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JUN 17 1997

Commonwealth of Virginia
Department of Environmental Quality
Attn: Mr. Devlin M. Harris
629 East Main Street
Richmond, Virginia 23219

Re: Response to VDEQ comments on the RI/FS Draft Work Plan for Sites 2,3,4, and 5, St. Juliens Creek Annex, Virginia

We are in receipt of your letter dated March 6, 1997. Enclosed please find the response to these comments. These comments have been previously discussed with VDEQ, EPA, Navy, CH2M-Hill, and CDM personnel during a conference call on April 1, 1997 and in a follow up meeting at LANTDIV on April 11, 1997.

If you have any questions, please contact the Remedial Project Manager, Mr. Randy M. Jackson, at (757) 322-4587

Sincerely,

N. M. JOHNSON, P.E.
Head
Installation Restoration Section
(North)
Environmental Programs Branch
Environmental Division
By direction of the Commander

Enclosure

Copy to:
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USN St. Julien Creek Annex, Va.
Sites 3 and 4
Review of the Navy's Draft RI/FS Work Plan

United States Environmental Protection Agency
Region III
Office of Superfund

GENERAL COMMENTS

1. The RI/FS Work Plan was assembled with nine major subsections as Iisted above. However, there is no overall Table of Contents provided and no discussion of document organization. As a result, the document's overall organization is confusing, although within each section, the organization is clear and well organized. The Navy should provide an overall Table of Contents for this document and a brief summary of the sections including the type of information presented in each section.

Response: Comment noted. A Preface has been inserted at the beginning of the document which explains the Work Plan organization and provides a brief summary of it's contents.

Draft Final Work Plan

1. The text of the Baseline Ecological Risk Assessment (BERA) is identical between the RI/FS Work Plan for Sites 3 and 4 and the RI/FS Work Plan for Sites 2 and 5. While some general description of a BERA is acceptable, the work scope should also outline specific activities consistent with a site's size, ecology, accessibility and contaminant history.

Response: The first phase proposed for the BERA is a Screening Level Assessment. The scope of work presented is believed to be consistent with this phase of assessment. Specific activities consistent with the site s size, ecology, accessibility, contaminant history. current levels of contamination, and identified receptors and exposure pathways will be detailed in preparation for future phases of the BERA as these factors will be established during the course of the remedial. investigation.

3. The RI/FS Work Plan does not provide clean objectives for the BERA. Bulleted activities are provided but are not linked to site specific or base wide objectives. Also, the level of ecological assessment is not specified (e.g. screening level or semi-quantitative).

Resoonse: The Work Plan has been revised to provide clear objectives for the BERA. As previously noted, the preliminary phase of the BERA will consist of a screening level assessment.

3. The sections of the RI/FS Work Plan relative to the BERA lack many important components and do not adhere to EPA guidance. It is recommended that the RI/FS Work Plan provide specifics on how the following will be accomplished and presented in the BERA Report:
   - problem formulation and conceptual model,
   - source characterization and exposure pathways,
   - exposure assessment,
   - ecological effects characterization, and
   - risk characterization.

Response: The Work Plan has been revised to address the key components of a BERA as established in EPA guidance.

4. The RI/FS Work Plan does not provide details on wetland delineation. Will wetland boundaries be surveyed? Will a global positioning system be utilized to map the wetlands for presentation in the RI report? It is recommended that wetlands be delineated with the boundaries mapped to aid in the ecological characterization of all sites.

Resoonse: The approximate boundaries of all habitats present onsite, including wetlands, will be mapped based on review of aerial photographs and the site ecological reconnaissance. Delineation of the boundaries of the jurisdictional wetlands present onsite will not be performed at this time. If future site activities, such as site remediation, appear to be necessary in areas within or adjacent to the identified wetlands, delineation following the procedures established in the 1987 Corps manual will be performed in preparation for the necessary mitigation planning and the boundaries will be more accurately mapped.

5. Sampling locations designated as "background" sampling locations are really upgradient or downgradient sampling locations, and do not represent true "background" sampling locations. "Background" samplicg is the attempt to establish naturally-occurring inorganic concentrations that are minimally influenced by human activity. Additionally, the establishment of naturally-occurring background concentrations is accomplished statistically and, for soil, is accomplished per soil classification. The draft Work Plan does not attempt to do this. Attached, please find a section of the Radford Army Ammunition Plant Work Plan describing an acceptable methodology for establishing facility-wide naturally-occurring background concentrations.

Response: All reference to "background" sample locations have been changed to "upgradient".

The number of surface water and sediment samples currently proposed are adequate only for a screening level ecological risk assessment where only the maximum detected concentrations are compared to ecological benchmarks. Without additional sampling, it will be difficult to characterize the extent of contamination and develop reasonable ecological exposure pathways. Since the RI/FS Work Plan does not specify the level of ecological risk assessment to be performed, it is recommended that the sampling regime be re-evaluated once the ecological problem formulation is enhanced.

Response: Text has been revised to indicate that a screening level ecological risk assessment will be performed during this phase of field activities.

2. A tiered approach for additional sediment sampling should be presented in the RI/FS Work Plan and should include Simultaneously Extracted Metals and Acid Volatile Sulfide (SEM/AVS) analysis to assist with the bioavailability assessment of inorganic contaminants, specifically divalent metals if these are found to be Contaminants of Concern.

Response: During discussions with Mr. Rob Thompson (EPA) and Mr. Devlin Harris (VDEQ), the SEM/AVS analysis of sediment samples is not required at this time.

3. The following field data should be collected for sediments: temperature, Eh. pH, conductivity, and Munsell color. In the current Draft Final Field Sampling Plan, only pH is proposed.

Response: The analysis of temperature, Eh, conductivity, and Munsell color have been added to the required analysis of all sediment samples.

4. All surface water samples should be analyzed for alkalinity, hardness, BOD, COD, total suspended solids, and total dissolved solids. The Draft Final Field Sampling Plan only proposes that surface water samples be analyzed for hardness. Also, the hardness method proposed. EPA Method 130.1, does not also provide an alkalinity result.

Response: The work plan has been revised to indicate that all surface water samples will be analyzed for hardness, alkalinity, BOD, COD, total suspended solids, and total dissolved solids.

5. The sample designation scheme does not appear to consider multiple rounds at the same sampling location. It is recommended that the sample number explanation be expanded to include the maintenance of unique sample designations in the event of multiple rounds of the same media at the same sampling location.

Resoonse: The sample designation scheme has been revised to accommodate multiple rounds of sampling at the same location.

SPECIFIC COMMENTS

Draft **Final Work Plan**

1. Page 3-1. Background. Landfill C

Review of historic aerial photography of the SJCA may depict Landfill C as encompassing an area larger than depicted in Figure 2-1. 1949 aerial photography depicts a large disturbed area in the general location of "Landfill C," extending somewhat southward of the current boundaries of Landfill C. Based upon review of aerial photography, waste disposal activity is evident at Landfill C until approximately 1970-1974. It is suggested that the area of investigation for Landfill C be expanded south-southwest to include trenching and waste disposal activity occurring on both sides of Patrol Road in 1958, 1964, and 1974 aerial photography.

Resoonse: Based on the review of historical aerial photographs and discussions with Mr. Rob Thompson (EPA) and Mr. Devlin Harris (VDEQ), the Landfill C western boundary was moved to the east. equal with the drainage swale and the break in slope visible in the field. It was agreed that these surface features should accurately represent the Landfill C western boundary and that the other site boundaries were accurately represented.

2. Paoe 3-1. Background. Landfill D

Historic aerial photography depicts significant activity occurring at the Landfill D area before the reported opening date of the landfill in 1970. In fact, significant ground disturbance and waste disposal activities occur on both the northern and southern areas of the Landfill D vicinity in both 1961 and 1964 aerial photography. Based upon a review of historic aerial photography, it is suggested that the boundaries of the investigation of Landfill D be expanded to the west-southwest to include the ground disturbance seen in 1964 and 1974 aerial photography.

Response: Comment noted. Landfill D site boundaries have been expanded to include the ground disturbance to the west-southwest seen in the 1964 and 1974 aerial photographs.

3. Figure 4-1

-The boundaries of the Landfill C should be expanded to the south-southwest to include trenching and waste disposal activity occurring on both sides of Patrol Road in 1958, 1964, and 1974 aerial photography.

-The referenced "background" samples should be re-designated as "upgradient" sampling locations. Also, the depicted "background" sampling locations may not be appropriate background sampling locations as they are located in close approximation to railroad tracks, and may actually be located in fill supporting the rail line.

Resuonse: Based on the review of historical aerial photographs and discussions with Mr. Rob Thompson (EPA) and Mr. Devlin Harris (VDEQ), the Landfill C western boundary was moved to the east, equal with the drainage swale and the break in slope visible in the field. It was agreed that these surface features should accurately represent the Landfill C western boundary and that the other site boundaries were accurately represented.

All reference to "background" sample locations have been changed to "upgradient". The upgradient sample locations at Landfill C are south of the railroad tracks and should not be located in fill supporting the rail line.

4. Fioure 4-2

The "background" sampling locations depicted on Figure 4-2 should be designated as "upgradient sampling locations. Also, as depicted, the background sampling locations lie within the boundaries of the Landfill D. and should be re-located based upon a review of aerial photography.

Response: All reference to "background" sample locations have been changed to "upgradient". Upgradient sample locations have been moved outside the site boundaries.

5. Figure 4-3

The boundaries of Landfill C should be expanded to the south-southwest to include trenching and waste disposal activity occurring on both sides of Patrol Road in 1958, 1964, and 1974 aerial photography.

Response: Based on the review of historical aerial photographs and discussions with Mr. Rob Thompson (EPA) and Mr. Devlin Harris (VDEQ), the Landfill C western boundary was moved to the east. equal with the drainage swale and the break in slope visible in the field. It was agreed that these surface features should accurately represent the Landfill C western boundary and that the other site boundaries were accurately represented.

6. Fioure 4-4

The boundaries of the investigation of Landfill D should be expanded to the west-southwest to include the ground disturbance seen in 1964 and 1974 aerial photography.

Response: Comment noted. Landfill D site boundaries have been revised to include the ground disturbance to the west-southwest seen in the 1964 and 1974 aerial photographs.

7. Paoe 4-4. Monitoring Well Installation. Landfill C

An additional shallow monitoring well is recommended to be installed east of the "caged pit" location, between contoured elevations 106 and 104.

Response: Based on discussions with Mr. Rob Thompson (EPA) and Mr. Devlin Hams (VDEQ), no additional monitoring wells at Landfill C have been proposed at this time.

8. Paoe 4-4. Geophvsical Survev Techniques. Landfill C

The geophysical survey of the Landfill C should attempt to locate the following:

- trenching and waste disposal activity occurring on both sides of Patrol Road in 1958, 1964, and 1974 aerial photography
- waste disposal activity south of Patrol Road depicted in 1970 aerial photography
- large pit depicted in 1961 aerial photography. The pit is situated north of Patrol Road
- ground disturbance occumng in the vicinity of the drop tower.

Additionally, supposed ordnance testing(?) occurred at Building 354(?), including the drop testing of ordnance. Did ordnance testing occur at the Landfill C vicinity, i.e., at the tower? If so, should ordnance clearance be conducted at Landfill C before intrusive operations begin?

Response: As discussed with Mr. Rob Thompson (EPA) and Mr. Devlin Harris (VDEQ), the surface geophysical survey for Landfill C will focus on areas within and immediately outside the site boundaries as proposed in the Draft Final Work Plan. After further review, ordnance clearing may be added to areas around Landfill C.

9. Paoe 4-4. Geophysical Survev Techniques. Landfill D

The geophysical survey of the Landfill D should attempt to locate the following:

- waste disposal activity occurring on the north end of Landfill D depicted in 1961, 1964, 1970, 1981, 1982, 1986, and 1990 aerial photography
  waste disposal activity occumng on the south end of Landfill D depicted in 1961, 1964, 1970, 1976 and 1982 aerial photography
- disposal trench evident in 1970 and 1976 aerial photography.

Response: As discussed with Mr. Rob Thompson (EPA) and Mr. Devlin Harris (VDEQ), the surface geophysical survey for Landfill D will focus on areas within and immediately outside the revised site boundaries as proposed in the Draft Final Work Plan. In addition to EM-31 surface geophysical equipment, EM-61 and GPR will also be used at Landfill D. Based on EM-31 and EM-61 surveys, GPR will focus on areas which may indicate the presence of buried drums at Landfill D.

10. Page 4-7. Groundwater Sampling. Groundwater Sample Numbers and Location

This section indicates that samples for both total and dissolved metals will be collected and analyzed. A brief discussion of the filtering procedure to be followed should be included in the Groundwater Sampling Techniques section. A more thorough discussion of the field filtering techniques should be included in the Sampling and Analysis Plan.

Response: Comment noted. Text revised.

11. Paoe 4-8. Table 4-1

Table notes indicate that trip blanks for volatile analysis will be collected at a frequency of 1 per cooler of volatile samples. It is recommended that separate trip blanks be used to monitor contamination of groundwater samples since groundwater samples will be analyzed for low concentration volatiles. Routine volatile analysis of trip blanks will not be adequate to monitor contamination of low concentration volatile samples.

Response: Comment noted. Text and tables have been revised to indicate that trip blanks used for groundwater sample shipping will be analyzed using the low concentration volatile method specified for all groundwater samples.

12. Page 4-18. Task 5: Risk Assessment

Steps outlined for the Baseline Human Health Risk Assessment seem thorough and include testing of the data distribution. The Navy has indicted that previous data will be validated and combined with new data to be collected in this study. The Navy should evaluate the size of the data set to be certain that enough samples are collected to complete the data set and to provide an adequate evaluation.

Response: Comment noted.

13. Paoe 4-20. Table 4-3

This section states that the future use of the site is expected to remain industrial. The Navy should elaborate on the reasons why future residential development is

not expected at SJC. However, EPA recommends that both scenarios be utilized in the risk assessment process. This allows for appropriate evaluation as to whether site restrictions are necessary, i.e. whether or not long-term monitoring is required at any particular site. Additionally, the calculation of both residential and industrial scenarios is important in the development of the Feasibility Study.

Response: Comment noted. Both residential and industrial risk scenarios will be included during the risk assessment.

14. Paoe 4-21. Paragraph 1

The Navy is reminded that the discussion of uncertainty is to be site specific and should include a qualitative analysis of any COPC's that could not be evaluated quantitatively.

Resuonse: A site specific discussion of uncertainty will be included in the assessment as will a qualitative analysis of any COPCs that can not be evaluated quantitatively. The Work Plan has been revised accordingly.

15. Paoe 4-19

Comments Related to Ecological Assessment Problem Formulation
It is recommended that the RI/FS Work Plan specify the assessment and measurement endpoints that will focus the ecological characterization.

Resuonse: Assessment and measurement endpoints consistent with a Screening Level BERA have been added to the Work Plan.

16. The RI/FS Work Plan should either specify receptors for exposure studies or set criteria for the selection of ecological receptors.

Response: The Work Plan has been revised to include the criteria that will be utilized for the selection of ecological receptors.

17. The second and third bullets should include the collection and presentation of information on feeding habits and habitat preferences of inventoried species.

Resuonse: The Work Plan has been revised to indicate a description of the selected receptors, including their feeding habits and habitat preferences will be provided in the appropriate phase of the BERA.

Page 4-19 Comments Related to Ecological Effects Assessment

18. The RI/FS Work Plan does not specify whether risk to ecological receptors will be assessed in a qualitative or quantitative manner. It is recommended that the eighth bullet item be expanded to specify the level of risk assessment (screening level, semi-quantitative level or quantitative level). If a tiered or phased approach is planned, then the decision points leading to the next level need to be specified in the RI/FS Work Plan.

Response: The Work Plan has been revised to indicate that a phased approach to the BERA will be implemented. The first phase will consist of a screening level assessment, The decision leading to the next level of the assessment will be based on a weight-of-evidence analysis of the data collected during the initial phase of the assessment.

19. Please clarify the fifth and sixth bullet items by clearly specifying how contaminants of potential ecological concern (COPCs) will be selected. Will the COPC selection process entail a comparison to EPA Region 111 BTAG screening levels, with contaminants detected at concentrations exceeding a screening level being selected as a COPC? The fifth bullet item appears to conflict with the sixth bullet item. Generally environmental effects quotients (EEQs) are calculated as part of a Tier 1 screening level ecological assessment. The sixth bullet appears to indicate that EEQs will be utilized in the COPC selection process. It is recommended that COPCs be selected by comparison with EPA Region III screening levels and that EEQs are calculated on COPCs in the first phase of the BERA. The RI/FS Work Plan should specify the denominator per medium that will be used in the EEQ calculation.

Response: The Work Plan has been revised to indicate that a screening level assessment will be completed. In this assessment, exposure point concentrations will be compared with the EPA Region 111 BTAG Screening Levels. Contaminants exceeding the screening levels'will be considered as contaminants of potential ecological concern. The environmental effects quotients (EEQs) will be calculated for the COPCs, with the appropriate BTAG screening value being utilized as the denominator.

20. It is recommended that the work scope specify that the ecological toxicity profiles for contaminants of potential concern will be provided in the BERA. The toxicity profiles should include a recent literature review.

Response: Toxicity profiles will be prepared for compounds identified as COPCs during the screening level assessment, as well as for compounds for which screening levels have not been developed. Profiles will also be provided for select compounds present at concentrations below screening levels but are known to bioconcentrate.

21. The RI/FS Work Plan should specify if there is potential that site specific toxicity tests may be performed. It is recommended that the performance of toxicity tests be outlined in a tiered approach.

Response: As indicated in the revised Work Plan, toxicity tests may be performed in the latter phase of the assessment if warranted.

22. The methods for ecological field investigations should be specified. For example, will the 1987 Corps Method be used for wetland delineation?

Response: The methods for the ecological field investigations have been specified in the revised Work Plan.

Page 4-19 Comments Related to Ecological Risk Characterization

23. It is recommended that the RI/FS Work Plan specify that a weight of evidence approach will be taken when comparing estimated exposure point concentrations with toxicity data, toxicity reference values, and ecological observations.

Response: The revised Work Plan now indicates that a weight of evidence approach will be taken when evaluating the exposure point concentrations.

24. The RI/FS Work Plan should specify that an uncertainty section specific to the ecological assessment will be included in the ecological risk assessment report.

Resoonse: The revised Work Plan now specifies that the ecological risk assessment will include an uncertainties section.

Draft Final Sampling and Analysis Plan

25. Table 8-1. Analytical Procedures

This table indicates SW846 Method 8330 will be used of for Total Petroleum Hydrocarbon analysis. However, this method was indicated for Nitramine (explosives) analysis in the RI/FS Work Plan for Sites 2 and 5. The Navy should verify the method to be used for TPH analysis on these sites.

Response: The correct method should have been SW846 Method 8015M however, based on recent discussions with Mr. Rob Thompson (EPA) and Mr. Devlin Harris (VDEQ), the analysis for TPH has been deleted from the Work Plan.

26. Table 2-3

This Table outlining Holding Times and Preservation Requirements is correct, but should be expanded to indicate that samples for dissolved metals must be filtered prior to preservation.

Response: Comment noted. Table 2-3 has been revised.

Draft Final Field Sampling Plan

27. Section 1.0

Though Blows Creek and the Southern branch of the Elizabeth River are adjacent to Site 4/Landfill D, no surface water or sediment sampling of Blows Creek or the Elizabeth River are proposed. It is recommended that a tiered sampling approach be specified in the RI/FS Work Plan. Such a tiered approach would outline the decision-making process. For example, if contaminants are detected in the currently proposed surface water samples at concentrations that exceed ambient water quality criteria, then surface water samples will be collected from Blows Creek.

Response: One surface water/sediment sample location is located downgradient of Site 4 and immediately upgradient of the confluence with Blows Creek. In addition, downgradient monitoring wells and surface/subsurface soil samples are also planned for Site 4. During discussions with Mr. Rob Thompson (EPA) and Mr. Devlin Harris (VDEQ), numbers of surface waterlsediment sample locations were determined to be appropriate for this phase of field activities.

28. Page 1-8

The Field Sampling Plan specifies that sediment samples will be analyzed for Total Organic Carbon (TOC). However, no method reference is provided. EPA recommends that all sediment samples be analyzed for TOC with results reported as percent organic matter, and for grain size distribution by the ASTM method for hydrometer or emery tube. In addition, the laboratory reports from the TAL/TCL analyses of the sediment samples should specify percent moisture or percent solids.

Response: Comment noted. TOC analysis will be performed by EPA MCAWW Methods 415.1 / 415.2. This Method will report percent moisture as part of the analysis. Grain size distribution of sediment samples are not planned at this time.

29. Table 1-1

It is reported that burning operations were conducted at Landfill C. It is appropriate to include dioxin as an analytical parameter at sites where solvents could have been burned.

Response: During discussions with Mr. Rob Thompson (EPA) and Mr. Devlin Harris (VDEQ), the sampling and analysis of dioxins at Landfill C has not been required during this phase of field activities.