

**ROUND 12 GROUNDWATER MONITORING REPORT FOR THE AREA A LANDFILL  
RESPONSE TO EPA COMMENTS DATED 10/21/03**

**General Comments:**

**General Comment 1:** The field and analytical activities summarized in the Groundwater Monitoring Report (GMR) generally follow the Groundwater Monitoring Plan [1]. The sampling in Round 12 followed the original scheme, and does not yet reflect adjustments discussed later in 2003 (e.g., reduction in the number of dredge-spoil wells off the toe of the landfill, addition of deep alluvium wells).

**Response to General Comment 1:** Comment is noted. Adjustments will be made following review of the pending *Operation and Maintenance Manual* [2] in the 2003 Year 2 Annual Report.

**General Comment 2:** Qualitative review of the data raises no significant concerns with respect to contaminants from the site that may have impacted groundwater.

**Response to General Comment 1:** Agree with comment.

**General Comment 2, Bullet 1:** Few SVOCs were detected. Phenanthrene was detected at 2WMW42DS at 7 micrograms per liter, above the primary monitoring criterion of 0.3 micrograms per liter. It is noted that no SVOCs were detected at this well in the previous three rounds.

**Response to General Comment 2, Bullet 1:** Comment is noted. Phenanthrene was detected at 2WMW42DS at 7 micrograms per liter, above the primary monitoring criterion of 0.3 micrograms per liter. Benzo(a) anthracene was also detected at 2WMW42DS at 0.11 micrograms per liter, above the primary monitoring criterion of 0.3 micrograms per liter. These SVOCs were not detected at this well in the previous three rounds.

**General Comment 2, Bullet 2:** Total and dissolved arsenic were detected at concentrations at or above the primary monitoring criterion at 7 and 8 wells, respectively. All were dredged material wells, consistent with previous findings that this material is prone to low ORP and elevated metals concentrations.

**Response to General Comment 2, Bullet 2:** Comment is noted. Total arsenic was detected at or above primary monitoring criterion in wells 2WMW40DS, 2WMW41DS, 2WMW42DS, 2WMW43DS, 2WMW45DS, 2WMW46DS and 2WMW47DS. Dissolved arsenic was detected at

or above primary monitoring criterion in wells 2WMW38DS, 2WMW40DS, 2WMW41DS, 2WMW42DS, 2WMW43DS, 2WMW45DS, 2WMW46DS and 2WMW47DS.

**General Comment 2, Bullet 3:** Total and dissolved lead were detected above the primary monitoring criterion at 2WMW47DS. Lead was not detected at this well in the previous three rounds.

**Response to General Comment 2, Bullet 3:** Comment is noted. Lead was not detected in well 2WMW47DS in the previous three rounds.

**General Comment 2, Bullet 4:** Zinc was detected in several surface water samples at concentrations above the primary criterion, consistent with past results. Copper and lead, which in the past were detected in exceedance of monitoring criteria, were not detected in surface water. However, it should be noted that the laboratory achieved detection limits for these elements of 10 micrograms per liter, below the primary, but above the secondary, monitoring criteria.

**Response to General Comment 2, Bullet 4:** Comment is noted. Detection of zinc in surface water samples is consistent with laboratory results. The laboratory detection limits for the elements copper and lead of 10 micrograms per liter is below the primary, but above the secondary, monitoring criteria. Copper exceedences for the last three rounds of monitoring ranged from 79.4 micrograms per liter (above the primary criterion of 48 micrograms per liter) to 6.3 micrograms per liter (above the secondary criteria of 4.8 micrograms per liter). Lead exceedences for the last three rounds of monitoring ranged from 75.7 micrograms per liter (above the primary criterion of 13 micrograms per liter) to an estimated 1.4 J micrograms per liter (above the secondary criteria of 1.2 micrograms per liter).

**Specific Comment 1:** Table 3-1 - Table 3-1 shows any analytical result that exceeds either the primary or the secondary monitoring criteria in boldface type. There is, however, no special notation reserved for cases where the detection limits achieved by the laboratory are above a particular monitoring criterion. As noted above, copper and lead were reported with detection limits of 10 micrograms per liter, while their secondary monitoring criteria are 4.8 and 1.2 micrograms per liter, respectively. Some notation should be found (e.g., a gray background to the relevant cell; a footnote; etc.) to indicate that the analysis was unable to discriminate exceedances in these cases.

**Response to Specific Comment 1:** Comment is noted. A footnote has been added to indicate when reporting limit from the laboratory exceeds the secondary monitoring criterion for a compound. Revised tables are attached.

**Specific Comment 2:** Appendix D - The field data sheets indicate stable purges were achieved at all wells. Turbidity was somewhat high in a few wells (e.g., 2WMW39DS, at 30 NTU; 2WMW46DS, at 21 NTU). However, this is often inevitable in a silty environment such as the dredged material. It is noted that there is no obvious or consistent association of elevated turbidity with elevated metals (e.g., 2WMW39DS, with the highest turbidity, showed no detections of any COPC, even in the unfiltered sample; 2WMW46DS, with the second highest turbidity, showed essentially no difference between filtered and unfiltered arsenic, detected at 18 and 19 micrograms per liter, respectively).

**Response to Specific Comment 2:** Comment is noted. Results indicate metals are present in groundwater samples in the dissolved state. In general, this is consistent with dissolved and total metal results of previous rounds.

## REFERENCE

- [1] Tetra Tech NUS, Inc., January 1999. Groundwater Monitoring Plan for Area A Landfill, Naval Submarine Base, New London, Groton, Connecticut, King of Prussia, Pennsylvania
- [2] Tetra Tech NUS, Inc. March 2003. Draft Operation and Maintenance Manual Installation Restoration Program Sites at Naval Submarine Base - New London, Groton, Connecticut, Volume II - Groundwater Monitoring Plan, King of Prussia, Pennsylvania