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PITT-10-2-025

October 16, 2002

Project Number 4286

Ms. Kymberlee Keckler
Remedial Project Manager
U.S. Environmental Protection Agency – Region 1
1 Congress St.
Suite 1100 (HBT)
Boston, Massachusetts 02114-2023

Subject: Final Work Plan for Basewide Groundwater OU Data Gap Investigation
Naval Submarine Base-New London, Groton, Connecticut

R ference: CLEAN Contract Number N62467-94-D-0888
Contract Task Order Number 0841

Dear Ms. Keckler:

On behalf of the U.S. Navy, Tetra Tech NUS, Inc. (TtNUS) is pleased to submit to the U.S. Environmental Protection Agency, Region 1 (EPA), 2 copies of the subject work plan. Changes were made during the preparation of the Work Plan to address EPA's September 16, 2002 comments and the additional EPA comment received October 7, 2002. The final Response-to-Comment document is attached to this l tter. Other changes were also made to the text, tables, and figures of the Work Plan to address internal review comments.

Fieldwork associated with this Work Plan began on October 14, 2002 and should be completed within 10 working days. If you have any questions regarding the Work Plan or the field work, please contact Mr. Mark Evans of Engineering Field Activity Northeast at (610) 595-0567 (ext. 162) or me at (412) 921-8984.

Sincerely,

Corey A. Rich, P.E.
Base Coordinator/Project Manager

Enclosure(s)

c: Mr. Mark Lewis, CTDEP (1 copy)
Mr. Mark Evans, EFANE (2 copies)
Mr. Richard Conant, NSB-NLON (3 copies)
Mr. Roger Boucher, EFANE (w/o enclosure)
Ms. Jennifer Hayes Stump, Gannett Fleming (1 copy)
Mr. John Trepanowski, TtNUS-KOP (1 copy)
Mr. Keith Simpson, TtNUS-PITT (2 copies)
CTO 841 – File Copy

RESPONSES TO USEPA's SEPTEMBER 16, 2002 COMMENTS AND OCTOBER 7, 2002 REBUTTAL ON THE DRAFT WORK PLAN FOR THE BASEWIDE GROUNDWATER OPERABLE UNIT DATA GAP INVESTIGATION
October 16, 2002

GENERAL COMMENTS (Text of Letter)

1. General Comment: I agree that the items targeted for investigation in the current Work Plan are significant data gaps, and warrant further characterization. Particular attention should be paid to the identification of potential sources and the development of defensible conceptual models for the transport of the contaminants of concern. These issues are of particular significance because Navy alludes to a possible appeal to natural attenuation of the organics. From a regulatory point of view, such an appeal will require definitive identification of sources, appropriate measures to establish source control, and thorough characterization of the geochemical environment and controls on transport of the principal contaminants.

> **Response:** Agree. The data collected during the datagap investigation will be combined with existing data sets to develop site-specific conceptual models. The data and models will be used in the Feasibility Study to determine the applicable remedial technologies and develop the appropriate remedial alternatives for the sites.

SPECIFIC COMMENTS (ATTACHMENT A)

1. Specific Comment: p. 1-3, §1.1.2 - The text refers the reader to Fig. 1-3 for historical sampling locations. These appear to be shown on Fig. 1-6.

> **Response:** Agree. The reference will be changed to Figure 1-6.

2. Specific Comment: p. 1-6, §1.2.1.2 - The text states, "...It is likely that monitored natural attenuation would be viable for the source area impacting 2DMW29S...." This presupposes that the source area is known or is identified definitively in the present data-gap investigation, and that the appropriate source-control measures are implemented.

> **Response:** Agree. The basis for the statement is the data included in the final Basewide Groundwater Operable Unit Remedial Investigation Report. The statement assumes that the appropriate source-control measures were or will be implemented.

3. Specific Comment: p. 1-14, §1.3 - A data gap identified for Site 15 is assessment of the "completeness" of the 1995 TCRA that removed a spent-acid storage tank and lead-contaminated soil from the site. Does this imply that no confirmation sampling was performed at the time, and that the current proposed effort will serve that purpose (as well as the broader objective of better characterizing the nature and extent of contamination at the site)?

> **Response:** Disagree. Confirmation sampling and analysis was performed during the Time Critical Removal Action at the Spent Acid Storage and Disposal Area by the Navy's Remedial Action Contractor (OHM Remediation Services, Inc.). The confirmation sampling

results are provided in the Final Report for Soil Remediation Spent Acid Storage and Disposal Area (OHM, September 1996). All confirmation sampling results were below the Preliminary Remediation Goals.

4. Specific Comment: p. 2-2, §2.1.2.1 - I agree that the most significant data gap with respect to potential sources for CVOCs in Site 3 groundwater is the disposal area along Stream 5. It is appropriate to focus the effort on this area. The Work Plan also proposes to re-sample wells 2DMW23D and 2DMW28D, both of which were found previously to have detectable TCE. The Work Plan states that 2DMW28D is downgradient of the new source area. While re-sampling of these wells is endorsed for the purpose of assessing the possible evolution of the TCE concentrations, it is not clear that this will support the stated objective of elucidating potential *source* areas. These seemingly isolated hits of TCE, if confirmed by another round of sampling, will remain isolated hits of TCE in the absence of any further exploration spatially. It is not obvious that 2DMW28D is downgradient of the new source area, as stated (*e.g.*, Fig. 2-1). The proposed water-level round on all available Site 3 wells may help to define the flow directions across the site, and establish the relationship between 2DMW28D and the new source area.

Response: Agree with qualification. Monitoring well 2DMW28D is not downgradient of the new source area. The text will be modified appropriately. The well is to be re-sampled to confirm the previous sample results. Historic data shown on Figure 1-5 of the Work Plan do not indicate an upgradient source of the TCE detection. Because the detection was isolated and did not significantly exceed the MCL, it did not warrant further investigation.

Monitoring well 2DMW23D is the only existing well located upgradient and north of the new source area. The TCE concentration detected in this well is below the MCL. The new data collected from this well will provided information regarding background/upgradient TCE concentrations in bedrock groundwater.

5. Specific Comment: p. 2-3, §2.1.2.2 - The text states that the "... disposal area will be the focus for determining the source of the groundwater contamination along the northwestern side of Site 3." Should this refer to the northeastern side?

Response: Disagree. The reference to the northwestern side of Site 3 is correct. The northeastern side of the site is located near the Torpedo Shops and the Area A Wetland dike.

6. Specific Comment: p. 2-3, §2.1.2.2 - The proposed locations for the three temporary wells (Fig. 2-2) are well motivated. These locations may reveal any VOC contamination that seems to emanate from the disposal area. Because a primary objective appears to be to establish continuity with the previous CVOC detections in 2DMW29S, consideration should be given to adding an additional well roughly midway between 3TW27 and 2DMW29S. This would help to establish a connection. In addition, it is noted that this connection (*i.e.*, from the potential source in the disposal area to the location of historic detections of CVOCs at 2DMW29S) should be supported by a defensible, local determination of the groundwater flow direction. The present plan includes a linear array of the three new temporary wells and the two existing monitoring wells. These five wells will not define a

gradient. Some control is needed off this linear array. It is suggested that at least one temporary well (or, at least a piezometer) be located in the area, but off this line. For example, a location north or northeast of the disposal area and/or a location southwest of the proposed line of temporary wells would provide added control.

Response: Agree with qualification. Monitoring well 3TW27 will be shifted approximately 20 feet to the northwest along Stream 5 to accommodate the EPA's comment. Monitoring well 3TW28 will also be shifted approximately 20 feet to the northwest along Stream 5. Figure 2-2 will be revised appropriately. In addition, based on recent field reconnaissance and historical information known about the petroleum product detected during the remediation of Stream 5, the soil boring locations shown on Figure 2-2 (3SB01 through 3SB03) will be modified to better detect soil contamination.

As shown on Figure 1-5, temporary wells 3TW1 and 3TW4 were previously installed and sampled along the southwestern and southeastern sides of the disposal area.

Because of the geologic features [vertical bedrock (granite) walls] to the north of the new source area, it would be impossible to install a well directly north of the site. Monitoring well 2DMW23D was selected to be sampled to provide upgradient/background information regarding bedrock groundwater quality.

EPA October 7, 2002 Rebuttal: *Specific Comment 6:* At Site 3, Navy agrees to spread out the three new temporary wells between the disposal area and existing well 2DMW29S in order to test the continuity of the CVOCs in this area. The proposed locations are appropriate, and will serve their intended purpose. A second part of the original comment noted that the proposed new wells, along with two existing wells, form a roughly linear array from southeast to northwest, and therefore the water levels from these wells will not define a local hydraulic gradient. The proposed changes to the well locations do not address EPA's concern. They still form a linear array. Better control on the local flow direction would support the interpretation of existing and new water-quality data from this area. Are there any existing wells to the southwest of Triton Road? Can at least one piezometer be installed to add some constraint in a second dimension?

Additional Response: Agree. A new temporary well (3TW30) will be installed approximately 50 feet southwest of proposed temporary well 3TW28. The new location is shown on Figure 2-2. A groundwater sample will be collected from the well and analyzed for the same parameter list as the other temporary wells. Table 2-1 was revised accordingly. A water level measurement will also be collected from the proposed temporary well location. No soil samples will be collected from the location.

The new water level data will help to determine local groundwater flow directions and confirm comprehensive regional groundwater level data that was collected during the Basewide Groundwater OU RI. Water levels were measured in all Northern Region overburden and bedrock wells in June 2000 and August 2000. The data was used to develop regional overburden and bedrock potentiometric surface maps. These maps were included in the RI report as Figures 4-2 through 4-5.

7. Specific Comment: p. 2-4, §2.2.2.1 - The Work Plan alludes to the role of pH in the mobility of metals at Site 15. Previous work has shown low pH (minimum 4.4; see page 1-9) in site groundwater. The Plan alludes to an interest in possible buffering of pH for the FS. The proposed investigation should strive to develop a conceptual model for the low pH at the site. In particular, is it likely that direct impacts from historic releases of acid would be lingering in site groundwater for several decades? Why is the minimum pH found *upgradient* of the site? Has a natural origin for this low-pH groundwater been considered?

Response: Agree with qualification. The data collected during the datagap investigation will be used with existing data sets to develop an updated conceptual model for the low pH groundwater at the site.

The results of the datagap investigation will help to identify why the minimum pH was found upgradient of the site.

Because of the nature of the material stored in the former tank (i.e., spent battery acid), a natural origin for the low-pH groundwater has not been considered.

8. Specific Comment: p. 2-4, §2.2.2.1 - The second bullet in this section indicates that the three temporary wells will be sampled for groundwater analysis. The legend on Fig. 2-3 indicates that these wells are for water-level measurement only.

Response: Agree. The text in the second bullet on p. 2-4 is correct. The text for the temporary well in the legend for Figure 2-3 will be revised as follows: "Proposed Temporary Well Included In Groundwater Level Measurement and Sampling Program."

9. Specific Comment: p. 2-4, §2.2.2.1 - A stated objective of the investigation at Site 15 is to determine the nature and extent of contaminants in groundwater. The Work Plan proposes three new temporary wells to constrain better the distribution of TCE. While the proposed locations will certainly provide better control on the area between Building 410 and the former spent-acid tank, they are all upgradient of the area of the removal action, upgradient of the stormwater and sanitary sewer systems, and cross-gradient to the location of the highest historical hit of TCE at 15MW3S. At least one additional temporary well should be installed upgradient of 15MW3S in order to provide further constraints on the potential source of the TCE found there.

Response: Agree. The locations of the proposed temporary monitoring wells 15TW02 and 15TW03 will be moved from the northern side of the site to the eastern side of the site on Figure 2-3. Temporary well 15TW02 will be located adjacent to the southern end of Building 410 and temporary well 15TW03 will be located south of 15TW02 along the storm sewer.

It should be noted that other modifications will also be made to Figure 2-3 to address issues noted during internal review. For example, more recent utility information was obtained and placed on the figure. This information provides a better understanding of utility clearance issues associated with drilling activities at the site as well as potential sources of groundwater contamination. In addition, Note 1 will be removed from Figure 2-3 and Note 2 will be renumbered to Note 1. Note 1 will be removed because the approach for this field

investigation will be to complete the initial phase of field work, obtain and interpret the results, and then decide if additional field work is warranted.

10. Specific Comment: p. 2-6, §2.3.2.1 - The text offers an explanation for previous detections of elevated arsenic in 2WCMW1S, and this appears to be a likely scenario, based on extensive investigation associated with the Area A Landfill and adjacent wetlands. For this reason, Navy proposes to limit analysis of groundwater samples from Site 20 to silver only (Table 2-1). EPA recommends that the analyte list be expanded to the full TAL in order to support the development of a defensible conceptual model for silver. For example, is the mobility of silver affected by other metals (*e.g.*, iron and manganese)? Also, if arsenic (as well as zinc) has been an issue for site groundwater (*i.e.*, in exceedance of CTDEP criteria for protection of surface water), additional data to support the explanation offered in the text for the presence of elevated concentrations can only strengthen Navy's argument.

Response: Agree. Samples from monitoring wells 2WCMW1S and 2WCMW2S will be analyzed for total and dissolved TAL inorganics.