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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 1
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BOSTON, MASSACHUSETTS 02114-2023

July 19, 2004

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: Year 4 Annual Groundwater Monitoring Report for the Area A Landfill

Dear Mr. Evans:

EPA reviewed the *Year 4 Annual Groundwater Monitoring Report for Area A Landfill*, dated May 2004 with particular attention to conformance to the Groundwater Monitoring Plan, completeness of the execution and presentation, consistency of the interpretations with the available data, and appropriateness of the recommendations. The report provides a review of the site history, environmental investigations, and monitoring results from the first three years of the current program, as well as detailed results from sampling and analyses performed in April and August 2003. Detailed comments are provided in Attachment A.

The field and analytical activities summarized in the Groundwater Monitoring Report (GMR) follow the Groundwater Monitoring Plan.

Qualitative review of the data raises no significant concerns with respect to contaminants from the site that may have impacted groundwater. All observations in Year 4 are consistent with previous monitoring results. A minor exception is elevated total metals in surface water sample SG24 in Round 13, but these results appear to be a result of sample turbidity. Phenanthrene, arsenic, and lead were found in excess of their respective primary monitoring criteria for groundwater. Several SVOCs, dissolved arsenic, and dissolved zinc were found in excess of their respective primary criteria for surface water.

The report recommends (p. 5-3, §5.0) that the monitoring program continue on its present course for Year 5 with respect to frequency (semi-annual), sample locations, and analytes. This recommendation is sound. The report also recommends routine maintenance on the monitoring wells, which is also endorsed.

I look forward to working with you and the Connecticut Department of Environmental Protection to protect the environs 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
Melissa Cokas, NSBNL, Groton, CT
Jennifer Stump, Gannett Fleming, Harrisburg, PA

ATTACHMENT A

Page	Comment
p. 2-1, §2.1	The text notes a number of maintenance issues with respect to the monitoring wells (*e.g.*, water in the vault for 2LMW20S, damaged protective casing for 4MW1S, *etc.*). While repair to 2LMW20S is part of the plan of action to correct deficiencies noted during the annual inspection, repair of the damaged protective casing for 4MW1S is not part of the plan of action. Will a separate plan of action be completed?
p. 2-2, §2.2	The interpretation of the potential surface shown in Figure 2-2 is consistent with the available data in the vicinity of the landfill. However, the interpretation on the upgradient side of the site (*i.e.*, to the southwest) is not well constrained by data. The contours shown are based largely on interpolation between the single well on the elevated upland area (4MW1S) and downgradient points. It seems unlikely that the 110-foot and 120-foot contours are closed around 4MW1S, with more elevated topography lying to the southwest. Similarly, the 100-foot and 90-foot potential contours likely tend to parallel the topographic contours. These remarks have no important consequences for the monitoring program or for interpretation of the water-quality data. Nonetheless, the potential surface should not be overinterpreted in areas of low data coverage.
p. 3-3, §3.0	The discussion of total arsenic notes that surface water at SG24 showed 4 J micrograms per liter in Round 12 and 190 micrograms per liter in Round 13. These strikingly different results demand closer examination. It is noted that the corresponding dissolved (filtered) results for these two samples are 4 U and 14 J micrograms per liter. Chromium, copper, lead, and zinc also show a dramatic decrease in the filtered sample from Round 13. It appears that the elevated total metals detected in Round 13 are associated with particulates.
p. 3-4, §3.0	The discussion of dissolved arsenic notes that the laboratory reporting limit of 4 micrograms per liter is equal to the primary monitoring criterion. It should also be noted that the laboratory was not able to achieve even this limit; many samples report detection limits of 20 micrograms per liter (*see* Table 3-2). Thus, conclusions regarding presence or absence of arsenic above the primary monitoring criterion are limited.

p. 3-4, §3.0 *typo:* The last sentence in the first paragraph under Dissolved arsenic reads, "As with the total arsenic, the laboratory reporting limit for total arsenic ..." Please change to, "... reporting limit for *dissolved* arsenic ...."

p. 3-5, §3.0 The discussion of total copper notes that the laboratory reporting limit of 10 micrograms per liter is greater than the secondary monitoring criterion (4.8 micrograms per liter). It should also be noted that the laboratory was not able to achieve even this limit; many samples report detection limits of 50 micrograms per liter (*see* Table 3-2), above the primary criterion of 48 micrograms per liter, as well. Thus, conclusions regarding presence or absence of copper above the primary monitoring criterion are limited.

p. 3-6, §3.0 The discussions of total and dissolved lead note that the laboratory reporting limits of 5 or 10 micrograms per liter are greater than the secondary monitoring criterion (1.2 micrograms per liter). It should also be noted that the laboratory was not able to achieve even this limit; many samples report detection limits of 25 micrograms per liter (*see* Table 3-2), above the primary criterion of 13 micrograms per liter, as well. Thus, conclusions regarding presence or absence of lead above the primary monitoring criterion are limited.

p. 4-1, §4.1.2 The description of the statistical method for comparison of upgradient and downgradient wells states, "In cases where there were detections in the downgradient wells but none in the upgradient wells, no statistical analysis was performed and downgradient results were considered statistically higher than upgradient concentrations for that analyte." While this is a reasonable and "conservative" approach, the procedure might benefit from one further step. In particular, detection limits achieved by the laboratory should be reviewed as part of this assessment. It is noted that the detection limits achieved in the program for inorganics are somewhat variable (*e.g.*, As at 4 to 20 micrograms per liter, copper at 10 to 50 micrograms per liter, zinc at 50 to 250 micrograms per liter). Variable detection limits could, in principle, lead to a situation where the upgradient wells show ND for an analyte, while the downgradient wells show detections that are lower than the upgradient detection limit. In this case, the current procedure would conclude that the downgradient groundwater is higher in the analyte than the upgradient water. However, the data would, in fact, be inconclusive.

REFERENCE

Tetra Tech NUS, Inc., "Groundwater Monitoring Plan for Area A Landfill, Naval Submarine Base, New London, Groton, Connecticut," January 1999.