STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

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February 8, 2005

Mr. Orlando Monaco
Department of Navy
Engineering Field Activity-Northeast
Code 1823/OM
10 Industrial Highway, Mailstop 82
Lester, PA 19113-2090

Re: Site 9, Direct-Push Groundwater & Ash Landfill/Dump Area Delineation Investigation Report
Naval Air Station, Brunswick, Maine

Dear Mr. Monaco:

The Maine Department of Environmental Protection (MEDEP) has reviewed the draft final "Direct Push Groundwater and Ash Landfill/Dump Area Delineation Investigation Summary Report for Site 9", dated November 2004, prepared by EA Engineering, Science and Technology. Based on that review MEDEP has the following comments and issues.

General Comments

1. The analysis of geologic conditions that might show a preferential pathway for contaminant migration is not adequately presented without including a figure showing top of clay contours for the general Site 9 area. The orientation of cross section A-A', discussed on page 19, is not useful in portraying the NE-SW oriented trough in the clay surface. Construction of a clay topography map was an objective of the 2003 and 2004 investigations, and needs to be presented. (RR)

2. Another geologic cross section is needed along the NE-SW trough to show its continuity and gradual decline in bottom elevation toward the southwest. It should span from MW-NASB-080, through MW-NASB-069, S9-B6, MW-NASB-227, and end at S9-B10. Total VOC concentrations opposite sample collection intervals should be shown for each of the above points. (ED)

3. It appears that the ash landfill/dump area under Barracks 218-219 is the likely source of most of the VOCs detected in groundwater within the Site 9 boundary. Upon analysis of the data collected in 2003-2004, the landfill is the only likely source area identified. The data suggests that minor and possibly sporadic outfluxes of VOCs have migrated in groundwater eastward from the flightline infrastructure immediately west of Site 9. More importantly, the recent soil borings define a larger landfill/dump area than previously recognized; the southern end is approximately 40 feet upgradient of the vinyl chloride hotspot (MW-NASB-069). Section 3.2 and the boring logs in Appendix C include descriptions of groundwater sheens, petroleum and volatile odors and a pasty black sand layer within construction debris/ wastes, particularly at the southern end of the fill near Borings 19, 21, and 22. Migration within troughs in the clay surface may explain the spatial distribution of VOCs at Site 9. This report is deficient in not acknowledging the likelihood and importance of the landfill as a primary source area of groundwater contamination. (RR)

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Specific Comments

4. Section 1.1, Investigation Objectives and Purpose, p. 2:

   This section lists one objective for the 2004 direct push investigation however the Work Plan for Direct-Push Investigations at the Eastern Plume and Site 9 contains one goal and two specific objectives. Please revise to include all this information. (ED)

5. Section 1.1, Investigation Objectives and Purpose, 2nd bullet:

   "A total of 2 electrical conductivity logs were completed to assess area geology and groundwater concentrations of VOCs in the subsurface south of Building 29 in 2004."

   a.) Electrical conductivity logs cannot be used to assess groundwater concentrations. MEDEP suggests the following language: "A total of 2 electrical conductivity logs were completed to assess area geology *south of Building 29 in 2004. These logs were subsequently used to identify depth intervals to sample groundwater VOC concentrations in the subsurface."* (ED)

   b.) Please list the other activities for Site 9 listed in the Work Plan for Direct-Push Investigations at the Eastern Plume and Site 9 as part of this section.

6. Section 2, Summary of Field Activities, 1st paragraph, sentence 2:

   In the parentheses, please add the VOC compounds TCE and PCE, as they are the usual parent compounds of 1,2-dichloroethene, and have been detected many times at Site 9. (ED)

7. Section 2.1.2, 2003 Direct-Push Groundwater Investigation, 3rd paragraph:

   "The specific sample intervals were determined based upon the geological and PID field screening data collected by the Field Geologist."

   As stated on page 6 of this document and in the workplan, EPA and MEDEP were asked to help decide the sampling depth intervals based on the data. This must be reflected in this statement. (ED)

8. Section 3.1.1, Site Geology, p. 10, Sand Unit bullet:

   "Fill material (i.e., coarse to fine sand with varying amounts of fine gravel), distinct peat layers, and trace amounts of organic-rich silt are also common."

   Peat layers are not shown in any of the three geologic cross sections, and are not characterized elsewhere in this report. The thickness and depth distribution of these layers must be added to this section. Substantial peat layers are depth could be important in evaluating the natural attenuation potential. Also address whether these peat layers occur outside the buried drainage underlying the ash landfill/dump at the barracks. (RR)

9. Section 3.1.1, Site Geology, p. 10-11, Clay Unit bullet:

   "The geometry of this unit likely has an influence on the lateral and vertical migration of contaminants throughout the Site 9 study area."

While MEDEP agrees with this statement, it appears to be in direct conflict with the conclusion given in the third bullet in Section 4.1, and therefore, the report needs to be modified. Also, see General Comment 1 above. (ED)

10. Section 3.1.1, Site Geology, p. 11, 4th paragraph:

"Figure 5 provides a geologic transect through the galley area of the Site 9 study area (i.e., the southern boundary portion...), where vinyl chloride has been detected at low concentrations in groundwater."

This wording might give the impression that vinyl chloride has not been found outside the galley area, which is inaccurate. MW-NASB-069 is the hot spot of vinyl chloride, and is upgradient of the galley area. Please reword this sentence. (ED)

11. Section 3.1.1, Site Geology, p. 12, Cross-Section B-B':

"The cross-section shows a probable and distinct trough in the vicinity of these two locations, potentially created by shallow occurrences of the clay in the north of the Site 9 study area,..."

Two separate trough-like depressions are shown on this section. Both appear real according to the data shown on the section, although the one beneath S9-B8 appears much smaller. A detailed and carefully drawn top of clay contour map is needed in this report to show the potential significant of each trough. Please see General Comment 1. (ED)

12. Section 3.1.2, Site Hydrogeology and Groundwater Flow Patterns, paragraph 1, 2nd sentence:

"This prominent flow pattern is shown on Figure 6, which was contoured to represent available groundwater gauging data from Monitoring Event 20 for Site 9 (April 2002). These data are presented and further discussed in Monitoring Event 20 (April 2002) for Site 9 (Neptune Drive Disposal Site) (EA 2003b), which is the most recent monitoring event report."

The title of Figure 6 indicates that the data shown are for September 30, 2003. Please reconcile the above statements. (ED)

13. Section 3.3.1, 2003 Groundwater Results, p.14:

This short section only mentions VOC contamination found in groundwater that exceeds either the MEG or MCL. Concentrations lower than the regulatory limits are important to overall site interpretations. The three bullets in this section include only the findings at S9-B6 and S9-B8. At a minimum, this section should include a statement that some or all of the primary VOCs of interest at Site 9 (cis-1,2-dichloroethene, trichloroethene, and tetrachloroethene) were also detected at two sampling intervals at S9-B4, at S9-B5, and at S9-B9. Furthermore, the deepest sampling interval at S9-B7 also contained VOCs. This information must be noted in the in the text, as well as in Table 2 and the cross-sections. Please expand Section 3.3.1. (ED)

14. Section 3.3.2, 2003 Soil Results, 4th bullet:

"Additionally, several other common metal analytes were reported, including calcium, iron, lead, magnesium, and manganese. Inorganic concentrations distinctly above background values at NAS Brunswick include copper, iron, lead, silver, and zinc due to the presence of the ash material."

a.) The Navy needs to provide a reference that provides the background values for the base, or else state that these inorganic concentrations are elevated substantially above the levels normally measured away from source areas on base. (ED)

b.) Also, evidence or rationale must be given to support the Navy's assertion that the elevated metal concentrations were derived from the landfilled ash, instead of general dump materials (i.e. metalic debris or batteries). (RR)

15. Section 3.3.2, 2003 Soil Results, p.15, 5th bullet:

"Methylene chloride and acetone, both common laboratory contaminants, were detected at low concentrations in samples preserved with deionized water only, and were not detected in samples preserved with sodium bi-sulfate."

This result is opposite of what has occurred in other Brunswick NAS soil and sediment samples preserved by these methods. In the past, where some samples were preserved with sodium bisulfate, acetone was found where acetone should not be present. Please double check the data, and provide further explanation if laboratory contamination cannot be substantiated. (RR)

16. Section 4.1, Conclusions, p. 19, 1st bullet:

"Based on these data, the extent of the VOC plume appears to be adequately delineated."

The Navy has not yet shown the boundaries of the VOC plume in map view in any Site 9 report received by MEDEP. Without such a map, the State cannot agree with the above statement that the plume is adequately delineated. Please add the plume boundaries to a figure, with the supporting concentrations. Reference this figure in the text here and in Section 3. (ED)

17. Section 4.1, Conclusions, p. 19, 2nd bullet:

Twice in this paragraph the expression "monitored natural attenuation" occurs. MEDEP has commented repeatedly in the past that the remedy at Site 9 did not evolve from the EPA protocol procedure called monitored natural attenuation. The remedy for Site 9 remedy is natural attenuation with groundwater monitoring. Please modify this paragraph accordingly. (ED)

18. Section 4.1, Conclusions, p. 19, 3rd bullet:

a.) "The geometry of the Presumpscot Clay along the western boundary of Site 9 (as shown on cross-section A-A') and through the center of Site 9 (cross-section B-B') does not indicate the presence of a preferential pathway along the top of the clay unit."

MEDEP disagrees with this analysis. Cross sections are not an effective means of showing potential pathways over distance. A top-of-clay contour map is needed. See General Comment 1 above. (RR)

b) "Groundwater samples collected at S9-B10 and S9-B11 in 2004 did not identify significant concentrations of trichloroethene or other VOCs which would indicate that contaminants have moved along the top of the clay towards the southwest."

In 2nd bullet of this section, a concentration of 7.3 ug/L at S9-B6 was termed significant, presumedly because it exceeded the MEG/MCL of 5.0 ug/L. The measured concentration at S9-B10 is 5.0 ug/L. These two detections are among the highest TCE concentrations found at Site 9, and while low compared to the Eastern Plume concentrations, most likely represent either a historic and/or current migration pathway. The MEDEP's top-of-clay contour map appears to support a continuity in contamination to the southwest from MW-NASB-069. (RR)

19. Section 4.2, Recommendations, p. 21, 1st bullet:

MEDEP agrees with this recommendation. (NR)

Figures:

Figures 2 and 7 need to have the caption on the figure that reads "approximate location of ash landfill/dump area" changed as it is no longer appropriate. Please change it to denote that is was the historic understanding of the location of the ash landfill/dump area" and also change the arrow since both the "historic and the current" caption point to the same boundary line. (ED)

20. Figure 7, Ash Landfill/Dump Area Delineation:

In the legend, the qualifier "possible" is used in two places. It's use casts doubt on the investigation results. Please delete or explain its use in the legend. Also please denote whether the red dot depicts "possible waste" deeper than 1 foot. (ED)

21. Table 1, Summary of Groundwater Sampling Intervals, Screening Data and Sampling Rationale for Borings B-1 through B-9:

Please add "*Soil*" to "Measured PID Response". (ED)

Thank you for the opportunity to review this report. If you have any questions or comments please call me at (207) 287-7713 or email me at claudia.b.sait@maine.gov.

Respectfully,

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