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

June 15, 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: Work Plan and Sampling and Analysis Plan for the Basewide Groundwater Operable Unit Remedial Investigation at the Naval Submarine Base-New London in Groton, CT

Dear Mr. Evans:

EPA reviewed the *Work Plan and Sampling and Analysis Plan for Basewide Groundwater Operable Unit Remedial Investigation, Naval Submarine Base New London, Groton, Connecticut*, dated May 2000. The work plan and SAP represent modifications to a draft of the same document released in February 2000 and subjected to regulatory review at that time. EPA reviewed the WP/SAP for consistency with exchanges emerging from review of earlier drafts.

This document represents relatively modest changes from the version of the same title released in February 2000. Other than changes of organization and text that have been expanded for clarification, the more significant modifications in terms of scope and technical procedure are in: 1) the analyte list for the natural attenuation (NA) assessments and 2) the approach to bedrock monitoring well installation. The changes in these areas are well motivated. Detailed comments are provided in Attachment A.

I look forward to working with you and the Connecticut Department of Environmental Protection to protect the groundwater resources 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
David Cercone, Tetra Tech-NUS, Pittsburgh, PA

ATTACHMENT A

Page	Comment
p. 1-30, §1.4.1.2	The analyte list for the natural attenuation (NA) evaluation has been expanded from the previous draft; it now includes nitrite, carbon dioxide, hydrogen sulfide, and ethane. These additions are an improvement to the work plan. The added data will allow for a more complete assessment of evidence for or against significant degradation of fuels constituents and VOCs. It is noted that the list of natural attenuation analytes omits hydrogen, which USEPA had recommended in previous Comments on the draft work plan. As was discussed in a follow-up to Navy's Response to Comments, it is agreed that hydrogen is not critical to the NA assessment at this point. Sulfate and methane remain on the analyte list, and these analyses should provide some indication of the presence or absence of sulfate-reducing or methanogenic bacteria, indicative of strongly reducing conditions favorable to degradation of chlorinated VOCs. The methane analysis supports similar conclusions, and therefore is somewhat redundant for the purpose of this early assessment. However, it might be necessary to include analyses for methane at some future date, should natural attenuation be put forward as a remedy, and a more in-depth assessment be required. USEPA guidance indicates that demonstration of the efficacy of natural attenuation is held to a very high standard.
p. 1-66, §1.5.2.3.2	Contaminant Release and Migration Mechanisms: The text fails to mention a process that may prove to be important within the context of basewide contaminant fate and transport. Given the detection of relatively high concentrations of inorganics (*e.g.*, manganese, arsenic, etc.) at a number of sites, any site activities that alter the redox conditions in groundwater take on particular significance. This can result from leaching of reducing water from filled areas, consumption of oxygen during degradation of hydrocarbons in the subsurface, *etc.* Although these mechanisms are noted in section 1.4.1.3.2, and an understanding of the transport processes that control the mobility of metals is an explicit goal of the groundwater RI, they bear mention in this section describing conceptual models for transport and pathways to receptors. These mechanisms recognize that inorganic "contaminants" may be of natural origin, but the mechanisms by which they are released to the environment at hazardous levels can sometimes be linked directly to site activities.
p. 2-13, §2.4.1	It is noted that the "modeling parameters" to be determined from soil samples collected at selected borings do not include grain-size distribution. Given that this analysis is quite inexpensive, it would be

useful to obtain the additional information. In particular, it is noted that the number of slug tests (*i.e.*, hydraulic conductivity estimates) proposed is relatively modest. Grain-size analyses can expand the conductivity database at relatively low cost. If the grain-size analyses are added to the program, some of them should be performed on samples taken from the same locations as slug tests so that a comparison and/or calibration can be made between the slug test results and the prediction of conductivity from various empirical relationships using grain-size statistics.

p. 2-16, §2.4.3

This section introduces some changes in bedrock well installation procedures. In particular, it is now planned to install 10-foot (or shorter) PVC well screens, rather than to leave open boreholes. In addition, the exploration of bedrock is now proposed to a limit of 30 feet from the top of rock, rather than 20 feet, as in the previous draft. These changes are favorable. The screened well should offer a better opportunity to isolate a particular fractured interval, which will yield less equivocal results (*i.e.*, any contaminated water produced from a discrete fracture will not be diluted by clean water from other fractured intervals crossed by the boring), and will minimize cross-contamination. Although it is recognized that many borehole tools are too long to be useable in these holes, technologies should be sought that will allow characterization of the open borehole before selection of the target interval and the screen length. Various logging tools (*e.g.*, optical or sonic tools, calipers, heat-pulse flow meters, *etc.*) can help to pinpoint productive fractures for isolation by the well screen.

p. 2-20, §2.5.2

A few samples are to be collected for analysis of dissolved inorganics, and these are to be filtered in the field. The Work Plan does not specify the filtration method to be used. USEPA guidance suggests that an in-line filter (45 μm) be used, directly on the pump tubing. This procedure should be followed in order to minimize oxidation of dissolved constituents before filtering, which can then remove the precipitates and bias results.

p. 2-20, §2.5.2

The text here states that analysis for reduced manganese will be performed in the laboratory, while the list on p. 1-30 indicates that the Mn(II) analysis will be done in the field. Please check for internal consistency.