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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

March 20, 2006

Mrs. Agnes Sullivan, P.E.
NAVFAC MIDLANT
Environmental Code EV3
9742 Maryland Ave,
Building N-26, Room 3208
Norfolk, VA 23511

**Subject: St. Juliens Creek Annex, Draft Expanded Remedial Investigation Report
for Site 2**

Dear Mrs. Sullivan,

Thank you for the opportunity to review the Draft Expanded Remedial Investigation Report for Site 2 at the St. Juliens Creek Annex in Chesapeake, VA. EPA has completed review of the subject document and offers the following comments for your consideration.

HHRA

1. Section 2.2. The second paragraph discusses open burning of refuse at the site. Since this was the case, was dioxin analysis conducted? Table 2-6 list dioxin as a chemical when summarizing risk however, it is unclear if dioxin was evaluated for human health risk? The report should clearly indicate if analysis of dioxin was conducted to evaluate human health risk.
2. Section 2.4.2. The third paragraph discusses how Site 17 data was compared to the HHRA conducted during the RI (February 2004) and how additional COPCs were identified for the trespasser, industrial worker, and resident. Please explain why the identified COPCs differ based on the receptor? All contaminants should have been screened against EPA's RBC table for residential soil therefore; all identified receptors should have the same COPC. In addition, the paragraph does not clearly identify the media that is being discussed (soil, groundwater)? Finally, the identified qualitative evaluation for Site 17 appears weak and non-defensible therefore; EPA recommends using the Streamlined Risk Evaluation to determine if additional risk is being contributed to this area by Site 17. In addition, the streamlined risk evaluation will provide risk information necessary to help determine contaminant remediation goals if additional



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contaminants are identified at Site 17 that were not identified at Site 2. Please apply the following streamlined risk equations:

Noncarcinogens: $HQ = C_{max}/RBC$
 $HI = \sum HQ$

where;

HQ = Hazard Quotient

C_{max} = maximum detected concentration (mg/kg, ug/L)

RBC = Risk-based Concentration (mg/kg, ug/L)

HI - Hazard Index

***Hazardous Index should not exceed 0.5 to account for dermal and inhalation pathways not considered in the Region III, RBC Table.**

Carcinogens: $ICR = \sum (C_{max}/RBC) \times 10^{-6}$

where;

ICR = Incremental Lifetime Cancer Risk

C_{max} = maximum detected concentration (mg/kg, ug/L)

RBC = Risk-based Concentration (mg/kg, ug/L)

10⁻⁶ = Risk Assessment Point of Departure

***Cumulative Excess Cancer Risk should not exceed 5E-05 to account for the dermal and inhalation pathways not considered in the Region III, RBC Table.**

3. Section 3.1.3. Please explain why Figure 7-5 indicates the collection of 8 surface water samples but the section and Table C-6 only discusses and provides raw data for two surface water samples? Since Figure 7-5 provides a listing of COPCs detections in surface water, all raw data for surface water should be included in the report.
4. Section 4.2.5. The paragraph discusses the collection of 3 sediment samples with the detection of 9 VOCs including a detection of vinyl chloride at 9,800 ug/kg and 7,700 ug/kg. In addition, cis-1,2-dichloroethene was detected at 2,300 ug/kg. Since these contaminants exceed EPA's screening criteria but were not quantitatively evaluated for risk, please explain how remediation goals will be determined for vinyl chloride and cis-1,2-dichloroethene in sediment?
5. Section 7.2. The report states, "Because there are no unacceptable human health risks based on CT exposure to soil and potential remedies under consideration will mitigate potential ecological risks, there are no COCs or COPCs that warrant remedy consideration." Remedial decisions should not be based solely on CT risk results but instead should take into consideration both RME and CTE risk.

6. Section 7.3. The report indicates VOCs as contaminants of concern but does not provide the actual chemical name of the COC VOCs. Please provide the actual chemical name of each VOC COC as this information is extremely relevant for the Administrative Record.

RAGS D Tables

7. Table 1.0. The conceptual site model should include indoor air vapor intrusion to residents as a potential future exposure pathway.
8. Tables 2.1, 2.2, 5.1. The toxicity value for toluene has changed. The most recent tap water RBC is 2.3E+02.
9. Table 2.1. The toxicity values for barium have changed. The most recent tap water RBC is 7.3E+02.
10. Table 5.1. The toxicity values for 2,6-dinitrotoluene should be included in the table.
11. Table 5.2. The inhalation RfDi for methylene chloride is 3E-01.
12. Table 6.1. The toxicity values for 1,1,2-trichloroethene, and 1,4-dichlorobenzene should be included in the table.
13. Table 7.0. RME risk should be presented before CTE risk.
14. Table 7.1, RME. Since inhalation of volatiles while showering is not calculated for the child resident, the carcinogenic risk for the adult resident exposure to volatiles while showering should be presented.
15. Table 7.1, RME. RAGS E now recommends 95th percentile value for showering. (adult shower, 30 minutes, child bath, 60 minutes). Therefore, EPA Region III recommends the following parameter changes for the Foster & Chrostowski model;

Shower Room Volume(SV) = 12 m³ (based on professional judgement)

Droplet drop time (ts) = 0.5 sec (CPF Associates, 2003. Integrated Human Exposure Model, Version 2 (IHEM2) for Volatile Compounds).

Shower flow rate = 10 L/min (professional judgement, considering maximum mean flow rates reported in EPA's 1997 Exposure Factors Handbook).

Shower time (Ds) = 30 minutes (EPA, 1997; Draft PRA; RAGS E)

Total time in shower room (Dt) = 60 min (EPA, 1997; Draft PRA)

16. Table 7.5RME and 7.5RME Supplement. An incorrect Duration of Event, event time (t) was used to calculate risk. Table 7.5RME Supplement indicates t=8 hours was used to calculate risk. However, the results could not be duplicated when this t (time) value was applied. Please recheck these risk results.

17. The RAGS D Tables do not include Table 8.0's?

ERA

18. Section 6.1.4 presents a summary of the toxicity tests performed to evaluate risk to benthic dwelling organisms in the adjacent wetlands. Collocated sediment samples were also collected for chemical analysis. It is unclear from the summary if there was any attempt to develop site-specific effect concentrations that could be used in the feasibility study (FS) as risk-based remediation goals (RGs). An explanation should be provided stating if this evaluation was performed, and if not, how RGs would be developed.
19. Section 6.2.2 on page 6-7 provides a summary of risks to avian piscivores and reptiles. It is unclear why only modeling was performed and there was no attempt to collect site-specific fish tissue concentrations to estimate risk to avian piscivores. This would have reduced uncertainty and resulted in a more accurate estimate of risk. An explanation should be provided stating why site-specific fish tissue was not collected at this site.
20. Section 7.6 summarizes the chemical concentrations in surface water at the site. The section states that due to the transient nature of surface water at the site, no further action is recommended for the low potential ecological risks associated with surface water. The low risk from surface water is not supported by the conclusion in the screening ecological risk assessment (ERA) and baseline ERA which is summarized in Section 6 on page 6-1. This section states that these reports indicated potential risk for aquatic life from the presence of inorganic chemicals and carbon disulfide in inlet surface water. In addition, the impact of volatile organic compounds (VOC) was not evaluated in the ERA. While a remedial action would not be performed for surface water directly, contaminants in surface water would be indirectly reduced by controlling contaminants in groundwater and stormwater discharging to the wetland (i.e., VOCs) and reducing the contaminant levels in sediment. Therefore, surface water should be addressed as part of the FS.
21. Section 7.8 on page 7-5 states that an FS is recommended to evaluate potential remedial alternatives to mitigate unacceptable human health and ecological risks in soil, groundwater, and sediment at Site 2. BTAG supports this recommendation, however, as stated above, surface water should also be evaluated as part of the FS since these other media directly impact contaminant levels in surface water.

If you have any questions or concerns regarding the review of this document, please contact me.

Sincerely,

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