STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

JOHN ELIAS BALDACCI
GOVERNOR

DAWN R. GALLAGHER
COMMISSIONER

May 28, 2003

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

Re: Sites 1, 3 and the Eastern Plume
Naval Air Station, Brunswick, Maine

Dear Mr. Monaco:

The Maine Department of Environmental Protection (MEDEP) has reviewed the report entitled, dated Monitoring Event 20-April 2002, Sites 1 & 3 and Eastern Plume, dated March 2003, prepared by EA Engineering, Science and Technology. Based on that review MEDEP has the following comments and issues.

General Comments:

1. Due to the diminishing file room space MEDEP requests that EA duplex (copied both sides) this and all future reports.

2. The report does not provide information on functioning of the GWET infiltration gallery, or state where the treatment plant effluent is directed for disposal. On page 11 it is reported that there were no discharge violations of the Brunswick Sewer District permit for the 5-month period. This finding apparently applies to only December 2001 and January 2002, in that the monthly operational reports for GWETS signal that the conversion from the Sewer District disposal to the on-base infiltration gallery occurred in February 2002. This disposal change needs to be documented in this report. Also, it should be noted that the plant effluent now discharges into the former head of the Eastern Plume (the former fire training pit) and the discharge limits for contaminants should be listed and discussed. (ED)

3. Now that MW-313 and MW-333 have contaminant levels above the MCL/MEG, there are no sentinel monitoring wells downgradient of the southeastern part of the leading edge of the Eastern Plume. This situation needs to be discussed at the upcoming June 3rd Technical Meeting between the Navy, EPA, and MEDEP. (MTG)

AUGUSTA
17 STATE HOUSE STATION
AUGUSTA, MAINE 04333-0017
(207) 287-7688
RAY BLDG., HOSPITAL ST.

BANGOR
106 HOGAN ROAD
BANGOR, MAINE 04401
(207) 941-4570 FAX: (207) 941-4584

PORTLAND
312 CANCO ROAD
PORTLAND, MAINE 04103
(207) 822-6300 FAX: (207) 822-6303

PRESQUE ISLE
1235 CENTRAL DRIVE, SKYWAY PARK
PRESQUE ISLE, MAINE 04769-2094
(207) 764-6477 FAX: (207) 764-1507

web site: www.state.me.us/dep

4. Another common laboratory contaminant, 2- butanone not acetone, has manifested itself in the data, and is compromising the long-term surface water concentration graphs. The inclusion of 2-butanone in total VOC concentrations without clear identification causes misleading impressions from the Navy's description of trends between monitoring events. In most such instances, the reported 10 to 12 μg/l of 2-butanone comprises the entire total VOC value. Apparently some aspect of surface water sampling or analysis introduced this compound into the laboratory results at a consistent level. MEDEP recommends that the Navy immediately review the quality control measures with their field personnel and their laboratory to eliminate or minimize future occurrences. Specific problem areas in the report identified under Specific Comments needs to be corrected in the final ME-20 report. (RR)

5. There are no recommendations given in this report that address deficiencies with plume capture, extraction well performance, and plume expansion beyond sentinel wells as identified in the Long-Term Monitoring Plan. While monitored natural attenuation should be investigated as a possible future remedial action, MEDEP believes that some tightening of the extraction system effectiveness is critical to setting the stage for natural attenuation. With the ineffectiveness of EW-01 with its very low pumping rate and long well screen, and the decline in contaminant mass captured by EW-02A, it appears that the plume's leading edge is fanning out into new areas. This movement is documented by the recent data in the southeast sector. However, the situation south of MW-205 needs more attention. Recent discussions in Technical Meetings have brought forth the above concerns. The Navy must develop and include the appropriate full spectrum of recommendations. (RR)

6. The 2001 Annual Report, (Monitoring Events 18 & 19) included a page titled "Figure 2-1 Water elevations within the Sites 1 and 3 landfill, shallow and deep wells" that depicted two graphs that showed water level trends since March 1995 for the following wells :Shallow Wells MW-234R, MW-210B, MW-217B, MW-211B, and EP-16; Deep Wells MW-216A, MW-217A, MW-232A, and MW-233R. (EW-06 was not being tracked on these graphs.) All the above wells were measured and reported in the Monitoring Event 20 9 April 2002, however, the page of graphs was eliminated. These graphs need to be reinstated and updated. (ED)

Specific Comments:

7. Section 1.1, Introduction, p. 1, 3rd para:

   "Ground water in the Eastern Plume is being remediated by a treatment system consisting of four ground-water extraction wells designed to provide hydraulic control of the aquifer..."

   While this statement is likely factual, it is somewhat misleading because water-level data has consistently shown that remedial pumping has not resulted in hydraulic control. The evidence indicates that the natural gradient toward Harpswell Cove have not been reversed across the leading edge of the plume (i.e., inward gradients exist only locally around the extraction wells). Either this sentence should be deleted, or else a follow-up statement must be added to indicate hydraulic control has been only partially established. (ED)

8. Section 1.1, Introduction, p. 1, 4th para:

   "The extraction system has been operational since April 1995."
   The records at MEDEP indicate that the system became operational in June 1995. Please modify as appropriate. (ED)

9. Section 1.2.2, Results, p.4, top para:

"MW-309B, a shallow bedrock well, is currently considered to be representative of the deep flow..."

The second sentence, which concerns MW-309B, is out-of-place, and consequently, is confusing. Please add "*However*," and move the sentence to the end of this paragraph. (ED)

10. Section 1.3.1, Sampling Activities, p. 4, 1st para:

Please provide a specific reference for the aqueous diffusion sample collection procedure for the previous phases of the Brunswick pilot study. (ED)

11. Section 1.3.1, Sampling Activities, p. 4, 2nd para:

The third sentence implies 22 samples were collected at the Eastern Plume, while the fourth sentence gives the total as 26 samples. Please reconcile and/or clarify this difference. (ED)

12. Section 1.3.1, Sampling Activities, p. 5, para above bullets:

Because only Sites 1 and 3 were analyzed for Target Analyte List elements and chromium, the bullet structuring needs to be revised so that the reader realizes that the Eastern Plume is analyzed for VOCs only. (ED)

13. Section 1.6.1, Inspection Activities, p. 8, 1st bullet:

"Some settlement continued to be noted in the vicinity of MW-217A/B. Further investigation is warranted to determine the cause of this subsidence."

MEDEP agrees with this recommendation, and requests that the Navy take immediate and appropriate action. This should also be discussed at the upcoming June 3, 2003 Technical Meeting. (MTG)

14. Section 2.1, Ground-Water Extraction and Treatment System 2001-2002 Performance Summary, p. 11, 3rd para:

"As shown in the graphic above, the cumulative VOC removal was approximately 300 kg during 2000 from the Eastern Plume."

This statement is incorrect. The graph on page 10 shows that at the end of 2000 the cumulative removal of VOCs reached 350 kg, and was roughly 40 kg for just 2000. The mass of VOCs removed in 2001 appears to be approximately 25 kg. Please correct. (ED)

15. Section 2.1, Ground-Water Extraction and Treatment System 2001-2002 Performance Summary, p. 11, 4th para:

"The overall monthly VOCs removed from the Eastern Plume continue to show a relatively consistent rate of VOC removal during 2001, with the exception of January 2002 when the VOC removal rate decreased sharply due to system shutdown."

The system shutdown occurred from September 11 to November 13 (see page 2)! The date annotation on the monthly GWETS VOC Removal Rate graph on page 10 was apparently misread by one time mark (three months). Please correct the above statement. (ED)

16. Section 2.1, Ground-Water Extraction and Treatment System 2001-2002 Performance Summary, p. 11, 6th para:

    This section should also note that a newly installed on-base infiltration gallery was placed into operation in the January 2002 timeframe, and that no Eastern Plume effluent was directed to the Brunswick Sewer District after January 2002 (according to the monthly GWETS records). (ED)

17. Section 2.2, Water Level Gauging Program Trends, p. 12, 1st sentence:

    a.) "...which indicates, at this time, that the ground-water potentiometric surface is rising above the bottom of the waste mass at this location."

    Please reword as follows: "which indicates, at this time, that the ground-water potentiometric surface *has risen almost 2 feet* above the bottom of the waste mass at this location." (ED)

    b.) MEDEP reviewed the agreement between the Navy and the regulatory agencies to shut off extraction wells 6 and 7. The Navy agreed to monitor the groundwater elevation within the landfill and if the groundwater elevation exceeded 35 feet above mean sea level (msl) it would trigger specific criteria (January 15, 1999 letter from the USN). That agreement is summarized below:

    - Quarterly monitoring of EP-17, EP-18, EP-19, EP-20, EW-6, EW-7, MW-201R, and MW-234R;
    - Water levels shall be reported yearly in the Annual Report;
    - Should any water level in any of these location rise to above 35-ft msl, an engineering report shall be prepared and submitted to the EPA and MEDEP within 45 days of the water level measurement. At the time additional water level measurements in other locations may be made to support recommended course of action in the report.
    - The engineering report shall include the following:
      Visual inspection of the landfill
      Graph of water level measurements to date
      Possible seasonal effects
      Recommended course of action
      Schedule for Course of Action

    Currently the Navy is in Non Compliance with this agreement and therefore the Federal Facilities Agreement. Neither the Navy nor its consultant notified the regulatory agencies of this problem until the issuance of this monitoring event report, 12 months later. The Navy must prepare the engineering report within 45 days from the date of this letter and take appropriate actions to ensure that the rise of water does not effect the remedy and that the remedy is still protective of human health and the environment. MEDEP considers this a serious oversight by the Navy and that it may jeopardizes future agreements of this nature. The Navy must include this as an agenda item at the up coming June 3, 2003 Technical Meeting and Restoration Advisory Board meeting. (MTG)

18. Section 2.3.1, Sites 1 and 3 – Volatiles, p. 12, 3rd sentence:

    "The volatile concentration for 1,4 dichlorobenzene has increased to a level (40 µg/L) that exceeds the State MEG (as shown in table B-1)."

Any contaminant that reaches either the MEG or MCL must be included in the long-term trend graph for that well. In this case, the MEG for1,4 dichlorobenzene is 27 µg/L. Therefore, 1,4 dichlorobenzene needs to be added to the VOCs graph (Figure 62) in Appendix B. (ED)

19. Section 2.3.3 Eastern Plume – Volatiles, p. 16, top para and last sentence of next bullet:

Monitoring Well MW-229A: "...the concentration of total VOCs has ranged from non-detected to approximately 180 µg/L."

Monitoring Well MW-231B: "During 2001, there was a sudden increase in the concentration of volatile compounds except for 1,1-dichloroethene and 1,1-dichloroethane."

MEDEP pointed out in its comment letter for the 2001 Annual Report (Comment 13, February 4, 2003) that the reported non-detection of VOCs at MW-229A and the detection of several VOCs in the MW-231B sample that mimic the levels historically reported in MW-229A samples was an obvious sample identification problem. This problem was originally brought to the Navy's attention by MEDEP during the January 28, 2003 regularly scheduled conference call. At that time, the Navy acknowledged that the laboratory data appeared anomalous and that a field labeling error could have occurred. MEDEP's expectation was that, at the least, a qualifying note would be placed in the annual report data tables and that the text would mention the probability of erroneous data for these two wells. However, MEDEP preferred that Monitoring Event 19 VOC data for MW-229A and MW-231B should be deleted from the tables and graphs, with an explanatory footnote.

It is unacceptable that the questioned data be carried forward in the long-term graphs. Please modify these graphs appropriately after discussion with the stakeholders. (MTG, ED)

20. Section 2.3.3 Eastern Plume – Volatiles, p. 16, bottom bullet:

"Volatile concentrations for total VOCs, 1,1-dichloroethane and 1,1-dichloroethene have generally increased since the last monitoring event while..."

These two compounds have more than tripled in concentration over Monitoring Event 19 levels, and Figure 58 (Appendix B) clearly suggests that the degradation products on the plume front have migrated into this location. In that 1,1-dichlorethene has exceeded its MCL and MEG, MW-313 is no longer a sentinel well, but is within the plume. The above statement should read: "Volatile concentrations for total VOCs, 1,1-dichloroethane and 1,1-dichloroethene have *substantially* increased since the last monitoring event while..." (ED)

21 Section 2.4, Surface Water, Sediment, and Seep Sampling Program, p. 18, 3rd bullet:

"From 2001 through 2002, total VOC concentrations have continually increased up to approximately 12 µg/L."

This increase at SW-09 is not "gradual" – it is abrupt. The reported VOC concentration for ME-20 is 12 µg/L. The correct ME-18 value is non-detect however; the graphed value for ME-18 was erroneously plotted as 2 µg/L, creating a false gradual upward slope. Furthermore, the increase appears to be totally due to the presence of 2-butanone in the ME-20 sample. (See General Comment 3 for further discussion.) MEDEP suggests the following language: "In April 2002, total VOC concentrations rose from historically non detection to approximately 12 µg/L, due entirely to 2-butanone." (ED)

22. Section 2.4.1.3, Eastern Plume – Volatiles, p. 19, bullets 1, and 3-5:

All of ME-20 VOC reported in surface water at these four sites is due to 2-butanone, and all reported concentrations are between 10 and 12 µg/L. See General Comment 4 for further discussion. These new reports of VOCs in surface water should be clarified as being totally due to 2-butanone. (ED)

23. Section 2.4.2.1, Sites 1 and 3 – Volatiles, p. 20, top bullet:

MEDEP notes that the duplicate sample was reported as having no detectable VOCs, while the primary sample had multiple compounds detected and a total concentration of 36 µg/L. The previous historic highest total VOC concentration was approximately 6 µg/L. This lack of resemblance between primary and duplicate for VOCs in seep water is unusual. The Navy needs to provide an explanation. (ED)

24. Section 3.1 Ground-Water Sampling Program, p. 23:

MEDEP agrees with both recommendations provided. The RAB has discussed, but not completely agreed on, when the diffusion pilot studies can be terminated and full implementation of diffusion sampling can take place. Before the full implementation of diffusion sampling can proceed the Navy needs to revise the Long Term Monitoring Plan within 2003 to codify the change in the sampling procedure allowing for stakeholder review and comment. (RR)

25. Section 3.3, Additional Data Collection and Review, p. 23 & 24:

a.) Three bullets address the Navy's objectives in evaluating natural attenuation. MEDEP agrees that a number of tasks are involved, and reiterates that these tasks have to be completed prior to agency acceptance of MNA as a stand-alone finishing remedy. Given that it may take years to collect the necessary amount of data, the Navy needs to begin this process as soon as possible. (RR)

b.) Of equal concern is the continued maintenance and optimization of the current groundwater extraction system and monitoring well network. Some recommendations need to be presented that address the existing shortcomings that MEDEP has pointed out in General Comment 5 above.

26. Figure 10, Interpreted total Volatile Organic compound Concentration Contour Map Deep Wells:

The Eastern Plume has a larger expanse south of Mere Brook than is portrayed in this figure. The shaded plume area must extend southward of MW-229A, as the trichloroethene concentration is 23 µg/L exceeding its MCL (5 µg/L). Also, MW-313 has a 1,1-dichloroethene concentration of 23 µg/L, which exceeds its MCL. In past monitoring event reports, the Navy has shown the MW-313 data on the shallow wells contour map, and because MEGs/MCLs were not exceeded, contamination was not highlighted in this locality. However for the ME-20 map, the highlighting around MW-313 on the shallow map makes little sense, in that it has to be an extension of the main body of the Eastern Plume, which is defined by deeper monitoring wells to the north and west. A review of the subsurface geology strongly suggests that the plume would naturally rise in the MW-313/ Mere Brook area. The bottom of the screen of MW-313 is –16 feet msl, and no deeper sandy layer exists. Please redraw and extend the leading edge of the plume to encompass MW-229A and MW-313.

Thank you for the opportunity to review this report. If you have any questions or comments please call me at (207) 287-7713.

Respectfully,

Claudia Sait
Project Manager-Federal Facilities
Bureau of Remediation & Waste Management

Cf: File
Larry Dearborn-DEP
Anthony Williams-BNAS
Christine Williams-EPA
Carolyn Lepage-Lepage Environmental
Al Easterday-EA
Ed Benedikt