



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 1
JOHN F. KENNEDY FEDERAL BUILDING
BOSTON, MASSACHUSETTS 02203-0001

January 5, 1999

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: Existing Data Summary Report for the Basewide Groundwater Operable Unit

Dear Mr. Evans:

EPA has reviewed the "Existing Data Summary Report for Basewide Groundwater Operable Unit Remedial Investigation, Naval Submarine Base New London, Groton, Connecticut," dated December 1998. The report provides a review of historical investigations bearing on groundwater quality; hydrogeological characteristics of each site within the base; the nature and extent of contamination based on historical soil, sediment, surface-water, and groundwater sampling; contaminant fate and transport; historical human health risk assessments; screening assessments for Contaminants of Potential Concern (COPCs); and recommendations for further actions under the Basewide Groundwater Operable Unit RI. The document was reviewed for completeness and consistency between the conclusions and available data. Detailed comments are provided in Attachment A.

The report provides a good overview of previous site investigations and their implications for basewide groundwater contamination. In general, the remaining data gaps identified in the report for further investigation in the Basewide Groundwater OU RI are well supported.

In a letter dated July 29, 1997, EPA enumerated specific data requests to be incorporated in the Basewide Groundwater OU RI Work Plan. In general, the spirit of these requests is embodied in the recommendations presented in the Data Summary Report. However, the Data Summary Report is rather broad and generic in its recommendations. EPA data requests outlined in the July 29, 1997 letter should be covered specifically in the more detailed Work Plan/Sampling and Analysis Plan (WP/SAP). Please add these specific recommendations.

The Data Summary Report includes a screening assessment to identify Chemicals of Potential Concern (COPCs). The text states that COPCs are identified, in part, on the basis of "... likely contaminant migration pathways" (page 1-17, §1.4.2), and emphasizes "... the potential impact of contamination in each medium of concern on groundwater." In this case, EPA recommends that you include mobile contaminants identified as COPCs in soil on the list of COPCs for the

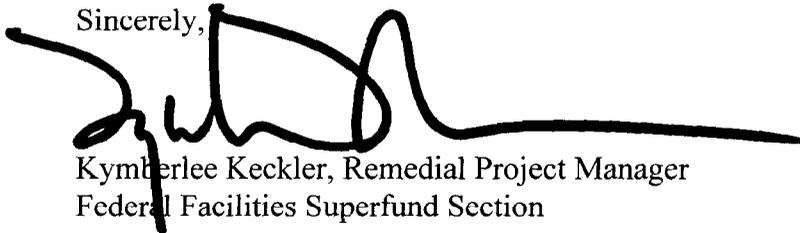
underlying groundwater, even in the event that such constituents have not been detected in groundwater sampling to date. This would allow for some "coupling" of the media via potential transport processes. For example, TCA appears on the COPC list for soils and for bedrock groundwater at the same site, but does not pass the screening for overburden groundwater. The screening procedure should be reviewed to identify constituents that are present at significant concentrations in soils and that are relatively mobile in solution, so that they can be listed as chemicals of potential concern for groundwater. The fact that such compounds have not been detected in sampling to date (particularly in areas of sparse monitoring well coverage) does not imply that the contaminants are unlikely to be present in groundwater when there is evidence that they are available to water infiltrating through overlying soils.

Risk-based screening values were used to identify groundwater COPCs in this data gaps analysis. It is unclear, however, whether future groundwater sampling will be limited to the identified COPCs. Where additional sampling is recommended, the suite of analytes should not be limited to only the COPCs identified for the specific sites in this existing data summary report, in order to ensure that the groundwater at each site is fully characterized.

Concern has emerged recently nationwide for ammonium perchlorate contamination at sites where weapons components have been stored and maintained. Given the presence of the Weapons Center adjacent to the Area A Wetland and the Torpedo Shops adjacent to the Downstream Watercourses, it should be determined whether ammonium perchlorate has ever been present in weapons at these sites. If so, it should be added to the analyte list for groundwater monitoring downgradient.

I look forward to working with you and the Connecticut department of Environmental Protection on the cleanup of groundwater at the base. Please do not hesitate to contact me at (617) 918-1385 should you have any questions or wish to arrange a meeting.

Sincerely,

A handwritten signature in black ink, appearing to read 'Kymberlee Keckler', with a long horizontal flourish extending to the right.

Kymberlee Keckler, Remedial Project Manager
Federal Facilities Superfund Section

Attachment

cc: Mark Lewis, CTDEP, Hartford, CT
Andy Stackpole, NSBNL, Groton, CT
Jennifer Stump, Gannett Fleming, Harrisburg, PA
Corey Rich, Tetra Tech-NUS, Pittsburgh, PA

ATTACHMENT A

<u>Page</u>	<u>Comment</u>
p. 2-39, §2.3.2.5	The text states (first paragraph) that Figure 2-3 shows the locations of the nine Phase II RI surface water samples. However, the figure appears to show only monitoring-well, test-boring, and staff-gauge locations. Please check the figure and text for consistency.
p. 2-45, §2.3.4.2	The discussion of historical groundwater analyses notes that arsenic was detected in well 2WMW21S, screened in the overburden, at 138 ppb. The forthcoming groundwater OU RI should include an assessment of geochemical conditions relevant to the mobility and transport of inorganics, with particular emphasis on arsenic and lead. In particular, the RI should include the usual field measurements of oxidation-reduction potential (ORP), pH, and dissolved oxygen (DO), as well as an assessment of the potential role of the bedrock as a source of inorganics (<i>e.g.</i> , arsenic and lead sulfides). The impact of the capped Area A Landfill on the geochemistry of groundwater flowing beneath it and discharging to the wetland, and its influence on the mobility of inorganics should be assessed. Adequate monitoring well coverage at discharge areas for water flowing under the landfill to the wetland should be assured, as noted in the recommendations (§2.3.7). For these purposes, the current EPA "low-flow" sampling protocols should be followed, and at least one round of filtered samples should also be taken for comparison, so that some assurance can be given that the analyses truly reflect dissolved phase inorganics.
p. 2-54, §2.3.7	Please refer to EPA letter of July 29, 1997, for specific recommendations for well installation, monitoring, and sampling of the Area A Wetland.
p. 2-56, §2.4.2.1	The text refers to the 1982 Envirodyne study of Area A (Site 2). Please clarify in the text the relationship of this designation to the present site designations. The text should specify whether the 1982 Area A (Site 2) includes the Area A Downstream Watercourses and OBDA. This is indicated in section 2.4.2.3 for the later (1990-1992) Atlantic study. These changes in designations should be clarified in the text where they first appear.
p. 2-63, §2.4.4	The text states, "Analytical results for surface water samples will not be discussed because this medium will also no longer be a potential source of contamination for groundwater after the contaminated sediments are removed." The surface water could receive contaminants from upgradient

areas via the culverts through the dike, or via discharging groundwater. It was stated in section 2.4.3.4 that, "There are downward gradients throughout most of Site 3." The downward flow could carry contamination from surface water to groundwater. Such a scenario may prove to be unlikely, given what is known about the groundwater and surface water quality upgradient in the Area A wetland area. However, the case should be made that the Site 3 surface water need not be discussed in this context.

- p. 2-63, §2.4.4.1 The text states, "Groundwater samples were not collected from the OBDA (Site 3B)," presumably in reference to the Phase I and II RIs and the FFS, results from which section 2.4.4 summarizes. Are not wells 3MW12S and 3MW12D considered to be within the OBDA? Results from 3MW12D from the Phase II RI are referred to on page 2-65 ("Bedrock Wells," paragraph 2). Please clarify in the text.
- p. 2-63, §2.4.4.1 The detection of 1,2-DCE and vinyl chloride at 2DMW29S is suggestive of degradation of chlorinated solvents (PCE, TCE). This appears to be consistent with the statements regarding a possible source from the Torpedo Shops leach field (*i.e.*, the DCE and VC found downgradient could be degradation products from historic releases of VOCs in that area). See also section 2.4.5.1. An assessment of the fate and transport of the chlorinated VOCs, including verification of potential source areas, as well as possible degradation processes, should be included in the Basewide Groundwater OU RI.
- p. 2-71, §2.4.7 EPA concurs that the VOCs found warrant further characterization. This should not be considered an issue that is closed out under the Area A Downstream/OBDA ROD. It appears that it may be a different problem (*e.g.*, transport from the Torpedo Shop leach field area).
- p. 2-71, §2.4.7 Additional monitoring well coverage should be considered for the area immediately northwest of the dike separating the Area A Wetland and Site 3, perhaps in the area of the former Over Bank Disposal Area (OBDA). This area is a "focus" for groundwater from the Area A Wetland and its surroundings, and an area of likely upward gradients and groundwater discharging to surface water. Existing wells 3MW12S and 3MW12D provide some coverage, but an additional well cluster approximately 250 feet upgradient (closer to the dike) should be considered in order to monitor groundwater at a "gateway" between major domains of the basewide flow system. (Obviously, a shallow well is relevant only if any significant overburden remains following the OBDA removal.)

- p. 2-71, §2.4.7 Please refer to EPA letter of July 29, 1997, for specific recommendations for well installation, monitoring, and sampling for the Area A Downstream Watercourses and OBDA.
- p. 2-83, §2.5.7 EPA concurs that monitoring is appropriate, and can be coordinated with the monitoring for landfill cover performance.
- p. 2-93, §2.7.4 The text states that contamination of sediment and surface water at the Torpedo Shops "... is not expected to impact the groundwater at this site...." The basis for this conclusion should be presented in more detail, as the previous section notes that the site is a recharge area, with downward gradients prevailing throughout. Thus, it appears to be possible that contaminated sediment and surface water could impact groundwater.
- p. 2-104, §2.7.7 EPA concurs that better characterization of organics (especially chlorinated VOCs) is warranted. Further sampling under the Basewide Groundwater OU is appropriate. Both 1,1-DCA and 1,1-DCE have been detected in a number of downgradient wells (see page 2-95, §2.7.4.2), which may be degradation products from TCA and TCE or higher parent compounds from the source area. The Groundwater OU RI should include an assessment of transport pathways for these VOCs. The recommendations explicitly mention the need for further characterization of the overburden groundwater. Further characterization of the bedrock should also be included, as this appears to be a potential source area for contamination of groundwater in fractured bedrock, given the thin to absent overburden and the prevalence of downward gradients.
- p. 2-116, §2.9.2.2 In the paragraph describing sediment and surface-water sampling, the text states, "All sample locations are shown on Figure 2-8." It appears, however, that Figure 2-8 shows only test boring and groundwater monitoring well locations. The figure and text should be consistent.
- p. 2-120, §2.9.4.2 Chlorinated VOCs (1,1,2-TCA, 1,2-DCE, and TCE; cf., Table 2-27) were detected in bedrock monitoring well 2WMW4D. The levels detected were low (1-2 ppb, compared to MCLs for these compounds of 5 ppb), and detections were infrequent (1 of 3 bedrock wells in Site 20). The chlorinated VOCs passed the screening criteria for COPCs for bedrock groundwater, but not for primary COPCs. The report recommends (page 2-127, §2.9.7) that no further groundwater sampling be performed in support of the Basewide Groundwater OU RI. Although the chlorinated VOC levels detected do not appear to be a matter of great concern, it is noted that 2WMW4D is on the upgradient side of the site (see Drawing 4). Possible sources for the chlorinated VOCs in bedrock groundwater could

exist. A stronger case should be made for neglecting further characterization in this area and the area upgradient. Is there any evidence of historic use or storage of solvents in this area or along the perimeter road above the area?

Tables

Tables 2-3, 2-6, 2-7, 2-10 - 2-16, 2-19, 2-20 present the COPC screening for groundwater samples from overburden and bedrock wells and surface water for each of the sites. The Region III RBCs that were used for chromium (18 ug/L) and manganese (84 ug/L) do not correspond with those in the most recent Region III RBC Table (11 ug/L and 73 ug/L), respectively. The value for chromium should correspond with the appropriately conservative assumption that all of the detected chromium is chromium VI. (USEPA Region I. *EPA New England Risk Updates*. Number 3. Risk-Based Screening of Contaminants for Human Health Risk Assessment. August 1995. And USEPA Region III. *Risk-Based Concentration Table*. October 1, 1998).

Tables 2-10 to 2-12 present the COPC screening for Site 2B- Area A Wetland for overburden wells, bedrock wells, and surface water respectively. None of the samples in any of these areas were analyzed for pesticides. Due to the historic use of this site, "pesticide blocks" were used regularly on the pond in the wetland area, characterization of the pesticides in the groundwater should be considered by additional sampling with analysis for pesticides.

- p. 3-1, §3.1.2 The text states that no sampling was carried out as part of the IAS in 1983. It appears that the same statement holds for subsequent basewide investigations (*e.g.*, the Phase I and II RIs). If so, this should be stated for completeness.
- p. 3-3, §3.1.7 The report recommends development of a sampling and analysis program for Site 16, and, appropriately, leaves the details open. Soil and groundwater are mentioned specifically as likely targets of the investigation. It is suggested that sediments associated with drainage structures also be considered for sampling.
- p. 4-1, §4.1.1 The legend for Figure 4-1 shows an incorrect symbol for the Phase I monitoring wells. It appears from the map that the correct symbol is a circle with a complete cross.
- p. 4-9, §4.1.4.2 The text (under Overburden Wells, first paragraph) refers to well 8MW3S. Figure 4-1, as well as Table 4-3, show only a well designated 8MW3. Please check for internal consistency.

- p. 4-18, §4.1.7 Please refer to EPA letter of July 29, 1997, for specific recommendations for well installation, monitoring, and sampling for the Goss Cove Landfill area.
- p. 4-19, §4.1.7 EPA agrees with the recommendation in the report to characterize the PCE in bedrock further.
- p. 4-31, §4.3.5.1 The report states, "...The analytical results presented in the previous section do not appear to indicate the vertical migration of contaminants..." It is noted (Table 4-5) that lead was detected in well 15MW3S at 21.2 ppb, above the federal MCL of 15 ppb. The possible relationship of lead in groundwater to lead in the site soil (prior to removal) should be discussed. Is there reason to believe that the lead in groundwater is unrelated to the SASDA? Acknowledging that the likely principal source has been removed, what is the expected fate of lead already present in groundwater?
- p. 4-34, §4.3.6 The report notes that the existing monitoring wells "... can be sampled, if necessary, during the Basewide Groundwater OU RI..." The existing wells should be sampled for the Basewide Groundwater OU RI in order to verify that contaminant concentrations are stable or declining, and to characterize the chemistry of the groundwater that is advected further downgradient.
- p. 4-57, §4.5.7 The report recommends further characterization of PCE in bedrock, possibly originating from a source area near the base entrance. EPA agrees with the recommendation to further characterize PCE in bedrock.