Baker

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August 14, 1991

Commanding Officer
Atlantic Division
Naval Facilities Engineering Command
Norfolk, Virginia 23511-6287

Attn: Ms. Laurie Boucher, P.E.
Code 1822

Re: Contract N62470-89-D-4814
CTO-0017, HPIA, Review of FS Report
FS Evaluation Report

Dear Ms. Boucher:

This letter report consists of technical review comments pertaining to the Preliminary Draft Supplemental Feasibility Study Report for Marine Corps Base, Camp Lejeune. This report, dated August 1991, was prepared by Environmental Engineering & Science, Inc. (ESE).

This letter evaluation report is being submitted in accordance with Task 9 of the CTO-0017 Final Implementation Plan (June 26, 1991). However, based on discussion of August 7, 1991, the project schedule for this task has been modified. The submittal of the this FS Evaluation Letter Report has been changed to August 14 (the original scheduled submittal date was September 27, 1991). Baker received the FS report on August 8, 1991.

Attached to this report are the technical review comments which document Baker's evaluation.

If you have any questions regarding these comments, please do not hesitate to contact me at (412) 269-2016.

Very truly yours,

BAKER ENVIRONMENTAL, INC.

Raymond P. Wattras

Raymond P. Wattras
Project Manager

RPW/rw
Attachment

cc: Mr. Marc Lambert, P.E.
Mr. Steven Chambliss, P.E.
Ms. Stephany Del Re Johnson

CTO-0017

FS Evaluation

Technical Review Comments

HPIA, Camp Lejeune

General Comments

1. The FS report dismisses the need to remediate the deep aquifer because the Risk Assessment indicated that the risk was acceptable (i.e., less than 10-6 risk factor). The major assumption in the risk assessment is that the groundwater would not be used as a water supply well for residential purposes. This does not appear to make sense since four water supply wells at HPIA have been shut down due to contamination of volatile organics. Additionally, EPA guidance on remedial actions for contaminated groundwater at superfund sites (December, 1988) indicates that the EPA Groundwater Protection Strategy (EPA, 1984) plays an important role in the remediation of groundwater. The deep aquifer at HPIA would be considered at least a Class IIA designation (or possibly a Class I designation) since it is currently used as a source of drinking water. The implications of EPA's GPS should have been addressed in the FS. The FS needs to explain in more detail the rationale for dismissing the deep aquifer. It appears that the FS addresses groundwater contamination only from the three areas of concern (i.e., Areas 900, 1200, and 1600), which have limited data on the deep aquifer. The deep aquifer on a whole should be addressed.

2. It is not clear why the FS focuses only on Areas 900, 1200, and 1600, and not the other areas (i.e., Areas 21, 22, and 24). The FS (Section 1.2) needs to better explain why the FS only address Areas 900, 1200, and 1600. Indicate that the contamination at these areas are associated with solvents.

3. The FS (and the remedial investigation and risk assessment) should discuss the fact that volatile organics in the soil were only observed at a limited number of sampling locations and at relatively low concentrations in the soil (less than 1 mg/kg total). It is possible that the volatile organics have either leached or volatilized from the soil matrix. The FS addresses PAHs because the of results of the risk assessment. The presence of PAHs may not be site related. This should be explored by comparing other areas of HPIA with the samples collected at the areas of concern.

4. The FS, as it stands, is not likely to be useful in providing sufficient information to determine the most feasible alternative for soil. Primarily, volume estimates cannot be calculated with much accuracy due to the limited data points. Additionally, the data is representative of only the top two feet of soil. Capital and annual cost estimates could not be estimated due to this lack of information. At best, each area of concern has only two to three soil data points. It is not certain whether the source of groundwater contamination at these areas has been identified, or determined not to be present due to the leaching/volatilization. At best, the FS serves as a preliminary screening document for remediation of PAHs.

5. References are provided at the end of the report. However, statements made throughout the report about the feasibility of technologies/alternatives (i.e., effectiveness, implementability, and cost) are not referenced. Statements implying that in-situ bioremediation will reduce the levels of PAHs to below the clean-up level need to be referenced. Another example is the elimination of composting as a technology; no reference is provided to support this decision. Add references to these remarks in the text of the FS.

6. It is mentioned throughout the text that there are no ARARs for soils. Did ESE consider the impacts of the RCRA Land Disposal Restrictions (this would imply to offsite landfilling). The impacts, if any, of the LDRs need to be discussed.

7. The FS states that more sampling and analysis will be required, but no information is presented with respect to what areas, how many soil samples, depths of samples, or analytical parameters.

8. The FS states that volumes of soil to be remediated will be determined at the time of excavation by additional sampling. The PAH levels may be so low that acres of Camp Lejeune may be excavated using this approach. The point is that the source of soil contamination may need other criteria which are more definable such as stained soils, or physical boundaries (e.g., to the roadway). Background levels of PAHs may be as high if not higher that what was detected in the borings. This comment applies if remediation of PAHs are still considered.

SPECIFIC COMMENTS

1. Page 1-12. The FS should describe the locations of the water supply wells. It is unknown to the reader (without the RI or RA report) whether the supply wells are located near the areas of concern, or just within the HPIA.

2. Page 2-12. Response objective Number 1, as stated. is not an objective.

3. Table 3-1. Explain in the FS why the clean-up levels differ for each area of concern.

4. Page 3-9. The general response actions listed under "treatment" are actually technologies and the technologies associated with the modes of treatment as actually process options.

5. Table 3-3, 3-4, and 3-5. References should be included for each statement made under the "comment" column to defend the screening decision.

6. Table 3-3. The low levels of PAHs, which are about 2 mg/kg at best, may not be able to be treated much lower with in-situ biodegradation. In general, in-situ biodegradation may not be effective because the levels of PAHs are not that high for the micro-organisms to survive.

7. Table 4-1 (and Section 4.0). With respect to capping, the proposed asphalt cap most likely contains higher levels of PAHs than the soil. Was a soil cover considered? A soil cover (with planted grass) would reduce or eliminate exposure to the surface soil. A soil cover would not eliminate infiltration, but PAHs are not likely to mobilize to the water table given the low concentrations observed (PAHs were not detected in either the shallow or deep aquifers).

8. Table 4-2. No discussion other than Table 4-2 was given for retaining or eliminating alternatives from further analysis. The text, or table, should briefly explain why certain alternatives were eliminated.

9. Table 4-2. Alternative 1B bench-scale costs appear to be low. Also, provide references for the cost information in this table. This would provide more credibility to the FS.

10. Section 4.0. Was an onsite landfill (at some other location at Camp Lejeune) considered?

11. Section 4.0 Solidification is an alternative that may be effective on the soil, but based on the data, what is there to stabilize. The objective of preventing exposure can be met by capping. Also, stabilization may not be implementable at the site area. There may not be enough space and the water table may render this technology non-implementable. The FS should address whether the water table would be a factor.

12. Page 5-8, line 6. The word "sediment" needs to be changed to "settlement".

13. Page 7-9. The preferred alternative for remediating the soil (i.e., incineration) is not cost effective and may not be accepted by the community. If remediation is warranted, other technologies such as low-temperature thermal stripping or composting may be just as effective on the low levels of PAHs and is more cost effective.