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LETTER AND COMMENTS ON BEHALF OF SEACOAST ANTI POLLUTION LEAGUE REGARDING GROUNDWATER MONITORING SUMMARY REPORT NSY PORTSMOUTH ME
10/8/1998
LEPAGE ENVIRONMENTAL SERVICES

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October 8, 1998

Peter Vandermark
Seacoast Anti-Pollution League
P. O. Box 1136
Portsmouth, New Hampshire 03802

Subject: Review of *Groundwater Monitoring Summary Report (December, 1996 - December, 1997)*

Dear Mr. Vandermark:

We are transmitting comments to the Seacoast Anti-Pollution League (SAPL) concerning the July 1998 *Groundwater Monitoring Summary Report (December, 1996 - December, 1997)*. The work plan was prepared by Brown & Root Environmental to summarize the results of four rounds of groundwater sampling conducted at Portsmouth Naval Shipyard between December 1996 and December 1997. Comments are as follows:

1. Page ES-1, Purpose and Objectives. To better understand the movement of groundwater in bedrock, the interrelationships investigated must include those involving the naturally occurring unconsolidated overburden, not just the entities identified in the first sentence. The use of the term "surficial aquifer" in the second sentence is a bit misleading, as "aquifer" implies that useful quantities of water could be supplied by the surficial deposits. Perhaps "overburden" would be a more suitable term as it does not carry any implications regarding quantity of water. It is not clear how the interrelationship of the bedrock, overburden, and pond flow regimes can be adequately characterized if there are only two bedrock wells and no overburden wells in the vicinity of the ponds. Please clarify.

This groundwater summary report does not adequately touch upon the impact contaminated groundwater migration has had, is having, and will have on the offshore environment, or on the use of groundwater quality and flow data in dealing with transport modeling, risk assessment and management, or remedial action decisions. The relationship of the data and interpretations to offshore issues and actions must also be summarized.

2. Page ES-2, Summary of Field Activities and Data Evaluation. The reference for the USEPA Region 1 Low-Flow Purging and Sampling Procedure mentioned in the second paragraph and on page 3-6 must be provided in the References section. The final sentence on the page concludes that groundwater at the Shipyard is not currently used, nor **could** [emphasis added] it be used in the future, as a future source of drinking water. The basis for this absolute statement

regarding potential future use is not clear. Fresh (as opposed to brackish or saline) groundwater occurs at a number of areas around the Shipyard. Future uses and corresponding water needs of the Shipyard property are not known with complete certainty. The reasons for stating that groundwater could never be used to supply drinking water should be presented in the text.

3. Page ES-3, Conclusions, Potential Background Wells and Freshwater Wells. The second sentence states that no noticeable taste or odor was observed in the wells during monitoring. Given concerns for the health and safety of site workers, it seems unlikely that proper sampling procedures include the tasting and smelling of water collected from monitoring wells at the Shipyard. The reference to taste and odor should be removed here and wherever else it occurs in the document (for example, on page ES-4 in the Freshwater Wells section) or a description of the tasting/smelling procedures and criteria must be provided.

4. Page ES-4, Conclusions, Potential Background Wells and Freshwater Wells. While the positive detections of many metals in the potential background wells suggest that metals may be naturally occurring, they also suggest that Shipyard activities may have affected the quality of the groundwater at these locations. The text should be revised here and elsewhere in the document to reflect this possibility.

5. Page ES-4, Conclusions, Facility Groundwater Nature and Extent of Contamination. It would be helpful the have a map showing exceedances or detections in saline/brackish wells similar to Map 5 which shows exceedances in freshwater wells.

6. Page ES-5 Conclusions, Facility Groundwater Nature and Extent of Contamination. Because of exceedences of Ambient Water Quality Criteria at a number of seep and sediment locations, we cannot agree with the statement that PCBs (polychlorinated biphenyls) and pesticides do not require further evaluation with respect to groundwater.

7. Page ES-5 Conclusions, Facility Groundwater Nature and Extent of Contamination. The paragraph concerning results for metals should also note exceedances for several metals in freshwater wells and the potential impact of metal concentrations in groundwater on seep and sediment results.

8. Page ES-5 Conclusions, Facility Groundwater Nature and Extent of Contamination. The use of the term "miscellaneous" in the final paragraph in the section and elsewhere in the document is not very illuminating. Perhaps a better term would be "field parameters".

9. Page 1-1, Section 1.0 Introduction. The relationship between the Solid Waste Management Units (SWMUs) mentioned in the first paragraph and the Operable Units (OUs) and Sites identified on page 1-2 and in the Executive Summary should be explained. The sentence referring to known or potential releases of hazardous constituents is a bit confusing. It should be rewritten to clarify that the potential releases have not yet occurred.

10. Page 1-2, Scope of Work. The final paragraph in the section states that this summary report evaluates the data with respect to effects of potentially contaminated groundwater on local on-shore and off-shore environments. As indicated by our first comment is this letter, this evaluation was not readily apparent to us. Each of the site-specific sections in Chapters 4 and 5 should include an evaluation of the past, present, and potential future impact of contaminated groundwater on seeps, sediment, and the offshore environment. The overall conclusions in Section 5.5 must also address these issues.

11. Page 1-2, Section 1.3 Summary of Field Activities. It would be very helpful to the reader to have the specific months that sampling occurred identified here and elsewhere in the text. The text on page 3-15 states that water level measurements were made in January, April, August, and October. This seems at odds with the December to December period mentioned numerous times in the document. Please clarify.

12. Page 2-1, Section 2.1 OU-2, Site 6 - Defense Reutilization and Marketing Office. It is our understanding that Henderson's Point was blasted prior to excavation in 1905. This may be a minor point, but it may have implications for interpreting groundwater migration in bedrock in the area.

13. Page 3-7, Section 3.2 Sample Collection Procedures. The definition of stabilization for each of the bulleted parameters appears to be missing the minus sign. The following paragraph states that if parameters hadn't stabilized within 1 ½ hours, sampling was initiated. How and where are these wells identified?

14. Pages 3-8 - 3-13, Table 3-2. There appear to be some significant differences in the field measurements at individual wells from round to round. For example, the specific conductance measured at well DW-01 in Round 9 was more than ten times higher than the measurements in the two previous rounds. Turbidity in MW-4 was more than thirty times greater than measurements in the other three rounds. An explanation for significant variations from round to round at a given location should be provided.

15. Page 3-15, Section 3.3 Hydrogeologic Evaluation. What influence do precipitation and recharge have on the groundwater flow patterns and areas of tidal influence? The last sentence in the paragraph should include the location within the summary report of the water level comparison so the reader can readily find it.

16. Page 3-15, Section 3.3.1 <u>Low Tide Description of Groundwater Flow Patterns</u>. A definition of "shallow" bedrock should be included. Were any wells screened in naturally occurring overburden (not fill) used to prepare Map 2?

17. Page 3-19, Section 3.3.2 <u>High Tide Description of Groundwater Flow Patterns</u>. The last paragraph in the section describes a "hinge line" between saline river water and freshwater

flow directions as the tide rises faster than the opposing hydraulic gradient from inland areas can respond. It is not clear what data were used to draw the contours at Sites 5 and 6 on Map 3. The water level measurements included at each well on Map 3 do not appear to justify wrapping the 103-foot contour around between Site 6 and the area north of Site 27 or terminating the 106-foot contour between wells DW-2 and DW-3 at Site 6. Is there data missing from the maps?

18. Page 3-19, Section 3.3.3 Tidal Influence and Salinity. It appears that water level information at well JW-18B is important to the interpretation of groundwater flow. However, Table 3-3 (see page 3-18) indicates that well JW-18B has not been surveyed, so no water level information can be presented. The Navy should complete whatever surveying is needed as soon as possible. The text also implies that water quality conditions at well JW-18B are representative of "deep" bedrock. Well construction information in Table 3-1 shows that this well is screened to a depth of less than 30 feet below the ground surface (BGS) and that bedrock is encountered at 20 feet BGS at that location. This does not seem to be deep, especially when there are other wells completed in bedrock to a depth of more than 150 feet BGS. The interpretation of groundwater flow should be expanded and clarified.

19. Page 3-19, Section 3.3.4 Seasonal Variations Among Rounds. The first two sentences in the second paragraph are confusing. Why should there be a 2-hour difference between the published tidal data and the high and low slack? Please clarify.

20. Pages 3-22 & 3-26, Section 3.3.5 Potential Facility Background Monitoring Wells. While all the potential background wells may be located upgradient of the sites under investigation is this report as stated in this section, water quality at these locations may have been affected by activities at other sites or potential sites. Additional information and analysis is required to determine which well locations are suitable to represent background conditions.

21. Page 3-26, Section 3.3.6 Freshwater Wells. The sentence regarding the occurrence of metals in the freshwater wells, while technically correct, is a bit misleading. Additional information must be added regarding the exceedences of other metals. For example, as shown on Map 5, arsenic and thallium were detected at well JW-08B at roughly twice and ten times the MEG (Maximum Exposure Guideline), respectively.

22. Page 4-1, Section 4.0 Nature and Extent of Contamination. The first paragraph concludes with a statement that the comparison of groundwater data with MEGs and MCLs (Maximum Contaminant Levels) will assist in gaining a perspective relative to offshore concerns and Feasibility Study options. However, in subsequent sections of this chapter where site-specific groundwater conditions are discussed relative to MEGs and MCLs (see the paragraph at the top of page 4-4 as an example), the conclusion focuses on the unlikelihood that groundwater at the Shipyard will be used as a drinking water supply. Discussion of the potential or actual impact of migrating contaminated groundwater on seeps, sediments, or offshore areas must be added to Sections 4.1 through 4.3, as well as to all sections in Chapter 5 (except 5.4).

23. Page 4-1, Section 4.0 Nature and Extent of Contamination. What is ICP? It should be defined in the text and added to the list of acronyms.

24. Pages 4-4 & 4-5, Section 4.2 OU-3; Site 8 (JILF), Site 9 (Mercury Burial Sites I and II) and Site 11 (Waste Oil Tanks). The meaning of the following sentence is not clear: "As previously discussed, there is no historical evidence of a release at either MBI or MBII associated with the concrete blocks." Please clarify. In addition, because the exact location of MBII has not yet been determined or sampled, one cannot say that there is no contamination associated with it. The sentence in last paragraph regarding the location of MBII should state that it is thought to be located near the former location of a gas station. The last sentence on page 4-5 states that the Mercury Burial Sites are both near the former gas station, when MBI is actually located on the opposite side of the landfill from the presumed location of MBII. Please revise the text.

25. Page 4-6, Section 4.2 OU-3; Site 8 (JILF), Site 9 (Mercury Burial Sites I and II) and Site 11 (Waste Oil Tanks). Wording to the effect there was no sampling for pesticides and PCBs at Site 11 should be added to the second paragraph on the page.

26. Pages 4-9 & 4-10, Section 4.4 Non-Site Related Wells and Background Wells. Table 4-1 indicates that there was no sampling for volatile or semivolatile organic compounds or gasoline-range petroleum hydrocarbons at the non-site related wells. The text in Section 4.4 should be revised to clearly reflect that.

27. Page 4-10, Section 4.4 Non-Site Related Wells and Background Wells. What is (are) the source (sources) of the diesel-range petroleum hydrocarbons detected in the five bedrock non-site related wells? Why are the hydrocarbons detected in the bedrock wells but not in the two shallow wells? This information is important to understanding actual and potential impacts of Shipyard activities on potential background well locations.

28. Pages 5-1 - 5-8, Conclusions. Each of the sections in this chapter (except 5.4) should contain a conclusion regarding the actual and potential impact of contaminated groundwater on seeps, sediment, and the offshore environment (see comment 22 above).

29. Pages 5-3 - 5-5, Section 5.2 OU-3; Site 8 (JILF), Site 9 (Mercury Burial Sites I and II) and Site 11 (Waste Oil Tanks). Table 4-1 indicates that pesticides/PCBs samples were not collected at Site 11. The fourth paragraph should be corrected. Information concerning other metals detected should be included in the paragraph at the top of page 5-4 and in the first bullet on page 5-5. The VOCs detected should be listed in the first bullet on page 5-4.

30. Page 5-7, Section 5.5, Overall Conclusions. The third paragraph should clearly state that pesticide/PCB samples were not collected at all the sites.

31. General Comment. We were struck by the numerous detections of thallium in wells in various parts of the Shipyard as it is not a constituent commonly reported in groundwater monitoring. Is there soil or rock chemistry data available that indicates thallium is naturally occurring at the concentrations reported? Is or was thallium used in any Shipyard processes or activities? Might it be a by-product or daughter product of materials used currently or in the past? Is it a common contaminant at shipyards or submarine bases?

If you have any questions regarding the comments above, please give me a call at 207-777-1049.

Sincerely,

Carolyn A. Lepage

CAROLYN A. LEPAGE 1982 CERTIFIED GEOLOGIST

Carolyn A. Lepage, C.G.
President

cc: Iver McLeod, Department of Environmental Protection
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