

Baker

Baker Environmental, Inc.
 Airport Office Park, Building 3
 420 Rouser Road
 Coraopolis, Pennsylvania 15108

(412) 269-6000
 FAX (412) 269-2002

July 27, 1993

Commander
Atlantic Division
Naval Facilities Engineering Command
 1510 Gilbert Street (Building N-26)
 Norfolk, Virginia 23511-6299

Attn: Ms. Linda Berry, P.E.
 Code 1823

Re: Contract N62470-89-D-4814
Navy CLEAN, District III
Contract Task Order (CTO) 0133
Recommendations for Pre-Design Study at Operable Unit No. 2
MCB Camp Lejeune, North Carolina

Dear Ms. Berry:

Baker has previously indicated the need to install two additional deep monitoring wells west of Wallace Creek in order to better identify the extent of off-site groundwater contamination as part of a pre-design study. This recommendation was approved by LANTDIV, the Activity, EPA, and the DEHNR. However, based on comments recently received from EPA Region IV, and discussions with EPA and their contractor during the recent RI/FS summary meeting (June 30, 1993), the vertical extent of VOC contamination in the deep aquifer is still an issue. In order to resolve this issue, Baker is recommending the following change in scope to the pre-design study:

- One off-site deep monitoring well will be installed, as originally proposed, south of Wallace Creek. This well is depicted as 6GW38D on the attached figure.
- The deep well proposed north of Wallace Creek will not be installed since the extent of groundwater contamination in this area has been defined. Deep well 6GW35D, located north of Wallace Creek on the eastern side of Holcomb Boulevard, and supply well 633, located north of Wallace Creek along Holcomb Boulevard, are not contaminated. Therefore, no additional deep monitoring well in this area appears to be necessary.
- A deep monitoring well will be installed just above the clay layer at a depth of approximately 230 feet near well cluster 6GW27. This well is shown on the attached figure as "6GW27DA." Elevated levels of VOCs (approximately 52,000 ug/l) were detected in well 6GW27D (110 feet deep). The proposed deep well (6GW27DA) will determine the vertical extent of groundwater contamination just above the clay layer downgradient from well 6GW1DA, which is believed to be near the source of groundwater contamination. Well 6GW1DA, which was installed at a depth of approximately 230 feet at the clay layer, was sampled and found to contain approximately 300 ug/l total VOC. This level of VOC is much



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lower than the total VOC detected (75,000 ug/l) in well 6GWDA, which monitored groundwater at a depth of approximately 110 feet.

The installation of a deep well just above the clay layer is proposed to respond to EPA comments indicating that the vertical extent of groundwater contamination as well as the continuity of the confining layer (i.e., clay) at the site are unknown. Baker concurs with this comment; however, based on existing information, the primary zone which extraction wells would be screened for purposes of remediating the groundwater would be approximately 100 to 110 feet deep, where extremely high levels of VOCs have been detected. Although the vertical extent of groundwater contamination along the clay layer, and perhaps through the clay layer, has not been fully delineated, remediation of the groundwater would not likely focus in this portion of the aquifer.

- In order to better delineate the continuity and thickness of the clay layer, and to determine groundwater quality beneath the clay layer, two deep monitoring wells are proposed. Both wells would be screened below the clay layer (approximately 230 to 250 feet). The wells would be installed near well cluster 6GW1 (6GW1DB) and 6GW27 (6GW27B) (see attached figure).

The installation of these two wells would allow for a determination of whether the clay layer is both impermeable and continuous across the site, as well as groundwater quality in the deepest portion of the aquifer. EPA commented that the potential exists for contaminants to migrate into the deeper zone. Baker concurs with the comment; however, it should be noted that none of the supply wells in this area of the base are screened below the clay layer. EPA also commented that the investigation of groundwater below the clay layer may not be necessary if this portion of the flow system contains at least 10,000 ppb of total dissolved solids (i.e., a Class III aquifer, which is unusable for potable supply). Unfortunately, there is no data to determine whether the groundwater below the clay layer is either a Class II or III aquifer. USGS reports indicate that the Beufort Aquifer, which underlies the Castle Hayne, is not used for water supply because of saltwater intrusion. However, the Beufort Aquifer is present below the study area at a depth of approximately 270 feet. Therefore, the clay layer which was encountered at a depth of 220 feet at the site may not indicate the bottom of the Castle Hayne. In theory, supply wells could be impacted if the clay layer is not continuous, or if supply wells would be installed near the site below the clay layer (which is unlikely since there is a sufficient supply of water above the clay layer).

In summary, four deep monitoring wells rather than two deep monitoring wells are proposed for the pre-design study.

Baker is also recommending additional soil sampling at Area of Concern No. 1 (the VOC contaminated soil at Site 82) in order to better delineate the extent (volume) of contamination for design of the vapor extraction system. Four test borings are proposed at the locations depicted on the attached figure. Two soil samples would be collected

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from each boring (top two feet and just above the water table) and analyzed for TCL volatiles only.


Soil samples will also be collected from five of the six AOCs identified in the FS report and analyzed for full TCLP and RCRA hazardous waste characteristics to ensure that the soil is not hazardous by characteristic (e.g., fails TCLP or is ignitable, corrosive, or reactive). This information will also help in the design of the remedial action (excavation and off-site disposal).

Baker would like to discuss the groundwater investigation with EPA before our August 2, 1993 meeting with EPA, if possible. Baker is planning on beginning the pre-design study on Wednesday, July 28.

Please contact me to discuss the proposed changes to the pre-design study after you have had an opportunity to review this letter.

Sincerely,

BAKER ENVIRONMENTAL, INC.


Raymond P. Wattras
Project Manager

Attachment
RPW/nd

cc: Mr. Neal Paul
Ms. Lee Anne Rapp (w/o attachment)
~~Ms. Beth Hurd~~ (w/o attachment)
Ms. Michelle Glenn (EPA)
Mr. Peter Burger (DEHNR)