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ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.

May 11, 1988
ESE No. 86-601-0100

Ms. Cherryl Barnett
Department of the Navy
Atlantic Division, Code 1143
Naval Facilities, Engineering Command
Bldg. N23, Gilbert Street
Norfolk, Virginia 23511

RE: Contract No. N62470-83-C-6106, Confirmation Study, Marine
Corps Base, Camp Lejeune, North Carolina

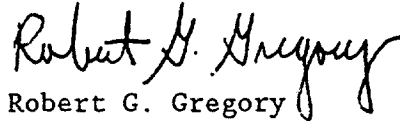
Dear Ms. Barnett:

Transmitted with this letter is one copy of the Final Report for the Feasibility Study for the shallow aquifer at the Hadnot Point Industrial Area. All LANTDIV/Camp Lejeune comments have been incorporated either in the body of the report, or in the separate response to comments also transmitted with this letter. Those comments addressed in the separate response to comments consist of clarification of ESE methodologies which we felt were not appropriate for inclusion in the body of the report.

When you have determined that all responses to the review comments have been completed to your satisfaction, we will send you additional copies for distribution.

If you have any other questions regarding this submittal, please call me at your convenience.

Sincerely,



Robert G. Gregory
Project Manager

RGG/wp

Enclosure

cc: L.J. Bilello

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RESPONSE TO COMMENTS ON FOCUSED FEASIBILITY STUDY

✓ Comment 3: The hydraulic gradient given in Section 2.2 is correct. The value of 0.2 ft/ft, given in the characterization step report (page 4-23) is incorrect.

Comment 9: (Page 4-8) ReInjection was deemed a nonviable option for disposal of treated groundwater at Camp Lejeune, mainly due to the shallow groundwater table and the mounding of water associated with injection wells. No major problems can be anticipated with discharging treated water to surface water in the area. Thus, costing the reinjection option is not necessary.

Comment 10: Lowering the water table will have no impact on building foundations in the Hadnot Point area. The shallow aquifer materials are well graded clay, silt, and sand mixes. Very little interstitial pore space exists, therefore, removal of groundwater will not result in compaction/settling of the shallow sediments.

✓ Comment 13: Section 4.2 provides a description of each technology considered applicable, including collection, biological treatment, and onsite physical/chemical treatment, while Section 5.0 describes each alternative, consisting of collection, treatment, sludge disposal, effluent discharge, etc.

✓ Comment 16: Cost summaries for each remedial alternative have been broken down in the enclosed Tables A through E. These summary tables have not been included in the body of the FS report. The costs are based on several assumptions using available information and should not be used as final cost estimates. The purpose of these costs is to provide a relative comparison between each alternative. The costs are well-suited for this purpose. Final cost estimation would be more detailed and would

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require more background information regarding the site characteristics and the individual technology.

Comment 17: Each technology will work effectively at lower contaminant concentrations than the concentrations assumed in water to be treated (i.e., maximum concentrations). The package biological towers, in particular, would probably perform more effectively with lower contaminant concentrations in the water. Nutrient addition would probably be required for treatment with package biological towers. As treatment progresses and contaminant concentrations in the groundwater decrease to levels considered acceptable, treatment will be discontinued.

Comment 19: Table 7-1 ranks each of the five alternatives for five components: capital cost, O&M, labor, technical ranking, and E/I rating. The total rankings for the five alternatives would be the same as the ranking in Table 7-1, except the biomedica and ~~carbon-adsorption~~ *steam stripping* systems would have equal rankings, i.e, 4.

Comment 20: Even though the rankings for alternatives two and five both add up to 16, steam stripping was ranked third instead of biological towers, based on the relative differences between each of the five individual ranking criteria.

Comment 23: Please read Section 2.4. For the purposes of this Feasibility Study, no ARARs will be listed for parameters detected in water supply wells. A risk assessment is necessary before further investigation takes place.

Comment from Elizabeth Betz: Comment 2.C.3: Yes, the cost analysis for the wastewater treatment plant alternative does include monitoring requirements through NPDES permitting.

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NOTE: It is noteworthy to comment that the FS addresses only groundwater contamination, and not soil contamination. We anticipate that EPA will require an evaluation of soil contamination at HPIA because soil contamination usually impacts groundwater, and soil remediation is sometimes more effective in alleviating contamination than groundwater remediation.