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LETTER OFFERING COMMENTS ON DRAFT REMEDIAL INVESTIGATION AND QUALITY
CONTROL SUMMARY/ ANALYTICAL RESULTS REPORTS 80TH DIVISION RESERVE SITE
FORT STORY VA
3/22/2006
COMMONWEALTH OF VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY



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COMMONWEALTH of VIRGINIA

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March 22, 2006

Joanna G. Bateman
Environmental & Natural Resources Specialist
U.S. Army Transportation Center
ATTN: IMNE-EU-PW-E (Bateman)
1407 Washington Blvd.
Fort Eustis, Virginia 23604

Re: **Draft Remedial Investigation and Quality Control Summary/Analytical Results Reports; 80th Division Reserve Site; Fort Story, VA**

Dear Ms. Bateman:

Thank you for the opportunity to comment on the *Draft Remedial Investigation and Quality Control Summary/Analytical Results Reports; 80th Division Reserve Site (Draft RI and QCS/AR Reports)* submitted May 26, 2005 by your consultant, Mr. Anthony K. Pace with Malcolm Pirnie, Inc. The Department of Environmental Quality's Office of Remediation Programs (the Department) has completed its review of the subject documents and comments are enclosed.

If you have questions concerning any of the above, please contact me at (804) 698-4131 or you may e-mail me at gweng@deq.virginia.gov.

Sincerely,

Garwin W. Eng
Environmental Engineer Senior
ORP, FFR

Enclosure

c: Milton L. Johnston – TRO, DEQ
Durwood H. Willis – DEQ
Patricia A. McMurray – DEQ
Fort Story Correspondence File

Draft Remedial Investigation and Quality Control Summary/Analytical Results Reports
80th Division Reserve Site
Fort Story, VA
Department of Environmental Quality Comments

Comments are referenced in accordance with the *Draft RI and QCS/AR Reports* by section, paragraph (counting from the beginning of the section), sentence (counting from the beginning of the paragraph), and page number.

Remedial Project Manager Comments

1. The Department has no comments on the *Draft QCS/AR Report* at this time.
2. 4.2.2.1, page 4-11 – Please insert a section heading for “**Metals**” as was done for “**Organics**.”
3. 4.3.2, last paragraph, 3rd sentence, page 4-15 – This refers to “the shallow part of the aquifer.” Please clarify the meaning of this phrase or the specific location to which this phrase is referring.
4. 5.1.1, paragraph 2, page 5-3 – This states that infrequent detection is an indication that impact and risk is minimal. The Department recommends that, initially, all detected constituents exceeding screening criteria be evaluated. Discussions concerning the frequency of detection (and the criteria by which detections are determined to be “infrequent”) may be addressed in the “**Uncertainty**” section.
5. 5.1.1, VOCs, page 5-5 – The constituents listed do not include all those specified in the tables on pages 4-5, 4-10, and 5-2 through 5-3. Please specify the purpose for listing some of the detected VOCs and not others.
6. 5.1.1, VOCs, page 5-5 – Benzene is listed here but is not shown on Tables 4-3 and 4-7, nor is a discussion provided for it later in this section. Please clarify this discrepancy.
7. 5.1.1, VOCs, pages 5-5 through 5-11 – Please correct the spelling for 2-butanone here and throughout the *Draft RI*. Also, please correct the headings for and verify that the correct information is provided for cis-1,2-dichloroethene and trans-1,2-dichloroethene (as opposed to the alkanes).
8. 6.1.2, last paragraph, last bullet, page 6-4 – This states that data may be evaluated based on the frequency of detection. Please see comment 4 above.
9. 6.1.2, last paragraph, last bullet, page 6-4 – This states that data may be compared to background. Please provide all background data.
10. 6.3.1, paragraph 1, 1st sentence, page 6-9 – This references surface sediment. However, neither Section 2 nor Table 2-2 mentions any sediment samples. Please clarify this discrepancy.

11. 6.3.1, paragraph 1, 2nd sentence, page 6-9 – This references 16 surface soil samples. However, only 10 samples are shown in Tables 4-3 through 4-6. Please clarify this discrepancy.
12. 6.3.1, paragraph 1, last sentence, page 6-9 – Please revise this to correctly reference **Tables 4-3** (as opposed to Table 4-4) **through 4-6**.
13. 6.4.3, last paragraph, page 6-18 – Please specifically indicate which qualifiers are subject to this treatment. Also, see comments 12 and 21 of the **Risk Assessor Comments** below.
14. 6.6.3, *Residential Population Exposure Scenarios, Soil*, page 6-46 – Please provide all background soils data and supporting statistical evaluations.
15. 6.6.3, *Residential Population Exposure Scenarios, Groundwater*, 2nd bullet, page 6-46 – The Department has reviewed the document (Siudyla, E.A., May, A.E., Hawthorne, D.W., 1981; Ground Water Resources of the Four Cities Area, Virginia; Commonwealth of Virginia, State Water Control Board, Bureau of Water Control Management) referenced in this section. It is not possible to determine whether or not any of the wells used in the SWCB, 1981 study have been impacted by contamination. Therefore, the SWCB, 1981 study is not sufficient (by itself) to determine background levels for this site. The Department recommends also obtaining site-specific background data. The Groundwater Flexibilities statement and related information (previously provided to you) may provide some guidance for the development of additional lines of evidence.
16. 7.4.1, Terrestrial Plants and Invertebrates, paragraph 1, last sentence, page 7-13 – Please correct this incomplete sentence.
17. 7.6.3, paragraph 2, last sentence, page 7-16 – Please provide all background data and supporting statistical evaluations.
18. 7.6.6, paragraph 1, page 7-16 – Please provide the table referenced here.
19. Figure 5-1 – This figure refers to the DOL Storage Yard. Please provide the correct figure.

Risk Assessor Comments

Page 1-3, Section 1.2.2:

1. Was there any history of explosive manufacture, use or storage at this site?
Dinitrotoluene was detected in the subsurface soil and could be indicative of explosives.
2. Since there was an antifreeze storage tank at the site, did any of the sampling events include analysis for antifreeze ingredients such as ethylene glycol or propylene glycol?

Page 6-1, Section 6.1:

3. The list of Human Health Risk Assessment (HHRA) guidance documents should also include Risk Assessment Guidance for Superfund (RAGS) Part D. The HHRA should use the standard table format presented in RAGS Part D. Not having the standard format added considerably to the review time for this project.
4. The final version of RAGS, Part E (EPA, 2004) should be cited rather than the interim version.
5. Page 6-16, Section 6.4.1: The section on groundwater indicates that no development of the Columbia Aquifer at or near the site for drinking water purposes is expected. Section 3.1.5 on page 3-9 states that several housing communities located within 1 mile west of Fort Story are developing shallow drinking water wells in the water table aquifer. Are these communities downgradient of the 80th DRS site?
6. Page 6-17, Section 6.4.2: The exposure assessment should also consider the potential for vapor intrusion into buildings from contaminated groundwater.
7. Page 6-19, Section 6.4.5: The ProUCL program also calculates upper confidence limits (UCLs) based on a gamma distribution. These should be used when recommended by ProUCL. In addition, ProUCL sometimes recommends a 97.5 or 99% UCL. These should be used when recommended by ProUCL.

Section 6.4.5:

8. Note that the Virginia Department of Environmental Quality (VDEQ) risk assessment guidance is updated at least twice a year. Some of the exposure factors cited in this section have been updated.
9. VDEQ uses total metals concentrations in risk calculations for drinking water. We don't assume that a drinking water well would always have a filter. What is the basis for that assumption?
10. See comments below on Appendix D for comments regarding the UCL calculations.
11. Page 6-36, Section 6.5.1: Oral-to-dermal toxicity factor adjustments should be done according to RAGS Part E.

Table 6-1:

12. It is not clear why certain constituents (such as trans-1,2-dichloroethylene (DCE), methylene chloride, trichloroethylene (TCE), etc.) were included as detections on this table when all of their detections were B qualified. If the qualifiers were applied correctly (concentration less than 10 times the blank concentration), B qualified data should not be included in the risk assessment.
13. The EPA Region III Residential risk-based concentration (RBC) for acenaphthene should be 470,000 µg/kg. Acenaphthene does not need to be retained as a contaminant of potential concern (COPC). The RBC for anthracene should be 2,300,000 µg/kg. Anthracene does not need to be retained as a COPC.
14. The residential RBC for dibenzo(a,h)anthracene should be 87 µg/kg. Dibenzo(a,h)anthracene should be retained as a COPC.
15. The residential and industrial RBCs for chromium should be 23 and 310 mg/kg, respectively.
16. According to Table 4-6, the maximum concentration of mercury should be 0.035 mg/kg.
17. The residential and industrial RBCs for vanadium should be 7.8 and 100 mg/kg, respectively. Vanadium should be retained as a COPC.

Table 6-3:

18. It is not clear why the detection of 11 µg/L cis-1,2-DCE in MW-9 was not included as the maximum concentration in groundwater. Cis-1,2-DCE should be a COPC since the maximum concentration exceeds the RBC.
19. The RBC for tetrachloroethylene (PCE) should be 0.1 µg/L. The RBC table is updated twice a year. The most recent version of the RBC table should be used.
20. It is not clear why the detection of 7.5 µg/L TCE in MW-9 was not included as the maximum concentration in groundwater.
21. It is not clear why the detections of toluene and 1,2,4-trichlorobenzene were included on this table since all of the detections had B qualifiers. If the qualifiers were applied according to the 10X rule (concentration less than 10 times the blank concentration) B qualified data should not be included in the risk assessment.
22. The EPA carcinogen class for mercury (mercuric chloride) should be C.
23. The EPA RBC for vanadium should be 3.7 µg/L.
24. Table 6-9: The fraction ingested (FI) for the industrial worker should be 1.
25. Table 6-10: The skin surface area (SA) for the industrial worker should be 3300 cm².

26. Table 6-13: The SA for the child resident should be 2800 cm².
27. Table 6-24 and 6-25: See RAGS E for current guidance on adjustment of toxicity factors for dermal exposure assessment. It appears that some adjustments have been made that weren't required.
28. Table 6-33: I was not able to verify the oral carcinogenic risk estimates for residents. I was not able to determine the source of the discrepancy.

Appendix D,UCL Calculations

29. Note that UCLs only need to be calculated for contaminants that exceed screening values.

Groundwater

30. ProUCL recommends a UCL of 2.631 mg/L for iron based on a gamma distribution.
31. ProUCL recommends a UCL of 0.0034 mg/L for dissolved arsenic using the modified t method.
32. ProUCL recommends a UCL of 2.3 mg/L for dissolved iron based on a gamma distribution.
33. ProUCL recommends a UCL of 0.09 mg/L for dissolved manganese based on a gamma distribution.

Soil

34. The surface soil concentration of Benzo(b)fluoranthene in SB-1 should be 240 µg/kg rather than 140 µg/kg according to Table 4-4. The UCL should be 6.2 mg/kg based on a non parametric distribution.
35. The surface soil concentration of indeno(1,2,3-cd)pyrene in SB-1 should be 150 µg/kg rather than 75 µg/kg according to Table 4-4. The UCL should be 3.1 mg/kg based on a gamma distribution.
36. The surface soil concentration of aldrin in SB-3 should be 43 µg/kg rather than 0.43 µg/kg according to Table 4-5. The UCL should be 0.067 mg/kg based on a non parametric distribution.
37. The surface soil UCL for aluminum should be 5632 mg/kg based on a gamma distribution.
38. The surface soil UCL for iron should be 6670 mg/kg based on a gamma distribution.
39. Results that were qualified JB were not treated consistently. For example in the combined soils data set for benzo(a)anthracene the full value (140 µg/kg) was used for MW-7 while ½ the detection (150 µg/kg) was used for MW-8. As noted above, B

qualified data are generally not included in quantitative risk assessment. However, if they are used they should be treated consistently.

40. For benzo(a)anthracene and benzo(a)pyrene the summary statistics indicate that the number of samples in the data set was 10. However 30 data points are shown. This discrepancy should be corrected or explained.
41. For the benzo(b)fluoranthene combined soil data set the concentration in SB-1 should be 240 $\mu\text{g}/\text{kg}$ rather than 120 $\mu\text{g}/\text{kg}$, the concentration in SB-4 should be 2000 $\mu\text{g}/\text{kg}$ rather than 200 $\mu\text{g}/\text{kg}$ and the concentration in SB-5 should be 3400 $\mu\text{g}/\text{kg}$ rather than 2400 $\mu\text{g}/\text{kg}$. My calculations resulted in a UCL of 4.4 mg/kg based on a non parametric distribution.
42. For the indeno(1,2,3-cd)pyrene combined soil data set the concentration in SB-1 should be 150 $\mu\text{g}/\text{kg}$ rather than 75 $\mu\text{g}/\text{kg}$. My calculations resulted in a UCL of 2.3 mg/kg based on a non parametric distribution.
43. In some cases ProUCL recommends a 99% UCL rather than a 95% UCL. It appears that the 95% UCL was selected regardless of the ProUCL recommendation. For example, the 99% UCL for aldrin in the combined data set should be 0.036 mg/kg based on the ProUCL recommendation. The UCL for aluminum should be 4884 mg/kg based on the ProUCL recommendation.