STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

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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 & Eastern Plume, Monitoring Event 25
Naval Air Station, Brunswick, Maine

Dear Mr. Monaco:

The Maine Department of Environmental Protection (MEDEP) has reviewed the draft "Sites 1 and 3, Eastern Plume Monitoring Event 25 Report", dated July 25, prepared by Environmental Chemical Corporation. Based on that review MEDEP has the following comments and issues.

General Comments:

1. Any future data submissions must include an electronic data deliverable in the MEDEP's EDD version 4.0 format. The inclusion of the EDD will enable MEDEP to access monitoring data and link it to our GIS database and statistical packages, improving the review of future reports. When the ongoing database transfer is complete between EA and ECC MEDEP will request a copy of the site database in Access or a similar format so MEDEP reviewers can access historical monitoring data during future reviews. The trend graphs are useful for overall contaminant trends, but the issues of scale and multiple components mean reviewers must look through multiple reports to assess contaminant trends at a particular location. Most laboratories in the state are familiar with this format, and can supply the analytical data to be compatible with the EDD. MEDEP can supply an Excel template of the EDD on request, if ECC or Navy has not received one. (10 MRSA section 9418(1) and 9418(2)(A) provide statutory authority for the MEDEP to require this.) (RR)

2. The Eastern Plume outline presented in Figures 2, 3, 4, and 5 should be updated to display the area exceeding groundwater criteria and to show the outer limits of the plume, as a dashed or other line which extends to the vicinity of MW-230/MW-337 in the south, MW-323 in the northwest, and MW-207AR and MW 319 in the west. (ED)

3. Based on the 2004 data the interpreted wedge of "clean" water is no longer present. Both MW 207 AR and MW-319 have VOCs exceeding criteria this round. This indicates the 2003 data are not indicative of a permanent change in the plume's disposition. It is notable that MW-1104 had VOC detections in September 2001 when the GWETS shut down, suggesting that VOCs are present there, and possibly diluted out by the infiltration gallery. (NR)

4. MEDEP notes that some apparent VOC declines or distribution may relate to the available wells more than actual trends. MEDEP notes that several "Sentinel wells" (MW-230A, MW-313, MW-333, and MW-334) have had low VOC detections for multiple rounds. The designation of these wells in the Long Term Monitoring Plan will need to be changed to interior plume well if detections continue. It will also be necessary to refine the LTMP to ensure that adequate downgradient monitoring is in place. (RR)

Specific Comments:

5. Section 2.3.2, Page 2-6, Table B-2:

   Few VOCs are detected in the vicinity of Landfills 1 & 3 other than a vinyl chloride hit at MW-217B. This well also has exceeded criteria for most of the COC metals. The value of this location is uncertain due to the low recharge and water volume in the well. The field form indicates the well was pumped dry and sampled after recharge, with a turbidity of 140. The deep well MW-217A has not been sampled since 1998, according to the temporal trend graphs. MEDEP recommends that this well be sampled using the same methodology as MW-217B to confirm the shallow location data. (RR)

6. Section 2.3.2, Table B-2:

   MW-218 also has elevated aluminum, arsenic and manganese, possibly related to discharge through the open side of the slurry wall. This well also was pumped dry and sampled from the recharge, and the turbidity increased from less than 10 to 54 at the time of sampling. Elevated turbidity readings may contribute to the metals detections. The Navy should evaluate whether an alternate sampling methodology is required. (RR)

7. Section 2.3.3, Monitoring Well 205, Page 2-7:

   a.) Figure 24 suggests ME-22 was the only round missed at MW-205 rather than ME-21 and ME-22. Please review and correct as necessary. (ED)

   b.) Based on the artesian conditions at MW-207AR and the potential for contamination of clean portions of the aquifer, a cap should be installed at this location. Previous discussion indicated a pressure cap reading would be obtained at this location, has that been put in place? (RR)

   c.) According to the text sampling did not occur during monitoring events 21 and 22 due to a field error however the following text states that "a significant decline of concentrations from 2000 to 2002". Monitoring events 21 and 22 occurred in 2002 so this is a misleading statement. Please revise.

8. Section 2.3.3, Monitoring Well MW-225A, Page 2-8:

   Please note that the highest TVOC at MW-225A was detected in 2003 at75 ppb. (ED)

9. Section 2.3.3, Monitoring Well MW-229A, Page 2-8:

   Based on the MW-229A TVOC decline to near ND in the fall 2001 round, concentration trends at this location may be strongly related to the pump rate at EW-1. The extraction well may be preventing eastward migration of some portion of the plume at this location. (NR)

10. Section 2.3.3, Monitoring Well MW-306, Page 2-8:

MEDEP agrees the ME24 data for MW-306 appear anomalous, the ME25 data are in line with a steady decline over the last several rounds. Unless there is some analytical basis to suspect a problem with the data, the Navy should evaluate geochemical or hydrological explanations for the Spring 2004 results and provide an explanation. (RR)

11. Section 2.3.3, EW-2A Graph, Page 2-9:

a.) The graph of EW-2A and nearby well concentrations would benefit from the use of color or different symbols to define individual wells for clarity. (ED)

b.) If MEDEP interpreted the graph correctly it is notable that in recent years MW-311 responded somewhat inversely to pumping rates at EW-2A. (NR)

c.) The values for the TVOC increase at MW-313 from ME-24 are reversed. Please revise. (ED)

12. Section 2.3.3, Monitoring Well MW-331, Page 2-10:

The lack of 1,4-dioxane and decreasing VOCs at MW-331 suggests the plume is migrating away from this area, possibly to the east to Merriconeag Stream. Stakeholders should consider the need for evaluating the eastern edge of the plume in this area, possibly through additional porewater sampling of the Mere Brook and Merriconeag Stream. SW-13 has remained at non-detect levels, but may not be indicative of the leading edge of the plume. (RR/MTG)

13. Section 2.3.3, Monitoring Well MW-332, Page 2-10:

The seasonal pattern of fluctuations at MW-332 supports the concept that infiltration of surface water is impacting the wells in the vicinity of EW-2A, if spring water levels are measurably higher around the Merriconeag Stream. (NR)

14. Section 2.3.3, Monitoring Well MW-331, Page 2-11:

The low VOC detections at MW-337 (as with MW-230A) suggest there is some portion of the plume migrating to this area south of New Gurnet Road. The southern boundary borings and the interpreted potentiometric surface make it difficult to determine what the flowpath may be. The upcoming modeling effort may shed some light on this issue. (NR)

15. Section 2.3.3, Page 2-12 and Appendix C – Figure 3 of 183:

EW-01: The final sentence needs to be revised to reflect the data in Figure 3. (ED)

16. Table B-5, Appendix C - Figure 1 of 183:

The presence of 1,4-dioxane in the GWETS effluent will need to be addressed if it exceeds criteria and is found to be widespread in LTM wells. The Navy must provide information on the relative effectiveness of the current treatment system at removing 1,4-dioxane. (RR)

17. Section 2.4.2.4, Page 2-16 and Table B-8 and B-12:

a.) Seep 10: The data for Seep-10 were omitted from Table B-12. Please revise. (ED)

b.) Seep 10 & 11: The detections of VOCs in Seeps 10 and 11 suggest some portion of the plume is discharging to the brook and associated wetland. While the lack of detections at SW-10 may indicate that the plume is having limited impacts in the brook, it is more likely that it indicates the limitations of traditional surface water sampling in defining the potential discharge. MEDEP would like the Navy to consider switching to a pore water sampling or shallow piezometer type sampling rather than or in addition to surface water sampling. (RR)

18. Section 2.5, Page 2-21:

Before the Monitored Natural Attenuation can be evaluated fully stakeholders must discuss and agree upon an alternative background well to evaluate the biodegradation potential in the Eastern Plume. The low VOC detections in Fall 2001 and the proximity to the GWETS infiltration gallery and the former source areas make MW-1104 a questionable choice for background data. Finding a suitable background location would be more useful than limiting the parameters for comparison. (RR)

Section 3.1, Conclusions and Recommendations:

19. Bullet 1, Page 3-1 :

a.) This paragraph is internally contradictory; please review and revise. (ED)

b.) According to Table B-3, P-106 has a higher TVOC concentration than MW-331, so both wells still represent areas of high VOC. Due to the lack of other monitoring wells in the vicinity of MW-331 the implications of increases are not clear. This is also true at P-106. MEDEP agrees with the current plan to install a new extraction well in the vicinity of P-106, and strongly recommends that additional monitoring points be installed to help define the extent of the high concentrations in that portion of the plume. (RR)

c.) Recommendation: The proposed recommendation has been over taken by events. The stakeholder have agreed in concept to one extraction well for hot spot removal and the second well to target plume containment is pending the groundwater modeling work to be performed by the Navy. (NR)

20. Bullet 2, Page 3-1 :

MEDEP agrees that determining the presence or absence of bacteria known to aid in dechlorination would be a useful analysis in evaluating the potential for biodegradation of the plume and looks forward to seeing the workplan. (NR)

21. Bullet 3, Page 3-2:

MEDEP generally agrees that the data suggest the plume is migrating south and east and discharging to the brooks and associated wetlands. However the recommendation for three additional surface water samples has been over taken by events. The 2005 pore water investigations indicate that VOCs are present southeast of MW-332 and east of MW-313. MEDEP would suggest that additional porewater sampling be conducted. MEDEP also strongly recommends that the Navy redevelop and sample the bedrock wells MW-316 and MW-317 across Mere Brook. MEDEP anticipates that the Navy will propose an investigation that will supersede the recommendations here. (RR)

22. Bullet 4, Page 3-2:

MEDEP also generally agrees that the trends at Sites 1 and 3 are stable, however metals concentrations increased in sediment at several locations during this monitoring event. MEDEP agrees that the addition of the very shallow piezometers will be an improvement for monitoring the seep locations. When the screening criteria are finalized it will be necessary to review existing data. At that point MEDEP would consider it prudent to wait for at least 4 rounds of data from the new shallow piezometers and nested wells to be collected before discussing a reduction in frequency or sample points. (RR)

23. Bullet 1, Page 3-3:

MEDEP agrees with the conclusion that the GWETS system has established only limited hydraulic control over the Eastern Plume, and that the site geology/hydrogeology has likely had equal or greater influence over the plume's migration. The portions of the plume bypassing the extraction wells are discharging to the wetlands and brooks associated with Mere Brook and Merriconeag Stream and have been found for the first time off the Base.

The recommendation represents a major shift in the Record of Decision's stated objectives for the Eastern Plume. MEDEP agrees the best potential for reducing the volume of impacted groundwater is to focus on "hot spots", and to optimize well and screen locations to pump the maximum contaminated water possible, however with the new information regarding the migration of the plume off base containment of the plume is an important goals of the containment system. At this time, MEDEP would oppose total abandonment of any of the existing extraction wells until the extent of hydraulic containment exerted by the existing system is better understood. (RR)

24. Bullet 2, Page 3-3:

MEDEP agrees with the recommendation to replace EW-1 with a shorter, deeper screen. MEDEP notes that when the system shut off in September 2001, the VOCs at MW-229 went to non-detect. EW-1 may be preventing southward or eastward migration of some portion of the plume, therefore if the extraction well is replaced then monitoring of the interpreted downgradient wells will be important. MEDEP also will recommend that the well not be replaced until hydrophysical or other logging is completed at EW-1 to determine whether there are discrete zones contributing most of the groundwater flow and/or contamination. (RR)

25. Bullet 3, Page 3-3:

MEDEP agrees with the proposal to replace MW-1104 with an alternate or new temporary background well. (NR)

Section 3.2, Long-Term Monitoring Objectives:

26. Bullet 1, Pages 3-3 and 3-4:

This statement has been over taken by events. The pore water investigations conducted in 2005 confirm that additional investigation is needed along Mere Brook and Merriconeag Stream to determine the nature and extent of the plume migration. Based on the results of the2005 porewater sampling MEDEP strongly suggests that the Navy consider whether traditional surface water sampling is fully meeting its objective and if a pore water type of sampling should be added to the Long Term Monitoring Program.(RR/MTG)

27. Bullet 2, Page 3-4:

Overall the monitoring network provides sufficient data for evaluation of the groundwater extraction system, however there are areas where individual wells are relied upon to represent large portions of the plume, as previously noted for MW-331 and P-106. (NR)

28. Bullet 3, Page 3-4:

MEDEP also believes the nested wells installed in 2005 will be an important factor in determining whether the slurry wall is effectively containing any impacted groundwater beneath the landfills. (NR)

29. Bullet 4, Page 3-4:

The degree of capture and control will be better understood with the addition of the nested wells at Landfills 1 and 3, with the completion of the groundwater model, and the additional pore water investigation of the Mere Brook and Merriconneag Stream. The current conceptual model appears to be reasonable, but the monitoring network will need to be adjusted if the plume continues to migrate and to fill gaps as they are identified. However, MEDEP disagrees that existing data delineate the capture zone and amount of hydraulic control exerted by the current system. (MTG)

30. Figure 2:

Please revise the legend to indicate what the lines designation for the Eastern Plume depict. (For example, currently the outer line represents the boundary of Site 2 according to the legend.) (ED)

31. Figure 7:

There appears to be an error on the contours adjacent MW-105A, where a contour line crosses Mere Brook. (ED)

32. Figure 10:

The outline of the Eastern Plume needs to updated to 2004. (ED) (Also see comment 2 above.)

33. Figure 11, 12:

a.) The Eastern Plume outline excludes MW-207AR, despite hits for TCE and PCE. Please revise. (ED)

b.) The contouring around P-106 emphasizes a need for additional monitoring to determine whether the plume is migrating to the east or to the south, as suggested by the lack of detections at MW-308 and MW-309B. (NR)

34. Appendix D:

The Accuracy and Precision evaluation found few significant issues except the MS/MSD for volatiles in sediment. The recoveries were less than 10% for many VOCs including 1,1,1 TCA, TCE, and PCE. If this problem persists the sediment data could be compromised, and a solution must be found. Low surrogate recoveries for pesticides analysis of Seep 9 (Page

D345) led to rejection of that data. This issue will also be a concern if data is frequently rejected. (NR)

35. Appendix E:

a.) Landfill 1 & 3: The beaver activity and resultant flooding may have diluted COC concentrations in surface water and altered sediment deposition at SED-18 and SED-19. (NR)

b.) Eastern Plume: Several locations (MW-309A, P123, GP-6A) noted repairs may be needed, please note in the final ME-25 report if those repairs have been completed. (ED)

c.) The field sheet for MW-332 is not located in the appendix. Please determine if it is available and incorporate it into the final report. (ED)

36. Appendix F and Section 1.9:

a) If pictures are available of the extent to which the beaver activity floods the area, they would be a helpful addition to the report. If not some additional written detail in the report of the extent of ponded water should be included. (ED)

b) The Long-Term Monitoring Plan indicates landfill gas readings will be taken annually in September at Sites 1 and 3, and the results reported in an Annual Report. Please add the appropriate text to the report and include the results in Appendix F. (ED/RR)

37. Table B-4:

The units for the MEG and MCL are listed in ug/L, while the sample values are mg/L, please convert all the data to ug/L.

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,

Claudia Sait

Claudia Sait
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