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CERTIFIED MAIL RETURN RECEIPT REQUESTED

United States Environmental Protection Agency,
Region IV
Waste Management Division
Attn: Ms. Michelle Glenn
345 Courtland Street, N.E.
Atlanta, Georgia 30365

Re: MCB Camp Lejeune; Responses to EPA Region IV Comments on the 30 Percent Submittal for the Design of the Shallow Aquifer at the Hadnot Point Industrial Area Operable Unit

Dear Ms. Glenn:

This letter addresses comments from the United States Environmental Protection Agency on the 30 Percent Design Submittal Basis of Design Report for the referenced project. These comments were contained in a letter from Ms. Michelle M. Glenn, dated April 1, 1993, and were discussed at a meeting with LANTDIV, USEPA, NC DEHNR, and Baker on March 23, 1993. Responses to these comments have been included in the 90 percent design submittal.

Response to Comment No.1

The Remedial Action Work Plan, which will be prepared by the Remedial Contractor, will be required to include precautions for workers while excavating in the contaminated areas of the site.

Response to Comment No.2

Sludges produced by the treatment systems will be pumped to a sludge storage tank and dewatered with a plate press. The dewatered sludge will be sampled and analyzed for full TCLP and disposed of accordingly. The 90 percent design submittal package includes the solids dewatering system.

Response to Comment No.3

The groundwater treatment system design has been based on the maximum concentrations of the VOCs detected. A table has been included in the 90 percent design submittal that lists the minimum, average, 95th percentile, and maximum concentrations

detected from sampling data collected in January 1991. The table lists the estimated effluent concentrations from the air stripper at maximum influent concentrations, based on air stripper modeling.

Response to Comment No.4

Baker reviewed the EPA document referenced in this comment and believes that the type of tray air stripper described is not the type that Baker proposes for this system. The shallow tray air stripper that was selected has been shown to have removal rates greater than 99 percent for selected VOCs.

The anticipated maximum VOC concentrations from the Hadnot Point shallow aquifer, which are presented in the table noted in Comment No. 3, were checked via computer modeling to verify that the shallow tray air stripper is capable of removing the maximum VOC concentrations. In addition, the liquid phase carbon adsorption units being added to the groundwater treatment systems will provide additional VOC reduction should the system experience a high influent VOC concentration, or "spike," that exceeds the anticipated maximum VOC influent levels used in the design.

It should also be noted that a four tray air stripper unit is included in the 90 percent design submittal, as compared with a two tray unit submitted in the 30 percent design. The additional two trays increase the performance of the air stripper to a level that is capable of removing the maximum VOCs detected.

Response to Comment No.5

The 90 percent design submittal package includes a polymer addition system to aid in the flocculation of the suspended metals. Liquid polymer will be mixed with water and added to the groundwater influent prior to a flocculation tank. The metal floc formed in this tank will be removed as a settled solids or sludge in the oil/water separator and the surge/settling tank, which is designed for approximately thirty minutes of detention. A multi-media sand filter following the surge/settling tank will filter any remaining solids prior to the air stripper.

Response to Comment No.6

As discussed during the conference call on April 15, 1993, LANTDIV and Baker have reviewed pump test data and well influence calculations for the Site 22 product recovery system (O'Brien & Gere, January 1990). This report documented similar pump test results, with pumping rates from 2 to 3 gpm from a 6 inch diameter well. O'Brien & Gere calculated a radius of influence of 300 to 400 feet. Based on this information, and after

considering potential well configurations, Baker is recommending that a the recovery wells be placed 400 feet apart (200 foot radius) with sufficient overlapping of the well capture zones.

Response to Comment No.7

A review of the well development procedures followed by Baker's field geologist verifies that the recovery well was properly developed. The recovery well was developed using a submersible pump. The well was overpumped and then allowed to recover. This process was repeated until the water was visually sediment-free.

Response to Comment No.8

This comment was discussed during the conference call on April 15, 1993. It was agreed that the remedial contractor will be required to conduct a step drawdown test after a recovery well is installed in order to determine well yield. If the well yield is too low, it will be abandoned and another well location selected.

Response to Comment No.9

As discussed during our conference call on April 15, 1993, Baker has reviewed aquifer pump test data from other locations near the Hadnot Point area to try to determine if the data obtained from Baker's pump test is representative of aquifer properties in this area. The test data have been reviewed and are similar to the data generated during the treatability study pump test.

Response to Comment No.10

A 6-inch diameter recovery well was installed for the pump test. Appendix A of the 30 percent design submittal uses a 3-inch radius for the GWAP calculations, which is correct for a 6-inch diameter well.

The following items address the specific comments which begin on page 4 of the comment letter.

Response to Comment No.1

The fourth paragraph on Page 2-1, Section 2.2 will be changed as requested.

Response to Comment No.2

Figure 2-2 is intended to show the groundwater elevation contours in the HPIA, as identified in the Figure Legend.

Response to Comment No.3

There is no apparent reason why shallow groundwater concentrations were lower in 1991. However, deep groundwater quality showed an improving trend after the potable supply wells near the HPIA were shut down in the mid-1980s.

Response to Comment No.4

As footnoted in Table 2-1 on page 2-6, data reported with a "B" postscript denote that the value was less than the contract required detection limit (CRDL), but was greater than the instrument detection limit (IDL). The CRDL is determined by the test method used for a particular contaminant or chemical, and is considered as the lowest concentration that can reliably be determined for that contaminant. If a laboratory is using an instrument with an IDL that is less than the CRDL, the data is typically identified with a qualifier (in this case "B") to show that the reported data is less than the CRDL.

Response to Comment No.5

The 10 mg/l oil and grease level noted in Section 3.1.1 is generally accepted as the minimum effluent concentration achievable with a slant rib type oil/water separator.

Response to Comment No.6

Section 3.1.1, the first paragraph on Page 3-3 will be changed to include the contract required detection limit for oil and grease, which is 3 mg/l. A brief explanation of CRDL is provided in Comment No. 4.

Response to Comment No.7

A polymer addition system is being added to the groundwater treatment system, as described in the response to General Comment No. 5.

Response to Comment No.8

Baker believes that the samples used for the bench-scale test are representative of actual site conditions at the HPIA. One sample, lead, showed an increased concentration after 30 minutes of settling when polymer was added. Baker believes this variance was due to laboratory testing variances. However, the result could be due to a reaction between the lead in the sample and the polymer. The polymer used in the actual chemical feed system will be selected based on testing conducted prior to and during system start-up.

Response to Comment No.9

Baker believes that the maximum sustainable pumping rate of 1.5 gpm which was obtained during the pump test is typical for the shallow aquifer. Pump tests conducted at the Hadnot Point Fuel Farm (Site 22) produced pumping rates of 2 to 3 gpm.

Response to Comment No.10

Baker calculated and provided estimated pumping radii for flow rates of 1.5 and 3.0 gpm (Page 3-7) because previous pump tests near this site produced recovery rates up to 3 gpm. Based on these previous field test and USGS estimates, Baker believes that recovery wells installed in the shallow aquifer will produce flow rates of 1 to 5 gpm; therefore, it was necessary to calculate a pumping radii at a flow rate greater than 1.5 gpm.

The interim remedial design for the HPIA shallow aquifer is being done in response to the Record of Decision for this area, which focused on the shallow aquifer. The Record of Decision does not address any actions to remediate the deeper Castle Hayne Aquifer. In addition, sampling data collected to date from the deeper aquifer does not indicate any definable contamination plumes.

Response to Comment No.11

In place of providing the same sampling results in the Basis of Design as are provided in the Treatability Study Report, we would rather present a single table that presents the critical sampling and engineering data which is used in the design. This table is attached to this response letter.

Response to Comment No.12

The configuration of the groundwater recovery wells will be positioned to insure coverage of the down-gradient edge of each plume, with sufficient overlap between wells. In addition, the recovery wells will be installed to a depth of approximately 35 feet, in order to improve the groundwater recovery rate.

Response to Comment No.13

As note in the previous response, the first set of groundwater recovery wells will be positioned to insure coverage of the downgradient edge of each plume.

Sewage Treatment Plant (STP) will be spelled out.

Response to Comment No.14

The two groundwater treatment systems are being designed for a maximum capacity of 80 gpm each. This flow rate was recommended

in the Interim Remedial Action Feasibility Study, and was based on an assumed groundwater flow rate of 5 gpm per well. This study also estimated that 16 recovery wells would be the maximum number of wells necessary to cover each plume. Although the aquifer pump test produced a pumping rate of 1.5 gpm, Baker believes that additional recovery wells that are installed may produce up to 5 gpm since the wells will be installed approximately 10 feet deeper.

Response to Comment No.15

Any recovered free product will be stored in a separate storage tank located next to the oil/water separator. The free product will then be taken to a reclamation facility. The settled solids will be pumped to a sludge holding tank and disposed of accordingly based on analytical testing.

Response to Comment No.16

Data is not available on the maximum concentrations for each contaminant of concern that the sewage treatment plant can treat. However, since the groundwater treatment systems will be designed to treat to levels that meet groundwater standards, the treated effluent should not inhibit or upset the sewage treatment plant. Given that the discharge rate of 80 gpm (maximum) will be combined with an influent rate of 3,500 gpm, no adverse impacts to the HPIA STP are anticipated.

Response to Comment No.17

The shallow tray air stripper will be included in the Division 11 Equipment Specifications.

Response to Comment No.18

Calendar day units will be added to Appendix D.

Response to Comment No.19

Page numbers will be added to the equipment catalog cut sheets.

Response to Comment No.20

The air stripper will be designed to treat the maximum concentrations anticipated for the site. Refer to the attached table.

Response to Comments Nos.21 and 22

The configuration of the groundwater recovery wells will be positioned to insure coverage of the down-gradient edge of each plume.

Any questions concerning these responses should be directed to Ms. Linda Berry at (804) 445-8637.

Sincerely.

L. A. BOUCHER, P.E.
Head
Installation Restoration Section
(South)
Environmental Programs Branch
Environmental Quality Division
By direction of the Commander

Copy to:
NC DEHNR (Mr. Peter Burger)
MCB Camp Lejeune (Mr. Neal Paul)
Baker Environmental (Mr. Ray Wattras, Mr. Don Joiner)

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