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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 4

345 COURTLAND STREET, N.E.
ATLANTA, GEORGIA 30365

May 6, 1996

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CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Ms. Katherine Landman
Department of the Navy - Atlantic Division
Naval Facilities Engineering Command
Code 1823
Norfolk, Virginia 23511-6287

SUBJ: MCB Camp Lejeune
Draft Feasibility Study
Operable Unit No. 12 - Site 3

Dear Ms. Landman:

The Environmental Protection Agency (EPA) has completed its review of the above subject document. Enclosed are comments.

If you have any questions or comments, please call me at (404) 347-3016 or voice mail, (404) 347-3555, x-6459.

Sincerely,

Gena D. Townsend
Senior Project Manager

cc: Patrick Waters, NCDEHNR
Neal Paul, MCB Camp Lejeune

1.0 General Comments

1. Section 3.7.1.1, Page 3-10, Paragraph 1, states that benzene does not appear to present a significant problem for two reasons. First, detections were not consistent between the three sampling rounds, and well locations where benzene was detected appear to be unrelated. Second, benzene concentrations (3 μg/L - 40 μg/L) only slightly exceeded the federal and state standards (5 μg/L and 1 μg/L, respectively). However, such a conclusion is not convincing for the following three reasons. First, the detected concentration of benzene (40μg/L at well 03-MW08) exceeded the federal and state standards quite significantly, not slightly. Second, the text does not substantiate the claim that the benzene concentrations at these two wells are unrelated. Third, a data gap apparently exists between wells 03-MW07 and 03-MW08 (about 450 ft), based on well locations where benzene was detected. The text regarding the insignificance of benzene in the shallow aquifer should be revised accordingly.

2. Section 5 describes the various soil and groundwater alternatives. However, in some cases, all the components of an alternative are unclear. Process flow (block) diagrams should be added to show the primary components of the alternative, including residuals and auxiliary inputs. These diagrams are critical for understanding soil alternatives RAA 3, 4 and 5 and groundwater alternative RAA 3.

3. Section 5.1.5, Page 5-3, Paragraph 3, describes the composting alternatives (RAA 5). The text in section 6.3.1, paragraph 1, sentence 5, indicates that the soil will be completely removed. The final two sentences in paragraph 3 (Page 5-3) indicates on-base borrow will be used to backfill. However, the text does not indicate what is to be done with the composted soil. The text should clarify what will be done with the composted soil.

4. Section 5.2.2, Page 5-4, Paragraph 8, states that institutional controls include a groundwater monitoring program that incorporates periodic sampling and analysis at the following wells: MW02, MW02IW, MW02DW, MW04, MW06, MW11, MW11IW, and MW13. However, monitoring wells MW07 and MW08 were not identified as part of the monitoring program. Analytical results from these two wells recorded benzene concentrations of 40 μg/L (J) and 13 μg/L (J), respectively, which exceed remediation levels for groundwater. The text

should provide the rationale for the selection of the wells in the monitoring program

5. Section 6.2 presents the individual analysis of alternatives. Under the evaluation criterion, "Reduction of Toxicity, Mobility, or Volume", no mass reduction or volume reductions for COCs are presented for any of the alternatives. Table 6-2 of the USEPA Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA indicates proportions of mass or volume reductions should be presented. The text should present the expected performance for each alternative in terms of contaminant reductions and the time frame for these reductions.

6. Section 6.2.3, Page 6-7, Paragraph 7, indicates that RAA 3 does not provide reduction of toxicity, mobility, or volume an active means for toxicity, mobility, or volume reduction of the soil contaminants. However, the text in section 6.3.4 indicates that RAA 3 involves soil removal and disposal, so this alternative will result in toxicity, mobility, and volume reduction. Thus, the two statements (sections 6.2.3 and 6.3.4) appear to be contradictory. The text should present an explanation regarding the reduction of toxicity, mobility, or volume by RAA 3.

7. Appendix C discusses costs for the soil and groundwater alternatives. However, the costs for long-term monitoring are duplicated if future site action requires implementation of both soil and groundwater alternatives. Combinations of soil and groundwater alternative costs should be reviewed carefully to prevent double counting.

2.0 Specific Comments

1. **Table 2-5**.
Table 2-5 lists results for surface soil. However, the depth range for these samples is not presented in the table. The depth range for these samples should be placed in the title or footnotes.

2. **Figure 2-8**.
Figure 2-8 presents water supply well locations in the vicinity of Site 3, along with the groundwater flow direction in the surficial aquifer. However, the groundwater direction is shown incorrectly. According to Figure 2-2 and the text on page 2-5, paragraph 2, sentence 1, groundwater flow direction in the surficial aquifer is west-southwest. Therefore, the groundwater flow direction on Figure 2-8 should be more accurately presented.

3. **Section 3.7.1.1, Page 3-10, Paragraph 1, Bullet 1, Sentences 4 and 5.**
The text states that chloroform in the shallow aquifer was only detected above standards in the second sampling round. However, the text then states that chloroform was not detected in the first and second sampling rounds. These two statements are contradictory. According to the data on Table 2-7, chloroform was not detected in the first and third sampling rounds. This discrepancy should be corrected in the text.

4. **Section 3.7.1.2, Page 3-10, Paragraph 3, Bullet 1, Sentence 4.**
The text states that chloroform in the Castle Hayne Aquifer was only detected above standards during the second round, but chloroform was detected during the first and second sampling rounds. However, the data on Table 2-7 indicates that chloroform was not detected in the first and third sampling rounds. The text should be revised accordingly.

5. **Table 3-1.**
Table 3-1 presents a summary of the COCs. However, what the bulleted footnote means is unclear. The text should clarify the meaning of the first footnote and incorporate it into the table.

6. **Table 3-11.**
Table 3-11 shows the RLs for groundwater. However, bis(2-ethylhexyl)phthalate was detected above criteria (Table 2-7) but not listed in Tables 3-10 or 3-11. This compound should be added to Tables 3-10 and 3-11, or the text should explain why bis(2-ethylhexyl)phthalate is not listed on the table.

7. **Section 4.3, Page 4-3, Paragraph 5.**
The text lists the soil technologies that were eliminated for further consideration. However, ex situ soil flushing was not an option, according to Table 4-2. In situ soil flushing is the technology that should have been listed as an eliminated option in the text.

8. **Table 4-3.**
The text states that dual phase extraction is applicable to volatile organics in low permeability formations. However, the text also states that air sparging and stripping are eliminated because the majority of compounds are semivolatiles. Therefore, by the same logic dual phase extraction should also be eliminated.

9. **Section 5.1.5, Page 5-3, Paragraph 3, Sentence 1.**

The dimensions for the windrow piles are presented (10 feet high, 10 feet wide, and 50 feet long). The height to width ratio is not practical based on literature information (Hay 1990; Finstein 1989, and EPA 1985). A typical sideslope for a windrow pile is 1:1 (45° angle). The proposed slope angle is approximately 63°. The maximum height should be limited to approximately eight feet (Finstein, 1989). The pile height to width ratio should be revised and space requirements recalculated and presented. The cost in Appendix C should also be revised accordingly.

10. **Section 5.1.5, Page 5-3, Paragraph 3, Sentence 3.**
The text indicates that windrow piles would be "turned" on a monthly basis. However, literature values indicate a turning frequency of once per week or once every two weeks is required for proper pile aeration (Hutzler et al, 1989 and EPA, 1985). The text should be revised accordingly.

11. **Section 6.2.3, Page 6-7, Paragraph 8, Sentence 2.**
The text indicates that RAA 3 will not present any environmental impacts. However, the possibility exists for some air emissions or surface runoff if rainfall occurs. The text should be modified to read: "RAA 3 will present minimal environmental impacts."

12. **Sections 6.2.3 and 6.2.4, Page 6-8.**
The titles give the names for RAA 3 and RAA 4, yet the title does not identify landfilling or incineration as off-site. The word "off-site" should be added to the titles (prior to "Landfill Disposal" for RAA 3 and prior to "Incineration" for RAA 4).

13. **Table 6-1.**
Table 6-1 lists the detailed analysis of soil alternatives for Site 3. However, for RAAs 4 and 5, "none" is listed as the amount destroyed or treated. Through incineration and composting (RAAs 4 and 5), a certain mass of soil contaminants will be destroyed or treated. The mass reduction should be estimated, and the text should be revised accordingly.

14. **Section 7.1.3, Page 7-5, Paragraph 1.**
The text describes RAA 3 alternative. However, the description does not indicate if there will be a treatment system for each extraction well or a single system for both extraction wells. The text should be revised accordingly.

15. **Section 7.1.3, Page 7-6, Paragraph 5, Sentences 2 and 3.**
The text states that the extraction wells will only be able to collect some of the groundwater contamination and that some of the contamination will remain in the aquifer adsorbed to soils and sediments or trapped in pore spaces

and fissures. However, the text does not specify the quantities of collected contaminants and remaining contaminants. Also, the text does not discuss whether the remaining contaminants could affect the quality of the remediation. The text should specify the approximate quantities of collected and remaining contaminants by RAA 3.

16. **Table 7-1**.
Table 7-1 lists the environmental impacts within the short-term effectiveness criteria of the groundwater alternatives. The text states that no additional environmental impacts will accompany RAA 3. However, on page 7-6, paragraph 6, sentence 3, the text states that RAA 3 may cause aquifer drawdown. Table 7-1 should list aquifer drawdown as an environmental impact of RAA 3.

17. **Appendix C (Table C-3, Second page)**.
The text presents site work and soil excavation cost items. However, cost items and unit rates are not the same for RAA 4 and RAA 3 (Table C-2), specifically, sample labor and spreading under "Site Excavation" and unit rates for stockpile area and fencing under "Site Work". The text should be revised to explain why these items and/or rates are different for RAA 3 and RAA 4.

18. **Appendix C (Table C-4, First page)**.
Under "Windrow O & M", 24 samples are specified for collection each year assuming four composites samples every two months. These composite samples would come from 32 windrow piles. However, the logic behind this assumed sampling frequency is not clear. As estimated degradation rates have not been presented, a two-month sampling schedule may or may not be supported. Furthermore, the projected times for degradation should govern the sampling frequency, not a two-month schedule.

19. **Appendix C (Table C-4, First page)**.
Under "Windrow O & M", the labor hours for turning are based on turning the piles once per month. However, according to literature, the turning frequency should be once per week to once every two weeks (Hutzler et al, 1989 and EPA, 1985). Thus, the hours required for pile turnover should be doubled.

20. **Appendix C (Table C-4, Second page)**.
Under "Windrow Capital Costs", several comments reference a conceptual design for piping. However, no conceptual design is presented in the Feasibility Study. The comments should be clarified by adding a conceptual drawing or sketch.

21. **Appendix C (Table C-6, First page)**.
Under "Treatment System O & M", annual costs for RAA 3 are presented. However, costs for carbon purchase and sampling spent carbon and disposal are omitted. Disposal costs for oil are also not included. The costs for these items should be incorporated into the table.

22. **Appendix C (Table C-6, Third page)**.
Under "Treatment Plant Equipment Costs", the cost for the proposed plant is presented. However, the size of this plant (gpm rating) is not provided. It is not clear if the plant includes the oil/water separator, precipitation system, filters, sedimentation, or sludge dewatering unit. The table should be revised to show the treatment plant size and all components.