

**Baker**

10/31/01-3132

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October 31, 2001

Commander  
Atlantic Division  
Naval Facilities Engineering Command  
1510 Gilbert Street (Building N-26)  
Norfolk, Virginia 23511-2699

Attn: Mr. Kirk Stevens  
Code EV23

Re: Contract N62470-89-D-4814  
Navy CLEAN, District III  
Contract Task Order (CTO) 0369  
Final Site Investigation Report, Site 10  
MCB Camp Lejeune, North Carolina  
Response to Comments

Dear Mr. Stevens:

On behalf of Baker Environmental, Inc. (Baker) I am pleased to submit a copy of our response to comments received on the Final Site Investigation Report for Site 10, Original Base Landfill, MCB, Camp Lejeune (see Attachment A). Copies of the comments are provided in Attachment B. The draft responses are included in Word 97 format and have been emailed to you. A copy of this letter and attachments has been forwarded to Mr. Rick Raines at MCB, Camp Lejeune.

If you have any questions regarding this correspondence, please contact me at (412) 269-2098 (email: [jculp@mbakercorp.com](mailto:jculp@mbakercorp.com)) or in my absence contact Mr. Rich Bonelli (Activity Coordinator) at (412) 269-2033 (email: [rbonelli@mbakercorp.com](mailto:rbonelli@mbakercorp.com)).

Sincerely,

BAKER ENVIRONMENTAL, INC.



James S. Culp, P.G.  
Project Manager

cc: Mr. Rick Raines, MCB, Camp Lejeune (w/attachments)  
Ms. Lee Anne Rapp, P.E., LANTDIV, Code EV31 (w/o attachments)  
Ms. Beth Collier, LANTDIV, Code AQ115 (w/o attachments)

**ChallengeUs.**



*Baker Environmental, Inc.*  
**ATTACHMENT A**  
*Response to Comments*

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**Response to Comments submitted by David Lilley of the Superfund Section, North Carolina Division of Waste Management, dated September 6, 2001, to the Baseline Risk Assessment in the Final Site Investigation Report for Site 10, Original Base Landfill - Marine Corps Base Camp Lejeune, North Carolina.**

1. We will use Region IX PRGS to screen for COPCs in future risk assessments performed for Region IV.
2. We have simplified the text of this paragraph on Page 6-12 so that it addresses exceedances of the RBC, rather than the frequency of detection. Lead was deleted in the listing of COPCs in the second paragraph, but the next paragraph, discussing the OSWER's lead screening levels, was retained.

The new text for subsurface soil on Page 6-12 now reads as follows:

Site 10 subsurface soil inorganic data summary and COPC selection results are presented in Table 6-2. Twenty-two subsurface soil samples were analyzed for TAL inorganics. Inorganics were detected in every sample. The maximum detected concentrations of antimony, arsenic, barium, cadmium, chromium, copper, iron, manganese, and thallium exceeded their respective residential soil RBCs. Consequently, antimony, arsenic, barium, cadmium, chromium, copper, iron, manganese, and thallium were retained as Site 10 surface soil RBCs.

Lead was not retained as a COPC due to the unavailability of toxicity criteria. Lead concentrations were compared to screening levels developed in the USEPA's Office of Solid Waste and Emergency Response (OSWER) Directive #9355.4-12. Refer to Section 6.5.2 for an interpretation of results.

3. As stated in response to Comment 2, above, lead was deleted in the listing of COPCs in the second paragraph on Page 6-12, but the next paragraph, discussing the OSWER's screening levels, was retained.

To make the treatment of lead consistent throughout Section 6.2 "Hazard Identification" of the document, we have added the text on lead that is found on page 6-12 to the COPC selection section for surface soil, located on Page 6-11. Also, as in our response to Comment 2 for subsurface soil, the text on Page 6-11 for surface soil was also changed to address exceedances of the RBC rather than the frequency of detection.

The new text for surface soil on Page 6-11 now reads as follows:

Site 10 surface soil inorganic data summary and COPC selection results are presented in Table 6-1. Twenty-five surface soil samples were analyzed for Target Analyte List (TAL) inorganics. Inorganics were detected in every sample. The maximum detected concentrations of aluminum, antimony, arsenic, and iron exceeded their respective residential soil RBCs. Consequently, aluminum, antimony, arsenic, and iron were retained as Site 10 surface soil RBCs.

Lead was not retained as a COPC due to the unavailability of toxicity criteria. Lead concentrations were compared to screening levels developed in the USEPA's Office of Solid Waste and Emergency Response (OSWER) Directive #9355.4-12. Refer to Section 6.5.2 for an interpretation of results.

#### 4. *Future Residents*

The Draft Site Investigation Report used groundwater samples from March 1998 that may have had excessively high levels of inorganics due to the nature of the well installation, development, and sampling in that investigation. Therefore, in the risk assessment in the Draft Report, exposure to groundwater was the main contributor to risk for future residents at the site.

Seven groundwater samples were obtained and analyzed from permanent wells in March 2001. These groundwater data were used for the characterization of risk from exposure to groundwater in the Final Site Investigation Report dated July 2001. The detected concentrations of inorganics in the March 2001 groundwater samples were considerably lower than the 1998 concentrations, and several chemicals, including arsenic, chromium, lead, manganese, and thallium, were no longer groundwater COPCs. Therefore, the potential carcinogenic and noncarcinogenic risks from the reasonable maximum exposure evaluation to all environmental media at Site 10, including groundwater, were within acceptable risk levels for residents, (i.e.,  $HI < 1$  and  $1 \times 10^{-6} < ICR < 1 \times 10^{-4}$ ). This made the evaluation of the central tendency scenario unnecessary for these receptors.

#### *Future Construction Workers*

The exposure parameters used in the Draft SI Report (as presented in Table 6-17 "Values Used for Daily Intake Calculations" were updated in the Final SI Report with more appropriate values (see Table 6-17 in the Final Report). This resulted in a slight increase in the noncarcinogenic risk calculated for exposure to surface soil.

In addition, in your memo to David Lown on November 25, 1998 RE: "Comments prepared on the

Draft Baseline Risk Assessment contained within the Site Investigation Report for Site 10 – Original Base Landfill, MCB, Camp Lejeune, NC, August, 1998” you recommended that we add exposure to surface soil to the construction worker scenario. This also contributed to the risk that was calculated for this receptor in the Final SI Report. Since the HI value exceeded 1 for the construction worker, a CT evaluation was performed in the Final Report.

5. We have reverted to the ABS values that were used in the draft, which were the Region IV default values of 0.01 for organics and 0.001 for inorganics. The risks were recalculated and the tables and text were updated, as appropriate.
6. Region III tapwater RBCs were inadvertently used as the COPC screening criteria in the Final SI Report. Screening with the tapwater RBCs resulted in only one COPC, which was iron.

As per your comment, NC Groundwater Standards were used as the screening criteria, and again, iron was the only COPC. However, our risk calculation system at Baker conservatively retains a chemical as a COPCs if there is no screening criterion for that chemical, but there are toxicity values. Three chemicals detected in the groundwater (aluminum, cobalt, and vanadium) had no NC Groundwater Standards, however, we do have toxicity criteria for these chemicals, so they were retained as COPCs. The risks were recalculated and the tables and text were updated, as appropriate.

**Response to Comments submitted by David Lilley of the Superfund Section, North Carolina Division of Waste Management, dated September 6, 2001, to the Ecological Risk Screening in the Final Site Investigation Report for Site 10, Original Base Landfill - Marine Corps Base Camp Lejeune, North Carolina.**

1. In the draft version of the document the substrate within the ponded areas was evaluated as surface soil instead of sediment for reasons provided in paragraph 3 on page 7-1 (Draft SI Report). Subsequent site visits revealed that southern most pond feature is, under normal conditions, void of standing water or saturation. The standing water observed and sampled during the March 1998 field effort was likely the result of above average precipitation (see Section 3.3 of the Draft SI Report) during the preceding months. Based on this evidence, the samples designated IR-SD05 and IR-SD06 were once again evaluated as surface soil samples. The northern most area of standing water has proven to be more permanent in nature. Water levels in this area appear to fluctuate according to precipitation and season but never completely recede. In order to assess potential risks to ecological receptors associated with this pond, the samples designated IR-SD01 through IR-SD04 were evaluated as *sediment* samples in the final version. In summary, samples IR SD01 through SD06 were initially evaluated as surface soil samples. In the final version, four of these samples (IR-SD01 through IR-SD04) were subtracted from the surface soil sample set and evaluated as sediment samples leaving 27 surface soil samples instead of 31.
  
2. Region IV's fresh surface water screening values are based on the protection of aquatic life. The area of standing water from which these surface water samples were collected does not exhibit any characteristics (i.e. emergent or hydrophytic vegetation, standing water or saturation), associated with either aquatic or semi-aquatic environments. Therefore, we believe comparing this data to freshwater screening values is inappropriate.  
  
During the March 1998 sampling effort, surface water samples designated IR-SW05 and IR-SW06 were collected from the southernmost (atypical) area of standing water. For reasons stated above, the standing water from which these samples were collected is considered extraordinary and is not representative of normal site conditions. As a result, these samples were not used in the ecological evaluation.
  
3. Although mean concentrations and associated HQ values are shown in Tables 7-3 through 7.6, only *maximum* concentrations and associated HQ values were considered in Section 7.4 when formulating conclusions regarding the ecological risk screening.
  
4. Non-detected chemicals with maximum reporting limits greater than media-specific screening values,

as well as non-detected chemicals lacking media-specific screening values were retained as ECOCs by the ecological risk screening. Additional evaluation is not warranted since it is as likely that the concentrations of these chemicals are near zero and not present at ecologically important concentrations. It is acknowledged that exclusion of these non-detected chemicals is a source of uncertainty to the risk assessment process.

5. The USEPA Region IV screening value for total PAHs (1,000 ug/kg) represents a Ministry of Housing, Spatial Planning, and the Environment target value for soil (MHSPE 1994). According to the MSHPE (1994), the target value for total PAHs represents the total concentration of the following ten PAH compounds: anthracene, benzo(a)anthracene, benzo(k)fluoranthene, benzo(a)pyrene, chrysene, phenanthrene, fluoranthene, indeno(1,2,3-cd)pyrene, naphthalene, and benzo(g,h,i)perylene. As evidenced by Table 7-3, PAH compounds excluded from the MSHPE definition of “total PAHs” were analyzed in surface soil collected from the site, including benzo(b)fluoranthene and pyrene. Because specific PAH compounds are not included in the definition of “total PAHs”, total PAH concentrations were not compared to the USEPA Region IV screening value for total PAHs.

It is acknowledged that the sum of the maximum concentrations reported for the ten PAH compounds listed in the preceding paragraph can be compared to the USEPA Region IV screening value for total PAHs. Using maximum detected concentrations and, in the case of non-detected chemicals, maximum reporting limits, the HQ value is 2.1. However, if non-detected results for anthracene and naphthalene are excluded from the calculation, the HQ value is 0.8.

6. This typographical error has been corrected in the text.



*Baker Environmental, Inc.*

**ATTACHMENT B**

*Comments on Final SI Report*

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September 7, 2001

TO: David Lown

FROM: David Lilley

RE: Comments on Section 7, Ecological Risk Screening,  
contained within the Final Site Investigation Report for Site  
10-Original Base Landfill, MCB, Camp Lejeune, NC  
July, 2001

1. Page 7-11: In the draft version of this document, 31 surface soil samples were collected and analyzed. In this version, 27. Which 4 samples were deleted from the final version and why?
2. Page 7-13: In the draft version of this document, 6 surface water samples were collected and analyzed. In this version, 4. Which 2 samples were deleted from the final version and why?
3. Tables 7-3 through 7.6, footnote 3: The term "mean HQ" has no value in a screening level ecological risk assessment and must not be used to make decisions at this stage.
4. Sections 7.2.4.1 through 7.2.4.4: In these sections, it is stated that additional evaluation of the non-detected compounds is not necessary. Why?
5. Page 7-18: I agree with the conclusion concerning PAH contamination, but not the method used. The Region IV total PAH screening value of 1,000 ug/kg should be used to compare to the total PAH concentration.
6. Page 7-19, third paragraph, seventh line: Change "Appendix A" to "Appendix K".

September 6, 2001

TO: David Lown  
FROM: David Lilley  
RE: Comments on Section 6, Baseline Risk Assessment,  
contained within the Final Site Investigation Report for Site  
10-Original Base Landfill, MCB, Camp Lejeune, NC  
July, 2001

1. Page 6-3, Section 6.2.3: It is stated that the US EPA Region III RBCs will be used to select COPCs. As of 5/30/00, US EPA Region IV recommends using the Region IX PRGs instead of the Region III RBCs to screen for COPCs. Since the draft of this report used the RBCs before the policy change, the use of the RBCs in this report will be acceptable. In the future, please use the PRGs.
2. Page 6-12, second paragraph: Lead should be added to the list of inorganics detected in almost every sample.
3. Page 6-12: The last sentence of the second paragraph (the list of subsurface soil COPCs, which includes lead) is contradicted by the first sentence of the next paragraph, which claims lead was not retained as a COPC. Please make these consistent.
4. Page 6-20, section 6.3.4, second paragraph, second sentence: In the draft version of this document, it was claimed that the CT exposure scenario was used only for future residential receptors. In the current version, it is claimed that the CT exposure scenario was used only for future construction worker receptors. Please explain why this was changed.
5. Section 6.3.4.2: The ABS values in the draft version (0.01 for organics and 0.001 for inorganics) were reviewed and accepted. The current version of this document changes these values to Region III values, which have not been accepted by Region IV or the state of North Carolina. Please change back to the ABS values in the draft.
6. Table 6-3: In my 11/25/98 comments, comment #3 stated that the NC Groundwater Standards must be used as a screening level. This was