DEPARTMENT OF THE NAVY
NORTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
10 INDUSTRIAL HIGHWAY
MAIIL STOP, #82
LESTER, PA 19113-2090

IN REPLY REFER TO

5090
Code 1821/EK

04 FEB 1999

Maine Department of Environmental Protection
Attn: Ms. Claudia B. Sait
Office of the Commissioner
17 State House Station
Augusta, ME 04333-0017

Dear Ms. Sait:

Subj: SUMMARY OF MONITORING WELL INSTALLATION AND DIRECT PUSH GROUND WATER CONDUCTED 13-30 OCTOBER 1998, NAVAL AIR STATION, BRUNSWICK, ME

Thank you for your comments on the subject report, we have provided responses to these comments in enclosure (1). We will consider these in the preparation of the 1998 Annual Report; however, some comments require discussion prior to implementation. We look forward to discussing these issues with you at our February 10, 1999 meeting and future meetings.

If you have any questions, please feel free to call me at (610) 595-0567, x161.

Sincerely,

EMIL E. KLAWITTER, PE
Remedial Project Manager
By direction of the
Commanding Officer

Enclosure (1): Response to MEDEP Comments

Copy to:
Mr. T. Williams, NAS Brunswick
Mr. M. Barry, USEPA
Ms. C. Lepage, Lepage Environmental Associates, Inc.
Ms. S. Weddle, BACSE
Mr. P. Nimmer, EA Engineering, Science, and Technology

Response to MEDEP Comments on the Summary of Monitoring Well Installation and Direct Push Ground-Water Sampling Conducted 13-30 October 1998

Data Reporting:

1. Several cover letter statements are misleading.

   a. "The report shows a considerable thickness of clay over bedrock."

   While much of the plume area is underlain by clay that is 20 to 60 feet thick, some smaller areas have less than 10 feet. The statement could be taken out of context, and impart a false sense of security.

Response: Our intent was not to imply a positive or negative sense of security, but to merely describe the clay thickness findings of the direct push in the report.

   b. "The ground water contamination concentrations found similar to MW-311 in the direct push were not unexpected."

   These new locations are more than half way from MW-311 to Merriconeag Stream, and as such, represent a significant discovery of previously unknown plume expanse.

Response: We disagree that this is an unexpected discovery. The Remedial Investigation interpreted the area of the stream to be a ground water divide. Since the samples were taken between MW-311 and the stream, the results are consistent with this understanding.

   c. "The Remedial Investigation interpreted the stream to be a natural ground water divide, and the direct push samples were taken on the eastern side of stream."

   The stream (Merriconeag) represents the opposite of a "natural ground water divide". It is groundwater discharge boundary to which ground water flows toward, not away from (as the term "divide" is used in hydrogeology). It is presumed that the Navy's intent was to portray that ground water flows toward the stream from both the east and west. Also, the direct pushes were performed on the western side (plume side) of Merriconeag Stream.

Response: We agree the term used should have been "discharge boundary." The correction from "eastern" to "western" had previously been made in the mailed hardcopy of the letter.

2. Improvements are needed on Figure 3.

   The contours of bedrock surface (-40 through –70) must be redirected to make an eastward traverse to skirt around the MW-313 data point. The contours would then nearly follow the course of Mere Brook in this area.
   At new well MW-331, a local pocket in the bedrock surface is shown. The inner contour should be labeled –60 and hachure marks used to illustrate that it is a depression in a general sloping surface. The drilling log presented in Attachment A suggests to DEP that the lower 10 feet might well be weathered bedrock (could be related to the Cape Elizabeth Fault running through the Eastern Plume area).

Response: The change to the bedrock contour map is minor, and does will not impact the overall interpretation of the bedrock surface of the Eastern Plume. This change will be made in the contour maps included in the 1998 Annual Report with exception to the hatch marks. Consistent with previous NAS Brunswick reports, hatch marks were not used to indicate depressions, therefore no change is recommended.

The 60-ft label was not included to improve map readability.

Please provide more data to support the interpretation that the Cape Elizabeth Fault is present at this location, and that the boring logs may be weathered bedrock that is related to the fault. We do not feel this interpretation is supported by existing data.

3. New well MW-240 and existing well MW-313 need to be shown on Figures 1 and 2.

Response: The figures will be corrected and shown in the 1998 Annual Report.

4. Soil Sampling, page 2 , 2nd to last sentence:

   "These elevated readings are likely attributed to a miscalibrated PID and elevated humidity (i.e., rain) during the installation of these wells."

   The Departments' experience is that rain will not cause elevated readings of several hundred ppm, and that a calibration problem of this magnitude is rare and should have been corrected immediately. We were told during the Jan 21, 1999, RAB that the groundwater sample from MW-331 contained significant concentrations of plume contaminants. Also, the drilling logs presented in Appendix A indicate readings of zero or near zero for shallow samples and some samples at depth. The Department sees no reason to qualify elevated readings reported for MW-330 and MW-331, and furthermore, the plume was expected to be present at these locations.

Response: PID results can commonly be affected by rain and increased humidity, and can provide unreliable data in the range noted. The sentence following the one quoted indicated that subsequently the PID was re-calibrated. We see nothing wrong with the

field geologist decision to recalibrate the PID should he/she feel it is necessary. In this case we feel it was an excellent decision and disagree with the Department implication that it should not have been re-calibrated.

5. On page 4, it is noted that at 15 of 26 depth intervals targeted for groundwater sampling would not produce adequate water. The reason for this is not apparent from the electrical conductivity logs (at some sampling depths, the electrical conductivity and speed logs show essentially no difference between depths that produced water and those that did not). The reasons for this mixed result is not explained in the text, but is presumed by DEP to related to higher clay content of the adjacent soils. What is the potential for smearing of previously penetrated clay-rich strata into these insufficient water intervals? It is disappointing that groundwater samples were unable to be collected at a higher frequency through the use of the applied geological techniques.

Response: We are unsure of this comment and request clarification. Smearing is minimal. The direct push probe is pushed to the appropriate depth, and then pulled back to expose the screen. This pulling of the probe clears any smearing effects. Also, is the Department disappointed with the sampling technique or was the Department hoping that more water-bearing strata would be encountered?

Implications of Findings at MW-311 Area:

6. The plume has now been documented (direct push results shown on Figure 2) to extend over half way to the stream from MW-311. The plume is riding on the surface of the clay at approximately 40 feet in depth. Using data from Figures 3 and 4, DEP staff drew a contour map of the top of the clay surface. Our map shows that the clay surface rises in elevation as one moves from MW-311 eastward, past the new direct pushes, to the stream. The stream is between 100 and 150 feet from the new direct push locations. Artesian heads were noted at the depths of plume detections. Based on this information, the Department suspects that the Mere Brook-Merriconeag Stream junction area was a very likely discharge zone for part of the Eastern Plume prior to remedial pumping. The important question now is whether the relatively new pumping at MW-2A is preventing further movement toward (into?) the above surface waters.

Response: We request the Department provide a copy of the map that they have prepared. Also, as you know we have been monitoring the surface water for Eastern Plume contaminants with no detections. Therefore, we are unsure if the question will lead us to any decisions.

7. The Department views the detections of VOCs along the road between MW-229 A,B and MW-313 as a significant discovery. At DP-EP-01, the reported 5 µg/L of 1,1-DCE is only 2 µg/L below its MEG/MCL. Also, 1,1-DCA was detected at both DP-EP-01 and DP-EP-02. The depth of these "hits" is between 30 and 40 feet below ground surface, corresponding to the depth of the plume at the direct-push sampling points downgradient of MW-311. This finding suggests to us that DP-EP-01 is in the southern fringe of the plume pathway leading

to Mere Brook, and reinforces the hypothesis proposed in Comment 6. It will be not surprising if the groundwater laboratory sample from MW-333 shows low levels of contaminants.

Response: MW-333 shows 1 ppb of 1,1-DCA with other contaminants non-detect. We do not necessarily agree that this information supports the findings of the Departments comment 6.

Note that these wells and direct push locations were installed as sentinel points, to monitor the downgradient edge of the Eastern Plume, and were successful in that regard. The lack of exceedances of MEG/MCL at these locations confirms the Navy's position that the Eastern Plume is not migrating, and is contained within known extents. The lack of migration is strong evidence that natural attenuation is occurring within the Eastern Plume, by biotransformation and other processes such as dispersion and diffusion.

8. At the January 21, 1999, RAB, the Navy provided a handout that contained the VOC analytical results of recent sampling of Merriconeag Stream and Mere Brook in the general area of MW-311. The data for SW-10 through SW-14 indicate very low detections of VOCs. All TCE detections are qualified by a "B", signifying that the analyte was detected in the associated blank. The Department is baffled by TCE being reported in method blanks, and will await the next long-term monitoring program sample results before deciding whether to dismiss values of 3B as not valid, and possibly indicating the discharge of plume water.

Response: The detections in the trip blank are due to laboratory carryover. While, we are not happy with the results, it shows the QA/QC samples are serving their intended purpose. It is important to note that laboratory issues such as this are relatively rare, and the presence or absence of suspected laboratory carryover can be confirmed by the next long-term monitoring event data.

Recommendations:

9. Based on the above findings and relationships, the Department believes that VOC pore-water data need to be collected from shallow soils just beneath the water table along the western edge of the streams over a 400-foot reach. It is important to obtain these data even if the TCE blank detection in Comment 8 should become a non-issue (i.e., presence not confirmed by following monitoring events).

Response: We do not agree with this recommendation, because we are unsure about the objective of the sampling. We look forward to discussing our goals in this area, and if the aforementioned sampling fulfills the data quality objectives, we will program to take the samples.