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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET, S.W.
ATLANTA, GEORGIA 30303-3104

February 5, 1998

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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 Report
Operable Unit No.16-Sites 89 & 93

Dear Ms. Landman:

The Environmental Protection Agency has completed its review of the above subject document. Comments are enclosed.

If you have any questions or comments, please call me at (404) 562-8538

Sincerely,

Gena D. Townsend
Senior Project Manager

Enclosure

cc: David Lown, NCDEHNR
Neal Paul, MCB Camp Lejeune

1.0 GENERAL COMMENTS

1. In this report the alternative "Institutional controls" is addressed, but the sampling frequency and total number of years proposed for groundwater monitoring is not presented. The text should be revised accordingly.

2. Section 1.5.1.1, Page 1-12, Paragraph 0, Sentence 1 indicates that the distribution and extent of detected organics are not discussed in detail because they are not considered to be site related. However, this conclusion is not supported since the detected organics also include some non-laboratory contaminants which are likely to be site-related. The text should be revised to include detailed discussions on the detected organics in soil samples.

3. Section 1.5.1.1, Page 1-12, Paragraph 3, Sentence 4 indicates that the detections of the inorganics in the soil at Site 89 are considered to be a result of natural conditions and not site related. However, this conclusion is not supported. According to the review comments on the RI of OU16, a justification for this statement should be presented. Neither the RI nor this FS presents the justification. The text should be revised to include the justification in order to support this conclusion.

This comment also applies the same issue for Site 93.

4. Section 2.4, Page 2-6 discusses the Remedial Action Objectives (RAOs). However, the discussion is inadequate. EPA suggests that the RAO should specify the contaminants of concern, exposure route and receptors and acceptable levels or range of levels for each exposure route, that is, a PRG. The text should be revised accordingly.

5. Section 4 presents development and screening of Remedial Action Alternatives. However, this section does not contain information to define critical items such as the volume of contaminated media as recommended by EPA guidance (EPA, 1988). A subsection should be added or referenced to define the volume and plume size of groundwater.

2.0 SPECIFIC COMMENTS

1. **Figure 1-4**.
   The figure depicts the potentiometric surface (shallow wells), OU No. 16. However, the yellow line used to

delineate OU No. 16 is not included in the legend. The legend should be revised accordingly.

This comment applies to Figures 1-5, 1-6 and 1-11.

2. **Figure 1-16**.
The legend on Figure 1-16 shows a yellow line that supposedly depicts the DRMO Facility. However, the DRMO Facility is not depicted on the actual figure. The borders of the DRMO Facility should be shown on the figure.

RISK ASSESSMENT

1.0 GENERAL COMMENTS

1. Section 1.7.1.1, Page 1-20 discusses the screening for COPCs for Site 89. However, no mention is made of the subsurface soil to groundwater screening. This soil to groundwater screening should be performed and included in the FS.

This comment also applies to Site 93.

2. Section 1.7.3, Page 1-24, Paragraph 1, Sentences 4 and 5 discuss the acceptable risk range. However, the statement is not entirely correct. The Region 4 policy is that if the total risk (all media, all contaminants, and all pathways) to a receptor is less than 1×10^{-4}, then no further action may be necessary. If the total risk is greater than 1×10^{-4}, then any COPC having a risk greater than 1×10^{-6} is considered a COC and RGOs are to be calculated. For the non-carcinogenic HIs, if the total HI is greater than 1.0, then all COPCs having a HI greater than 1.0 should be considered COCs (EPA, 1995). For example, since the scenario of Future Residential Child has a groundwater risk greater than 1×10^{-4} and the surface water COPCs have a risk greater than 1×10^{-6}, then some of the surface water COPCs will be considered as COCs. This section should be revised to reflect this concept.

This comment also applies to Site 93 (Section 1.7.3.2).

3. Section 1.9, Page 1-31, Bullet 2 provides a summary of the conclusions of the RI regarding ecological risk. However, the ecological risk section of the RI is incomplete. Therefore, the information included in this text does not adequately address potential ecological risk from this OU. The text should be edited to address conclusions of ecological risk after the performance of a full ERA.

2.0 SPECIFIC COMMENTS

1. **Section 1.7.1.2, Page 1-21, Paragraph 1.**
This paragraph discusses the bis(2-ethylhexyl)phthalate site contamination and blank contamination which was addressed in the General Comment #5 on the RI/BRA. This issue concerns extremely high blank concentrations that need to be addressed.

2. **Section 1.7.3, Page 1-23, Paragraph 5.**
This paragraph presents the receptors to be considered in the risk assessment. However, a site worker (or maintenance worker) and trespassers are not included in the risk assessment. This issue was addressed in the General Comment #7 on the RI/BRA. The risk assessment should be revised to include these receptors.

3. **Section 1.7.3.1, Page 1-24.**
This section presents the results of the risk assessment. However, this section does not present a table of the COCs and their risk values. Such a table should be added.

4. **Section 2.0, Page 2-1, Paragraph 1, Sentence 5.**
This sentence states that RGOs are developed in Section 2.3. However, RGOs are usually calculated in the Risk Assessment and it should be noted that the RGOs were not presented in the RI/BRA. In addition, RGOs should be presented for all COCs selected in the risk assessment.

5. **Section 2.1, Page 2-1, Paragraph 4, Sentence Bullet 1.**
This bullet states that 1,1-dichloroethene was not included as a COC because its concentration was less than its RGO. This is surprising because the 10^{-6} RGO for 1,1-dichloroethene will be equal to or less than the RBC. The maximum concentration of 1,1-dichloroethene should be greater than the RBC because it was selected as a COPC. The fact applies to the other contaminants in this bullet. This discrepancy should be resolved.

6. **Section 2.1, Page 2-1, Paragraph 4, Sentence Bullets 2 and 3.**
These bullets present reasons why iron and manganese should not be included as COCs. However, these reasons are insufficient. If the groundwater in the Camp Lejeune area is naturally rich in iron and manganese, then the background samples should have high concentrations of iron and manganese. Since iron and manganese were selected as COPCs, it is to be assumed that they are greater than background (2X average). Even though the historical record has no indication of use of

iron and manganese, the fact that they are present at levels above background and had elevated HI (>1.0) levels is a cause for concern. It is acknowledged that iron is an essential nutrient and that there is a considerable uncertainty surrounding the provisional RfD. Given this fact, a rationale should be developed to exclude iron. For manganese, additional information is needed to substantiate that the elevated levels are due to natural conditions.

7. **Section 2.1, Page 2-1, Paragraph 4, Sentence Bullet 4**.
This bullet states that because of its infrequent occurrence, lead should not be considered as a COC. However, since the lead level was very high (165 ug/L), the elimination of lead as a COC due to infrequent occurrence is not justified. Rather, there could be a concern of a point source of lead release. Further investigation or discussion is needed before lead can be removed as a COC.

8. **Section 2.3.3, Page 2-5, Paragraph 5, Sentence 3**.
This sentence states that MCLs are designed to be prevention of human health effects for a 70 kg person drinking 2 liters of water a day. However, this statement is not correct. While the starting point in the development of MCLs may be health effects, the actual values of MCLs are due to technical feasibility or natural conditions (arsenic is a case in point). In fact, most MCLs are greater than the respective RBC or 10^{-6} value. Therefore, sentence 3 should be removed.

9. **Section 2.3.3, Page 2-5, Paragraph 6, Sentence 3**.
This sentence states that RGOs that are protective of adults will be protective of children. Although this may be true for carcinogenic risks, it is not true for non-carcinogenic RGOs. The HIs for children are usually greater than for adults. This section should be revised and consideration of RGOs specific to children should be included.