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U S NAVY RESPONSES TO U S EPA REGION IV AND SOUTH CAROLINA DEPARTMENT
OF HEALTH AND ENVIRONMENTAL CONTROL COMMENTS ON DRAFT REMEDIAL
INVESTIGATION FOR SITE 45 MCRD PARRIS ISLAND SC
2/1/2003
NAVAL FACILITIES ENGINEERING COMMAND SOUTHERN DIVISION

**Responses to Division of Hydrogeology Comments on the Draft Remedial
Investigation/RCRA Facility Investigation Report
Site/SWMU 45 – Former MWR Dry Cleaning Facility
U.S. Marine Corps Recruit Depot Parris Island, South Carolina
June 2002**

1. **Comment:** Section 3.2.2, Subsurface Soil Sampling: The reference to Cohen, 1993 should be included in the References Section. Please revise accordingly.

Response: The document will be added to the Reference Section.

2. **Comment:** Section 3.2.4, Permanent Monitoring Well Installation: This section specifies that for each permanent monitoring well installed, the amount of potable water used during drilling was recorded, and that five times that amount was removed prior to monitoring well development. The text also states that readings were collected until the field parameters stabilized in accordance with the approved work plan.
- a. The volumes of potable water used during construction of each well are not presented in the report. Please revise to include this data.
 - b. The amount of water that was removed prior to development is not presented in this report. Please revise to include this data.
 - c. Although this section states that development followed the approved work plan, it does not appear that Section 2.3.3 of Volume II of the Master Work Plan (MWP) was followed. The actual recorded field procedures should be compared to the procedures specified in the MWP. Any non-conformances should be appropriately noted in the text.

Response:

- a. Water was not used during Hollow Stem Auger drilling. The amount of water used during Mud Rotary drilling was not determined. The sentence "Potable water was used to fill the augers....." will be re-written to state in which instances, if any, that potable water was used during drilling and well completion to prevent sand bridging.. If no water was used, then the sentence should be deleted. The sentence "The amount of water used was noted in the field book...." will be modified to state that this did not occur.
- b. All water was removed during development not prior to development. The sentence "The amount of water used was noted in the field book and five times the amount was removed before development..." will be corrected.
- c. There is a discrepancy with regards to how long after a well has been completed when development can start. Section 2.3.3 of the MWP states wells will be developed no sooner than 24 hours after completion then later states that wells will be developed no sooner than 48 hours after completion. Going back through the log

book the field Geologist waited approximately 24 hours after the well had been completed to start development. Refer to the attached spreadsheet that shows proper water volume removal. All but one well, MW11D, reached the required removal volume. The text will be modified to discuss this well.

3. **Comment:** Appendix A-3, Well Installation Records:

- a. Please specify the length of time the bentonite was allowed to hydrate prior to the installation of the concrete pad. This can be accomplished by including the daily work logs as part of this appendix.
- b. The use of #2 sand as a filter pack for a screen sized to 0.010 in. is questionable. Please justify the combination.

Response:

- a. The bentonite was allowed to hydrate a minimum of 24-hrs before the installation of the concrete pads. Refer to the Daily Log sheets. Our log books do not indicate when the pads were poured.
- b. The #2 sand pack used by the drilling company was a 20-30 sieve size sand. This sand was specified in the Work Plan to be used with 0.010 slot screens.

4. **Comment:** Appendix A-4, Well Development Records:

- a. Please discuss the significance of "Blink" in the turbidity readings.
- b. When a well is pumped dry during development, the well should be allowed time to recover. The length of recovery time, and the water level at recovery should both be recorded on these logs. These logs do not convey enough information about the driller's actions when the wells were pumped dry. A more in-depth discussion is needed.
- c. Well development for MW11D did not follow Volume II of the MWP, or what was specified in Section 3.2.4 of this report. The team should discuss the construction of this well, this development record, and the purge log.

Response:

- a. The turbidity meter apparently was not functioning properly, even though it was calibrated. The groundwater was visually described in the remarks column.
- b. For those wells that went dry, the well development logs show the information.
- c. Well MW11D was a "slow" producer due to the material that was encountered at the proposed target depth of the well. Only 5.5 gallons were removed in a two hour period. During the development of MW11D, the well went dry twice and allowed to recover. Care was taken during purging to allow the parameters to stabilize. The well was purged at a slow rate of 40 to 60 mL/min for 2.5 hours and sampled after parameters had stabilized.

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GENERAL COMMENTS

1. **Comment:** The RFI Report presents Marine Corps Recruit Depot (MCRD) Parris Island site-specific surface soil background values for inorganic analytes as screening criteria. Please provide information regarding the locations of these samples and a description of the soil type, as well as a brief description of the justification for these sample locations.

Response: The requested discussion will be provided in the revised RI/RFI.

2. **Comment:** The RFI Report mentions a pump and treat system to prevent migration of contaminated groundwater. Please provide information on the operation of this system, its duration and effectiveness. How long has the system been shut down?

Response: Based on other team review comments, a more thorough discussion of the design and operation of the pump and treat system will be provided in the revised RI/RFI. The discussion will identify dates of operation.

SPECIFIC COMMENTS

3. **Comment:** 2.7 Ecology, pp. 2-4
The text states that "based on approximately 5 years of monitoring data, the groundwater plume is moving slowly, if at all". Where are these data located? Please quantify this statement – how slowly is the groundwater contamination moving?

Response: The referenced data is presented in Section 5.4 and Appendix E of the report. Based on a review of the data, there is no obvious migration of the contamination at the site, and therefore the rate could not be quantified. To address this comment, the referenced sentence will be modified as follows. "Based on approximately 5 years of monitoring data, there is no obvious migration of groundwater contamination."

4. **Comment:** 4.0 Nature and Extent of Contamination, pp. 4-1
The tag maps for soils present those chemicals that exceed Soil Screening Levels (SSLs) for soil to groundwater using a Dilution Attenuation Factor (DAF) of 20. This is not appropriate for VOCs or SVOCs. SSLs using a DAF of 1.0 must be used for initial screening purposes.

Response: A DAF of 20 was used to select COPCs in accordance with current EPA guidance. The EPA SSL guidance states "EPA has selected a DAF of 20 to account for contaminant dilution and attenuation during transport through the saturated zone to a compliance point (i.e., receptor well). At most sites, this adjustment will more accurately reflect a contaminant's threat to ground water resources than assuming a DAF of 1 (i.e., no dilution or attenuation)." In addition a DAF of 20 was used to selected COPCs in the human health risk assessments that were previously prepared for SMWUs 1, 2, 3, 10, and 15.

5. **Comment:** 4.2 Subsurface Soil, pp. 4-3

Please provide justification for not sampling for metals, pesticides, or PCBs, and only sampling for VOCs and SVOCs.

Response: As described in the Site 45 Work Plan, the soil sampling approach was designed based on knowledge of site operations and history. The site was only investigated because of the historic dry cleaning operations and reported/suspected historic spills. As such, site contaminants are limited to solvents and potentially semi-volatile organic compounds that may be absorbed during the solvent cleaning process. Metals, pesticides, and PCBs would not be present as site related contamination and therefore were not evaluated.

6. **Comment:** 4.4 Summary, pp. 4-7

The text states that field sampling suggest that the inorganic constituents detected in surface soils were similar to background conditions at MCRD. A much more detailed discussion of the background study is necessary in order to justify this conclusion.

Response: Based on other team review comments, a more thorough discussion of the background data set will be included in the RI/RFI revisions.

7. **Comment:** Table 6-2 and Table 6-3

It is not appropriate to screen VOCs and SVOCs in surface soil and subsurface soil against SSLs using a DAF of 20. Please revise the screening criteria to incorporate SSLs using a DAF of 1.0 and recalculate the COPC selection.

Response: A DAF of 20 was used to select COPCs in accordance with current EPA guidance. The EPA SSL guidance states "EPA has selected a DAF of 20 to account for contaminant dilution and attenuation during transport through the saturated zone to a compliance point (i.e., receptor well). At most sites, this adjustment will more accurately reflects a contaminant's threat to ground water resources than assuming a DAF of 1 (i.e., no dilution or attenuation)." In addition a DAF of 20 was used to selected COPCs in the human health risk assessments that were previously prepared for SMWUs 1, 2, 3, 10, and 15.

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General Comments

1. **Comment:** The draft RI/RFI Report for Site/SWMU 45 demonstrates that the objectives of the approved RI/RFI Work Plan, and addenda, were met. EPA concurs with the Navy that the nature and extent of contamination at the site have been sufficiently delineated to proceed with development of a Feasibility Study for the site. After resolution of the following comments, EPA anticipates that RI/RFI will be complete.

Response: The Navy agrees.

2. **Comment:** Even though the potential for exposure is limited for ecological receptors, a Screening-Level Ecological Risk Assessment (SERA) should still be conducted for this (and all) sites. Given the size and exposure potential for this site, this exercise should be limited to presenting a comparison of contaminants found in surface soil samples to the EPA Region 4 ecological screening values. The conclusions drawn after this comparison are expected to coincide with the ones currently made in the document.

Response: Utilizing the EPA's 1997 guidance document, *Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments*, EPA 540-R-97-006, the Navy determined that the SERA does not proceed beyond Step 1. This is because the Guidance states 'If an exposure pathway is not complete for a specific contaminant, that exposure pathway does not need to be evaluated further. The Site/SWMU 45 RI/RFI Workplan (February, 2001) states on page 5-2 that 'The surface soil exposure route is not considered to be complete, since the site is largely paved or covered with buildings.' The Navy will provide this justification in the revisions to the RI/RFI Report.

3. **Comment:** Based on the data presented, EPA agrees that natural attenuation processes are active at the Site 45. The natural attenuation data presented strongly supports a "mixed" plume behavior and that sequential anaerobic (source area)-aerobic (down gradient of source area) and/or possibly cometabolic processes are the primary mechanisms of biodegradation for chlorinated solvents at the site. However, as indicated by contaminant fate and transport modeling, natural attenuation alone will not control plume migration or provide timely contaminant reductions that will be protective of human health and the environment. Additionally, due to the use of literature values and subsequent calibration of the BIOSCREEN and BIOCHLOR models, future fate and transport modeling efforts should include a sensitivity analyses, and, due to the uncertainty in some model input parameters, EPA recommends that a sensitivity analysis be performed for the first order decay coefficients, adsorption and dispersion parameters, as needed.

Response: A sensitivity analysis will be performed, as requested.

4. **Comment:** Within the body of the RI, it is indicated that a long-duration pump test is being planned, and, since the field work for the Draft RI is complete, it is assumed this will be part of FS data collection. Clarify if the test will be completed and in which document the test results will be reported.

Response: The revisions to the RI/RFI Report will include the following: 'A long-duration pump test has not been conducted to date because the controls for the currently-inactive system still will not allow automatic system operation which is necessary for the test. If the system is returned to operability and a long-duration pump test is necessary for pumping remedy evaluation, the test will be conducted and documented in the Feasibility Study.'

Specific Comments

1. **Comment:** Page vii, Figures. The title for Figure 3-11 incorporated the title for Figure 4-1 as well. Please review as appropriate.

Response: The document Table of Contents will be revised to address the error.

2. **Comment:** Page ix, Acronym List. The acronym for Marine Corps Recruit Depot is listed as MCRC; please revise to MCRD.

Response: The acronym will be corrected to MCRD.

3. **Comment:** Page ES-3, 3rd Bullet, 4th Sentence. The parenthetical notation "except surficial groundwater" appears out of place in a summary of soil contamination. Clarify whether this is intended to refer to soil beneath the water table.

Response: The parenthetical will be deleted from the 3rd bullet. A new bullet will be inserted between the current 3rd and 4th bullets:

- The human health risk assessment indicated that surficial groundwater consumption resulted in unacceptable excess risk for the on-site child resident, the on-site adult resident, and the on-site lifelong resident based on vinyl chloride, TCE and PCE contamination. The HI for surficial groundwater for the child resident (248) and the adult resident (224) exceeded the acceptable level of 1.0.

A corresponding correction will be provided in Section 7 – Conclusions and Recommendations.

4. **Comment:** Page 1-2, Section 1.3, 2nd Paragraph, 1st Sentence. An adequate justification for not performing an ecological risk assessment as part of the baseline risk assessment for this site is not provided. While EPA generally concurs with the Navy's position that there is not a complete exposure pathway between the contaminated site media and any identified ecological receptors, a SERA should be performed as discussed in General Comment 2. The inclusion of a SERA should be clearly stated and justified early in the RI Report.

Response: Please see the response to EPA's General Comment #2.

5. **Comment:** Page 1-5, Section 1.4.3, 4th Paragraph, 3rd Bullet. The abbreviations "SL" and "SU" appear to be associated with the wrong descriptions. Please revise as appropriate.

Response: The text will be revised to address the error.

6. **Comment:** Page 1-6, Section 1.4.3, 5th Paragraph. Include additional detail regarding the periods of operation, the amount of contaminant removed, and technical problems with the existing pump and treat system. As an apparently viable alternative for controlling and remediating groundwater contamination appears to be turning the existing system back on, a more thorough understanding of prior experience with the system is necessary.

Response: Greater detail on the system operation will be distilled from other site documentation and included in the RI/RFI as requested.

7. **Comment:** Page 3-10, Section 3.2.11, 4th Paragraph, 4th Sentence. Clarify the rationale for only qualifying the duplicate and associated environmental sample when there are quality control exceedances. Typically, the batch associated with the off-normal QC sample would be qualified, particularly if only limited validation is performed. A tabular summary by analyte, media and/or sample delivery group of the number of analyses and the number exceeding the various QC criteria would be helpful.

Response:

8. **Comment:** Page 3-12, Section 3.2.11, 2nd Paragraph. A comparison of the volatile organic compound analytical results from the temporary well/quick-turnaround (QT) laboratory and the permanent well/standard laboratory analyses would be useful. Co-located samples would aid in evaluating any analytical bias that may be present, and comparison of the range of results would provide insight into the representativeness of the data used for risk assessment. The results of Membrane Interface Probe (MIP) analysis could be included as well to evaluate the efficacy of that technology. While this discussion may be more appropriate in Section 4, the Navy needs to perform these comparisons.

Response: A comparison table will be provided as requested.

9. **Comment:** Page 3-14, Section 3.3, 3rd Paragraph, 1st Sentence. Figure 3-5 (cross-sectional transect B-B') was missing from the review copy of the report.

Response: Figure 3-5 is attached to this letter and will be included with the RI/RFI Report revisions.

10. **Comment:** Table 3-1, Groundwater, 2nd Row, 4th and 5th Columns. There appears to be a discontinuity between the number of samples included in the investigation activity (9) and the number of samples listed (5). Clarify.

Response: Column 4 will be revised to read "Four shallow and one intermediate well. "

11. **Comment:** Table 3-3, Page 3 of 3. As noted in Specific Comment 8, a comparison of QT and MIPs data for wells PAI-45-TW31 through TW35 should be performed, and wells PAI-45-MW-06SU and PAI-45-MW-08SU offer co-located analyses for comparison of QT and standard laboratory results.

Response: As noted in the response to Comment 8, a comparison table will be provided.

12. **Comment:** Page 4-5, Section 4.3, 2nd Paragraph. As noted in Specific Comments 8 and 11, comparison between groundwater VOC analytical methods and results should be included in this discussion rather than in Section 3.

Response: The comparison table will be tied into this Section 4.3 discussion versus Section 3.

13. **Comment:** Page 4-6, Section 4.3, 1st Paragraph, 3rd Sentence. Elaborate on the timing and significance of the "other investigations" relative to the RI and its conclusions.

Response: The 'other investigations' refers to the natural attenuation study. Elaboration will be provided.

14. **Comment:** Page 4-6, Section 4.3, 3rd Paragraph. Include within this section a discussion of the distribution of PCE and its degradation products within the surficial aquifer.

Response: The subject discussion will be provided.

15. **Comment:** Page 4-7, Section 4.3, 3rd Paragraph. Include a reference to the location of the natural attenuation study (Section 5.4) in the text.

Response: The location of the natural attenuation study will be included.

16. **Comment:** Section 4-7, Section 4.4, 1st paragraph, 1st Sentence. It is recommended that this sentence be re-worded in part to clarify the findings. Specifically: "...soils and groundwater above screening levels in all three identified potential source areas."

Response: EPA's suggested rewording will be utilized.

17. **Comment:** Page 4-7, Section 4.4, 4th Paragraph, 1st Sentence. Clarify the impacted groundwater referred to is groundwater contaminated above screening levels.

Response: The clarification will be made.

18. **Comment:** Pages 4-7 and 4-8, Section 4.4, 1st Paragraph. Include in the summary discussion of the nature and extent of contamination an estimate of the area and volume of soil and groundwater contaminated above screening levels (or other proposed action levels).

Response: The estimates requested by EPA will be provided in the RI/RFI revisions.

19. **Comment:** Page 5-5, Section 5.3.1, 2nd Paragraph, 1st Sentence. It is recommended that the Navy use PCE for an example of a dense non-aqueous phase liquid, as used in dry cleaning facilities, due to its applicability to this site.

Response: The replacement suggested by EPA will be made.

20. **Comment:** Page 5-6, Section 5.4.1. Another line of evidence for biodegradation is the amount of cis-1,2-DCE relative to trans-1,2-DCE. Biodegradation of TCE results in the production of exclusively cis-1,2-DCE. Please comment on the site specific cis-1,2-DCE and trans-1,2-DCE ratios and whether they support the contention that biodegradation is occurring.

Response: An assessment of DCE ratios will be made and included in the revised RI/RFI.

21. **Comment:** Page 5-7, Section 5.4.1, 2nd Paragraph, 3rd Sentence. Justify the inclusion of lower-surficial well MW05SL in the transect of upper-surficial wells used to assess natural attenuation.

Response: Based on historic information, monitoring well MW05SL was observed to contain greater concentrations of VOCs than MW05SU. This data suggests that MW05SL is a more appropriate down gradient monitoring well than MW05SU.

22. **Comment:** Page 5-7, Section 5.4.1, 2nd Paragraph, 5th Sentence. Clarify that an alternate interpretation of the observed pattern may be that little degradation is taking place, and the observed changes in concentration are attributable to physical processes of dispersion and dilution (and treatment?).

Response: An additional sentence will be added to the discussion: 'An alternative interpretation of the observed pattern may be that little degradation is taking place, and the observed changes in concentration are attributable to physical processes of dispersion and dilution, possibly influenced by past operation of the groundwater pumping system.'

23. **Comment:** Page 5-8, Section 5.4.2, 1st Paragraph, 3rd Sentence. Please verify that the "upgradient well" is a "background" well and represents conditions outside of the contaminant plume.

Response: The well is as close to a background well as feasible at the facility. Utilities, roadways, and buildings restrict placing background wells in more strategic locations, (i.e. 30 to 50 feet to the west). Since there are no known unique sources of contamination hydraulically up gradient of the MW01 well cluster or the site, the plume is relatively wide (100 feet across) and groundwater from this cluster flows onto parts of the site, and the MW01 cluster wells do not contain detectable concentrations of site contaminants, this well cluster was selected as the up gradient well for the site.

24. **Comment:** Page 5-9, Section 5.4.4. Trends in contaminant concentrations as presented in the time/concentrations graphs in Appendix E, Attachment B could better be represented or identified if the contaminant concentration data were plotted as a logarithmic function over time.

Response: The data will be plotted as a logarithmic function in the RI/RFI revisions.

25. **Comment:** Page 5-9, Section 5.4.4, 1st paragraph, 5th Sentence. Clarify whether the period and duration of groundwater extraction system operation was sufficient to attribute the observed drop in concentration.

Response: Documentation indicates that the system operated for approximately two years. It is reasonable that operation for this period of time provided the benefit indicated.

26. **Comment:** Page 5-10, 3rd Complete Paragraph. The text states that the BIOSCREEN model was run assuming a residual source mass of 100 kg. As reported, based on the consistency of source area concentrations, there may be a continuing source of contaminant to groundwater. Please discuss if the BIOSCREEN modeling results may be biased low because a finite source mass of 100 kg was assumed and utilized in the model.

Response: A new 3rd paragraph final sentence will be added: 'The BIOSCREEN model results may be biased low because a finite source mass of 100 kg was assumed and utilized in the model.'

27. **Comment:** Page 6-1, Section 6.0. Include a SERA, and appropriate justification for not performing a Baseline Ecological Risk Assessment in the Baseline Risk Assessment section.

Response: Please see the response to EPA's General Comment 2.

28. **Comment:** Page 6-5, Section 6.1.2.1, 3rd Paragraph. Please clarify that the chemicals identified at concentrations in excess of EPA SSLs were retained as chemicals of potential concern (COPCs).

Response: The clarification suggested by EPA will be added to the discussion.

29. **Comment:** Page 6-6, Section 6.1.2.2, 1st Paragraph, 2nd Sentence. As noted in an earlier Specific Comment, it should be clarified that these chemicals are retained as COPCs.

Response: The clarification suggested by EPA will be added to the discussion.

30. **Comment:** Pages 6-8 and 6-9, Section 6.2.3.1, 2nd Paragraph, 4th Sentence. Based on text in Section 6.1.2.1 and on Table 6-2, these chemicals did not exceed EPA SSLs for soil to air. Please revise the text as appropriate.

Response: Agreed. The sentence will be revised as follows: "Based on the qualitative screening, maximum detected concentrations of PCE and TCE in subsurface soil exceeded the soil to air SSLs; therefore, exposure via inhalation was evaluated in the risk assessment."

31. **Comment:** Page 6-28, Section 6.4.2, 4th Paragraph, 1st Sentence. Clarify that 7.5×10^{-7} is below the acceptable EPA risk threshold of 1×10^{-6} .

Response: The clarification requested by EPA will be added to the discussion.

32. **Comment:** Page 6-29, Section 6.4.2, 3rd Paragraph, 1st Sentence. Clarify that 2.7×10^{-7} is below the acceptable EPA risk threshold of 1×10^{-6} .

Response: The clarification requested by EPA will be added to the discussion.

33. **Comment:** Page 6-31, Section 6.5.1, 1st Paragraph. Another source of uncertainty may exist in the differences between the contaminants and concentrations detected by the QT and by the standard laboratory analyses (e.g. benzene in deep groundwater, TCE at a maximum concentration of 13,000 ug/L rather than 1,000 ug/L, and DCE at a maximum concentration of 14,000 ug/L rather than 4 ug/L.). For this reason the selected COPCs may not represent the entire range of contaminants, and the maximum concentrations used for risk assessment may underestimate the actual maximum concentrations.

Response: The clarification requested by EPA will be added to the discussion.

34. **Comment:** Page 6-33, Section 6.5.2.2, 1st Paragraph, 2nd Sentence. As noted in an earlier Specific Comment, the maximum detected concentrations observed during the QP phase of the RI are significantly greater than those used during the risk assessment. For this reason, uncertainty over the representativeness of exposure point concentrations based on "maximum" concentrations may be overstated.

Response: The section will be revised as follows: 'For some chemicals in surface soil, surficial groundwater, and deep groundwater, the distribution of the chemical was not defined and the maximum detected concentration was used as the exposure point concentration. As a result, the estimations of risk, where the maximum concentrations were used as the exposure point concentrations, may be overstated because it is unlikely that potential receptors would be exposed to the maximum concentration over the entire exposure period. Conversely, in some areas where the maximum detected concentrations observed during the QP phase of the RI are significantly greater than those used during the risk assessment, the uncertainty over this representativeness may be overstated.'

35. **Comment:** Appendix E-1, Page E-5, Section 2.4.1. Trends in contaminant concentrations as presented in the time/concentrations graphs could better be represented or identified if the contaminant concentration data were plotted as a logarithmic function over time.

Response: The data will be plotted as a logarithmic function in the RI/RFI revisions.

36. **Comment:** Appendix E-1, Page E-6, Section 2.4.2, 2nd Paragraph, Last Sentence. BIOSCREEN not only allows for a decaying source over time as stated in this section, but also allows for an infinite or continuing source mass.

Response: Agreed. The text will be revised.

37. **Comment:** Appendix E-1, Page E-7, 1st Complete Sentence. As reported in the text, it is true that the BIOSCREEN model does not allow the user to define specific distances from the source area to be directly entered into the model. However, by adjusting the modeled area length input parameter, comparative points or distances from source area can be matched to the site-specific field data. The Navy should use this approach.

Response: This approach will be used, however, since spacing is consistent for all data points once specified, if the actual data points vary in spacing, the same issues could be expected.

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GENERAL COMMENTS:

1. **Comment:** Analytical data screening for COPC selection includes a comparison to basewide background values. Since the Department is unaware of an approved basewide background study, please include a discussion of the background samples used in the screening process. It is important to include a discussion of how the background samples are comparable to the samples collected at Site/SWMU 45.

Response: Table 4-1 – Summary of Detected Background Concentrations and Appendix A-12 – Background Sample Description, Locations, and Supporting Collection Data - from the RFI/RI for Site/SWMU 3 is attached to this letter and will be packaged as an attachment to this document.

2. **Comment:** Several exposure frequency and duration values used in the intake equations for the various exposure pathways are not consistent with EPA's standard default values. Although the Department agrees that it is not always appropriate to use the standard default values, please include a more thorough site specific discussion in Section 6.0 as a rationale for the exposure values selected.

Response: EPA standard default exposure frequencies and exposure durations were used for the receptors when available (e.g, commercial worker, child and adult resident). There are no default exposure frequencies and/or exposure durations available for the construction worker, maintenance worker, and adult visitor. The rationale for the values used for these receptors is provided in Sections 2.6.4, 2.6.6 and Table 6-9.

SPECIFIC COMMENTS:

1. **Comment: Section 3, Subsection 3.2.2, Page 3-3:** The surface soil sampling section discusses the eight surface soil samples collected during the "2001 RI/RFA". The text should be modified to say the 2001 RI/RFI. Also, the sample identification for the surface soil samples is listed in this section as PAI-45-SB-01 through PAI-45-SB-08. Table 3-2 and Figure 3-1 show the surface soil sample identification numbers as PAI-45-SS-01 through PAI-45-SS-08. Please clarify.

Response: The surface soil and soil boring samples were co-located, e.g. surface soil SS01 was collected at soil boring location SB01. The only difference was that the surface soils were collected at the surface, whereas the subsurface soil samples were collected at depth.

2. **Comment: Section 4, Subsection 4.2, Page 4-3:** Please include a discussion of the entire subsurface soil samples collected during the RI/RFI. Section 3 contains a discussion of the 13 subsurface soil samples and locations; however, page 4-3 only mentions contamination detected in the eight on-site samples and not the entire 13 samples.

Response: Section 4.0 provides a discussion of the Nature and Extent of Contamination and as such references only the eight locations in which samples were collected for chemical analysis to determine the presence of site contamination. Section 3.0 discusses the collection of the five additional soil samples that were used to determine lithology and related hydrogeological parameters down gradient of the site. The downgradient soil samples were not tested for potential site contaminant and as such were not discussed in Section 4.0.

3. **Comment:** Section 4, Subsection 4.3, Page 4-6: Paragraph 5 states that the vertical extent of the chlorinated VOC contamination is limited to approximately 19 feet bgs, where a clay unit confines the surficial from the underlying deep. The paragraph continues to state that low levels of chlorinated VOCs have been detected in the deeper aquifer at concentrations below EPA MCLs. Please clarify how the clay unit is considered a confining unit if contamination has migrated to the deeper aquifer.

Response: The clay unit is described as a confining unit based on noted physical properties and the observation that contaminant concentrations decrease by several orders of magnitude over a short distance of only a few feet. In general, confining units restrict but do not prevent all migration. Therefore, the detection of some chemicals in the lower aquifer is not unexpected.