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

June 14, 2001

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: Final Year 1 Annual Groundwater Monitoring Report for the Area A Landfill at the Naval Submarine Base New London

Dear Mr. Evans:

EPA reviewed the *Final Year 1 Annual Groundwater Monitoring Report for Area A Landfill*, dated May 2001. The Final Annual Report is virtually identical to the Draft Report (dated February 2001). Only two changes have been made to the text. First, a sentence is inserted in the fourth paragraph of section 4.1 to clarify that the discussion bears only on total (unfiltered) metals results, rather than on dissolved (filtered) results. The second insertion is a sentence in the following paragraph (p. 4-2, second paragraph) noting two samples in which dissolved lead analyses came back higher than total lead. These additions appear to be in response to EPA Specific Comment 1 on the Draft report. Other than these modifications, the Final Report is identical to the Draft Report, with the addition of Appendix C, which includes the Navy responses to EPA Comments.

The Responses to Comments indicate that recommendations for improvement of the presentation (*e.g.*, General Comment 2, suggesting that detailed monitoring well information be included in the report) will be accommodated in future Annual Reports. This will be welcome, so that the report is more "self-contained," and readers do not have to extract critical data from numerous documents.

A number of Comments on the Draft document posed questions bearing on the conceptual model for sources, geochemical controls, and transport pathways for inorganics at the site. Inorganics (particularly arsenic) appear to be the principal concern as monitoring moves forward. A conceptual model (or set of several potentially viable models) will serve as a framework within which to evaluate the monitoring data and the efficacy of the monitoring program design itself. The Comments suggested, in particular, that it is essential to understand the role of arsenic present within the dredged spoil fill in the Area A Wetland, possibly associated with iron oxyhydroxides, as well as the possible impact of the landfill on groundwater redox conditions, which appear to be reducing even in areas well removed from the landfill. These issues, in turn, bear upon the design of the monitoring program (*e.g.*, What is the purpose of "background" wells, and what wells best serve this purpose? What data should be collected to support the evaluations of performance of the remediation scheme and lingering environmental impacts? What sort of changes over what time scale can be anticipated if the working conceptual model is supported by continued data collection?) Navy agrees in the Responses to discuss these issues further. Such a discussion is important to shaping a monitoring program with the most informative, as well as the most

cost-effective, structure. The discussion should address well coverage, analytes, sampling frequency, and approaches to data reduction, interpretation, and presentation.

Navy's Response to General Comment 4 notes that the selection of "upgradient" and/or "background" wells was done with regulatory review and approval. I note that any monitoring program benefits from continued review, particularly in view of the data that have been collected. Review of the data to date, as presented in the Draft report, suggested possible new interpretations of the predominant sources and transport processes that may control arsenic concentrations in site groundwater. If these interpretations are supported by site data, they may suggest modifications to the monitoring program, and this process is positive for all parties concerned. By way of clarification, the questions concerning well 2WMW21S as an "upgradient" well were not intended to challenge the value of the well as a reference well for groundwater in the wetland that is not impacted directly by the landfill. Rather, it is not "upgradient" in the usual sense of providing a measure of water quality on the upgradient side of a site that can be compared to water on the downgradient side to assess impacts of the site. The well is clearly valuable, and is an important part of the picture that emerged in review of the data. Nonetheless, further discussion should be held on the manner in which data from "upgradient" and/or "background" wells are to be interpreted, and whether the current suite of such wells can be enhanced.

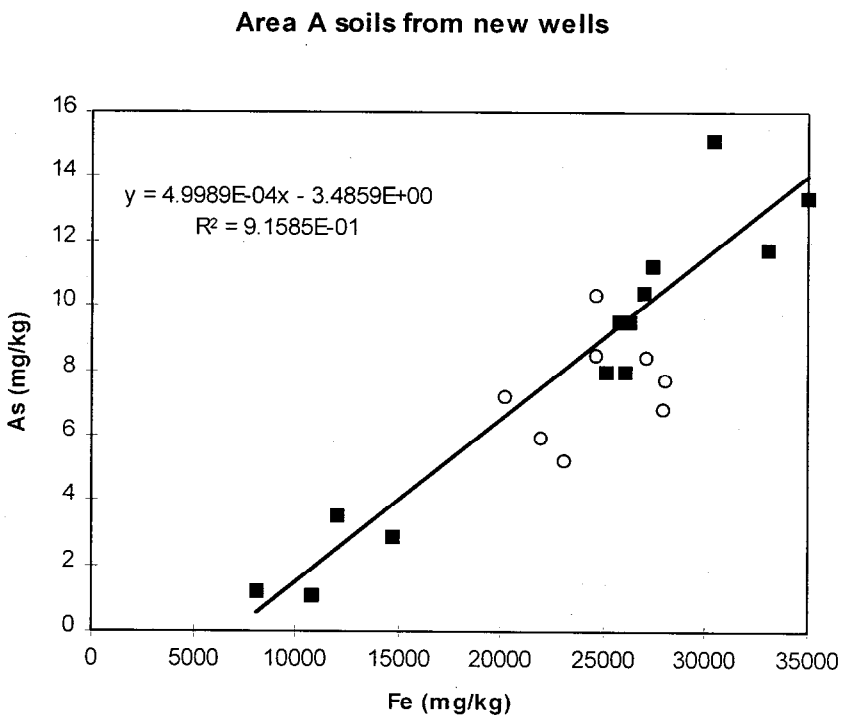
EPA General Comment 6 refers to a figure showing a correlation of arsenic and manganese in soils from borings associated with both the landfill and with more distant areas of the wetland. The plot on Attachment A offers a fairly compelling case that significant arsenic mass is associated with iron within the wetland soils, particularly the dredge spoil. This is a key piece of evidence in developing a conceptual model for arsenic in this setting and is provided again here. Please see accompanying text in the original Comment 6.

I look forward to working with you and the Connecticut Department of Environmental Protection to complete the remedial action at the Area A Landfill. 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
Dick Conant, NSBNL, Groton, CT
Jennifer Stump, Gannett Fleming, Harrisburg, PA

ATTACHMENT A