collected within fine sediments just prior to the northern most culvert intake. An additional downstream sample was added to adequately characterize whether potential site-releases are migrating through the culverts to Youth Pond. Figure 7 was revised to reflect these changes and the following bullet was added to Environmental Question #1 on Worksheet 10c: "Surface water and sediment samples will be collected from just upgradient of the D Street culvert intakes to determine if site related contaminants, if identified, have the potential to migrate to Youth Pond."

Youth Pond:

e. *Please add seven surface water / sediment samples as shown in Attachment 2. Three of those samples need to be collected within the fine sediment in the flow paths of the three culverts.*

York River:

f. *Please add five surface water / sediment samples as shown in the attached figure. Three of the samples need to be collected in fine sediment in an arc centered on the outfall. The center sample within the arc needs to be within the flow path from the outfall. The remaining two samples need to be up- and downstream of the outfall.*

Response 1e/f: This work plan outlines proposed sampling activities to be conducted as part of a Site Investigation for Sites 4, 9, and AOC 3. As such, the purpose of the investigation is to determine if a CERCLA release has occurred at the site, what types of constituents have been released, what media have been affected. Limited sampling is proposed in Upstream Pond to evaluate if a CERCLA release to surface water and sediment has occurred. The nature and extent of the release, if identified, potential risks (human health and ecological) associated with site contaminants, and the sampling/characterization of potential migration pathways will be conducted as part of a Remedial Investigation if warranted for the site. Therefore, no additional samples were added in Youth Pond or the York River.

2. Comment: *Page 5 indicates Site 9, a former transformer area, will only be investigated for possible releases of PCBs. This site was scored in the HRS and will have to result in a Decision Document. To do that, it has to be proven that there is minimal risk to human health and the environment. Two of the proposed samples need to be analyzed for TAL/TCL (the southernmost sample within the box that outlines the site and the center sample within the drainage ditch). If previous samples were analyzed for TAL/TCL, we will consider using that data in lieu of analyzing new samples. Additionally, the well that is downgradient of Site 9 also needs to be sampled for TAL/TCL.*

Response: No previous sampling has been conducted for full TAL/TCL compounds (VOCs, SVOCs, pesticides, and inorganics). Additional analysis of full TAL/TCL compounds has been added for all samples to be collected at Site 9.. Detections of these compounds will be screened against human health and ecological screening criteria, background UCLs, and MCLs, where appropriate. An additional environmental question (#2) was added to Worksheet #10b to address the assessment for the potential for a CERCLA release of compounds other than PCBs to have occurred at Site 9. The document has been updated throughout to reflect this change.

3. Comment: *On page 37 the comments/discussion paragraph indicates that previous sampling occurred at Sites 4 and 9. The subsequent documentation of the results and analysis of the data to be collected during this investigation need to also contain all the historic data.*

Response: Information regarding historical sampling events, including media and analyzed constituents, are included in the Previous Investigations and Removals sections

of Worksheets 10a, 10b, and 10c. A discussion of previous sampling will be included in the SI Report. The nature and extent evaluation for each site will include the results of previous investigations where appropriate (i.e. where no current site data exists). No changes to the document were made.

4. Comment: *Please include both previous and proposed sample locations on Figures 5-7.*

Response: Previous sampling locations for Site 4 and 9 have been added to Figures 5 and 6, respectively. No previous sampling has been conducted at AOC 3, therefore, no changes were made to Figure 7.

5. Comment: *Page 47 – The use of ecological risk based screening numbers needs to be in accordance with USEPA Region III BTAG procedure (www.epa.gov/reg3hscd/risk/eco/index.htm).*

Response: Reference to USEPA Region III BTAG procedure has been added.

6. Comment: Page 100 – On SAP Worksheet #15-2 for subsurface soils, ecological screening values need to be added as ecological receptors (e.g., plants, invertebrates, and burrowing animals) come into contact with this medium.

Response: Ecological screening values were added to Worksheet 15-2 as requested.

7. Comment: *On page 123 the ecological screening value (µg/kg) in sediment for silver is listed as 4,500. The BTAG screening value for silver in sediment is 1.0 mg/kg or 1,000 µg/kg. Contaminant concentration value units need to be carefully used, especially when comparing with screening values with analytical results reported in different units. The data and screening values should be rechecked to ensure the concentrations and units are correct.*

Response: The ecological screening values listed in Worksheet 15 and all its sub-worksheets, have been reviewed to ensure the values are correct. Corrections were made as needed. The most recent screening values will be used when the ecological risk screening is conducted.

8. Comment: *Worksheet #10b and Figure 6 – This worksheet discusses the data that is proposed for collection at Site 9. Figure 6 shows where soil samples will be collected. This section states that surface soil samples will be collected from the B-street drainage ditch to determine if PCBs have migrated westward into the ditch. Please include another sample in the pond at the downstream end of the ditch.*

Response: This work plan outlines proposed sampling activities to be conducted as part of a Site Investigation for Sites 4, 9, and AOC 3. As such, the purpose of the investigation is to determine if a CERCLA release has occurred at the site, what types of constituents have been released, what media have been affected. Previous soil sampling at Site 9 indicates a release of PCBs may have occurred; however, the highest concentrations were detected in soil west of the B-Street drainage ditch. A berm is present immediately west of the drainage ditch, therefore it is unlikely the PCBs detected in these soils are attributable to historic activities at Site 9. The presence of PCBs at CAX will be investigated under a separate SAP.

The proposed samples within the drainage ditch are intended to determine if surface runoff from Site 9 has impacted the drainage ditch. If warranted, additional downgradient samples within the drainage ditch and characterization of the migration pathway to Cheatham Pond will be conducted as part of an RI. No additional samples are warranted at this time and no changes to the document were made.

Comments from EPA RPM (Sue Haug)

1. Comment: *Four direct push wells may be more suitable than the three permanent wells proposed at Site 9 based on the contamination levels found in the 1986 samples. The four locations should be chosen to determine the groundwater flow direction (due to the groundwater divide) as well as to determine if there is contamination from Site 9. All four wells must be sampled for TAL/TCL. See Attachment 3.*

Response: The method for groundwater sample collection at all sites has been changed to installation of pre-packed temporary monitoring wells. Worksheet #14 has been updated to describe installation, development, and survey methods. A fourth groundwater sampling location has been added to the Site 9 sampling design as recommended. Figure 6 has been updated accordingly. Analysis of all samples collected at site 9 for VOCs, SVOCs, pesticides, PCBs, and metals has been added. Changes have been made throughout the document to reflect these changes.

2. Comment: *Since no groundwater data has been collected at Site 4 the location or existence of any groundwater contamination due to Site 4 is unknown. More data locations are needed to determine whether or not there is any groundwater contamination. Four direct push wells should be installed instead of the two proposed permanent wells. See Attachment 1.*

Response: The method for groundwater sample collection at all sites has been changed to installation of pre-packed temporary monitoring wells. Worksheet #14 has been updated to describe installation, development, and survey methods. Two additional groundwater sampling locations have been added to the Site 4 sampling design as recommended. Figure 5 has been updated accordingly. Changes have been made throughout the document to reflect the increase in sample numbers.

3. Comment: *Soil boring locations at AOC 3 should be chosen based on geophysical survey results. Further discussions will be required to determine the number of borings. Four surface/subsurface samples should be collected to verify there were no surface spills regardless of whether buried waste is found. If waste or contamination is found, locations of groundwater wells (or direct push wells depending on the likelihood of groundwater contamination) should be chosen based on locations of buried waste or contamination.*

Response: Based on the 5/21/09 Partnering Team conference call, the four soil borings proposed within the footprint of a former ground scar as evident on a 1955 aerial photograph will be changed to test pits, to be completed with a backhoe. Test pitting will adequately identify buried waste, if present, therefore, a geophysical survey will not be required. Changes have been made throughout the document to reflect test pitting activities Soil samples will be collected if buried waste is found and/or evidence of

surface spills (i.e staining) is observed. Samples will be collected from those areas where the highest potential for contamination is noted. The number of samples collected will be field determined. If no evidence of buried debris or surface spills is noted, no soil samples will be collected. Worksheet #10c has been updated to reflect this rationale. Additionally, as stated on Worksheet #10c, groundwater samples will be collected to determine if potential releases have impacted groundwater. Because the method for groundwater sample collection has been changed, in addition to the upgradient and downgradient samples proposed, up to three additional temporary monitoring wells will be installed for sample collection. These samples will be collected from those areas where the highest potential for contamination is noted. The total number of groundwater samples will be field determined. Worksheet #10c, #11, #17, and Figure 7 have been updated to reflect these changes.

If you have any questions or comments regarding the above response to comments, please feel free to contact me at 757-671-6266.

Sincerely,

CH2M HILL

Cecilia Landin
Project Manager

cc: Mr. Chris Murray/NAVFAC
Mr. Wade Smith/VDEQ
Ms. Marlene Ivester/CH2M HILL