

***POST-REMOVAL
GROUNDWATER AND SURFACE WATER SAMPLING REPORT***

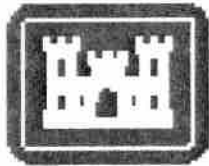
FOR OCTOBER 2007

***Area of Concern (AOC) No. 2
Former Schenectady Army Depot, Voorheesville Area
Guilderland, New York***

***Contract No. DACA45-03-D-0022
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List of Acronyms

AOC	Area of Concern
DOD	Department of Defense
EE/CA	Engineering Evaluation & Cost Analysis
MCL	Maximum Contamination Level
MNA	Method of Natural Attenuation
MW	Monitoring Well
NAPL	Non Aqueous Phase Liquids
NYSDEC	New York State Department of Environmental Conservation
PAHs	Polynuclear Aromatic Hydrocarbons
PCMW	Post Construction Monitoring Well
RL	Reporting Limit
SADVA	Schenectady Army Depot - Voorheesville Area
Shaw	Shaw Environmental, Inc.
SVOCs	Semi-volatile Organic Compounds
TAL	Target Analyte List
TOGS	Technical and Operational Guidance Series
USACE	United States Army Corps of Engineers
VOCs	Volatile Organic Compounds

1.0 INTRODUCTION

The following Groundwater and Surface Water Sampling Report has been prepared by Shaw Environmental, Inc. (Shaw) for the U.S. Army Corps of Engineers (USACE), Omaha District in compliance with the Rapid Response Contract No. DACA45-03-D-0022, Task Order No. 045.

As required in the approved Work Plan, (Shaw, July 2005) a groundwater and surface water monitoring program has been substantially completed within the area of the former Post Commander's Landfill, known as AOC-2. This two event program, which commenced approximately six months after the completion of the interim removal action in October 2006, is intended to determine if groundwater and/or surface water quality has been compromised and if any further potential impacts exist which would threaten human health and/or the environment. The first of the scheduled events was completed in April 2007 and was addressed in a previous report. The second and final event was performed in October 2007 and is discussed in this report. In order to provide ready reference to the necessary data, all result summary tables also include the April 2007 data.

In April 2007 (1st round of sampling) and October 2007 (2nd round of sampling), five groundwater samples were analyzed for the chemical constituents known to have been present in the site waste materials (VOCs, metals, SVOCS, PAHs, and pesticides). Insufficient surface water was present for sampling on three different visits to the site. Therefore, although planned for, no surface water sample was collected as part of 2nd round of sampling. The results were compared to the applicable groundwater quality parameters listed in New York State's Department of Environmental Conservation (NYSDEC), Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1, "Ambient Water Standards and Guidance Values and Groundwater Effluent Standards". Although there is no known use of the groundwater for drinking water purposes at or in the vicinity of the site, Class GA groundwater standards and/or guidance values were used for evaluation of observed concentrations in groundwater.

2.0 SITE HISTORY AND BACKGROUND

The former Bivouac Area/Post Commander's Landfill (AOC-2) is located west of County Route 201. This 40.6 acre parcel was part of the SADVA from its inception in 1941 until its sale to a private landowner in 1963. Historical information indicates the parcel was used as a transit troop bivouac area and officer's family housing area in the 1950s and 1960s. Sometime after purchasing the property in 1963, the new owners noticed a disposal area (later referred to as the Post Commander's Landfill). The existence of the landfill was subsequently reported to the New York State Department of Environmental Conservation (NYSDEC). The U.S. Department of Defense commenced investigations and the Engineering Evaluation and Cost Analysis (EE/CA) (Parsons) described the waste disposal area as consisting of several distinct waste areas with waste materials including salt/iodine pill bottles, drums, glass bottles containing flammable liquids and other materials.

During a time spanning September 2005 to October 2006, an interim removal action was completed within AOC-2. This removal action, performed by Shaw under USACE direction consisted of the excavation and disposal of waste materials and impacted soils followed by restoration to grade. The excavation activities were concentrated in areas defined in the EE/CA (Parsons) and in other impacted areas located during the excavation activities. The removal action resulted in the excavation and off-site disposal of approximately 10,000 cubic yards of waste and impacted soils. These wastes primarily consisted of dried paint residues, flammable liquids, mercury contaminated flammable liquids, and other materials. The excavated soils were found to be primarily impacted by metals, VOCs, SVOCs, PAHs, and organo-chlorine pesticides.

AOC-2 presently has a residence located on the property; this residence dates back to the Department of Defense's (DOD) use of the property. The residence is located about 300 yards from the former Post Commander's Landfill. A small barn, a farm pond, and small sheds are presently located on the property, but were not part of the DOD use of the site. These structures are located 200 yards or more from the Post Commander's Landfill area.

3.0 SAMPLING AND ANALYTICAL METHODOLOGY

A total of five monitoring wells (MW) including two post construction monitoring wells (PCMW), [PCMW-1, PCMW-2, MW-3, MW-5, and MW-7] were sampled on October 10, 2007. As stated in the introduction, two additional attempts to collect a surface water sample (10/12/07 and 10/29/07) following significant rain events found there to be no surface water present due to the ongoing drought conditions. A site map, providing reference to the former waste disposal areas is included as Figure 1. Two of the wells (PCMW-1 and PCMW-2) were installed by Shaw as part of the Work Plan for this task (Shaw September 2006). These wells were placed in close proximity to the former waste disposal areas in order to monitor groundwater impacts. All sampling and analysis was performed in accordance with the procedures outlined in the aforementioned Work Plan. These procedures included the following:

- Prior to sample collection, each monitoring well was gauged for depth to water, depth to non-aqueous phase liquids (NAPL), and depth to bottom of well.
- Each well was purged and sampled using low-flow techniques to ensure that the samples were collected from representative groundwater with minimal disturbance. During purging activities, a continuous flow-through water quality meter was used to measure the pH, conductivity, and turbidity of the water. Purging continued until there was no more than a ten-percent variation in the field measured water quality parameters between each measuring point.
- The monitoring wells were allowed to recharge following purging activities.
- Samples were packaged and submitted under Chain of Custody for analysis to an off-site subcontractor laboratory for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), poly aromatic hydrocarbons (PAHs), metals, and organo-chlorine pesticides.
- The samples were analyzed by GPL Laboratories in Frederick, Maryland. GPL is certified by the State of New York to perform the requested analyses.

Field sampling logs are included in Appendix A. While Appendix B contains the Data Usability Report for the GPL data package.

4.0 RESULTS

4.1 Water Characteristics

According to the EE/CA (Parsons 2005) the groundwater flow is in a general northwest direction through the site. This sampling event was conducted during low water conditions and the sampler was unable to find standing water throughout the site. The Field Logs, Appendix A, contain the water depths and column lengths. Since the well elevations were not surveyed a water table elevation map cannot be shown.

4.2 Groundwater Quality-Field Readings

The Field Logs, Appendix A, contain the field water quality parameter results from the groundwater samples collected during the low-flow purging and sampling process. Results for the October 2007 event indicate the following:

- Results for pH were within NYSDEC TOGS 1.1.1 criteria in all wells sampled, except (PC)MW-2, which was low at 5.90 pH units. This well started the purge/sampling process with a pH of 6.91 units; within the criteria.
- Turbidity values were above NYSDEC TOGS 1.1.1 criteria in all five wells. Values ranged from 20 to 125 NTU while the criterion is set at 5 NTU. The highest level was found in (PC)MW-1.

4.3 Chemical Constituent Concentrations

Groundwater samples were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs) including poly nuclear aromatic hydrocarbons (PAHs), organo-chlorine pesticides, and target analyte list (TAL) metals. Tables 1 through 4 present a summary of the analytical results. Results for the October 2007 event indicate the following:

- No VOC, SVOC, PAH, or pesticide analytes were detected at levels above the NYDEC TOGS 1.1.1 criteria in any of the five wells sampled.
- Magnesium was detected in four of the five wells (MW-1, MW-3, MW-5, and MW-7) at concentrations above the NYSDEC TOGS 1.1.1 criteria (35,000 ug/l) with values ranging from 53,100 to 453,000 ug/l.
- Manganese was found at concentrations above the NYSDEC TOGS 1.1.1 criteria of 600 ug/l in three of five wells (MW-2, MW-3, and MW-5) with concentrations ranging from 697 to 1600 ug/l.
- Iron was present at concentrations greater than the NYSDEC TOGS 1.1.1 criteria in four of the wells; MW-1, MW-2, MW-3, and MW-5.
- No other metals were found at concentrations exceeding the NYSDEC TOGS 1.1.1 criteria, including the predominant site contaminant metals; Barium, Nickel, Mercury, and Zinc.

4.4 Quality Control Results

Table 5 presents a summary of the Field Quality Control analytical results. Results indicate the following:

- One blind duplicate sample, using MW-3, was submitted for all parameters.
 - Precision for the detected organic compounds was reasonable; especially since most were reported as J-flagged values.
 - Precision data for metals is also generally good; with the highest RPD being 59 for an analyte (Thallium) which was J-flagged in both samples.
- No analytes were detected in the VOC Trip Blank submitted with the samples

The laboratory QC is discussed in the Data Usability Report attached as Appendix B to this report. The complete laboratory package can be provided upon request and a CD with this report has been included with the original copy of this report.

5.0 SUMMARY

In accordance with the Work Plan requirements a second round of groundwater samples collected at the site were, and have been, analyzed for VOCs, SVOCs-including low-level PAH, pesticides, and metals. In addition, regulated field parameters (pH and turbidity) were obtained during the sampling effort. Two of the groundwater samples (MW-1 and MW-2) were collected from recently installed wells. These wells were placed within and down-gradient of the previously removed waste areas to provide a bearing on potential impacts. Due to ongoing drought conditions, no surface water sample was collected during the second round of sampling. Shaw personnel attempted on three occasions; including two directly after rain events to collect a surface water sample to no avail. All results have been compared to applicable standards contained in NYDEC TOGS 1.1.1, based upon a Class GA groundwater use, despite the fact that the site groundwater is not used for human consumption purposes.

To help alleviate potential problems from suspended particulates and in accordance with NYDEC guidance, low flow sampling techniques were used to collect all groundwater samples. However, since the State of New York regulates groundwater on the total concentration of constituents, all analyses, including metals were performed as a “totals” determination, i.e. unfiltered.

Unlike the April 2007 event, no organic compounds (VOCs, SVOCs, PAHs, or pesticides) were detected at levels above NYDEC criteria in any of the five wells sampled on October 10, 2007. In fact, only trace concentrations of phthalate esters were detected in the samples.

Metals were found above NYDEC criteria throughout the site groundwater. However, those that exceeded criteria were predominantly the typical naturally occurring elements for the area. It should be noted that none of the metals found in the formerly removed wastes (Mercury, Barium, Lead, Nickel, and Zinc) were present at concentrations above NYDEC criteria in any of the samples. This strongly suggests that no groundwater impacts from metals have resulted from the now removed waste materials.

In closing, the limited site groundwater impacts present during the April 2007 event appear to have dissipated and site groundwater does not appear to be impacted with any waste-derived organic compounds. In addition, the metals exceeding the NYDEC criteria are commonly found mineral constituents and probably present in the still significant colloidal particles present in the wells.

Based on the results of the post-removal action sampling, the U. S. Army Corps of Engineers will prepare and coordinate a proposed plan recommending that no further actions to be taken at Area of Concern #2.

TABLES

FIGURES

APPENDIX A

Groundwater Monitoring Well Field Data Sheet

APPENDIX B

Laboratory Analytical Data Package and Usability Memo

APPENDIX C

Well Construction Logs