

State of North Carolina  
Department of Environment,  
Health and Natural Resources  
Division of Solid Waste Management

James B. Hunt, Jr., Governor  
Jonathan B. Howes, Secretary  
William L. Meyer, Director



August 26, 1994

Ms. Renee Henderson  
NREA  
Marine Corps Air Station  
PSC - Box 8006  
Cherry Point, NC 28533-0006

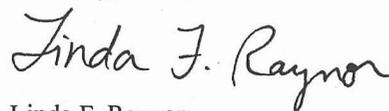
Subject: Site Characterization and Evaluation Report & Site Cleanup Plan  
Sites 1 through 5, Naval Aviation Depot (BRAC Work)  
MCAS - Cherry Point, North Carolina

Dear Ms. Henderson:

The North Carolina Superfund Section has reviewed the subject documents. Enclosed are comments for each of the documents.

If you have any question, I can be reached at (919) 733-2801, extension 244.

Sincerely,



A handwritten signature in cursive script that reads 'Linda F. Raynor'.

Linda F. Raynor  
Environmental Engineer  
NC Superfund Section

cc: Jack Butler  
Gena Townsend  
Gary McSmith  
J. Randall Elder

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**SITE CHARACTERIZATION AND EVALUATION REPORT**  
**(Report Dated August 1994)**  
(Comments from NC Superfund Section)

1. Section 5.3.1.1 Second paragraph - The units for metals in soils for the added text need to be changed from ug/kg to mg/kg; the ratios of samples with metals detected vs the number of samples collected need to be checked and corrected where necessary; for example, arsenic was detected in at least 9 of the samples, not 6; manganese is listed in this paragraph twice (I think the first manganese is supposed to be manganesium), at a maximum concentration of 2940 mg/kg (see 01-SB-13-001), not 34 mg/kg.
2. Table 5-1 (continued on p. 5-6) The word "SOILS" should be removed from the title since this table includes groundwater analyses results also.
3. Table 5-2 (continued on p. 5-9) 1,2, Dichlorobenzene is listed in table twice. Trichlorofluoromethane is misspelled.
4. Table 5-3 Barium and sodium are missing from the table for positively detected chemicals in the soils at Site 3. (See sample 03-SB-04-0001) Barium was detected @ 10.5 mg/kg and sodium @ 103 mg/kg; the maximum concentration for magnesium should be changed from 276 to 785 mg/kg.
5. Section 5.3.4.1 No mention was made about the 2-butanone that was previously reported in the May 1994 version of this report as being detected @ 29 ppb in soil sample 04-S0-12-0709. The lab results for this sample do not indicate this parameter was detected, however, this parameter is still listed in Table 6-10 in the summary of toxicological data. Please clarify. If 2-butanone was indeed detected in any of the samples, it should be added to Tables 5-4 and Table 6-8 and included in any health risk calculations.  
  

**NOTE:** Much time was spent reviewing the report and in considering the effect of 2-butanone on the health risk calculations. When major corrections are made between versions of reports, such as the deletion of parameters from the listing of detected contaminants and deletion from health risk calculations, a cover letter should accompany the newer version explaining the major changes that were made, especially when these changes may affect the outcome of the health risk evaluation.
6. Table 5-5 The metals of concern listed for the soils on this table do not coincide with the metals of concern listed for soils in Table 6-5. (See barium, beryllium and copper listed in Table 6-5; these should be deleted from Table 6-5). The maximum concentration range for magnesium should be changed from 433 to 540 mg/kg (see soil sample 05-SB-03-0001). Sodium should be added to this table. Sodium was detected @ 62 ppm in 05-SB-03-0001.
7. Section 5.4 The paragraph on Ketones was deleted from this version of the report. Please clarify.
8. Section 6.0 RISK ASSESSMENT (see also attached comments by David Lilley)
9. Table 6-2 The chemical N-Nitrosodiphenylamine was left off the table under organics in groundwater.
10. Table 6-4 Cyanide was left off the table under metals of concern in groundwater. Barium was detected in soil sample 04-SB-15-0001 @ 15.7 mg/kg and should be added to Table 6-4 under metals in soils for Site 4.
11. Section 6.1.1.5 - Site 5 Barium, beryllium and copper are listed as potential chemicals of concern for Site 5 and are listed in Table 6-5 under metals in soils. According to the laboratory results, these metals were not detected in soils collected from Site 5.

**SITE CHARACTERIZATION AND EVALUATION REPORT (Continued)**

**(Report Dated August 1994)**

(Comments from NC Superfund Section)

12. Section 6.5.2.3 - North Carolina Action Levels for Petroleum-Contaminated Soils - How were these action/cleanup levels calculated? No documentation was included in the report or submitted to the State concerning these calculated cleanup levels. The cleanup levels will need to be approved by the NC Department of EHNR's, Division of Environmental Management, Washington Regional Office's Groundwater Section. Should it be determined that the strictest soil cleanup levels apply, cleanup levels will be **10 mg/kg** (or ppm) for low boiling point hydrocarbons, **40 ppm** for high boiling point hydrocarbons and **250 ppm** for heavy fuels/oil and grease. (See "Groundwater Section Guidelines For the Investigation and Remediation of Soils and Groundwater (March 1993 with June 1993 Revisions incorporated).") Laboratory method detection limits **must** be low enough to compare sample results to these lowest quantities, otherwise, the laboratory data is meaningless.

13. Section 7.0 Summary - first paragraph - "As shown in the analytical detail included in Appendix C, ignitability, corrosivity, reactivity, and TCLP results for soils and concrete indicate that no regulatory restrictions apply to disposal of the materials resulting from construction at any of the sites." There are no laboratory results for ignitability, corrosivity and reactivity for soils or concrete samples collected.

14. Section 7.0 Summary - Sites 1 through 5 Conclusions cannot be drawn regarding the cleanup/action levels for petroleum contaminated soils at any of these sites. Documentation regarding the calculated levels have not been provided with this report or submitted to the State for approval. Therefore, any statements regarding total petroleum hydrocarbon (TPH) levels not exceeding the NC cleanup/action levels are unsubstantial.

15. Appendix C - The letter "B" and its meaning needs to be added to the key of analytical abbreviations. Are the attached laboratory results the original data? What are the sample dates? The units of measurement (ug/l, ug/kg, mg/kg etc.) should be listed on each page. Chain-of-custody reports were not included for laboratory samples. The typographical error noted in previous submitted comments (See comment 10) was not corrected.

**SITE CLEANUP PLAN**  
**(Report Dated August 1994)**  
(Comments by NC Superfund Section)

General Comment:

Soil remediation at some of these BRAC Sites will be necessary. However, the areas of petroleum contaminated soils for Sites 1 through 5 have not been delineated adequately, therefore, the areas and quantities of soil requiring remediation is unknown at this point. The cleanup levels calculated have not been submitted or approved by the State, and the laboratory method detection limits used are not adequate to compare sample results to State approved cleanup levels. Since PCBs were detected at Site 2 (soil boring 02-SB-04 ) at levels above the State's soil cleanup level of 1 ppm, soils in this vicinity will also require further delineation of contamination and subsequent cleanup.

It would probably be best for these contaminated soils to be addressed prior to the construction of any buildings or other structures to avoid future disturbances of these areas. To achieve soil remediation in a short period of time, soil removal may be performed. However, the remediation of any groundwater contamination in these BRAC construction areas will be a lengthy process. Many of these BRAC sites are located within, and in the nearby vicinity of previously identified groundwater contamination plumes in Operable Unit one, which includes the Naval Aviation Depot area. As part of the investigation of Operable Unit 1 (OU-1), these areas are currently undergoing additional investigative measures to determine the extent of soil and groundwater contamination.

August 26, 1994

TO: Linda Raynor

FROM: David Lilley

DBL

RE: Comments prepared on the Risk Assessment contained in the Site Characterization and Evaluation Report for MCAS, Cherry Point, NC. Report is dated August, 1994.

After reviewing the above mentioned document, I offer the following comments:

1. Page 6-5: Although Endosulfan I is listed as a chemical of concern in the soil for Site 2, it was left out of the spread sheets in Appendix D and no risk was calculated. Please explain.
2. Page 6-7: The evaluation of the above mentioned site has been accepted under the commercial/industrial exposure scenario assuming the present commercial/industrial use of the site never changes. It is the responsibility of the military to inform the state of the policies and procedures used to ensure the commercial/industrial nature of the site remains. It should be noted that the state reserves the right to reevaluate this risk assessment at any point in the future if the commercial/industrial nature of the property should change for any reason including but not limited to either base closure or redesignation of the area use for any other reason.
3. Page 6-33: The risk equation in the middle of the page needs to be used when the risk exceeds 0.01, not 0.1 as listed. Also, the equation given as:

$$\text{Risk} = 1 - \exp(-\text{intake} \times \text{CSF})$$

should read

$$\text{Risk} = 1 - \exp(-\text{intake} \times \text{CSF}).$$

4. Table 6-4: In the Draft of this report, 2-butanone was included as a chemical of concern at Site 4. This resulted in a Hazard Index (HI) of 1.5 and 0.98 for workers involved in the installation of the utility corridor and underground storage tank, respectively. This risk in the Draft report was described as "considerable". When the 2-butanone was left out of this report, the HI dropped to 0.20 and 0.22. Unless you have received new information that would warrant removing 2-butanone as a chemical of concern from Site 2, 2-butanone must be reinstated as a chemical of concern.

5. Appendix D, Dermal Exposure spreadsheets: The Absorption Fractions in the sample equations should be changed to match the ones used in the spreadsheets.
  
6. Appendix D, Dermal Contact With Soil, Site 2, Pages 2 and 3: It is unclear to the reader why the following chemicals listed on page 2 were omitted from page 3: Carbazole, Acenaphthene, Fluorene, Anthracene, Butylbenzylphthalate, Indeno(1,2,3-cd)pyrene, Dibenz(a,h)anthracene, Benzo(g,h,i)perylene, Dieldrin, 4,4'-DDE, Endrin, gamma-Chlordane, and Aroclor-1260. The risk posed by these chemicals tended to be small, but some pose a greater risk than chemicals that were retained on page 3. For example, according to the information given, Dieldrin had an Annual Adult Dose of  $3.25E-09$  mg/kg/day, and a Dermal RfD of  $2.50E-04$  mg/kg/day, giving it a Hazard Quotient (HQ) of  $1.3E-05$ . This poses a greater risk than Toluene, (HQ =  $2.74E-08$ ) which was retained in page 3. Please explain this inconsistency in procedure.