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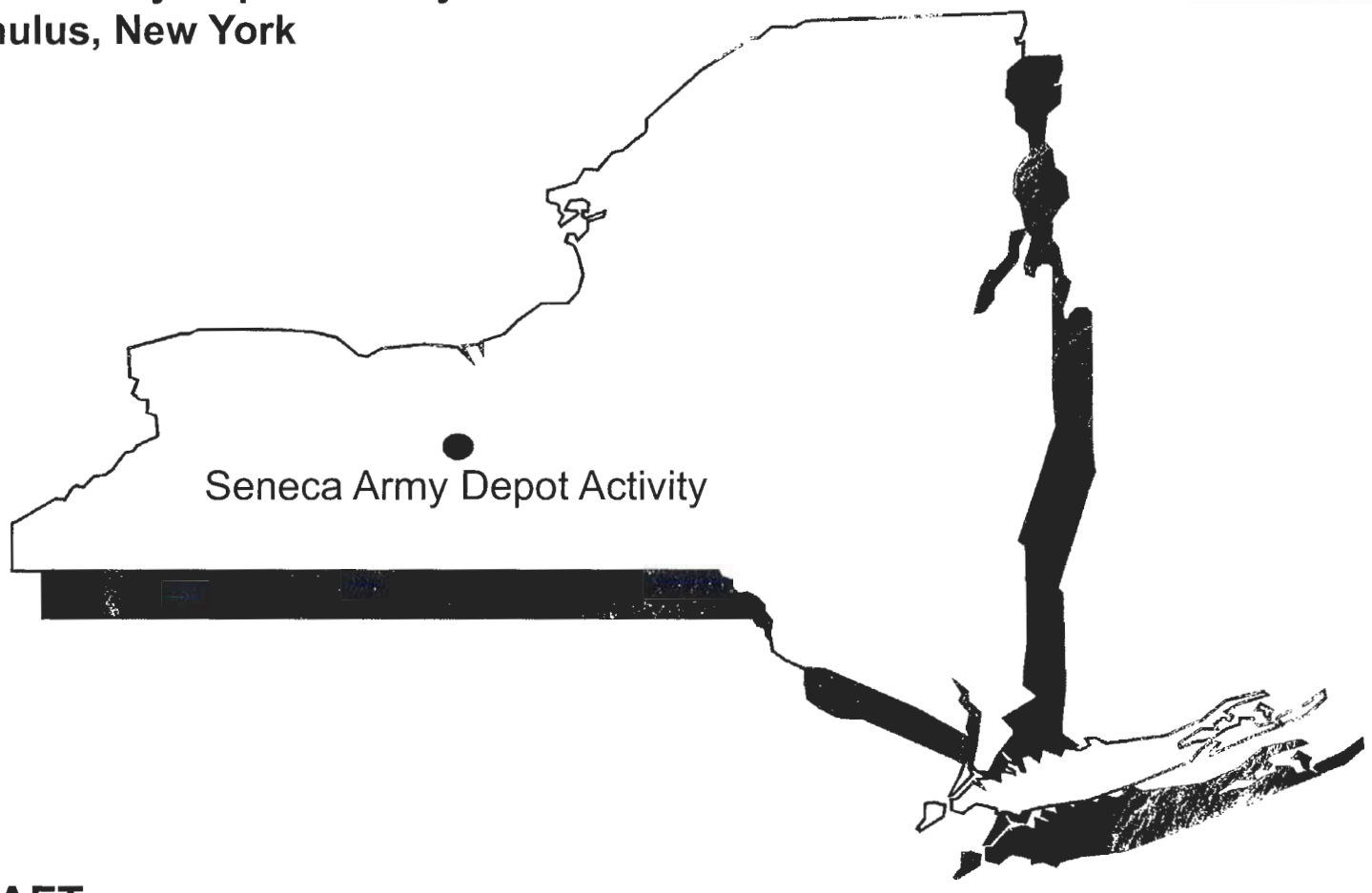
Seneca Army Depot Activity
Romulus, New York



DRAFT
ANNUAL REPORT 2010 – YEAR 4

THE ABANDONED DEACTIVATION FURNACE (SEAD-16)
AND THE ACTIVE DEACTIVATION FURNACE (SEAD-17)
SENECA ARMY DEPOT ACTIVITY

AFCEE CONTRACT NO. FA8903-04-D-8675
TASK ORDER NO. 0031
CDRL A001G

EPA SITE ID# NY0213820830
NY SITE ID# 8-50-006

PARSONS
APRIL 2011

ANNUAL REPORT 2010 – YEAR 4
SEAD-16 AND SEAD-17, SENECA ARMY DEPOT ACTIVITY

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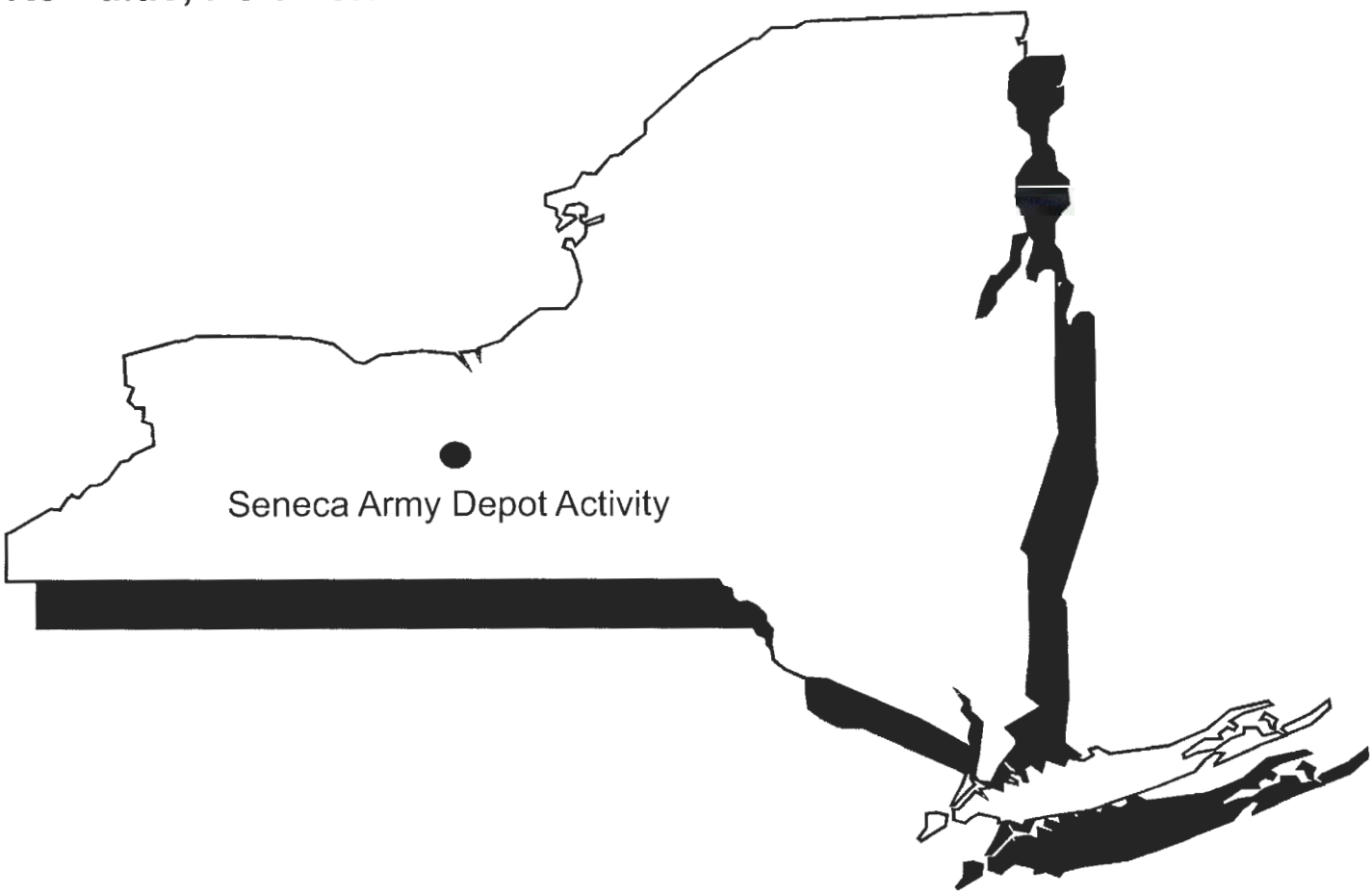

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FOR THE ABANDONED DEACTIVATION FURNACE (SEAD-16)
AND THE ACTIVE DEACTIVATION FURNACE (SEAD-17)
SENECA ARMY DEPOT ACTIVITY, ROMULUS, NY

Prepared for:

AIR FORCE CENTER FOR ENGINEERING AND THE ENVIRONMENT
BROOKS CITY-BASE, TEXAS
and
SENECA ARMY DEPOT ACTIVITY
ROMULUS, NY

Prepared by:

PARSONS
100 High Street
Boston, MA 02110

Contract Number FA8903-04-D-8675
Task Order 0031, CDRL A001G
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April 2011

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1.0 INTRODUCTION

This 2010 Annual Report – Year 4 for the former Abandoned Deactivation Furnace (SEAD-16) and the former Active Deactivation Furnace (SEAD-17) sites at the Seneca Army Depot Activity (SEDA or the Depot) in Romulus, Seneca County, New York provides a review of annual groundwater monitoring data collected in 2010, comparisons to other pre- and post-remedial action (RA) groundwater sampling events, recommendations for future long-term monitoring (LTM) at SEAD-16 and SEAD-17, and the annual review of the effectiveness of the remedy implemented at the sites in 2007.

In accordance with the Record of Decision (ROD) for SEAD-16 and SEAD-17 (Parsons, 2006) and the *Remedial Design Work Plan and Design Report* (Parsons, 2007) (Final Work Plan), a remedial action was completed in August 2007 for both areas of concern (AOCs). The remedial action consisted of the excavation, stabilization, as warranted, and disposal of soil from both AOCs that was contaminated with selected metals (i.e., antimony, arsenic, cadmium, copper, lead, mercury, thallium, and zinc) at levels above identified risk-based action levels. In addition, soil at SEAD-16 that was also contaminated with polyaromatic hydrocarbons (PAHs) at concentrations in excess of risk-based action levels was also excavated, stabilized, if warranted, and disposed at a licensed landfill. The work is documented in the *Final Construction Completion Report for the Abandoned Deactivation Furnace (SEAD-16) and Active Deactivation Furnace (SEAD-17)* (Parsons, 2008) (CCR). The remedial action at SEAD-16 involved the removal of 1,862 cubic yards (cy) of soil that was impacted with metals and polycyclic aromatic hydrocarbons (PAHs). The remedial action at SEAD-17 involved the removal of 2,565 cy of metal-impacted soil.

The ROD for SEAD-16 and SEAD-17 also requires the implementation, maintenance, inspection, and periodic reporting of land use controls (LUCs) that prohibit use of the land at the AOCs for residential purposes, and prohibits access to and use of groundwater until applicable cleanup standards [i.e., the lowest enforceable standard recorded either on New York State Class GA Ambient Water Quality Standards (AWQS) or United States Environmental Protection Agency (EPA) maximum contaminant levels (MCLs)] are met. Once groundwater cleanup standards are achieved, the groundwater use restrictions may be eliminated upon approval of the EPA and the New York State Department of Environmental Conservation (NYSDEC). SEAD-16 and SEAD-17 are located within the Planned Industrial/Office Development and Warehousing (PID) area, which has area-wide LUCs that prohibit the development and use of the property for residential housing, elementary and secondary schools, childcare facilities, and playgrounds; and, prohibits access to and use of groundwater until concentrations have been reduced to levels that allow for unlimited exposure and unrestricted use.

The Land Use Control Remedial Design (LUC RD) Addendum #4 implementing the LUCs required by the SEAD-16 and SEAD-17 ROD at the identified AOCs, as well as others (i.e., SEADs 1, 2, 5, 59, 71, 121C, and 121I) in the PID area, identifies and implements the LUCs. The LUC objectives for SEAD-16 and SEAD-17 are to prevent access to or use of groundwater until New York State GA groundwater standards are achieved, and to prohibit residential housing, elementary and secondary schools, child care facilities and playground activities at the sites. Implementation of the land use controls at SEAD-16 and SEAD-17 may include lease restrictions, an environmental easement, deed restrictions, zoning, periodic

certification, and a five-year review as is defined in the *Final Land Use Control Design for SEAD-27, 66, and 64A* (Army, 2006). The LUC RD for SEAD-27, 66 and 64A is also known as the *LUC RD for the Planned Industrial/Office Development or Warehousing Area* that proposed the establishment of an area-wide set of land use restrictions for the PID/Warehouse Area to simplify institutional control implementation by having a single set of land use restrictions for the PID/Warehouse Area, which are consistent with its anticipated industrial land use. The periodic certification will be submitted to the NYSDEC and EPA to document that the LUCs at SEAD-16 and SEAD-17 are unchanged and that no activities have occurred that impair or violate the ability of the LUCs to protect public health and the environment. Additionally, a five-year review will be conducted to evaluate the effectiveness of the selected remedies for SEAD-16 and SEAD-17.

Long-term groundwater monitoring (LTM) is being performed at SEAD-16 and SEAD-17 as part of the post-closure monitoring and maintenance (PCMM) operations in accordance with the ROD and as outlined in the Final Work Plan. The first year (Year 1) groundwater sampling event that was conducted as part of the LTM for SEAD-16 and SEAD-17 was performed in December 2007, and results are documented in the CCR. The second year (Year 2) groundwater sampling event was conducted in December 2008 for SEAD-16 and SEAD-17, and the results of the Year 2 sampling event are documented in the *Final Annual Report – Year 2* (Parsons, 2009). The third year (Year 3) groundwater sampling event was conducted in November 2009 for SEAD-16 and SEAD-17, and the results of the Year 3 sampling event are documented in the *Draft Final Annual Report – Year 3* (Parsons, 2010). Final regulatory approval of this report is still pending. The fourth year (Year 4) groundwater sampling event was conducted in December 2010 for both AOCs, and the results are presented and discussed in this report.

2.0 SITE BACKGROUND

2.1 Site Description

SEDA is a 10,587-acre former military facility located in Seneca County near Romulus, New York that was wholly owned by the United States Government and operated by the Department of the Army between 1941 and 2000; since 2000 portions of the Depot have been transferred to other parties for reuse. SEDA's primary mission was the receipt, storage, maintenance, and supply of military items. A location map for SEDA is shown in **Figure 1**. SEDA is located between Seneca Lake and Cayuga Lake in Seneca County, and is bordered by New York State Highway 96 to the east, New York State Highway 96A to the west, and sparsely populated farmland to the north and south.

SEAD-16 and SEAD-17 are located in the east-central portion of the former Depot, within the Depot's former ammunition storage area, where vehicular and pedestrian access is restricted. SEAD-16 and SEAD-17 are now located in the portion of the former Depot where land is designated for future planned industrial/office development and warehousing (PID) uses. The location of SEAD-16 and SEAD-17 is shown in **Figure 2**.

Both AOCs were historically used for the demilitarization of various small arms munitions. The munitions deactivation process involved heating the munitions in a rotating steel kiln. The heat would cause the munitions to detonate once the detonation temperature was reached. The byproducts produced during this detonation were then either swept out of the kiln through the stack or expelled from the kiln as bottom ash or debris.

SEAD-16, the former Abandoned Deactivation Furnace, was used from approximately 1945 until the mid 1960s when its use ceased and it was vacated. The site consisted of 2.6 acres of fenced land with grasslands in the north, east, and west; a storage area for empty boxes and wooden debris; and an unpaved roadway in the south. Building S-311, which previously housed the deactivation furnace was located at the approximate center of this area, was demolished as part of the remedial action at SEAD-16 and the results are documented in the *Building Cleaning and Building Demolition Completion Report* (Parsons, 2008). Building S-366, known as the Process Support Building which is currently unused and vacant, is still present on site along with two sets of SEDA railroad tracks and utilities.

SEAD-17, the former Active Deactivation Furnace, was constructed to replace the Abandoned Deactivation Furnace at SEAD-16. However, SEAD-17 was inactive after 1989 as a result of Resource Conservation and Recovery Act (RCRA) permitting issues. SEAD-17 formerly consisted of the deactivation furnace, associated air pollution control equipment, and a support building (Building S-367), which were demolished or dismantled during the remedial action. Details and results of the demolition are documented in the *Building Cleaning and Building Demolition Completion Report* (Parsons, 2008). The former SEAD-17 deactivation furnace facility and support building were surrounded by a crushed shale road, beyond which are grasslands. Two small sheds are located in the eastern portion of SEAD-17. An unpaved road to the north permits vehicular access to SEAD-17.

2.2 Site Hydrology

The hydrogeologic setting of SEAD-16 and SEAD-17 is described in detail in Sections 3.1.6 and 3.2.6, respectively, of *Final Remedial Investigation (RI) Report at the Abandoned Deactivation Furnace (SEAD-16) and the Active Deactivation Furnace (SEAD-17)* (Parsons, 1999). A brief summary of hydrogeologic conditions and chemical impacts found in the RI Report is presented below.

2.2.1 SEAD-16

Three groundwater monitoring wells (MW16-1, MW16-2, and MW16-3) were installed as part of the Expanded Site Investigation (ESI) conducted at SEAD-16 in 1993/1994. Four additional groundwater monitoring wells (MW16-4, MW16-5, MW16-6, and MW16-7) were installed during the RI. The locations of the seven groundwater monitoring wells installed at SEAD-16 are shown on **Figure 3**.

Prior to the completion of the remedial action, depth to groundwater was measured at SEAD-16 on three different occasions: April 1994, August 1996, and December 1996. Groundwater flow at SEDA generally trends to the west based on previous subsurface investigations conducted at the Depot. Previous investigation data suggest that a groundwater divide exists near, and approximately parallel to, Route 96 near Romulus, New York, indicating that the groundwater in the area encompassing SEAD-16 flows west. However, the groundwater elevation data are difficult to interpret since the varied ground surface cover type at SEAD-16 (i.e., vegetation, gravel, drainage swales, etc.) influences surface water infiltration. Available elevation data indicate that there may be a regional groundwater high southwest of the former Building S-311, which may contribute to local fluctuations in groundwater flow.

Horizontal hydraulic conductivities were determined for five wells that are screened in the till/weathered shale zone at SEAD-16. The saturated thickness in the till/weathered shale aquifer measured less than 2 feet when tested in September 1996. Hydraulic conductivity values for the shallow till/weathered shale aquifer range from 2.8×10^{-3} cm/sec to 2.5×10^{-2} cm/sec and the geometric mean was 7.3×10^{-3} cm/sec.

2.2.2 SEAD-17

Four groundwater monitoring wells (MW17-1, MW17-2, MW17-3, and MW17-4) were installed as part of the ESI conducted at SEAD-17. One additional groundwater monitoring well, MW17-5, was installed during the RI. The locations of the five groundwater monitoring wells installed at SEAD-17 are shown on **Figure 4**.

The depth to groundwater was measured at SEAD-17 during the same times as SEAD-16. Elevation data indicate that groundwater flows southwesterly.

The horizontal hydraulic gradient was calculated to be 0.01ft/ft between monitoring wells MW17-1 and MW17-3. Hydraulic conductivities were found to range from 2.9×10^{-3} cm/sec to 1.4×10^{-2} cm/sec.

2.3 Pre-Remedial Action Soil and Groundwater Conditions for SEAD-16

Pre-Remedial Action Soil Conditions

The primary historic constituents of concern (COCs) at SEAD-16 for soil included arsenic, copper, lead, and zinc. The highest concentrations of soil contamination resulted from operations that were performed

within and in close proximity to the former Abandoned Deactivation Furnace Building and the Process Support Building. Carcinogenic PAHs were detected in soils found at discrete locations within the AOC, with the highest concentrations detected in the surface soil samples collected adjacent to the northwestern corner of the former Abandoned Deactivation Furnace Building. Metals (antimony, copper, lead, mercury, and zinc) were found at concentrations greater than the site-specific cleanup goals in soil located in portions of the surrounding man-made drainage ditches.

Pre-Remedial Action Groundwater Conditions

Prior to completion of the remedial action, three rounds of groundwater sampling were conducted at SEAD-16. Compounds detected in the groundwater samples collected during the low-flow sampling events in 1996 are presented in **Appendix A**. For complete groundwater data results refer to the RI report.

Metals were detected above the applicable NYSDEC Class GA standards or EPA MCLs. All of these exceedances were less than or close to SEDA background concentrations, except for the exceedances of sodium. A summary of SEDA background groundwater data providing summary statistics (e.g., maximum and average concentrations, the standard deviation for the collected data, and the frequency of detection) is provided in **Appendix B**. The Final Work Plan summarized that, although metals had been detected in the groundwater above their respective standards during previous sampling events, the groundwater was not impacted by site activities. This conclusion is based on a comparison of results to groundwater data collected from unaffected parts of the Depot.

2.4 Pre-Remedial Action Soil and Groundwater Conditions for SEAD-17

Pre-Remedial Action Soil Conditions

The primary historic COCs in the soil at SEAD-17 were metals, including antimony, arsenic, copper, lead, mercury, and zinc. The concentrations of metals were highest in samples collected closest to the location of the former Active Deactivation Furnace and its support building, particularly near the southwestern corner of the building.

Pre-Remedial Action Groundwater Conditions

Prior to the completion of the remedial action, three rounds of groundwater sampling were conducted at SEAD-17, similar to the sampling that was conducted at SEAD-16 (April 1993 for the ESI and August and December 1996 for the RI). Compounds detected in the groundwater samples collected during the low-flow sampling events in 1996 are presented in **Appendix A**. Metals were detected at concentrations above the applicable Class GA standards or MCLs; however, these concentrations were lower than SEDA background concentrations, except for sodium. (See SEDA background groundwater data summary in **Appendix B**). The Final Work Plan summarized that, although metals had been detected in the groundwater above their respective standards during previous sampling events, the groundwater was not impacted by site activities. This conclusion is based on a comparison of results to groundwater data collected from unaffected parts of the Depot.

2.5 Remedial Action Summary

The selected remedy for SEAD-16 and SEAD-17 consisted of the following elements:

- Excavation of soil impacted with metals and PAHs at concentrations greater than the site-specific cleanup standards;
- Stabilization of excavated soil exceeding the toxicity characteristic leaching procedure;
- Disposal of the material in an off-site landfill;
- Backfilling the excavated areas with clean backfill;
- Groundwater monitoring until concentrations are below applicable New York State Class GA or Federal MCL standard levels;
- Establishment and maintenance of LUCs to prevent access to or use of groundwater and to prevent residential use of the land until cleanup standards are met; and
- Performance of a review of the selected remedy every 5 years to evaluate if the remedy remains protective of the public health and the environment in accordance with Section 121(c) of the CERCLA.

The excavation of the impacted soil at SEAD-16 and SEAD-17 began on July 9, 2007 and was completed on August 2, 2007 with 1,862 cy of impacted soil removed from SEAD-16 and 2,565 cy of impacted soil removed from SEAD-17. The limit of the excavations for SEAD-16 is shown on **Figure 3** and for SEAD-17 on **Figure 4**.

Soil was excavated from both SEAD-16 and SEAD-17 until confirmatory soil samples collected from the sidewalls (when appropriate), the excavation floor, and the perimeter were below site specific cleanup standards. The depth of excavation completed at SEAD-16 varied from 1 to 3 feet below ground surface (bgs) and the excavation depth at SEAD-17 varied from 1 to 2 feet bgs. The impacted soil from SEAD-16 and SEAD-17 was transported off-site, and disposed as non-hazardous material at the Ontario County Landfill in Flint, New York.

Deeper excavations at SEAD-16 and SEAD-17, including excavation areas surrounding the railroad tracks, were backfilled with clean bank-run gravel. SEAD-16 and SEAD-17 were graded to promote positive drainage. The areas at SEAD-17 that were vegetated prior to the remedial action were seeded to restore the vegetation. SEAD-16 was not seeded since it was not previously vegetated.

3.0 LONG TERM MONITORING RESULTS

3.1 Summary of Year 1 Groundwater Event

The first post-remedial action long-term groundwater monitoring event (Year 1) was performed at SEAD-16 and SEAD-17 between December 19, 2007 and December 21, 2007. The results of the Year 1 event are reported in the CCR. Only unfiltered samples of the groundwater were collected and analyzed during this sampling event.

In summary, at SEAD-16 five metals of concern (antimony, iron, lead, manganese, and sodium) were detected at concentrations above their respective Class GA or MCL standards in one or more of the wells; at SEAD-17 two metals, antimony and sodium, were each detected once in different wells at concentrations above their respective Class GA groundwater standards. Concentrations of other metals detected at SEAD-16 and SEAD-17 were all below their respective Class GA groundwater and MCL standards. With the noted exception of sodium concentrations detected at SEAD-16, concentrations detected at both SEAD-16 and SEAD-17 were below SEDA background concentrations. The CCR concluded that the groundwater did not appear to be impacted by historic site activities.

3.2 Summary of Year 2 Groundwater Event

The second post-remedial action long-term groundwater monitoring event (Year 2) was performed at SEAD-16 and SEAD-17 between December 9, 2008 and December 11, 2008. The results of the Year 2 event were reported in *Final Annual Report – Year 2* (Parsons, 2009). Only unfiltered samples of the groundwater were collected and analyzed during this sampling event.

Four metals (antimony, iron, lead, and sodium) were detected in wells at SEAD-16 at concentrations above their respective Class GA or MCL standards; at SEAD-17 two COCs (iron and manganese) were detected at concentrations above their respective Class GA standards. Concentrations of all other metals detected at SEAD-16 and SEAD-17 were below their respective Class GA or MCL standards. *The Final Annual Report – Year 2* (Parsons, 2009) concluded that the groundwater does not appear to be impacted by historic site activities and there does not appear to be an indication that conditions were deteriorating at SEAD-16 and SEAD-17.

3.3 Summary of Year 3 Groundwater Event

The third post-remedial action long-term groundwater monitoring event (Year 3) was performed at SEAD-16 and SEAD-17 between November 12, 2009 and November 18, 2009. The results of the Year 3 event were reported in *Draft Final Annual Report – Year 3* (Parsons, 2010, regulatory approval pending). Filtered and unfiltered samples were collected and characterized during this sampling event.

Three metals (antimony, iron, and sodium) were detected in unfiltered groundwater samples from SEAD-16 at concentrations above their respective Class GA or MCL standards; at SEAD-17, two COCs (iron and sodium) were detected in unfiltered samples at concentrations above their respective Class GA. Filtered and unfiltered sample results for SEAD-16 were similar for two metals (antimony and sodium); however unfiltered results for iron were somewhat higher than reported for filtered samples. Filtered and unfiltered sodium concentrations were similar in all of the SEAD-17 wells, but filtered and unfiltered iron

concentrations in wells MW17-2 and MW17-3 were significantly different with the unfiltered concentrations being the highest in both cases. Concentrations of all other metals detected at SEAD-16 and SEAD-17 were below their respective Class GA or MCL standards. The *Draft Final Annual Report – Year 3* (Parsons, 2010) concluded that the groundwater does not appear to be impacted by historic site activities and there does not appear to be an indication that conditions are deteriorating at SEAD-16 and SEAD-17.

3.4 Year 4 Groundwater Sampling

The Year 4 post-remedial action groundwater sampling event was conducted at SEAD-16 and SEAD-17 between December 13, 2010 and December 17, 2010. Filtered and unfiltered groundwater samples were collected from the six monitoring wells (MW16-1, MW16-2, MW16-4, MW16-5, MW16-6, and MW16-7) located at SEAD-16. Well MW16-3 was removed during the remedial action and was not sampled. Filtered and unfiltered groundwater samples were also collected from the five monitoring wells (MW17-1, MW17-2, MW17-3, MW17-4, and MW17-5) located at SEAD-17. Field forms for Year 4 sampling activities are included in **Appendix C**. Prior to the collection of groundwater samples from each of the monitoring wells, groundwater elevation measurements were collected at each of the wells to be sampled. The results of the groundwater elevation monitoring are presented in **Table 1** for SEAD-16 and **Table 2** for SEAD-17, along with historic data from these locations.

3.4.1 Sample Collection

The samples were collected using low flow sampling techniques. A peristaltic pump was used to collect the groundwater samples at all the wells due to weather conditions (temperature 21 degrees Fahrenheit [°F] to 26 °F and winds 10-30 miles per hour). A peristaltic pump is recommended in these freezing conditions since the bladder pump recharge cycle sequence has periodically caused water to freeze in exposed sample tubing which hampers and can terminate sample collection efforts if ice plugs form in the sample lines. Sample collection, handling and custody, holding times, and field parameter collection procedures employed were conducted in accordance with the *Revised Final Sampling and Analysis Plan for Seneca Army Depot Activity* (SAP) (Parsons, 2006c). Samples were collected from the 11 wells and submitted to TestAmerica (Savannah, GA) for analysis of the following analytes:

- Total Analyte List (TAL) metals, exclusive of mercury, by USEPA SW846 Method 6020;
- Mercury by USEPA SW846 7470A.

TestAmerica's Savannah GA laboratory is certified by the Department of Defense's (DoD's) Environmental Laboratory Accreditation Program (ELAP) and the NELAC National Environmental Laboratory Accreditation Program (NELAP) for analysis of the identified analytes by the identified methods for both potable and non-potable water.

Quality control (QC) samples, including one duplicate and one matrix spike/matrix spike duplicate (MS/MSD) pair, were collected at MW16-2. In the field, pH, oxidation-reduction potential (ORP), dissolved oxygen (DO), conductivity, temperature, and turbidity data were collected from each well during the pre-sampling purging cycle performed at the well; filtered turbidity data was collected for each location after the filtered sample was collected except at wells MW16-1 and MW16-4; and pH, ORP, DO,

conductivity, temperature, and turbidity data were also collected from each well after samples had been collected to assess overall sample sequence stability. A summary of the pre- and post-sampling field parameters is provided in **Table 3** for SEAD-16 and **Table 4** for SEAD-17.

3.4.2 Sample Filtering

As documented in *Final Annual Report – Year 2* (Parsons, 2009) and *Draft Final Annual Report – Year 3* (Parsons, 2010), some of the metal concentrations that exceed Class GA or MCL standards in specific SEAD-16 and SEAD-17 wells may be associated with the fluctuation of groundwater turbidity encountered in the wells at the time of sampling. Several of the samples (e.g., MW16-1, MW16-4, MW16-7, MW17-1, and MW17-4) collected during the Year 3 monitoring event had very low levels of turbidity (i.e., less than 1 Nephelometric Turbidity Unit [NTU]) which results in similar metal concentrations being reported for both the filtered and unfiltered sample pairs. Conversely, certain metals, most notably including aluminum, iron, and manganese in many wells, and specific metals in other wells (e.g., lead in MW16-7, MW17-2 and MW17-3) appear to be affected by filtering, which suggests that some of the reported metal results due to the presence of soil particles in the analyzed samples. Concentrations measured for several metals (i.e., antimony, calcium, magnesium, potassium and sodium) are unaffected either by variations in turbidity level or by sample filtering, suggesting that these metals are present as dissolved species in the groundwater. With this in mind, samples from the Year 4 sampling event were collected as extracted from the well (i.e., unfiltered) and filtered in the field through a 0.45-micron membrane filter.

Both the filtered and unfiltered samples from all SEAD-16 and SEAD-17 wells were analyzed for the TAL metals by the methods listed in **Section 3.4.1.** A comparison of the unfiltered and filtered concentrations of all metals at SEAD-16 and SEAD-17 is shown in **Table 5A** and **Table 5B**. This is the second sampling event when filtered and unfiltered samples were collected; the Year 3 event was the first time unfiltered and filtered samples were collected.

Turbidity levels recorded immediately prior to Year 4 sample collection ranged from 0 NTU to 3.1 NTUs with six of the 11 wells having turbidity less than 1 NTU. Turbidity levels of groundwater recorded after the collection of all samples (i.e., unfiltered and filtered) from a well ranged from 0 NTU to 6.5 NTU with only three wells (MW16-2, MW16-5, and MW16-6) showing turbidity levels greater than 1.4 NTU. Filtered water turbidity levels ranged from 0 NTU to 0.4 NTU, as would be expected after passing through a 0.45-micron membrane filter.

Review of the Year 4 data adds further support to some of the conclusions drawn from the Year 3 data. The Year 4 data show that in cases where raw groundwater turbidity level is low, the difference between the filtered and unfiltered samples concentrations are minute. Several of the samples (e.g., MW16-1, MW16-4, MW16-7, MW17-1, and MW17-4) collected during the Year 4 monitoring event had very low levels of turbidity (i.e., less than 1 NTU) which results in similar metal concentrations being reported for both the filtered and unfiltered sample pairs. Only iron levels measured in wells MW16-5, MW17-2, and MW17-3 showed marginal evidence of concentration decreases that may be attributable to filtering. Concentrations measured for several metals (i.e., antimony, calcium, magnesium, potassium and sodium)

are unaffected either by variation in turbidity levels of by sample filtering, suggesting that these metals are dissolved in the groundwater.

3.5 Year 4 Groundwater Elevations for SEAD-16 and SEAD-17

SEAD-16 groundwater elevation data were recorded on December 13, 2010 for Year 4 and are presented on **Table 1**. Groundwater elevation data collected during the pre-remedial action (April 4, 1994, August 1996, December 1996) and Years 1, 2, and 3 post-remedial action sampling events are also shown on **Table 1**. Groundwater elevation data collected during previous investigations indicate that groundwater generally flows southwestward at SEAD-16; however, groundwater elevation data also indicate that there may be a regional high southwest of the location of former Building 311 that could create local fluctuations in groundwater flow direction. During the most recent event, elevation data suggest that there is a groundwater low in the vicinity of the former Building 311 location which receives flow from the northeast and southwest where the localized high is suspected to exist. Flow entering this low is then expected to move west and then possibly southwest with the more regional flow as shown on **Figure 5**.

SEAD-17 groundwater elevation data were recorded on December 13, 2010 for Year 4 and are presented on **Table 2**. Groundwater elevation data collected during the pre-remedial action (April 4, 1994, August 1996, December 1996) and Years 1, 2, and 3 post remedial action sampling events are shown on **Table 2**. Based on the most recent elevation data (December 2010), groundwater at SEAD-17 appears to flow westward as shown on **Figure 5**.

3.6 Year 4 Groundwater Data Analysis for SEAD-16

A summary of metals detected in the groundwater during the Year 4 annual sampling event for SEAD-16 is presented in **Table 6A**. Complete groundwater data results are presented in **Appendix D**. Concentrations of metals above the comparative criteria levels were detected in filtered and unfiltered samples collected from five of the six wells (all except MW16-6) sampled in SEAD-16.

Antimony exceeded its Class GA standard (3 µg/L) in both the filtered and unfiltered samples collected from two wells (MW16-2 and MW16-7). The highest concentrations of antimony detected were found at well MW16-7, where concentrations of 16 µg/L and 15 µg/L, respectively were found in the unfiltered and filtered samples. Antimony concentrations measured in the unfiltered and filtered sample collected from MW16-2 were also comparable (i.e., average of 6.3 µg/L, unfiltered; 6.1 µg/L filtered sample/sample duplicate) at this location.

Iron exceeded its Class GA standard (300 µg/L) in the unfiltered and filtered samples characterized from well MW16-5. The highest unfiltered and filtered sample concentration of iron was detected at MW16-5 (660 µg/L and 480 µg/L, respectively).

The unfiltered and filtered sample concentrations of "iron+manganese" detected in well MW16-5 also exceeded the combined GA standard (500 µg/L) with the primary contributing metal being iron. Although, manganese was detected in the unfiltered and filtered groundwater samples collected from all SEAD-16 wells, it was never detected at concentrations above its GA standard level (i.e., 300 µg/L).

Sodium was detected at concentrations above its Class GA standard (20,000 µg/L) in unfiltered and filtered sample pairs collected from four of the SEAD-16 wells (MW16-1, MW16-2, MW16-4, and MW16-7). The highest concentration was found in the unfiltered sample collected from well MW16-4 (550,000 µg/L). The highest sodium concentrations reported at the other three wells were found in the MW16-2 unfiltered sample pair at 33,000 µg/L (average of sample and duplicate pair), in the MW16-1 filtered sample at 170,000 µg/L, and in the MW16-7 filtered sample at 29,000 µg/L.

In summary, select metals continue to be detected in the groundwater at SEAD-16 at levels that exceed Class GA standard levels. In general, there does not appear to be evidence of an area-wide or expanding plume at SEAD-16, as identified by the contaminant concentrations detected in the groundwater monitoring wells. Access to and use of the groundwater is restricted at the AOC under the terms of the ROD and the groundwater is not being used as a potable water source. A municipal water supply derived from a non-groundwater source is available for the Depot and its current distribution includes the PID area. The groundwater access/use restriction will remain in effect at SEAD-16 until the groundwater concentrations have been reduced to levels below applicable Class GA and MCL standards, and until data that documents acceptable groundwater quality is present in the AOC is provided to and approved by the regulatory agencies.

3.7 Year 4 Groundwater Data Analysis for SEAD-17

A summary of metals detected from the Year 4 groundwater sampling event for SEAD-17 is presented in **Table 6B**. Complete groundwater analytical results are presented in **Appendix D**. All metals in monitoring wells except MW17-3 were detected at concentrations below their respective Class GA and MCL standards in the filtered and unfiltered samples. At MW17-3, iron was the only metal detected above its groundwater standard (i.e., 300 µg/L) in both the filtered (730 µg/L) and unfiltered (770 µg/L) sample. The "iron+manganese" concentration determined in this well also exceeded NYSDEC's GA standard level in both the filtered and unfiltered sample collected from MW17-3, but both of these exceedances result from the elevated iron concentration and not due to elevated manganese concentrations in the well.

The Year 4 data demonstrate that the groundwater at SEAD-17 has not been impacted by metals released from the former Active Deactivation Furnace site. Access to and use of the groundwater is restricted at the AOC under the terms of the ROD and it is not being used as a potable water source. A municipal water supply derived from a non-groundwater source is available for the Depot and its current distribution includes the PID area. The groundwater access/use restriction will remain in effect at SEAD-17 until the groundwater concentrations have been reduced to levels below applicable Class GA and MCL standards, and until data that documents acceptable groundwater quality is present in the AOC is provided to and approved by the oversight agencies.

3.8 Groundwater Data Trends

A comparison of data during the Year 1 to 4 post-remedial action monitoring events to each other and to groundwater conditions noted prior to the remedial action is provided for each of the sites in the following discussions. A summary of the Year 4, groundwater monitoring events for SEAD-16 and SEAD-17

exceedances is provided in **Table 6A** and **Table 6B**, respectively. The complete data set for the Year 1, Year 2, Year 3, and Year 4 events is included in **Appendix D**.

3.8.1 Review of Groundwater Trends at SEAD-16

ESI and RI Data

Review of SEAD-16 data presented in the RI Report indicates that one or more concentrations measured for 14 metals (i.e., arsenic, antimony, barium, beryllium, chromium, copper, iron, lead, manganese, mercury, nickel, selenium, sodium, and thallium) in 19 unfiltered groundwater samples collected during the expanded site investigation (ESI) or the RI exceeded New York State GA or Federal MCL standards in effect at the time of analysis. Of the 39 total instances where measured groundwater concentrations exceeded standards, 22 were associated with samples which were collected using peristaltic pumps (ESI sampling event) while the remaining 17 were found in samples which were collected using low-flow bladder pump sampling procedures. Sample water turbidities recorded during the RI sampling events were significantly lower than those recorded during the ESI sampling event, and thus are believed to be more representative of the water quality located at the site prior to the remedial action. Examination of the RI groundwater data only indicates that six metals (i.e., antimony [2 times], iron [5 times], lead [1 time], manganese [2 times], sodium [3 times] and thallium [4 times]) were detected at concentrations in excess of GA or MCL standards in effect at the time of analysis. Of these detections, antimony was only detected at concentrations above its standard in well MW16-3 with a maximum concentration of 12.3 µg/L; iron was found at elevated concentrations in three wells (i.e., MW16-1 [maximum], MW16-2, and MW16-3) with a maximum concentration of 2,400 J[1] µg/L; lead was found only in MW16-3 with a maximum concentration of 24.1 J µg/L; manganese was detected at elevated concentrations only in MW16-6 with a maximum level of 1,380 µg/L; sodium was detected in two wells (i.e., MW16-5 and MW16-6 [maximum]) with a maximum concentration of 409,000 µg/L; and thallium was detected in three wells (i.e., MW16-2, MW16-5, and MW16-6 [maximum]) with a maximum level of 11 µg/L.

Post-Remedial Action Data

Over the four years since the completion of the remedial action at SEAD-16, a total of 29 unfiltered and 14 filtered groundwater samples have been collected from the six wells that are located at the site. Sixty-two exceedances of GA or MCL standards have been detected in the samples characterized, distributed across five metals (i.e., antimony [20 times], iron [11 times], lead [2 times], manganese [1 time], and sodium [28 times]). Of the 62 groundwater standard exceedances, 19 were observed in the filtered samples and 43 were detected in unfiltered samples.

Noted exceedances of antimony were at the highest frequency in wells MW16-2 and MW 16-7 where samples collected and characterized contained concentrations in excess of antimony's 3 µg/L GA standard. Sporadic detections of antimony above the GA limit were noted in well MW16-4 (i.e., 3 times, one filtered and two unfiltered samples) and MW16-5 (1 unfiltered sample). Filtered and unfiltered sample results for antimony from wells MW16-2 and MW16-7 are generally comparable, suggesting that the metal is present as a dissolved species and the highest concentrations are found consistently in well

[1] The "J" data qualifier is used to indicate that the reported concentration is estimated.

MW16-7 where the overall maximum (16.15 µg/L) is found in the sample/duplicate pair collected during the 2010 Year 4 sampling event. This number is approximately equivalent to what was observed in the groundwater at MW16-3 prior to the remedial action.

Iron GA standard exceedances were noted 11 times, spread across wells MW16-4 through MW 16-7. Iron concentrations noted in filtered samples are generally lower than concentrations found in unfiltered samples indicating that the noted iron concentrations are somewhat dependant of turbidity levels found in the groundwater at the time of sampling. The highest post remedial action iron concentration detected in the groundwater at SEAD-16 is 1,200 µg/L, which is roughly half of what was detected in the groundwater at the site prior to the remedial action.

Lead has been detected less frequently (i.e., 15 of 62 samples post RA; 11 of 19 samples pre-RA) and at lower concentrations (i.e., 2 exceedances post RA) in groundwater during the four years of post-RA monitoring. The two noted post-RA exceedances of the lead MCL both occurred in well MW16-7 during the first and second post-RA sampling events. Both of these samples were unfiltered, and since the last exceedance at MW16-7, lead levels in both the filtered and the unfiltered samples collected from this well have trended downward.

Sodium is a persistent contaminant identified in SEAD-16 wells, as it has been identified in every sample collected from the site, and at levels in excess of its GA standard in 28 of the 62 samples characterized. Levels found in the groundwater are currently higher than what was found prior to the remedial action, with these being affected by the known county highway salt pile operation that is operated by the Seneca County Highway Department that is located approximately 1,000 feet upgradient (east, northeast) of SEAD-16.

A statistical analysis could not be performed on the available SEAD-16 pre (1 to 3 samples per well) and post remedial action (4 samples per well) datasets due to limited available data points and the high percentage of non-detects in the metal constituents results. A review of the EPA's *Groundwater – Unified Guidance* (EPA 2009) document provides numerous statistical methodologies, however all of them require more data points than are presently available. Once a sufficient number of data points has been obtained a statistical analysis of the post remedial action sampling events can be conducted.

3.8.2 Review of Groundwater Trends at SEAD-17

ESI and RI Data

Review of SEAD-17 data presented in the RI Report indicates that one or more concentrations measured for five metals (i.e., iron, lead, sodium, and thallium) in 12 unfiltered groundwater samples exceeded New York State GA or federal MCL standards in effect at the time of analysis. Of the 16 instances where measured groundwater concentrations exceeded standards, 10 were associated with samples that were collected using peristaltic pumps (ESI sampling event) while the remaining six were found in samples that were collected using low-flow bladder pump sampling procedures. As was indicated above for SEAD-16, sample water turbidities recorded during the RI sampling events were lower than those recorded during the ESI sampling event, and thus the analytical results from the RI samples are believed to be more representative of the water quality present at SEAD-17. Examination of the RI groundwater

data only indicates that three metals (i.e., iron [1 time], sodium [2 times], and thallium [3 times]) were detected at concentrations above GA or MCL standards in effect at the time of analysis. Of these detections, iron was found at an elevated concentration in one well (MW17-1 with a concentration of 572 J µg/L; sodium was detected in two wells (i.e., MW17-3 [maximum] and MW17-4) with a maximum concentration of 30,100 µg/L; and thallium was detected in two wells (i.e., MW17-1 [sample/duplicate, with maximum] and MW17-5) with a maximum level of 7.1 µg/L (5.75 µg/L average of sample/duplicate).

Post-Remedial Action Data

Since the completion of the remedial action at SEAD-17, a total of 20 unfiltered and 10 filtered groundwater samples have been collected from the five wells that are located at the site. Sixteen exceedances of GA or MCL standards have been detected distributed across five metals (i.e., antimony [2 times], iron [7 times], lead [1 time], manganese [2 times], and sodium [4 times]). Of the 16 groundwater standard exceedances, three were observed in the filtered samples and 13 were detected in unfiltered samples. No exceedance of groundwater standards has been observed in well MW17-1 since the start of post-remedial action LTM, while six exceedances have been observed in MW17-2, five exceedances have been observed in well MW17-3 and each of these is for iron, three in MW17-4 and two, both for sodium, have been observed in MW17-5.

Exceedances of the 3 µg/L MCL for antimony were only recorded at MW17-2 during the first and third sampling events, both in unfiltered samples. The paired filtered sample from MW17-2 collected during the Year 3 event did not contain a level of antimony in excess of the 3 µg/L MCL standard. The maximum concentration reported for thallium was 3.7 µg/L in the MW17-2 Year 3 unfiltered sample. The antimony concentration in the filtered sample from this well was 2.2 µg/L.

Iron GA standard exceedances were noted seven times, found distributed between three wells (MW17-2, [1 time], MW17-3 [5 times] and MW17-4 [1 time]). The maximum iron concentration recorded was found in the well MW17-2 unfiltered sample collected during the third annual event. Iron was not detected in the filtered sample collected during this event, therefore this result is presumed attributable to elevated turbidity in the sample, which may also affect a few of the other metal detections reported (i.e., antimony, lead, and manganese) in this sample, which are not confirmed by the results in the filtered sample from this well and sampling event. Iron concentrations found in five samples from MW17-3 (three unfiltered and two filtered) all were above iron's 300 µg/L GA standard. Iron results from the third sampling event's filtered and unfiltered pair suggest that turbidity may impact the results found in this round, but iron in the filtered sample still surpassed the GA standard level.

Lead has only been detected above the federal MCL action level once in SEAD-17 wells since the completion of the RA, this being found in well MW17-2 in the unfiltered sample collected during the third sampling event. The presence of lead was not confirmed by the results of the filtered sample, where lead was not detected at a level of 2.9 U[2] µg/L.

[2] The "U" data qualifier is used to indicate that this compound was not detected at a concentration above this level.

Manganese concentrations reported for samples collected from MW17-2 (unfiltered, Year 3 post-RA event) and MW17-4 (unfiltered, Year 2 post-RA event) exceeded its GA standard of 300 µg/L. The MW17-4 sample had the highest manganese concentration (911 µg/L), and the filtered sample from MW17-2 did not confirm the exceedance of manganese in this well, as a concentration of 1.5 J µg/L was reported in this sample.

Sodium was detected at levels in excess of its 20,000 µg/L GA standard four times in samples collected from MW17-2, MW17-4 and MW17-5. Of these detections, the sample results from MW17-5 are the most notable as the paired filtered/unfiltered sample collected from the Year 3 post-RA event both exceeded 360,000 µg/L. Year 2 and 4 post-remedial action sampling event sodium results for this well were all below 10,000 µg/L, suggesting the Year 3 results are possibly a seasonal anomaly.

In general, post-remedial action LTM results indicate that groundwater quality at SEAD-17 is not impacted by historic operations conducted in this area. Many of the identified groundwater quality exceedances appear to be affected by turbidity issues (MW17-2 samples), while other noted exceedances of iron, manganese, and sodium either random occurrences (e.g., sodium, MW17-5) or may be attributable to regional iron and manganese groundwater impacts that are present in Seneca County. Similar to SEAD-16, a statistical analysis could not be performed on the available SEAD-17 pre (1 to 3 samples per well) and post-RA (4 samples per well) datasets due to limited available data points and the high percentage of non-detects in the metal constituents results. A review of the EPA's "*Groundwater – Unified Guidance*" document provides numerous statistical methodologies, however all of them require more data points than are presently available. Once a sufficient number of data points has been obtained a statistical analysis of the post remedial action sampling events can be conducted.

3.9 Routine Inspections of Monitoring Wells for SEAD-16 and SEAD-17

The wells at SEAD-16 are in acceptable condition. Well MW16-5's well upriser had lifted slightly into the metal protective casing's lid which initially prevented the lid from being opened; the metal lid was stuck with a 2-pound hammer three times which cause the upriser to recede enough to permit the metal lid be opened and the well to be sampled. This action did not affect the groundwater quality observed at this well as only iron was observed at levels in excess of groundwater standards and the levels reported for iron during the Year 4 sampling event are consistent with other reported for other post-remedial action events. All other metal results observed in this well remain similar to prior post-remedial action sampling event results.

Observations made during Year 3 indicated that roots may have breached wells MW17-2, MW17-3, and MW17-5. However, no root material or obstructions were observed in wells MW17-4 or MW17-5 during the Year 4 sampling event. An obstruction was noted at well MW17-2 during the Year 4 sampling event, which prevented use of the water level gauge and DO probe below a depth of 6.4 feet from the top of the well upriser. Necessary samples from this well were obtained during the Year 4 sampling event, and the results recorded for this location continue to be consistent with prior events, which suggest that water quality at this well are not adversely affected by the obstruction.

4.0 REMEDY EVALUATION

As discussed above in **Section 2.5**, 4,427 cy of metal- and PAH-impacted soil were removed from SEAD-16 and SEAD-17 during the remedial action conducted in the summer of 2007. The impacted soil was removed to minimize or eliminate the migration of hazardous contaminates from soil to groundwater. Soil that exceeded the site-specific cleanup standards, as based on the confirmatory soil data, was removed from SEAD-16 and SEAD-17.

The long-term groundwater monitoring performed for four years shows that the soil removal remedy has been effective in minimizing the migration of the identified COCs from soil to groundwater. Pre-remedial action groundwater quality concerns associated with arsenic, barium, beryllium, chromium, copper, iron, lead, mercury, nickel and thallium have been eliminated, as each of these metals, except lead, have not been detected in the groundwater at SEAD-16 in excess of groundwater quality standards since the action was completed,. Lead was found twice at levels in excess of its MCL action level, but these were confined to a single well (i.e., MW16-7) during the Year 1 and Year 2 post-action sampling events, and they have not been repeated during either the Year 3 or Year 4 sampling events. While iron and manganese are still detected at concentrations in excess of GA groundwater quality standards, these results appear to be partially affected by turbidity issues or are attributable to the regional groundwater quality, and are not attributable to the site. Noted sodium exceedances found in the groundwater at SEAD-16 appear to originate from an off-site salt storage source operated by the Seneca County Highway Department that is located upgradient of SEAD-16. Antimony continues to be observed in at concentrations above the GA standard, but these appear to be limited to two wells where concentrations have remained consistent since the removal action was completed.

The groundwater quality at SEAD-17 appears to have improved since the completion of the remedial action. The few noted groundwater quality exceedances for metals other than iron and manganese appear to be limited to initial Year 1 or Year 2 post-remedial action sampling events or a sample where a turbidity impact is suspected (i.e., Year 3 MW17-2 sample), and where groundwater quality has improved since the exceedances were reported. The noted iron exceedances reported for SEAD-17 are isolated and are most likely attributable to regional quality.

The remedy for SEAD-16 and SEAD-17 includes the implementation and maintenance of LUCs consisting of:

- Prevention of residential housing, elementary and secondary schools, childcare facilities and playground activities, and
- Prevention of access to or uses of the groundwater until concentrations are below the New York State Class GA Groundwater or EPA MCL standard levels.

As part of the LTM program, SEAD-16 and SEAD-17 were inspected to determine if the LUCs are being maintained. During the Year 4 event, it was confirmed that no residential housing, elementary and secondary schools, childcare facilities, or playgrounds have been constructed or established in these AOCs, and no access to or use of groundwater, beyond that which is gained by the exiting monitoring well network, was evident at either SEAD-16 or SEAD-17.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

- The soil excavation remedy at SEAD-16 and SEAD-17 has been effective controlling, and in some cases eliminating, the migration of COCs from soil to the groundwater based on the four post-action LTM sampling rounds.
- The results of the Year 4 LTM event demonstrate that field filtering is an effective tool for identifying turbidity impacts on the groundwater data.
- Post-remediation groundwater monitoring results indicate that the groundwater has not been impacted by site activities, though concentrations were observed above the Class GA or MCL standards.
- The land and groundwater use restrictions imposed at SEAD-16 and SEAD-17 are maintained and there are no signs of unauthorized use or access to the AOCs.

5.2 Recommendations

Based on the pre-remedial groundwater data and the data collected during Years 1, 2, 3, and 4 of the LTM program at SEAD-16 and SEAD-17, the Army recommends that the groundwater monitoring continue on an annual basis at SEAD-16 and SEAD-17 until the Depot's five-year review is performed and approved. The Army anticipates that long-term groundwater monitoring for SEAD-16 and SEAD-17 can be discontinued once the five-year review is performed.

6.0 REFERENCES

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TABLES

Table 1
SEAD-16 - Groundwater Table Elevations Summary
SEAD-16 & SEAD-17 Year 4 Annual Groundwater Monitoring Report
Seneca Army Depot Activity

Pre-Remedial Action Groundwater Elevation Data

Monitoring Well	Top of PVC Elevation [1]	April 4, 1994		August 27, 1996		December 6, 1996	
		Depth to Water (feet)	Water Table Elevation (feet)	Depth to Water (feet)	Water Table Elevation (feet)	Depth to Water (feet)	Water Table Elevation (feet)
MW 16-1	735.54	3.52	732.02	6.45	729.09	3.25	732.29
MW 16-2*	734.56	3.65	730.91	4.50	730.06	3.71	730.85
MW 16-3	735.48	4.60	730.88	5.43	730.05	4.64	730.84
MW 16-4	733.93	NA	NA	4.83	729.10	2.93	731.00
MW 16-5*	733.40	NA	NA	4.76	728.64	2.20	731.20
MW 16-6	733.56	NA	NA	4.54	729.02	2.90	730.66
MW 16-7	734.42	NA	NA	5.06	729.36	4.23	730.19

Post-Remedial Action Groundwater Elevation Data

Monitoring Well	Top of PVC Elevation [1]	December 20, 2007		December 9, 2008		November 13, 2009		December 13, 2010	
		Depth to Water	Water Table Elevation	Depth to Water	Water Table Elevation	Depth to Water	Water Table Elevation	Depth to Water	Water Table Elevation
MW 16-1	735.54	4.25	731.29	4.28	731.26	5.76	729.78	3.16	732.38
MW 16-2*	734.56	4.20	730.36	4.20	729.28	4.35	729.13	4.08	729.40
MW 16-3	735.48	NA	NA	NA	NA	NA	NA	NA	NA
MW 16-4	733.93	3.00	730.93	3.42	730.51	3.91	730.02	2.78	731.15
MW 16-5*	733.40	1.90	731.50	3.32	732.50	3.10	732.72	1.68	734.14
MW 16-6	733.56	2.66	730.90	3.47	730.09	3.68	729.88	2.53	731.03
MW 16-7	734.42	4.45	729.97	4.63	729.79	4.75	729.67	4.41	730.01

Notes:
(1) Elevations are relative to the North American Vertical Datum (NAVD) 1988.
(2) April 4, 1994 data were collected as a part of the ESI and August 1996 and December 1996 were collected during the Remedial Investigation Report.
(3) Monitoring well MW16-3 was destroyed during the remedial action conducted at SEAD-16.
(4) December 2007 and 2008 data collected after the completion of the remedial action.
NA = Not Available.
* indicates that PVC riser pipe was cut during December 2008 sampling event.

Table 2
SEAD-17 - Groundwater Table Elevations Summary
SEAD-16 & SEAD-17 Year 4 Annual Groundwater Monitoring Report
Seneca Army Depot Activity

Pre-Remedial Action Groundwater Elevation Data

Monitoring Well	Top of PVC Elevation (1) (feet)	April 4, 1994		August 29, 1996		December 6, 1996	
		Depth to Water (feet)	Water Table Elevation (feet)	Depth to Water (feet)	Water Table Elevation (feet)	Depth to Water (feet)	Water Table Elevation (feet)
MW 17-1	736.30	2.80	733.50	7.64	728.66	3.01	733.29
MW 17-2	733.75	3.19	730.56	7.24	726.51	3.45	730.30
MW 17-3*	732.15	2.38	729.77	7.14	725.01	2.47	729.68
MW 17-4	734.59	3.00	731.59	7.23	727.36	3.13	731.46
MW 17-5	733.58	NA	NA	6.92	726.66	2.65	730.93

Post Remedial Action Groundwater Elevation Data

Monitoring Well	Top of PVC Elevation (1)	December 19, 2007		December 9, 2008		November 11, 2009		December 13, 2010	
		Depth to Water	Water Table Elevation	Depth to Water	Water Table Elevation	Depth to Water	Water Table Elevation	Depth to Water	Water Table Elevation
MW 17-1	736.30	3.33	732.97	4.25	732.05	5.60	730.70	3.32	732.98
MW 17-2	733.75	3.31	730.44	4.07	729.68	5.27	728.48	2.2	731.55
MW 17-3*	732.15	2.67	729.48	3.96	728.67	6.15	726.48	2.51	730.12
MW 17-4	734.59	3.40	731.19	4.05	730.54	5.75	728.84	3.4	731.19
MW 17-5	733.58	2.90	730.68	3.46	730.12	4.65	728.93	2.79	730.79

Notes:
(1) Elevations are relative to the North American Vertical Datum (NAVD) 1988.
(2) April 4, 1994 data were collected as a part of the ESI and August 1996 and December 1996 were collected during the Remedial Investigation Report.
(3) December 2007 and 2008 data collected after the completion of the remedial action.
NA = Not Available.
* indicates that PVC riser pipe was cut during December 2008 sampling event.

Table 3
SEAD-16 - Round 4 Geochemical Parameters Before and After Sample Collection Comparison
SEAD-16 & SEAD-17 Year 4 Annual Groundwater Monitoring Report
Seneca Army Depot Activity

Well ID	Geo param collection Before/After Sampling	Dissolved Oxygen (mg/L)	ORP (mV)	Temperature (°C)	Turbidity (NTU)	pH (Std units)	Conductivity (S/m)
MW16-1	Before	0.04	25	8.8	0.7	6.94	1.56
	After	0.04	25	8.8	NS	7.03	1.46
MW16-2	Before	3.66	-6	5	2.1	7.31	0.68
	After	3.52	16	4.7	4.9	7.32	0.698
MW16-4	Before	0.09	-62	5.1	0.7	6.92	3.62
	After	0.09	-63	5.1	NS	6.9	3.59
MW16-5	Before	0.09	-223	4.6	1.4	7.13	0.424
	After	0.11	-222	4.8	6.5	7.15	0.433
MW16-6	Before	3.04	51	6.6	3.1	7.42	0.407
	After	2.85	50	6.8	3.3	7.34	0.405
MW16-7	Before	3.47	33	6.4	0.15	7.53	0.61
	After	1.17	38	6.3	1	7.58	0.64

Note:Not sampled (NS)

Table 4
SEAD-17 - Round 4 Geochemical Parameters Before and After Sample Collection Comparison
SEAD-16 & SEAD-17 Year 4 Annual Groundwater Monitoring Report
Seneca Army Depot Activity

Well ID	Geo param collection Before/After Sampling	Dissolved Oxygen (mg/L)	ORP (mV)	Temperature (°C)	Turbidity (NTU)	pH (Std units)	Conductivity (S/m)
MW17-1	Before	0.67	125	8.9	1.6	7.19	0.595
	After	0.62	137	8.9	1.2	7.22	0.593
MW17-2	Before	0.26	-11	6.8	0.96	7.03	0.654
	After	0.27	1	6.8	1.4	7.03	0.647
MW17-3	Before	0.95	-98	7.4	1.3	7.1	0.495
	After	0.9	-90	7.7	1.2	7.08	0.509
MW17-4	Before	0.3	-56	7.7	0.67	7.05	0.438
	After	0.26	-56	7.7	0.85	7.05	0.435
MW17-5	Before	0.26	-21	8.1	0	7.03	0.495
	After	0.21	-23	8.2	0	7.03	0.496

Table 5A
Comparison of Filtered and Unfiltered Groundwater at SEAD-16
Year 4 - SEAD-16 & SEAD-17 Long-Term Monitoring
Seneca Army Depot Activity

Area								SEAD-16	SEAD-16	SEAD-16	SEAD-16	SEAD-16	SEAD-16
Loc ID								MW16-1	MW16-1	MW16-2	MW16-2	MW16-2	MW16-2
Matrix								GW	GW	GW	GW	GW	GW
Sample ID								16LM20021FIL	16LM20021UNF	16LM20022FIL	16LM20022UNF	16LM20023FIL	16LM20023UNF
Sample Depth Interval (FT)								0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1
Sample Date								12/16/2010	12/16/2010	12/15/2010	12/15/2010	12/15/2010	12/15/2010
QC Type								SA	SA	SA	SA	DU	DU
Study ID								LTM	LTM	LTM	LTM	LTM	LTM
Sample Round								4	4	4	4	4	4
Parameter	**Units**	**Maximum Value**	**Frequency of Detection**	**Criteria Level**	**Number of Exceedances**	**Number of Times Detected**	**Number of Samples Analyzed**	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Aluminum	UG/L	160	14%		0	2	14	23 U	50 U	23 U	50 U	23 U	50 U
Antimony	UG/L	16	43%	3	6	6	14	2.3 U	2 U	**6.1**	**6.6**	**6.1**	**6**
Arsenic	UG/L	0	0%	10	0	0	14	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U
Barium	UG/L	240	100%	1000	0	14	14	110	97 J	68	77 J	67	69 J
Beryllium	UG/L	0	0%	4	0	0	14	0.25 U	0.15 U	0.25 U	0.15 U	0.25 U	0.15 U
Cadmium	UG/L	0	0%	5	0	0	14	0.095 U	0.13 U	0.095 U	0.13 U	0.095 U	0.13 U
Calcium	UG/L	210000	100%		0	14	14	140000	130000	100000 J	110000 J	96000	100000
Chromium	UG/L	0	0%	50	0	0	14	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Cobalt	UG/L	1.1	29%		0	4	14	1.1	1.1	0.15 U	0.12 U	0.15 U	0.12 U
Copper	UG/L	5.9	71%	200	0	10	14	1.1 U	1.1 U	4.4 J	5.9	4.5 J	5.1
Iron	UG/L	660	71%	300	2	10	14	77 J	100	33 U	89 J	33 U	63 J
Iron+Manganese	UG/L	820	100%	500	2	14	14	131 J	152	12	105 J	12	76 J
Lead	UG/L	6.3	57%	15	0	8	14	0.2 U	0.5 U	0.21 J	1.3 J	0.2 U	0.97 J
Magnesium	UG/L	32000	100%		0	14	14	21000	20000 J	12000	14000 J	11000	12000 J
Manganese	UG/L	200	100%	300	0	14	14	54	52	12	16	12	13
Mercury	UG/L	0	0%	0.7	0	0	14	0.091 U	0.091 U	0.091 U	0.091 U	0.091 U	0.091 U
Nickel	UG/L	2.8	50%	100	0	7	14	2.8 J	2.7 J	2 U	2 J	2.2 J	2.2 J
Potassium	UG/L	2800	100%		0	14	14	1200	1100	2300	2500	2200	2200
Selenium	UG/L	0	0%	10	0	0	14	1 U	1.1 U	1 U	1.1 U	1 U	1.1 U
Silver	UG/L	0	0%	50	0	0	14	0.25 U	0.18 U	0.25 U	0.18 U	0.25 U	0.18 U
Sodium	UG/L	550000	100%	20000	10	14	14	**170000**	**160000**	**33000** J	**34000** J	**31000**	**32000**
Thallium	UG/L	0	0%	2	0	0	14	0.5 U	0.25 U	0.5 U	0.25 U	0.5 U	0.25 U
Vanadium	UG/L	0	0%		0	0	14	3.8 U	3.2 U	3.8 U	3.2 U	3.8 U	3.2 U
Zinc	UG/L	14	50%		0	7	14	8.3 U	8.8 J	11 J	14 J	12 J	12 J
Turbidity (pre)	NTU	3.1	100%		0	7	7		0.7		2.1		2.1
Turbidity (post)	NTU	6.5	67%		0	8	12	0		0.25	4.9	0.25	4.9

Notes:
1. The criteria values are NYSDEC Class GA Groundwater Standards (TOGS 1.1.1, June 1998)
and EPA Maximum Contamination Limit (MCL), Source http://www.epa.gov/safewater/mcl.html#inorganic.htm
2. Shading indicates a concentration above the GA or MCL groundwater standard.

U = compound was not detected
J = the reported value is an estimated concentration

Table 5A
Comparison of Filtered and Unfiltered Groundwater at SEAD-16
Year 4 - SEAD-16 & SEAD-17 Long-Term Monitoring
Seneca Army Depot Activity

Area								SEAD-16	SEAD-16	SEAD-16	SEAD-16
Loc ID								MW16-4	MW16-4	MW16-5	MW16-5
Matrix								GW	GW	GW	GW
Sample ID								16LM20024FIL	16LM20024UNF	16LM20025FIL	16LM20025UNF
Sample Depth Interval (FT)								0-0.1	0-0.1	0-0.1	0-0.1
Sample Date								12/16/2010	12/16/2010	12/15/2010	12/15/2010
QC Type								SA	SA	SA	SA
Study ID								LTM	LTM	LTM	LTM
Sample Round								4	4	4	4
Parameter	**Units**	**Maximum Value**	**Frequency of Detection**	**Criteria Level**	**Number of Exceedances**	**Number of Times Detected**	**Number of Samples Analyzed**	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Aluminum	UG/L	160	14%		0	2	14	23 U	50 U	23 U	160
Antimony	UG/L	16	43%	3	6	6	14	2.3 U	2 U	2.3 U	2 U
Arsenic	UG/L	0	0%	10	0	0	14	1.3 U	1.3 U	1.3 U	1.3 U
Barium	UG/L	240	100%	1000	0	14	14	220	240 J	34	33 J
Beryllium	UG/L	0	0%	4	0	0	14	0.25 U	0.15 U	0.25 U	0.15 U
Cadmium	UG/L	0	0%	5	0	0	14	0.095 U	0.13 U	0.095 U	0.13 U
Calcium	UG/L	210000	100%		0	14	14	210000	210000	90000	86000
Chromium	UG/L	0	0%	50	0	0	14	2.5 U	2.5 U	2.5 U	2.5 U
Cobalt	UG/L	1.1	29%		0	4	14	0.7	0.71	0.15 U	0.12 U
Copper	UG/L	5.9	71%	200	0	10	14	1.4 J	2.8 J	1.1 U	1.1 U
Iron	UG/L	660	71%	300	2	10	14	130	150	**480**	**660**
Iron+Manganese	UG/L	820	100%	500	2	14	14	260	290	**680**	**820**
Lead	UG/L	6.3	57%	15	0	8	14	0.7 J	3	0.2 U	0.77 J
Magnesium	UG/L	32000	100%		0	14	14	31000	32000 J	10000	9700 J
Manganese	UG/L	200	100%	300	0	14	14	130	140	200	160
Mercury	UG/L	0	0%	0.7	0	0	14	0.091 U	0.091 U	0.091 U	0.091 U
Nickel	UG/L	2.8	50%	100	0	7	14	2.2 J	2.3 J	2 U	2 U
Potassium	UG/L	2800	100%		0	14	14	2600	2600	2200	2100
Selenium	UG/L	0	0%	10	0	0	14	1 U	1.1 U	1 U	1.1 U
Silver	UG/L	0	0%	50	0	0	14	0.25 U	0.18 U	0.25 U	0.18 U
Sodium	UG/L	550000	100%	20000	10	14	14	**540000**	**550000**	1800	1800
Thallium	UG/L	0	0%	2	0	0	14	0.5 U	0.25 U	0.5 U	0.25 U
Vanadium	UG/L	0	0%		0	0	14	3.8 U	3.2 U	3.8 U	3.2 U
Zinc	UG/L	14	50%		0	7	14	9.2 J	13 J	8.3 U	8.4 U
Turbidity (pre)	NTU	3.1	100%		0	7	7		0.7		1.4
Turbidity (post)	NTU	6.5	67%		0	8	12	0		0	6.5

Notes:
1. The criteria values are NYSDEC Class GA Groundwater Standards (TOGS 1.1.1, June 1998)
and EPA Maximum Contamination Limit (MCL), Source http://www.epa.gov/safewater/mcl.html#inorganic.htm
2. Shading indicates a concentration above the GA or MCL groundwater standard.

U = compound was not detected
J = the reported value is an estimated cocentration

Table 5A
Comparison of Filtered and Unfiltered Groundwater at SEAD-16
Year 4 - SEAD-16 & SEAD-17 Long-Term Monitoring
Seneca Army Depot Activity

Area								SEAD-16	SEAD-16	SEAD-16	SEAD-16
Loc ID								MW16-6	MW16-6	MW16-7	MW16-7
Matrix								GW	GW	GW	GW
Sample ID								16LM20026FIL	16LM20026UNF	16LM20027FIL	16LM20027UNF
Sample Depth Interval (FT)								0-0.1	0-0.1	0-0.1	0-0.1
Sample Date								12/15/2010	12/15/2010	12/15/2010	12/15/2010
QC Type								SA	SA	SA	SA
Study ID								LTM	LTM	LTM	LTM
Sample Round								4	4	4	4
Parameter	**Units**	**Maximum Value**	**Frequency of Detection**	**Criteria Level**	**Number of Exceedances**	**Number of Times Detected**	**Number of Samples Analyzed**	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Aluminum	UG/L	160	14%		0	2	14	23 U	61 J	23 U	50 U
Antimony	UG/L	16	43%	3	6	6	14	2.3 U	2 U	**15**	**16**
Arsenic	UG/L	0	0%	10	0	0	14	1.3 U	1.3 U	1.3 U	1.3 U
Barium	UG/L	240	100%	1000	0	14	14	44	50 J	69	71 J
Beryllium	UG/L	0	0%	4	0	0	14	0.25 U	0.15 U	0.25 U	0.15 U
Cadmium	UG/L	0	0%	5	0	0	14	0.095 U	0.13 U	0.095 U	0.13 U
Calcium	UG/L	210000	100%		0	14	14	68000	78000	82000	86000
Chromium	UG/L	0	0%	50	0	0	14	2.5 U	2.5 U	2.5 U	2.5 U
Cobalt	UG/L	1.1	29%		0	4	14	0.15 U	0.12 U	0.15 U	0.12 U
Copper	UG/L	5.9	71%	200	0	10	14	1.5 J	2 J	1.8 J	2.7 J
Iron	UG/L	660	71%	300	2	10	14	33 U	110	33 U	45 J
Iron+Manganese	UG/L	820	100%	500	2	14	14	2.1 J	114.5 J	35	79 J
Lead	UG/L	6.3	57%	15	0	8	14	0.2 U	0.5 U	1 J	6.3
Magnesium	UG/L	32000	100%		0	14	14	6600	7600 J	18000	19000 J
Manganese	UG/L	200	100%	300	0	14	14	2.1 J	3.5 J	35	34
Mercury	UG/L	0	0%	0.7	0	0	14	0.091 U	0.091 U	0.091 U	0.091 U
Nickel	UG/L	2.8	50%	100	0	7	14	2 U	2 U	2 U	2 U
Potassium	UG/L	2800	100%		0	14	14	1500	1800	2800	2700
Selenium	UG/L	0	0%	10	0	0	14	1 U	1.1 U	1 U	1.1 U
Silver	UG/L	0	0%	50	0	0	14	0.25 U	0.18 U	0.25 U	0.18 U
Sodium	UG/L	550000	100%	20000	10	14	14	7600	8400	**29000**	**28000**
Thallium	UG/L	0	0%	2	0	0	14	0.5 U	0.25 U	0.5 U	0.25 U
Vanadium	UG/L	0	0%		0	0	14	3.8 U	3.2 U	3.8 U	3.2 U
Zinc	UG/L	14	50%		0	7	14	8.3 U	8.4 U	8.3 U	8.4 U
Turbidity (pre)	NTU	3.1	100%		0	7	7		3.1		0.15
Turbidity (post)	NTU	6.5	67%		0	8	12	0.25	3.3	0	1

Notes:
1. The criteria values are NYSDEC Class GA Groundwater Standards (TOGS 1.1.1, June 1998)
and EPA Maximum Contamination Limit (MCL), Source http://www.epa.gov/safewater/mcl.html#inorganic.htn
2. Shading indicates a concentration above the GA or MCL groundwater standard.

U = compound was not detected
J = the reported value is an estimated concentration

Table 5B
Comparison of Filtered and Unfiltered Groundwater at SEAD-17
Year 4 - SEAD-16 & SEAD-17 Long-Term Monitoring
Seneca Army Depot Activity

Area								SEAD-17	SEAD-17	SEAD-17	SEAD-17	SEAD-17	SEAD-17
Loc ID								MW17-1	MW17-1	MW17-2	MW17-2	MW17-3	MW17-3
Matrix								GW	GW	GW	GW	GW	GW
Sample ID								17LM20016FIL	17LM20016UNF	17LM20015FIL	17LM20015UNF	17LM20017FIL	17LM20017UNF
Sample Depth Interval (FT)								0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1
Sample Date								12/17/2010	12/17/2010	12/16/2010	12/16/2010	12/16/2010	12/16/2010
QC Type								SA	SA	SA	SA	SA	SA
Study ID								LTM	LTM	LTM	LTM	LTM	LTM
Sample Round								4	4	4	4	4	4
Parameter	**Units**	**Maximum Value**	**Frequency of Detection**	**Criteria Level**	**Number of Exceedances**	**Number of Times Detected**	**Number of Samples Analyzed**	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Aluminum	UG/L	51	10%		0	1	10	23 U	50 U	23 U	51 J	23 U	50 U
Antimony	UG/L	0	0%	3	0	0	10	2.3 U	2 U	2.3 U	2 U	2.3 U	2 U
Arsenic	UG/L	0	0%	10	0	0	10	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U
Barium	UG/L	82	100%	1000	0	10	10	61	63 J	54	58 J	37	38 J
Beryllium	UG/L	0	0%	4	0	0	10	0.25 U	0.15 U	0.25 U	0.15 U	0.25 U	0.15 U
Cadmium	UG/L	0	0%	5	0	0	10	0.095 U	0.13 U	0.095 U	0.13 U	0.095 U	0.13 U
Calcium	UG/L	150000	100%		0	10	10	96000	100000	140000	150000	90000	93000
Chromium	UG/L	0	0%	50	0	0	10	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Cobalt	UG/L	1.1	90%		0	9	10	0.15 U	0.3 J	0.32 J	0.46 J	0.63	0.7
Copper	UG/L	1.9	30%	200	0	3	10	1.1 U	1.1 J	1.5 J	1.9 J	1.1 U	1.1 U
Iron	UG/L	770	80%	300	2	8	10	33 U	270	33 U	130	**730**	**770**
Iron+Manganese	UG/L	940	100%	500	2	10	10	4.2 J	312	23	173	**890**	**940**
Lead	UG/L	0.6	10%	15	0	1	10	0.2 U	0.5 U	0.2 U	0.6 J	0.2 U	0.5 U
Magnesium	UG/L	20000	100%		0	10	10	19000	20000 J	18000	19000 J	9900	10000 J
Manganese	UG/L	170	100%	300	0	10	10	4.2 J	42	23	43	160	170
Mercury	UG/L	0	0%	0.7	0	0	10	0.091 U	0.091 U	0.091 U	0.091 U	0.091 U	0.091 U
Nickel	UG/L	0	0%	100	0	0	10	2 U	2 U	2 U	2 U	2 U	2 U
Potassium	UG/L	1600	100%		0	10	10	690	690 J	1300	1300	1200	1200
Selenium	UG/L	0	0%	10	0	0	10	1 U	1.1 U	1 U	1.1 U	1 U	1.1 U
Silver	UG/L	0	0%	50	0	0	10	0.25 U	0.18 U	0.25 U	0.18 U	0.25 U	0.18 U
Sodium	UG/L	14000	100%	20000	0	10	10	6000	6200	14000	14000	6000	6100
Thallium	UG/L	0	0%	2	0	0	10	0.5 U	0.25 U	0.5 U	0.25 U	0.5 U	0.25 U
Vanadium	UG/L	0	0%		0	0	10	3.8 U	3.2 U	3.8 U	3.2 U	3.8 U	3.2 U
Zinc	UG/L	21	50%		0	5	10	8.3 U	8.4 U	17 J	21	8.3 U	12 J
Turbidity (pre)	NTU	1.6	80%		0	4	5		1.6		0.96		1.3
Turbidity (post)	NTU	1.4	50%		0	5	10	0	1.2	0.4	1.4	0	1.2

Notes:
1. The criteria values are NYSDEC Class GA Groundwater Standards (TOGS 1.1.1, June 1998)
and EPA Maximum Contamination Limit (MCL), Source http://www.epa.gov/safewater/mcl.html#inorganic.htm
2. Shading indicates a concentration above the GA or MCL groundwater standard.

U = compound was not detected
J = the reported value is an estimated cocentration

Table 5B
Comparison of Filtered and Unfiltered Groundwater at SEAD-17
Year 4 - SEAD-16 & SEAD-17 Long-Term Monitoring
Seneca Army Depot Activity

Area								SEAD-17	SEAD-17	SEAD-17	SEAD-17
Loc ID								MW17-4	MW17-4	MW17-5	MW17-5
Matrix								GW	GW	GW	GW
Sample ID								17LM20018FIL	17LM20018UNF	17LM20019FIL	17LM20019UNF
Sample Depth Interval (FT)								0-0.1	0-0.1	0-0.1	0-0.1
Sample Date								12/16/2010	12/16/2010	12/16/2010	12/16/2010
QC Type								SA	SA	SA	SA
Study ID								LTM	LTM	LTM	LTM
Sample Round								4	4	4	4
Parameter	**Units**	**Maximum Value**	**Frequency of Detection**	**Criteria Level**	**Number of Exceedances**	**Number of Times Detected**	**Number of Samples Analyzed**	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Aluminum	UG/L	51	10%		0	1	10	23 U	50 U	23 U	50 U
Antimony	UG/L	0	0%	3	0	0	10	2.3 U	2 U	2.3 U	2 U
Arsenic	UG/L	0	0%	10	0	0	10	1.3 U	1.3 U	1.3 U	1.3 U
Barium	UG/L	82	100%	1000	0	10	10	27	28 J	81	82 J
Beryllium	UG/L	0	0%	4	0	0	10	0.25 U	0.15 U	0.25 U	0.15 U
Cadmium	UG/L	0	0%	5	0	0	10	0.095 U	0.13 U	0.095 U	0.13 U
Calcium	UG/L	150000	100%		0	10	10	90000	88000	100000	110000
Chromium	UG/L	0	0%	50	0	0	10	2.5 U	2.5 U	2.5 U	2.5 U
Cobalt	UG/L	1.1	90%		0	9	10	0.96	1.1	0.17 J	0.19 J
Copper	UG/L	1.9	30%	200	0	3	10	1.1 U	1.1 U	1.1 U	1.1 U
Iron	UG/L	770	80%	300	2	8	10	240	260	83 J	110
Iron+Manganese	UG/L	940	100%	500	2	10	10	370	400	118 J	145
Lead	UG/L	0.6	10%	15	0	1	10	0.2 U	0.5 U	0.2 U	0.5 U
Magnesium	UG/L	20000	100%		0	10	10	13000	13000 J	17000	18000 J
Manganese	UG/L	170	100%	300	0	10	10	130	140	35	35
Mercury	UG/L	0	0%	0.7	0	0	10	0.091 U	0.091 U	0.091 U	0.091 U
Nickel	UG/L	0	0%	100	0	0	10	2 U	2 U	2 U	2 U
Potassium	UG/L	1600	100%		0	10	10	540	530 J	1600	1600
Selenium	UG/L	0	0%	10	0	0	10	1 U	1.1 U	1 U	1.1 U
Silver	UG/L	0	0%	50	0	0	10	0.25 U	0.18 U	0.25 U	0.18 U
Sodium	UG/L	14000	100%	20000	0	10	10	12000	12000	8200	8300
Thallium	UG/L	0	0%	2	0	0	10	0.5 U	0.25 U	0.5 U	0.25 U
Vanadium	UG/L	0	0%		0	0	10	3.8 U	3.2 U	3.8 U	3.2 U
Zinc	UG/L	21	50%		0	5	10	8.7 J	8.4 U	20	8.4 U
Turbidity (pre)	NTU	1.6	80%		0	4	5		0.67		0
Turbidity (post)	NTU	1.4	50%		0	5	10	0	0.85	0	0

Notes:

1. The criteria values are NYSDEC Class GA Groundwater Standards (TOGS 1.1.1, June 1998) and EPA Maximum Contamination Limit (MCL), Source http://www.epa.gov/safewater/mcl.html#inorganic.htm
2. Shading indicates a concentration above the GA or MCL groundwater standard.

U = compound was not detected
J = the reported value is an estimated concentration

Table 6A
Metal Exceedances in Groundwater at SEAD-16
Year 4 - SEAD-16 and SEAD-17 Long-Term Monitoring
Seneca Army Depot Activity

Area								SEAD-16	SEAD-16	SEAD-16	SEAD-16	SEAD-16	SEAD-16
Loc ID								MW16-1	MW16-1	MW16-2	MW16-2	MW16-2	MW16-2
Matrix								GW	GW	GW	GW	GW	GW
Sample ID								16LM20021FIL	16LM20021UNF	16LM20022FIL	16LM20022UNF	16LM20023FIL	16LM20023UNF
Sample Depth Interval (FT)								0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1
Sample Date								12/16/2010	12/16/2010	12/15/2010	12/15/2010	12/15/2010	12/15/2010
QC Type								SA	SA	SA	SA	DU	DU
Study ID								LTM	LTM	LTM	LTM	LTM	LTM
Sample Round								4	4	4	4	4	4
Parameter	**Units**	**Maximum Value**	**Frequency of Detection**	**Criteria Level**	**Number of Exceedances**	**Number of Times Detected**	**Number of Samples Analyzed**	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Antimony	UG/L	16	43%	3	6	6	14	2.3 U	2 U	**6.1**	**6.6**	**6.1**	**6**
Iron	UG/L	660	71%	300	2	10	14	77 J	100	33 U	89 J	33 U	63 J
Iron+Manganese	UG/L	820	100%	500	2	14	14	131 J	152	12	105 J	12	76 J
Sodium	UG/L	550000	100%	20000	10	14	14	**170000**	**160000**	**33000** J	**34000** J	**31000**	**32000**
Turbidity (pre)	NTU	3.1	100%		0	7	7		0.7		2.1		2.1
Turbidity (post)	NTU	6.5	67%		0	8	12	0		0.25	4.9	0.25	4.9

Notes:
1. Only exceeding metals are included in this sumamry tabl
2. The criteria values are NYSDEC Class GA Groundwater Standards (TOGS 1.1.1, June 1998)
and EPA Maximum Contamination Limit (MCL), Source http://www.epa.gov/safewater/mcl.html#inorganic.htm
3. Shading indicates a concentration above the GA or MCL groundwater standard.

U = compound was not detected
J = the reported value is an estimated cocentration

Table 6A
Metal Exceedances in Groundwater at SEAD-16
Year 4 - SEAD-16 and SEAD-17 Long-Term Monitoring
Seneca Army Depot Activity

Area								SEAD-16	SEAD-16	SEAD-16	SEAD-16
Loc ID								MW16-4	MW16-4	MW16-5	MW16-5
Matrix								GW	GW	GW	GW
Sample ID								16LM20024FIL	16LM20024UNF	16LM20025FIL	16LM20025UNF
Sample Depth Interval (FT)								0-0.1	0-0.1	0-0.1	0-0.1
Sample Date								12/16/2010	12/16/2010	12/15/2010	12/15/2010
QC Type								SA	SA	SA	SA
Study ID								LTM	LTM	LTM	LTM
Sample Round								4	4	4	4
Parameter	**Units**	**Maximum Value**	**Frequency of Detection**	**Criteria Level**	**Number of Exceedances**	**Number of Times Detected**	**Number of Samples Analyzed**	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Antimony	UG/L	16	43%	3	6	6	14	2.3 U	2 U	2.3 U	2 U
Iron	UG/L	660	71%	300	2	10	14	130	150	**480**	**660**
Iron+Manganese	UG/L	820	100%	500	2	14	14	260	290	**680**	**820**
Sodium	UG/L	550000	100%	20000	10	14	14	**540000**	**550000**	1800	1800
Turbidity (pre)	NTU	3.1	100%		0	7	7		0.7		1.4
Turbidity (post)	NTU	6.5	67%		0	8	12	0		0	6.5

Notes:
1. Only exceeding metals are included in this sumamry tabl
2. The criteria values are NYSDEC Class GA Groundwater Standards (TOGS 1.1.1, June 1998)
   and EPA Maximum Contamination Limit (MCL), Source http://www.epa.gov/safewater/mcl.html#inorganic.htn
3. Shading indicates a concentration above the GA or MCL groundwater standard.

U = compound was not detected
J = the reported value is an estimated cocentration

Table 6A
Metal Exceedances in Groundwater at SEAD-16
Year 4 - SEAD-16 and SEAD-17 Long-Term Monitoring
Seneca Army Depot Activity

Parameter	Units	Maximum Value	Frequency of Detection	Criteria Level	Number of Exceedances	Number of Times Detected	Number of Samples Analyzed	SEAD-16 MW16-6 GW 16LM20026FIL 0-0.1 12/15/2010 SA LTM 4 Value (Q)	SEAD-16 MW16-6 GW 16LM20026UNF 0-0.1 12/15/2010 SA LTM 4 Value (Q)	SEAD-16 MW16-7 GW 16LM20027FIL 0-0.1 12/15/2010 SA LTM 4 Value (Q)	SEAD-16 MW16-7 GW 16LM20027UNF 0-0.1 12/15/2010 SA LTM 4 Value (Q)
Antimony	UG/L	16	43%	3	6	6	14	2.3 U	2 U	**15**	**16**
Iron	UG/L	660	71%	300	2	10	14	33 U	110	33 U	45 J
Iron+Manganese	UG/L	820	100%	500	2	14	14	2.1 J	114.5 J	35	79 J
Sodium	UG/L	550000	100%	20000	10	14	14	7600	8400	**29000**	**28000**
Turbidity (pre)	NTU	3.1	100%		0	7	7		3.1		0.15
Turbidity (post)	NTU	6.5	67%		0	8	12	0.25	3.3	0	1

Notes:
1. Only exceeding metals are included in this summary table
2. The criteria values are NYSDEC Class GA Groundwater Standards (TOGS 1.1.1, June 1998)
   and EPA Maximum Contamination Limit (MCL). Source http://www.epa.gov/safewater/mcl.html#inorganic.htn
3. Shading indicates a concentration above the GA or MCL groundwater standard.

U = compound was not detected
J = the reported value is an estimated cocentration

Table 6B
Metal Exceedances in Groundwater at SEAD-17
Year 4 - SEAD-16 and SEAD-17 Long-Term Monitoring
Seneca Army Depot Activity

Parameter	Units	Maximum Value	Frequency of Detection	Criteria Level	Number of Exceedances	Number of Times Detected	Number of Samples Analyzed	SEAD-17 MW17-1 GW 17LM20016FIL 0-0.1 12/17/2010 SA LTM 4 Value (Q)	SEAD-17 MW17-1 GW 17LM20016UNF 0-0.1 12/17/2010 SA LTM 4 Value (Q)	SEAD-17 MW17-2 GW 17LM20015FIL 0-0.1 12/16/2010 SA LTM 4 Value (Q)	SEAD-17 MW17-2 GW 17LM20015UNF 0-0.1 12/16/2010 SA LTM 4 Value (Q)	SEAD-17 MW17-3 GW 17LM20017FIL 0-0.1 12/16/2010 SA LTM 4 Value (Q)	SEAD-17 MW17-3 GW 17LM20017UNF 0-0.1 12/16/2010 SA LTM 4 Value (Q)
Iron	UG/L	770	80%	300	2	8	10	33 U	270	33 U	130	**730**	**770**
Iron+Manganese	UG/L	940	100%	500	2	10	10	4.2 J	312	23	173	**890**	**940**
Turbidity (pre)	NTU	1.6	80%		0	4	5		1.6		0.96		1.3
Turbidity (post)	NTU	1.4	50%		0	5	10	0	1.2	0.4	1.4	0	1.2

Notes:
1. Only exceeding metals are included in this sumamry table
2. The criteria values are NYSDEC Class GA Groundwater Standards (TOGS 1.1.1, June 1998) and EPA Maximum Contamination Limit (MCL), Source http://www.epa.gov/safewater/mcl.html#inorganic.htn
3. Shading indicates a concentration above the GA or MCL groundwater standard.

U = compound was not detected
J = the reported value is an estimated cocentration

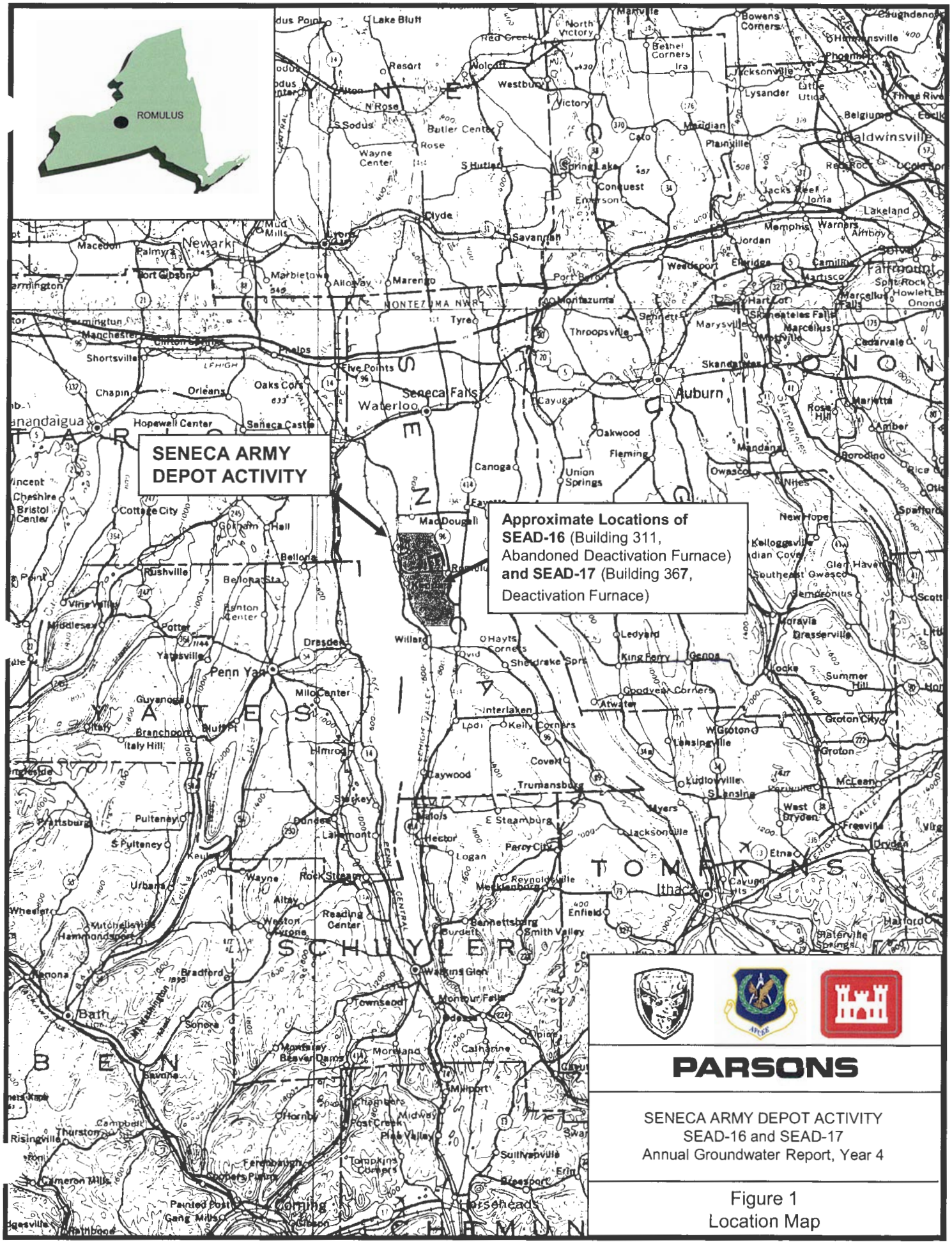
Table 6B
Metal Exceedances in Groundwater at SEAD-17
Year 4 - SEAD-16 and SEAD-17 Long-Term Monitoring
Seneca Army Depot Activity

Area								SEAD-17	SEAD-17	SEAD-17	SEAD-17
Loc ID								MW17-4	MW17-4	MW17-5	MW17-5
Matrix								GW	GW	GW	GW
Sample ID								17LM20018FIL	17LM20018UNF	17LM20019FIL	17LM20019UNF
Sample Depth Interval (FT)								0-0.1	0-0.1	0-0.1	0-0.1
Sample Date								12/16/2010	12/16/2010	12/16/2010	12/16/2010
QC Type								SA	SA	SA	SA
Study ID								LTM	LTM	LTM	LTM
Sample Round								4	4	4	4
Parameter	**Units**	**Maximum Value**	**Frequency of Detection**	**Criteria Level**	**Number of Exceedances**	**Number of Times Detected**	**Number of Samples Analyzed**	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Iron	UG/L	770	80%	300	2	8	10	240	260	83 J	110
Iron+Manganese	UG/L	940	100%	500	2	10	10	370	400	118 J	145
Turbidity (pre)	NTU	1.6	80%		0	4	5		0.67		0
Turbidity (post)	NTU	1.4	50%		0	5	10	0	0.85	0	0

Notes:
1. Only exceeding metals are included in this sumamry tabl
2. The criteria values are NYSDEC Class GA Groundwater Standards (TOGS 1.1.1, June 1998)
and EPA Maximum Contamination Limit (MCL), Source http://www.epa.gov/safewater/mcl.html#inorganic.htm
3. Shading indicates a concentration above the GA or MCL groundwater standard.

U = compound was not detected
J = the reported value is an estimated cocentration

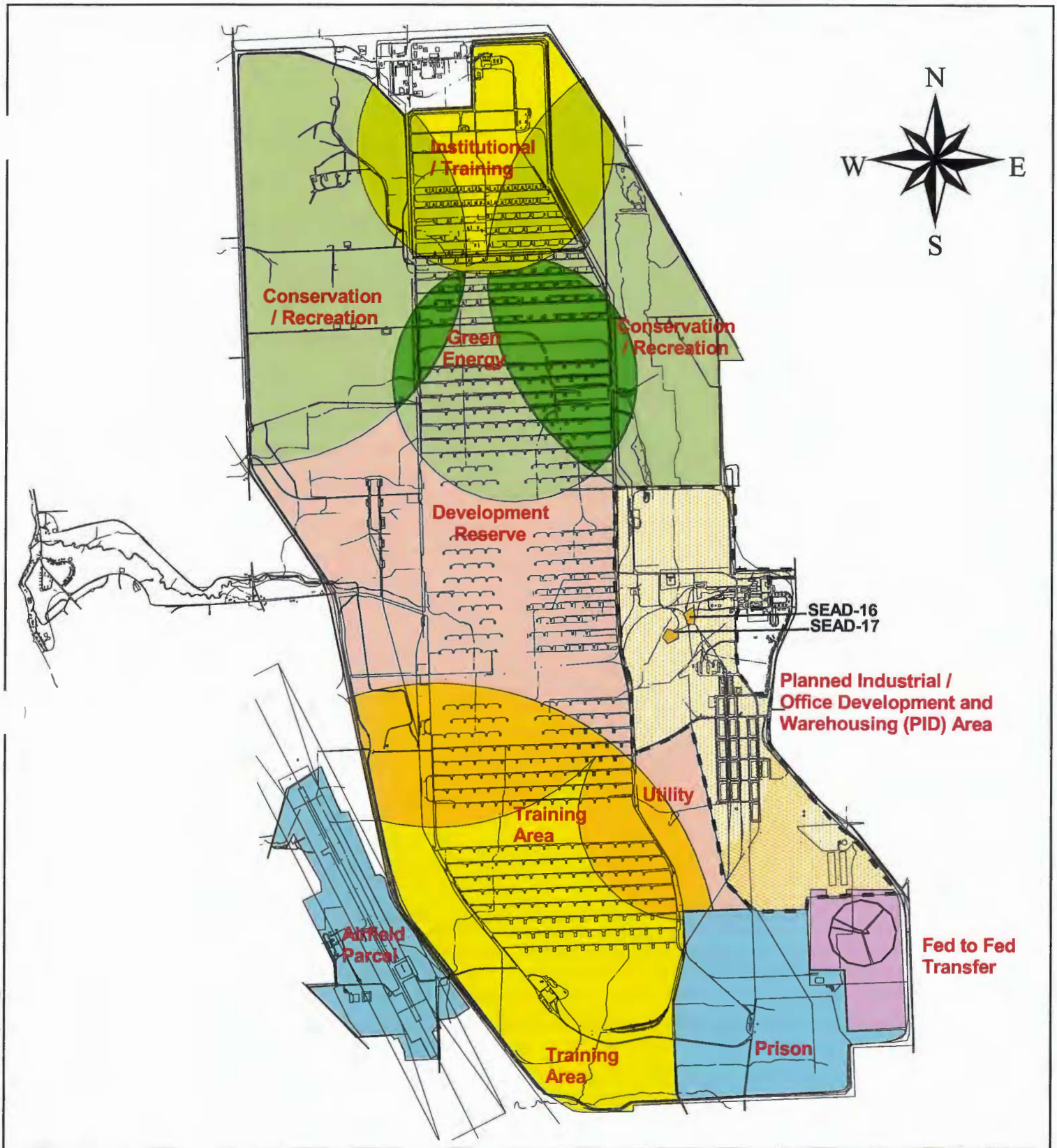
FIGURES



PARSONS

SENECA ARMY DEPOT ACTIVITY
SEAD-16 and SEAD-17
Annual Groundwater Report, Year 4

Figure 1
Location Map



1000 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000 11000 Feet

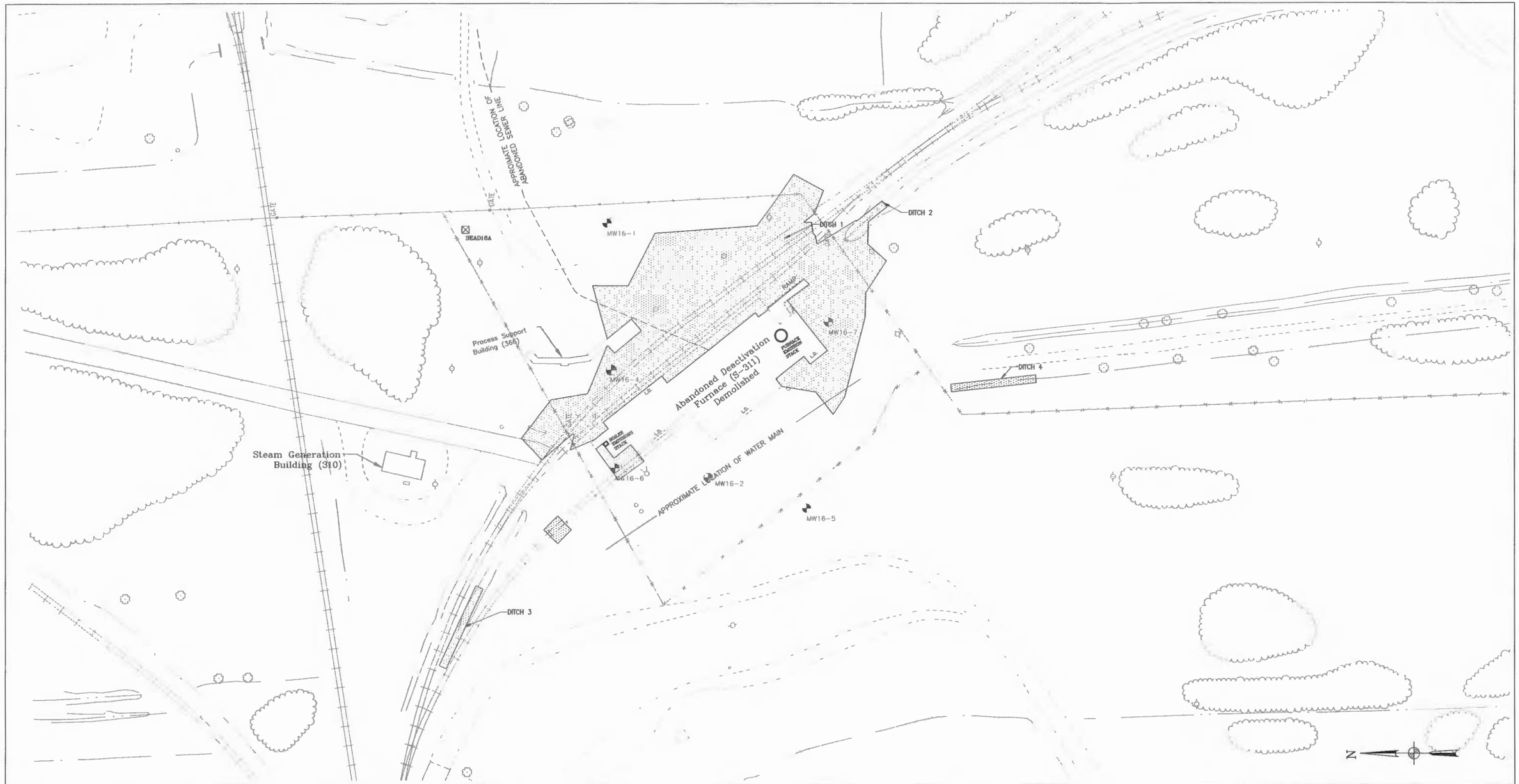
Area Covered by PID-wide Land Use Restrictions
- Prohibit the development and use of property for residential housing, elementary and secondary schools, childcare facilities and playgrounds.
- Prevent access to or use of the groundwater until the Class GA Groundwater Standards are met.

PARSONS

SENECA ARMY DEPOT ACTIVITY
Year 4 Annual Groundwater Report
SEAD-16 and SEAD-17

FIGURE 2
Location of SEAD-16 and SEAD-17
at Seneca Army Depot Activity

o:\senecalpid\ucls\...&17 annual report.apr\sead-16&17 Annual Report Figure 2



LEGEND:

- MINOR WATERWAY
- MAJOR WATERWAY
- FENCE
- BRUSH LINE
- RAILROAD
- UNPAVED ROAD
- SURVEY MONUMENT
- ROAD SIGN
- DECIDOUS TREE
- L.D. LOADING DOCK
- FIRE HYDRANT
- MANHOLE
- GUIDE POST
- POLE
- UTILITY BOX
- OVERHEAD UTILITY POLE
- MAILBOX/RR SIGNAL
- MW16-5 MONITORING WELL LOCATION
- LIMITS OF EXCAVATION

NOTE:

MONITORING WELL MW16-3 WAS DESTROYED DURING THE REMEDIAL ACTION.

50 0 50 100

SCALE IN FEET

PARSONS

CLIENT/PROJECT TITLE

SENECA ARMY DEPOT ACTIVITY
SEAD-16 AND SEAD-17
FOURTH ANNUAL GROUNDWATER REPORT

DEPT.	Dwg. No.
ENVIRONMENTAL ENGINEERING	745172-01200

FIGURE 3
SEAD-16
SITE PLAN

DATE	REV
MARCH 2011	-

FILE: P:\PIT\PROJECTS\SENECA PBC II\SEAD-16_17\ANNUAL REPORT - YR 4\DRAFT\FIGURES\FIGURE 3.DWG, DATE: 03/02/2011 12:29:08PM, p0018397

APPENDICES

APPENDIX A

HISTORIC GROUNDWATER DATA

Appendix A Table
SEAD-16 Pre Remedial Groundwater Monitoring Results
SEAD-16 & SEAD-17 Fourth Annual Groundwater Monitoring Report
Seneca Army Depot Activity

PARAMETER	ACTION LEVEL	SOURCE [1]	UNIT	LOC_ID:	MW16-1		MW16-1		MW16-2		MW16-2		MW16-3		MW16-3		MW16-4		MW16-4		MW16-5		MW16-6		MW16-6		MW16-7		MW16-7		MW16-7	
				SAMP ID:	16101		16152		16102		16150		16110		16165		16105		16156		16162		16111		16155		16104		16158		16159	
				QC CODE:	SA		SA		SA		SA		SA		SA		SA		SA		SA		SA		SA		SA		SA		DU	
				STUDY ID:	RI ROUND1		RI ROUND2		RI ROUND1		RI ROUND2		RI ROUND1		RI ROUND2		RI ROUND1		RI ROUND2		RI ROUND2		RI ROUND1		RI ROUND2		RI ROUND1		RI ROUND2		RI ROUND2	
				MATRIX:	WATER		WATER		WATER		WATER		WATER		WATER		WATER		WATER		WATER		WATER		WATER		WATER		WATER		WATER	
				SAMPLE DATE:	8/27/1996		12/7/1996		8/27/1996		12/6/1996		8/30/1996		12/10/1996		8/28/1996		12/7/1996		12/9/1996		9/3/1996		12/8/1996		8/28/1996		12/8/1996		12/8/1996	
					VALUE	Q	VALUE	Q	VALUE	Q	VALUE	Q	VALUE	Q	VALUE	Q	VALUE	Q	VALUE	Q	VALUE	Q	VALUE	Q	VALUE	Q	VALUE	Q	VALUE	Q	VALUE	Q
SEMIVOLATILE ORGANICS																																
3-Nitroaniline	5	GA	UG/L		26	UJ	25	U	25	U	25	U	25	U	25	U	26	U	25	U	25	U	25	U	25	U	25	J	25	U	25	U
4-Chloroaniline	5	GA	UG/L		10	UJ	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	J	10	U	10	U
Benzo[ghi]perylene			UG/L		10	UJ	10	U	10	U	10	U	1	J	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Dibenz[a,h]anthracene			UG/L		10	UJ	10	U	10	U	10	U	0.7	J	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Diethyl phthalate			UG/L		10	UJ	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Indeno[1,2,3-cd]pyrene			UG/L		10	UJ	10	U	10	U	10	U	0.6	J	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
OTHER ANALYSES																																
Nitrate/Nitrite Nitrogen	10	GA	MG/L		0.02		0.01	U	0.67		2		0.04		0.64		0.29		0.26		1.4		0.01	U	0.01	U	0.83		0.24		0.23	
Percent Solids (Metals)					0		0		0		0		0		0		0		0		0		0		0		0		0		0	
Total Petroleum Hydrocarbons			MG/L		0.44	U	0.4	U	0.4	U	0.36	U	0.41	U	1		0.41	U	0.42	U	0.91		0.89		0.73		0.41	U	0.46	U	1.3	
NITROAROMATICS																																
1,3-Dinitrobenzene	5	GA	UG/L		0.26	U	0.26	U	1.8	J	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U	0.26		0.26	U	0.26	U
2,4-Dinitrotoluene	5	GA	UG/L		0.26	U	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U	0.68	J	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U
METALS																																
Aluminum			UG/L		1850		143	U	1010		490		336		36.1	U	24.9		36.1	U	148	U	208		170	U	12.4		67.4	U	52.9	U
Antimony	3	GA	UG/L		2	U	3	U	2	U	3	U	7.5		5.3	U	2	U	3	U	3	U	2	U	3	U	15.7	U	8.9	U	10	U
Arsenic	10	MCL	UG/L		2.7	U	4.4	U	2.7	U	4.4	U	2.7	U	4.4	U	2.7	U	4.4	U	4.4	U	2.7	U	4.4	U	4	U	4.4	U	4.4	U
Barium	1,000	GA	UG/L		74.2		48.2	U	48.1		31.4	U	64.4		57.4	U	97.4		55.2	U	67.6	U	86.4		80.2	U	89.2		59.1	U	60.2	U
Beryllium	4	MCL	UG/L		0.23		0.2	U	0.22		0.2	U	0.21		0.2	U	0.21		0.2	U	0.2	U	0.1	U	0.2	U	0.21		0.2	U	0.2	U
Cadmium	5	GA	UG/L		0.3	U	0.6	U	0.3	U	0.6	U	0.3	U	0.6	U	0.3	U	0.6	U	0.6	U	0.3	U	0.6	U	0.3	U	0.6	U	0.6	U
Calcium			UG/L		157,000		116,000		193,000		164,000		99,800		85,500		130,000		158,000		90,000		44600		84,900		109,000		114,000		117,000	
Chromium	50	GA	UG/L		2.7		1	U	2.3		1.1	U	1	U	1	U	1	U	1	U	1	U	1.5		1	U	1		1	U	1	U
Cobalt			UG/L		2.1		1.3	U	1.5		1.3	U	1.2	U	1.3	U	1.2	U	1.3	U	1.3	U	1.2		1.3	U	1.2		1.3	U	1.3	U
Copper	200	GA	UG/L		4.9		1.9	U	7.9		2.9	U	19.2		11.4	U	3.6		1.1	U	1.1	U	4.4		1.1	U	5.1		1.4	U	2.1	U
Iron	300	GA	UG/L		2,400	J	296		4,720	J	1,920	J	432	J	77.8	U	38.2		126		211		273	J	290		23.4		174		160	
Lead	15	MCL	UG/L		1.7	U	1.5	U	5.9		6.8		6.1		1.5	U	1.7	U	1.5	U	3	U	1.7	U	1.5	U	8.4		9.9		9.2	
Magnesium			UG/L		23,300		17,600		23,700		20,900		11,600		10,000		17,700		22,900		11,800		6370		12,800		16,900		22,600		23,200	
Manganese	300	GA	UG/L		210		64.2		129		65.2		130		5.9	U	132		66.9		51		545		1,380		85.7		43.2		44.3	
Mercury	0.7	GA	UG/L		0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Nickel	100	GA	UG/L		4.7		2.5	U	11		3.1	U	3		2.5	U	2.2		2.5	U	2.5	U	4.1		2.5	U	2.2		2.5	U	2.5	U
Potassium			UG/L		1670		998	U	4760		3410	U	2740		1900	U	4040		1660	U	18800		3530		2230	U	3220		2090	U	2160	U
Selenium	10	GA	UG/L		2.4	U	4.7	UJ	2.4	U	4.7	UJ	2.4	U	4.7	UJ	2.4	U	4.7	UJ	2.4	U	4.7	UJ	2.4	U	4.7	UJ	2.4	U	4.7	UJ
Sodium	20,000	GA	UG/L		8,750		3,870	U	19,100		17,000		9,480		7,660		17,200		12,300		49,500		396000		408000		12,000		9,940		10,200	
Thallium	2	MCL	UG/L		4.2	U	5.9	U	9.2		9.6	U	4.2	U	4.1	U	4.2	U	4.1	U	6.9	U	6.2		4.1	U	4.2	U	4.2	U	4.1	U
Vanadium			UG/L		3.3		1.6	U	2.9		1.6	U	1.2	U	1.6	U	1.2	U	1.6	U	1.6	U	2.9		1.6	U	1.2		1.6	U	1.6	U
Zinc			UG/L		15.6	R	5.8	U	37.4	R	13.5	U	32.4	R	42		4.5	R	5.1	U	6.3	U	13.2	R	10.5	U	2.9	R	2.2	U	7.3	U

Notes:
1. The criteria values are NYSDEC Class GA Groundwater Standards (TOGS 1.1.1, June 1998) and EPA Maximum Contamination Limit (MCL), Source http://www.epa.gov/safewater/mcl.html#inorganic.html
2. Shading indicates a concentration above groundwater standard.
3. A blank in the action level column indicates no Class GA and/or MCL standand or standard is a secondary value.

U = compound was not detected
J = the reported value is and estimated concentration
R = the compound was rejected

Appendix A Table
SEAD-17 Pre Remedial Groundwater Monitoring Results
SEAD-16 & SEAD-17 Fourth Annual Groundwater Monitoing Report
Seneca Army Depot Activity

			LOC_ID:	MW17-1		MW17-1		MW17-1		MW17-2		MW17-3		MW17-4		MW17-5		MW17-5	
			SAMP ID:	16108		16109		16171		16163		16166		16169		16106		16170	
			QC CODE:	SA		DU		SA		SA		SA		SA		SA		SA	
			STUDY ID:	RI ROUND1		RI ROUND1		RI ROUND2		RI ROUND2		RI ROUND2		RI ROUND2		RI ROUND1		RI ROUND2	
			MATRIX:	Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater	
			SAMPLE DATE:	8/29/1996		8/29/1996		12/11/1996		12/9/1996		12/10/1996		12/11/1996		8/29/1996		12/11/1996	
PARAMETER	ACTION LEVEL	SOURCE [1]	UNIT	VALUE	Q	VALUE	Q	VALUE	Q	VALUE	Q	VALUE	Q	VALUE	Q	VALUE	Q	VALUE	Q
SEMIVOLATILE ORGANICS																			
Benzo[a]pyrene			UG/L	0.7	J	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Benzo[ghi]perylene			UG/L	2	J	1	J	10	U	10	U	10	U	10	U	10	U	10	U
Dibenz[a,h]anthracene			UG/L	1	J	0.9	J	10	U	10	U	10	U	10	U	10	U	10	U
Indeno[1,2,3-cd]pyrene			UG/L	2	J	1	J	10	U	10	U	10	U	10	U	10	U	10	U
OTHER ANALYSES																			
Nitrate/Nitrite Nitrogen	10	GA	MG/L	0.24		0.23		0.2		0.04		0.05		0.02		0.04		0.02	
Percent Solids (Metals)				0		0		0		0		0		0		0		0	
NITROAROMATICS																			
Tetryl			UG/L	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U
METALS																			
Aluminum			UG/L	90.4		54.6		386		85.3	U	36.1	U	41.9	U	39.9		59	U
Antimony	3	GA	UG/L	2	U	2	U	3	U	3	U	3	U	3	U	2	U	3	U
Arsenic	10	MCL	UG/L	2.7	U	2.7	U	4.4	U	4.4	U	4.4	U	4.4	U	2.7	U	4.4	U
Barium	1,000	GA	UG/L	85		87		90.4	U	66.1	U	27.4	U	27.4	U	92.5		62.6	U
Beryllium	4	MCL	UG/L	0.26		0.21		0.2	U	0.2	U	0.2	U	0.2	U	0.23		0.2	U
Cadmium	5	GA	UG/L	0.3	U	0.31		0.6	U	0.6	U	0.6	U	0.6	U	0.3	U	0.6	U
Calcium			UG/L	108000		110000		104000		118000		108000		92000		108000		81100	
Chromium	50	GA	UG/L	1	U	1.5		1	U	1	U	1	U	1	U	1	U	1	U
Cobalt			UG/L	1.2	U	1.4		2	U	1.3	U	1.3	U	1.3	U	1.2	U	1.3	U
Copper	200	GA	UG/L	3.1		4.3		1.1	U	2.6	U	1.1	U	1.1	U	3.3		1.3	U
Iron	300	GA	UG/L	119		90.6		572	J	214		53.1	U	96.4	U	56.8		134	
Lead	15	MCL	UG/L	1.7	U	1.7	U	1.5	U	1.9	U	1.5	U	3	U	1.7	U	1.5	U
Magnesium			UG/L	22600		23000		22900		14600		15200		14200		17700		13600	
Manganese	300	GA	UG/L	21.3		20		9.7	U	73.8		0.7	U	22.5		73.2		62	
Mercury	0.7	GA	UG/L	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Nickel	100	GA	UG/L	1.8		2.2		2.5	U	2.5	U	2.5	U	2.5	U	2.4		2.5	U
Potassium			UG/L	472		574		843	U	5320		772	U	1330	U	853		1070	U
Selenium	10	GA	UG/L	2.4	U	2.4	U	4.7	UJ	4.7	UJ	4.7	UJ	4.7	UJ	2.4	U	4.7	UJ
Silver	50	GA	UG/L	1.3	U	2.3		1.5	U	1.5	U	1.5	U	1.5	U	1.3	U	1.5	U
Sodium	20,000	GA	UG/L	9,290		9,620		8,190		18,700		30,100		[illegible]		11,700		8,970	
Thallium	2	MCL	UG/L	4.40		7.1		4.1	U	4.7	U	4.4	U	6.2	U	[illegible]		8.6	U
Vanadium			UG/L	1.2	U	1.4		1.6	U	1.6	U	1.6	U	1.6	U	1.2	U	1.6	U
Zinc			UG/L	2.5	R	3.2	R	14.4	U	63.9		7.7	U	8.3	U	6.2	R	4.4	U

Notes:
1. The criteria values are NYSDEC Class GA Groundwater Standards (TOGS 1.1.1, June 1998) and EPA Maximum Contamination Limit (MCL), Source http://www.epa.gov/safewater/mcl.html#inorganic.html
2. Shading indicates a concentration above groundwater standard.
3. A blank in the action level column indicates no Class GA and/or MCL standand or standard is a secondary value.
4. Wells MW17-2, MW17-3, and MW17-4 were not sampled in August 1996 since they were dry.

U = compound was not detected
J = the reported value is and estimated concentration
R = the compound was rejected

APPENDIX B

SEDA BACKGROUND GROUNDWATER DATA SUMMARY

Appendix B
SEDA Background Groundwater Concentrations
SEAD-16 & SEAD-17 Fouth Annual Groundwater Monitoring Report
Seneca Army Depot Activity

PARAMETER	UNIT	MAXIMUM	AVERAGE CONCENTRATION	STANDARD DEVIATION	FREQUENCY OF DETECTION	CRITERIA VALUE	TYPE OF CRITERIA	NUMBER OF EXCEEDENCES	NUMBER OF DETECTS	NUMBER OF ANALYSES
Aluminum	UG/L	42,400	2,732	8,207	87%	50	MCL	25	27	31
Antimony	UG/L	52.7	8.2	13.9	13%	3	GA	3	4	31
Arsenic	UG/L	10	1.7	2.2	13%	5	MCL	2	4	31
Barium	UG/L	337	78.2	62.6	94%	1000	GA	0	29	31
Beryllium	UG/L	2.2	0.2	0.4	13%	4	MCL	0	4	31
Cadmium	UG/L	0	0.5	0.5	0%	5	GA	0	0	31
Calcium	UG/L	181,000	115,619	25,274	100%			0	31	31
Chromium	UG/L	69.4	4.7	13.4	48%	50	GA	1	15	31
Cobalt	UG/L	34.6	3.7	7.4	45%			0	14	31
Copper	UG/L	32.5	3.3	6.9	48%	200	GA	0	15	31
Cyanide	UG/L	2.8	NA	NA	3%	200	GA	0	1	31
Iron	UG/L	69,400	4,476	13,429	100%	300	GA	22	31	31
Lead	UG/L	34.8	2.5	6.3	32%	15	MCL	1	10	31
Magnesium	UG/L	58,200	28,568	13,848	100%			0	31	31
Manganese	UG/L	1120	224	254	97%	50	SEC	22	30	31
Mercury	UG/L	0.06	0.04	0.02	23%	0.7	GA	0	7	31
Nickel	UG/L	99.8	7.3	18.7	61%	100	GA	0	19	31
Potassium	UG/L	10,200	3,833	3,010	94%			0	29	31
Selenium	UG/L	3.6	1.5	0.7	19%	10	GA	0	6	31
Silver	UG/L	0.98	1.0	1.0	6%	50	GA	0	2	31
Sodium	UG/L	59,400	14,601	13,877	97%	20000	GA	7	30	31
Thallium	UG/L	4.7	1.5	1.2	13%	2	MCL	4	4	31
Vanadium	UG/L	70.8	5.2	13.5	52%			0	16	31
Zinc	UG/L	143	23.1	34.5	84%	5000	MCL	0	26	31

GA = NYSDEC Ambient Water Quality Standards for a source of Drinking Water from Groundwater (TOGS 1.1.1)
MCL = Maximum Contaminant Level - Drinking Water Standards and Health Advisory (EPA 822-B-00-001)
SEC = Secondary Drinking Water Regulations - Drinking Water Standards and Health Advisory (EPA 822-B-00-001)

APPENDIX C

FIELD FORMS FOR YEAR 3 SAMPLING ACTIVITIES

GROUNDWATER ELEVATION REPORT

PARSONS | **CLIENT:** | **DATE:** 2/17/2016

PROJECT: SEAD-16/17
LOCATION: SENECA ARMY DEPOT
PROJECT NO:
INSPECTOR: EBO/SD

MONITORING EQUIPMENT:

INSTRUMENT	DETECTOR	BGD	TIME	REMARKS

WATER LEVEL INDICATOR:

INSTRUMENT	CORRECTION FACTOR
Solinst #04903	0.27' Probe Tip

→ not metal Probe Tip (0.27')

COMMENTS: @ ground surface has numerous frozen puddles across S-16/17 sites. High GW?

WELL	TIME	DEPTH TO Water WATER	DEPTH TO ~~PRODUCT~~ Total Depth	CORRECTED WATER LEVEL	MEASURED POW	INSTALLED POW	PRODUCT SPEC. GRAV	WELL STATUS / COMMENTS (Lock?, Well #?, Surface Disturbance?, Riser marked?, Condition of pad, concrete, protective casing, etc.)
MW16-6	11:13	2.53'	6.7					
16-4	11:15	2.78'	6.6					~~→Total Depth of well to rim of metal ~8.6'~~ → Double checked well Depths
16-1	11:18	3.16	7.7'					ressessed in metal protective casing
16-7	11:21	4.41	6.6'					
16-5	11:24	—	—					PVC lifted onto Lid of metal Protective Casing,
—	—	—	—	—	—	—	—	unable to open lid, will call BW.
16-2	11:26	4.08	5.70'					
→returned to 16-5, was able to hammer down PVC ~2 inches from previous head								
16-5	11:45	1.68	~~3.88~~ →4.9 total Depth, historical depth 5.1 ft					
17-2	11:53	2.20	5.86'					
17-3	11:55	2.51	7.3'					PVC cut well from couple of rounds cap
17-4	11:58	3.40	8.28		PVC lifted 2.7 above			PVC lifted, can't close lid
→ hammer down PVC, new PVC lift height metal casing 1.5 inch								
17-4	12:06	3.27	8.28'					
17-5	12:09	2.79	10.0					
17-1	12:10	3.32	10.09					

(ALL DEPTH MEASUREMENTS FROM MARKED LOCATION ON RISER)

SAMPLING RECORD - GROUNDWATER

SENECA ARMY DEPOT ACTIVITY	PARSONS	WELL #: MW16-1

PROJECT: SEAD-16/17 LTM Groundwater Sampling - Round 4
LOCATION: ROMULUS, NY

DATE: 12/16/10
INSPECTORS: Dillman
PUMP #: Peristaltic #01445
SAMPLE ID #: 16LM2002UNF/FIL

WEATHER / FIELD CONDITIONS CHECKLIST (RECORD MAJOR CHANGES)

TIME (24 HR)	TEMP (APPRX)	WEATHER (APPRX)	REL. HUMIDITY (GEN)	WIND VELOCITY (APPRX)	WIND (FROM) DIRECTION (0 - 360)	GROUND / SITE SURFACE CONDITIONS	MONITORING INSTRUMENT	MONITORING DETECTOR
	Low 20's	Windy, cold				Frozen	OVM-580	PID
		Partly cloudy						

WELL VOLUME CALCULATION FACTORS

DIAMETER (INCHES):	0.25	1	2	3	4	6
GALLONS / FOOT:	0.0026	0.041	0.163	0.367	0.654	1.47
LITERS/FOOT	0.010	0.151	0.617	1.389	2.135	5.564

ONE WELL VOLUME (GAL) = [(POW - STABILIZED WATER LEVEL) X WELL DIAMETER FACTOR (GAL/FT)]
3 well vol. = ~2.40 gals

Horiba U-52 #14200 HISTORIC DATA LaMotte #2403 YSI 85 #3210	DEPTH TO POINT OF WELL (TOC)	DEPTH TO TOP OF SCREEN (TOC)	SCREEN LENGTH (FT)	WELL DEVELOPMENT TURBIDITY	WELL DEVELOPMENT pH	WELL DEVELOPMENT SPEC. COND
	8.75					
DATA COLLECTED AT WELL SITE	PID READING (OPENING WELL)	DEPTH TO STATIC WATER LEVEL (TOC)		DEPTH TO STABILIZED WATER LEVEL (TOC)	DEPTH TO PUMP INTAKE (TOC)	PUMPING START TIME
		3.85 PVC				
RADIATION SCREENING DATA	PUMP PRIOR TO SAMPLING (cps)	4.70 Steel		PUMP AFTER SAMPLING (cps)		

MONITORING DATA COLLECTED DURING PURGING OPERATIONS

TIME (min)	WATER LEVEL	PUMPING RATE (ml/min)	CUMULATIVE VOL (GALLONS)	DISSOLVED OXYGEN (mg/L)	TEMP (C)	SPEC. COND (mmhos)	pH	ORP (mV)	TURBIDITY (NTU)
9:15	3.85/4.70		Static water level			ms/cm			
				YSI	YSI				
9:40	4.72	150	Start Pump						
9:52	4.81	160		0.05	8.4	1.35	7.03	160	18
10:00	4.81	~150		0.04	8.5	1.37	7.00	101	8.0
10:10	4.85	" "		0.04	8.6	1.41	6.95	50	4.6
10:15	4.83	~150		0.04	8.6	1.43	6.91	43	2.2
10:20	4.83	" "		0.04	8.7	1.45	6.93	36	1.3
10:25	4.81	130		0.04	8.7	1.55	6.89	35	1.4
10:30	4.82	140		0.04	8.7	1.56	6.95	30	1.1
10:35	4.82	" "		0.04	8.7	1.57	6.96	28	0.70
10:40	4.82	140	2.25	0.03	8.7	1.57	6.93	29	0.85
10:45	4.82	" "		0.04	8.8	1.57	6.96	26	1.2
10:50	4.87	164		0.04	8.8	1.57	6.94	26	2.3
10:55	4.84	160		0.04	8.8	1.56	6.94	25	0.70
COLLECT SAMPLE FOR TOTAL & DISSOLVED METALS @ 11:00									
11:15	4.82	160	3.3 total	0.04	8.8	1.46	7.03	25	0.0 ← Post Filtered Turbidity
*Post sample readings									

SAMPLING RECORD - GROUNDWATER

SENECA ARMY DEPOT ACTIVITY	PARSONS	WELL #: 4W16-2

PROJECT: SEAD-16/17 LTM Groundwater Sampling - Round 4
LOCATION: ROMULUS, NY

DATE: 12/15/16
INSPECTORS: SD/BEO
PUMP #: Peristaltic #01445
SAMPLE ID #: 16LM20022/23

WEATHER / FIELD CONDITIONS CHECKLIST (RECORD MAJOR CHANGES)

TIME (24 HR)	TEMP (APPRX)	WEATHER (APPRX)	REL. HUMIDITY (GEN)	WIND VELOCITY (APPRX)	WIND DIRECTION (FROM) (0 - 360)	GROUND / SITE SURFACE CONDITIONS

MONITORING

INSTRUMENT	DETECTOR
OVM-580	PID

WELL VOLUME CALCULATION FACTORS

DIAMETER (INCHES):	0.25	1	2	3	4	6
GALLONS / FOOT:	0.0026	0.041	0.163	0.367	0.654	1.47
LITERS/FOOT	0.010	0.131	0.617	1.389	2.475	5.564

ONE WELL VOLUME (GAL) = [(POW - STABILIZED WATER LEVEL) X WELL DIAMETER FACTOR (GAL/FT)]
~ 0.87 gals

	DEPTH TO POINT OF WELL (TOC)	DEPTH TO TOP OF SCREEN (TOC)	SCREEN LENGTH (FT)	WELL DEVELOPMENT TURBIDITY	WELL DEVELOPMENT pH	WELL DEVELOPMENT SPEC. COND
HISTORIC DATA	5.97'					

	PID READING (OPENING WELL)	DEPTH TO STATIC WATER LEVEL (TOC)	DEPTH TO STABILIZED WATER LEVEL (TOC)	DEPTH TO PUMP INTAKE (TOC)	PUMPING START TIME
DATA COLLECTED AT WELL SITE		4.19'			

RADIATION SCREENING DATA	PUMP PRIOR TO SAMPLING (cps)		PUMP AFTER SAMPLING (cps)	

MONITORING DATA COLLECTED DURING PURGING OPERATIONS

TIME (min)	WATER LEVEL	PUMPING RATE (mL/min)	CUMULATIVE VOL (GALLONS)	DISSOLVED OXYGEN (mg/L)	TEMP (C)	SPEC. COND (mS/cm)	pH	ORP (mV)	TURBIDITY (NTU)
		Peristaltic Pump Pump #01445, Horiba #14200, LaMotte #02933, YSI #321							
1152	4.18	Pump Started → replace water tube due to crack							
1158		Pump Started		YSI	YSI				LaMotte
1203	4.16	~104 mL/min		4.57	4.9	0.498	7.44	-104	350
1210	4.18	140		4.29	4.9	0.556	7.38	-73	100
1215	4.17	" "		3.96	4.9	0.588	7.37	-59	27
1220	4.18	" "		3.99	5.0	0.617	7.37	-45	12
1225	4.18	~140	~1 gal	3.93	5.0	0.623	7.34	-31	5.7
1231	4.18	"		3.88	5.1	0.636	7.33	-20	3.7
1236	4.18	"	~1.5 gals	3.79	5.1	0.647	7.33	-17	2.5
1242	4.18	"		3.74	5.1	0.665	7.32	-13	1.7
1246	4.18			3.70	5.0	0.676	7.32	-8	2.0
1251	4.18	"	~2.2 gals	3.66	5.0	0.680	7.31	-6	2.1
			(Unfiltered)			(Filtered)			
Sample	Collected		16LM20022UNF		1300	16LM20022FIL	1312		
for total & dissolved			16LM20022MSUNF		"	16LM20022MSFIL	1312		
Metals.			16LM20022MSDUNF		"	16LM20022MSDFIL	1312		
			16LM20023UNF		1305	16LM20023FIL	1318		(Dup)
						Post Filter Turbidity			0.25
Post-Sample		Geo Parameters (Pump Started)					1318		
1322	4.18		~2.5 gals	3.52	4.7	0.698	7.32	16	4.9

SAMPLING RECORD - GROUNDWATER

SENECA ARMY DEPOT ACTIVITY	PARSONS	WELL #: MW16-4

PROJECT: SEAD-16/17 LTM Groundwater Sampling - Round 4
LOCATION: ROMULUS, NY

DATE: 12/16/10
INSPECTORS: D. Moran
PUMP #: Peristaltic #01445
SAMPLE ID #: 16LM20024UNF/FIL

WEATHER / FIELD CONDITIONS CHECKLIST (RECORD MAJOR CHANGES)

TIME (24 HR)	TEMP (APPRX)	WEATHER (APPRX)	REL. HUMIDITY (GEN)	WIND VELOCITY (APPRX)	WIND DIRECTION (FROM) (0 - 360)	GROUND / SITE SURFACE CONDITIONS	MONITORING INSTRUMENT	MONITORING DETECTOR
	Low 20s	Windy, cold				Frozen	OVM-580	PID
		Partly cloudy						

WELL VOLUME CALCULATION FACTORS

DIAMETER (INCHES):	0.25	1	2	3	4	6
GALLONS / FOOT:	0.0026	0.041	0.163	0.367	0.651	1.47
LITERS/FOOT	0.010	0.151	0.617	1.389	2.475	5.564

ONE WELL VOLUME (GAL.) = [(POW - STABILIZED WATER LEVEL) X WELL DIAMETER FACTOR (GAL/FT)]
3 well vol. = ~1.86 gals

Horiba U-52 # 14200 HISTORIC DATA LaMotte # 2403 YSI 85 # 3210	DEPTH TO POINT OF WELL (TOC)	DEPTH TO TOP OF SCREEN (TOC)	SCREEN LENGTH (FT)	WELL DEVELOPMENT TURBIDITY	WELL DEVELOPMENT pH	WELL DEVELOPMENT SPEC COND
	6.87					
DATA COLLECTED AT WELL SITE	PID READING (OPENING WELL)	DEPTH TO STATIC WATER LEVEL (TOC)		DEPTH TO STABILIZED WATER LEVEL (TOC)	DEPTH TO PUMP INTAKE (TOC)	PUMPING START TIME
		3.06				
RADIATION SCREENING DATA	PUMP PRIOR TO SAMPLING (cps)			PUMP AFTER SAMPLING (cps)		

MONITORING DATA COLLECTED DURING PURGING OPERATIONS

TIME (min)	WATER LEVEL	PUMPING RATE (ml/min)	CUMULATIVE VOL (GALLONS)	DISSOLVED OXYGEN (mg/L)	TEMP (C)	SPEC. COND (umhos)	pH	ORP (mV)	TURBIDITY (NTU)
	3.06	STATIC WATER LEVEL - PRE PUMP							
1215		START PUMP		YSI	YSI				LaMotte
1220	~~300~~	200		0.07	5.9	3.62	7.01	-49	90
1225	3.23			0.09	5.6	3.65	6.94	-54	45
1230	3.25	220		0.10	5.5	3.70	6.94	-57	2.2
1235	3.25	220		0.10	5.4	3.69	6.94	-60	1.4
1240	3.24	220		0.11	5.2	3.66	6.92	-61	5.1
1245	3.24	" "		0.11	5.2	3.68	6.92	-60	2.4
1250	3.24	210		0.13	5.2	3.64	6.92	-61	1.4
1255	3.24	220		0.17	5.2	3.62	6.92	-61	4.4
1300	3.25	220		0.17	5.2	3.59	6.91	-61	3.4
1305	3.25	225	3 gal	0.15	5.2	3.59	6.91	-61	2.2
1310	3.25	220		0.14	5.2	3.58	6.91	-61	0.65
1315	3.24	" "		0.11	5.1	3.62	6.92	-62	0.55
1320	3.24	220		0.09	5.1	3.62	6.92	-62	0.10
1325		SAMPLE WELL FOR TOTAL & DISSOLVED METALS							
1335	3.23	220	~4.75 gal	0.09	5.1	3.59	6.90	-63	0.0 ← Post Filtered Turbidity

SAMPLING RECORD - GROUNDWATER

SENECA ARMY DEPOT ACTIVITY	PARSONS	WELL #: MW16-5

PROJECT: SEAD-16/17 LTM Groundwater Sampling - Round 4
LOCATION: ROMULUS, NY

DATE: 12/15/10
INSPECTORS: BBO/SD
PUMP #: Peristaltic #01445
SAMPLE ID #: 16LM20025

WEATHER / FIELD CONDITIONS CHECKLIST (RECORD MAJOR CHANGES)

TIME (24 HR)	TEMP (APPRX)	WEATHER (APPRX)	REL. HUMIDITY (GEN)	WIND VELOCITY (APPRX)	(FROM) DIRECTION (0 - 360)	GROUND / SITE SURFACE CONDITIONS	MONITORING INSTRUMENT	DETECTOR
1018	21			10-20	SW→NE	frozen	OVM-580	PID

WELL VOLUME CALCULATION FACTORS

DIAMETER (INCHES):	0.25	1	(2)	3	4	6
GALLONS / FOOT:	0.0026	0.041	0.163	0.367	0.654	1.47
LITERS/FOOT	0.010	0.151	0.617	1.389	2.475	5.564

ONE WELL VOLUME (GAL) = [(POW - STABILIZED WATER LEVEL) X WELL DIAMETER FACTOR (GAL/FT)]: ~1 gal

HISTORIC DATA	DEPTH TO POINT OF WELL (TOC)	DEPTH TO TOP OF SCREEN (TOC)	SCREEN LENGTH (FT)	WELL DEVELOPMENT TURBIDITY	WELL DEVELOPMENT pH	WELL DEVELOPMENT SPEC. COND
Horiba Pine #14200 LaMotte Pine #02933 YSI Pine #3210	5.1'					

DATA COLLECTED AT WELL SITE	PID READING (OPENING WELL)	DEPTH TO STATIC WATER LEVEL (TOC)	DEPTH TO STABILIZED WATER LEVEL (TOC)	DEPTH TO PUMP INTAKE (TOC)	PUMPING START TIME
		3.12'			

RADIATION SCREENING DATA	PUMP PRIOR TO SAMPLING (cps)		PUMP AFTER SAMPLING (cps)	

MONITORING DATA COLLECTED DURING PURGING OPERATIONS

TIME (min)	WATER LEVEL	PUMPING RATE (ml/min)	CUMULATIVE VOL (GALLONS)	DISSOLVED OXYGEN (mg/L)	TEMP (C)	SPEC. COND (mS/cm)	pH	ORP (mV)	TURBIDITY (NTU)
		Peristaltic pump used		Pine #Ø	1445				
1027	3.34	Pump started at		YSI	YSI				LaMotte
1032	3.45	160 ml/min	flowrate ↓	0.09	4.0	0.436	7.04	3	19
1037	3.58	140	flow rate ↓	0.08	4.0	0.417	7.09	-77	7.5
1043	3.67	104		0.07	4.1	0.414	7.15	-138	3.6
1047	3.76	"		0.08	4.1	0.412	7.15	-168	2.3
1052	3.84	100		0.20	4.2	0.417	7.18	-191	8.0
1058	3.91	~100	~1.0 gals	0.16	4.2	0.424	7.16	-201	10
1103	4.03			0.12	4.3	0.423	7.18	-210	4.8
1108	4.07	~96		0.09	4.4	0.422	7.16	-215	4.8
1113	4.18			0.09	4.5	0.420	7.15	-220	2.4
1118	4.26		~1.5 gals	0.09	4.6	0.424	7.13	-223	1.4
→ collected samples 16LM20025 UNF & 16LM20025 FIL									
for dissolved & Total Metals					11:23			11:25	
						Post Filter Sample →			0.00
Post Sample Collection Geo Parameters (recalibrated 1129)									
1133	4.45		~1.75 gals	0.11	4.8	0.433	7.15	-222	6.5

check twice

SAMPLING RECORD - GROUNDWATER

SENECA ARMY DEPOT ACTIVITY	PARSONS	WELL #: MW16-6

PROJECT: SEAD-16/17 LTM Groundwater Sampling - Round 4
LOCATION: ROMULUS, NY

DATE: 12/15/10
INSPECTORS: BBO/SD
PUMP #: Peristaltic #01445
SAMPLE ID #: 16LM20026UNF/FIL

WEATHER / FIELD CONDITIONS CHECKLIST (RECORD MAJOR CHANGES)

TIME (24 HR)	TEMP (APPRX)	WEATHER (APPRX)	REL. HUMIDITY (GEN)	WIND VELOCITY (APPRX)	WIND (FROM) DIRECTION (0 - 360)	GROUND / SITE SURFACE CONDITIONS

MONITORING INSTRUMENT	MONITORING DETECTOR
OVM-580	PID

WELL VOLUME CALCULATION FACTORS

DIAMETER (INCHES):	0.25	1	2	3	4	6
GALLONS / FOOT:	0.0026	0.041	0.16	0.367	0.654	1.47
LITERS/FOOT	0.010	0.151	0.617	1.389	2.475	5.564

ONE WELL VOLUME (GAL) = [(POW - STABILIZED WATER LEVEL) X WELL DIAMETER FACTOR (GAL/FT)]
~1.58 gals

Heritage Pine #14200 / LaMotte Pine #02933 / YSI Pine #3210 (HISTORIC DATA)	DEPTH TO POINT OF WELL (TOC)	DEPTH TO TOP OF SCREEN (TOC)	SCREEN LENGTH (FT)	WELL DEVELOPMENT TURBIDITY	WELL DEVELOPMENT pH	WELL DEVELOPMENT SPEC COND
	6.97'					

DATA COLLECTED AT WELL SITE	PID READING (OPENING WELL)	DEPTH TO STATIC WATER LEVEL (TOC)	DEPTH TO STABILIZED WATER LEVEL (TOC)	DEPTH TO PUMP INTAKE (TOC)	PUMPING START TIME
		3.15'			

RADIATION SCREENING DATA	PUMP PRIOR TO SAMPLING (cps)		PUMP AFTER SAMPLING (cps)	

MONITORING DATA COLLECTED DURING PURGING OPERATIONS

TIME (min)	WATER LEVEL	PUMPING RATE (ml/min)	CUMULATIVE VOL (GALLONS)	DISSOLVED OXYGEN (mg/L)	TEMP (C)	SPEC COND ~~mS/cm~~ (mS/cm)	pH	ORP (mV)	TURBIDITY (NTU)
		Peristaltic Pump Pine #01445							
1525	3.11	Pump started		YSI	YSI				LaMotte
1535	4.01	~105		5.18	6.2	0.402	7.59	41	700
1540	4.14	~105		4.89	5.9	0.399	7.60	42	240
1545	4.31	" "		4.88	6.1	0.396	7.56	43	65
1550	4.42	" "		5.02	6.2	0.395	7.51	43	22
1555	4.48	~80	flowrate↑	4.83	6.3	0.398	7.52	42	11
1601	4.55	~72	~1.0 gals	3.75	6.6	0.400	7.50	46	5.9
1605	4.64	~132		3.57	6.6	0.398	7.42	47	
1610	4.67	114		3.60	6.5	0.396	7.47	48	6.3
1615	4.72	86	flow rate ↑	3.52	6.5	0.403	7.47	59	5.7
1620	4.79	106	~1.5 gals	2.95	6.5	0.406	7.47	56	2.2
1625	4.92	146		3.15	6.5	0.405	7.45	51	2.0
1630	5.07			3.04	6.6	0.407	7.42	51	3.1
						Time			
Collected Samples for Total & Dissolved Metals.			16LM20026UNF 16LM20026FIL			1641 1645		Post-Filter Turb	0.25
Post-Sample Collection Geoparameters						Pump Started 1642			
1646	5.42		~2.25 gals	2.85	6.8	0.405	7.34	50	3.3

Did not adjust flow. Unknown why flow is varying

SAMPLING RECORD - GROUNDWATER

SENECA ARMY DEPOT ACTIVITY	PARSONS	WELL #: MW16-7

PROJECT: SEAD-16/17 LTM Groundwater Sampling - Round 4
LOCATION: ROMULUS, NY

DATE: 12/15/10
INSPECTORS: BPO/SD
PUMP #: Peristaltic #01445
SAMPLE ID #: 16LM20027UNF/FIL

WEATHER/ FIELD CONDITIONS CHECKLIST (RECORD MAJOR CHANGES)

TIME (24 HR)	TEMP (APPRX)	WEATHER (APPRX)	REL. HUMIDITY (GEN)	WIND VELOCITY (APPRX)	WIND DIRECTION (FROM) (0 - 360)	GROUND / SITE SURFACE CONDITIONS	MONITORING INSTRUMENT	MONITORING DETECTOR
1347	~23	Partly cloudy scattered snow showers		10-20	SW→NE	Green	OVM-580	PID

WELL VOLUME CALCULATION FACTORS

DIAMETER (INCHES):	0.25	1	2	3	4	6
GALLONS / FOOT:	0.0026	0.041	0.163	0.367	0.654	1.47
LITERS/FOOT	0.010	0.151	0.617	1.389	2.475	5.564

ONE WELL VOLUME (GAL) = [(POW - STABILIZED WATER LEVEL) X WELL DIAMETER FACTOR (GAL/FT)]
~1.20 gals

HISTORIC DATA	DEPTH TO POINT OF WELL (TOC)	DEPTH TO TOP OF SCREEN (TOC)	SCREEN LENGTH (FT)	WELL DEVELOPMENT TURBIDITY	WELL DEVELOPMENT pH	WELL DEVELOPMENT SPEC COND
Horiba Pre #14200 LaMotte Pre #02933 YSI Pre # 3210	6.85					

DATA COLLECTED AT WELL SITE	PID READING (OPENING WELL)	DEPTH TO STATIC WATER LEVEL (TOC)	DEPTH TO STABILIZED WATER LEVEL (TOC)	DEPTH TO PUMP INTAKE (TOC)	PUMPING START TIME
		4.52			

RADIATION SCREENING DATA	PUMP PRIOR TO SAMPLING (cps)		PUMP AFTER SAMPLING (cps)	

MONITORING DATA COLLECTED DURING PURGING OPERATIONS

TIME (min)	WATER LEVEL	PUMPING RATE (ml/min)	CUMULATIVE VOL (GALLONS)	DISSOLVED OXYGEN (mg/L)	TEMP (C)	SPEC. COND (umhos)	pH	ORP (mV)	TURBIDITY (NTU)
		Peristaltic Pump Pre #01445				Possible obstruction, but able to set			
1350	4.52	Pump Started		YSI	YSI	tubing past 5ft from TOC.			LaMotte
1356	4.75	~184		4.89	5.6	0.534	7.52	23	15
1403	4.76	~126		4.69	5.9	0.544	7.57	27	12
1408	4.85	~160		4.18	5.6	0.537	7.57	35	4.9
1413	4.87	95		4.39	5.8	0.539	7.56	43	2.4
1418	4.85	112		4.12	6.2	0.562	7.53	33	1.6
1423	4.87	" "	~1 gal	3.78	6.1	0.559	7.54	36	0.80
1429	4.86	100		3.77	6.3	0.570	7.55	29	0.20
1434	4.85			3.55	6.5	0.589	7.54	35	0.50
1439	4.82	100		3.43	6.4	0.602	7.54	31	0.35
1445	4.83	100		3.47	6.4	0.610	7.53	33	0.15
1452		COLLECT SAMPLE		Dissolved & Total metals					
			16LM20027UNF (1452)			16LM20027FIL (1459)			0.0
Post-Collection Geo Parameters (Pump started 1456)									
1501	4.89		1.8 gals	4.17	6.3	0.640	7.58	38	1.0

Post filtration

SAMPLING RECORD - GROUNDWATER

SENECA ARMY DEPOT ACTIVITY	PARSONS	WELL #: MW 17-1

PROJECT: SEAD-16/17 LTM Groundwater Sampling - Round 4
LOCATION: ROMULUS, NY

DATE: 12/17/10
INSPECTORS: SD / BBO
PUMP #: Peristaltic #01445
SAMPLE ID #: 17LM20016UNF/FIL

WEATHER / FIELD CONDITIONS CHECKLIST (RECORD MAJOR CHANGES)

TIME (24 HR)	TEMP (APPRX)	WEATHER (APPRX)	REL. HUMIDITY (GEN)	WIND VELOCITY (APPRX)	WIND (FROM) DIRECTION (0 - 360)	GROUND / SITE SURFACE CONDITIONS
857	25	snow		~8	SW→NE	Frozen

MONITORING INSTRUMENT	DETECTOR
OVM-580	PID

WELL VOLUME CALCULATION FACTORS

DIAMETER (INCHES):	0.25	1	2	3	4	6
GALLONS / FOOT:	0.0026	0.041	0.163	0.367	0.654	1.47
LITERS/FOOT	0.010	0.151	0.617	1.389	2.475	5.564

ONE WELL VOLUME (GAL) = [(POW - STABILIZED WATER LEVEL) X WELL DIAMETER FACTOR (GAL/FT)]

Horiba U-52 #14200 / HISTORIC DATA / LaMotte #02403 / YSI 85 #3210	DEPTH TO POINT OF WELL (TOC)	DEPTH TO TOP OF SCREEN (TOC)	SCREEN LENGTH (FT)	WELL DEVELOPMENT TURBIDITY	WELL DEVELOPMENT pH	WELL DEVELOPMENT SPEC. COND
	10.30' - 7.3' BBO					

DATA COLLECTED AT WELL SITE	PID READING (OPENING WELL)	DEPTH TO STATIC WATER LEVEL (TOC)	DEPTH TO STABILIZED WATER LEVEL (TOC)	DEPTH TO PUMP INTAKE (TOC)	PUMPING START TIME
		4.43			

RADIATION SCREENING DATA	PUMP PRIOR TO SAMPLING (cps)		PUMP AFTER SAMPLING (cps)	

MONITORING DATA COLLECTED DURING PURGING OPERATIONS

TIME (min)	WATER LEVEL	PUMPING RATE (ml/min)	CUMULATIVE VOL (GALLONS)	DISSOLVED OXYGEN (mg/L)	TEMP (C)	SPEC. COND mS/cm	pH	ORP (mV)	TURBIDITY (NTU)
		Peristaltic pump pole #01445							
856	4.38	Pump Started at		YSI	YSI				LaMotte
900	4.82	220 ml/m	flow rate ↓	1.10	8.9	0.467	7.02	198	18
905	4.85	108		1.09	9.0	0.488	7.02	200	27
910	4.80	80	flowrate ↑	0.66	9.0	0.481	7.17	154	18
915	4.85	~104		0.42	9.1	0.493	7.27	166	13
920	4.86	96		0.37	9.0	0.510	7.24	161	13
925	4.86	106		0.46	8.9	0.508	7.26	110	13
930	4.86	106		0.59	8.9	0.539	7.28	97	10
935	4.90	140		0.67	8.9	0.532	7.25	98	7.1
940	4.96	140		0.65	8.9	0.565	7.26	116	4.9
945	5.01	114	~2.0 gals	0.61	8.9	0.566	7.23	123	4.0
950	5.00	120		0.60	8.9	0.573	7.25	127	2.4
955	5.00	114		0.61	8.9	0.579	7.24	127	2.0
1000	5.06	156		0.67	8.9	0.595	7.19	125	1.6
Samples Collected			17LM20016UNF			1010			
			17LM20016FIL			1013			
							Post-Filtered Turb		0.00 Checked twice
Collected		Post-Sample Collection Geoparameter (Pump Stopped at 1014							
1018	5.12		~3.0 gals	0.62	8.9	0.593	7.22	137	1.2

SAMPLING RECORD - GROUNDWATER

SENECA ARMY DEPOT ACTIVITY	PARSONS	WELL #: MW17-2

PROJECT: SEAD-16/17 LTM Groundwater Sampling - Round 4
LOCATION: ROMULUS, NY

DATE: 12/16/10
INSPECTORS: TBO
PUMP #: Peristaltic Parsons
SAMPLE ID #: 17LM20015UNF/FIL

WEATHER / FIELD CONDITIONS CHECKLIST (RECORD MAJOR CHANGES)

TIME (24 HR)	TEMP (APPRX)	WEATHER (APPRX)	REL. HUMIDITY (GEN)	WIND VELOCITY (APPRX)	WIND (FROM) DIRECTION (0 - 360)	GROUND / SITE SURFACE CONDITIONS
1445	26	Partly Cloudy		10	NW-NE	Frozen

MONITORING

INSTRUMENT	DETECTOR
OVM-580	PID

WELL VOLUME CALCULATION FACTORS

DIAMETER (INCHES):	0.25	1	2	3	4	6
GALLONS / FOOT:	0.0026	0.041	0.163	0.367	0.654	1.47
LITERS/FOOT	0.010	0.151	0.617	1.389	2.475	5.564

ONE WELL VOLUME (GAL) = [(POW - STABILIZED WATER LEVEL) X WELL DIAMETER FACTOR (GAL/FT)]
3 X 1.82 gals

HISTORIC DATA	DEPTH TO POINT OF WELL (TOC)	DEPTH TO TOP OF SCREEN (TOC)	SCREEN LENGTH (FT)	WELL DEVELOPMENT TURBIDITY	WELL DEVELOPMENT pH	WELL DEVELOPMENT SPEC. COND
Heriden U-52 #15294 LaMotte #02933 YSI 85 #6122	8'					

DATA COLLECTED AT WELL SITE	PID READING (OPENING WELL)	DEPTH TO STATIC WATER LEVEL (TOC)	DEPTH TO STABILIZED WATER LEVEL (TOC)	DEPTH TO PUMP INTAKE (TOC)	PUMPING START TIME
		4.27'			

RADIATION SCREENING DATA	PUMP PRIOR TO SAMPLING (cps)		PUMP AFTER SAMPLING (cps)	

MONITORING DATA COLLECTED DURING PURGING OPERATIONS

TIME (min)	WATER LEVEL	PUMPING RATE (ml/min)	CUMULATIVE VOL (GALLONS)	DISSOLVED OXYGEN (mg/L)	TEMP (C)	SPEC. COND mS/cm	pH	ORP (mV)	TURBIDITY (NTU)
		Peristaltic Pump Parsons from SEDA field office							
1450	4.24	Pump Started		YSI	YSI				LaMotte
1503	5.46	~80	flow rate ↑	0.08	6.0	0.663	7.21	-5	4.76
1508		112		0.20	6.1	0.663	7.19	-3	
⇒ can't get DO			Probe Past	6.4' from TOC, obstruction? Tubing can fit past it					
1514	5.90	158	flow rate ↓	0.97	6.6	0.664	7.15	-6	12.0
1519	5.96	106	~0.5 gals	0.54	6.6	0.666	7.11	-11	16.1
* 1524	6.0	102		0.32	6.6	0.663	7.08	-17	8.38
1529	6.03	114		0.30	6.7	0.661	7.07	-19	4.09
1534	6.07	104		0.32	6.7	0.660	7.05	-19	2.75
1540	6.11	100	~1 gal	0.24	6.7	0.656	7.04	-19	1.74
1545	6.13	~95		0.21	6.8	0.656	7.04	-17	1.01
1550	ND	100	1.25 gals	0.23	6.8	0.655	7.03	-14	1.11
1555	ND	106		0.26	6.8	0.654	7.03	-11	0.96
Collected Samples for Total & Dissolved Metals.			17LM20015UNF			1603	Unfiltered		
			17LM20015FIL			1607	Filtered		
							Post-Filtered Turbidity		0.40 NTU
Collected Post-Sample Collection Geo Parameters (started pump at 1609									
1613			~2.0 gals	0.27	6.8	0.647	7.03	1.0	1.4

* Water level Probe can't advance past 6.4'. feels like soft material, Probe will go 8.0' deep if probe dropped from a height.
ND = not detectable

SAMPLING RECORD - GROUNDWATER 1 of 2

SENECA ARMY DEPOT ACTIVITY	PARSONS	WELL #: MW17-3

PROJECT: SEAD-16/17 LTM Groundwater Sampling - Round 4
LOCATION: ROMULUS, NY

DATE: 12/16/10
INSPECTORS: Dillman
PUMP #: 01445 Geopump
SAMPLE ID #: 17LM20017UNF/FIL

WEATHER / FIELD CONDITIONS CHECKLIST (RECORD MAJOR CHANGES)

TIME (24 HR)	TEMP (APPRX)	WEATHER (APPRX)	REL. HUMIDITY (GEN)	WIND VELOCITY (APPRX)	(FROM) DIRECTION (0 - 360)	GROUND / SITE SURFACE CONDITIONS
14:00		20's, breezy				Frozen
		partly cloudy				

MONITORING INSTRUMENT	DETECTOR
OVM-580	PID

WELL VOLUME CALCULATION FACTORS

DIAMETER (INCHES):	0.25	1	2	3	4	6
GALLONS / FOOT:	0.0026	0.041	0.163	0.367	0.654	1.47
LITERS/FOOT	0.010	0.151	0.617	1.389	2.475	5.564

ONE WELL VOLUME (GAL) = [(POW - STABILIZED WATER LEVEL) X WELL DIAMETER FACTOR (GAL/FT)]
3 well vol = ~1.90 gals

Horiba U-52 #14200 / HISTORIC DATA / YSI 85 #3210 / LaMotte #2403	DEPTH TO POINT OF WELL (TOC)	DEPTH TO TOP OF SCREEN (TOC)	SCREEN LENGTH (FT)	WELL DEVELOPMENT TURBIDITY	WELL DEVELOPMENT pH	WELL DEVELOPMENT SPEC. COND
	~7 ft					
DATA COLLECTED AT WELL SITE	PID READING (OPENING WELL)	DEPTH TO STATIC WATER LEVEL (TOC)		DEPTH TO STABILIZED WATER LEVEL (TOC)	DEPTH TO PUMP INTAKE (TOC)	PUMPING START TIME
		3.68				
RADIATION SCREENING DATA	PUMP PRIOR TO SAMPLING (cps)			PUMP AFTER SAMPLING (cps)		

MONITORING DATA COLLECTED DURING PURGING OPERATIONS

TIME (min)	WATER LEVEL	PUMPING RATE (ml/min)	CUMULATIVE VOL. (GALLONS)	DISSOLVED OXYGEN (mg/L)	TEMP (C)	SPEC. COND (umhos)	pH	ORP (mV)	TURBIDITY (NTU)
1415	3.62	Pre pump water level		YSI	YSI				LaMotte
1420	~~3.62~~	250		2.31	6.1	0.523	7.42	-60	
1425	4.77	160		2.70	6.0	0.493	7.37	-54	14
1430	5.30	140		2.44	6.2	0.453	7.27	-44	9.2
1435	5.33	84		2.36	6.4	0.448	7.14	-40	6.2
1440	5.37	~85		2.39	6.6	0.449	6.99	-23	5.3
1445	5.40	90		2.26	6.8	0.450	7.15	-39	3.1
1450	5.42	90		2.26	6.8	0.452	7.04	-40	2.2
1455	5.34	110	Pump Adjusted	2.24	7.0	0.451	7.19	-36	1.7
1500	5.49	106		2.23	7.0	0.454	7.23	-65	1.6
1505	5.54	110		2.22	7.1	0.456	7.23	-70	3.9
1510	5.62	" "		2.42	7.0	0.460	7.16	-74	5.9
1515	5.68	110		2.16	7.0	0.468	7.14	-78	3.5
1520	5.72	110		1.81	7.1	0.470	7.19	-85	2.0
1525	5.85	140		1.95	7.1	0.476	7.16	-91	1.2
1530	5.94	100		1.56	7.1	0.483	7.11	-94	0.70
1535				1.35	7.2	0.486	7.09	-92	
1540	5.96	88		1.20	7.3	0.488	7.03	-90	0.50
1545	6.01	102		1.10	7.3	0.488	6.96	-90	0.30
1555	6.08	102		1.03	7.4	0.488	7.05	-98	0.00
1600	6.09	75		1.01	7.4	0.487	7.06	-96	0.00

P6-2

SAMPLING RECORD - GROUNDWATER 2 of 2

SENECA ARMY DEPOT ACTIVITY	PARSONS	WELL #: MW17-3

PROJECT: SEAD-16/17 LTM Groundwater Sampling - Round 4
LOCATION: ROMULUS, NY

DATE: 12/16/10
INSPECTORS: Dillman
PUMP #: Penstaltic #01445
SAMPLE ID #: 17LM20017UNFILFIL

WEATHER / FIELD CONDITIONS CHECKLIST (RECORD MAJOR CHANGES)

TIME (24 HR)	TEMP (APPRX)	WEATHER (APPRX)	REL. HUMIDITY (GEN)	WIND VELOCITY (APPRX)	WIND (FROM) DIRECTION (0 - 360)	GROUND / SITE SURFACE CONDITIONS

MONITORING

INSTRUMENT	DETECTOR
OVM-580	PID

WELL VOLUME CALCULATION FACTORS

DIAMETER (INCHES):	0.25	1	2	3	4	6
GALLONS / FOOT:	0.0026	0.041	0.163	0.367	0.653	1.47
LITERS/FOOT	0.010	0.151	0.617	1.389	2.475	5.564

ONE WELL VOLUME (GAL) = [(POW - STABILIZED WATER LEVEL) X WELL DIAMETER FACTOR (GAL/FT)]
3 well vol. = ~1.90 gals

HISTORIC DATA	DEPTH TO POINT OF WELL (TOC)	DEPTH TO TOP OF SCREEN (TOC)	SCREEN LENGTH (FT)	WELL DEVELOPMENT TURBIDITY	WELL DEVELOPMENT pH	WELL DEVELOPMENT SPEC. COND

DATA COLLECTED AT WELL SITE	PID READING (OPENING WELL)	DEPTH TO STATIC WATER LEVEL (TOC)	DEPTH TO STABILIZED WATER LEVEL (TOC)	DEPTH TO PUMP INTAKE (TOC)	PUMPING START TIME

RADIATION SCREENING DATA	PUMP PRIOR TO SAMPLING (cps)		PUMP AFTER SAMPLING (cps)	

MONITORING DATA COLLECTED DURING PURGING OPERATIONS

TIME (min)	WATER LEVEL	PUMPING RATE (ml/min)	CUMULATIVE VOL (GALLONS)	DISSOLVED OXYGEN (mg/L)	TEMP (C)	SPEC. COND (umhos)	pH	ORP (mV)	TURBIDITY (NTU)
1605	6.11	70		1.00	7.5	0.490	7.11	~~69~~ -100	0.30
1610	6.15	100		0.96	7.5	0.490	6.95	-70	0.45
1615	6.15	100		0.94	7.5	0.490	7.02	-94	0.70
1620	6.23	160		0.92	7.5	0.491	7.13	-98	1.0
1625	6.24	100		0.95	7.4	0.495	7.10	-98	1.3
1630	Collected		Sample for Total + Dissolved Metals						0.0 Post Filtered Turbidity
									↑ Filtered 1.2
1640	6.50		4 gal	0.90	7.7	0.569	7.03	-70	
	Post sample readings								

SAMPLING RECORD - GROUNDWATER 1 of 2

SENECA ARMY DEPOT ACTIVITY	PARSONS	WELL #: MW17-4

PROJECT: SEAD-16/17 LTM Groundwater Sampling - Round 4
LOCATION: ROMULUS, NY

DATE: 12/16/10
INSPECTORS: TSBO
PUMP #: Peristaltic Pump
SAMPLE ID #: 17LM20018UNF/FIL

WEATHER / FIELD CONDITIONS CHECKLIST (RECORD MAJOR CHANGES)

TIME (24 HR)	TEMP (APPRX)	WEATHER (APPRX)	REL. HUMIDITY (GEN)	WIND VELOCITY (APPRX)	WIND (FROM) DIRECTION (0 - 360)	GROUND / SITE SURFACE CONDITIONS	MONITORING INSTRUMENT	MONITORING DETECTOR
1205	26	Partly cloudy		~10	SW→NE	frozen	OVM-580	PID

WELL VOLUME CALCULATION FACTORS

DIAMETER (INCHES):	0.25	1	2	3	4	6
GALLONS / FOOT:	0.0026	0.041	0.163	0.367	0.654	1.47
LITERS/FOOT	0.010	0.151	0.617	1.389	2.475	5.564

ONE WELL VOLUME (GAL) = [(POW - STABILIZED WATER LEVEL) X WELL DIAMETER FACTOR (GAL/FT)] 3
~ 2.29 gals

HISTORIC DATA	DEPTH TO POINT OF WELL (TOC)	DEPTH TO TOP OF SCREEN (TOC)	SCREEN LENGTH (FT)	WELL DEVELOPMENT TURBIDITY	WELL DEVELOPMENT pH	WELL DEVELOPMENT SPEC. COND
Horiba U-52 #15294 LaMotte #02933 YSI 85 #6122	8.5'					

DATA COLLECTED AT WELL SITE	PID READING (OPENING WELL)	DEPTH TO STATIC WATER LEVEL (TOC)	DEPTH TO STABILIZED WATER LEVEL (TOC)	DEPTH TO PUMP INTAKE (TOC)	PUMPING START TIME
		3.81'			

RADIATION SCREENING DATA	PUMP PRIOR TO SAMPLING (cps)		PUMP AFTER SAMPLING (cps)	

MONITORING DATA COLLECTED DURING PURGING OPERATIONS

TIME (min)	WATER LEVEL	PUMPING RATE (ml/min)	CUMULATIVE VOL (GALLONS)	DISSOLVED OXYGEN (mg/L)	TEMP (C)	SPEC. COND mS/cm	pH	ORP (mV)	TURBIDITY (NTU)
		Peristaltic Pump from SEDA field office							
1216	3.74	Pump started at		YSI	YSI				LaMotte
1223	4.23	~100		2.18	7.1	0.438	7.19	22	53.7
1228	4.29	108		2.10	7.2	0.439	7.14	10	23.5
1233	4.34	~100		2.03	7.3	0.444	7.12	-1	17.7
1238	4.37	~98	~0.5 gals	1.86	7.4	0.446	7.10	-9	12.9
1243	4.40	~96	flow rate ↑	1.74	7.4	0.447	7.09	-17	10.62
1248	4.42	~106		1.79	7.3	0.445	7.09	-23	9.96
1253	4.46	~112		1.74	7.2	0.447	7.08	-30	10.07
1258	4.48	~110	~1.0 gals	1.42	7.3	0.446	7.08	-35	8.45
1303	4.48	112		1.14	7.3	0.446	7.07	-39	8.09
1308	4.51	118	1.35 gals	0.98	7.3	0.446	7.07	-42	6.93
1313	4.51	110	1.5 gals	0.88	7.3	0.445	7.06	-45	4.72
1318	4.48	100		0.71	7.2	0.446	7.06	-47	4.10
1323	4.46	104	~1.75 gals	0.67	7.2	0.447	7.06	-49	3.33
1328	4.47	104	~2.0 gals	0.64	7.3	0.444	7.06	-50	2.84
1333	4.47	108	~~~2.2 gals~~~	0.54	7.4	0.443	7.05	-51	1.93
1338	4.48	114	~2.25 gal	0.48	7.5	0.442	7.06	-52	1.20
1343	4.50	108		0.45	7.6	0.440	7.06	-53	0.85
1348	4.49	102	~2.5 gals	0.37	7.7	0.441	7.05	-54	0.77

SAMPLING RECORD - GROUNDWATER 2 of 2

SENECA ARMY DEPOT ACTIVITY	PARSONS	WELL #: MW17-4

PROJECT: SEAD-16/17 ~~Ash Landfill LTM Groundwater Sampling~~ - Round #4
LOCATION: ROMULUS, NY

DATE: 12/16/10
INSPECTORS: DJO
PUMP #: Rental for Parsons
SAMPLE ID #: 17LM20018UNF/FIL

WEATHER / FIELD CONDITIONS CHECKLIST (RECORD MAJOR CHANGES)

TIME (24 HR)	TEMP (APPRX)	WEATHER (APPRX)	REL. HUMIDITY (GEN)	WIND VELOCITY (APPRX)	WIND (FROM) DIRECTION (0 - 360)	GROUND / SITE SURFACE CONDITIONS	MONITORING INSTRUMENT	MONITORING DETECTOR
							OVM-580	PID

WELL VOLUME CALCULATION FACTORS

DIAMETER (INCHES):	0.25	1	2	3	4	6
GALLONS / FOOT:	0.0026	0.041	0.163	0.367	0.654	1.47
LITERS/FOOT	0.010	0.151	0.617	1.389	2.475	5.564

WELL VOLUME (GAL) = [(POW - STABILIZED WATER LEVEL) X WELL DIAMETER FACTOR (GAL/FT)] X 3
~2.29 gals

HISTORIC DATA	DEPTH TO POINT OF WELL (TOC)	DEPTH TO TOP OF SCREEN (TOC)	SCREEN LENGTH (FT)	WELL DEVELOPMENT TURBIDITY	WELL DEVELOPMENT pH	WELL DEVELOPMENT SPEC. COND
	8.5'					

DATA COLLECTED AT WELL SITE	PID READING (OPENING WELL)	DEPTH TO STATIC WATER LEVEL (TOC)	DEPTH TO STABILIZED WATER LEVEL (TOC)	DEPTH TO PUMP INTAKE (TOC)	PUMPING START TIME
		3.81'			

RADIATION SCREENING DATA	PUMP PRIOR TO SAMPLING (cps)		PUMP AFTER SAMPLING (cps)	

MONITORING DATA COLLECTED DURING PURGING OPERATIONS

TIME (min)	WATER LEVEL	PUMPING RATE (ml/min)	CUMULATIVE VOL (GALLONS)	DISSOLVED OXYGEN (mg/L)	TEMP (C)	SPEC. COND (umhos)	pH	ORP (mV)	TURBIDITY (NTU)
1353	4.48	104	~2.6 gals	0.35	7.7	0.441	7.05	-55	0.84
1358	4.50	110	~2.75 gals	0.32	7.7	0.439	7.05	-55	0.89
1403	4.50	102		0.32	7.6	0.439	7.05	-55	0.74
1408	4.51	106	~3.0 gals	0.30	7.7	0.438	7.05	-56	0.67
Collected Samples for Total & Dissolved Metals.				17LM20018UNF 17LM20018FIL		1411 1414	Unfiltered Filtered		
							Post	Filter Tested	0.00 Checked twice
Post-Sample Collection Geo Parameters (stated pump)							1420)		
1424	4.54		~3.25 gals	0.26	7.7	0.435	7.05	-56	0.85

SAMPLING RECORD - GROUNDWATER 1 of 2

SENECA ARMY DEPOT ACTIVITY	PARSONS	WELL #: MW17-5

PROJECT: SEAD-16/17 LTM Groundwater Sampling - Round 4
LOCATION: ROMULUS, NY

DATE: 12/16/10
INSPECTORS: BJO
PUMP #: Peristaltic Parsons
SAMPLE ID #: 17LM200 19UNF/FIL

WEATHER / FIELD CONDITIONS CHECKLIST (RECORD MAJOR CHANGES)

TIME (24 HR)	TEMP (APPRX)	WEATHER (APPRX)	REL. HUMIDITY (GEN)	WIND VELOCITY (APPRX)	WIND (FROM) DIRECTION (0 - 360)	GROUND / SITE SURFACE CONDITIONS
914	26°F	scattered clouds		10	SW-NE	frozen

MONITORING

INSTRUMENT	DETECTOR
OVM-580	PID

WELL VOLUME CALCULATION FACTORS

DIAMETER (INCHES):	0.25	1	2	3	4	6
GALLONS / FOOT:	0.0026	0.011	0.163	0.367	0.654	1.47
LITERS/FOOT	0.010	0.131	0.617	1.389	2.475	5.564

ONE WELL VOLUME (GAL) = [(POW - STABILIZED WATER LEVEL) X WELL DIAMETER FACTOR (GAL/FT)] 3 ~ 3.33 gals

HISTORIC DATA	DEPTH TO POINT OF WELL (TOC)	DEPTH TO TOP OF SCREEN (TOS')	SCREEN LENGTH (FT)	WELL DEVELOPMENT TURBIDITY	WELL DEVELOPMENT pH	WELL DEVELOPMENT SPEC. COND
Horiba Pre #15294 YSI 85 Pre#G122 LaMotte Pre #02933	10.1'					

DATA COLLECTED AT WELL SITE	PID READING (OPENING WELL)	DEPTH TO STATIC WATER LEVEL (TOC)	DEPTH TO STABILIZED WATER LEVEL (TOC)	DEPTH TO PUMP INTAKE (TOC)	PUMPING START TIME
		5.3'			

RADIATION SCREENING DATA	PUMP PRIOR TO SAMPLING (cps)		PUMP AFTER SAMPLING (cps)	

MONITORING DATA COLLECTED DURING PURGING OPERATIONS

LaMotte

TIME (min)	WATER LEVEL	PUMPING RATE (ml/min)	CUMULATIVE VOL (GALLONS)	DISSOLVED OXYGEN (mg/L)	TEMP °C	SPEC. COND mS/cm	pH	ORP (mV)	TURBIDITY (NTU)
		Peristaltic Pump Parsons		SEDA field office					
948	3.31	Pump Started at		Replaced water line, could not extract previous one.					
953	3.38	~132 ml/min		1.48	7.8	0.513	7.03	-22 pH mV value	50.2
1004	3.37	128		1.30	7.6	0.500	7.03	-22	17.5
1009	3.38			1.17	7.7	0.497	7.03	-21	15.4
1014	3.37	~136		0.86	7.9	0.495	7.03	-22	11.7
1019	3.37	126	~1.0 gals	0.72	8.0	0.494	7.03	-21	9.17
1025	3.37	113		0.67	8.1	0.494	7.02	-21	5.32
1030	3.37	~125	~1.25	0.54	8.1	0.493	7.02	-21	6.50
1035	3.38			0.47	8.1	0.493	7.01	-21	5.49
1040	3.38	128	~1.6 gals	0.44	7.9	0.494	7.01	-21	5.90
1045	3.38			0.46	8.0	0.495	7.02	-21	6.81
1050	3.38	128	~2.2 gals	0.37	8.1	0.494	7.02	-21	6.07
1055	3.37	132		0.34	8.1	0.495	7.02	-21	5.77
1100	3.37	135	~2.5 gals	0.35	8.2	0.496	7.02	-21	5.98
1105	3.38	136	~2.8 gals	0.31	8.1	0.495	7.01	-4 ORP mV	3.69
1110	3.38	144	3.0 gals	0.29	8.1	0.494	7.02	-6	4.34
1115	3.38	144		0.26	8.1	0.494	7.02	-9	1.98
1120	3.39	152	~3.25 gals	0.26	8.1	0.496	7.02	-12	1.56
1125	3.38	166		0.27	8.1	0.495	7.02	-14	0.89

* LaMotte Battery replaced, previous broke

SAMPLING RECORD - GROUNDWATER 2 of 2

SENECA ARMY DEPOT ACTIVITY	PARSONS	WELL #: MW17-5

PROJECT: SEAD-16/17 LTM Groundwater Sampling - Round 4
LOCATION: ROMULUS, NY

DATE: 12/16/10
INSPECTORS: BBO
PUMP #: Penstaltic Parsons
SAMPLE ID #: 17LM20019UNF/FIL

WEATHER / FIELD CONDITIONS CHECKLIST (RECORD MAJOR CHANGES)

TIME (24 HR)	TEMP (APPRX)	WEATHER (APPRX)	REL. HUMIDITY (GEN)	WIND VELOCITY (APPRX)	WIND (FROM) DIRECTION (0 - 360)	GROUND / SITE SURFACE CONDITIONS

MONITORING

INSTRUMENT	DETECTOR
OVM-580	PID

WELL VOLUME CALCULATION FACTORS

DIAMETER (INCHES):	0.25	1	(2)	3	4	6
GALLONS / FOOT:	0.0026	0.041	0.163	0.367	0.654	1.47
LITERS/FOOT	0.010	0.151	0.617	1.389	2.475	5.564

~~ONE~~ 3 WELL VOLUME (GAL) = [(POW - STABILIZED WATER LEVEL) X WELL DIAMETER FACTOR (GAL/FT)]
~3.33 gals

HISTORIC DATA	DEPTH TO POINT OF WELL (TOC)	DEPTH TO TOP OF SCREEN (TOC)	SCREEN LENGTH (FT)	WELL DEVELOPMENT TURBIDITY	WELL DEVELOPMENT pH	WELL DEVELOPMENT SPEC. COND
	10.1					

DATA COLLECTED AT WELL SITE	PID READING (OPENING WELL)	DEPTH TO STATIC WATER LEVEL (TOC)	DEPTH TO STABILIZED WATER LEVEL (TOC)	DEPTH TO PUMP INTAKE (TOC)	PUMPING START TIME
		3.3'			

RADIATION SCREENING DATA	PUMP PRIOR TO SAMPLING (cps)		PUMP AFTER SAMPLING (cps)	

MONITORING DATA COLLECTED DURING PURGING OPERATIONS — LaMotte

TIME (min)	WATER LEVEL	PUMPING RATE (ml/min)	CUMULATIVE VOL. (GALLONS)	YSI DISSOLVED OXYGEN (mg/L)	YSI TEMP (°C)	YSI SPEC. COND (mS/cm)	pH	ORP (mV)	TURBIDITY (NTU)
1130	3.38	148	~3.6 gals	0.28	8.2	0.496	7.02	-17	0.57
1135	3.38	138	~3.9 gals	0.29	8.2	0.495	7.02	-19	0.51
1140	3.37			0.26	8.1	0.495	7.03	-21	0.00 checked twice
collected Samples			17LM20019UNF			1144	unfiltered		
for Total & Dissolved			17LM20019FIL			1149	filtered		
Metals							Post-Filter Turbidity		0.00 checked twice
Post-Sample Collection Geo Parameters (Pump stopped at 1151									
1155	3.37		~4.3 gals	0.21	8.2	0.496	7.03	-23	0.00 checked twice

APPENDIX D

COMPLETE GROUNDWATER DATA RESULTS FOR YEAR 1, YEAR 2, YEAR 3, AND YEAR 4

Appendix D Table 1
SEAD-16 Post Remedial Action Groundwater Monitoring Results
SEAD-16 SEAD-17 Long-term Monitoring Report
Seneca Army Depot Activity

Sample Location				SEAD-16	SEAD-16	SEAD-16	SEAD-16	SEAD-16	SEAD-16	SEAD-16	SEAD-16
Location ID				MW16-1	MW16-1	MW16-1	MW16-1	MW16-1	MW16-1	MW16-1	MW16-2
Matrix				GW	GW	GW	GW	GW	GW	GW	GW
Sample ID				16LM20000	16LM20001	16LM20013	16LM20014FIL	16LM20014UNFIL	16LM20021FIL	16LM20021UNF	16LM20002
Sample Date				12/20/2007	12/20/2007	12/9/2008	11/13/2009	11/13/2009	12/16/2010	12/16/2010	12/20/2007
QC_Code				SA	DU	SA	SA	SA	SA	SA	SA
Study ID				LTM	LTM	LTM	LTM	LTM	LTM	LTM	LTM
Sample Round				1	1	2	3	3	4	4	1
Parameter	Units	Criteria [1] Type	Criteria [1] Value	Value (Q)[2]	Value (Q)[2]	Value (Q)[2]	Value (Q)[2]	Value (Q)[2]	Value (Q)[2]	Value (Q)[2]	Value (Q)[2]
Aluminum	UG/L			61.4 J	91.6 J	148 J	24 U	45 J	23 U	50 U	98.8 J
Antimony	UG/L	GA	3	1 U	1.02	0.95 J	1 U	1 U	2.3 U	2 U	**3.36**
Arsenic	UG/L	MCL	10	4.2 U	4.2 U	3.7 U	3.7 U	3.7 U	1.3 U	1.3 U	4.2 U
Barium	UG/L	GA	1000	60.4	59	125	105	104	110	97 J	64.6
Beryllium	UG/L	MCL	4	0.27 U	0.27 U	0.33 U	0.3 U	0.3 U	0.25 U	0.15 U	0.27 U
Cadmium	UG/L	GA	5	0.36 U	0.36 U	0.33 U	0.3 U	0.3 U	0.095 U	0.13 U	0.36 U
Calcium	UG/L			107000 J	105000 J	176000	111000 J	110000 J	140000	130000	143000 J
Chromium	UG/L	GA	50	0.84 U	0.84 U	0.88 U	0.9 U	0.9 U	2.5 U	2.5 U	0.84 U
Cobalt	UG/L			0.89 U	0.89 U	1.1 U	1.1 U	1.1 U	1.1	1.1	0.89 U
Copper	UG/L	GA	200	1.3 U	1.3 U	1.3 U	1.6 J	1.6 J	1.1 U	1.1 U	4.5 J
Iron	UG/L	GA	300	35.8 J	68.3	93.3	19 UJ	19 UJ	77 J	100	49.5 J
Iron+Manganese	UG/L	GA	500	39 J	73	105	1 J	2.4 J	131 J	152	53 J
Lead	UG/L	MCL	15	2.9 U	2.9 U	2.9 U	2.9 U	2.9 U	0.2 U	0.5 U	2.9 U
Magnesium	UG/L			16100 J	15900 J	25800	18000	17900	21000	20000 J	15600 J
Manganese	UG/L	GA	300	3.3	5	11.8	1 J	2.4 J	54	52	3.4
Mercury	UG/L	GA	0.7	0.12 U	0.12 U	0.12 U	0.1 U	0.1 U	0.091 U	0.091 U	0.12 U
Nickel	UG/L	GA	100	1.2 U	1.2 U	1 U	1.8 J	1.2 J	2.8 J	2.7 J	1.2 U
Potassium	UG/L			886 R	907 R	1340 J	1110	1100	1200	1100	2050 R
Selenium	UG/L	GA	10	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U	1 U	1.1 U	6.1 U
Silver	UG/L	GA	50	1 U	1 U	1.3 U	1.3 U	1.3 U	0.25 U	0.18 U	1 U
Sodium	UG/L	GA	20000	**24200** J	**25300** J	**182000**	8000 J	8000 J	**170000**	**160000**	**49600** J
Thallium	UG/L	MCL	2	0.03 U	0.03 U	0.09 U	0.2 U	0.2 U	0.5 U	0.25 U	0.03 U
Vanadium	UG/L			0.78 U	0.78 U	0.98 U	1 U	1 U	3.8 U	3.2 U	0.78 U
Zinc	UG/L			4.4 J	7.8 J	5.8 J	3.6 U	3.6 U	8.3 U	8.8 J	8.2 J

Notes:

1. The lowest value for either the New York Class GA Groundwater Standards (TOGS 1.1.1, June 1998, et al.) or the EPA Maximum Contaminant Limit (MCL), source http://www.epa.gov/safewater/mcl.html#inorganic.html is used. A blank cell indicates no criteria value available.
2. Data validation qualifier.
   [empty cell] = data is not qualified
   U = compound not detected at concentration listed
   J = the reported value is an estimated concentration
   R = the result was rejected due to QA/QC considerations
   UJ = detection limit is estimated.
3. Shading indicates a concentration above the identified criteria value.

Appendix D Table 1
SEAD-16 Post Remedial Action Groundwater Monitoring Results
SEAD-16 SEAD-17 Long-term Monitoring Report
Seneca Army Depot Activity

Sample Location				SEAD-16	SEAD-16	SEAD-16	SEAD-16	SEAD-16	SEAD-16	SEAD-16	SEAD-16
Location ID				MW16-2	MW16-2	MW16-2	MW16-2	MW16-2	MW16-2	MW16-2	MW16-4
Matrix				GW	GW	GW	GW	GW	GW	GW	GW
Sample ID				16LM20007	16LM20015FIL	16LM20015UNFIL	16LM20022FIL	16LM20022UNF	16LM20023FIL	16LM20023UNF	16LM20003
Sample Date				12/9/2008	11/11/2009	11/11/2009	12/15/2010	12/15/2010	12/15/2010	12/15/2010	12/20/2007
QC_Code				SA	SA	SA	SA	SA	DU	DU	SA
Study ID				LTM	LTM	LTM	LTM	LTM	LTM	LTM	LTM
Sample Round				2	3	3	4	4	4	4	1
Parameter	Units	Criteria [1] Type	Criteria [1] Value	Value (Q)[2]	Value (Q)[2]	Value (Q)[2]	Value (Q)[2]	Value (Q)[2]	Value (Q)[2]	Value (Q)[2]	Value (Q)[2]
Aluminum	UG/L			97.1 J	24 U	205	23 U	50 U	23 U	50 U	167 J
Antimony	UG/L	GA	3	5.53	3.6	3.6	6.1	6.6	6.1	6	5.11
Arsenic	UG/L	MCL	10	3.7 U	3.7 U	3.7 U	1.3 U	1.3 U	1.3 U	1.3 U	4.2 U
Barium	UG/L	GA	1000	69.7	71.9	72.7	68	77 J	67	69 J	44.5
Beryllium	UG/L	MCL	4	0.33 U	0.3 U	0.3 U	0.25 U	0.15 U	0.25 U	0.15 U	0.27 U
Cadmium	UG/L	GA	5	0.33 U	0.3 U	0.3 U	0.095 U	0.13 U	0.095 U	0.13 U	0.36 U
Calcium	UG/L			138000	118000 J	117000 J	100000 J	110000 J	96000	100000	87100 J
Chromium	UG/L	GA	50	0.88 U	0.9 U	0.9 U	2.5 U	2.5 U	2.5 U	2.5 U	1 J
Cobalt	UG/L			1.1 U	1.1 U	1.1 U	0.15 U	0.12 U	0.15 U	0.12 U	0.89 U
Copper	UG/L	GA	200	4 J	3.4 J	5.1 J	4.4 J	5.9	4.5 J	5.1	5.4 J
Iron	UG/L	GA	300	26.1 J	19 UJ	197 J	33 U	89 J	33 U	63 J	95.4
Iron+Manganese	UG/L	GA	500	27	39.5	260.7 J	12	105 J	12	76 J	127
Lead	UG/L	MCL	15	2.9 U	2.9 U	2.9 U	0.21 J	1.3 J	0.2 U	0.97 J	2.9 U
Magnesium	UG/L			15700	12600	12300	12000	14000 J	11000	12000 J	9440 R
Manganese	UG/L	GA	300	0.84 J	39.5	63.7	12	16	12	13	31.2
Mercury	UG/L	GA	0.7	0.148 J	0.1 U	0.1 U	0.091 U	0.091 U	0.091 U	0.091 U	0.12 U
Nickel	UG/L	GA	100	1.6 J	2.2 J	2.6 J	2 U	2 J	2.2 J	2.2 J	1.2 U
Potassium	UG/L			2410 J	3170	3140	2300	2500	2200	2200	1300 R
Selenium	UG/L	GA	10	6.1 U	6.1 U	6.1 U	1 U	1.1 U	1 U	1.1 U	6.1 U
Silver	UG/L	GA	50	1.3 U	1.3 U	1.3 U	0.25 U	0.18 U	0.25 U	0.18 U	1 U
Sodium	UG/L	GA	20000	63500	19500 J	18800 J	33000 J	34000 J	31000	32000	40800 J
Thallium	UG/L	MCL	2	0.09 U	0.2 U	0.2 U	0.5 U	0.25 U	0.5 U	0.25 U	0.03 U
Vanadium	UG/L			0.98 U	1 U	1 U	3.8 U	3.2 U	3.8 U	3.2 U	0.78 U
Zinc	UG/L			10.2	11.1	11.3	11 J	14 J	12 J	12 J	5.3 J

Notes:

1. The lowest value for either the New York Class GA Groundwater Standards (TOGS 1.1.1, June 1998, et al.) or the EPA Maximum Contaminant Limit (MCL), source http://www.epa.gov/safewater/mcl.html#inorganic.html is used. A blank cell indicates no criteria value available.
2. Data validation qualifier.
   [empty cell] = data is not qualified
   U = compound not detected at concentration listed
   J = the reported value is an estimated concentration
   R = the result was rejected due to QA/QC considerations
   UJ = detection limit is estimated.
3. Shading indicates a concentration above the identified criteria value.

Appendix D Table 1
SEAD-16 Post Remedial Action Groundwater Monitoring Results
SEAD-16 SEAD-17 Long-term Monitoring Report
Seneca Army Depot Activity

Sample Location				SEAD-16	SEAD-16	SEAD-16	SEAD-16	SEAD-16	SEAD-16	SEAD-16	SEAD-16
Location ID				MW16-4	MW16-4	MW16-4	MW16-4	MW16-4	MW16-4	MW16-5	MW16-5
Matrix				GW	GW	GW	GW	GW	GW	GW	GW
Sample ID				16LM20008	16LM20009	16LM20016FIL	16LM20016UNFIL	16LM20024FIL	16LM20024UNF	16LM20004	16LM20010
Sample Date				12/9/2008	12/9/2008	11/17/2009	11/17/2009	12/16/2010	12/16/2010	12/20/2007	12/10/2008
QC_Code				SA	DU	SA	SA	SA	SA	SA	SA
Study ID				LTM	LTM	LTM	LTM	LTM	LTM	LTM	LTM
Sample Round				2	2	3	3	4	4	1	2
Parameter	Units	Criteria[1] Type	Criteria[1] Value	Value (Q)[2]	Value (Q)[2]	Value (Q)[2]	Value (Q)[2]	Value (Q)[2]	Value (Q)[2]	Value (Q)[2]	Value (Q)[2]
Aluminum	UG/L			104 J	101 J	24 U	68 J	23 U	50 U	160 J	563
Antimony	UG/L	GA	3	2.89	2.94	6	6.3	2.3 U	2 U	1.82	4.23
Arsenic	UG/L	MCL	10	3.7 U	3.7 U	3.7 U	3.7 U	1.3 U	1.3 U	4.2 U	3.7 U
Barium	UG/L	GA	1000	290	279	129	123	220	240 J	38.9	22
Beryllium	UG/L	MCL	4	0.33 U	0.33 U	0.3 U	0.3 U	0.25 U	0.15 U	0.27 U	0.33 U
Cadmium	UG/L	GA	5	0.33 U	0.33 U	0.3 U	0.3 U	0.095 U	0.13 U	0.36 U	0.33 U
Calcium	UG/L			275000	267000	130000 J	125000 J	210000	210000	89000 J	53100
Chromium	UG/L	GA	50	0.88 U	0.88 U	0.9 U	0.9 U	2.5 U	2.5 U	1.1 J	1.2 J
Cobalt	UG/L			1.1 U	1.1 U	1.8 J	2 J	0.7	0.71	0.89 U	1.1 U
Copper	UG/L	GA	200	4.4 J	4.2 J	2.4 J	6.2 J	1.4 J	2.8 J	3.1 J	10.6
Iron	UG/L	GA	300	57 J	38.4 J	329 J	419 J	130	150	1200	699
Iron+Manganese	UG/L	GA	500	65	46 J	417.7 J	513.5 J	260	290	1238	731
Lead	UG/L	MCL	15	2.9 U	2.9 U	2.9 U	2.9 U	0.7 J	3	2.9 U	10.1
Magnesium	UG/L			35200	34500	16800	16000	31000	32000 J	9380 R	6050
Manganese	UG/L	GA	300	7.7	8	88.7	94.5	130	140	37.6	32.4
Mercury	UG/L	GA	0.7	0.12 U	0.12 U	0.1 U	0.1 U	0.091 U	0.091 U	0.12 U	0.12 U
Nickel	UG/L	GA	100	2.2 J	1.9 J	1.7 J	1.4 J	2.2 J	2.3 J	1.2 U	2.6 J
Potassium	UG/L			3830 J	3690 J	3270	3270	2600	2600	4420 R	2610 J
Selenium	UG/L	GA	10	6.1 U	6.1 U	6.1 U	6.1 U	1 U	1.1 U	6.1 U	6.1 U
Silver	UG/L	GA	50	1.3 U	1.3 U	1.3 U	1.3 U	0.25 U	0.18 U	1 U	1.3 U
Sodium	UG/L	GA	20000	434000	419000	380000 J	363000 J	540000	550000	8410 R	2180
Thallium	UG/L	MCL	2	0.09 U	0.09 U	0.2 U	0.2 U	0.5 U	0.25 U	0.03 U	0.09 U
Vanadium	UG/L			0.98 U	0.98 U	1.1 J	1.1 J	3.8 U	3.2 U	1.2 J	2.3 J
Zinc	UG/L			14.6 J	9.8 J	3.6 U	3.6 U	9.2 J	13 J	34.4	10.3

Notes:

1. The lowest value for either the New York Class GA Groundwater Standards (TOGS 1.1.1, June 1998, et al.) or the EPA Maximum Contaminant Limit (MCL), source http://www.epa.gov/safewater/mcl.html#inorganic.html is used. A blank cell indicates no criteria value available.
2. Data validation qualifier.
   [empty cell] = data is not qualified
   U = compound not detected at concentration listed
   J = the reported value is an estimated concentration
   R = the result was rejected due to QA/QC considerations
   UJ = detection limit is estimated.
3. Shading indicates a concentration above the identified criteria value.

Appendix D Table 1
SEAD-16 Post Remedial Action Groundwater Monitoring Results
SEAD-16 SEAD-17 Long-term Monitoring Report
Seneca Army Depot Activity

Sample Location				SEAD-16	SEAD-16	SEAD-16	SEAD-16	SEAD-16	SEAD-16	SEAD-16	SEAD-16
Location ID				MW16-5	MW16-5	MW16-5	MW16-5	MW16-6	MW16-6	MW16-6	MW16-6
Matrix				GW	GW	GW	GW	GW	GW	GW	GW
Sample ID				16LM20017FIL	16LM20017UNFIL	16LM20025FIL	16LM20025UNF	16LM20005	16LM20011	16LM20018FIL	16LM20018UNFIL
Sample Date				11/16/2009	11/16/2009	12/15/2010	12/15/2010	12/20/2007	12/9/2008	11/17/2009	11/17/2009
QC_Code				SA	SA	SA	SA	SA	SA	SA	SA
Study ID				LTM	LTM	LTM	LTM	LTM	LTM	LTM	LTM
Sample Round				3	3	4	4	1	2	3	3
Parameter	Units	Criteria [1] Type	Criteria [1] Value	Value (Q)[2]	Value (Q)[2]	Value (Q)[2]	Value (Q)[2]	Value (Q)[2]	Value (Q)[2]	Value (Q)[2]	Value (Q)[2]
Aluminum	UG/L			24 U	164 J	23 U	160	168 J	189 J	107 J	442
Antimony	UG/L	GA	3	1 U	1 U	2.3 U	2 U	1 U	0.92 J	0.9 J	1 U
Arsenic	UG/L	MCL	10	3.7 U	3.7 U	1.3 U	1.3 U	4.2 U	3.7 U	3.7 U	3.7 U
Barium	UG/L	GA	1000	42.8	42	34	33 J	31.8	39.1	78.5	80.2
Beryllium	UG/L	MCL	4	0.3 U	0.3 U	0.25 U	0.15 U	0.27 U	0.33 U	0.3 U	0.3 U
Cadmium	UG/L	GA	5	0.3 U	0.3 U	0.095 U	0.13 U	0.36 U	0.33 U	0.3 U	0.3 U
Calcium	UG/L			115000 J	110000 J	90000	86000	80400 J	84300	112000 J	112000 J
Chromium	UG/L	GA	50	0.9 U	0.9 U	2.5 U	2.5 U	0.84 U	0.88 U	0.9 U	0.9 U
Cobalt	UG/L			1.1 U	1.1 U	0.15 U	0.12 U	0.89 U	1.1 U	1.1 U	1.1 U
Copper	UG/L	GA	200	1.3 U	1.3 U	1.1 U	1.1 U	3.4 J	2.1 J	1.9 J	2.5 J
Iron	UG/L	GA	300	800 J	1150 J	480	660	418	153	55 J	440 J
Iron+Manganese	UG/L	GA	500	970 J	1323 J	680	820	441	158	153.4 J	515 J
Lead	UG/L	MCL	15	2.9 U	2.9 U	0.2 U	0.77 J	2.9 U	2.9 U	2.9 U	2.9 U
Magnesium	UG/L			12200	11800	10000	9700 J	7100 R	7380	9970	9950
Manganese	UG/L	GA	300	170	173	200	160	23.3	4.8	98.4	75
Mercury	UG/L	GA	0.7	0.1 U	0.1 U	0.091 U	0.091 U	0.12 U	0.12 U	0.1 U	0.1 U
Nickel	UG/L	GA	100	1.8 J	2 J	2 U	2 U	1.2 U	1 U	1.2 J	2.6 J
Potassium	UG/L			2370	2380	2200	2100	2690 R	2310 J	2380	2580
Selenium	UG/L	GA	10	6.1 U	6.1 U	1 U	1.1 U	6.1 U	6.1 U	6.1 U	6.1 U
Silver	UG/L	GA	50	1.3 U	1.3 U	0.25 U	0.18 U	1 U	1.3 U	1.3 U	1.3 U
Sodium	UG/L	GA	20000	2700 J	2800 J	1800	1800	6110 R	9200	22000 J	20600 J
Thallium	UG/L	MCL	2	0.2 U	0.2 U	0.5 U	0.25 U	0.03 U	0.09 U	0.008 U	0.008 U
Vanadium	UG/L			1 U	1.1 J	3.8 U	3.2 U	0.86 J	0.98 U	1 U	1.3 J
Zinc	UG/L			3.6 U	3.6 U	8.3 U	8.4 U	5.5 J	3.7 J	3.6 U	3.6 U

Notes:

1. The lowest value for either the New York Class GA Groundwater Standards (TOGS 1.1.1, June 1998, et al.) or the EPA Maximum Contaminant Limit (MCL), source http://www.epa.gov/safewater/mcl.html#inorganic.html is used. A blank cell indicates no criteria value available.
2. Data validation qualifier.
   [empty cell] = data is not qualified
   U = compound not detected at concentration listed
   J = the reported value is an estimated concentration
   R = the result was rejected due to QA/QC considerations
   UJ = detection limit is estimated.
3. Shading indicates a concentration above the identified criteria value.

Appendix D Table 1
SEAD-16 Post Remedial Action Groundwater Monitoring Results
SEAD-16 SEAD-17 Long-term Monitoring Report
Seneca Army Depot Activity

Sample Location				SEAD-16	SEAD-16	SEAD-16	SEAD-16	SEAD-16	SEAD-16	SEAD-16	SEAD-16
Location ID				MW16-6	MW16-6	MW16-7	MW16-7	MW16-7	MW16-7	MW16-7	MW16-7
Matrix				GW	GW	GW	GW	GW	GW	GW	GW
Sample ID				16LM20026FIL	16LM20026UNF	16LM20006	16LM20012	16LM20019FIL	16LM20019UNFIL	16LM20020FIL	16LM20020UNFIL
Sample Date				12/15/2010	12/15/2010	12/20/2007	12/10/2008	11/12/2009	11/12/2009	11/12/2009	11/12/2009
QC_Code				SA	SA	SA	SA	SA	SA	DU	DU
Study ID				LTM	LTM	LTM	LTM	LTM	LTM	LTM	LTM
Sample Round				4	4	1	2	3	3	3	3
Parameter	Units	Criteria [1] Type	Criteria [1] Value	Value (Q)[2]	Value (Q)[2]	Value (Q)[2]	Value (Q)[2]	Value (Q)[2]	Value (Q)[2]	Value (Q)[2]	Value (Q)[2]
Aluminum	UG/L			23 U	61 J	45.9 J	577	32 J	182 J	25 J	116 J
Antimony	UG/L	GA	3	2.3 U	2 U	9.58	13.6	15.2	15.7	13.9	16.3
Arsenic	UG/L	MCL	10	1.3 U	1.3 U	4.2 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U
Barium	UG/L	GA	1000	44	50 J	170	122	83.6	81.6	83.9	80.3
Beryllium	UG/L	MCL	4	0.25 U	0.15 U	0.27 U	0.33 U	0.3 U	0.3 U	0.3 U	0.3 U
Cadmium	UG/L	GA	5	0.095 U	0.13 U	0.46 J	0.33 U	0.3 U	0.3 U	0.3 U	0.3 U
Calcium	UG/L			68000	78000	194000	133000	85000 J	84600 J	81900 J	82800 J
Chromium	UG/L	GA	50	2.5 U	2.5 U	0.84 U	1.6 J	0.9 U	0.9 U	0.9 U	0.9 U
Cobalt	UG/L			0.15 U	0.12 U	1.6 J	1.1 J	1.1 U	1.1 U	1.1 U	1.1 U
Copper	UG/L	GA	200	1.5 J	2 J	34.7	20.2	3.1 J	5 J	3.5 J	4.1 J
Iron	UG/L	GA	300	33 U	110	29.2 J	770	19 UJ	135 J	19 UJ	61 J
Iron+Manganese	UG/L	GA	500	2.1 J	114.5 J	660 J	990	136	244 J	152	168 J
Lead	UG/L	MCL	15	0.2 U	0.5 U	26.5	88.6	4.4 J	12.1	4.9 J	9.4
Magnesium	UG/L			6600	7600 J	32000 J	25100	15900	16500	14800	16200
Manganese	UG/L	GA	300	2.1 J	3.5 J	631	220	136	109	152	107
Mercury	UG/L	GA	0.7	0.091 U	0.091 U	0.507	0.12 U	0.1 U	0.1 U	0.1 U	0.1 U
Nickel	UG/L	GA	100	2 U	2 U	5.5 J	2.6 J	1.9 J	1.7 J	2 J	1.1 J
Potassium	UG/L			1500	1800	5480 J	5670 J	6520	5780	7010	5630
Selenium	UG/L	GA	10	1 U	1.1 U	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U
Silver	UG/L	GA	50	0.25 U	0.18 U	1 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U
Sodium	UG/L	GA	20000	7600	8400	68400 J	74900	52100 J	47100 J	55900 J	46100 J
Thallium	UG/L	MCL	2	0.5 U	0.25 U	0.03 J	0.09 U	0.2 U	0.2 U	0.2 U	0.2 U
Vanadium	UG/L			3.8 U	3.2 U	0.78 U	0.98 U	1 U	1 U	1 U	1 U
Zinc	UG/L			8.3 U	8.4 U	3.6 U	8.6 J	3.6 U	3.6 U	3.6 U	3.6 U

Notes:

1. The lowest value for either the New York Class GA Groundwater Standards (TOGS 1.1.1, June 1998, et al.) or the EPA Maximum Contaminant Limit (MCL), source http://www.epa.gov/safewater/mcl.html#inorganic.html is used. A blank cell indicates no criteria value available.
2. Data validation qualifier.
   [empty cell] = data is not qualified
   U = compound not detected at concentration listed
   J = the reported value is an estimated concentration
   R = the result was rejected due to QA/QC considerations
   UJ = detection limit is estimated.
3. Shading indicates a concentration above the identified criteria value.

Appendix D Table 1
SEAD-16 Post Remedial Action Groundwater Monitoring Results
SEAD-16 SEAD-17 Long-term Monitoring Report
Seneca Army Depot Activity

Sample Location				SEAD-16	SEAD-16
Location ID				MW16-7	MW16-7
Matrix				GW	GW
Sample ID				16LM20027FIL	16LM20027UNF
Sample Date				12/15/2010	12/15/2010
QC_Code				SA	SA
Study ID				LTM	LTM
Sample Round				4	4
Parameter	**Units**	**Criteria [1] Type**	**Criteria [1] Value**	Value (Q)[2]	Value (Q)[2]
Aluminum	UG/L			23 U	50 U
Antimony	UG/L	GA	3	**15**	**16**
Arsenic	UG/L	MCL	10	1.3 U	1.3 U
Barium	UG/L	GA	1000	69	71 J
Beryllium	UG/L	MCL	4	0.25 U	0.15 U
Cadmium	UG/L	GA	5	0.095 U	0.13 U
Calcium	UG/L			82000	86000
Chromium	UG/L	GA	50	2.5 U	2.5 U
Cobalt	UG/L			0.15 U	0.12 U
Copper	UG/L	GA	200	1.8 J	2.7 J
Iron	UG/L	GA	300	33 U	45 J
Iron+Manganese	UG/L	GA	500	35	79 J
Lead	UG/L	MCL	15	1 J	6.3
Magnesium	UG/L			18000	19000 J
Manganese	UG/L	GA	300	35	34
Mercury	UG/L	GA	0.7	0.091 U	0.091 U
Nickel	UG/L	GA	100	2 U	2 U
Potassium	UG/L			2800	2700
Selenium	UG/L	GA	10	1 U	1.1 U
Silver	UG/L	GA	50	0.25 U	0.18 U
Sodium	UG/L	GA	20000	**29000**	**28000**
Thallium	UG/L	MCL	2	0.5 U	0.25 U
Vanadium	UG/L			3.8 U	3.2 U
Zinc	UG/L			8.3 U	8.4 U

Notes:

1. The lowest value for either the New York Class GA Groundwater Standards (TOGS 1.1.1, June 1998, et al.) or the EPA Maximum Contaminant Limit (MCL), source http://www.epa.gov/safewater/mcl.html#inorganic.htm is used. A blank cell indicates no criteria value available.
2. Data validation qualifier.
   [empty cell] = data is not qualified
   U = compound not detected at concentration listed
   J = the reported value is an estimated concentration
   R = the result was rejected due to QA/QC considerations
   UJ = detection limit is estimated.
3. Shading indicates a concentration above the identified criteria value.

Appendix D Table 2
SEAD-17 Post Remedial Action Groundwater Monitoring Results
SEAD-16 SEAD-17 Long-term Monitoring Report
Seneca Army Depot Activity

Sample Location				SEAD-17	SEAD-17	SEAD-17	SEAD-17	SEAD-17	SEAD-17	SEAD-17	SEAD-17
Location ID				MW17-1	MW17-1	MW17-1	MW17-1	MW17-1	MW17-1	MW17-2	MW17-2
Matrix				GW	GW	GW	GW	GW	GW	GW	GW
Sample ID				17LM20000	17LM20005	17LM20010FIL	17LM20010UNFIL	17LM20016FIL	17LM20016UNF	17LM20001	17LM20006
Sample Date				12/20/2007	12/11/2008	11/18/2009	11/18/2009	12/17/2010	12/17/2010	12/20/2007	12/10/2008
QC_Code				SA	SA	SA	SA	SA	SA	SA	SA
Study ID				LTM	LTM	LTM	LTM	LTM	LTM	LTM	LTM
Sample Round				1	2	3	3	4	4	1	2
Parameter	Units	Criteria[1] Type	Criteria[1] Value	Value (Q)[2]	Value (Q)[2]	Value (Q)[2]	Value (Q)[2]	Value (Q)[2]	Value (Q)[2]	Value (Q)[2]	Value (Q)[2]
Aluminum	UG/L			204	219	37 J	59 J	23 U	50 U	110 J	142 J
Antimony	UG/L	GA	3	1 U	1 U	1 U	1 U	2.3 U	2 U	3.44	2.76
Arsenic	UG/L	MCL	10	4.2 U	3.7 U	3.7 U	3.7 U	1.3 U	1.3 U	4.2 U	3.7 U
Barium	UG/L	GA	1000	70	79	99.1	99	61	63 J	58.8	51.8
Beryllium	UG/L	MCL	4	0.27 U	0.33 U	0.3 U	0.3 U	0.25 U	0.15 U	0.27 U	0.33 U
Cadmium	UG/L	GA	5	0.36 U	0.33 U	0.3 U	0.3 U	0.095 U	0.13 U	0.36 U	0.33 U
Calcium	UG/L			98300 J	95600	109000 J	108000 J	96000	100000	110000 J	112000
Chromium	UG/L	GA	50	0.84 U	0.88 U	0.9 U	0.9 U	2.5 U	2.5 U	0.84 U	2.9 J
Cobalt	UG/L			0.89 U	1.1 U	1.1 U	1.1 U	0.15 U	0.3 J	0.89 U	1.1 U
Copper	UG/L	GA	200	1.3 U	1.3 U	1.3 U	1.3 U	1.1 U	1.1 J	6.2 J	4.4 J
Iron	UG/L	GA	300	106	126	19 UJ	42 J	33 U	270	140	115
Iron+Manganese	UG/L	GA	500	119	141	38.9	67.6 J	4.2 J	312	160	121
Lead	UG/L	MCL	15	2.9 U	2.9 U	2.9 U	2.9 U	0.2 U	0.5 U	2.9 U	2.9 U
Magnesium	UG/L			21800 J	20600	24300	24000	19000	20000 J	11000 R	11200
Manganese	UG/L	GA	300	13.2	14.9	38.9	25.6	4.2 J	42	20.5	6.1
Mercury	UG/L	GA	0.7	0.12 U	0.12 U	0.1 U	0.1 U	0.091 U	0.091 U	0.12 U	0.12 U
Nickel	UG/L	GA	100	1.2 U	1.3 J	1 U	1 U	2 U	2 U	1.2 U	2.8 J
Potassium	UG/L			614 R	462 J	260 J	254 J	690	690 J	1690 R	1260 J
Selenium	UG/L	GA	10	6.1 U	6.1 U	6.1 U	6.1 U	1 U	1.1 U	6.1 U	6.1 U
Silver	UG/L	GA	50	1 U	1.3 U	1.3 U	1.3 U	0.25 U	0.18 U	1 U	1.3 U
Sodium	UG/L	GA	20000	7790 R	8380	7300 J	7400 J	6000	6200	6620 R	7860
Thallium	UG/L	MCL	2	0.03 U	0.09 U	0.008 U	0.008 U	0.5 U	0.25 U	0.03 U	0.09 U
Vanadium	UG/L			0.78 U	0.98 U	1 U	1 U	3.8 U	3.2 U	0.78 U	0.98 U
Zinc	UG/L			4.7 J	4 J	3.6 U	3.6 U	8.3 U	8.4 U	72 J	27.6

Notes:

1. The lowest value for either the New York Class GA Groundwater Standards (TOGS 1.1.1, June 1998, et al.) or the EPA Maximum Contaminant Limit (MCL), source http://www.epa.gov/safewater/mcl.html#inorganic.html is used. A blank cell indicates no criteria value available.
2. Data validation qualifier.
   [empty cell] = data is not qualified
   U = compound not detected at concentration listed
   J = the reported value is an estimated concentration
   R = the result was rejected due to QA/QC considerations
   UJ = detection limit is estimated.
3. Shading indicates a concentration above the identified criteria value.

Appendix D Table 2
SEAD-17 Post Remedial Action Groundwater Monitoring Results
SEAD-16 SEAD-17 Long-term Monitoring Report
Seneca Army Depot Activity

Sample Location				SEAD-17	SEAD-17	SEAD-17	SEAD-17	SEAD-17	SEAD-17	SEAD-17	SEAD-17
Location ID				MW17-2	MW17-2	MW17-2	MW17-2	MW17-3	MW17-3	MW17-3	MW17-3
Matrix				GW	GW	GW	GW	GW	GW	GW	GW
Sample ID				17LM20011FIL	17LM20011UNFIL	17LM20015FIL	17LM20015UNF	17LM20002	17LM20007	17LM20012FIL	17LM20012UNFIL
Sample Date				11/17/2009	11/17/2009	12/16/2010	12/16/2010	12/20/2007	12/10/2008	11/18/2009	11/18/2009
QC_Code				SA	SA	SA	SA	SA	SA	SA	SA
Study ID				LTM	LTM	LTM	LTM	LTM	LTM	LTM	LTM
Sample Round				3	3	4	4	1	2	3	3
Parameter	Units	Criteria[1] Type	Criteria[1] Value	Value (Q)[2]	Value (Q)[2]	Value (Q)[2]	Value (Q)[2]	Value (Q)[2]	Value (Q)[2]	Value (Q)[2]	Value (Q)[2]
Aluminum	UG/L			88 J	19600	23 U	51 J	106 J	386	141 J	1550 J
Antimony	UG/L	GA	3	2.2	3.7	2.3 U	2 U	1 U	1 U	1 U	1.5
Arsenic	UG/L	MCL	10	3.7 U	7.8 J	1.3 U	1.3 U	4.2 U	3.7 U	3.7 U	3.7 U
Barium	UG/L	GA	1000	82.3	251	54	58 J	39	29.3	49.4	54.5
Beryllium	UG/L	MCL	4	0.3 U	1.2 J	0.25 U	0.15 U	0.27 U	0.33 U	0.3 U	0.3 U
Cadmium	UG/L	GA	5	0.3 U	1.7	0.095 U	0.13 U	0.36 U	0.33 U	0.3 U	0.3 U
Calcium	UG/L			154000 J	195000 J	140000	150000	69000 J	67200	99400 J	95900 J
Chromium	UG/L	GA	50	0.9 U	37.2	2.5 U	2.5 U	0.84 U	0.88 U	0.9 U	5.2
Cobalt	UG/L			1.1 U	10.5	0.32 J	0.46 J	0.89 U	1.1 U	1.5 J	1.7 J
Copper	UG/L	GA	200	2.9 J	46.7	1.5 J	1.9 J	2.6 J	2.8 J	2.5 J	7.9 J
Iron	UG/L	GA	300	19 UJ	25500 J	33 U	130	133	1300	827 J	2690 J
Iron+Manganese	UG/L	GA	500	1.5 J	25929 J	23	173	170	1573	968 J	2858 J
Lead	UG/L	MCL	15	2.9 U	103	0.2 U	0.6 J	2.9 U	2.9 U	2.9 U	8.6
Magnesium	UG/L			18200	23300	18000	19000 J	7560 R	7400	9850	9170
Manganese	UG/L	GA	300	1.5 J	429	23	43	36.7	273	141	168
Mercury	UG/L	GA	0.7	0.1 U	0.1 U	0.091 U	0.091 U	0.12 U	0.12 U	0.1 U	0.1 U
Nickel	UG/L	GA	100	1.2 J	34	2 U	2 U	1.2 U	1.8 J	3.1 J	4.5 J
Potassium	UG/L			2390	7810	1300	1300	2620 R	1840 J	1290	1590
Selenium	UG/L	GA	10	6.1 U	6.1 U	1 U	1.1 U	6.1 U	6.1 U	6.1 U	6.1 U
Silver	UG/L	GA	50	1.3 U	1.3 U	0.25 U	0.18 U	1 U	1.3 U	1.3 U	1.3 U
Sodium	UG/L	GA	20000	19800 J	20300 J	14000	14000	4550 R	5500	7500 J	6200 J
Thallium	UG/L	MCL	2	0.008 U	0.2 U	0.5 U	0.25 U	0.03 U	0.09 U	0.008 U	0.008 U
Vanadium	UG/L			1 U	32.8	3.8 U	3.2 U	0.78 U	0.98 U	1 U	1.7 J
Zinc	UG/L			28.6	935	17 J	21	27 J	14.2	21.1	45.7

Notes:

1. The lowest value for either the New York Class GA Groundwater Standards (TOGS 1.1.1, June 1998, et al.) or the EPA Maximum Contaminant Limit (MCL), source http://www.epa.gov/safewater/mcl.html#inorganic.html is used. A blank cell indicates no criteria value available.
2. Data validation qualifier.
   [empty cell] = data is not qualified
   U = compound not detected at concentration listed
   J = the reported value is an estimated concentration
   R = the result was rejected due to QA/QC considerations
   UJ = detection limit is estimated.
3. Shading indicates a concentration above the identified criteria value.

Appendix D Table 2
SEAD-17 Post Remedial Action Groundwater Monitoring Results
SEAD-16 SEAD-17 Long-term Monitoring Report
Seneca Army Depot Activity

Sample Location				SEAD-17	SEAD-17	SEAD-17	SEAD-17	SEAD-17	SEAD-17	SEAD-17	SEAD-17
Location ID				MW17-3	MW17-3	MW17-4	MW17-4	MW17-4	MW17-4	MW17-4	MW17-4
Matrix				GW	GW	GW	GW	GW	GW	GW	GW
Sample ID				17LM20017FIL	17LM20017UNF	17LM20003	17LM20008	17LM20013FIL	17LM20013UNFIL	17LM20018FIL	17LM20018UNF
Sample Date				12/16/2010	12/16/2010	12/20/2007	12/10/2008	11/17/2009	11/17/2009	12/16/2010	12/16/2010
QC_Code				SA	SA	SA	SA	SA	SA	SA	SA
Study ID				LTM	LTM	LTM	LTM	LTM	LTM	LTM	LTM
Sample Round				4	4	1	2	3	3	4	4
Parameter	Units	Criteria[1] Type	Criteria[1] Value	Value (Q)[2]	Value (Q)[2]	Value (Q)[2]	Value (Q)[2]	Value (Q)[2]	Value (Q)[2]	Value (Q)[2]	Value (Q)[2]
Aluminum	UG/L			23 U	50 U	50.2 J	125 J	28 J	70 J	23 U	50 U
Antimony	UG/L	GA	3	2.3 U	2 U	1 U	0.62 J	1 U	1 U	2.3 U	2 U
Arsenic	UG/L	MCL	10	1.3 U	1.3 U	4.2 U	3.7 U	3.7 U	3.7 U	1.3 U	1.3 U
Barium	UG/L	GA	1000	37	38 J	32.5	35.9	36.3	36.6	27	28 J
Beryllium	UG/L	MCL	4	0.25 U	0.15 U	0.27 U	0.33 U	0.3 U	0.3 U	0.25 U	0.15 U
Cadmium	UG/L	GA	5	0.095 U	0.13 U	0.36 U	0.33 U	0.3 U	0.3 U	0.095 U	0.13 U
Calcium	UG/L			90000	93000	74900 J	74700	96600 J	97600 J	90000	88000
Chromium	UG/L	GA	50	2.5 U	2.5 U	1 J	0.88 U	0.9 U	0.9 U	2.5 U	2.5 U
Cobalt	UG/L			0.63	0.7	0.89 U	2.4 J	1.5 J	1.3 J	0.96	1.1
Copper	UG/L	GA	200	1.1 U	1.1 U	1.8 J	1.8 J	1.3 U	1.3 U	1.1 U	1.1 U
Iron	UG/L	GA	300	**730**	**770**	45.4 J	**1760**	60 J	142 J	240	260
Iron+Manganese	UG/L	GA	500	**890**	**940**	59 J	**2671**	258 J	355 J	370	400
Lead	UG/L	MCL	15	0.2 U	0.5 U	2.9 U	2.9 U	2.9 U	2.9 U	0.2 U	0.5 U
Magnesium	UG/L			9900	10000 J	10400 R	10200	12900	13000	13000	13000 J
Manganese	UG/L	GA	300	160	170	13.7	**911**	198	213	130	140
Mercury	UG/L	GA	0.7	0.091 U	0.091 U	0.12 U	0.12 U	0.1 U	0.1 U	0.091 U	0.091 U
Nickel	UG/L	GA	100	2 U	2 U	1.2 U	2.6 J	2.2 J	2.4 J	2 U	2 U
Potassium	UG/L			1200	1200	838 R	1190 J	844	866	540	530 J
Selenium	UG/L	GA	10	1 U	1.1 U	6.1 U	6.1 U	6.1 U	6.1 U	1 U	1.1 U
Silver	UG/L	GA	50	0.25 U	0.18 U	1 U	1.3 U	1.3 U	1.3 U	0.25 U	0.18 U
Sodium	UG/L	GA	20000	6000	6100	**28500** J	15500	10400 J	10500 J	12000	12000
Thallium	UG/L	MCL	2	0.5 U	0.25 U	0.03 U	0.09 U	0.008 U	0.008 U	0.5 U	0.25 U
Vanadium	UG/L			3.8 U	3.2 U	0.78 U	0.98 U	1 U	1 U	3.8 U	3.2 U
Zinc	UG/L			8.3 U	12 J	5.1 J	6.7 J	3.6 U	3.6 U	8.7 J	8.4 U

Notes:

1. The lowest value for either the New York Class GA Groundwater Standards (TOGS 1.1.1, June 1998, et al.) or the EPA Maximum Contaminant Limit (MCL), source http://www.epa.gov/safewater/mcl.html#inorganic.html is used. A blank cell indicates no criteria value available.
2. Data validation qualifier.
   [empty cell] = data is not qualified
   U = compound not detected at concentration listed
   J = the reported value is an estimated concentration
   R = the result was rejected due to QA/QC considerations
   UJ = detection limit is estimated.
3. Shading indicates a concentration above the identified criteria value.

Appendix D Table 2
SEAD-17 Post Remedial Action Groundwater Monitoring Results
SEAD-16 SEAD-17 Long-term Monitoring Report
Seneca Army Depot Activity

Sample Location				SEAD-17	SEAD-17	SEAD-17	SEAD-17	SEAD-17	SEAD-17
Location ID				MW17-5	MW17-5	MW17-5	MW17-5	MW17-5	MW17-5
Matrix				GW	GW	GW	GW	GW	GW
Sample ID				17LM20004	17LM20009	17LM20014FIL	17LM20014UNFIL	17LM20019FIL	17LM20019UNF
Sample Date				12/20/2007	12/11/2008	11/17/2009	11/17/2009	12/16/2010	12/16/2010
QC_Code				SA	SA	SA	SA	SA	SA
Study ID				LTM	LTM	LTM	LTM	LTM	LTM
Sample Round				1	2	3	3	4	4
Parameter	Units	Criteria [1] Type	Criteria [1] Value	Value (Q)[2]	Value (Q)[2]	Value (Q)[2]	Value (Q)[2]	Value (Q)[2]	Value (Q)[2]
Aluminum	UG/L			98.5 J	125 J	29 J	98 J	23 U	50 U
Antimony	UG/L	GA	3	1 U	0.56 J	1	1	2.3 U	2 U
Arsenic	UG/L	MCL	10	4.2 U	3.7 U	3.7 U	3.7 U	1.3 U	1.3 U
Barium	UG/L	GA	1000	86.7	82.9	166	168	81	82 J
Beryllium	UG/L	MCL	4	0.27 U	0.33 U	2 U	2 U	0.25 U	0.15 U
Cadmium	UG/L	GA	5	0.36 U	0.33 U	0.3 U	0.3 U	0.095 U	0.13 U
Calcium	UG/L			97100 J	97300	184000 J	185000 J	100000	110000
Chromium	UG/L	GA	50	0.84 U	0.88 U	0.9 U	0.9 U	2.5 U	2.5 U
Cobalt	UG/L			0.89 U	1.1 U	1.1 U	1.1 U	0.17 J	0.19 J
Copper	UG/L	GA	200	1.3 U	1.5 J	1.3 U	1.3 U	1.1 U	1.1 U
Iron	UG/L	GA	300	91.7	76	19 UJ	34 J	83 J	110
Iron+Manganese	UG/L	GA	500	128	85	24.3	61.4 J	118 J	145
Lead	UG/L	MCL	15	2.9 U	2.9 U	2.9 U	2.9 U	0.2 U	0.5 U
Magnesium	UG/L			15800 J	15600	27100	27300	17000	18000 J
Manganese	UG/L	GA	300	36.5	8.9	24.3	27.4	35	35
Mercury	UG/L	GA	0.7	0.12 U	0.12 U	0.1 U	0.1 U	0.091 U	0.091 U
Nickel	UG/L	GA	100	1.2 U	1.2 J	1.7 J	1.8 J	2 U	2 U
Potassium	UG/L			972 R	824 J	1920	1960	1600	1600
Selenium	UG/L	GA	10	6.1 U	6.1 U	6.1 U	6.1 U	1 U	1.1 U
Silver	UG/L	GA	50	1 U	1.3 U	1.3 U	1.3 U	0.25 U	0.18 U
Sodium	UG/L	GA	20000	7950 R	7360	**364000** J	**366000** J	8200	8300
Thallium	UG/L	MCL	2	0.03 U	0.09 U	0.08 J	0.08 J	0.5 U	0.25 U
Vanadium	UG/L			0.78 U	0.98 U	1 U	1 U	3.8 U	3.2 U
Zinc	UG/L			4.7 J	41.6	3.6 U	3.6 U	20	8.4 U

Notes:

1. The lowest value for either the New York Class GA Groundwater Standards (TOGS 1.1.1, June 1998, et al.) or the EPA Maximum Contaminant Limit (MCL), source http://www.epa.gov/safewater/mcl.html#inorganic.html is used. A blank cell indicates no criteria value available.
2. Data validation qualifier.
   [empty cell] = data is not qualified
   U = compound not detected at concentration listed
   J = the reported value is an estimated concentration
   R = the result was rejected due to QA/QC considerations
   UJ = detection limit is estimated.
3. Shading indicates a concentration above the identified criteria value.

APPENDIX E

LABORATORY REPORTS

APPENDIX F

DATA VALIDATION

PROJECT NAME/NO. USACE - Seneca Army Depot SEAD-16/17 LTM
LAB: TestAmerica
SDG: SGW001 (J64239-1)
FRACTION: Metals (SW846 7470A)
MEDIA: Groundwater
NUMBER OF SAMPLES: 12 Unfiltered

CRITERIA	Did Analyses Meet all criteria as specified in the SOPS?	Region 2 Acceptable limits / criteria	Comments/Qualifying Actions	Qualifiers Added?
Data Completeness, Holding Times & Preservation	Yes	Cooler temp < 10 C. Holding Time Hg < 28 days, all other metals < 180 days from collection.	Coolers were received at 1.2°C by the laboratory. All samples were received in good condition based on the laboratory login report. Samples were analyzed within 19 days from collection.	No
Calibration	Yes	r^2 ≥ 0.995 CCV every 10 samps or 2 hours ICV/CCV %R btw 90-110%	Calibrations available, taken every ten samples, and within recovery limits (80-120% for mercury and 90-110% for other metals).	No
Blanks (prep blank, ICB, CCB)	Yes	Method blanks: 1 per 20 project samples.	ICB analyzed on 1/4/11 at 11:00 for Hg Method 7470. CCB analyzed on 1/4/11 for Hg every ten samples. Hg (MDL = 0.2 and RL = 0.091 ug/L). CCB1 at 11:10, CCB2 at 12:08, CCB3 at 18:57, CCB4 at 19:55, CCB5 at 20:53, and CCB6 at 21:52 were non-detect for Hg. A Preparation blank analyzed and non-detect for Hg.	No
CRDL Standard	Yes	CRDL results btw 70-130%	CRDL analyses for Hg conducted at the beginning and end of the analysis. All met requirements.	No
Laboratory Control Sample	Yes	LCS/LCSD: 1 per 20 project samples or each preparation batch. LCS limits within 80-120%.	Aqueous LCS results were within the limits for Hg.	No
Duplicates	Yes	RPD < 35% or Absolute Diff < 2 RL when samp/dup value < 5x RL	A field duplicate pair was collected for this SDG; 16LM20022UNF and 16LM20023UNF. All detected results had RPD < 35%. A lab duplicate was not analyzed for this SDG.	No
Matrix Spike/Matrix Spike Duplicates	Yes	MS/MSD: 1 per 20 project samples or each preparation batch. Recoveries within lab limits. MS/MSD %RPDs <= 20%. Spike Recovery limits 75-	A spike sample was associated with this SDG; sample 16LM20022UNF. All spike metal recoveries were within the limits and did not have a initial conc >4x spike conc.	No
ICP Interference Check Sample (ICS)	NA	ICS results within 80-120%.	ICP Interference Check was not performed.	NA
Serial Dilution	NA	Performed on samples of a similar matrix or 1 per 20 samples. %D ≤ 10% conc ≥ 25xDL (7470A/7471A) and 10x IDL (6010B) for 5-fold dilution.	A serial dilution was not performed on this analysis.	NA
Field Duplicate Precision	Yes	%RPD less than 50%	A field duplicate pairs were collected for this SDG. Unfiltered sample 16LM20022UNF and its duplicate 16LM20023UNF. Both samples were non-detect, no action was taken.	No

RT = Retention Time; %D = Percent Deviation; %RPD = Relative Percent Difference; %RSD = Percent Relative Standard Deviation; RRF = Relative Response Factor; CCV = Continuing Calibration Ve
TCL = Target Compound List; MS = Matrix Spike; MSD = Matrix Spike Duplicate;

PROJECT NAME/NO. USACE - Seneca Army Depot SEAD-16/17 LTM
LAB: TestAmerica
SDG: SGW001 (J64239-1)
FRACTION: Metals (SW846 6020)
MEDIA: Groundwater
NUMBER OF SAMPLES: 12 Unfiltered

CRITERIA	Did Analyses Meet all criteria as specified in the SOPS?	Region 2 Acceptable limits / criteria	Comments/Qualifying Actions	Qualifiers Added?
Data Completeness, Holding Times & Preservation	Yes	Cooler temp < 10 C. Holding Time Hg < 28 days, all other metals < 180 days from collection.	Coolers were received at 1.2°C by the laboratory. All samples were received in good condition based on the laboratory login report. Samples were analyzed within 19 days from collection.	No
Calibration	Yes	r^2 ≥ 0.995 CCV every 10 samps or 2 hours ICV/CCV %R btw 90-110%	Calibrations available, taken every ten samples, and within recovery limits (80-120% for mercury and 90-110% for other metals).	No
Blanks (prep blank, ICB, CCB)	Yes	Method blanks: 1 per 20 project samples.	ICB analyzed on 1/3/11 at 10:03 for metals and all metals were non-detected. CCB analyzed on 1/3/11 and 1/4/11 for metals every ten samples. CCB1 at 10:47 on 1/3/11, CCB2 at 11:53, CCB3 at 22:42, CCB4 at 23:34, CCB5 at 00:17 on 1/4/11, CCB6 at 01:45, CCB7 at 03:12, CCB8 at 04:11, CCB10 at 13:30 were non-detect for all metals. CCB09 at 12:38 on 1/4/11 all metals were non-detect except for Silver (0.0398 J ug/L). CCB11 at 14:06 on 1/4/11, were non-detect for Calcium and Sodium. Preparation blank analyzed and non-detect for all metals. No project sampels were analyzed before or after CCB09, therefore no action is required.	No
CRDL Standard	Yes	CRDL results btw 70-130%	CRDL analyses for all remaining metals conducted at the beginning and end of the analysis. All met requirements except Potassium (134%) and Sodium (147%), but within the lab limits 50-150%.	No
Laboratory Control Sample	Yes	LCS/LCSD: 1 per 20 project samples or each preparation batch. LCS limits within 80-120%.	Aqueous LCS results were within the limits for metals.	No
Duplicates	Yes	RPD < 35% or Absolute Diff < 2 RL when samp/dup value < 5x RL	A field duplicate pair was collected for this SDG; 16LM20022UNF and 16LM20023UNF. All detected results had RPD < 35%. A lab duplicate was not analyzed for this SDG.	No
Matrix Spike/Matrix Spike Duplicates	No	MS/MSD: 1 per 20 project samples or each preparation batch. Recoveries within lab limits. MS/MSD %RPDs <= 20%. Spike Recovery limits 75-	A spike sample was associated with this SDG; sample 16LM20022UNF. Spike metal recoveries for 16LM20022UNF were within the limits and did not have a initial conc >4x spike conc except Magnesium (%Rec = 74% in MS). Qualify Mg detects as J and non-detects as UJ. The post digestion spike was performed on 16LM20022UNF. All metals recoveries within the limites except Calcium (221%), Magnesium (135%), and Sodium (146%).	Yes
ICP Interference Check Sample (ICS)	Yes	ICS results within 80-120%.	All concentrations detected in all samples within the ICP Linear Range. No action was taken.	No
Serial Dilution	No	Performed on samples of a similar matrix or 1 per 20 samples. %D ≤ 10% conc ≥ 25xDL (7470A/7471A) and 10x IDL (6010B) for 5-fold dilution.	Sample 16LM20022UNF serial dilution for all metal with %D < 10% and sample conc > 50xMDL met requirements except for Barium (15%). Qualify Barium results >MDL as J.	Yes
Field Duplicate Precision	Yes	%RPD less than 50%	A field duplicate pairs were collected for this SDG. Unfiltered sample 16LM20022UNF and its duplicate 16LM20023UNF. All metal %RPD results were within limit %RPD < 50% or Abs Diff < 2xCRDL.	No

RT = Retention Time; %D = Percent Deviation; %RPD = Relative Percent Difference; %RSD = Percent Relative Standard Deviation; RRF = Relative Response Factor; CCV = Continuing Calibration Ve
TCL = Target Compound List; MS = Matrix Spike; MSD = Matrix Spike Duplicate;

PROJECT NAME/NO. USACE - Seneca Army Depot SEAD-16/17 LTM
LAB: TestAmerica
SDG: SGW002 (J64239-2)
FRACTION: Metals (SW846 7470A)
MEDIA: Groundwater
NUMBER OF SAMPLES: 12 Filtered

CRITERIA	Did Analyses Meet all criteria as specified in the SOPS?	Region 2 Acceptable limits / criteria	Comments/Qualifying Actions	Qualifiers Added?
Data Completeness, Holding Times & Preservation	Yes	Cooler temp < 10 C. Holding Time Hg < 28 days, all other metals < 180 days from collection.	Coolers were received at 1.2°C by the laboratory. All samples were received in good condition based on the laboratory login report. Samples were analyzed within 19 days from collection.	No
Calibration	Yes	r^2 ≥ 0.995 CCV every 10 samps or 2 hours ICV/CCV %R btw 90-110%	Calibrations available, taken every ten samples, and within recovery limits (80-120% for mercury and 90-110% for other metals).	No
Blanks (prep blank, ICB, CCB)	Yes	Method blanks: 1 per 20 project samples.	ICB analyzed on 1/4/11 at 11:00 for Hg Method 7470. CCB analyzed on 1/4/11 for Hg every ten samples. Hg (MDL = 0.2 and RL = 0.091 ug/L). CCB1 at 11:10, CCB2 at 12:08, CCB3 at 12:16 on 1/5/11, CCB4 at 13:14, CCB5 at 13:51, CCB6 at 14:05, and CCB7 at 14:35 were non-detect for Hg. A Preparation blank analyzed and non-detect for Hg.	No
CRDL Standard	Yes	CRDL results btw 70-130%	CRDL analyses for Hg conducted at the beginning and end of the analysis. All met requirements.	No
Laboratory Control Sample	Yes	LCS/LCSD: 1 per 20 project samples or each preparation batch. LCS limits within 80-120%.	Aqueous LCS results were within the limits for Hg.	No
Duplicates	Yes	RPD < 35% or Absolute Diff < 2 RL when samp/dup value < 5x RL	A field duplicate pair was collected for this SDG; 16LM20022FIL and 16LM20023FIL. All detected results had RPD < 35%. A lab duplicate was not analyzed for this SDG.	No
Matrix Spike/Matrix Spike Duplicates	Yes	MS/MSD: 1 per 20 project samples or each preparation batch. Recoveries within lab limits. MS/MSD %RPDs <= 20%. Spike Recovery limits 75-	A spike sample was associated with this SDG; sample 16LM20022FIL. All spike metal recoveries were within the limits and did not have a initial conc >4x spike conc.	No
ICP Interference Check Sample (ICS)	NA	ICS results within 80-120%.	ICP Interference Check was not performed.	NA
Serial Dilution	NA	Performed on samples of a similar matrix or 1 per 20 samples. %D ≤ 10% conc ≥ 25xDL (7470A/7471A) and 10x IDL (6010B) for 5-fold dilution.	A serial dilution was not performed on this analysis.	NA
Field Duplicate Precision	Yes	%RPD less than 50%	A field duplicate pairs were collected for this SDG. Unfiltered sample 16LM20022FIL and its duplicate 16LM20023FIL. Both samples were non-detect, no action was taken.	No

RT = Retention Time; %D = Percent Deviation; %RPD = Relative Percent Difference; %RSD = Percent Relative Standard Deviation; RRF = Relative Response Factor; CCV = Continuing Calibration Ve
TCL = Target Compound List; MS = Matrix Spike; MSD = Matrix Spike Duplicate;

PROJECT NAME/NO. USACE - Seneca Army Depot SEAD-16/17 LTM
LAB: TestAmerica
SDG: SGW002 (J64239-2)
FRACTION: Metals (SW846 6020)
MEDIA: Groundwater
NUMBER OF SAMPLES: 12 Filtered

CRITERIA	Did Analyses Meet all criteria as specified in the SOPS?	Region 2 Acceptable limits / criteria	Comments/Qualifying Actions	Qualifiers Added?
Data Completeness, Holding Times & Preservation	Yes	Cooler temp < 10 C. Holding Time Hg < 28 days, all other metals < 180 days from collection.	Coolers were received at 1.2°C by the laboratory. All samples were received in good condition based on the laboratory login report. Samples were analyzed within 19 days from collection.	No
Calibration	Yes	r^2 ≥ 0.995 CCV every 10 samps or 2 hours ICV/CCV %R btw 90-110%	Calibrations available, taken every ten samples, and within recovery limits (80-120% for mercury and 90-110% for other metals).	No
Blanks (prep blank, ICB, CCB)	Yes	Method blanks: 1 per 20 project samples.	ICB analyzed on 1/3/11 at 10:03 for metals and all metals were non-detected. CCB analyzed on 1/3/11 and 1/4/11 for metals every ten samples. CCB1 at 10:47 on 1/3/11, CCB2 at 11:53, CCB3 at 16:16, CCB4 at 17:43, CCB5 at 19:11, CCB6 at 22:42, and CCB7 at 23:34 were non-detect for all metals. CCB8 at 12:38 on 1/4/11 all metals were non-detect except for Cadmium (0.0220 J ug/L). CCB9 at 13:30 on 1/4/11 all metals were non-detect except for Cadmium (0.0191 J ug/L). Preparation blank analyzed and non-detect for all metals. No project sampels were analyzed before or after CCB09, therefore no action is required.	No
CRDL Standard	Yes	CRDL results btw 70-130%	CRDL analyses for all remaining metals conducted at the beginning and end of the analysis. All met requirements except Potassium (134%) and Sodium (147%), but within the lab limits 50-150%.	No
Laboratory Control Sample	Yes	LCS/LCSD: 1 per 20 project samples or each preparation batch. LCS limits within 80-120%.	Aqueous LCS results were within the limits for metals.	No
Duplicates	Yes	RPD < 35% or Absolute Diff < 2 RL when samp/dup value < 5x RL	A field duplicate pair was collected for this SDG; 16LM20022FIL and 16LM20023FIL. All detected results had RPD < 35%. A lab duplicate was not analyzed for this SDG.	No
Matrix Spike/Matrix Spike Duplicates	Yes	MS/MSD: 1 per 20 project samples or each preparation batch. Recoveries within lab limits. MS/MSD %RPDs <= 20%. Spike Recovery limits 75-	A spike sample was associated with this SDG; sample 16LM20022FIL. Spike metal recoveries for 16LM20022FIL were within the limits and did not have a initial conc >4x spike conc. The post digestion spike was performed on 16LM20022Fil. All metals recoveries within the limits.	No
ICP Interference Check Sample (ICS)	Yes	ICS results within 80-120%.	All concentrations detected in all samples within the ICP Linear Range. No action was taken.	No
Serial Dilution	Yes	Performed on samples of a similar matrix or 1 per 20 samples. %D ≤ 10% conc ≥ 25xDL (7470A/7471A) and 10x IDL (6010B) for 5-fold dilution.	Sample 16LM20022FIL serial dilution for all metal with %D < 10% and sample conc > 50xMDL met requirements.	No
Field Duplicate Precision	Yes	%RPD less than 50%	A field duplicate pairs were collected for this SDG. Unfiltered sample 16LM20022FIL and its duplicate 16LM20023FIL. All metal %RPD results were within limit %RPD < 50% or Abs Diff < 2xCRDL.	No

RT = Retention Time; %D = Percent Deviation; %RPD = Relative Percent Difference; %RSD = Percent Relative Standard Deviation; RRF = Relative Response Factor; CCV = Continuing Calibration Ve
TCL = Target Compound List; MS = Matrix Spike; MSD = Matrix Spike Duplicate;