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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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BOSTON, MASSACHUSETTS 02114-2023

January 5, 2000

Mark Evans, Remedial Project Manager
U.S. Department of the Navy
Naval Facilities Engineering Command
Northern Division
10 Industrial Highway
Code 1823, Mail Stop 82
Lester, PA 19113-2090

Re: Technical Review Comments on Round 5: Groundwater Monitoring Report for the Defense Reutilization and Marketing Office at the Naval Submarine Base New London

Dear Mr. Evans:

EPA reviewed the *Round 5 Groundwater Monitoring Report for Defense Reutilization and Marketing Office*, dated December 1999. The report gives a review of the site history and previous investigations, a description of field activities involved in the fifth round of monitoring, and results of sampling and analysis from the July 1999 sampling. The report was reviewed with particular attention to conformance to the *Groundwater Monitoring Plan*, the execution of the sampling round, and the completeness of the documentation. Detailed comments are provided in Attachment A.

The field activities and laboratory analyses summarized in the Groundwater Monitoring Report ("GMR") generally adhere to the *Groundwater Monitoring Plan*. The monitoring program appears to be proceeding routinely.

The GMR is complete; it documents rather fully the data accumulated in Round 5 sampling and analysis, including the field parameters and the laboratory data sheets (Appendices E & G).

As stated in the report (p. 1-5, §1.2), there is no interpretation of the data offered in this report. Only a comparison to the monitoring criteria adopted in the *Groundwater Monitoring Plan* is provided, with exceedances identified, but no further comment made. This is appropriate.

Qualitative review of the data indicates no new concerns with respect to groundwater quality. Indications to date are that the soil removal and capping generally have been successful in limiting impacts to groundwater. There are no exceedances of the primary monitoring criteria.

Some of the few persistent exceedances of monitoring criteria are for arsenic and copper (*e.g.*, Table 3-1), which are higher than the secondary criteria at several wells. While the concentrations of these elements are still rather low, the question remains whether they are

elevated in site groundwater due to past site activities. One possibility is that the historic fill at the site caused the groundwater to become more reducing, in turn mobilizing inorganics that were otherwise sorbed on, for example, iron oxides. For this reason, the second year monitoring and interpretation should pay special attention to developing an understanding of controls on the redox conditions for site groundwater. It is noted that most of the monitoring wells exhibit reducing conditions, including those that are upgradient of the landfill and cap area (6MW6S and 6MW9S). Thus, it is also possible that reducing groundwater is a natural condition of the site, due, perhaps, to deeper groundwater discharging to surface water at the river, passage through organic-rich materials in upgradient wetlands, and interaction with the estuarine waters via tidal fluctuations. The projected annual report following the completion of Round 8 should include a discussion of the prevalent redox conditions at the DRMO site, with reference to how this fits into the base wide picture. A conceptual model should be developed, and assessed against available data. This information could have a significant influence on decisions regarding the duration and scope of long-term monitoring for the DRMO site.

I look forward to working with you and the Connecticut Department of Environmental Protection on the environmental cleanup of the Naval Submarine Base. Please do not hesitate to contact me at (617) 918-1385 should you have any questions.

Sincerely,

Kymberlee Keckler, Remedial Project Manager
Federal Facilities Superfund Section

Attachment

cc: Mark Lewis, CTDEP, Hartford, CT
Darlene Ward, NSBNL, Groton, CT
Jennifer Stump, Gannett Fleming, Harrisburg, PA
Mark Mengel, Tetra Tech-NUS, Pittsburgh, PA

ATTACHMENT A

Page	Comment
p. 2-1, §2.1	The water-level measurements were obtained within a fairly short time of the targeted high and low tides, and this is commendable. The results are curious in some ways, and deserve some attention in the annual report, when the data are synthesized. In particular, it is noted that the expected reversal of the gradient near the shore of the estuary at high tide is not resolved by the high-tide data (Figure 2-3). In contrast, the low-tide data (Figure 2-2) show a local area of elevated water levels near 6MW11S. It is noted that the contours drawn in both Figures 2-2 and 2-3 are not well constrained by the rather sparse water-level data, and could be drawn in quite different ways, as well. It is suggested that some attention be paid to rationalizing the water levels and tidal fluctuations with the understanding of the site hydrogeology. For example, is there a hydrostratigraphic explanation for the apparent slow response of the area around 6MW11S (*e.g.*, a low-conductivity unit)? Contouring should be done with some qualitative judgment in order to present an interpretation that is consistent not only with the observed water levels, but also with knowledge of the hydrostratigraphy and the expected response to tidal fluctuations. There may be additional useful insight in the data for shallow/deep well pairs. For example, it is interesting to note that wells 6MW11S and 6MW11D indicate a downward vertical gradient at low tide, at the time when the potential at 6MW11S is anomalously high (Figure 2-2). This might be consistent with an interpretation of the high at 6MW11S as a "perched" residual of groundwater that is unable to drain quickly in response to the low tide.