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Seneca Army Depot Activity
Romulus, NY

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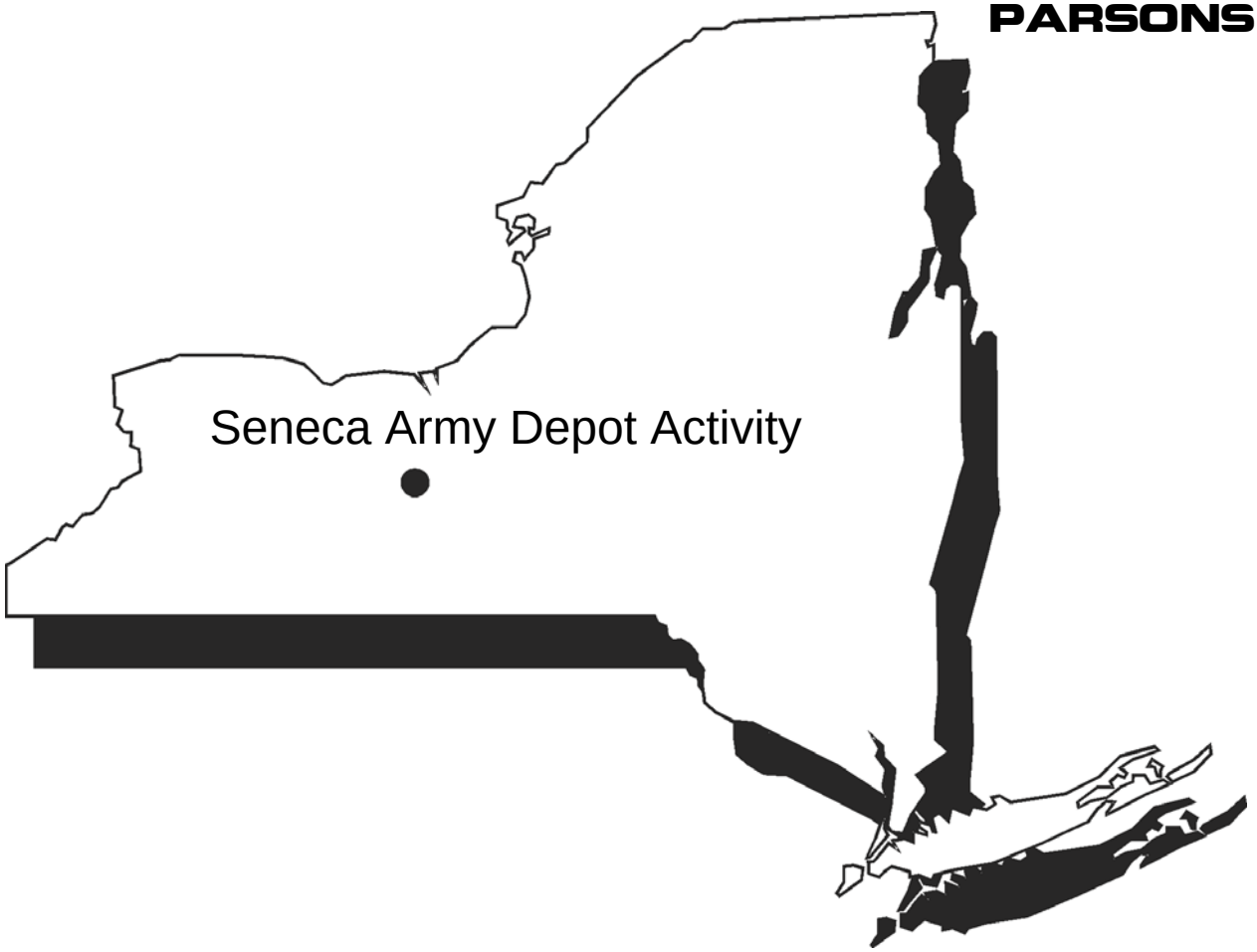

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SUPPLEMENTAL REMEDIAL INVESTIGATION REPORT RADIOACTIVE WASTE BURIAL SITES (SEAD-12)

SENECA ARMY DEPOT ACTIVITY

EPA Site ID# NY0213820830
NY Site ID# 8-50-006
CONTRACT NO. DACA87-02-D-0005
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May 2005

DRAFT

SEAD-12
Supplemental Remedial Investigation Report

SENECA ARMY DEPOT ACTIVITY
ROMULUS, NEW YORK 14541

and

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EXECUTIVE SUMMARY

This Supplemental Remedial Investigation (SRI) report summarizes SRI site investigation activities, presents data on the nature and extent of contamination, and makes recommendations for the path forward at Building 813/814 and the EM-5 area in the Radioactive Waste Burial Sites (SEAD-12) area at the Seneca Army Depot Activity (SEDA) in Romulus, NY. The two areas were recommended for further investigation in a Feasibility Study (FS) prepared following a Remedial Investigation (RI) performed at SEAD-12 in 1995 through 1999. The additional investigation at Building 813/814 was recommended due to elevated volatile organic compound (VOC) concentrations detected in a monitoring well adjacent to the building, and further investigation of EM-5 was recommended to further evaluate elevated levels of Pb-210 detected in soil samples.

Thirteen temporary wells were installed in the vicinity of the elevated VOC concentrations detected during the RI. Groundwater samples were collected from these temporary wells and two existing permanent wells to determine the extent of VOC contamination. Results of the sample analysis indicated that VOC contamination, primarily in the form of trichloroethene (TCE), was limited to the area immediately adjacent to one of the permanent wells, MW12-37. Based on these results, a test pit investigation was initiated to determine the source of the TCE contamination in the groundwater. The investigation traced elevated TCE levels to the footer of the building, where exploration halted due to concerns for the structural integrity of the building. An abandoned sewer pipe exiting the building was identified as a potential source; the majority of the pipe was removed during the test pitting operation.

The ten RI soil sample locations at EM-5 exhibiting the highest Pb-210 concentrations were re-sampled as part of the SRI. The SRI samples were analyzed using a modified DOE EML HASL-300 method which was intended to lower uncertainty levels that had been relatively high in the samples analyzed during the RI. Results of the analysis of the soil from the re-sampled locations indicated that Pb-210 is not a concern at EM-5.

Recommendations were developed for the two areas based on the conclusions drawn from the field investigation. These include a deed restriction to be placed on Building 813/814, the removal of the temporary wells installed during the project, and re-sampling of test pit soil that remains stockpiled adjacent to the building. No further action is proposed at EM-5. It is proposed that these recommendations be incorporated into the forthcoming Draft Final Feasibility Study Report for the Radioactive Waste Burial Sites (SEAD-12) that also addresses the Disposal Pit areas within SEAD-12.

1 INTRODUCTION

1.1 PURPOSE OF REPORT

The purpose of this report is to present the findings of the Supplemental Remedial Investigation (SRI) conducted at the Radioactive Waste Burial Sites (SEAD-12) at the Seneca Army Depot Activity (SEDA) in Romulus, New York. The work for the SRI was undertaken in response to issues noted in the Revised Final RI Report at the Radiological Waste Burial Sites (SEAD-12; Parsons, 2002b) and the Draft Feasibility Study (FS) Report for the Radioactive Waste Burial Sites (SEAD-12; Parsons, 2002a), which presented the results of several different investigations designed to characterize the nature and extent of risks posed by the conditions at SEAD-12. As indicated in the RI and FS reports, there were two issues within SEAD-12 that required additional investigation: the VOC contamination in the vicinity of Building 813 and 814 and the elevated concentrations of Pb-210, a radionuclide, in the soil at the EM-5 area. The work conducted during the SRI was outlined in the Final Workplan for the Supplemental Remedial Investigations at the Radioactive Waste Burial Sites (Parsons, 2004).

The additional Remedial Investigation activities carried out at these two areas were performed as part of the United States Army Corps of Engineers (USACOE) remedial response activities under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) at SEDA. They followed the requirements of the New York State Department of Environmental Conservation (NYSDEC), the U.S. Environmental Protection Agency, Region II (EPA), and the Interagency Agreement (IAG).

1.2 SITE BACKGROUND

1.2.1 Depot

Seneca Army Depot Activity (SEDA or the Depot) was constructed in 1941 on approximately 10,600 acres of former farmland in western New York. The Depot was owned by the United States Government and operated by the Department of the Army. From its inception in 1941 until its recommended closure in 1995, SEDA's primary mission was the receipt, storage, maintenance, and supply of military items, including munitions and equipment. A number of hazardous wastes were stored and generated at the Depot as part of its mission, and SEDA was proposed for inclusion on the National Priority List (NPL) as a Federal Facility site in July of 1989. The Depot's listing was approved by Congress and finalized in August of 1990. The Depot's EPA identification number is NY0213820830. The site is also identified by NYSDEC as Inactive Hazardous Waste Site Number 8-50-006.

In accordance with requirements of Section 120 of CERCLA (Title 42, *U.S. Code*, Sec. 9620), the US Army, the EPA, and the NYSDEC negotiated and signed a Federal Facilities Agreement (FFA) or

an Interagency Agreement (IAG) governing site investigation and remediation of the Depot in January 1993. This agreement determined that future investigations were to be based on CERCLA guidelines and RCRA was considered an Applicable or Relevant and Appropriate Requirement (ARAR) pursuant to Section 121 of CERCLA. In October 1995, SEDA was designated as a facility recommended for closure under the provisions of the Base Realignment and Closure (BRAC) process. In 2000, the facility was closed.

Pursuant to the requirements of BRAC, the Seneca County Board of Supervisors had established the Seneca Army Depot Local Redevelopment Authority (LRA) in October 1995. The primary responsibility assigned to the LRA was to plan and oversee the redevelopment of the Depot. The Reuse Plan and Implementation Strategy for SEDA was adopted by the LRA and approved by the Seneca County Board of Supervisors on October 22, 1996. Under this plan and subsequent amendment, areas within the Depot were classified according to their most likely future use. The proposed future use designations identified by the LRA and approved by the Board of Supervisors included:

- Housing;
- Institutional;
- Industrial;
- Warehousing;
- Conservation/recreational land;
- An area designated for a future prison;
- An area for an airfield, special events, institutional, and training; and
- An area to be transferred from one federal entity to another (i.e., the area of the existing navigational LORAN transmitter).

A map showing the LRA's recommended future land use for the Depot is provided as **Figure 1-1**. In 2000, the Army began to deed portions of the Depot over to the State of New York (Prison) and the Seneca County Industrial Development Authority (SCIDA) Adolescent Center for redevelopment and reuse. In September 2003, the majority of the conservation/recreation land was also transferred to SCIDA. A number of parcels still undergoing remediation, including the ones discussed in this report, were held out of the transfer and are still under government control.

1.2.2 Buildings 813 and 814

Buildings 813 and 814 were primarily used for painting operations that took place in SEAD-12, the Former Weapons Storage Area (**Figure 1-2**). The buildings were originally constructed in the 1950s, and modifications were made to both over time. Building 813 originally contained a number of small offices and equipment rooms along with one large, open room. This room contained the paint booth,

which was a completely self-contained, pre-fabricated room that was replaced at least once during the period the building was used. An addition to this building was completed in the late 1980s and included a new sand blasting room. This addition covered what was once an open area between Building 813 and Building 814.

Building 814 originally contained one furnace room and a large, open room. The building was lengthened in the late 1960s, at which point an office was constructed in the southeast corner of the building. Two storage rooms were constructed inside the main room of the building and two other rooms were added to the building's exterior between 1970 and 1990, however, the exact timeframe of these modifications is not known. The basic layouts of the buildings are shown in **Figure 1-3**.

1.2.3 EM-5

As part of the original RI, a geophysical investigation of all of SEAD-12 was performed using an EM-31 ground conductivity meter. The survey detected 44 conductivity anomalies which were designated EM-1 through EM-44. Test pits were excavated at a number of these EM anomalies, including two in the location of anomaly EM-5 (**Figure 1-2**). The test pit operation at EM-5 uncovered items such as horseshoes, square nails, and broken glass, which were apparently associated with an original farmstead that predated SEDA. None of the debris recovered appeared to be related to military activities.

1.3 SITE PHYSICAL CHARACTERISTICS

SEAD-12 is fairly flat with a slight downward trend to the west, towards Seneca Lake. The only notable topographic features in the area are a series of surface water control ditches that run along the sides of most of the roads in the Depot. The bottoms of some of these ditches can be nearly 6 feet below the nearby ground surface elevation. Although there are some wooded spots in SEAD-12, most of the area has been cleared and is either open field or is occupied by buildings or ammunition storage igloos. Buildings 813 and 814 are located on the eastern side of SEAD-12, adjacent to Building 815 to the west and an open field to the east. There is a paved parking lot between 815 and 813/814 and one of the deeper ditches runs along the north, east, and south sides of the connected buildings. EM-5 lies in the middle of a grassy field on the western side of SEAD-12.

Geologically, the areas around Buildings 813/814 and EM-5 are similar to the rest of the Depot, which is located within one distinct unit of glacial till that covers the area between the western shore of Lake Cayuga and the eastern shore of Lake Seneca. The till ranges in thickness from less than 2 feet to as much as 15 feet, with the average being only a few feet thick. This till is generally characterized by brown to gray-brown silt, clay and fine sand with few fine to coarse gravel-sized inclusions of weathered shale. Larger diameter weathered shale clasts (as large as 6-inches in

diameter) are more prevalent in basal portions of the till and are probably rip-up clasts removed by the active glacier during the late Pleistocene era. A zone of gray weathered shale of variable thickness is present below the till in almost all locations at SEDA. This zone is characterized by fissile shale with a large amount of brown interstitial silt and clay.

1.4 COMPARISON CRITERIA FOR INVESTIGATION RESULTS

The investigation of SEAD-12 falls under the jurisdiction of both the State of New York regulations (administered by NYSDEC) and Federal regulations (administered by USEPA Region II). Applicable or Relevant and Appropriate Requirements (ARARs) are promulgated regulatory standards or requirements and as such are legally enforceable and generally applicable and equivalent to the media or conditions at the site. In addition to ARARs, advisories, criteria, or guidance may be evaluated as "To Be Considered" (TBC) regulatory items. CERCLA indicates that the TBC category could include advisories, criteria, or guidance that were developed by USEPA, other federal agencies, or states that may be useful in developing CERCLA remedies. These advisories, criteria, or guidance are not promulgated and, therefore, are not legally enforceable standards such as ARARs. To date, ARARs have only been propagated for groundwater and surface water at the site.

In reviewing ARARs and TBCs for the site, the following documents were used for comparison of chemical constituents at the site:

- Soils and Ditch Soils - New York State Department of Environmental Conservation (NYSDEC) Technical and Administrative Guidance Memorandum (TAGM) HWR-94-4046 (January 1994) - TBC.
- Surface Water – NYSDEC Technical and Operation Guidance Series (TOGS, 1.1.1), Class C Standards (June 1998) – ARAR.
- Groundwater – TOGS, 1.1.1, Class GA Standards (June 1998) – ARAR.

For constituents in surface water and groundwater, the regulatory criteria used for comparison to field data are from the above published standards which are considered ARARs for the site. For soil, criteria from TAGM-4046 are considered TBCs. These criteria are referenced both during the evaluation of previous investigations as well as the evaluation of the data collected during the SRI.

1.5 PREVIOUS REMEDIAL INVESTIGATION RESULTS

As indicated in the **Section 1.1**, the complete results of the original RI conducted at SEAD-12 are contained in The Revised Final RI Report at the Radiological Waste Burial Sites (SEAD-12; Parsons, 2002b) and the Draft Feasibility Study (FS) Report for the Radioactive Waste Burial Sites (SEAD-12;

Parsons, 2002a). The specific RI results that led to the implementation of the SRI are briefly discussed below.

1.5.1 VOC Concentrations Proximate to Buildings 813 and 814

1.5.1.1 Soil Gas Survey Results

Thirty-nine soil gas survey samples were collected in and around Buildings 813 and 814 to determine if the area had been impacted by VOCs (**Figure 1-4**) as a result of the former painting operations conducted in the buildings. The soil gas samples collected were analyzed for benzene, toluene, and p-xylenes (three of the four components of BTEX) as well as 1,2-dichloroethene (DCE), trichloroethene (TCE), and total VOCs. Of the individual VOCs analyzed, TCE exhibited the highest concentrations across the site, with values ranging as high as 2,400 ppb. A number of other soil gas locations around the buildings were identified as having elevated concentrations of total VOCs that did not appear to be particularly related to high TCE values or to any of the other specific constituents analyzed. The locations of these elevated TCE and total VOC concentrations were noted as sites that required further investigation. The complete soil gas survey results are presented in **Table 1-1**.

1.5.1.2 Groundwater Chemistry

In the area of Buildings 813 and 814, four (4) overburden monitoring wells (**Figure 1-4**) were installed, with the locations of the wells based primarily on the soil gas survey results. Monitoring well location MW12-37 was placed approximately 10 feet from the northeast corner of Building 813 to further investigate the elevated soil gas TCE concentrations detected in that location. Monitoring well locations MW12-38 and MW12-39 were placed in approximately the same locations as soil gas sample locations SG12-122 and SG12-148, respectively, in order to investigate the elevated total VOC concentrations detected in those locations. Monitoring well location MW12-38 is also in the suspected downgradient direction of the highest TCE detection at soil gas sample location SG12-147. The fourth monitoring well location, MW12-40, was placed approximately 300 feet downgradient of Buildings 813 and 814 to determine the extent of VOC contamination in the area.

The results of the groundwater sampling program during the RI at SEAD-12 indicated that VOCs were present in groundwater at two of these four wells. The samples collected at monitoring well MW12-37, located at the northeast corner of Building 813, contained a concentration of 1,600 μg/L of TCE during both of the two sampling events conducted; the NYSDEC Class GA Standard for groundwater is 5μg/L. The groundwater samples collected during the second sampling event also showed an estimated DCE concentration of 30 μg/L, which also exceeds the NYSDEC Class GA Standard of 5 μg/L. The sample collected during the second event at MW12-40 showed a TCE concentration of 1.7 μg/L, however, this does not exceed the GA Standard.

1.5.1.3 Surface Water/Ditch Soil Chemistry

Surface water and ditch soil samples were collected from three locations within the ditch that runs adjacent to Buildings 813 and 814 as indicated in **Figure 1-4**. In the surface water samples, only metals were detected; and of the metals detected, only concentrations of iron and aluminum exceeded NYS AWQS Class C Standards. Although they exceeded the Class C Criteria, the concentrations of these two metals were in line with background values across the site and the iron and aluminum were not considered a contaminant of concern. The SW12-30 sample also contained a concentration of 1 μg/L of TCE, which is below the Class C Standards.

Each of the three ditch soil samples, which were co-located with the surface water sample locations, contained detectable concentrations of VOCs, semivolatile organic compounds (SVOCs), pesticides/Polychlorinated Biphenyls (PCBs), and metals. Risk assessment performed for the RI indicated that nothing in the SEAD-12 ditch soil posed a threat to human health or the environment, and the medium was not considered to be of concern in the FS.

1.5.1.4 Soil Chemistry

Both surface and subsurface soil samples were collected in the vicinity of Buildings 813 and 814 during the RI (**Figure 1-4**). Three surface soil samples, SS12-66, SS12-67, and SS12-68, were collected to the northwest of the Buildings 813 and 814, near monitoring well MW12-40. The subsurface soil samples were collected during the installation of the four monitoring wells, MW12-37, MW12-38, MW12-39, and MW12-40, to the north and west of the Buildings 813 and 814. The results of the analysis of the surface and subsurface soil samples indicate that there were metals that exceeded TAGM values at these locations. However, none of the VOC or SVOC detections in the surface or subsurface soils exceeded their respective TAGM values.

1.5.2 Investigation of Radionuclides at EM-5

In addition to the test pitting performed at EM-5 during the RI, a total of 30 surface soil and subsurface soil samples were collected and analyzed for radionuclides (**Figure 1-5**). Using the Wilcoxon Rank Sum statistical analysis, the EM-5 soils were compared to a background data set to determine if there were any radionuclides that exceeded background concentrations. For the radionuclides distinguishable from background at EM-5, both the residential and worker Derived Concentration Guideline Level (DCGLs) were added to the background dataset as described in MARSSIM (NRC, 2000) and in Section 4.1.2.3 of the RI (Parsons, 2002). When compared to the worker DCGLs, Lead-210 exceeded DCGLs; Lead-210 is part of the Radium-226 decay series. The DCGL exceedances were not extremely high, and it was believed that the elevated Pb-210 levels may

have been naturally occurring and associated with the archaeological anomalies found during test pit activities performed in the area; there was no indication of Army activity in this area. Since the analytical uncertainty associated with the RI samples was rather large, NYSDEC comments on the Draft FS recommended a different analytical method for gamma spectroscopy that would minimize analytical error. The SRI suggested further investigation of the area to confirm the detections.

1.6 REPORT ORGANIZATION

The remaining sections of this report discuss the activities performed during the SRI and the conclusions resulting from the fieldwork. **Section 2** describes the fieldwork performed during the project and the analyses run on the samples collected. **Section 3** summarizes the results of sample analysis performed for the project. **Section 4** summarizes the conclusions drawn from the work completed during the project and presents recommendations for the two sites based on the data collected.

2 STUDY AREA INVESTIGATION

2.1 INTRODUCTION

Additional investigations were performed within the SEAD-12 area based on the results of the Remedial Investigation (RI) at the Radiological Waste Burial Sites (Parsons, 2002). Based on comments received from the regulatory community, additional investigation of an elevated trichloroethene (TCE) detection in groundwater outside Buildings 813/814, as well as elevated detections of Pb-210 within the EM-5 area of the site were performed. In order to further investigate these two issues, the Final Workplan for the Supplemental Remedial Investigations at the Radioactive Waste Burial Sites was submitted in March, 2004. The purpose of the Supplemental RI (SRI) was to determine the extent of TCE contamination in groundwater by installing temporary monitoring wells using a phased approach. In addition, several soil sample locations within the EM-5 area were to be re-sampled and analyzed using a different method (as requested by NYSDEC) for the analysis of Pb-210. The following section describes the fieldwork performed during the SRI.

2.2 BUILDING 813 AND 814 INVESTIGATION

2.2.1 Groundwater Investigation

2.2.1.1 Temporary Well Installation

The highest VOC concentrations observed during the original RI were TCE concentrations in groundwater, although TCE was also detected in one surface water sample and VOCs were detected in a number of soil gas samples. The SRI fieldwork at Buildings 813 and 814 focused on delineating potential VOC plumes in this area, in particular, the TCE plume that appeared to extend downgradient from MW12-37. To further delineate the VOC contamination, the Army proposed the installation of 15 temporary wells in locations where elevated VOCs were detected in the soil gas survey or in areas downgradient from the RI TCE detections (**Figure 2-1**). The proposed placement of each temporary well is shown in **Figure 2-2**, and the rationale for the proposed locations is presented in **Table 2-1**. As indicated in the figure, the wells were to be installed in two phases to ensure that the outer boundaries of any VOC plumes were well defined.

The nine Phase I temporary wells, TW12-1 through TW12-9, were installed on May 24 and 25, 2004 with the exception of TW12-2. The boring advanced in this location hit bedrock prior to reaching the water table, so the hole was abandoned. Groundwater samples were collected from the eight temporary wells and the samples were analyzed for VOCs. The VOC results from Phase I, which will be discussed in detail in **Section 3**, indicated that the elevated TCE concentration detected in MW12-37 during the RI was relatively localized. Therefore, five additional wells, rather than the originally projected six, were located between the building and the Phase I locations in an effort to determine

the boundary of any plume if one existed. The five Phase II temporary wells were installed on June 9 and 10, 2004. The final locations of the 13 temporary wells installed during the SRI are shown on **Figure 2-3**.

The temporary monitoring wells were installed according to the procedures outlined in the Field Sampling and Analysis Plan of the *Generic RI/FS Workplan* (Parsons, 1995), with the exception that the temporary wells were not finished with bollards, casings, or concrete collars. All soil boring points were advanced to auger refusal, which was taken to represent the depth to bedrock. Monitoring wells were then established in the completed borings using 2" PVC with a maximum screen length of ten feet. The completion diagram for each of the wells is contained in **Appendix A**.

2.2.1.2 Groundwater Sampling

Groundwater samples were collected at each of the temporary monitoring wells installed during this program. As stated in **Section 2.2.1.1**, the sampling of these wells took place in two phases to ensure that any VOC plumes were accurately defined. Phase I samples were collected from the first eight temporary wells installed and were analyzed for VOCs. The results of this analysis were used to position the five Phase II temporary wells, which were also sampled following installation. In order to confirm the TCE concentrations observed during the original RI, permanent wells MW12-37 and 40 were also re-sampled during the SRI. The Phase II wells and the permanent wells were sampled during the same event, and the samples sent for VOC analysis.

All of the temporary well samples were collected in accordance with procedures specified in the EPA SOP titled *Groundwater Sampling Procedure, Low Flow Pump Purging and Sampling* (EPA, 1998). In general, each well was purged and sampled using a bladder pump. Samples were collected only after water quality indicator parameters including turbidity, temperature, specific conductivity, pH, dissolved oxygen content (DO), and oxidation-reduction potential (ORP), stabilized in the well (i.e. were constant for three consecutive readings). The groundwater sampling records are contained in **Appendix B**.

2.2.1.3 Sample Analysis

The samples collected were submitted to a laboratory certified by New York State's Contract Laboratory Program (CLP), Analytical Services Protocol (administered by NYSDOH) and the US Army Corp of Engineers (USACE), Hazardous, Toxic, and Radioactive Waste (HTRW) Center of Expertise (i.e., former Missouri River Division). Organic compounds characterized during this investigation focused on compounds listed on the EPA's Target Compound List (TCL). Additionally, attempts were made to quantify the next 10 volatile tentatively identified compounds (TICs), in accordance with standard EPA and NYSDEC CLP protocols. EPA SW-846 Method 8260B was used for all VOC determinations. A duplicate sample, a rinse blank, and a Matrix Spike/Matrix Spike

Duplicate (MS/MSD) sample were collected during each phase of sampling and were submitted to the lab with the rest of the temporary well samples and a trip blank supplied by the lab for quality control (QC) purposes. A detailed discussion of the lab results is contained in **Section 3**.

2.2.2 Surface Water/Ditch Soil Investigation

Seven surface water/ditch soil samples were collected on June 24, 2004 from the drainage ditch adjacent to Buildings 813 and 814. One set of samples, SW/SD 12-69, re-examined RI sample location SW/SD12-30, which showed a 1 µg/L concentration of TCE during the RI. Three of the samples, SW/SD12-70, -71, and -74, were collected in the ditch to the north of this location at approximately 100-foot intervals to assess whether or not VOCs were discharging to the surface water. SW12-72 and 73 were both collected to the northwest of the elevated TCE detection at MW12-37 to determine if TCE was migrating downgradient from that location via the ditches rather than through groundwater. Finally, SW/SD12-68 was collected south of SW/SD12-69 to ensure that VOCs were not migrating in the suspected upgradient direction via the surface water in the ditch. **Figure 2-3** shows the locations of the collected surface water/ditch soil samples.

The surface water samples and ditch soil samples were collected according to the sampling methods outlined in the Field Sampling and Analysis Plan. Both the surface water and ditch soil samples were analyzed for VOCs by Method 8260B, and the ditch soil samples were also analyzed for total organic carbon (TOC) by EPA Method 9060. As with the groundwater samples, a full set of QC samples was collected and submitted to the lab for both the surface water and ditch soil samples. The surface water/ditch soil sampling records are contained in **Appendix B**, and detailed discussion of the lab results is contained in **Section 3**.

2.2.3 TCE Source Investigation

2.2.3.1 Phase I Test Pit - November 3, 2004

The results obtained from the groundwater and surface water/ditch soil sampling operations performed during the SRI indicated that the TCE plume detected in MW12-37 was localized. However, TCE continued to be detected in groundwater at MW12-37 as it had been in 1997. Based on the continued presence of elevated TCE concentrations in this location, the Army proposed a test pit investigation to determine if there was a subsurface point source for the TCE, such as buried debris associated with the painting operations in the building. Representatives from the US Environmental Protection Agency (USEPA) and New York State Department of Environmental Conservation (NYSDEC) concurred with the plan for a test pit investigation during a conference call on July 6, 2004.

On November 3, 2004, approximately 20 cubic yards of soil were removed from the area immediately surrounding MW12-37. The pit was excavated to bedrock depth, and the only notable object discovered was an abandoned 6-inch clay sewer pipe. The pipe appeared to run north from the building and was approximately 1 foot to the west of the former MW12-37, which was removed during excavation. The pipe appeared to be empty, and no visible contamination was sighted in the soil removed from the hole. There were also no elevated readings detected by the field photoionization detector (PID).

Three soil samples, TP813-1T, TP813-2T, and TP813-3T, were collected from the south, north, and east sides of the pit, respectively. The "T" suffix signifies a temporary sample location that was removed in a later phase of excavation; an "F" suffix signifies locations remaining after the final phase of the investigation. One composite sample, SP813-1, was also collected on November 3 from the stockpile of excavated soil, which had been staged immediately adjacent to the pit. This stockpile was re-sampled (SP813-3) on November 10 and moved prior to the initiation of Phase II of the investigation. The locations of the test pit samples and the final location of the stockpiles are shown on **Figure 2-4**. The test pit logs for the investigation are included in **Appendix C**.

2.2.3.2 Phase II - November 10 and 11, 2004

TCE concentrations exceeding the TAGM limit were detected in all three of the sidewall samples collected on November 3. As a result, the Army decided to expand the scope of the test pit investigation in an attempt to determine the location of the TCE source. The test pit was expanded by approximately 160 cubic yards on November 10 and 11, 2004. During test pitting activities, a flame ionization detector (FID) was used to field screen for elevated VOCs.

Metal debris was found near the northern limit of the Phase II test pit, approximately 22 feet from the NE corner of the building. Soils were not discolored near this debris nor were there any elevated FID readings. One sample, TP813-4F, was collected from the soil immediately surrounding the debris. Additionally, stained soils were observed in the weathered shale in the southern portion of the test pit near the east side of the building. Two samples, TP813-7T and TP813-8T, were collected from the area of the stained shale. Three more samples were collected from the eastern (TP813-5F), northern (TP813-6F), and western (TP813-9T) sides of the pit to determine if a source could still be present in those directions. No samples were collected from the base of the test pit, as it extended down to competent bedrock.

The soil removed during Phase II of the excavation was stockpiled in the same area as the material removed during Phase I; however, the piles from the two Phases were kept separate. An effort was also made to segregate soil from differing areas of the pit itself, with the stained shale and the soil containing metal debris separated from the soil that was not visually impacted. **Figure 2-4** illustrates how the material was grouped in the stockpile area. Samples were collected from the stockpiled

material on December 9 to determine which, if any, of the material could be used to refill the excavation when it was completed. Samples SP813-3 through SP813-7 were collected from the stockpiles on December 9, with each collected from a pile that was deemed to be representative of a set of piles exhibiting relatively similar properties. At least one sample was collected for every 50 cubic yards of soil in the stockpile area. **Figure 2-4** also indicates which samples represented each group of piles. The samples collected during the second phase of investigation were analyzed for VOCs, and the full results of both the test pit and stockpile sample analyses are contained in **Section 3**.

2.2.3.3 Phase III - December 20 - 22, 2004

The VOC results from the second phase of investigation indicated that the northern and eastern bank wall samples were below the NYSDEC TAGM level for TCE. However, the level of TCE in the samples collected from the south wall and western walls exceeded the TAGM value. The Army decided to extend the test pit to the south and west in a further attempt to determine the extent of the TCE impacted soil.

Phase III of the investigation, conducted on December 20 and 21, 2004, removed an additional 50 cubic yards of material from the southern and western ends of the existing test pit. The southeastern side of the pit was extended to TW12-24, which contained no detectable VOCs during the groundwater investigation. Following the extension of the excavation to TW12-24, no further evidence of any stained soil was observed in the shale at the base or side of the pit. To preserve the structural integrity of the building, the southwestern side of the test pit was extended only to the northern edge of the building. Finally, the western side was extended approximately 15 feet to halfway between the eastern and western sides of the building. Three samples, TP813-10F through TP813-12F, were collected from beneath the edge of the building, with TP813-11F collected from the eastern side where the stained soils were originally observed. An additional sidewall sample, TP813-13F, was collected from the western wall of the pit, and one stockpile sample, SP813-8, was collected from the area of the stockpiled Phase III soil exhibiting the highest PID readings.

The test pit was backfilled on December 21 and 22 using soil removed during the first two phases of the investigation. Only those piles that were determined to be below TAGMs based on the results of the stockpile samples collected in December were used in backfilling. These included the Phase I soil and the Phase II soils that were not visibly impacted. The soil removed during the third phase of test pitting was stockpiled as indicated on **Figure 2-4** pending sample analysis and was not returned to the hole. **Figure 2-5** is an as built diagram of the final pit.

2.2.3.4 Soil Sampling and Analysis

The soil samples were collected from the pit according to the methods outlined in the Field Sampling and Analysis Plan. Both the samples collected in the excavation and the stockpile samples were grab samples. Grab samples, rather than composite samples, were collected from the stockpiles due to the risk of volatilizing VOCs in the soil during the mixing of a composite from more than one pile. Each of the stockpile samples was judged to be representative of the other material removed from the same area in the excavation. All of the soil samples were analyzed for VOCs by Method 8260B, and a one set of QC samples was collected and submitted to the lab for both the November and December samples. A detailed discussion of the lab results is contained in **Section 3**.

2.3 EM-5 SOIL INVESTIGATION

2.3.1 Surface and Subsurface Soil Sampling

Due to the elevated levels of Pb-210 detected at EM-5, additional re-sampling and analysis of RI soil sample locations was proposed for this area to verify the results of the RI investigation. The SRI sampling locations were selected from existing sample locations based on the highest detections of Pb-210 during the RI. One modification was made to the sampling plan proposed in the SRI Workplan; the subsurface sample to be collected at MW12-23 was replaced by a subsurface sample collected at TP12-15A, as further review of the RI data indicated that the Pb-210 concentration in this location had been higher than the one seen at MW12-23. Eight surface soil and two subsurface soil samples were collected from ten locations on June 24, 2004 (**Figure 2-6**). All of the samples were collected using a hand driven split-spoon. If necessary, a hand auger was used to remove material above the sample depth at the subsurface locations. The soil sampling records are contained in **Appendix B**.

2.3.2 Sample Analysis

All samples were analyzed for Ra-226 (the parent of Pb-210) and its daughter products by General Engineering Laboratories (GEL) using a Modified DOE EML HASL-300 Method. NYSDEC had requested the use of this method to verify the RI results and minimize the uncertainty of the RI. GEL's Standard Operating Procedures for the Determination of Gamma Isotopes (Modified DOE EML HASL-300) is included as **Appendix D**. One set of QA/QC samples was collected from surface soil location SS12-107 and submitted to the laboratory with the rest of the samples. The results of the lab analysis are contained in **Section 3**.

2.4 SITE SURVEY

A surveyor, licensed by the State of New York, was contracted to determine the locations of all temporary wells installed during this program as well as the locations of the surface water/ditch soil samples. Site surveys were performed in accordance with good land surveying practices and conformed to all pertinent state, federal, and USACOE laws and regulations governing land surveying. The procedures are outlined in Section 3.13.1 of the Field Sampling and Analysis Plan of the *Generic RI/FS Workplan.*

2.5 DATA VALIDATION

Validation of analytical data resulting from analytical determinations in soil was performed in a manner that is generally consistent with procedures defined in the EPA's "National Functional Guidelines for Organic Data Review" and consistent with EPA Region 2's Standard Operating Procedures. The data package submittal received from the various laboratories used for the project contained all data generated during the analyses, including mass spectral identification charts, mass spectral tuning data, spike recoveries laboratory duplicate results, method blank results, instrument calibration, and holding times documentation.

All analyses were subjected to full data validation. Full data validation is a *qualitative* and *quantitative* review of those items evaluated during a qualitative assessment in addition to calculating sample and laboratory QC results with the instrument raw data. This level of data quality provides assurance that all sample results reported by the laboratory were transcribed, calculated, and reported correctly. Therefore, this level of data review requires laboratories to submit all environmental sample results, laboratory QC results, and instrument raw data (i.e., a full data package or "CLP-type" data deliverable).

3 RESULTS

3.1 GROUNDWATER RESULTS

A total of fifteen temporary and permanent monitoring wells were sampled during the Supplemental Remedial Investigation (SRI) project and analyzed for VOCs. The detections observed in the groundwater VOC analysis are summarized in **Table 3-1** and shown on **Figure 3-1**. A complete record of the analytical results is presented in **Appendix E**. As shown on **Table 3-1**, there were no exceedances of NYSDEC's Class GA Groundwater Standards in the samples collected following the installation of the Phase I temporary wells, TW12-1 through TW12-9. The only detections in the Phase I wells were for trichloroethene (TCE) and acetone. TCE was detected in wells TW12-1 and TW12-3 at concentrations of 4.1 µg/L (J) and 4.2 µg/L (J), respectively. Both of these concentrations are below the TCE standard of 5 µg/L. Acetone was detected at a concentration of 47 µg/L (J) at TW12-9 and a concentration of 51 µg/L at TW12-4. There is no standard for acetone, but these two detections were near the NYSDEC GA guidance value of 50 µg/L. Acetone is considered a relatively common lab contaminant; and although it was not detected in the laboratory trip blank, it is unlikely that these detections are indicative of an acetone release to groundwater.

Because there was no significant detection of TCE in the first round results, the Phase II temporary wells were generally positioned between the building and the Phase I well locations. The five Phase II wells installed, TW12-22 through TW12-26, were positioned to better define the area adjacent to MW12-37, the only well containing a TCE exceedance in the RI samples, and the area adjacent to the TCE detection at TW12-1. Two permanent wells, MW12-37 and MW12-40, were also sampled with the Phase II temporary wells. The only detections observed during the Phase II groundwater investigation were for TCE and cis-1,2-dichloroethene (cis-1,2,-DCE) in MW12-37. Both detections also exceeded the Class GA Standards, with TCE detected at a concentration of 2,400 µg/L and cis-1,2-DCE at a concentration of 41 µg/L. The TCE observed during the RI was still present.

3.2 SURFACE WATER AND DITCH SOIL SAMPLE RESULTS

Seven surface water and ditch soil locations were investigated in the drainage ditch near the two buildings. The surface water and ditch soil samples were co-located and shared location IDs with the exception of the SW or SD prefix. As with the groundwater samples collected, the surface water and ditch soil samples were analyzed for VOCs. The surface water results are shown on **Figure 3-1**, and the ditch soil detections are summarized in **Table 3-2** and also shown on **Figure 3-1**. A complete record of surface water and ditch soil analytical results is presented in **Appendix E**. There were no detections of VOCs in the surface water samples; and two analytes, toluene and acetone, were detected in the ditch soil samples. Toluene was detected in samples SD12-68, -69, -71, and -72; and acetone was detected in samples SD12-68 and -70. The toluene detections were all well below the NYSDEC TAGM 4046 Standard of 1,500 µg/Kg. The highest toluene concentration observed in the

samples was 7.4 µg/Kg. The two acetone detections were 110 µg/Kg at SD12-70 and 72 µg/Kg at SD12-68; both are below the TAGM limit of 200 µg/Kg.

3.3 SOIL RESULTS

3.3.1 TCE Source Investigation

3.3.1.1 Phase I Test Pitting- November 3, 2004

Three samples and a duplicate were collected from the north, east, and south sidewalls of the initial test pit excavated north of Building 813. All four samples were analyzed for VOCs, and all four contained concentrations of TCE that exceeded NYSDEC TAGM 4046; the TCE results are shown on **Figure 3-2.** The highest TCE concentration was 65,000 µg/Kg in the duplicate sample for location TP813-3T, which was on the east side of the test pit. The concentration in the initial sample was comparable to this at 60,000 µg/Kg. The TP813-1T (south sidewall) and TP813-2T (north sidewall) concentrations were not as high as those on the east side, with concentrations of 11,000 µg/Kg and 7,000 µg/Kg, respectively. However, both of these concentrations are at least 10 times the TAGM value of 700 µg/Kg. A number of other VOCs were also detected in the four test pit samples, but none of the others exceeded TAGMs and the concentrations detected were approximately 1,000 times lower than those for TCE.

3.3.1.2 Phase II - November 10 and 11, 2004

Following the detection of elevated levels of TCE in the sidewalls of the test pit, the pit was expanded to determine if the TCE source material was located outside of the area investigated on November 3. Six more sidewall samples were collected following the enlargement of the test pit to determine the potential location of a source. TP813-4F was collected from the area immediately beneath rusted metal debris that had been discovered and removed during the exploration activities, and TP813-5F through TP813-9T were collected from the sidewalls of the pit.

No TCE was detected in TP813-4F, the sample collected under the rusted debris, suggesting that the debris was not associated with a source of TCE in the subsurface. All of the samples collected from the sidewalls contained detectable concentrations of TCE, with concentrations above TAGMs in three of the five samples, TP813-7T, -8T, and -9T. The three TCE exceedances were between 1,000 and 1,400 µg/Kg. TP813-7T and TP813-8T had been collected near visually stained soils. The two detections not exceeding the standard were 160 µg/Kg (J) at TP813-5F and 590 µg/Kg at TP813-6F. The two locations below TAGMs were immediately adjacent to the drainage ditch on the northern and eastern sides of the pit. These data, in conjunction with the surface water and ditch soil data that indicated no TCE was present, suggested that source material would not be present further out in these directions (i.e. towards the ditch). No further investigation was planned to the east or north of

the November 11 pit boundaries. The exceedances on the west and south sides of the test pit indicated that a source could be present in either of those directions, and a further phase of exploration was planned. The only other analytes detected in the samples were toluene at a concentration of 100 µg/Kg in sample TP813-6F and cis-1,2,-DCE at a concentration of 2,800 µg/Kg in sample TP813-7T.

3.3.1.3 Phase III - December 20 - 22, 2004

The final phase of source investigation, Phase III, extended the walls of the pit further to the south, southeast, and west based on sample results from TP813-7T, TP813-8T, and TP813-9T. Four more sidewall samples and another duplicate were collected following the completion of this phase of investigation. VOC analysis of these samples indicated that two of the four contained TCE concentrations exceeding the TAGM values. The higher of the two exceedances, 4,800 µg/Kg (J), was detected in sample TP813-10F. This sample was collected immediately beneath the northern footer of Building 813, underneath the outlet of an abandoned sewer pipe exiting the building. This pipe had extended farther to the north, but all of the pipe past the northern wall of the building was removed during test pitting activities. The other TCE exceedance was detected in TP813-12F at a concentration of 1,000 µg/Kg (J). This sample was collected approximately 10 feet west of TP813-10F. TP813-11F, collected underneath the eastern footer of the building near the location of stained soils that had been removed, contained 11 µg/Kg of TCE, a concentration well below the TAGM. The analytical results for TP813-13F and the duplicate collected at the same location on the western side of the test pit showed a concentration of 1.3 µg/Kg (J) and a non-detect with an SQL of 4.5 µg/Kg, respectively. The concentration is well below the TAGM.

Of the non-TCE compounds, acetone was detected at the highest concentration, 32 µg/Kg. None of the non-TCE VOCs exceeded any of the established TAGMs. A list of the VOCs detected in the excavation is summarized in **Table 3-3**, and a complete record of the test pit results is contained in **Appendix E**.

The limit of the TCE source (i.e. where the TCE in soil was less than the NYSDEC TAGM) had been identified in all directions except at the northern boundary of Building 813. Due to the impracticality of excavating further beneath the footer of the building, no additional investigation was pursued. Test pit activities ceased after discussions between the Army, NYSDEC, and USEPA at the BRAC Closure Team (BCT) meeting on January 18, 2005.

3.3.2 Stockpiles

A total of eight soil samples and a duplicate were collected from stockpiled soils during the SRI. A list of the VOCs detected in the stockpiles is summarized in **Table 3-4**, and a complete record of the stockpile sample results is contained in **Appendix E**. **Figure 3-3** shows the locations of the stockpile

samples and the TCE concentrations of each. Stockpiled soil with TCE concentrations below the TAGM value was backfilled following the completion of the test pit investigation. The two stockpile samples not shown on the figure, SP813-1 and SP813-2, were collected on November 3 and November 10, respectively, from the Phase I soil when it was located immediately adjacent to the test pit. The Phase I soil was moved to the location shown on the figure and re-sampled on December 9. The Phase II stockpile samples were also collected on December 9, and the Phase II stockpile samples were collected on December 21.

3.3.3 EM-5

A total of 10 locations were sampled during the SRI project and analyzed for Ra-226 and its daughter products using Modified DOE EML HASL 300 Method. Ra-226 is the parent of Pb-210, which was the only radiological contaminant of concern at EM-5 based on analysis performed during the original RI. The RI analysis used a Wilcoxon Rank Sum Test (WRS) to compare Depot-wide background radiological concentrations with the concentrations detected at EM-5. Prior to the background to site comparison, Derived Concentration Guideline Levels (DCGLs) were developed for each isotope and added to each background data point. The DCGLs were developed according to procedures outlined in the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM-EPA, 1997) using RESRAD version 5.82 and the NYSDEC TAGM-4003 total effective dose equivalent of 10 millirems per year. Using the WRS, Pb-210 was the only isotope detected that exceeded the background value adjusted using the DCGL calculated for a worker at EM-5. The Pb-210 DCGL for a worker at EM-5 was calculated to be 33.05 pico-curies/gram (pCi/g).

Pb-210 was not detected in any of the samples analyzed during the SRI, and the uncertainties and detection limits associated with the SRI analyses were much lower than those reported for the RI analyses. Therefore, there is no longer any reason to believe that Pb-210 concentrations exceed background values at EM-5. **Table 3-5** shows a comparison between the SRI Pb-210 results and the RI Pb-210 results for the same locations. A complete record of the radiological results is presented in **Appendix E**.

4 CONCLUSIONS AND RECOMMENDATIONS

The objective of the Supplemental Remedial Investigation (SRI) was two fold: 1) to investigate the VOC contamination detected in the groundwater in the vicinity of Building 813 and 814 during the Remedial Investigation conducted in 2000; and 2) re-sample and re-analyze the elevated detections of Pb-210 in the soil at the EM-5 area. This section provides the conclusions and recommendations made with respect to each area.

4.1 CONCLUSIONS

4.1.1 VOC Contamination at Building 813/814

4.1.1.1 Groundwater

The first step in the SRI field program was the installation of 13 temporary monitoring wells. Groundwater from these wells and two existing permanent wells was collected and analyzed for VOCs to better define the location of a TCE plume identified during the original RI. Only one exceedance of the NYSDEC Class GA Standard for TCE was observed in the groundwater samples, and this exceedance was in the same location as the exceedance observed during the RI. No other VOCs were detected at concentrations above their respective Class GA Standards.

Based on the results of the groundwater investigation, a test pit investigation was performed in the area immediately surrounding MW12-37, the well containing the TCE contaminated groundwater. The specific conclusions drawn from the test pit investigation will be discussed in **Section 4.3**, but the results suggest that the source soils in the area were located and partially removed during the investigation. As the TCE detected during the original RI did not migrate to any of the temporary wells installed during the SRI, it does not appear that any TCE remaining beneath the building will migrate significantly in the future either.

4.1.1.2 Surface Water/Ditch Soil

No exceedances of the NYSDEC Class C surface water standards or TAGM 4046 soil standards were detected in either the surface water or the ditch soil samples collected in the drainage ditch adjacent to Building 813/814. Toluene and acetone were detected in the ditch soil samples, but the detections were all well below the TAGM values. It is not believed that there have been any significant releases of VOCs to the ditch, and the identification and removal of the TCE impacted soil at MW12-37 appreciably limits the likelihood that any VOCs will migrate to the ditch in the future.

4.1.1.3 Soil

A test pit was excavated in an attempt to determine the source of the TCE detected in the groundwater adjacent to the Building 813/814. Approximately 230 cubic yards of soil were removed from the area surrounding MW12-37, the only well sampled that showed a TCE concentration exceeding groundwater standards. The test pit operation took place in three stages, with sidewall samples collected following the completion of each expansion of the pit. The samples were analyzed for VOCs to determine if the limits of the source had been reached or if it existed outside of the limits of the investigation. Exploration ceased on each side of the pit when the sample collected on that side exhibited TCE concentrations below the NYSDEC TAGM value of 700 ug/Kg. The only exception was on the south side of the test pit, where further digging was prevented by the building. Two locations in this area still showed TCE concentrations that exceeded the TAGM, TP813-10F at 4,800 ug/Kg and TP813-12F at 1,000 ug/Kg (see **Fig. 3-2**).

During the test pitting, TCE concentrations of up to 65,000 ug/Kg (TP813-3T duplicate) were removed immediately adjacent to the former location of MW12-37. A potential source of the TCE is an abandoned sewer pipe, most of which was removed during the test pit activities. A leak in the pipe could have resulted in the discharge of TCE to the area near MW12-37. TP813-12F, the sample showing the highest remaining TCE concentration was collected immediately beneath this pipe where it extended northward from beneath the footer of the building. While it is probable that the TCE impacted soils extend beneath Building 813, it is believed that the soil containing the highest TCE concentrations had been located and subsequently removed during the investigation. As the Army did not want to risk the structural integrity of the building, excavation ceased at the footer on both the northern and eastern sides of the building. Digging was halted on the southeastern side of the test pit due to the proximity to TW12-24, which did not contain any VOCs during the groundwater investigation. The open excavation was backfilled using approximately 100 cubic yards of stockpiled material that had been sampled, analyzed, and found to be below TAGMs for all VOC constituents.

4.1.2 EM-5 Soils

The Pb-210 results from the EM-5 area soil sample analyses performed during the original RI were elevated compared to background values for Pb-210. However, there was a large uncertainty associated with the lab results; and there were no known Army activities at this area that suggest the area was impacted. In order to address concerns that Pb-210 levels may be elevated in this area, the ten locations from the original RI with the highest Pb-210 concentrations or highest uncertainties were re-sampled during the SRI. The SRI samples were analyzed for Ra-226 and its daughter products, including Pb-210, using Modified DOE EML HASL-300 Method. The results of this analysis indicated that there were no detections of Pb-210 in the SRI samples. The uncertainties associated with each of the samples were also a great deal lower than those from the original data.

4.2 RECOMMENDATIONS

The following is recommended at Building 813/814 and EM-5 based on the conclusions above. The recommendations for Building 813/814 were discussed with NYSDEC and USEPA at a BCT meeting held on January 18, 2005.

- No further action is recommended at Building 813/814. A deed notice will be placed on Building 813/814, stating that an investigation of indoor air quality must be performed prior to use of the building.

- The temporary wells installed during the project will be removed/abandoned according to accepted monitoring well decommissioning procedures.

- The stockpiles remaining on-site will be re-sampled in the spring, most likely in April or May, and analyzed for VOCs. If TCE concentrations are below the TAGM value, the stockpiled soil will be backfilled; otherwise, the soil will be disposed of off site.

- No further action will be performed at EM-5.

- A Draft Feasibility Study (FS) was submitted for SEAD-12 in May, 2002 (Parsons). The Army will proceed with the submittal of the Draft Final FS. Based on the results of the SRI, this FS will recommend no further action at Building 813/814 and EM-5; a deed restriction will be recommended at Building 813/814; and the remainder of the Draft Final FS will focus on the remedial action at the Disposal Pit areas within SEAD-12.

Tables

Table 1-1
RI Soil Gas Survey Results
SEAD-12 Supplemental RI Report
Seneca Army Depot Activity
Romulus, New York

LOC_ID	DICHLOROETHENE (ppbv)	BENZENE (ppbv)	TRICHLOROETHENE (ppbv)	TOLUENE (ppbv)	P-XYLENES (ppbv)	TOTAL VOC (ppmv)
SG12-117	0	0	6	0	0	6
SG12-118	0	0	0	0	0	3
SG12-119	0	132	461	11	0	5
SG12-120	0	0	0	197	0	6
SG12-121	452	3	1708	21	0	7
SG12-122	0	0	0	250	14	9
SG12-123	0	116	0	170	0	4
SG12-124	0	0	0	0	0	5
SG12-125	0	0	0	0	0	3
SG12-126	0	146	0	250	141	6
SG12-127	0	0	0	396	82	4
SG12-128	0	0	0	0	0	4
SG12-129	0	0	1	0	0	2
SG12-130	0	0	6	12	0	10
SG12-131	0	0	0	174	0	5
SG12-132	0	0	55	123	0	5
SG12-133	0	4	0	0	0	2
SG12-134	0	0	89	190	0	10
SG12-135	0	0	97	0	0	3
SG12-136	0	0	54	281	0	4
SG12-137	0	0	146	217	351	9
SG12-138	0	0	138	36	0	2
SG12-139	0	0	414	125	0	5
SG12-140	0	0	206	275	0	4
SG12-141	0	0	191	1	0	4
SG12-142	0	43	0	147	10	4
SG12-143	0	140	0	217	0	6
SG12-144	4	0	39	94	0	4
SG12-145	0	118	0	48	0	5
SG12-146	0	0	0	0	0	4
SG12-147	119	82	2407	22	0	7
SG12-148	0	74	110	171	0	6
SG12-149	0	0	0	0	0	3
SG12-150	0	123	0	212	136	6
SG12-151	0	0	958	32	0	4
SG12-152	0	0	98	0	0	3
SG12-153	0	0	31	0	0	2
SG12-154	0	0	633	1	0	3
SG12-155	0	0	224	144	0	3
SG12-156	0	0	0	0	0	2
SG12-157	0	0	0	10	0	4
SG12-158	0	69	148	2	0	2
SG12-159	0	0	0	0	0	3
SG12-160	0	0	0	149	0	9
SG12-161	0	0	193	2	0	6
SG12-162	0	0	10	206	0	9
SG12-163	0	94	0	12	0	4
SG12-164	0	0	0	0	0	7
SG12-165	0	0	245	180	0	4
SG12-166	0	0	0	0	0	13
SG12-167	0	4	0	13	0	4
SG12-168	0	0	0	93	0	7
SG12-169	0	0	0	320	0	28
SG12-170	0	0	0	0	0	1

Table 2-1
Well Placement Rationale - Existing and Proposed Monitoring Wells
SEAD-12 Supplemental RI Report
Seneca Army Depot Activity, Romulus, NY

Monitoring Well Loc ID	Status	Rationale
Existing Permanent or 1st Phase Temporary Wells		
MW12-37	existing	1,708 ppbv TCE concentration in soil gas sample SG12-121; TCE concentration of 1,600 ug/L during two sampling events in the Remedial Investigation
MW12-38	existing	8.5 ppmv total VOC concentration in soil gas sample SG12-122
MW12-39	existing	6.0 ppmv total VOC concentration in soil gas sample SG12-148
MW12-40	existing	Placed 300' downgradient of Bldg 813 and elevated TCE concentration at SG12-121
TW12-1	proposed	633 ppbv TCE concentration in soil gas sample SG12-154
TW12-2	proposed	5.5 ppmv total VOC and 471 ppbv BTEX concentrations in soil gas sample SG12-150
TW12-3	proposed	2,407 ppbv concentration of TCE in soil gas sample SG12-147. Well will be installed if location is accessible.
TW12-4	proposed	10.0 ppmv total VOC concentration in soil gas samples SG12-130 and SG12-134
TW12-5	proposed	191 ppbv TCE concentration in soil gas sample SG12-141
TW12-6	proposed	Suspected downgradient direction from Bldg 813 and elevated TCE concentration in MW12-40
TW12-7	proposed	Suspected downgradient direction from Bldg 813 and elevated TCE concentration in MW12-40
TW12-8	proposed	Suspected downgradient direction from Bldg 813 and elevated TCE concentration in MW12-40
TW12-9	proposed	Suspected downgradient direction from Bldg 813 and elevated TCE concentration in MW12-40
2nd Phase Temporary Wells - 6 of 12 to be Installed		
TW12-10	proposed	Installation based on detections at TW12-3
TW12-11	proposed	Installation based on detections at TW12-3
TW12-12	proposed	Upgradient background location, which will be permanent.
TW12-13	proposed	Installation based on detections at TW12-6 or TW12-9
TW12-14	proposed	Installation based on detections at TW12-7
TW12-15	proposed	Installation based on detections at TW12-7 or TW12-8
TW12-16	proposed	Installation based on detections at TW12-8
TW12-17	proposed	Installation based on detections at TW12-8 or TW12-9
TW12-18	proposed	Installation based on detections at TW12-9
TW12-19	proposed	Installation based on detections at TW12-5
TW12-20	proposed	Installation based on detections at TW12-3
TW12-21	proposed	Installation based on detections at TW12-1

Table 3-1
Building 813/814 Groundwater VOC Detections
SEAD-12 SRI
Seneca Army Depot Activity, Romulus, NY

LOCATION ID									TW12-1		TW12-1 (D)		TW12-3	
MATRIX									GW		GW		GW	
SAMPLE ID									122275		122284		122277	
TOP OF SAMPLE									5.20		5.20		5.00	
BOTTOM OF SAMPLE									10.20		10.20		10.00	
SAMPLE DATE									5/26/2004		5/26/2004		6/11/2004	
QC CODE									SA		DU		SA	
STUDY ID									SRI		SRI		SRI	
Parameter	Unit	Maximum	Frequency of Detection	Criteria Type	Action Level	Number of Exceedances	Number of Detections	Number of Analyses	Value	(Q)	Value	(Q)	Value	(Q)
Acetone	µg/L	51	12%			0	2	17	50	UJ	50	U	50	UJ
cis-1,2-Dichloroethene	µg/L	41	6%	NYSDEC CLASS GA	5	1	1	17	10	UJ	10	U	10	U
Trichloroethene	µg/L	2400	24%	NYSDEC CLASS GA	5	1	4	17	4.0	J	4.1	J	4.2	J

LOCATION ID									TW12-22		TW12-23		TW12-23 (D)	
MATRIX									GW		GW		GW	
SAMPLE ID									122285		122286		122297	
TOP OF SAMPLE									13.50		13.30		13.30	
BOTTOM OF SAMPLE									23.50		23.30		23.30	
SAMPLE DATE									6/11/2004		6/10/2004		6/10/2004	
QC CODE									SA		SA		DU	
STUDY ID									SRI		SRI		SRI	
Parameter	Unit	Maximum	Frequency of Detection	Criteria Type	Action Level	Number of Exceedances	Number of Detections	Number of Analyses	Value	(Q)	Value	(Q)	Value	(Q)
Acetone	µg/L	51	12%			0	2	17	50	U	50	U	50	U
cis-1,2-Dichloroethene	µg/L	41	6%	NYSDEC CLASS GA	5	1	1	17	10	U	10	U	10	U
Trichloroethene	µg/L	2400	24%	NYSDEC CLASS GA	5	1	4	17	10	U	10	U	10	U

Table 3-1
Building 813/814 Groundwater VOC Detections
SEAD-12 SRI
Seneca Army Depot Activity, Romulus, NY

LOCATION ID									TW12-4		TW12-5		TW12-6	
MATRIX									GW		GW		GW	
SAMPLE ID									122278		122279		122280	
TOP OF SAMPLE									3.75		8.70		5.00	
BOTTOM OF SAMPLE									8.75		13.70		10.00	
SAMPLE DATE									5/27/2004		5/27/2004		5/27/2004	
QC CODE									SA		SA		SA	
STUDY ID									SRI		SRI		SRI	
Parameter	Unit	Maximum	Frequency of Detection	Criteria Type	Action Level	Number of Exceedances	Number of Detections	Number of Analyses	Value	(Q)	Value	(Q)	Value	(Q)
Acetone	µg/L	51	12%			0	2	17	51		50	U	50	U
cis-1,2-Dichloroethene	µg/L	41	6%	NYSDEC CLASS GA	5	1	1	17	10	U	10	U	10	U
Trichloroethene	µg/L	2400	24%	NYSDEC CLASS GA	5	1	4	17	10	U	10	U	10	U

LOCATION ID									TW12-24		TW12-25		TW12-26	
MATRIX									GW		GW		GW	
SAMPLE ID									122287		122288		122289	
TOP OF SAMPLE									8.10		7.30		5.90	
BOTTOM OF SAMPLE									13.10		12.30		8.90	
SAMPLE DATE									6/11/2004		6/11/2004		6/11/2004	
QC CODE									SA		SA		SA	
STUDY ID									SRI		SRI		SRI	
Parameter	Unit	Maximum	Frequency of Detection	Criteria Type	Action Level	Number of Exceedances	Number of Detections	Number of Analyses	Value	(Q)	Value	(Q)	Value	(Q)
Acetone	µg/L	51	12%			0	2	17	50	U	50	U	50	U
cis-1,2-Dichloroethene	µg/L	41	6%	NYSDEC CLASS GA	5	1	1	17	10	U	10	U	10	U
Trichloroethene	µg/L	2400	24%	NYSDEC CLASS GA	5	1	4	17	10	U	10	U	10	U

Table 3-1
Building 813/814 Groundwater VOC Detections
SEAD-12 SRI
Seneca Army Depot Activity, Romulus, NY

LOCATION ID									TW12-7		TW12-8		TW12-9	
MATRIX									GW		GW		GW	
SAMPLE ID									122281		122282		122283	
TOP OF SAMPLE									7.10		5.00		4.90	
BOTTOM OF SAMPLE									12.10		10.00		9.90	
SAMPLE DATE									5/27/2004		5/27/2004		5/27/2004	
QC CODE									SA		SA		SA	
STUDY ID									SRI		SRI		SRI	
Parameter	Unit	Maximum	Frequency of Detection	Criteria Type	Action Level	Number of Exceedances	Number of Detections	Number of Analyses	Value	(Q)	Value	(Q)	Value	(Q)
Acetone	µg/L	51	12%			0	2	17	50	U	50	U	47	J
cis-1,2-Dichloroethene	µg/L	41	6%	NYSDEC CLASS GA	5	1	1	17	10	U	10	U	10	UJ
Trichloroethene	µg/L	2400	24%	NYSDEC CLASS GA	5	1	4	17	10	U	10	U	10	UJ

LOCATION ID									MW12-37		MW12-40	
MATRIX									GW		GW	
SAMPLE ID									122291		122290	
TOP OF SAMPLE									7.53		8.30	
BOTTOM OF SAMPLE									12.43		13.30	
SAMPLE DATE									6/11/2004		6/11/2004	
QC CODE									SA		SA	
STUDY ID									SRI		SRI	
Parameter	Unit	Maximum	Frequency of Detection	Criteria Type	Action Level	Number of Exceedances	Number of Detections	Number of Analyses	Value	(Q)	Value	(Q)
Acetone	µg/L	51	12%			0	2	17	50	U	50	U
cis-1,2-Dichloroethene	µg/L	41	6%	NYSDEC CLASS GA	5	1	1	17	**41**		10	U
Trichloroethene	µg/L	2400	24%	NYSDEC CLASS GA	5	1	4	17	**2400**		10	U

Table 3-2
Building 813/814 Ditch Soil VOC Detections
SEAD-12 SRI
Seneca Army Depot Activity, Romulus, NY

LOCATION ID									SD12-68		SD12-69		SD12-70		SD12-71	
MATRIX									DITCH SOIL		DITCH SOIL		DITCH SOIL		DITCH SOIL	
SAMPLE ID									124250		124251		124252		124253	
TOP OF SAMPLE									0.00		0.00		0.00		0.00	
BOTTOM OF SAMPLE									0.20		0.20		0.20		0.20	
SAMPLE DATE									6/22/2004		6/22/2004		6/22/2004		6/22/2004	
QC CODE									SA		SA		SA		SA	
STUDY ID									SRI		SRI		SRI		SRI	
Parameter	Units	Maximum	Frequency of Frequency	Criteria Type	Action Action Level	Number of Exceed	Number of Detect	Number of Analyses	Value	(Q)	Value	(Q)	Value	(Q)	Value	(Q)
Acetone	µg/Kg	110	25%	TAGM 4046	200	0	2	8	72	J	40	U	110	J	69	UJ
Toluene	µg/Kg	7.4	63%	TAGM 4046	1500	0	5	8	2.0	J	2.3	J	12	UJ	7.4	J
Total Organic Carbon	mg/Kg	31000	100%			0	8	8	31000	J	30000	J	11000	J	27000	J

LOCATION ID									SD12-72		SD12-72 (D)		SD12-73		SD12-74	
MATRIX									DITCH SOIL		DITCH SOIL		DITCH SOIL		DITCH SOIL	
SAMPLE ID									124254		124257		124255		124256	
TOP OF SAMPLE									0.00		0.00		0.00		0.00	
BOTTOM OF SAMPLE									0.20		0.20		0.20		0.20	
SAMPLE DATE									6/22/2004		6/22/2004		6/22/2004		6/22/2004	
QC CODE									SA		DU		SA		SA	
STUDY ID									SRI		SRI		SRI		SRI	
Parameter	Units	Maximum	Frequency of Frequency	Criteria Type	Action Action Level	Number of Exceed	Number of Detect	Number of Analyses	Value	(Q)	Value	(Q)	Value	(Q)	Value	(Q)
Acetone	µg/Kg	110	25%	TAGM 4046	200	0	2	8	48	U	61	UJ	60	UJ	62	UJ
Toluene	µg/Kg	7.4	63%	TAGM 4046	1500	0	5	8	7.2	J	5.7	J	12	UJ	12	UJ
Total Organic Carbon	mg/Kg	31000	100%			0	8	8	18000	J	22000	J	29000	J	22000	J

Table 3-3
Building 813/814 Test Pit VOC Results
SEAD-12 SRI
Seneca Army Depot Activity, Romulus, NY

LOCATION ID									TP813-1T		TP813-2T		TP813-3T		TP813-3T (D)		TP813-4F		TP813-5F	
MATRIX									SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
SAMPLE ID									123682		123683		123684		123686		123688		123689	
TOP OF SAMPLE									7		7		6		6		4		3	
BOTTOM OF SAMPLE									7.5		7.5		6.5		6.5		5		4	
SAMPLE DATE									11/3/2004		11/3/2004		11/3/2004		11/3/2004		11/10/2004		11/10/2004	
QC CODE									SA		SA		SA		DU		SA		SA	
STUDY ID									SRI		SRI		SRI		SRI		SRI		SRI	
Parameter	Unit	Maximum	Frequency of Detection	Criteria Type	Action Level	Number of Exceedances	Number of Detections	Number of Analyses	Value	(Q)	Value	(Q)	Value	(Q)	Value	(Q)	Value	(Q)	Value	(Q)
1,1-Dichloroethene	µg/Kg	3.2	13%	TAGM 4046	400	0	2	15	0.14	UJ	0.18	UJ	3.2	J	1.3	J	510	U	490	U
Acetone	µg/Kg	32	13%	TAGM 4046	200	0	2	15	4.9	U	6.1	UJ	450	U	5.1	U	2000	U	2000	U
Carbon Disulfide	µg/Kg	6.6	7%	TAGM 4046	2700	0	1	15	0.07	UJ	6.6	J	54	U	0.07	UJ	1000	U	980	U
Chloroform	µg/Kg	1.6	13%	TAGM 4046	300	0	2	15	0.16	UJ	0.19	UJ	1.6	J	0.16	U	510	U	490	U
cis-1,2-Dichloroethene	µg/Kg	2800	47%			0	7	15	13	J	19	J	21		9.1		510	U	490	U
Methyl ethyl ketone	µg/Kg	4.5	7%	TAGM 4046	300	0	1	15	1.5	UJ	1.9	UJ	390	U	1.5	U	1000	U	980	U
Tetrachloroethene	µg/Kg	3.2	7%	TAGM 4046	1400	0	1	15	0.42	UJ	0.52	UJ	45	UJ	0.43	U	510	U	490	U
Toluene	µg/Kg	100	7%	TAGM 4046	1500	0	1	15	0.17	UJ	0.21	UJ	53	U	0.18	U	510	U	490	U
Trichoroethene	µg/Kg	65000	87%	TAGM 4046	700	9	13	15	**11000**		**7000**		**60000**		**65000**		540	U	160	J
Vinyl Chloride	µg/Kg	1.5	7%	TAGM 4046	200	0	1	15	0.15	UJ	0.19	UJ	37	U	0.16	U	510	U	490	U
Percent Solids	%	89.1	73%			0	11	15									85.5		84.3	
Total Organic Carbon	mg/Kg	5420	13%			0	2	15											4120	

LOCATION ID									TP813-9T		TP813-10F		TP813-11F		TP813-12F		TP813-13F		TP813-13F (D)	
MATRIX									SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
SAMPLE ID									123694		123701		123702		123703		123704		123705	
TOP OF SAMPLE									5		4		3		2		3		3	
BOTTOM OF SAMPLE									6		5		4		3		4		4	
SAMPLE DATE									11/11/2004		12/21/2004		12/21/2004		12/21/2004		12/21/2004		12/21/2004	
QC CODE									SA		SA		SA		SA		SA		DU	
STUDY ID									SRI		SRI		SRI		SRI		SRI		SRI	
Parameter	Unit	Maximum	Frequency of Detection	Criteria Type	Action Level	Number of Exceedances	Number of Detections	Number of Analyses	Value	(Q)	Value	(Q)	Value	(Q)	Value	(Q)	Value	(Q)	Value	(Q)
1,1-Dichloroethene	µg/Kg	3.2	13%	TAGM 4046	400	0	2	15	430	U	4	U	1.6	U	4.9	U	4.3	U	4.5	U
Acetone	µg/Kg	32	13%	TAGM 4046	200	0	2	15	1700	U	16	U	4.3	J	32		17	U	18	U
Carbon Disulfide	µg/Kg	6.6	7%	TAGM 4046	2700	0	1	15	860	U	8.1	U	3.2	U	9.9	U	8.6	U	9.1	U
Chloroform	µg/Kg	1.6	13%	TAGM 4046	300	0	2	15	430	U	4	U	1.6	U	1.4	J	4.3	U	4.5	U
cis-1,2-Dichloroethene	µg/Kg	2800	47%	TAGM 4046		0	7	15	430	U	4	U	1.5	J	4.9	J	4.3	U	4.5	U
Methyl ethyl ketone	µg/Kg	4.5	7%	TAGM 4046	300	0	1	15	860	U	8.1	UJ	3.2	UJ	4.5	J	8.6	UJ	9.1	UJ
Tetrachloroethene	µg/Kg	3.2	7%	TAGM 4046	1400	0	1	15	430	U	3.2	J	1.6	U	4.9	U	4.3	U	4.5	U
Toluene	µg/Kg	100	7%	TAGM 4046	1500	0	1	15	430	U	4	U	1.6	U	4.9	U	4.3	U	4.5	U
Trichoroethene	µg/Kg	65000	87%	TAGM 4046	700	9	13	15	**1400**		**4800**	J	11		**1000**	J	1.3	J	4.5	U
Vinyl Chloride	µg/Kg	1.5	7%	TAGM 4046	200	0	1	15	430	U	4	U	1.5	J	4.9	U	4.3	U	4.5	U
Percent Solids	%	89.1	73%			0	11	15	84		81		80.7		77.3		89.1		87.9	
Total Organic Carbon	mg/Kg	5420	13%			0	2	15												

Table 3-3
Building 813/814 Test Pit VOC Results
SEAD-12 SRI
Seneca Army Depot Activity, Romulus, NY

LOCATION ID									TP813-6F		TP813-7T		TP813-8T	
MATRIX									SOIL		SOIL		SOIL	
SAMPLE ID									123691		123692		123693	
TOP OF SAMPLE									3		5		5	
BOTTOM OF SAMPLE									4		6		6	
SAMPLE DATE									11/10/2004		11/10/2004		11/11/2004	
QC CODE									SA		SA		SA	
STUDY ID									SRI		SRI		SRI	
Parameter	Unit	Maximum	Frequency of Detection	Criteria Type	Action Level	Number of Exceedances	Number of Detections	Number of Analyses	Value	(Q)	Value	(Q)	Value	(Q)
1,1-Dichloroethene	µg/Kg	3.2	13%	TAGM 4046	400	0	2	15	390	U	440	U	590	U
Acetone	µg/Kg	32	13%	TAGM 4046	200	0	2	15	1600	U	1800	U	2300	U
Carbon Disulfide	µg/Kg	6.6	7%	TAGM 4046	2700	0	1	15	780	U	880	U	1200	U
Chloroform	µg/Kg	1.6	13%	TAGM 4046	300	0	2	15	390	U	440	U	590	U
cis-1,2-Dichloroethene	µg/Kg	2800	47%			0	7	15	390	U	2800		590	U
Methyl ethyl ketone	µg/Kg	4.5	7%	TAGM 4046	300	0	1	15	780	U	880	U	1200	U
Tetrachloroethene	µg/Kg	3.2	7%	TAGM 4046	1400	0	1	15	390	U	440	U	590	U
Toluene	µg/Kg	100	7%	TAGM 4046	1500	0	1	15	100	J	440	U	590	U
Trichoroethene	µg/Kg	65000	87%	TAGM 4046	700	9	13	15	590		**1200**		**1100**	
Vinyl Chloride	µg/Kg	1.5	7%	TAGM 4046	200	0	1	15	390	U	440	U	590	U
Percent Solids	%	89.1	73%			0	11	15	84.4		86.7		85.2	
Total Organic Carbon	mg/Kg	5420	13%			0	2	15	5420					

LOCATION ID								
MATRIX								
SAMPLE ID								
TOP OF SAMPLE								
BOTTOM OF SAMPLE								
SAMPLE DATE								
QC CODE								
STUDY ID								
Parameter	Unit	Maximum	Frequency of Detection	Criteria Type	Action Level	Number of Exceedances	Number of Detections	Number of Analyses
1,1-Dichloroethene	µg/Kg	3.2	13%	TAGM 4046	400	0	2	15
Acetone	µg/Kg	32	13%	TAGM 4046	200	0	2	15
Carbon Disulfide	µg/Kg	6.6	7%	TAGM 4046	2700	0	1	15
Chloroform	µg/Kg	1.6	13%	TAGM 4046	300	0	2	15
cis-1,2-Dichloroethene	µg/Kg	2800	47%	TAGM 4046		0	7	15
Methyl ethyl ketone	µg/Kg	4.5	7%	TAGM 4046	300	0	1	15
Tetrachloroethene	µg/Kg	3.2	7%	TAGM 4046	1400	0	1	15
Toluene	µg/Kg	100	7%	TAGM 4046	1500	0	1	15
Trichoroethene	µg/Kg	65000	87%	TAGM 4046	700	9	13	15
Vinyl Chloride	µg/Kg	1.5	7%	TAGM 4046	200	0	1	15
Percent Solids	%	89.1	73%			0	11	15
Total Organic Carbon	mg/Kg	5420	13%			0	2	15

Table 3-4
Building 813/814 Stockpile VOC Results
SEAD-12 SRI
Seneca Army Depot Activity, Romulus, NY

LOCATION ID									SP813-1		SP813-2		SP813-3		SP813-3		SP813-4
MATRIX									SOIL		SOIL		SOIL		SOIL		SOIL
SAMPLE ID									123685		123687		123695		123696		123697
TOP OF SAMPLE									N/A		N/A		N/A		N/A		N/A
BOTTOM OF SAMPLE									N/A		N/A		N/A		N/A		N/A
SAMPLE DATE									11/3/2004		11/10/2004		12/9/2004		12/9/2004		12/9/2004
QC CODE									SA		SA		SA		SA		SA
STUDY ID									SRI		SRI		SRI		SRI		SRI
Parameter	Unit	Maximum	Frequency of Detection	Criteria Type	Action Level	Number of Exceedances	Number of Detections	Number of Analyses	Value	(Q)	Value	(Q)	Value	(Q)	Value	(Q)	Value
1,1-Dichloroethene	µg/Kg	0.65	11%	TAGM 4046	400	0	1	9	0.19	UJ	680	U	4.4	U	4.8	U	4.8
Acetone	µg/Kg	3.8	11%	TAGM 4046	200	0	1	9	6.4	UJ	2700	U	18	U	19	U	19
Carbon Disulfide	µg/Kg	1	11%	TAGM 4046	2700	0	1	9	0.09	UJ	1400	U	8.8	U	9.5	U	9.6
cis-1,2-Dichloroethene	µg/Kg	20	56%			0	5	9	3.3	J	680	U	2.4	J	2.6	J	1.7
Methylene Chloride	µg/Kg	950	11%	TAGM 4046	100	1	1	9	0.59	UJ	**950**		4.4	U	4.8	U	4.8
Tetrachloroethene	µg/Kg	1.7	11%	TAGM 4046	1400	0	1	9	0.55	UJ	680	U	4.4	U	4.8	U	4.8
trans-1,2-Dichloroethene	µg/Kg	1.3	11%	TAGM 4046	300	0	1	9	0.32	UJ	680	U	4.4	U	4.8	U	4.8
Trichloroethene	µg/Kg	28000	100%	TAGM 4046	700	6	9	9	**28000**		**1500**		**3100**		190		110
Vinyl Chloride	µg/Kg	7.4	11%	TAGM 4046	200	0	1	9	0.20	UJ	680	U	4.4	U	4.8	U	4.8

LOCATION ID									SP813-5		SP813-6		SP813-7		SP813-8	
MATRIX									SOIL		SOIL		SOIL		SOIL	
SAMPLE ID									123698		123699		123700		123706	
TOP OF SAMPLE									N/A		N/A		N/A		N/A	
BOTTOM OF SAMPLE									N/A		N/A		N/A		N/A	
SAMPLE DATE									12/9/2004		12/9/2004		12/9/2004		12/21/2004	
QC CODE									SA		SA		SA		SA	
STUDY ID									SRI		SRI		SRI		SRI	
Parameter	Unit	Maximum	Frequency of Detection	Criteria Type	Action Level	Number of Exceedances	Number of Detections	Number of Analyses	Value	(Q)	Value	(Q)	Value	(Q)	Value	(Q)
1,1-Dichloroethene	µg/Kg	0.65	11%	TAGM 4046	400	0	1	9	4.2	U	5.2	U	390	U	0.65	J
Acetone	µg/Kg	3.8	11%	TAGM 4046	200	0	1	9	17	U	21	U	1500	U	3.8	J
Carbon Disulfide	µg/Kg	1	11%	TAGM 4046	2700	0	1	9	8.4	U	10	U	770	U	1	J
cis-1,2-Dichloroethene	µg/Kg	20	56%	TAGM 4046		0	5	9	4.2	U	5.4	U	390	U	20	
Methylene Chloride	µg/Kg	950	11%	TAGM 4046	100	1	1	9	4.2	U	5.2	U	390	U	1.7	U
Tetrachloroethene	µg/Kg	1.7	11%	TAGM 4046	1400	0	1	9	4.2	U	5.2	U	390	U	1.7	J
trans-1,2-Dichloroethene	µg/Kg	1.3	11%	TAGM 4046	300	0	1	9	4.2	U	5.2	U	390	U	1.3	J
Trichloroethene	µg/Kg	28000	100%	TAGM 4046	700	6	9	9	9.3		**7400**	J	**1700**		**18000**	J
Vinyl Chloride	µg/Kg	7.4	11%	TAGM 4046	200	0	1	9	4.2	U	5.2	U	390	U	7.4	

Table 3-4
Building 813/814 Stockpile VOC Results
SEAD-12 SRI
Seneca Army Depot Activity, Romulus, NY

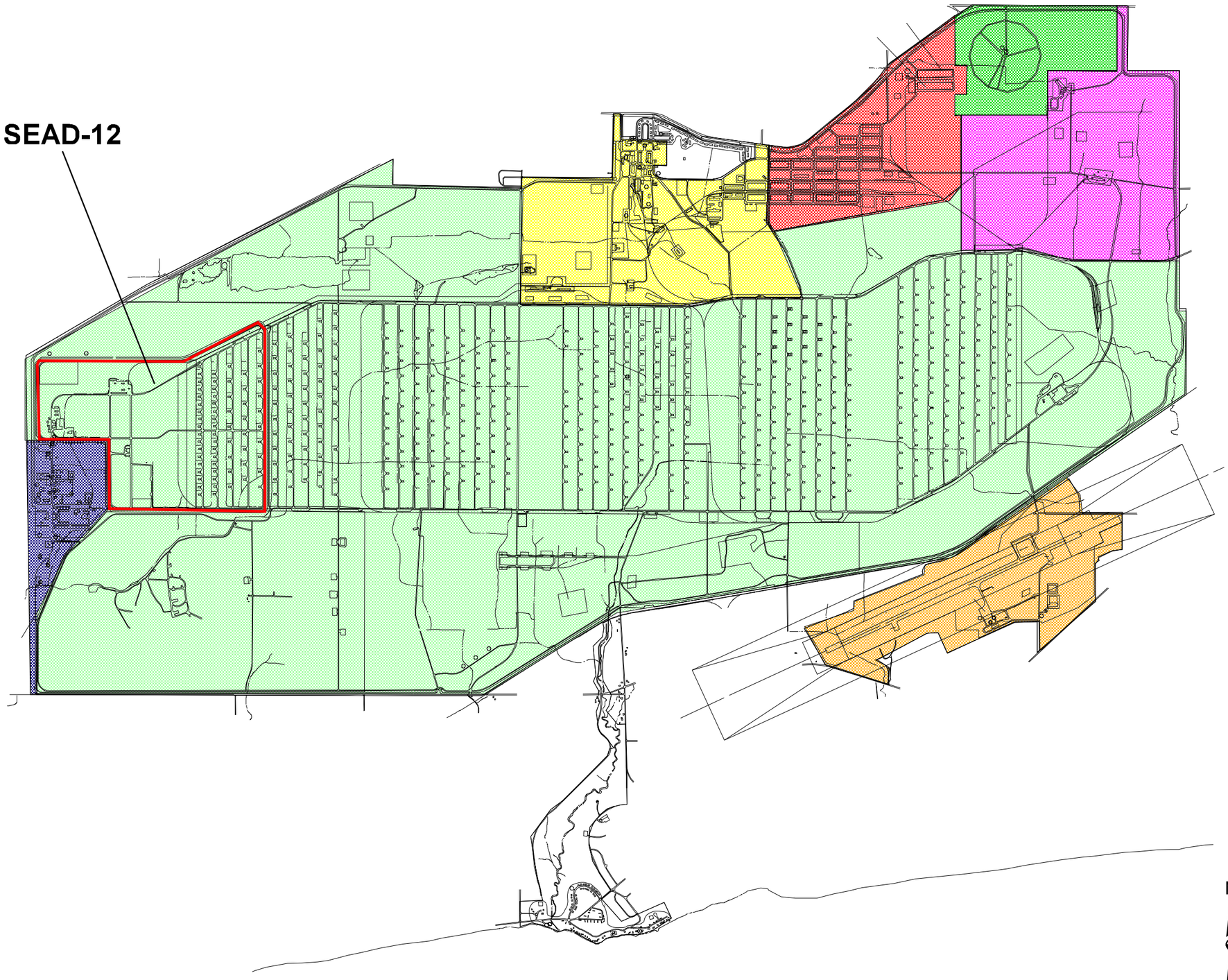
LOCATION ID									
MATRIX									
SAMPLE ID									
TOP OF SAMPLE									
BOTTOM OF SAMPLE									
SAMPLE DATE									
QC CODE									
STUDY ID									
Parameter	Unit	Maximum	Frequency of Detection	Criteria Type	Action Level	Number of Exceedances	Number of Detections	Number of Analyses	(Q)
1,1-Dichloroethene	µg/Kg	0.65	11%	TAGM 4046	400	0	1	9	U
Acetone	µg/Kg	3.8	11%	TAGM 4046	200	0	1	9	U
Carbon Disulfide	µg/Kg	1	11%	TAGM 4046	2700	0	1	9	U
cis-1,2-Dichloroethene	µg/Kg	20	56%			0	5	9	J
Methylene Chloride	µg/Kg	950	11%	TAGM 4046	100	1	1	9	U
Tetrachloroethene	µg/Kg	1.7	11%	TAGM 4046	1400	0	1	9	U
trans-1,2-Dichloroethene	µg/Kg	1.3	11%	TAGM 4046	300	0	1	9	U
Trichloroethene	µg/Kg	28000	100%	TAGM 4046	700	6	9	9	
Vinyl Chloride	µg/Kg	7.4	11%	TAGM 4046	200	0	1	9	U

LOCATION ID								
MATRIX								
SAMPLE ID								
TOP OF SAMPLE								
BOTTOM OF SAMPLE								
SAMPLE DATE								
QC CODE								
STUDY ID								
Parameter	Unit	Maximum	Frequency of Detection	Criteria Type	Action Level	Number of Exceedances	Number of Detections	Number of Analyses
1,1-Dichloroethene	µg/Kg	0.65	11%	TAGM 4046	400	0	1	9
Acetone	µg/Kg	3.8	11%	TAGM 4046	200	0	1	9
Carbon Disulfide	µg/Kg	1	11%	TAGM 4046	2700	0	1	9
cis-1,2-Dichloroethene	µg/Kg	20	56%	TAGM 4046		0	5	9
Methylene Chloride	µg/Kg	950	11%	TAGM 4046	100	1	1	9
Tetrachloroethene	µg/Kg	1.7	11%	TAGM 4046	1400	0	1	9
trans-1,2-Dichloroethene	µg/Kg	1.3	11%	TAGM 4046	300	0	1	9
Trichloroethene	µg/Kg	28000	100%	TAGM 4046	700	6	9	9
Vinyl Chloride	µg/Kg	7.4	11%	TAGM 4046	200	0	1	9

Table 3-5
Comparison of RI and SRI Pb-210 Results
for EM-5 Soil Samples

Loc_ID	SRI Result (pCi/g)	SRI Q	SRI Uncertainty	RI Result (pCi/g)	RI Q	RI Uncertainty
SS12-102	3.46	U	+/- 4.13	27.5	U	
SS12-107	1.56	U	+/- 4.49	55.9		+/- 35.2
SS12-107 (D)	3.11	U	+/- 2.97	55.9		+/- 35.2
SS12-108	1.88	U	+/- 6.59	50.6		+/- 32.8
SS12-109	1.60	U	+/- 2.71	23.1	UJ	
SS12-117	2.64	U	+/- 5.05	53.2		+/- 36.2
SS12-118	1.54	U	+/- 2.15	32.7	U	
SS12-119	2.92	U	+/- 3.92	50.4		+/- 32.2
SS12-120	0.827	U	+/- 7.86	24.2	U	
TP12-15C	1.64	U	+/- 2.25	79	J	+/- 48.6
TP12-15A	0.0728	U	+/- 2.07	50	J	+/- 49.4

Figures



LEGEND

- Airfield
- Conservation/Recreation
- Fed to Fed Transfer
- Industrial
- Institutional
- Prison
- Warehouse

Note: The Fed to Fed Transfer, Prison, and Institutional areas have already been transferred to new owners. The majority of the Airfield and the Conservation/Recreation area have also been transferred. However, pieces of these areas have been retained by the Army pending forthcoming environmental action. The Industrial and Warehouse areas are still owned by the Army.

0.25 0 0.25 0.5 0.75 Miles

PARSONS

SENECA ARMY DEPOT ACTIVITY

SEAD-12
SUPPLEMENTAL RI

FIGURE 1-1
FUTURE LAND USE

MARCH 2005

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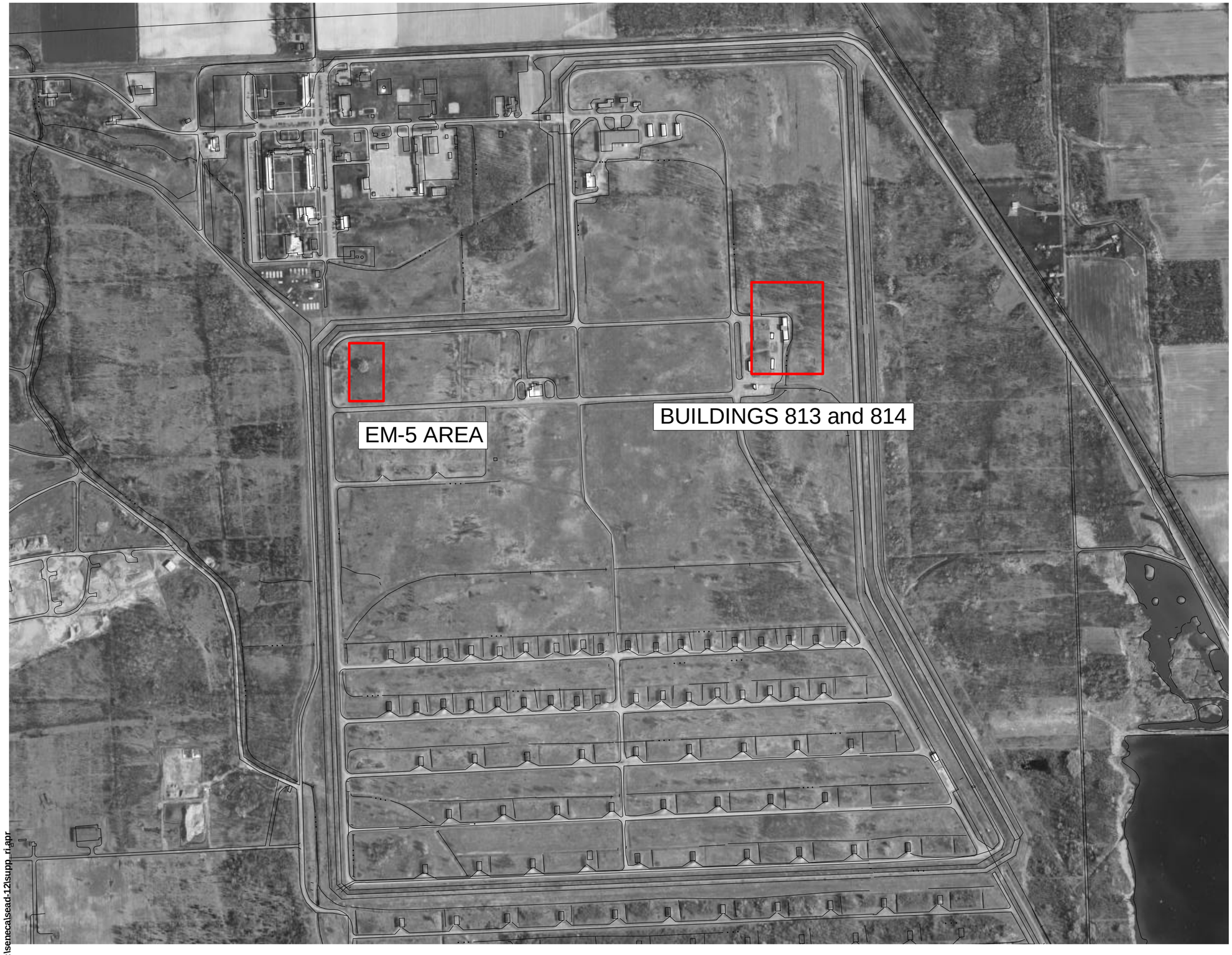

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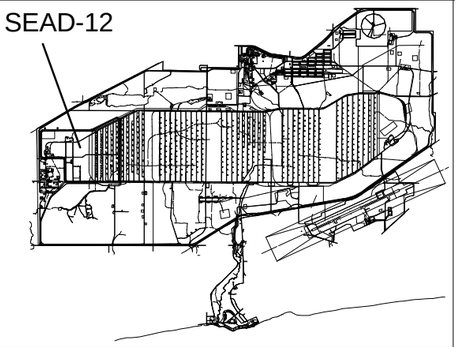
LEGEND

N

600 0 600 1200 Feet

SEAD-12



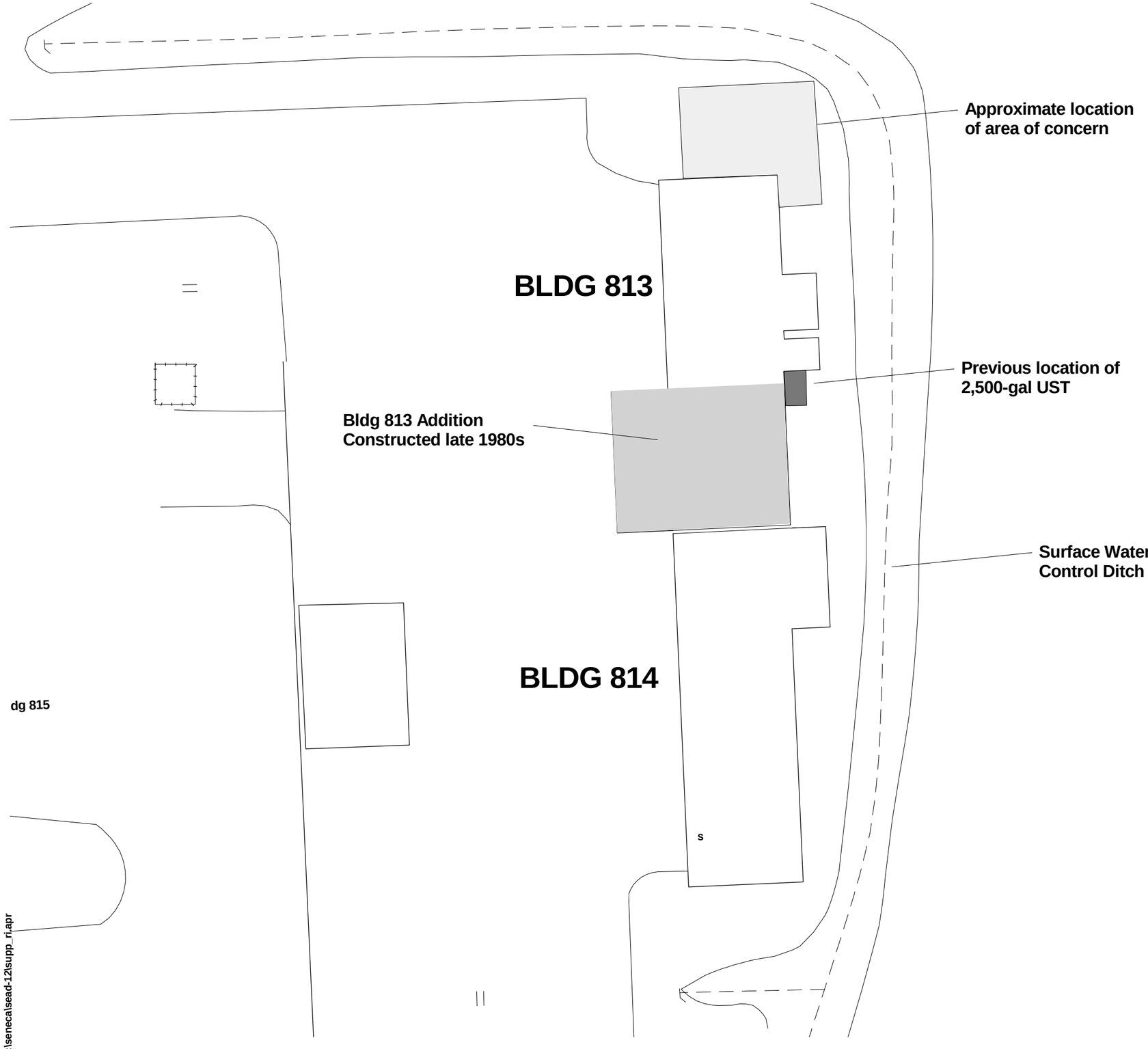
p a r s o n s

SENECA ARMY DEPOT ACTIVITY

SUPPLEMENTAL RI
SEAD 12

FIGURE 1-2
SEAD-12 SITE PLAN

SCALE	DATE
1:30	MARCH 2005



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LEGEND

N

20 0 20 40 Feet

p a r s o n s

SENECA ARMY DEPOT ACTIVITY

SEAD-12
SUPPLEMENTAL RI

FIGURE 1-3
BUILDINGS 813 AND 814

SCALE 1:30

DATE MARCH 2005

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LEGEND

SG12-128
SOIL GAS SAMPLE LOCATION

MW12-37
MONITORING WELL LOCATION
subsurface soil samples also collected

SS12-67
SURFACE SOIL SAMPLE LOCATION

SW/SD12-30
SURFACE WATER/SEDIMENT SAMPLE LOCATION

N

50 0 50 Feet

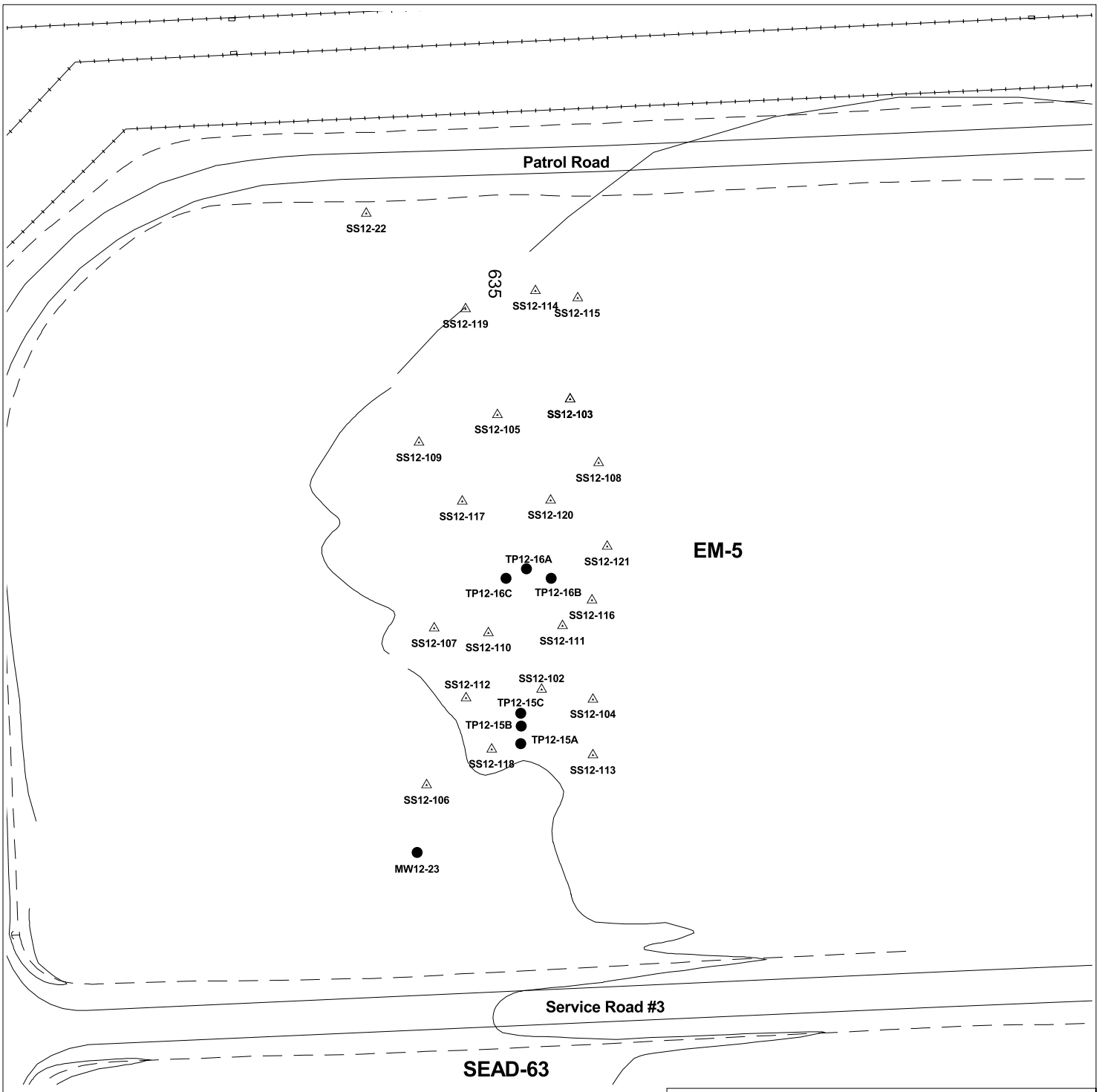
p a r s o n s

SENECA ARMY DEPOT ACTIVITY

SEAD-12
SUPPLEMENTAL RI

FIGURE 1-4
RI SAMPLING LOCATIONS
BUILDINGS 813 and 814

SCALE	DATE
1:50	MARCH 2005



SS12-128
△ PREVIOUS SURFACE SOIL SAMPLE LOCATION

TP12-15
● PREVIOUS SUBSURFACE SOIL SAMPLE LOCATION

80 0 80 Feet

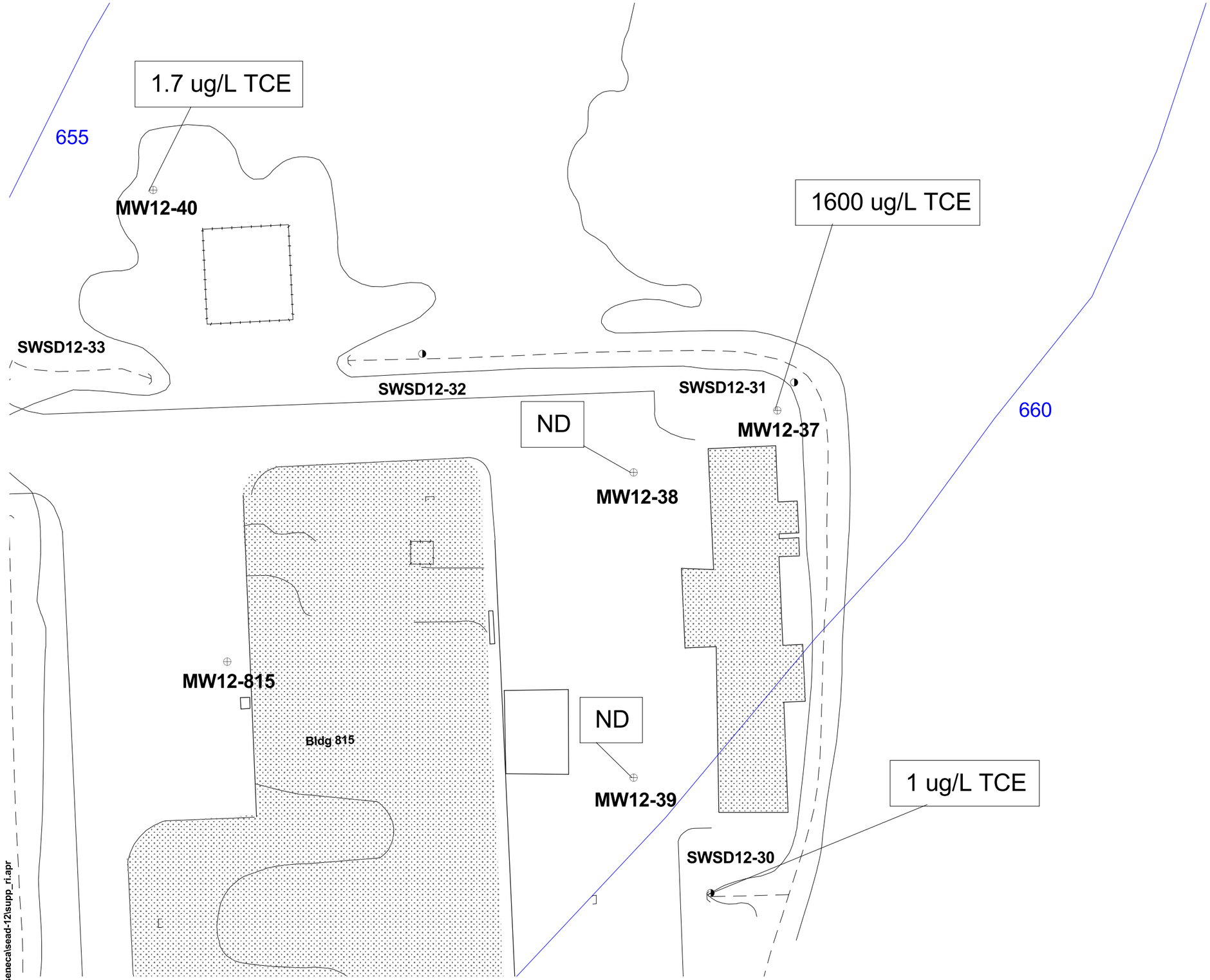
N

PARSONS

SENECA ARMY DEPOT ACTIVITY
SEAD-12
SUPPLEMENTAL RI

FIGURE 1-5
PREVIOUS SOIL SAMPLE LOCATIONS AT EM-5

SCALE	DATE
1:100	MARCH 2005



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LEGEND

MW12-37
⊕ MONITORING WELL LOCATION

SWSD12-30
◑ SURFACE WATER/SEDIMENT SAMPLE LOCATION

660 GROUNDWATER CONTOUR LINE

TCE concentration results are from the 1997 Remedial Investigation

Groundwater contours are based on elevations observed in Dec, 1999

N

50 0 50 Feet

PARSONS

SENECA ARMY DEPOT ACTIVITY

SEAD-12
SUPPLEMENTAL RI

FIGURE 2-1
TCE DETECTED DURING RI

SCALE	DATE
1:50	MARCH 2005

1.7 ug/L TCE - 1997 RI

1600 ug/L TCE - 1997 RI

1 ug/Kg TCE - 1997 RI

655

660

MW12-40

MW12-38

MW12-37

MW12-39

MW12-815

Bldg 815

SWSD12-33

SWSD12-32

SWSD12-30

SD12-31

TW12-16

TW12-17

TW12-18

TW12-15

TW12-8

TW12-9

TW12-14

TW12-7

TW12-13

TW12-6

TW12-5

TW12-19

TW12-4

TW12-11

TW12-10

TW12-3

TW12-2

TW12-20

TW12-1

TW12-21

TW12-12

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LEGEND

SD12-30 — SURFACE WATER/SEDIMENT SAMPLE LOCATION

MW12-37 — MONITORING WELL LOCATION

TW12-37 — TEMPORARY WELL LOCATION

Green - 1st phase of borings

Red - 2nd phase of borings
6 of 12 to be installed based on 1st round results

660 — GROUNDWATER CONTOUR LINE

N

50 0 50 Feet

PARSONS

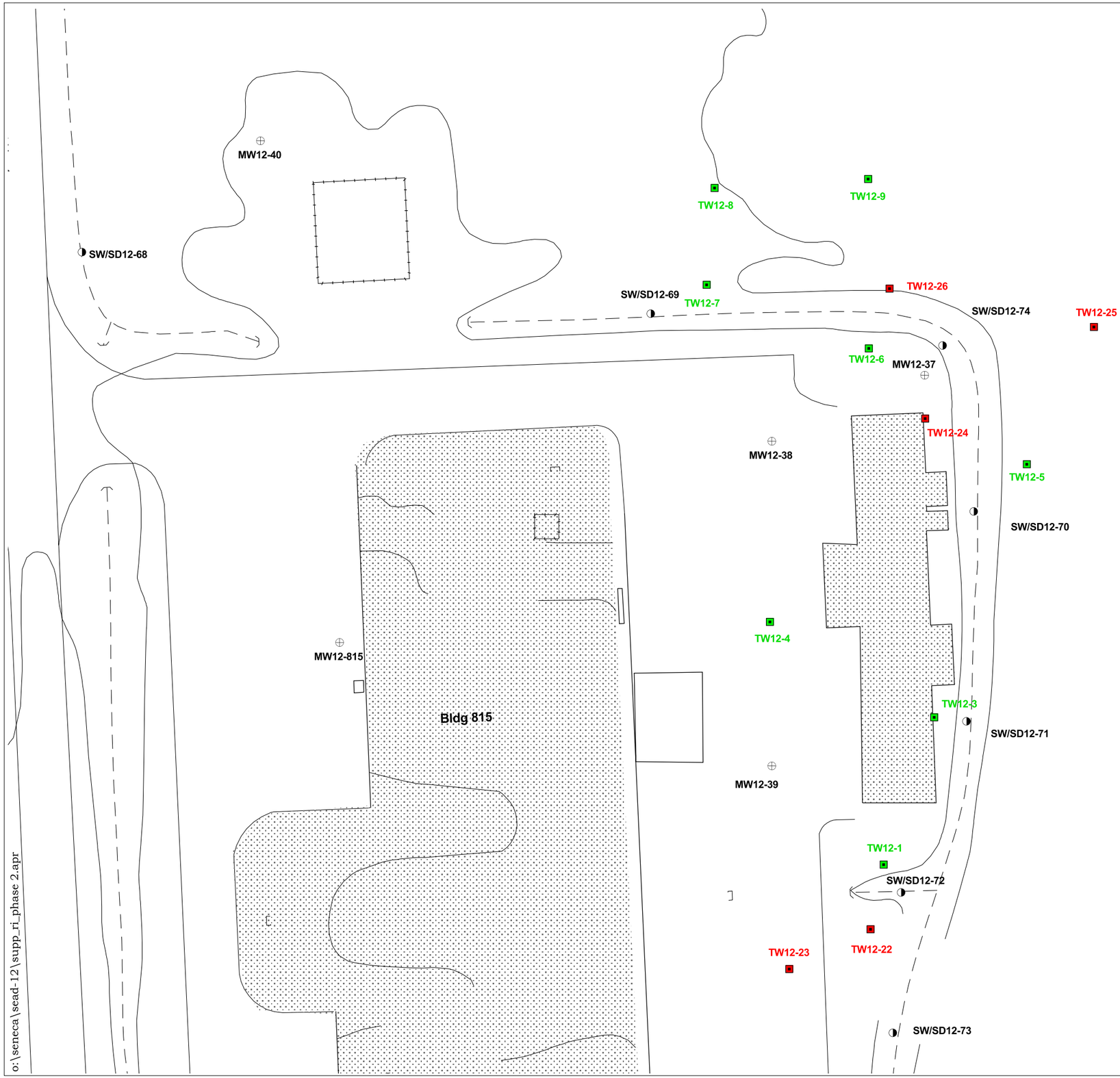
SENECA ARMY DEPOT ACTIVITY

SEAD-12
SUPPLEMENTAL RI

FIGURE 2-2
PROPOSED TEMPORARY WELL LOCATIONS

SCALE 1:50

DATE MARCH 2005



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LEGEND

MW12-37
⊕ PERMANENT MONITORING WELL LOCATION

TW12-37
⊡ TEMPORARY WELL LOCATION
Green Symbol - 1st Round
Red Symbol - 2nd Round

SW/SD12-2
◑ SURFACE WATER/DITCH SOIL SAMPLE LOCATION - SRI

N

50 0 50 Feet

PARSONS

SENECA ARMY DEPOT ACTIVITY
SEAD-12
SUPPLEMENTAL RI

FIGURE 2-3
TEMPORARY WELL AND SURFACE WATER/DITCH SOIL SAMPLE LOCATIONS

SCALE 1:50 | DATE MARCH 2005

Stockpile	Samples Collected	TCE Concentration	Average Stockpile Concentration
(100 cy)	SP813-3 SP813-3 (D) SP813-4 SP813-5	3,100 ug/Kg 190 ug/Kg 110 ug/Kg 9.3 ug/Kg	588.1 ug/Kg * (backfilled)
(80 cy)	SP813-6 SP813-7	7,400 ug/Kg 1,700 ug/Kg	4,550 ug/Kg (remains stockpiled)
(50 cy)	SP813-8	18,000 ug/Kg	18,000 ug/Kg (remains stockpiled)

* Concentration used for SP813-3 = (SA + DU)/2

LEGEND

TP813-2T
- Soil Sample Location in Excavation

T suffix - sample location removed during next phase of excavation

F suffix - sample location not removed

SP813-2
- Stockpile Sample Location

Area of Excavation

Stockpile Groups

Phase I and Phase II - visually unimpacted Returned to excavation

Phase II - visually impacted Stockpiled pending further analysis

Phase III - visually impacted Stockpiled pending further analysis

N

20 0 20 40 Feet

PARSONS

SENECA ARMY DEPOT ACTIVITY

SEAD-12
SUPPLEMENTAL RI

FIGURE 2-4
SAMPLE LOCATIONS FROM TEST PIT AT BUILDINGS 813 AND 814

SCALE 1:30

DATE MARCH 2005

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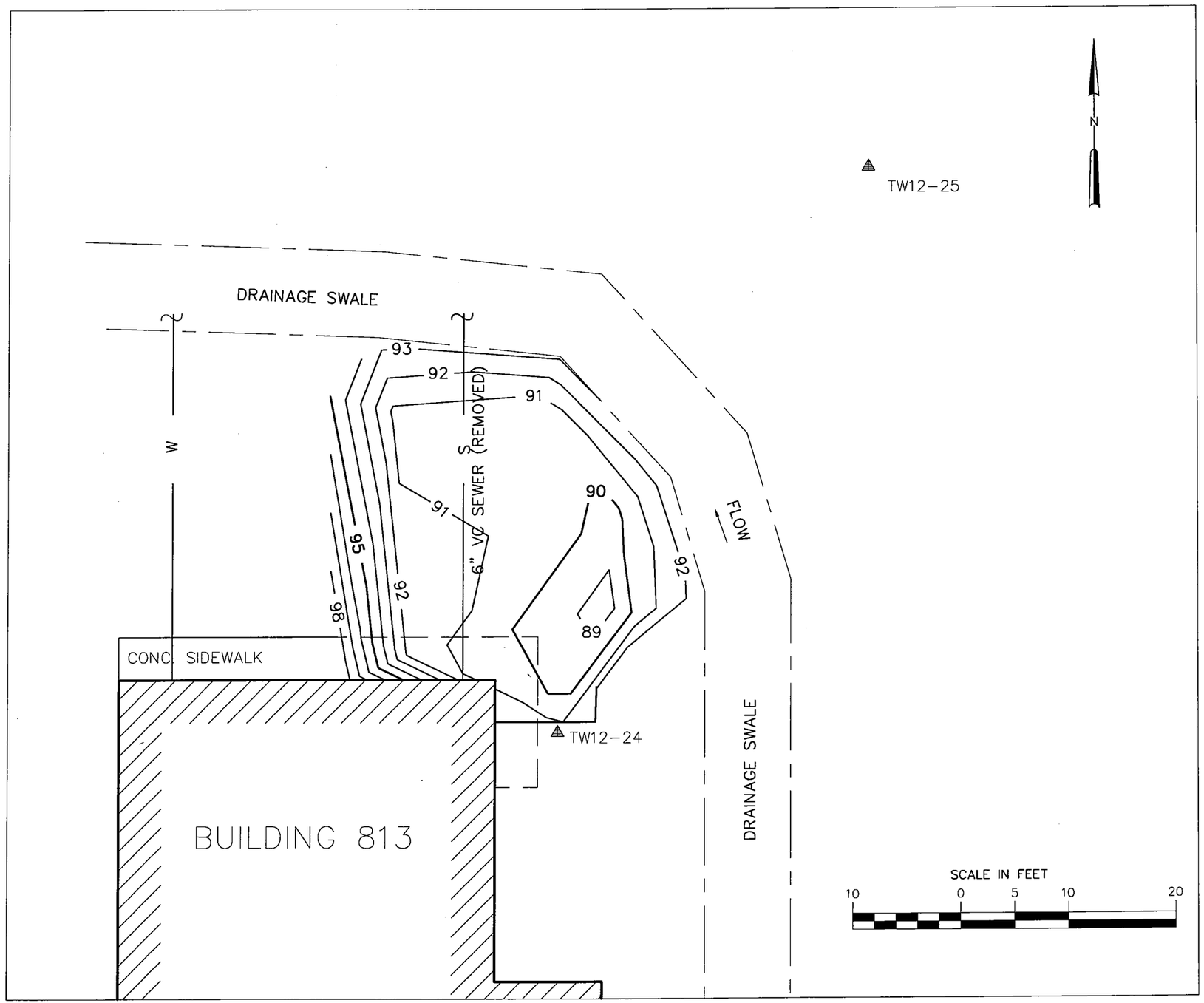


NOTE:

TOPOGRAPHIC SURVEY FOR TEST PIT GRADES WAS PERFORMED ON 12/21/04. GRADES ARE BASED ON AN ASSUMED VERTICAL DATUM BASED ON A BUILDING 813 FIRST FLOOR ELEVATION OF 100.0.

– 90– TEST PIT CONTOUR

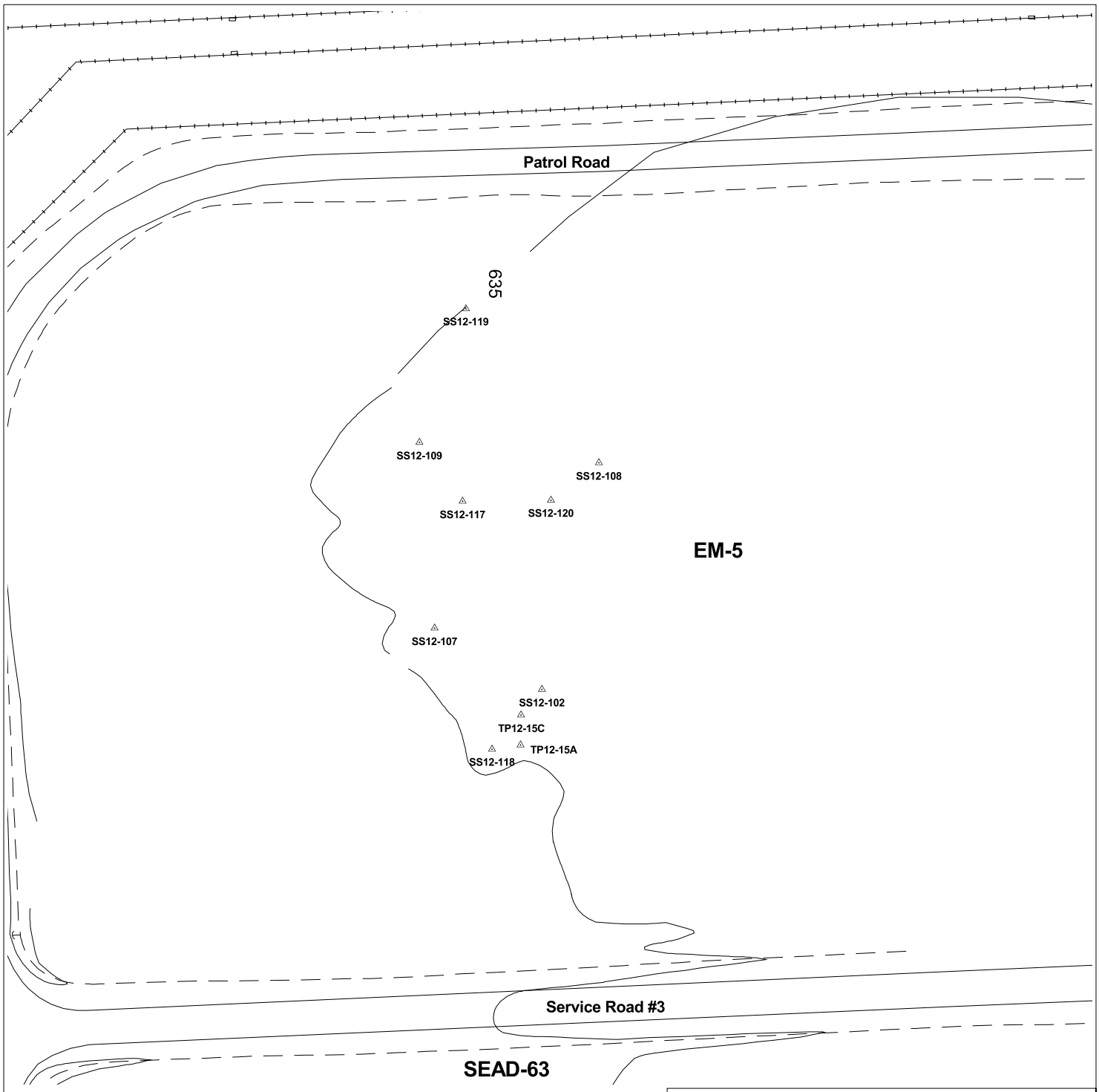
▲ MONITORING WELL
TW12-25

PARSONS

SENECA ARMY DEPOT ACTIVITY
SUPPLEMENTAL RI
SEAD 12

TEST PIT TOPOGRAPHIC PLAN BUILDING 813 AND 814 SEAD 12

Scale :	Date :	Drawing No. :
1"= 10'	11/17/04	FIG 2-5



SS12-128
△ SOIL RE-SAMPLE LOCATION

80 0 80 Feet

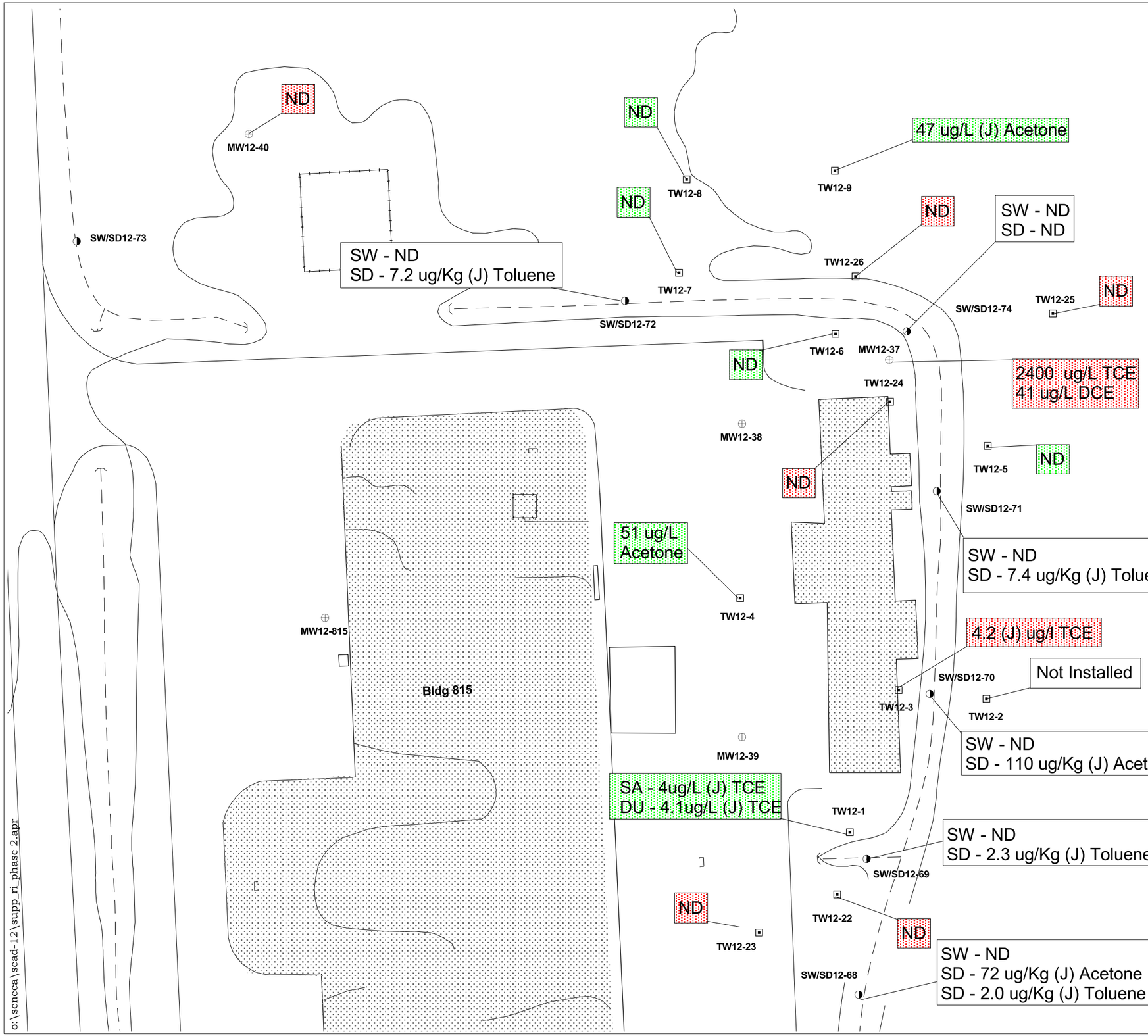
N

PARSONS

SENECA ARMY DEPOT ACTIVITY
SEAD-12
SUPPLEMENTAL RI

FIGURE 2-6
EM-5 SOIL SAMPLE LOCATIONS

SCALE	DATE
1:100	MARCH 2005



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LEGEND

MW12-37
⊕ MONITORING WELL LOCATION

TW12-37
▣ TEMPORARY WELL LOCATION
Green Label - 1st Round
Red Label - 2nd Round

SW/SD12-72
◑ SURFACE WATER/DITCH SOIL SAMPLE LOCATION

N

50 0 50 Feet

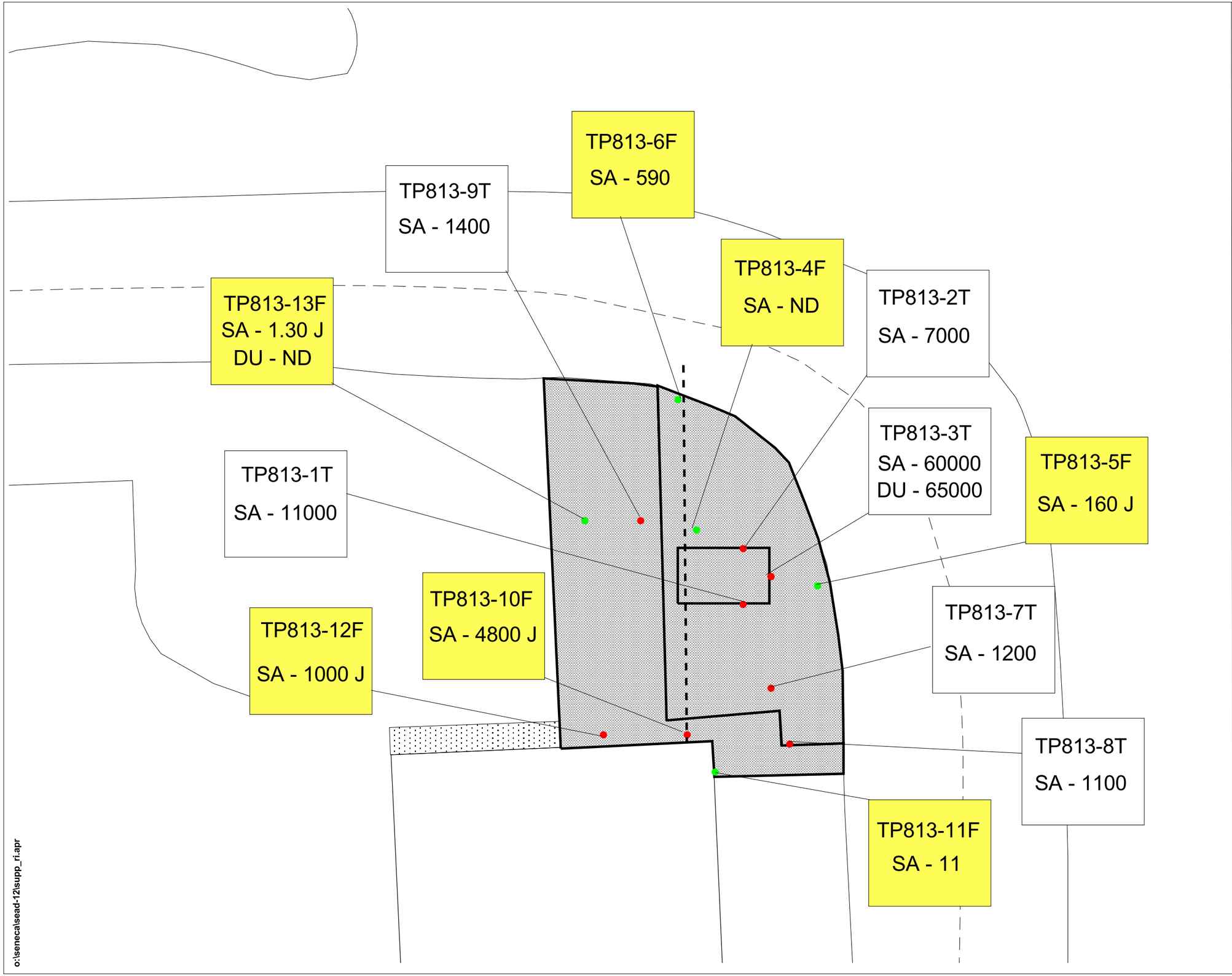
PARSONS

SENECA ARMY DEPOT ACTIVITY

SEAD-12
SUPPLEMENTAL RI

FIGURE 3-1
GROUNDWATER AND
SURFACE WATER/DITCH SOIL
DETECTIONS

SCALE 1:50 | DATE MARCH 2005



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LEGEND

TP813-2T

- Soil sample location in excavation w/ TCE concentration in ug/Kg
  - green - below TAGM for TCE
  - red - avove TAGM for TCE

T suffix - sample location removed during next phase of excavation

F suffix - sample location not removed

Area of excavation - black lines separate phases

Approximate location of sewer line removed during excavation

N

5 0 5 10 15 Feet

PARSONS

SENECA ARMY DEPOT ACTIVITY

SEAD-12
SUPPLEMENTAL RI

FIGURE 3-2
SAMPLE LOCATIONS FROM EXCAVATION AT BUILDINGS 813 AND 814

SCALE	DATE
1:10	MARCH 2005

Stockpile	Samples Collected	TCE Concentration	Average Stockpile Concentration
(100 cy)	SP813-3 SP813-3 (D) SP813-4 SP813-5	3,100 ug/Kg 190 ug/Kg 110 ug/Kg 9.3 ug/Kg	588.1 ug/Kg * (backfilled)
(80 cy)	SP813-6 SP813-7	7,400 ug/Kg 1,700 ug/Kg	4,550 ug/Kg (remains stockpiled)
(50 cy)	SP813-8	18,000 ug/Kg	18,000 ug/Kg (remains stockpiled)

*** Concentration used for SP813-3 = (SA + DU)/2**

LEGEND

TP813-2T
- Soil Sample Location in Excavation

T suffix - temporary sample location removed during next phase of excavation

F suffix - final confirmatory sample location

SP813-2
- Stockpile Sample Location

Approximate Area of Excavation

Stockpile Groups

Phase I and Phase II - visually unimpacted
Returned to excavation

Phase II - visually impacted
Stockpiled pending further analysis

Phase III - visually impacted
Stockpiled pending further analysis

N

20 0 20 40 Feet

PARSONS

SENECA ARMY DEPOT ACTIVITY

SEAD-12
SUPPLEMENTAL RI

FIGURE 3-3
TCE CONCENTRATIONS IN STOCKPILE SAMPLES AT BUILDINGS 813 AND 814

SCALE 1:30

DATE MARCH 2005

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Appendix A

Temporary Well Construction Diagrams

OVERBURDEN MONITORING WELL
COMPLETION REPORT & INSTALLATION DETAIL
ROADWAY BOX - SURFACE COMPLETION

PARSONS ENGINEERING SCIENCE, INC.	CLIENT: USACOE	WELL #: MW TW12-1

PROJECT:	RI FIELD INVESTIGATION	PROJECT NO:	
SWMU # (AREA):	SEAD- 12	INSPECTOR:	McAllister
SOP NO.:		CHECKED BY:	

DRILLING CONTRACTOR:	Nothnagle	POW DEPTH (ft) :	
DRILLER:	Jay	INSTALLATION STARTED:	
DRILLING COMPLETED:	May 24 2004	INSTALLATION COMPLETED:	
BORING DEPTH:		SURFACE COMPLETION DATE:	
DRILLING METHOD(S):		COMPLETION CONTRACTOR/CREW:	
BORING DIAMETER(S):		BEDROCK CONFIRMED (Y/N?)	

PROTECTIVE SURFACE CASING

DIAMETER (ft): LENGTH (ft):

RISER

TYPE: PVC TR (ft): 3.29

DIAMETER(in): 2 inch LENGTH (ft): 10.29

SURFACE COLLAR

TYPE: RADIUS (ft):

THICKNESS OF CENTER (ft): THICKNESS OF EDGE (in):

SCREEN

TYPE: PVC TSC (ft): 5.2 ft

DIAMETER (in): 2 SLOT SIZE: 0.010 LENGTH (ft): 5 foot

POINT OF WELL (SILT SUMP)

TYPE: end cap BSC (ft): POW(ft):

GROUT

TYPE: None TG (ft): LENGTH (ft):

SEAL

TYPE: Granular Bentonite TBS (ft): Surface LENGTH (ft): 4 ft

SAND PACK

FINE SAND TYPE: #00 TSP (ft): 4.00 LENGTH (ft): 6 ft

COARSE SAND TYPE: TSP (ft): LENGTH (ft):

ACRONYMS

TR	Top of Riser	BSC	Bottom of Screen	TG	Top of Grout
TSC	Top of Screen	POW	Point of Well	TBS	Top of Bentonite Seal
BGD	Background	TSP	Top of Sand Pack		

COMMENTS: Temporary well not yet completed.

* ALL DEPTH MEASUREMENTS REFERENCED TO GROUND SURFACE

SEE PAGE 2 FOR SCHEMATIC

OVERBURDEN MONITORING WELL
COMPLETION REPORT & INSTALLATION DETAIL
ROADWAY BOX - SURFACE COMPLETION

PARSONS ENGINEERING SCIENCE, INC.	CLIENT: USACOE	WELL #: ~~MW~~ TW12-3

PROJECT:	RI FIELD INVESTIGATION	PROJECT NO:	
SWMU # (AREA):	SEAD- 12 RI	INSPECTOR:	McAllister
SOP NO.:	Building 813/814	CHECKED BY:	

DRILLING CONTRACTOR:	Nothnagle	POW DEPTH (ft) :	9' 10"
DRILLER:		INSTALLATION STARTED:	—
DRILLING COMPLETED:	May 24 2004	INSTALLATION COMPLETED:	—
BORING DEPTH:	10.25	SURFACE COMPLETION DATE:	Temporary
DRILLING METHOD(S):	HSA (6")	COMPLETION CONTRACTOR/CREW:	
BORING DIAMETER(S):	6 inch	BEDROCK CONFIRMED (Y/N?)	Y

PROTECTIVE SURFACE CASING

DIAMETER (ft): _____ LENGTH (ft): _____

RISER

TYPE: 2 inch PVC TR (ft): _____

DIAMETER(in): 2 inch LENGTH (ft): _____

SURFACE COLLAR

TYPE: _____ RADIUS (ft): _____

THICKNESS OF CENTER (ft): _____ THICKNESS OF EDGE (in): _____

SCREEN

TYPE: PVC TSC (ft): 5' 10'

DIAMETER (in): 2 SLOT SIZE: .010 LENGTH (ft): 5 feet

POINT OF WELL (SILT SUMP)

TYPE: end Cap BSC (ft): 9 feet 10 inches POW(ft): 9 feet 10 in

GROUT

TYPE: Chip Bentonite TG (ft): _____ LENGTH (ft): _____

SEAL

TYPE: Chip Bentonite TBS (ft): 4 feet to Surface LENGTH (ft): 4 feet

SAND PACK

FINE SAND TYPE: #00 TSP (ft): 4 feet LENGTH (ft): 5 feet 10 in

COARSE SAND TYPE: _____ TSP (ft): _____ LENGTH (ft): _____

ACRONYMS

TR	Top of Riser	BSC	Bottom of Screen	TG	Top of Grout
TSC	Top of Screen	POW	Point of Well	TBS	Top of Bentonite Seal
BGD	Background	TSP	Top of Sand Pack		

COMMENTS: Temporary well not yet completed

* ALL DEPTH MEASUREMENTS REFERENCED TO GROUND SURFACE

SEE PAGE 2 FOR SCHEMATIC

OVERBURDEN MONITORING WELL
COMPLETION REPORT & INSTALLATION DETAIL
ROADWAY BOX - SURFACE COMPLETION

TW12-4

PARSONS ENGINEERING SCIENCE, INC.		CLIENT: USACOE	WELL #: ~~MW~~
PROJECT:	RI FIELD INVESTIGATION	PROJECT NO:	743156
SWMU # (AREA):	SEAD- 12 RI	INSPECTOR:	McAllister
SOP NO.:	Boilday 813/814	CHECKED BY:	

DRILLING CONTRACTOR:	Nothnagle	POW DEPTH (ft) :	8.65
DRILLER:		INSTALLATION STARTED:	
DRILLING COMPLETED:	May 29 2009	INSTALLATION COMPLETED:	
BORING DEPTH:	8.75	SURFACE COMPLETION DATE:	Temporary
DRILLING METHOD(S):	HSA	COMPLETION CONTRACTOR/CREW:	
BORING DIAMETER(S):	6inch	BEDROCK CONFIRMED (Y/N?)	Y

PROTECTIVE SURFACE CASING

DIAMETER (ft): _____ LENGTH (ft): _____

RISER

TYPE: _____ TR (ft): _____

DIAMETER(in): _____ LENGTH (ft): _____

SURFACE COLLAR

TYPE: _____ RADIUS (ft): _____

THICKNESS OF CENTER (ft): _____ THICKNESS OF EDGE (in): _____

SCREEN

TYPE: PVC TSC (ft): 3.75

DIAMETER (in): 2inch SLOT SIZE: 0.010 LENGTH (ft): 5 feet

POINT OF WELL (SILT SUMP)

TYPE: end Cap BSC (ft): 8.55 POW(ft): 8.65

GROUT

TYPE: _____ TG (ft): _____ LENGTH (ft): _____

SEAL

TYPE: Chip Bentonite TBS (ft): Surface LENGTH (ft): 3 feet

SAND PACK

FINE SAND TYPE: #00 TSP (ft): 3 feet LENGTH (ft): 5.65

COARSE SAND TYPE: _____ TSP (ft): _____ LENGTH (ft): _____

ACRONYMS

TR	Top of Riser	BSC	Bottom of Screen	TG	Top of Grout
TSC	Top of Screen	POW	Point of Well	TBS	Top of Bentonite Seal
BGD	Background	TSP	Top of Sand Pack		

COMMENTS: Temporay well not yet completed

* ALL DEPTH MEASUREMENTS REFERENCED TO GROUND SURFACE

SEE PAGE 2 FOR SCHEMATIC

OVERBURDEN MONITORING WELL
COMPLETION REPORT & INSTALLATION DETAIL
TEMPORARY WELL - SURFACE COMPLETION

PARSONS ENGINEERING SCIENCE, INC.	CLIENT: USACOE	WELL #: MWTW12-5

PROJECT:	RI FIELD INVESTIGATION	PROJECT NO:	
SWMU # (AREA):	SEAD- 12	INSPECTOR:	McAllister
SOP NO.:		CHECKED BY:	

DRILLING CONTRACTOR:	Nothnagle	POW DEPTH (ft) :	
DRILLER:	Jay	INSTALLATION STARTED:	
DRILLING COMPLETED:	May 24 2004	INSTALLATION COMPLETED:	
BORING DEPTH:		SURFACE COMPLETION DATE:	
DRILLING METHOD(S):		COMPLETION CONTRACTOR/CREW:	
BORING DIAMETER(S):		BEDROCK CONFIRMED (Y/N?)	

PROTECTIVE SURFACE CASING

DIAMETER (ft): LENGTH (ft):

RISER

TYPE: PVC TR (ft): 8.65

DIAMETER(in): 2 inch LENGTH (ft): 13.65 inc screen

SURFACE COLLAR

TYPE: RADIUS (ft):

THICKNESS OF CENTER (ft): THICKNESS OF EDGE (in):

SCREEN

TYPE: PVC TSC (ft): 6.5 feet

DIAMETER (in): 2 inch SLOT SIZE: 0.010 LENGTH (ft): 5 foot

POINT OF WELL (SILT SUMP)

TYPE: End Cap BSC (ft): POW(ft):

GROUT

TYPE: None TG (ft): LENGTH (ft):

SEAL

TYPE: Granular Bentonite TBS (ft): Surface LENGTH (ft): 4ft

SAND PACK

FINE SAND TYPE: #00 TSP (ft): 4ft bgs. LENGTH (ft):

COARSE SAND TYPE: TSP (ft): LENGTH (ft):

ACRONYMS

TR	Top of Riser	BSC	Bottom of Screen	TG	Top of Grout
TSC	Top of Screen	POW	Point of Well	TBS	Top of Bentonite Seal
BGD	Background	TSP	Top of Sand Pack		

COMMENTS:

* ALL DEPTH MEASUREMENTS REFERENCED TO GROUND SURFACE

SEE PAGE 2 FOR SCHEMATIC

13.65 overall stickup 2.50

OVERBURDEN MONITORING WELL
COMPLETION REPORT & INSTALLATION DETAIL
ROADWAY BOX - SURFACE COMPLETION

TW12-6

PARSONS ENGINEERING SCIENCE, INC.		CLIENT: USACOE	WELL #: ~~MW~~
PROJECT:	RI FIELD INVESTIGATION	PROJECT NO:	743156
SWMU # (AREA):	SEAD- 12 RI	INSPECTOR:	McAllister
SOP NO.:	Building 813/814	CHECKED BY:	
DRILLING CONTRACTOR:	Nothnagle	POW DEPTH (ft) :	10.0
DRILLER:		INSTALLATION STARTED:	
DRILLING COMPLETED:	May 25 2004	INSTALLATION COMPLETED:	
BORING DEPTH:	10.30	SURFACE COMPLETION DATE:	Temporary
DRILLING METHOD(S):		COMPLETION CONTRACTOR/CREW:	
BORING DIAMETER(S):		BEDROCK CONFIRMED (Y/N?)	Y

PROTECTIVE SURFACE CASING

DIAMETER (ft): _____ LENGTH (ft): _____

RISER

TYPE: _____ TR (ft): _____

DIAMETER(in): _____ LENGTH (ft): _____

SURFACE COLLAR

TYPE: _____ RADIUS (ft): _____

THICKNESS OF CENTER (ft): _____ THICKNESS OF EDGE (in): _____

SCREEN

TYPE: PVC TSC (ft): 5 feet

DIAMETER (in): 2 inch SLOT SIZE: 0.010 LENGTH (ft): 5 feet

POINT OF WELL (SILT SUMP)

TYPE: End Cap BSC (ft): 9.90 POW(ft): 10.00

GROUT

TYPE: _____ TG (ft): _____ LENGTH (ft): _____

SEAL

TYPE: Chip Bentonite TBS (ft): 4.5 ft Bgs LENGTH (ft): 5.5 ft

SAND PACK

FINE SAND TYPE: #00 TSP (ft): Surface LENGTH (ft): 4.5 feet

COARSE SAND TYPE: _____ TSP (ft): _____ LENGTH (ft): _____

ACRONYMS

TR	Top of Riser	BSC	Bottom of Screen	TG	Top of Grout
TSC	Top of Screen	POW	Point of Well	TBS	Top of Bentonite Seal
BGD	Background	TSP	Top of Sand Pack		

COMMENTS: Temporary Well not yet completed

* ALL DEPTH MEASUREMENTS REFERENCED TO GROUND SURFACE

SEE PAGE 2 FOR SCHEMATIC

OVERBURDEN MONITORING WELL
COMPLETION REPORT & INSTALLATION DETAIL
TEMPORARY WELL - SURFACE COMPLETION

TW 12-7

PARSONS ENGINEERING SCIENCE, INC.	CLIENT: USACOE	WELL #: MW

PROJECT:	RI FIELD INVESTIGATION	PROJECT NO:	
SWMU # (AREA):	SEAD- 12	INSPECTOR:	McAllister
SOP NO.:		CHECKED BY:	

DRILLING CONTRACTOR:	Nothnagle	POW DEPTH (ft) :	
DRILLER:	Jay	INSTALLATION STARTED:	
DRILLING COMPLETED:	May 24 2004	INSTALLATION COMPLETED:	
BORING DEPTH:		SURFACE COMPLETION DATE:	
DRILLING METHOD(S):		COMPLETION CONTRACTOR/CREW:	
BORING DIAMETER(S):		BEDROCK CONFIRMED (Y/N?)	

PROTECTIVE SURFACE CASING

DIAMETER (ft): LENGTH (ft):

RISER

TYPE: PVC TR (ft): 2.00 stickup

DIAMETER(in): 2 inch LENGTH (ft):

SURFACE COLLAR

TYPE: None RADIUS (ft):

THICKNESS OF CENTER (ft): THICKNESS OF EDGE (in):

SCREEN

TYPE: PVC TSC (ft): 4 feet

DIAMETER (in): 2 inch SLOT SIZE: 0.01 LENGTH (ft): 5 feet

POINT OF WELL (SILT SUMP)

TYPE: End Cap BSC (ft): 9.0 ft POW(ft): 9.025

GROUT

TYPE: None TG (ft): LENGTH (ft):

SEAL

TYPE: Granular Bentonite TBS (ft): Surface LENGTH (ft): 3.5 ft

SAND PACK

FINE SAND TYPE: #1 sand TSP (ft): 3.5 ft bgs LENGTH (ft): 5.5 ft.

COARSE SAND TYPE: TSP (ft): LENGTH (ft):

ACRONYMS

TR	Top of Riser	BSC	Bottom of Screen	TG	Top of Grout
TSC	Top of Screen	POW	Point of Well	TBS	Top of Bentonite Seal
BGD	Background	TSP	Top of Sand Pack		

COMMENTS: Depth of hole 9.025 ft
total well height 12.10

* ALL DEPTH MEASUREMENTS REFERENCED TO GROUND SURFACE

SEE PAGE 2 FOR SCHEMATIC

OVERBURDEN MONITORING WELL

COMPLETION REPORT & INSTALLATION DETAIL

ROADWAY BOX - SURFACE COMPLETION

TW12-8

PARSONS ENGINEERING SCIENCE, INC.	CLIENT: USACOE	WELL #: MW

PROJECT:	RI FIELD INVESTIGATION	PROJECT NO:	743156
SWMU # (AREA):	SEAD- 12 RI	INSPECTOR:	MCAllister
SOP NO.:		CHECKED BY:	

DRILLING CONTRACTOR:	Nothnagle	POW DEPTH (ft) :	
DRILLER:		INSTALLATION STARTED:	
DRILLING COMPLETED:	May 25 2004	INSTALLATION COMPLETED:	
BORING DEPTH:	10 feet	SURFACE COMPLETION DATE:	
DRILLING METHOD(S):	HSA	COMPLETION CONTRACTOR/CREW:	
BORING DIAMETER(S):	6 inch	BEDROCK CONFIRMED (Y/N?)	

PROTECTIVE SURFACE CASING

DIAMETER (ft): _____ LENGTH (ft): _____

RISER

TYPE: _____ TR (ft): _____

DIAMETER(in): _____ LENGTH (ft): _____

SURFACE COLLAR

TYPE: _____ RADIUS (ft): _____

THICKNESS OF CENTER (ft): _____ THICKNESS OF EDGE (in): _____

SCREEN

TYPE: PVC TSC (ft): 5 feet

DIAMETER (in): 2 inch SLOT SIZE: 0.010 LENGTH (ft): 5 foot

POINT OF WELL (SILT SUMP)

TYPE: _____ BSC (ft): _____ POW(ft): _____

GROUT

TYPE: _____ TG (ft): _____ LENGTH (ft): _____

SEAL

TYPE: Chip Bentonite TBS (ft): Surface LENGTH (ft): 4 feet

SAND PACK

FINE SAND TYPE: #00 TSP (ft): 4 feet LENGTH (ft): 6 feet

COARSE SAND TYPE: _____ TSP (ft): _____ LENGTH (ft): _____

ACRONYMS

TR	Top of Riser	BSC	Bottom of Screen	TG	Top of Grout
TSC	Top of Screen	POW	Point of Well	TBS	Top of Bentonite Seal
BGD	Background	TSP	Top of Sand Pack		

COMMENTS: Temporary well

* ALL DEPTH MEASUREMENTS REFERENCED TO GROUND SURFACE

SEE PAGE 2 FOR SCHEMATIC

OVERBURDEN MONITORING WELL

COMPLETION REPORT & INSTALLATION DETAIL
ROADWAY BOX - SURFACE COMPLETION

TW12-9

PARSONS ENGINEERING SCIENCE, INC.	CLIENT: USACOE	WELL #: MW

PROJECT:	RI FIELD INVESTIGATION	PROJECT NO:	743156
SWMU # (AREA):	SEAD- 12 RI	INSPECTOR:	McAllister
SOP NO.:	743156	CHECKED BY:	

DRILLING CONTRACTOR:	Nothnagle	POW DEPTH (ft) :	9.11
DRILLER:		INSTALLATION STARTED:	
DRILLING COMPLETED:	May 25 2004	INSTALLATION COMPLETED:	
BORING DEPTH:	10.2 feet	SURFACE COMPLETION DATE:	Temporary.
DRILLING METHOD(S):	HSA	COMPLETION CONTRACTOR/CREW:	
BORING DIAMETER(S):	6 inch	BEDROCK CONFIRMED (Y/N?)	Y

PROTECTIVE SURFACE CASING

DIAMETER (ft): _____ LENGTH (ft): _____

RISER

TYPE: _____ TR (ft): _____

DIAMETER(in): _____ LENGTH (ft): _____

SURFACE COLLAR

TYPE: _____ RADIUS (ft): _____

THICKNESS OF CENTER (ft): _____ THICKNESS OF EDGE (in): _____

SCREEN

TYPE: PVC TSC (ft): 4.11 ft

DIAMETER (in): 2 inch SLOT SIZE: 0.010 LENGTH (ft): 5 foot

POINT OF WELL (SILT SUMP)

TYPE: End Cap BSC (ft): 9.01 POW(ft): 9.1

GROUT

TYPE: _____ TG (ft): _____ LENGTH (ft): _____

SEAL

TYPE: Chip Bentonite TBS (ft): Surface LENGTH (ft): 4.5 ft

SAND PACK

FINE SAND TYPE: #00 TSP (ft): 4.5 ft. LENGTH (ft): 4.5 ft

COARSE SAND TYPE: _____ TSP (ft): _____ LENGTH (ft): _____

ACRONYMS

TR	Top of Riser	BSC	Bottom of Screen	TG	Top of Grout
TSC	Top of Screen	POW	Point of Well	TBS	Top of Bentonite Seal
BGD	Background	TSP	Top of Sand Pack		

COMMENTS: Temporary well No ~~Sand Pac~~ Grout

* ALL DEPTH MEASUREMENTS REFERENCED TO GROUND SURFACE

SEE PAGE 2 FOR SCHEMATIC

OVERBURDEN MONITORING WELL
COMPLETION REPORT & INSTALLATION DETAIL
ROADWAY BOX - SURFACE COMPLETION

TW 12-22

PARSONS ENGINEERING SCIENCE, INC.		CLIENT: USACOE	WELL #: ~~MW~~
PROJECT:	RI FIELD INVESTIGATION	PROJECT NO:	743156
SWMU # (AREA):	SEAD- 12 RI	INSPECTOR:	McAllister
SOP NO.:	Building 813/814	CHECKED BY:	
DRILLING CONTRACTOR:	Nothnagle	POW DEPTH (ft) :	23.5ft
DRILLER:		INSTALLATION STARTED:	
DRILLING COMPLETED:	June 9 2004	INSTALLATION COMPLETED:	
BORING DEPTH:	24.5	SURFACE COMPLETION DATE:	Temporary.
DRILLING METHOD(S):	HSA	COMPLETION CONTRACTOR/CREW:	
BORING DIAMETER(S):	6inch	BEDROCK CONFIRMED (Y/N?)	Y

PROTECTIVE SURFACE CASING

DIAMETER (ft): _____ LENGTH (ft): _____

RISER

TYPE: PVC TR (ft): _____

DIAMETER(in): 2inch LENGTH (ft): 14 ft

SURFACE COLLAR

TYPE: _____ RADIUS (ft): _____

THICKNESS OF CENTER (ft): _____ THICKNESS OF EDGE (in): _____

SCREEN

TYPE: PVC TSC (ft): 13.5

DIAMETER (in): 2inch SLOT SIZE: 0.010 LENGTH (ft): 10 foot

POINT OF WELL (SILT SUMP)

TYPE: End Cap BSC (ft): 23.5 POW(ft): 23.5

GROUT

TYPE: C TG (ft): _____ LENGTH (ft): _____

SEAL

TYPE: Chip Bentonite TBS (ft): Surface LENGTH (ft): 2 feet

SAND PACK

FINE SAND TYPE: #00 TSP (ft): 9 feet LENGTH (ft): 12 feet

COARSE SAND TYPE: _____ TSP (ft): _____ LENGTH (ft): _____

ACRONYMS

TR	Top of Riser	BSC	Bottom of Screen	TG	Top of Grout
TSC	Top of Screen	POW	Point of Well	TBS	Top of Bentonite Seal
BGD	Background	TSP	Top of Sand Pack		

COMMENTS:
Temporary well

* ALL DEPTH MEASUREMENTS REFERENCED TO GROUND SURFACE

SEE PAGE 2 FOR SCHEMATIC

OVERBURDEN MONITORING WELL
COMPLETION REPORT & INSTALLATION DETAIL
ROADWAY BOX - SURFACE COMPLETION

TW12-23

PARSONS ENGINEERING SCIENCE, INC.		CLIENT: USACOE	WELL#: ~~MW~~
PROJECT:	RI FIELD INVESTIGATION	PROJECT NO:	743156
SWMU # (AREA):	SEAD- 12 RI	INSPECTOR:	McAllister
SOP NO.:	743156	CHECKED BY:	
DRILLING CONTRACTOR:	Nothnagle	POW DEPTH (ft) :	23.25
DRILLER:		INSTALLATION STARTED:	
DRILLING COMPLETED:	June 9 2004	INSTALLATION COMPLETED:	
BORING DEPTH:	23.3 ft	SURFACE COMPLETION DATE:	Temporary
DRILLING METHOD(S):		COMPLETION CONTRACTOR/CREW:	
BORING DIAMETER(S):		BEDROCK CONFIRMED (Y/N?)	Y

PROTECTIVE SURFACE CASING

DIAMETER (ft): _____ LENGTH (ft): _____

RISER

TYPE: PVC TR (ft): _____

DIAMETER(in): 2 inch LENGTH (ft): 14 feet

SURFACE COLLAR

TYPE: _____ RADIUS (ft): _____

THICKNESS OF CENTER (ft): _____ THICKNESS OF EDGE (in): _____

SCREEN

TYPE: PVC TSC (ft): 13.3

DIAMETER (in): 2 inch SLOT SIZE: 0.010 LENGTH (ft): 10 foot

POINT OF WELL (SILT SUMP)

TYPE: End Cap BSC (ft): 23.25 POW(ft): 23.3

GROUT

TYPE: _____ TG (ft): _____ LENGTH (ft): _____

SEAL

TYPE: Chip Bentonite TBS (ft): 8.9 ft LENGTH (ft): 2.7

SAND PACK

FINE SAND TYPE: #00 TSP (ft): ~~8.9 ft~~ 11.2 ft LENGTH (ft): 2 feet

COARSE SAND TYPE: _____ TSP (ft): _____ LENGTH (ft): _____

ACRONYMS

TR	Top of Riser	BSC	Bottom of Screen	TG	Top of Grout
TSC	Top of Screen	POW	Point of Well	TBS	Top of Bentonite Seal
BGD	Background	TSP	Top of Sand Pack		

COMMENTS:
Temporary Well

* ALL DEPTH MEASUREMENTS REFERENCED TO GROUND SURFACE

SEE PAGE 2 FOR SCHEMATIC

OVERBURDEN MONITORING WELL

COMPLETION REPORT & INSTALLATION DETAIL

TEMPORARY WELL - SURFACE COMPLETION TW 12-24

PARSONS ENGINEERING SCIENCE, INC.	CLIENT: USACOE	WELL #: MW

PROJECT:	RI FIELD INVESTIGATION	PROJECT NO:	
SWMU # (AREA):	SEAD- 12	INSPECTOR:	
SOP NO.:		CHECKED BY:	

DRILLING CONTRACTOR:	Nothnagle	POW DEPTH (ft) :	
DRILLER:	Jay	INSTALLATION STARTED:	
DRILLING COMPLETED:	June 10 2004	INSTALLATION COMPLETED:	
BORING DEPTH:		SURFACE COMPLETION DATE:	
DRILLING METHOD(S):		COMPLETION CONTRACTOR/CREW:	
BORING DIAMETER(S):		BEDROCK CONFIRMED (Y/N?)	

PROTECTIVE SURFACE CASING

DIAMETER (ft): LENGTH (ft):

RISER

TYPE: PVC TR (ft): 8.01

DIAMETER(in): 2 inch LENGTH (ft):

SURFACE COLLAR

TYPE: RADIUS (ft):

THICKNESS OF CENTER (ft): THICKNESS OF EDGE (in):

SCREEN

TYPE: PVC TSC (ft): 9.3 feet

DIAMETER (in): 2 inch SLOT SIZE: 0.01 LENGTH (ft): 5 feet

POINT OF WELL (SILT SUMP)

TYPE: End Cap BSC (ft): POW(ft):

GROUT

TYPE: None TG (ft): LENGTH (ft):

SEAL

TYPE: Granular Bentonite TBS (ft): Surface LENGTH (ft): 3.1 ft

SAND PACK

FINE SAND TYPE: #1 sand TSP (ft): 3.1 feet LENGTH (ft): 6.2 feet

COARSE SAND TYPE: TSP (ft): LENGTH (ft):

ACRONYMS

TR	Top of Riser	BSC	Bottom of Screen	TG	Top of Grout
TSC	Top of Screen	POW	Point of Well	TBS	Top of Bentonite Seal
BGD	Background	TSP	Top of Sand Pack		

COMMENTS: Auger refusal @ 9.3ft
Screen 5 foot
#1 Sand to 3.1 feet
Granular Bentonite 3.1 to Surface
Total Depth 13.01
Stickup 3.71 feet

* ALL DEPTH MEASUREMENTS REFERENCED TO GROUND SURFACE

SEE PAGE 2 FOR SCHEMATIC

OVERBURDEN MONITORING WELL
COMPLETION REPORT & INSTALLATION DETAIL
ROADWAY BOX - SURFACE COMPLETION

TW12-25

PARSONS ENGINEERING SCIENCE, INC.		CLIENT: USACOE	WELL #: ~~MW~~
PROJECT:	RI FIELD INVESTIGATION	PROJECT NO:	743156
SWMU # (AREA):	SEAD- 12 RI	INSPECTOR:	McAllister
SOP NO.:		CHECKED BY:	
DRILLING CONTRACTOR:	Nothnagle	POW DEPTH (ft) :	12.3ft
DRILLER:		INSTALLATION STARTED:	
DRILLING COMPLETED:	June 9 2009	INSTALLATION COMPLETED:	
BORING DEPTH:	12.3 feet	SURFACE COMPLETION DATE:	Temporary
DRILLING METHOD(S):	HSA	COMPLETION CONTRACTOR/CREW:	
BORING DIAMETER(S):	6 inch	BEDROCK CONFIRMED (Y/N?)	

PROTECTIVE SURFACE CASING

DIAMETER (ft): _____ LENGTH (ft): _____

RISER

TYPE: _____ TR (ft): _____

DIAMETER(in): _____ LENGTH (ft): _____

SURFACE COLLAR

TYPE: _____ RADIUS (ft): _____

THICKNESS OF CENTER (ft): _____ THICKNESS OF EDGE (in): _____

SCREEN

TYPE: PVC TSC (ft): 7.3ft

DIAMETER (in): 2 inch SLOT SIZE: 0.010 LENGTH (ft): 4.85foot

POINT OF WELL (SILT SUMP)

TYPE: End Cap BSC (ft): 12.25 POW(ft): 12.3

GROUT

TYPE: _____ TG (ft): _____ LENGTH (ft): _____

SEAL

TYPE: Chip Bentonite TBS (ft): 5.2 feet LENGTH (ft): 5.2 feet

SAND PACK

FINE SAND TYPE: #00 TSP (ft): 5.2 feet LENGTH (ft): 6.9 ft

COARSE SAND TYPE: _____ TSP (ft): _____ LENGTH (ft): _____

ACRONYMS

TR	Top of Riser	BSC	Bottom of Screen	TG	Top of Grout
TSC	Top of Screen	POW	Point of Well	TBS	Top of Bentonite Seal
BGD	Background	TSP	Top of Sand Pack		

COMMENTS: Temporary well to

* ALL DEPTH MEASUREMENTS REFERENCED TO GROUND SURFACE

SEE PAGE 2 FOR SCHEMATIC

OVERBURDEN MONITORING WELL
COMPLETION REPORT & INSTALLATION DETAIL
ROADWAY BOX - SURFACE COMPLETION

TW12-26

PARSONS ENGINEERING SCIENCE, INC.		CLIENT: USACOE	WELL #: ~~MW~~
PROJECT:	RI FIELD INVESTIGATION	PROJECT NO:	743156
SWMU # (AREA):	SEAD- 12 RI	INSPECTOR:	McAllister
SOP NO.:		CHECKED BY:	
DRILLING CONTRACTOR:	Nothnagle	POW DEPTH (ft) :	10.9 ft
DRILLER:		INSTALLATION STARTED:	
DRILLING COMPLETED:	June 9 2004	INSTALLATION COMPLETED:	
BORING DEPTH:	11 feet	SURFACE COMPLETION DATE:	
DRILLING METHOD(S):	HSA	COMPLETION CONTRACTOR/CREW:	
BORING DIAMETER(S):	6 inch	BEDROCK CONFIRMED (Y/N?)	

PROTECTIVE SURFACE CASING

DIAMETER (ft): _____ LENGTH (ft): _____

RISER

TYPE: PVC TR (ft): _____

DIAMETER(in): 2 inch LENGTH (ft): _____

SURFACE COLLAR

TYPE: _____ RADIUS (ft): _____

THICKNESS OF CENTER (ft): _____ THICKNESS OF EDGE (in): _____

SCREEN

TYPE: PVC TSC (ft): 5.9 ft

DIAMETER (in): 2 inch SLOT SIZE: 0.010 LENGTH (ft): 5 foot

POINT OF WELL (SILT SUMP)

TYPE: End Cap BSC (ft): 10.85 ft POW(ft): 10.9 ft

GROUT

TYPE: _____ TG (ft): _____ LENGTH (ft): _____

SEAL

TYPE: Chip Bentonite TBS (ft): Surface LENGTH (ft): 4.9 ft

SAND PACK

FINE SAND TYPE: #00 TSP (ft): 4.9 ft LENGTH (ft): 6 feet

COARSE SAND TYPE: _____ TSP (ft): _____ LENGTH (ft): _____

ACRONYMS

TR	Top of Riser	BSC	Bottom of Screen	TG	Top of Grout
TSC	Top of Screen	POW	Point of Well	TBS	Top of Bentonite Seal
BGD	Background	TSP	Top of Sand Pack		

COMMENTS: Temporary Well

* ALL DEPTH MEASUREMENTS REFERENCED TO GROUND SURFACE

SEE PAGE 2 FOR SCHEMATIC

Appendix B

Sampling Records

SAMPLING RECORD - SURFACE WATER

DATE: June 22 2004

CONSULTANT: PARSONS
PROJECT: SEAD 12 RI
LOCATION: Building 813-814

INSPECTOR: McAllister
LABORATORY: Chemtech
LAB. STAFF: K. Hummel
CHAIN OF CUSTODY #:

WEATHER / FIELD CONDITIONS CHECKLIST (RECORD MAJOR CHANGES)

TIME (24 HR)	TEMP (APPRX)	WEATHER (GEN.)	REL. HUMIDITY (APPRX)	WIND VELOCITY (APPRX)	WIND DIRECTION (FROM) (0 - 360)	GROUND / SITE SURFACE CONDITIONS	MONITORING INSTRUMENT	MONITORING DECTECTOR
14:00	63°	Overcast	High	10-15 mph	West	Wet	PID	ppm

LOC ID	SAMPLE #	DFS	DEPTH	TIME	TEMP	MON. VOC	MON. CLR	TURBIDITY (NTU)	pH	SPEC COND	D.O.	SAMPLING DEVICE	CONT TYPE / SIZE	QC SPL (Y/N)
SW/SD 12-68	~~124000~~ 121000	2 ft	.3 ft	15:10	20.8	Ø		210 ntu	7.2	.77	6.30	~~Bottle~~	3/40ml VOA	N
SW/SD 12-69	121001	1.5	.1 ft	15:45	22.2	.6 ppm		63.9	7.4	.46	7.1	bottle	3/40ml VOA	N
SW/SD 12-70	121002	1.8 ft	.6 ft	1600	19.96	.3 ppm		47.2 ntu	7.1	.75	7.2	bottle	3/40ml VOA	N
SW/SD 12-71	121003	1.8 ft	.5 ft	16:20	19.44	.2 ppm		76 ntu	7.3	.73	7.5	bottle	3/40ml VOA	N
SW/SD 12-74	121006	1.2 ft	.3 ft	16:40	21.56	.1 ppm		44.6 ntu	7.3	.70	8.06	bottle	3/40ml VOA	N
SW/SD 12-72	121004	2.0	.3 ft	17:00	20.15	0 ppm		76 ntu	6.8	.72	5.52	bottle	3/40ml VOA	Y
SW/SD 12-73	121005	1.4 ft	.5	17:40	20.31	0 ppm		26 ntu	7.5	.70	7.62	bottle	3/40ml VOA	N

DFS-DISTANCE FROM SHORE (FEET)
IDENTIFY UNITS FOR ALL MEASURMENTS
CLEANING PROCEDURES ACCORDING TO SOP

SAMPLING RECORD - SURFACE SOIL/SEDIMENT

PARSONS | **CLIENT:** | **INSPECTOR :** | **DATE:** June 24 2004

PROJECT: EM-5 Resample

SOIL TYPE — SURFACE SOIL — SEDIMENT

COMMENTS: Samples collected with a Carbon steel split spoon

MONITORING

INSTRUMENT	DETECTOR	READING
GM - Mueller - Ludlum		

SAMPLE INFORMATION					SOIL INFORMATION					
LOCATION	SAMPLE NUMBER	SAMPLE DEPTH (in) TOP	SAMPLE DEPTH (in) BOTTOM	TIME (military)	GRAB or COMPOSITE SAMPLE	SAMPLE DESCRIPTION (Burmister method)	USCS Classification	~~VOC Screen~~ Rad (PPM)	QC Split (yes or no)	Other Notes
SS12-118	123678	0	.2	11:18		Dry brown, Silt & Clay soft loose, Some Shale fragments fine to coarse Agglom		0.0	No	
SS12-102	123677	0	.2	11:40		Dry brown Silt & Clay Soft loose Some Shale fragments fine to coarse Ag		0.0	No	
SS12-107	123676 123681	0	.2	11:57 12:03		moist. brown Silt & Clay Some Shale fragments f-c trace organic		0.0	Yes	
SS12-120	123671	0	.2	12:08		moist brown Silt & Clay some shale fragments trace Organic		0.0	No	
SS12-108	123673	0	.2	12:18		Dry brown Silt and Clay soft loose Some Shale fragments trace Organic		0.0	No	
SS12-117	123674	0	.2	12:29		Dry lt. brown Silt and Clay. trace organic material (nails)		0.0	No	Nails and wood at loc
SS12-109	123267 123267MS 123267MSD	0	.2	12:40		Dry lt. brown Silt and Clay Some Gravel m-c trace organic		0.0	Yes	Samp MS MRD MSD
TP12-15C	123680	0.8	0.85	15:46		lt. Grey Silt & Clay. Some Gravel little Organic mat.		0.0	No	
SS12-119	123670	0	.2	13:09		lt. Grey Silt & Clay some Gravel m-c trace Organic		0.0	No	
TP15A	123675	3.0	3.5	15:39		Wet, lt. grey to brown Silt & Clay. Some Gravel (Shale) m-c		0.0	No	
Rinse Blank										

(MRD sample collected at SS12-109 123267)

SAMPLING RECORD - GROUNDWATER

PARSONS	**CLIENT:**	**WELL #:** TW12-1

PROJECT (STUDY_ID):	SEAD 12 RI	**DATE:**	5/26/04
SWMU # (AREA):	Building 813/814	**LABORATORY:**	Chemtech
SCREENED INTERVAL (TOC):	13.55 to 8.55 ft	**MONITORING DATE:**	
STATE WELL PERMIT #:	* Not Surveyed elevation	**INSTRUMENT**	**DETECTOR**
WEATHER:	Sun 720	**PID / FID**	Ø
FREE PRODUCT (NO/ YES) Thickness	NA		

BOREHOLE DIAMETER FACTORS

DIAMETER (INCHES):	1	1.5	(2)	3	4	5	6	7	8	9	10
GALLONS/FOOT:	0.041	0.092	0.163	0.367	0.654	1.02	1.47	2.00	2.61	3.30	5.87

PURGE METHOD:	Bladder Pump	WELL HEAD VOC CONCENTRATION (ppm):	Ø
STATIC DEPTH TO WATER (TOC):	~~8.55~~ 6.50	STANDING WATER VOLUME IN WELL (gallons):	1.14
WELL DEPTH (TOC):	13.55	THREE WELL VOLUMES (gallons):	3.44
FEET OF WATER IN WELL:	7.05	ONE: TWO: THREE:	

PURGING DATA:

Measure indicator parameters after each volume (at 1/2 volume if more than 3 required*)

TIME BEGIN PURGING: 14:26 TIME END PURGING:

Time:	14:26	15:26	15:35	15:44	15:53	16:02	16:11	16:20
Depth to Water (ft)	7.50	8.72	8.72	8.72	8.72	8.72	8.72	8.72
Depth to bottom opening of Purge Device (TOC)	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5
Flow Rate (ml/min.)	80 ml	60 ml	60 ml	60 ml	60 ml	60 ml	60 ml	60 ml
Volume of Water Removed (gals)	500 ml	3700 ml	4200 ml	4700	5200	5700 ml	6200 ml	6700 ml
pH	Empty	7.18	7.22	7.21	7.20	7.19	7.16	7.15
Specific Conductivity (umhos)	Empty	1.25	1.21	1.20	1.18	1.19	1.13	1.12
Dissolve Oxygen (DO)	Empty	9.38	5.89	5.37	4.77	4.47	3.80	3.40
Temperature (deg. C)	Empty	19.00	19.97	20.1	20.35	20.40	19.89	19.73
ORP (mV)	Empty	138	120	114	108	106	102	102
Turbidity (NTU)		78	56.5	52.5	489	50	51	51

DEPTH TO WATER MEASUREMENTS AFTER PURGING

Date	Time	Depth to Water (ft) "After Purge"	Pre-Purge / "Static" Water Column (ft)	Water Column (ft)	% RECOVERY

Notes:

* **Purging should not exceed 5 volumes**

(1) Determine water column in the borehole(for both "after purge" and "static" conditions) by subtracting the measured water level from the well point.

(2) Divide the "after purge" water column by the "static" water column and multiply by 100 to determine the percent of recovery for the well.

Purge began at 14:26 it took 1 hour to establish a flow rate of 60 ml/min with a stabilized water level of 8.72 feet.

PAGE #2 of 2

SAMPLING RECORD - GROUNDWATER

PARSONS	CLIENT:	WELL #: TW 12-1
PROJECT (STUDY_ID): SEAD 12 RI		DATE: 8/26/04
SWMU # (AREA): Building 813/814		LABORATORY: Chemtek
SCREENED INTERVAL (TOC): 13.55 - 8.55 ft		MONITORING DATE:
STATE WELL PERMIT #: # Not surveyed elevation		INSTRUMENT / DETECTOR
WEATHER: Sun 72°		PID / FID: Ø
FREE PRODUCT (NO/ YES) Thickness: NA		

BOREHOLE DIAMETER FACTORS

DIAMETER (INCHES):	1	1.5	2	3	4	5	6	7	8	9	10
GALLONS/FOOT:	0.041	0.092	0.163	0.367	0.654	1.02	1.47	2.00	2.61	3.30	5.87

PURGE METHOD:	Bladder Pump	WELL HEAD VOC CONCENTRATION (ppm):	Ø
STATIC DEPTH TO WATER (TOC):	6.50	STANDING WATER VOLUME IN WELL (gallons):	1.14
WELL DEPTH (TOC):	13.55	THREE WELL VOLUMES (gallons):	3.44
FEET OF WATER IN WELL:	7.05	ONE: TWO: THREE:	

PURGING DATA:

Measure indicator parameters after each volume (at 1/2 volume if more than 3 required*)

TIME BEGIN PURGING: 14:26 TIME END PURGING:

Time:	16:29	16:38	16:47	16:56				
Depth to Water (ft)	8.72	8.72	8.72	8.72				
Depth to bottom opening of Purge Device (TOC)	10.5	10.5	10.5	10.5	Sample Collected @ 17:00			
Flow Rate (ml/min.)	60ml	60ml	60ml	60ml				
Volume of Water Removed (gals)	7200 ml	7700ml	8200ml	8700ml				
pH	7.16	7.17	7.17	7.17				
Specific Conductivity (umhos)	1.10	1.09	1.08	1.07				
Dissolve Oxygen (DO)	3.11	2.65	2.50	2.43				
Temperature (deg. C)	19.21	19.87	19.85	19.80				
ORP (mV)	99	97	96	97				
Turbidity (NTU)	52.3	54	56	54				

DEPTH TO WATER MEASUREMENTS AFTER PURGING

Date	Time	Depth to Water (ft) "After Purge"	Pre-Purge / "Static" Water Column (ft)	Water Column (ft)	% RECOVERY

Notes:

* **Purging should not exceed 5 volumes**

(1) Determine water column in the borehole(for both "after purge" and "static" conditions) by subtracting the measured water level from the well point.

(2) Divide the "after purge" water column by the "static" water column and multiply by 100 to determine the percent of recovery for the well.

DO has not stabilized continue to collect field parameters Although Sample time is 16:20

SAMPLING INFORMATION

Well Number: TW12-1

SAMPLING DEVICE: Bladder Pump

SAMPLE PARAMETER	TIME	CONTAINER	COLOR	TURBIDITY SAMPLE TAKEN AFTER (CHECK ONE)
sample VOC NYC CLPASP	16:20	40 ml VOA	None	122275
duplicate		2-40 ml VOA		122284
Rinse Blank		2-40 ml VOA		120100
Trip Blank		2-40 ml VOA		120001
MS		2-40 ml VOA		122275MS
MSD		2-40 ml VOA		122275MSD

QA\QC:

QA/QC DUPLICATE SAMPLE COLLECTED: (YES) or NO 122284

Duplicate Sample Name:

QA\QC RINSATE SAMPLE NAME: 120100

MATRIX SPIKE SAMPLE COLLECTED: (YES) or NO 122275MS 122275MSD

INVESTIGATION DERIVED WASTE (IDW):

Date:	5/27				
Volume Transfered to Drum:	3 gal				
Drum Number:	Work				

COMMENTS:

Samples collected 5/26/04 from TW 12-1

SAMPLING RECORD - GROUNDWATER

PARSONS	CLIENT: SEAD-12	WELL #: TW12-4

PROJECT (STUDY_ID):	SEAD-12 - RI	DATE:	5/26/04
SWMU # (AREA):	SEAD 12	LABORATORY:	Chemtek
SCREENED INTERVAL (TOC):	11.75 - 6.75	MONITORING DATE:	5/26
STATE WELL PERMIT #:		INSTRUMENT	DETECTOR
WEATHER:	Sun 70°	PID / FID	Ø
FREE PRODUCT (NO/ YES) Thickness	NA		

BOREHOLE DIAMETER FACTORS

DIAMETER (INCHES):	1	1.5	(2)	3	4	5	6	7	8	9	10
GALLONS/FOOT:	0.041	0.092	0.163	0.367	0.654	1.02	1.47	2.00	2.61	3.30	5.87

PURGE METHOD:	Bladder	WELL HEAD VOC CONCENTRATION (ppm):	
STATIC DEPTH TO WATER (TOC):	7.09	STANDING WATER VOLUME IN WELL (gallons):	.7661
WELL DEPTH (TOC):	11.75	THREE WELL VOLUMES (gallons):	2.29
FEET OF WATER IN WELL:	4.70	ONE: .76 TWO:	THREE: 2.30

PURGING DATA:

Measure indicator parameters after each volume (at 1/2 volume if more than 3 required*)

TIME BEGIN PURGING: 14:00 / 0930 5/27 TIME END PURGING: 14:14

Time:	14:00	~~0830~~ 10:20	10:29	10:38	10:47	10:56	11:05	
Depth to Water (ft)	7.8	7.80	7.82	7.82	7.82	7.82	7.82	
Depth to bottom opening of Purge Device (TOC)	9ft	9ft	9ft.	9ft	9ft	9ft	9ft	
Flow Rate (ml/min.)	100ml/m	85ml/min	65 ml/m	65 ml	65 ml	65ml	65ml	
Volume of Water Removed (gals)	1000 ml	2500 ml	3050	3600	4150	4700	5250	SAMPLE Collected
pH	—	6.81	6.80	6.78	6.74	6.70	6.69	
Specific Conductivity (umhos)	—	5.12	5.22	5.25	5.26	5.26	5.25	
Dissolve Oxygen (DO)	—	3.14	3.02	2.92	2.78	2.56	2.55	
Temperature (deg. C)	—	18.2	18.2	18.2	18.24	18.24	18.24	
ORP (mV)	—	14	20	22	24	26	28	
Turbidity (NTU)	—	29.3	29.5	22.8	23	21	23	

DEPTH TO WATER MEASUREMENTS AFTER PURGING

Date	Time	Depth to Water (ft) "After Purge"	Pre-Purge / "Static" Water Column (ft)	Water Column (ft)	% RECOVERY

Notes:

* **Purging should not exceed 5 volumes**

(1) Determine water column in the borehole(for both "after purge" and "static" conditions) by subtracting the measured water level from the well point.

(2) Divide the "after purge" water column by the "static" water column and multiply by 100 to determine the percent of recovery for the well.

1 gallon = 3785 ml

14:14 Stop pumping at 100 ml/min well has drawn down to 8.3ft.

09:30 May 27 2004 Purged 1500ml yesterday #122278

SAMPLING INFORMATION

Well Number: TW12-4

SAMPLING DEVICE:

SAMPLE PARAMETER	TIME	CONTAINER	COLOR	TURBIDITY SAMPLE TAKEN AFTER (CHECK ONE)
VOC NYC CLP		2 40 ml vial	clear	122278

QA\QC:

QA/QC DUPLICATE SAMPLE COLLECTED: (YES) or NO

Duplicate Sample Name:

QA\QC RINSATE SAMPLE NAME:

MATRIX SPIKE SAMPLE COLLECTED: (YES) or NO

INVESTIGATION DERIVED WASTE (IDW):

Date:	5/27				
Volume Transfered to Drum:	2gallons				
Drum Number:	Decon				

COMMENTS:

Sample 122278 collected at 11:10 this well was drawn down completly on 5/26/04 1500 ml Removed the well TW12-4 was purged of an additional 5250 ml today before sample 122278 was collected.

SAMPLING RECORD - GROUNDWATER

PARSONS	CLIENT:	WELL #: TW 12-5

PROJECT (STUDY_ID):	SEAD 12 RI	DATE:	6/27/09
SWMU # (AREA):	Building 813/814	LABORATORY:	Chemtek
SCREENED INTERVAL (TOC):		MONITORING DATE:	
STATE WELL PERMIT #:		INSTRUMENT	DETECTOR
WEATHER:	Sun 70°	PID / FID	0
FREE PRODUCT (NO/ YES) Thickness	NA		

BOREHOLE DIAMETER FACTORS

DIAMETER (INCHES):	1	1.5	(2)	3	4	5	6	7	8	9	10
GALLONS/FOOT:	0.041	0.092	0.163	0.367	0.654	1.02	1.47	2.00	2.61	3.30	5.87

PURGE METHOD:	Bladder	WELL HEAD VOC CONCENTRATION (ppm):	0
STATIC DEPTH TO WATER (TOC):	8.10	STANDING WATER VOLUME IN WELL (gallons):	.904
WELL DEPTH (TOC):	13.65	THREE WELL VOLUMES (gallons):	2.71
FEET OF WATER IN WELL:	5.55	ONE: TWO:	THREE:

PURGING DATA:

Measure indicator parameters after each volume (at 1/2 volume if more than 3 required*)

TIME BEGIN PURGING: 14:30 TIME END PURGING:

Time:	15:30	15:40	15:50	1555	1600	16:05	16:10	Sample Collected at 16:10
Depth to Water (ft)	8.70	8.70	8.70	8.75	8.75	8.75	8.75	
Depth to bottom opening of Purge Device (TOC)	11.65	11.65	11.65	11.65	11.65	11.65	11.65	
Flow Rate (ml/min.)	40ml	40ml	40ml	40mL	40mL	40ml	40ml	
Volume of Water Removed (gals)	2500	2900	3400 ml	—	—	—		
pH	6.71	6.53	6.72	6.76	6.74	6.70	6.71	
Specific Conductivity (umhos)	2.14	2.19	2.19	2.21	2.24	2.26	2.25	
Dissolve Oxygen (DO)	10.06	6.95	6.60	6.80	6.63	6.60	6.59	
Temperature (deg. C)	19.59	20.40	20.72	20.78	20.40	20.40	20.40	
ORP (mV)	19	26	14	16	24	26	26	
Turbidity (NTU)	32.5	43.3	44.4	53	69.4	76.4	98.5	

DEPTH TO WATER MEASUREMENTS AFTER PURGING

Date	Time	Depth to Water (ft) "After Purge"	Pre-Purge / "Static" Water Column (ft)	Water Column (ft)	% RECOVERY

Notes:

* **Purging should not exceed 5 volumes**

(1) Determine water column in the borehole(for both "after purge" and "static" conditions) by subtracting the measured water level from the well point.

(2) Divide the "after purge" water column by the "static" water column and multiply by 100 to determine the percent of recovery for the well.

* Turbidity is not 98.5 the meter is not working properly

SAMPLING INFORMATION

Well Number: TW 12-5

SAMPLING DEVICE: Bladder pump

SAMPLE PARAMETER	TIME	CONTAINER	COLOR	TURBIDITY SAMPLE TAKEN AFTER (CHECK ONE)
VOC NYSCLPASP	16:10	2-40 ml VOA	No color	122279

QA\QC:

QA/QC DUPLICATE SAMPLE COLLECTED: (YES) or NO

Duplicate Sample Name: 122294

QA\QC RINSATE SAMPLE NAME: 120100

MATRIX SPIKE SAMPLE COLLECTED: (YES) or NO

INVESTIGATION DERIVED WASTE (IDW):

Date:	5/27				
Volume Transfered to Drum:	2gal				
Drum Number:	white				

COMMENTS:

Sample # 122279 collected at 16:10 is VOC sample for TW12-5

SAMPLING RECORD - GROUNDWATER

PARSONS	CLIENT:	WELL #: TW 12-6

PROJECT (STUDY_ID):	SEAD-17	DATE:	5/27/04
SWMU # (AREA):	Building 813/814	LABORATORY :	
SCREENED INTERVAL (TOC):	10.05 - 5.05	MONITORING DATE:	
STATE WELL PERMIT #:	—	INSTRUMENT	DETECTOR
WEATHER:	Sun 70°	PID / FID	
FREE PRODUCT (NO/ YES) Thickness	NA		

BOREHOLE DIAMETER FACTORS

DIAMETER (INCHES):	1	1.5	2	3	4	5	6	7	8	9	10
GALLONS/FOOT:	0.041	0.092	0.163	0.367	0.654	1.02	1.47	2.00	2.61	3.30	5.87

PURGE METHOD:	Bladder	WELL HEAD VOC CONCENTRATION (ppm):	0.00
STATIC DEPTH TO WATER (TOC):	7.45	STANDING WATER VOLUME IN WELL (gallons):	.9128
WELL DEPTH (TOC):	13.05	THREE WELL VOLUMES (gallons):	
FEET OF WATER IN WELL:	5.06	ONE: TWO: THREE:	2.73

PURGING DATA:

Measure indicator parameters after each volume (at 1/2 volume if more than 3 required*)

TIME BEGIN PURGING: TIME END PURGING:

Time:	1030	1108	1115	1120	1125	1130	1135	1140
Depth to Water (ft)	7.45	8.25	* note	→	→	→	→	
Depth to bottom opening of Purge Device (TOC)	13.05	13.05	13.05	13.05	→	→	→	→
Flow Rate (ml/min.) ** note	75	20	20	20	→	→	→	→
Volume of Water Removed (gals)								
pH	—	6.47	6.35	6.38	6.42	6.44	6.45	6.45
Specific Conductivity (umhos)	—	2.65	2.66	2.64	2.62	2.59	2.55	2.55
Dissolve Oxygen (DO)	—	10.81	9.07	8.75	8.58	8.21	8.13	7.90
Temperature (deg. C)	—	18.71	19.53	19.70	20.10	20.60	21.33	21.59
ORP (mV)	—	12	22	23	23	21	19	18
Turbidity (NTU)	—	19.8	24.0	26.7	34.1	40.0	48.3	57.7

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DEPTH TO WATER MEASUREMENTS AFTER PURGING

Date	Time	Depth to Water (ft) "After Purge"	Pre-Purge / "Static" Water Column (ft)	Water Column (ft)	% RECOVERY

Notes:

* **Purging should not exceed 5 volumes**

(1) Determine water column in the borehole(for both "after purge" and "static" conditions) by subtracting the measured water level from the well point.

(2) Divide the "after purge" water column by the "static" water column and multiply by 100 to determine the percent of recovery for the well.

Note:
* Lowered flow rate to 59 secs refill to 1 sec discharge time to keep up low discharge rate of well. Did this at ≥ 1050
** DTW dropping slowly at maximum flow rate able to be produced by bladder pump. A final DTW will be

SAMPLING RECORD - GROUNDWATER

PARSONS	CLIENT:	WELL #: TW12-6

PROJECT (STUDY_ID):	SEAD 12 - RI	DATE:	5/27/04
SWMU # (AREA):	Building 813/814	LABORATORY :	
SCREENED INTERVAL (TOC):		MONITORING DATE:	
STATE WELL PERMIT #:		INSTRUMENT	DETECTOR
WEATHER:	Sun 70°	PID / FID	Ø
FREE PRODUCT (NO/ YES) Thickness	NA		

BOREHOLE DIAMETER FACTORS

DIAMETER (INCHES):	1	1.5	(2)	3	4	5	6	7	8	9	10
GALLONS/FOOT:	0.041	0.092	0.163	0.367	0.654	1.02	1.47	2.00	2.61	3.30	5.87

PURGE METHOD:	Bladder Pump	WELL HEAD VOC CONCENTRATION (ppm):	Ø
STATIC DEPTH TO WATER (TOC):	7.45	STANDING WATER VOLUME IN WELL (gallons):	.9128
WELL DEPTH (TOC):	13.05	THREE WELL VOLUMES (gallons):	
FEET OF WATER IN WELL:		ONE: TWO:	THREE: 2.73

PURGING DATA:

Measure indicator parameters after each volume (at 1/2 volume if more than 3 required*)

TIME BEGIN PURGING: TIME END PURGING:

Time:	11:50	11:55	12:00	12:05	12:10	12:20	12:25	12:30
Depth to Water (ft)								
Depth to bottom opening of Purge Device (TOC)	13.05	13.05	13.05	13.05	13.05	13.05	13.05	13.05
Flow Rate (ml/min.)	200ml	200ml/m	200ml/m	200ml/m	200ml/m	200ml/m	200ml/m	200ml/m
Volume of Water Removed (gals)								
pH	6.64	6.46	6.46	6.47	6.48	6.49	6.48	6.48
Specific Conductivity (umhos)	2.49	2.47	2.48	2.45	2.43	2.40	2.36	2.35
Dissolve Oxygen (DO)	7.39	7.34	7.21	7.19	7.11	7.01	6.93	6.87
Temperature (deg. C)	21.72	21.88	21.91	21.92	22.07	22.11	22.17	22.80
ORP (mV)	16	15	14	14	12	11	10	8
Turbidity (NTU)	80.1	94.7	110	126	138	183	228	297

DEPTH TO WATER MEASUREMENTS AFTER PURGING

Date	Time	Depth to Water (ft) "After Purge"	Pre-Purge / "Static" Water Column (ft)	Water Column (ft)	% RECOVERY

Notes:

* **Purging should not exceed 5 volumes**

(1) Determine water column in the borehole(for both "after purge" and "static" conditions) by subtracting the measured water level from the well point.

(2) Divide the "after purge" water column by the "static" water column and multiply by 100 to determine the percent of recovery for the well.

Sample Collected @ 12:30 #122280 4000 ml purged

SAMPLING INFORMATION

Well Number: TW12-6

SAMPLING DEVICE:

SAMPLE PARAMETER	TIME	CONTAINER	COLOR	TURBIDITY SAMPLE TAKEN AFTER (CHECK ONE)
VOC NYS CLP ASP	1230	2-40ml VOA	No color	122280

QA\QC:

QA/QC DUPLICATE SAMPLE COLLECTED: YES or NO

Duplicate Sample Name:

QA\QC RINSATE SAMPLE NAME:

MATRIX SPIKE SAMPLE COLLECTED: YES or NO

INVESTIGATION DERIVED WASTE (IDW):

Date:	5/27				
Volume Transfered to Drum:	1.8 gal				
Drum Number:	-				

COMMENTS:

Final DTW was 9.00 after sampling.

SAMPLING RECORD - GROUNDWATER

PARSONS	CLIENT:	WELL #: TW 12-7

PROJECT (STUDY_ID):	SEAD 12 RI	DATE:	
SWMU # (AREA):	Building 813/814	LABORATORY :	
SCREENED INTERVAL (TOC):		MONITORING DATE:	
STATE WELL PERMIT #:		INSTRUMENT	DETECTOR
WEATHER:	70° 70%	PID / FID	0
FREE PRODUCT (NO/ YES) Thickness	NA		

BOREHOLE DIAMETER FACTORS

DIAMETER (INCHES):	1	1.5	2	3	4	5	6	7	8	9	10
GALLONS/FOOT:	0.041	0.092	0.163	0.367	0.654	1.02	1.47	2.00	2.61	3.30	5.87

PURGE METHOD:	Bladder Pump	WELL HEAD VOC CONCENTRATION (ppm):	0
STATIC DEPTH TO WATER (TOC):	7.35	STANDING WATER VOLUME IN WELL (gallons):	.774
WELL DEPTH (TOC):	12.10	THREE WELL VOLUMES (gallons):	
FEET OF WATER IN WELL:	4.75	ONE: TWO:	THREE: 2.32

PURGING DATA:

Measure indicator parameters after each volume (at 1/2 volume if more than 3 required*)

TIME BEGIN PURGING: TIME END PURGING:

Time:	14:00	14:10						
Depth to Water (ft)	8.35	8.35						
Depth to bottom opening of Purge Device (TOC)	10.5	10.5	Sample					
Flow Rate (ml/min.)	400ml	400ml						
Volume of Water Removed (gals)	6500	7000	Collected at 14:10					
pH	6.81	6.81						
Specific Conductivity (umhos)	2.64	2.63						
Dissolve Oxygen (DO)	1.89	1.89						
Temperature (deg. C)	16.59	16.59						
ORP (mV)	59	57						
Turbidity (NTU)	30	31.7						

DEPTH TO WATER MEASUREMENTS AFTER PURGING

Date	Time	Depth to Water (ft) "After Purge"	Pre-Purge / "Static" Water Column (ft)	Water Column (ft)	% RECOVERY

Notes:

* **Purging should not exceed 5 volumes**

(1) Determine water column in the borehole(for both "after purge" and "static" conditions) by subtracting the measured water level from the well point.

(2) Divide the "after purge" water column by the "static" water column and multiply by 100 to determine the percent of recovery for the well.

Sample Collected @ 14:10 Sample # 122281

SAMPLING RECORD - GROUNDWATER

PARSONS	CLIENT:	WELL #: TW12-7

PROJECT (STUDY_ID):	SEAD 12	DATE:	5/27/04
SWMU # (AREA):	Building 913/914	LABORATORY:	Chemtech
SCREENED INTERVAL (TOC):	10'-10' 5-10	MONITORING DATE:	
STATE WELL PERMIT #:	—	INSTRUMENT	DETECTOR
WEATHER:	Sun 70°	PID / FID	Mini Rae
FREE PRODUCT (NO/ YES) Thickness	NA		

BOREHOLE DIAMETER FACTORS

DIAMETER (INCHES):	1	1.5	(2)	3	4	5	6	7	8	9	10
GALLONS/FOOT:	0.041	0.092	0.163	0.367	0.654	1.02	1.47	2.00	2.61	3.30	5.87

PURGE METHOD:	Bladder	WELL HEAD VOC CONCENTRATION (ppm):	Ø
STATIC DEPTH TO WATER (TOC):	7.35	STANDING WATER VOLUME IN WELL (gallons):	.774
WELL DEPTH (TOC):	12.10	THREE WELL VOLUMES (gallons):	
FEET OF WATER IN WELL:	4.75	ONE: TWO:	THREE: 2.32

PURGING DATA:

Measure indicator parameters after each volume (at 1/2 volume if more than 3 required*)

TIME BEGIN PURGING: 11:10 TIME END PURGING:

Time:	12:31	12:44	12:57	13:10	13:13	13:26	13:39	13:52
Depth to Water (ft)	8.20	8.30	8.35	8.35	8.55	8.35	8.35	8.35
Depth to bottom opening of Purge Device (TOC)	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6
Flow Rate (ml/min.)	40ml	40ml	40ml	40ml	40ml	40ml	40ml	40ml
Volume of Water Removed (gals)	2500 ml	3000ml	3500ml	4000	4500	5000	5500	6000
pH	6.61	6.48	6.61	6.69	6.71	6.65	6.69	6.78
Specific Conductivity (umhos)	2.56	2.66	2.59	2.58	2.62	2.67	2.68	2.67
Dissolve Oxygen (DO)	5.07	4.11	3.27	2.89	2.63	2.38	2.01	1.90
Temperature (deg. C)	20.62	20.79	20.78	20.65	19.30	17.30	16.62	16.63
ORP (mV)	65	73	67	64	64	69	66	60
Turbidity (NTU)	0	0	0	7.5	8.9	9.9	25.5	26.3

DEPTH TO WATER MEASUREMENTS AFTER PURGING

Date	Time	Depth to Water (ft) "After Purge"	Pre-Purge / "Static" Water Column (ft)	Water Column (ft)	% RECOVERY

Notes:

* **Purging should not exceed 5 volumes**

(1) Determine water column in the borehole(for both "after purge" and "static" conditions) by subtracting the measured water level from the well point.

(2) Divide the "after purge" water column by the "static" water column and multiply by 100 to determine the percent of recovery for the well.

SAMPLING INFORMATION

Well Number: TW12-7

SAMPLING DEVICE:

SAMPLE PARAMETER	TIME	CONTAINER	COLOR	TURBIDITY SAMPLE TAKEN AFTER (CHECK ONE)
VOC NYS CLP ASP	1410	2-40ml VOA	None	122281

QA\QC:

QA/QC DUPLICATE SAMPLE COLLECTED: YES or NO

Duplicate Sample Name:

QA\QC RINSATE SAMPLE NAME:

MATRIX SPIKE SAMPLE COLLECTED: YES or NO

INVESTIGATION DERIVED WASTE (IDW):

Date:	5/27				
Volume Transfered to Drum:	2 gal				
Drum Number:	—				

COMMENTS:

Sample Collected @ 14:10 # 122281

SAMPLING RECORD - GROUNDWATER

PARSONS	**CLIENT:**	**WELL #:** TW 12-8

PROJECT (STUDY_ID):	SEAD 12 RI	**DATE:**	5/27/04
SWMU # (AREA):	Building 83/84	**LABORATORY:**	Chemtech
SCREENED INTERVAL (TOC):	—	**MONITORING DATE:**	
STATE WELL PERMIT #:		**INSTRUMENT**	**DETECTOR**
WEATHER:	Sun 70°	**PID / FID**	Ø
FREE PRODUCT (NO/ YES) Thickness	NA		

BOREHOLE DIAMETER FACTORS

DIAMETER (INCHES):	1	1.5	(2)	3	4	5	6	7	8	9	10
GALLONS/FOOT:	0.041	0.092	0.163	0.367	0.654	1.02	1.47	2.00	2.61	3.30	5.87

PURGE METHOD:	Bladder pump	WELL HEAD VOC CONCENTRATION (ppm):	Ø
STATIC DEPTH TO WATER (TOC):	7.2	STANDING WATER VOLUME IN WELL (gallons):	5.4ft
WELL DEPTH (TOC):	12.4	THREE WELL VOLUMES (gallons):	3.2gallons
FEET OF WATER IN WELL:	5.2	ONE: TWO:	THREE:

PURGING DATA:

Measure indicator parameters after each volume (at 1/2 volume if more than 3 required*)

TIME BEGIN PURGING: TIME END PURGING:

Time:	13:25	13:31	13:45	14:00	14:05	14:10	14:15	14:20
Depth to Water (ft)	7.35	7.50	7.70	7.85	7.85	7.85	7.85	7.85
Depth to bottom opening of Purge Device (TOC)	12.40	12.40	12.40	12.40	12.40	12.40	12.40	12.40
Flow Rate (ml/min.)	30ml/m	30ml/m	30ml/m	30ml/m	30ml/m	30ml/m	30ml/m	30ml/m
Volume of Water Removed (gals)								
pH				6.69	6.65	6.64	6.61	6.61
Specific Conductivity (umhos)				2.63	2.76	2.75	2.74	2.72
Dissolve Oxygen (DO)				10.31	8.14	7.48	7.15	6.53
Temperature (deg. C)				20.06	20.60	20.80	20.95	21.56
ORP (mV)				55	54	54	55	56
Turbidity (NTU)				31.5	20.2	20.5	25.8	26.8

DEPTH TO WATER MEASUREMENTS AFTER PURGING

Date	Time	Depth to Water (ft) "After Purge"	Pre-Purge / "Static" Water Column (ft)	Water Column (ft)	% RECOVERY

Notes:

* **Purging should not exceed 5 volumes**

(1) Determine water column in the borehole(for both "after purge" and "static" conditions) by subtracting the measured water level from the well point.

(2) Divide the "after purge" water column by the "static" water column and multiply by 100 to determine the percent of recovery for the well.

TW12-8 Page 2 of 3

SAMPLING RECORD - GROUNDWATER

PARSONS	**CLIENT:**	**WELL # :** TW12-8	
PROJECT (STUDY_ID):	SEAD 12 RI	**DATE:**	5/27/04
SWMU # (AREA):	Building 813/814	**LABORATORY :**	Chemtech
SCREENED INTERVAL (TOC):		**MONITORING DATE:**	
STATE WELL PERMIT #:		**INSTRUMENT**	**DETECTOR**
WEATHER:	Sun 70°	**PID / FID**	Ø
FREE PRODUCT (NO/ YES) Thickness	NA		

BOREHOLE DIAMETER FACTORS

DIAMETER (INCHES):	1	1.5	(2)	3	4	5	6	7	8	9	10
GALLONS/FOOT:	0.041	0.092	0.163	0.367	0.654	1.02	1.47	2.00	2.61	3.30	5.87

PURGE METHOD:	Bladder Pump	WELL HEAD VOC CONCENTRATION (ppm):	
STATIC DEPTH TO WATER (TOC):	7.2	STANDING WATER VOLUME IN WELL (gallons):	.84
WELL DEPTH (TOC):	12.4	THREE WELL VOLUMES (gallons):	2.54
FEET OF WATER IN WELL:	5.2	ONE: .84 TWO:	THREE: 2.54

PURGING DATA:

Measure indicator parameters after each volume (at 1/2 volume if more than 3 required*)

TIME BEGIN PURGING: TIME END PURGING:

Time:	14:25	14:30	14:35	14:40	14:45	14:50	14:55	15:00
Depth to Water (ft)	7.85	7.85	7.85	7.85	7.85	7.85	7.85	7.85
Depth to bottom opening of Purge Device (TOC)	12.40	12.40	12.40	12.40	12.40	12.40	12.40	12.40
Flow Rate (ml/min.)	300ml/m	300ml/m	300ml/m	300ml/m	300ml/m	300ml/m	300ml/m	300ml/m
Volume of Water Removed (gals)	-	-	-	-	-	-	-	-
pH	6.62	6.62	6.62	6.61	6.62	6.63	6.63	6.64
Specific Conductivity (umhos)	2.67	2.64	2.61	2.58	2.54	2.49	2.46	2.42
Dissolve Oxygen (DO)	6.49	6.08	5.83	5.58	5.37	5.16	5.03	5.00
Temperature (deg. C)	21.7	21.78	21.73	21.88	22.32	22.53	22.67	22.51
ORP (mV)	56	58	59	61	61	62	62	63
Turbidity (NTU)	31	31.8	36.2	38.2	40.1	40.4	48.5	55.7

DEPTH TO WATER MEASUREMENTS AFTER PURGING

Date	Time	Depth to Water (ft) "After Purge"	Pre-Purge / "Static" Water Column (ft)	Water Column (ft)	% RECOVERY

Notes:

* **Purging should not exceed 5 volumes**

(1) Determine water column in the borehole(for both "after purge" and "static" conditions) by subtracting the measured water level from the well point.

(2) Divide the "after purge" water column by the "static" water column and multiply by 100 to determine the percent of recovery for the well.

Sample Collected at 15:15 122282 2 gallons purged

SAMPLING RECORD - GROUNDWATER

PARSONS	CLIENT:	WELL # : TW12-8

PROJECT (STUDY_ID):	SEAD 12 RI	DATE:	5:27
SWMU # (AREA):	Building 80/84	LABORATORY :	Chemtech
SCREENED INTERVAL (TOC):		MONITORING DATE:	
STATE WELL PERMIT #:		INSTRUMENT	DETECTOR
WEATHER:	Sun 70°	PID / FID	0
FREE PRODUCT (NO/ YES) Thickness	NA		

BOREHOLE DIAMETER FACTORS

DIAMETER (INCHES):	1	1.5	(2)	3	4	5	6	7	8	9	10
GALLONS/FOOT:	0.041	0.092	0.163	0.367	0.654	1.02	1.47	2.00	2.61	3.30	5.87

PURGE METHOD:	Bladder Pump	WELL HEAD VOC CONCENTRATION (ppm):	
STATIC DEPTH TO WATER (TOC):	7.2	STANDING WATER VOLUME IN WELL (gallons):	.84
WELL DEPTH (TOC):	12.4	THREE WELL VOLUMES (gallons):	2.54
FEET OF WATER IN WELL:	5.2	ONE: .84 TWO:	THREE: 2.54

PURGING DATA:

Measure indicator parameters after each volume (at 1/2 volume if more than 3 required*)

TIME BEGIN PURGING: TIME END PURGING:

Time:	15:05	15:10	15:15					
Depth to Water (ft)	7.85	7.85						
Depth to bottom opening of Purge Device (TOC)	12.40	12.40	Sample Collected					
Flow Rate (ml/min.)	30ml/m	30ml/m						
Volume of Water Removed (gals)	-	-						
pH	6.66	6.66						
Specific Conductivity (umhos)	2.39	2.35						
Dissolve Oxygen (DO)	4.87	4.75						
Temperature (deg. C)	22.52	22.60	15:15					
ORP (mV)	63	63						
Turbidity (NTU)	67.8	68						

DEPTH TO WATER MEASUREMENTS AFTER PURGING

Date	Time	Depth to Water (ft) "After Purge"	Pre-Purge / "Static" Water Column (ft)	Water Column (ft)	% RECOVERY

Notes:

* **Purging should not exceed 5 volumes**

(1) Determine water column in the borehole(for both "after purge" and "static" conditions) by subtracting the measured water level from the well point.

(2) Divide the "after purge" water column by the "static" water column and multiply by 100 to determine the percent of recovery for the well.

Sample Collected at 15:15 sample # 122282

SAMPLING INFORMATION

Well Number: TW 12-8

SAMPLING DEVICE: Bladder Pump

SAMPLE PARAMETER	TIME	CONTAINER	COLOR	TURBIDITY SAMPLE TAKEN AFTER (CHECK ONE)
VOC NYS CLP ASP	15:15	2- 40 ml VOA	No Color	122282

QA\QC:

QA/QC DUPLICATE SAMPLE COLLECTED: YES or NO

Duplicate Sample Name:

QA\QC RINSATE SAMPLE NAME:

MATRIX SPIKE SAMPLE COLLECTED: YES or NO

INVESTIGATION DERIVED WASTE (IDW):

Date:	5/27				
Volume Transfered to Drum:	2 gal				
Drum Number:	waste				

COMMENTS:

Sample Collected @ 15:15 122282

SAMPLING RECORD - GROUNDWATER

PARSONS	**CLIENT:**	**WELL # :** TW-12-9

PROJECT (STUDY_ID):	SEAD 12 RI	**DATE:**	5/27/09
SWMU # (AREA):	Building 813/814	**LABORATORY :**	Chemtech
SCREENED INTERVAL (TOC):		**MONITORING DATE:**	5/27
STATE WELL PERMIT #:		**INSTRUMENT**	**DETECTOR**
WEATHER:	Sun 70°	**PID / FID**	Ø
FREE PRODUCT (NO/ YES) Thickness	NA		

BOREHOLE DIAMETER FACTORS

DIAMETER (INCHES):	1	1.5	2	3	4	5	6	7	8	9	10
GALLONS/FOOT:	0.041	0.092	0.163	0.367	0.654	1.02	1.47	2.00	2.61	3.30	5.87

PURGE METHOD:	Bailer	WELL HEAD VOC CONCENTRATION (ppm):	
STATIC DEPTH TO WATER (TOC):	12.3	STANDING WATER VOLUME IN WELL (gallons):	
WELL DEPTH (TOC):	12.8	THREE WELL VOLUMES (gallons):	
FEET OF WATER IN WELL:	.5	ONE:	TWO: THREE:

PURGING DATA:

Measure indicator parameters after each volume (at 1/2 volume if more than 3 required*)

TIME BEGIN PURGING: TIME END PURGING:

Time:	15:35							
Depth to Water (ft)								
Depth to bottom opening of Purge Device (TOC)	Sample Collected 1228							
Flow Rate (ml/min.)								
Volume of Water Removed (gals)								
pH								
Specific Conductivity (umhos)								
Dissolve Oxygen (DO)								
Temperature (deg. C)								
ORP (mV)								
Turbidity (NTU)								

DEPTH TO WATER MEASUREMENTS AFTER PURGING

Date	Time	Depth to Water (ft) "After Purge"	Pre-Purge / "Static" Water Column (ft)	Water Column (ft)	% RECOVERY

Notes:

* **Purging should not exceed 5 volumes**

(1) Determine water column in the borehole(for both "after purge" and "static" conditions) by subtracting the measured water level from the well point.

(2) Divide the "after purge" water column by the "static" water column and multiply by 100 to determine the percent of recovery for the well.

* See back page for sampling Details

SAMPLING INFORMATION

Well Number: TW 12-9

SAMPLING DEVICE: Bailer

SAMPLE PARAMETER	TIME	CONTAINER	COLOR	TURBIDITY SAMPLE TAKEN AFTER (CHECK ONE)
VOC NYS CLPASP	15:35	2-40ml VOA	No Color	122283

QA\QC:

QA/QC DUPLICATE SAMPLE COLLECTED: YES or NO

Duplicate Sample Name:

QA\QC RINSATE SAMPLE NAME:

MATRIX SPIKE SAMPLE COLLECTED: YES or NO

INVESTIGATION DERIVED WASTE (IDW):

Date:	—				
Volume Transfered to Drum:	—				
Drum Number:	—				

COMMENTS:

There is not enough water in this well to low flow Sample. A grab sample will be collected with a dedicated bailer with No purging of the well or sandpack. Grab sample 122283 collected at 15:35 / 5/27

TW-	12-1	5/26	ms, msD, RB, TB, SA, DC
	12-2	Did	not install
	12-3	DRY	
	12-4	5-27	
	12-5	5-27	
	12-6	5-27	
	12-7	5-27	
	12-8	5-27	
	12-9	Grab	

SAMPLING RECORD - GROUNDWATER

PARSONS	**CLIENT:**	**WELL # :** TW12-3

PROJECT (STUDY_ID):	SEAD 12 RF	**DATE:**	June 11 2004
SWMU # (AREA):	Building 813/814	**LABORATORY :**	
SCREENED INTERVAL (TOC):		**MONITORING DATE:**	
STATE WELL PERMIT #:		**INSTRUMENT**	**DETECTOR**
WEATHER:	Sun 70°	**PID / FID**	
FREE PRODUCT (NO/ YES) Thickness			

BOREHOLE DIAMETER FACTORS

DIAMETER (INCHES):	1	1.5	(2)	3	4	5	6	7	8	9	10
GALLONS/FOOT:	0.041	0.092	0.163	0.367	0.654	1.02	1.47	2.00	2.61	3.30	5.87

PURGE METHOD:	Bladder	WELL HEAD VOC CONCENTRATION (ppm):	
STATIC DEPTH TO WATER (TOC):	6.28 525	STANDING WATER VOLUME IN WELL (gallons):	1.05
WELL DEPTH (TOC):	12.75	THREE WELL VOLUMES (gallons):	
FEET OF WATER IN WELL:	6.50	ONE: TWO: THREE:	3.15

PURGING DATA:

Measure indicator parameters after each volume (at 1/2 volume if more than 3 required*)

TIME BEGIN PURGING: Not real time = 1122 time = 20:45 TIME END PURGING: 22:05

Time:	20:45	21:05	21:20	21:35	21:46	21:56	22:00	22:05
Depth to Water (ft)		8.175	8.250		[illegible]	8.3	8.325	8.325
Depth to bottom opening of Purge Device (TOC)	10ft	—	—	—	—	—	—	—
Flow Rate (ml/min.)	25 ml/m							
Volume of Water Removed (gals)	0.15	0.20	0.25	0.30	0.33	0.4		
pH	7.21	7.20	7.20	7.19	7.16	7.15	7.15	7.14
Specific Conductivity (umhos)	1.45	1.42	1.39	1.39	1.39	1.38	1.38	1.37
Dissolve Oxygen (DO)	1.71	0.86	0.70	0.70	0.73	0.91	0.86	1.04
Temperature (deg. C)	19.13	17.70	19.23	19.68	20.76	22.93	23.46	24.27
ORP (mV)	92	72	72	59	61	90	97	105
Turbidity (NTU)	48.2	50.2	34.6	31.2	27.0	17.7	18.5	

DEPTH TO WATER MEASUREMENTS AFTER PURGING

Date	Time	Depth to Water (ft) "After Purge"	Pre-Purge / "Static" Water Column (ft)	Water Column (ft)	% RECOVERY

Notes:

* **Purging should not exceed 5 volumes**

(1) Determine water column in the borehole(for both "after purge" and "static" conditions) by subtracting the measured water level from the well point.

(2) Divide the "after purge" water column by the "static" water column and multiply by 100 to determine the percent of recovery for the well.

Sample # 122277 collected @ 11:30

SAMPLING RECORD - GROUNDWATER

PARSONS | **CLIENT:** | **WELL #:** TW12-3

PROJECT (STUDY_ID): SEAD 121
SWMU # (AREA): Building 813/814
SCREENED INTERVAL (TOC):
STATE WELL PERMIT #:
WEATHER: Sun 70°
FREE PRODUCT (NO/ YES) Thickness

DATE: June 11 2004
LABORATORY :
MONITORING DATE: —

INSTRUMENT	DETECTOR
PID / FID	

BOREHOLE DIAMETER FACTORS

DIAMETER (INCHES):	1	1.5	(2)	3	4	5	6	7	8	9	10
GALLONS/FOOT:	0.041	0.092	0.163	0.367	0.654	1.02	1.47	2.00	2.61	3.30	5.87

PURGE METHOD:
STATIC DEPTH TO WATER (TOC): 5.25
WELL DEPTH (TOC): 12.75
FEET OF WATER IN WELL: 6.50

WELL HEAD VOC CONCENTRATION (ppm):
STANDING WATER VOLUME IN WELL (gallons): 1.05
THREE WELL VOLUMES (gallons):
ONE: **TWO:** **THREE:** 3.15

PURGING DATA:

Measure indicator parameters after each volume (at 1/2 volume if more than 3 required*)

TIME BEGIN PURGING: **TIME END PURGING:** 22:34

Time:	22:12	22:18	22:23					
Depth to Water (ft)	8.325	8.350	8.350					
Depth to bottom opening of Purge Device (TOC)	10 ft	—	—	—	—	—	—	—
Flow Rate (ml/min.)	25ml/m							
Volume of Water Removed (gals)			0.5	Total Purge	0.5 gals			
pH	7.14	7.14	7.13					
Specific Conductivity (umhos)	1.39	1.39	1.39					
Dissolve Oxygen (DO)	1.33	1.35	1.38					
Temperature (deg. C)	24.69	25.30	25.62					
ORP (mV)	112	114	115					
Turbidity (NTU)		18.3						

DEPTH TO WATER MEASUREMENTS AFTER PURGING

Date	Time	Depth to Water (ft) "After Purge"	Pre-Purge / "Static" Water Column (ft)	Water Column (ft)	% RECOVERY

Notes:

* **Purging should not exceed 5 volumes**

(1) Determine water column in the borehole(for both "after purge" and "static" conditions) by subtracting the measured water level from the well point.

(2) Divide the "after purge" water column by the "static" water column and multiply by 100 to determine the percent of recovery for the well.

SAMPLING INFORMATION

Well Number: TW 12-3

SAMPLING DEVICE: low flow

SAMPLE PARAMETER	TIME	CONTAINER	COLOR	TURBIDITY SAMPLE TAKEN AFTER (CHECK ONE)
VOC NYS CLP ASP	11:30	2-40ml VOA HCl		18.3

QA\QC:

QA/QC DUPLICATE SAMPLE COLLECTED: YES or NO

Duplicate Sample Name:

QA\QC RINSATE SAMPLE NAME:

MATRIX SPIKE SAMPLE COLLECTED: YES or NO

INVESTIGATION DERIVED WASTE (IDW):

Date:	June 4				
Volume Transfered to Drum:	.75gal				
Drum Number:					

COMMENTS:

the Water level in this well continued to drop throughout purge period. The Sample rate of 25 ml/minute was the lowest volume the QED pump could draw. the drawdown of 2.75 inches occured throughout the purge period.

SAMPLING RECORD - GROUNDWATER

PARSONS	**CLIENT:**	**WELL #:**	TW12-22
PROJECT (STUDY_ID):	SEAD 12 RI	**DATE:**	June 10, 2009
SWMU # (AREA):	Building 813/819	**LABORATORY:**	Chemtech
SCREENED INTERVAL (TOC):		**MONITORING DATE:**	
STATE WELL PERMIT #:		**INSTRUMENT**	**DETECTOR**
WEATHER:	Rain 60°	**PID / FID**	O
FREE PRODUCT (NO/ YES) Thickness			

BOREHOLE DIAMETER FACTORS

DIAMETER (INCHES):	1	1.5	2	3	4	5	6	7	8	9	10
GALLONS/FOOT:	0.041	0.092	0.163	0.367	0.654	1.02	1.47	2.00	2.61	3.30	5.87

PURGE METHOD:		WELL HEAD VOC CONCENTRATION (ppm):	
STATIC DEPTH TO WATER (TOC):	5.67	STANDING WATER VOLUME IN WELL (gallons):	3.18
WELL DEPTH (TOC):	25.20	THREE WELL VOLUMES (gallons):	
FEET OF WATER IN WELL:	19.53	ONE: TWO: THREE:	9.5

PURGING DATA:

Measure indicator parameters after each volume (at 1/2 volume if more than 3 required*)

TIME BEGIN PURGING: 13:31 15:16 TIME END PURGING:

Time:	14:40	14:47	[illegible]	15:26	15:36	15:46	15:56	16:06
Depth to Water (ft)		7.65	7.625	7.59	7.59	7.63	7.78	7.96
Depth to bottom opening of Purge Device (TOC)	20ft							
Flow Rate (ml/min.)	40ml/m	80 ml/m	50 ml/m	40 ml/m	35 ml/m	50 ml/m	50 ml/m	55 ml/m
Volume of Water Removed (gals)	.75	0.85	1.0	1.25	1.40	1.75	2.0	2.25
pH	6.47	6.69	6.67	6.63	6.66	6.67	6.66	6.65
Specific Conductivity (umhos)	2.07	1.05	1.04	1.03	1.10	1.00	1.00	0.99
Dissolve Oxygen (DO)	2.10	1.76	1.95	1.55	1.44	1.39	1.36	1.30
Temperature (deg. C)	14.57	13.26	13.88	13.96	13.97	14.00	13.92	13.66
ORP (mV)	46	44	44	45	44	43	42	40
Turbidity (NTU)	85.9	71.2	36.9	23.6	21.3	18.0	18.4	16.2

DEPTH TO WATER MEASUREMENTS AFTER PURGING

Date	Time	Depth to Water (ft) "After Purge"	Pre-Purge / "Static" Water Column (ft)	Water Column (ft)	% RECOVERY

Notes:

* **Purging should not exceed 5 volumes**

(1) Determine water column in the borehole(for both "after purge" and "static" conditions) by subtracting the measured water level from the well point.

(2) Divide the "after purge" water column by the "static" water column and multiply by 100 to determine the percent of recovery for the well.

Sample 122285 @ 16:50

SAMPLING RECORD - GROUNDWATER

PARSONS	**CLIENT:**	**WELL # :**	TW12-22
PROJECT (STUDY_ID):	Sead 12 RF	**DATE:**	June 10 2004
SWMU # (AREA):	Building 813/814	**LABORATORY :**	
SCREENED INTERVAL (TOC):		**MONITORING DATE:**	
STATE WELL PERMIT #:		**INSTRUMENT**	**DETECTOR**
WEATHER:	Rain 60°	**PID / FID**	
FREE PRODUCT (NO/ YES) Thickness			

BOREHOLE DIAMETER FACTORS

DIAMETER (INCHES):	1	1.5	(2)	3	4	5	6	7	8	9	10
GALLONS/FOOT:	0.041	0.092	0.163	0.367	0.654	1.02	1.47	2.00	2.61	3.30	5.87

PURGE METHOD:		WELL HEAD VOC CONCENTRATION (ppm):	
STATIC DEPTH TO WATER (TOC):	5.67	STANDING WATER VOLUME IN WELL (gallons):	3.18
WELL DEPTH (TOC):	25.20	THREE WELL VOLUMES (gallons):	
FEET OF WATER IN WELL:	19.53	ONE:	TWO: THREE: 9.5

PURGING DATA:

Measure indicator parameters after each volume (at 1/2 volume if more than 3 required*)

TIME BEGIN PURGING: TIME END PURGING:

Time:	16:16	16:26	16:38	16:46				
Depth to Water (ft)	7.90	7.90	7.90	7.80				
Depth to bottom opening of Purge Device (TOC)					Total Purge	3 gal		
Flow Rate (ml/min.)	45 ml/m	30 ml/m	20 ml/m	35 ml/m				
Volume of Water Removed (gals)	2.25	2.5	2.60	2.80				
pH	6.65	6.63	6.61	6.65				
Specific Conductivity (umhos)	0.98	0.97	0.96	0.97				
Dissolve Oxygen (DO)	1.31	1.34	1.32	1.29				
Temperature (deg. C)	14.17	14.23	15.05	15.21				
ORP (mV)	40	42	43	41				
Turbidity (NTU)	13.4	14.5	13.4	16.0				

DEPTH TO WATER MEASUREMENTS AFTER PURGING

Date	Time	Depth to Water (ft) "After Purge"	Pre-Purge / "Static" Water Column (ft)	Water Column (ft)	% RECOVERY
June 10 2004	16:46	7.80	5.67	19.53	

Notes:

* **Purging should not exceed 5 volumes**

(1) Determine water column in the borehole(for both "after purge" and "static" conditions) by subtracting the measured water level from the well point.

(2) Divide the "after purge" water column by the "static" water column and multiply by 100 to determine the percent of recovery for the well.

SAMPLING INFORMATION

Well Number: TW12-22

SAMPLING DEVICE: low flow

SAMPLE PARAMETER	TIME	CONTAINER	COLOR	TURBIDITY SAMPLE TAKEN AFTER (CHECK ONE)
VOC NYS CLPASP	16:50	2-40ml/vial HCl		13.9

QA\QC:

QA/QC DUPLICATE SAMPLE COLLECTED: YES or NO

Duplicate Sample Name:

QA\QC RINSATE SAMPLE NAME:

MATRIX SPIKE SAMPLE COLLECTED: YES or NO

INVESTIGATION DERIVED WASTE (IDW):

Date:	June 10				
Volume Transfered to Drum:	3-5				
Drum Number:	Drum				

COMMENTS:

Sample 122285 @ 16:50 June 10 2004 3-5 gallons purged

SAMPLING RECORD - GROUNDWATER

PARSONS	**CLIENT:**	**WELL # :**	TW 12-23
PROJECT (STUDY_ID):	Building 813/814	**DATE:**	June 10 2004
SWMU # (AREA):	Sead 12 RI	**LABORATORY :**	Chemtech
SCREENED INTERVAL (TOC):		**MONITORING DATE:**	
STATE WELL PERMIT #:		**INSTRUMENT**	**DETECTOR**
WEATHER:	Rain 60°	**PID / FID**	
FREE PRODUCT (NO/ YES) Thickness			

BOREHOLE DIAMETER FACTORS

DIAMETER (INCHES):	1	1.5	(2)	3	4	5	6	7	8	9	10
GALLONS/FOOT:	0.041	0.092	0.165	0.367	0.654	1.02	1.47	2.00	2.61	3.30	5.87

PURGE METHOD:	low flow	WELL HEAD VOC CONCENTRATION (ppm):	Ø
STATIC DEPTH TO WATER (TOC):	8.95	STANDING WATER VOLUME IN WELL (gallons):	2.64
WELL DEPTH (TOC):	25.20	THREE WELL VOLUMES (gallons):	
FEET OF WATER IN WELL:	16.20	ONE: TWO:	THREE: 7.92

PURGING DATA:

Measure indicator parameters after each volume (at 1/2 volume if more than 3 required*)

TIME BEGIN PURGING: TIME END PURGING:

Time:	15:40	15:45	15:50	15:55	16:00	16:05	16:10	16:15
Depth to Water (ft)	9.75	9.75	9.75	9.75	9.75	9.75	9.75	9.75
Depth to bottom opening of Purge Device (TOC)	20ft	20ft	20ft	20ft	20ft	20ft	20ft	20ft
Flow Rate (ml/min.)	40ml/m	40ml/m	40ml/m	40ml/m	40ml/m	40ml/m	40ml/m	40ml/m
Volume of Water Removed (gals)						2.5gal		
pH	6.95	6.95	6.95	6.96	6.95	6.95	6.95	6.95
Specific Conductivity (umhos)	.756	.754	.752	.750	.750	.752	.750	.748
Dissolve Oxygen (DO)	2.56	2.56	2.49	2.42	2.41	2.40	2.33	2.30
Temperature (deg. C)	14.90	14.95	15.00	15.30	15.53	15:38	15.68	15.98
ORP (mV)	60	60	61	61	61	61	62	62
Turbidity (NTU)	8.01	7.44	6.41	5.90	5.64	5.53	5.45	5.51

DEPTH TO WATER MEASUREMENTS AFTER PURGING

Date	Time	Depth to Water (ft) "After Purge"	Pre-Purge / "Static" Water Column (ft)	Water Column (ft)	% RECOVERY

Notes:

Total Volume purged 3.25 gallons

* **Purging should not exceed 5 volumes**

(1) Determine water column in the borehole(for both "after purge" and "static" conditions) by subtracting the measured water level from the well point.

(2) Divide the "after purge" water column by the "static" water column and multiply by 100 to determine the percent of recovery for the well.

Sample = 122286 16:15
122286 MS 16:15
122286 MSD 16:15
122297 Duplicate 17:00

SAMPLING RECORD - GROUNDWATER

PARSONS	**CLIENT:**	**WELL # :**	TW-23
PROJECT (STUDY_ID):	Building 813/814	**DATE:**	June 10 2004
SWMU # (AREA):	SEAD 12 RI	**LABORATORY :**	Chemtech
SCREENED INTERVAL (TOC):		**MONITORING DATE:**	
STATE WELL PERMIT #:		**INSTRUMENT**	**DETECTOR**
WEATHER:	Rain 60°	**PID / FID**	
FREE PRODUCT (NO/ YES) Thickness			

BOREHOLE DIAMETER FACTORS

DIAMETER (INCHES):	1	1.5	(2)	3	4	5	6	7	8	9	10
GALLONS/FOOT:	0.041	0.092	0.163	0.367	0.654	1.02	1.47	2.00	2.61	3.30	5.87

PURGE METHOD:	Bladder pump	WELL HEAD VOC CONCENTRATION (ppm):	0
STATIC DEPTH TO WATER (TOC):	8.95	STANDING WATER VOLUME IN WELL (gallons):	2.64
WELL DEPTH (TOC):	25.20	THREE WELL VOLUMES (gallons):	
FEET OF WATER IN WELL:	16.25	ONE: TWO: THREE:	7.94

PURGING DATA:

Measure indicator parameters after each volume (at 1/2 volume if more than 3 required*)

TIME BEGIN PURGING: 12:58 TIME END PURGING:

Time:	14:30	14:40	14:55	15:10	15:15	15:25	15:30	15:35
Depth to Water (ft)	9.75	9.75	9.75	9.75	9.75	9.75	9.75	9.75
Depth to bottom opening of Purge Device (TOC)	20ft	20ft	20ft	20ft	20ft	20ft		
Flow Rate (ml/min.)	40ml/m	40ml/m	40ml/m	40ml/m	40ml/m	40ml/m	40ml/m	40ml/m
Volume of Water Removed (gals)	1gallon							
pH	6.89	6.89	6.89	6.90	6.91	6.91	6.92	6.95
Specific Conductivity (umhos)	.761	.755	.754	.755	.755	.756	.754	.755
Dissolve Oxygen (DO)	3.07	3.40	2.99	2.83	2.81	2.79	2.68	2.63
Temperature (deg. C)	14.99	15.40	15.80	16.33	16.32	15.48	15.42	14.92
ORP (mV)	59	60	61	61	61	60	60	59
Turbidity (NTU)	12.9	13.3	13.0	9.14	8.63	8.42	8.46	8.45

DEPTH TO WATER MEASUREMENTS AFTER PURGING

Date	Time	Depth to Water (ft) "After Purge"	Pre-Purge / "Static" Water Column (ft)	Water Column (ft)	% RECOVERY
June 10 2004	16:15	9.75	8.95	16.25	

Notes:

* **Purging should not exceed 5 volumes**

(1) Determine water column in the borehole(for both "after purge" and "static" conditions) by subtracting the measured water level from the well point.

(2) Divide the "after purge" water column by the "static" water column and multiply by 100 to determine the percent of recovery for the well.

SAMPLING INFORMATION

Well Number: TW12-23

SAMPLING DEVICE: low flow

SAMPLE PARAMETER	TIME	CONTAINER	COLOR	TURBIDITY SAMPLE TAKEN AFTER (CHECK ONE)
VOC NYSCLPASP	16:15	2-40ml VOA Hcl		5.51

QA\QC:

QA/QC DUPLICATE SAMPLE COLLECTED: (YES) or NO

Duplicate Sample Name: 122297

QA\QC RINSATE SAMPLE NAME: 120101

MATRIX SPIKE SAMPLE COLLECTED: (YES) or NO

INVESTIGATION DERIVED WASTE (IDW):

Date:	June 10				
Volume Transfered to Drum:	3.25				
Drum Number:	Drum 1				

COMMENTS:

Sample = 122286 @ 16:15 Sample

122286MS Matrix Spike JUE 10

122286MSD MS Duplicate

122297 17:00 Duplicate

120101 Rinse Blank JUE 10

120002 Trip Blank

SAMPLING RECORD - GROUNDWATER

PARSONS	CLIENT:	WELL #: TW2-24
PROJECT (STUDY_ID): SEAD 12-RI	DATE: June 11 2004	
SWMU # (AREA): Building 813/814	LABORATORY: Chemtech	
SCREENED INTERVAL (TOC):	MONITORING DATE:	
STATE WELL PERMIT #:	INSTRUMENT	DETECTOR
WEATHER: Sun 74°	PID / FID	
FREE PRODUCT (NO/ YES) Thickness		

BOREHOLE DIAMETER FACTORS

DIAMETER (INCHES):	1	1.5	2	3	4	5	6	7	8	9	10
GALLONS/FOOT:	0.041	0.092	0.163	0.367	0.654	1.02	1.47	2.00	2.61	3.30	5.87

PURGE METHOD:	Bladder	WELL HEAD VOC CONCENTRATION (ppm):	
STATIC DEPTH TO WATER (TOC):	8.75	STANDING WATER VOLUME IN WELL (gallons):	.69
WELL DEPTH (TOC):	13.01	THREE WELL VOLUMES (gallons):	
FEET OF WATER IN WELL:	9.26	ONE: TWO: THREE:	2.08

PURGING DATA:

Measure indicator parameters after each volume (at 1/2 volume if more than 3 required*)

TIME BEGIN PURGING: TIME END PURGING:

Time:	15:28	15:33	15:38	15:43	15:48	15:52	15:58	16:02
Depth to Water (ft)	9.15	9.15	9.2	9.2	9.2	9.2	9.2	9.2
Depth to bottom opening of Purge Device (TOC)								
Flow Rate (ml/min.)	25 ml/m	25 ml/m	25 ml/m	25 ml/m	25 ml/m	25 ml/m	25 ml/m	25 ml/m
Volume of Water Removed (gals)			0.15			0.25		
pH	7.05	7.06	7.07	7.08	7.08	7.08	7.08	7.08
Specific Conductivity (umhos)	1.26	1.25	1.25	1.25	1.24	1.24	1.23	1.23
Dissolve Oxygen (DO)	4.76	4.16	3.99	3.69	3.53	3.35	3.30	3.30
Temperature (deg. C)	18.71	18.43	18.54	18.19	18.27	18.10	18.10	18.28
ORP (mV)	103	102	104	100	102	102	104	105
Turbidity (NTU)	48.4	45.3	38.3	39.5	35.1	43.1	38.2	33.7

DEPTH TO WATER MEASUREMENTS AFTER PURGING

Date	Time	Depth to Water (ft) "After Purge"	Pre-Purge / "Static" Water Column (ft)	Water Column (ft)	% RECOVERY

Notes:

* **Purging should not exceed 5 volumes**

(1) Determine water column in the borehole(for both "after purge" and "static" conditions) by subtracting the measured water level from the well point.

(2) Divide the "after purge" water column by the "static" water column and multiply by 100 to determine the percent of recovery for the well.

SAMPLING RECORD - GROUNDWATER

PARSONS | **CLIENT:** | **WELL #:** TW12-24

PROJECT (STUDY_ID):	SEAD 12 RI	**DATE:**	
SWMU # (AREA):	Building B13/B14	**LABORATORY :**	
SCREENED INTERVAL (TOC):		**MONITORING DATE:**	
STATE WELL PERMIT #:		**INSTRUMENT**	**DETECTOR**
WEATHER:	Sun 74°	**PID / FID**	
FREE PRODUCT (NO/ YES) Thickness			

BOREHOLE DIAMETER FACTORS

DIAMETER (INCHES):	1	1.5	2	3	4	5	6	7	8	9	10
GALLONS/FOOT:	0.041	0.092	0.163	0.367	0.654	1.02	1.47	2.00	2.61	3.30	5.87

PURGE METHOD:	Low Flow	WELL HEAD VOC CONCENTRATION (ppm):	
STATIC DEPTH TO WATER (TOC):	8.75	STANDING WATER VOLUME IN WELL (gallons):	.69
WELL DEPTH (TOC):	13.01	THREE WELL VOLUMES (gallons):	
FEET OF WATER IN WELL:	4.26	ONE: TWO: THREE:	2.08

PURGING DATA:

Measure indicator parameters after each volume (at 1/2 volume if more than 3 required*)

TIME BEGIN PURGING: TIME END PURGING: 16:18

16:20 Sampled

Time:	16:08	16:13						
Depth to Water (ft)	9.2	9.2						
Depth to bottom opening of Purge Device (TOC)								
Flow Rate (ml/min.)	25 ml/m	25 ml/m						
Volume of Water Removed (gals)		0.3		Total Purge	0.42	gals		
pH	7.08	7.08						
Specific Conductivity (umhos)	1.23	1.23						
Dissolve Oxygen (DO)	3.30	3.26						
Temperature (deg. C)	18.25	18.30						
ORP (mV)	107	108						
Turbidity (NTU)	34.4	33.5						

DEPTH TO WATER MEASUREMENTS AFTER PURGING

Date	Time	Depth to Water (ft) "After Purge"	Pre-Purge / "Static" Water Column (ft)	Water Column (ft)	% RECOVERY

Notes:

* **Purging should not exceed 5 volumes**

(1) Determine water column in the borehole(for both "after purge" and "static" conditions) by subtracting the measured water level from the well point.

(2) Divide the "after purge" water column by the "static" water column and multiply by 100 to determine the percent of recovery for the well.

Sample# 122287 @ 16:19

SAMPLING INFORMATION

Well Number: TW 12-24

SAMPLING DEVICE: low flow

SAMPLE PARAMETER	TIME	CONTAINER	COLOR	TURBIDITY SAMPLE TAKEN AFTER (CHECK ONE)
VOC NYSCLPMSP	16:19	2-40ml VOA HCl		33.5 hr

QA\QC:

QA/QC DUPLICATE SAMPLE COLLECTED: YES or NO

Duplicate Sample Name:

QA\QC RINSATE SAMPLE NAME:

MATRIX SPIKE SAMPLE COLLECTED: YES or NO

INVESTIGATION DERIVED WASTE (IDW):

Date:					
Volume Transfered to Drum:	75gal				
Drum Number:	Drum				

COMMENTS:

Sample # 122287 collected @ 16:19

SAMPLING RECORD - GROUNDWATER

PARSONS | CLIENT: | WELL #: TW12-25

PROJECT (STUDY_ID):	SEAD 12 RI	DATE:	June 11 2009
SWMU # (AREA):	Building 813/814	LABORATORY:	Chemtech
SCREENED INTERVAL (TOC):		MONITORING DATE:	
STATE WELL PERMIT #:		INSTRUMENT	DETECTOR
WEATHER:	Sun 70°	PID / FID	
FREE PRODUCT (NO/ YES) Thickness	NA		

BOREHOLE DIAMETER FACTORS

DIAMETER (INCHES):	1	1.5	2	3	4	5	6	7	8	9	10
GALLONS/FOOT:	0.041	0.092	0.163	0.367	0.654	1.02	1.47	2.00	2.61	3.30	5.87

PURGE METHOD:		WELL HEAD VOC CONCENTRATION (ppm):	
STATIC DEPTH TO WATER (TOC):	8.65	STANDING WATER VOLUME IN WELL (gallons):	1.0
WELL DEPTH (TOC):	14.80	THREE WELL VOLUMES (gallons):	
FEET OF WATER IN WELL:	6.15	ONE: TWO: THREE:	3.0

PURGING DATA:

Measure indicator parameters after each volume (at 1/2 volume if more than 3 required*)

TIME BEGIN PURGING: 11:43 TIME END PURGING:

Time:	12:30	12:35	12:40	12:45	12:50	12:55	13:00	13:05
Depth to Water (ft)	9.9 ft	9.45ft	9.45ft	9.45ft	9.45	9.45	9.45	9.50
Depth to bottom opening of Purge Device (TOC)	12.5	12.5	12.5					
Flow Rate (ml/min.)	30ml/m	30ml/m	30ml/m	30ml/m	30ml/m	30ml/m	30ml/m	30ml/m
Volume of Water Removed (gals)	.8gal	3242ml	3393	3543	3693	3843	3993	4143ml
pH	7.14	7.13	7.11	7.08	6.98	6.89	6.93	7.08
Specific Conductivity (umhos)	1.15	1.12	1.10	1.13	1.15	1.21	1.18	1.16
Dissolve Oxygen (DO)	6.07	6.08	6.10	6.05	5.99	5.79	5.63	5.68
Temperature (deg. C)	15.21	15.23	15.43	15.23	14.61	14.55	15.55	16.13
ORP (mV)	63	65	66	70	76	87	74	67
Turbidity (NTU)	35.0	33.2	30.6	36.0	36.4	35.6	34.6	

DEPTH TO WATER MEASUREMENTS AFTER PURGING

Date	Time	Depth to Water (ft) "After Purge"	Pre-Purge / "Static" Water Column (ft)	Water Column (ft)	% RECOVERY
June 11 2009	13:45	9.57	8.65		

Notes:

* **Purging should not exceed 5 volumes**

(1) Determine water column in the borehole(for both "after purge" and "static" conditions) by subtracting the measured water level from the well point.

(2) Divide the "after purge" water column by the "static" water column and multiply by 100 to determine the percent of recovery for the well.

SAMPLING RECORD - GROUNDWATER

PARSONS	**CLIENT:**	**WELL #:** TW12-25	
PROJECT (STUDY_ID):	SEAD 12 RI	**DATE:**	June 11 2004
SWMU # (AREA):	Building 813/819	**LABORATORY:**	Chemtech
SCREENED INTERVAL (TOC):		**MONITORING DATE:**	June 11 2004
STATE WELL PERMIT #:		**INSTRUMENT**	**DETECTOR**
WEATHER:	Sun 72°	**PID / FID**	Ø
FREE PRODUCT (NO/ YES) Thickness	NA		

BOREHOLE DIAMETER FACTORS

DIAMETER (INCHES):	1	1.5	2	3	4	5	6	7	8	9	10
GALLONS/FOOT:	0.041	0.092	0.163	0.367	0.654	1.02	1.47	2.00	2.61	3.30	5.87

PURGE METHOD:		WELL HEAD VOC CONCENTRATION (ppm):	
STATIC DEPTH TO WATER (TOC):	8.65	STANDING WATER VOLUME IN WELL (gallons):	1.0
WELL DEPTH (TOC):	14.80	THREE WELL VOLUMES (gallons):	
FEET OF WATER IN WELL:	6.15	ONE: TWO: THREE:	30

PURGING DATA:

Measure indicator parameters after each volume (at 1/2 volume if more than 3 required*)

TIME BEGIN PURGING: 11:43 TIME END PURGING:

Time:	13:10	13:15	13:20	13:25	13:30	13:35	13:40	13:45
Depth to Water (ft)	9.50	9.55	9.55	9.55	9.55	9.57	9.57	
Depth to bottom opening of Purge Device (TOC)	12.5	12.5	12.5	12.5	12.5	12.5	12.5	Sample 122288 Collected @
Flow Rate (ml/min.)	30ml/m	30 ml/m	30ml/m	30ml/m	30ml/m	30ml/m	30ml/m	
Volume of Water Removed (gals)	4293	4443	4593ml	4743ml	4893	5043	5193	
pH	7.10	7.15	7.17	7.17	7.17	7.17	7.16	
Specific Conductivity (umhos)	1.18	1.16	1.17	1.15	1.16	1.17	1.16	
Dissolve Oxygen (DO)	5.67	5.67	5.66	5.67	5.66	5.66	5.66	
Temperature (deg. C)	16.35	16.19	16.61	17.11	16.37	16.53	16.47	
ORP (mV)	65	65	66	66	67	67	67	
Turbidity (NTU)	20.1	14.6	10.7	8.98	8.59	8.34	8.10	

DEPTH TO WATER MEASUREMENTS AFTER PURGING

Date	Time	Depth to Water (ft) "After Purge"	Pre-Purge / "Static" Water Column (ft)	Water Column (ft)	% RECOVERY

Notes:

* **Purging should not exceed 5 volumes**

(1) Determine water column in the borehole(for both "after purge" and "static" conditions) by subtracting the measured water level from the well point.

(2) Divide the "after purge" water column by the "static" water column and multiply by 100 to determine the percent of recovery for the well.

* Water is slowly dripping in well. Sample rate is 30 ml/min.

Sample ID # 122288 @ 13:45

Total Volume Purged 1.9 gallons (includes flow cell volume 750ml)

SAMPLING INFORMATION

Well Number: TW12-25

SAMPLING DEVICE: low flow

SAMPLE PARAMETER	TIME	CONTAINER	COLOR	TURBIDITY SAMPLE TAKEN AFTER (CHECK ONE)
VOC NYSCLP ASP	13:45	2-40 ml VOA HCl		8.10 ntu

QA\QC:

QA/QC DUPLICATE SAMPLE COLLECTED: YES or NO

Duplicate Sample Name:

QA\QC RINSATE SAMPLE NAME:

MATRIX SPIKE SAMPLE COLLECTED: YES or NO

INVESTIGATION DERIVED WASTE (IDW):

Date:	June 11				
Volume Transfered to Drum:	1.9 gal				
Drum Number:	Drum 1				

COMMENTS:

Sample # 122288 @ 13:45

Water level in well dropped 1.5 inches throughout purge cycle.

SAMPLING RECORD - GROUNDWATER

PARSONS	**CLIENT:**	**WELL #:**	TW12-26
PROJECT (STUDY_ID):	SEAD 12 RI	**DATE:**	June 11 2009
SWMU # (AREA):	Building 813/814	**LABORATORY:**	Chemtech
SCREENED INTERVAL (TOC):		**MONITORING DATE:**	
STATE WELL PERMIT #:		**INSTRUMENT**	**DETECTOR**
WEATHER:	Sun 70°	**PID / FID**	
FREE PRODUCT (NO/ YES) Thickness	NA		

BOREHOLE DIAMETER FACTORS

DIAMETER (INCHES):	1	1.5	2	3	4	5	6	7	8	9	10
GALLONS/FOOT:	0.041	0.092	0.163	0.367	0.654	1.02	1.47	2.00	2.61	3.30	5.87

PURGE METHOD:		WELL HEAD VOC CONCENTRATION (ppm):	
STATIC DEPTH TO WATER (TOC):	8.10	STANDING WATER VOLUME IN WELL (gallons):	.945
WELL DEPTH (TOC):	13.90	THREE WELL VOLUMES (gallons):	
FEET OF WATER IN WELL:	5.8	ONE: TWO: THREE:	2.8

PURGING DATA:

Measure indicator parameters after each volume (at 1/2 volume if more than 3 required*)

TIME BEGIN PURGING: 12:01 TIME END PURGING:

Time:	12:55	1:05	1:10	1:15	1:20	1:25	1:30	1:35
Depth to Water (ft)	8.725		8.775	8.79	8.8	8.8	8.8	8.825
Depth to bottom opening of Purge Device (TOC)								
Flow Rate (ml/min.)	25 ml/m	25 ml/m						25 ml/m
Volume of Water Removed (gals)	0.15	0.2	0.254	0.25	0.27	0.3		
pH	6.29	6.28	6.24	6.20	6.18	6.15	6.15	6.13
Specific Conductivity (umhos)	1.20	1.18	1.18	1.17	1.17	1.17	1.17	1.17
Dissolve Oxygen (DO)	6.11	5.34	5.14	5.15	5.06	4.83	4.82	4.79
Temperature (deg. C)	20.73	21.15	21.20	20.98	21.17	21.74	21.80	21.95
ORP (mV)	62	64	73	80	84	87	87	85
Turbidity (NTU)	135	132	110	90.2	89.7	88.2	78.8	80.1

DEPTH TO WATER MEASUREMENTS AFTER PURGING

Date	Time	Depth to Water (ft) "After Purge"	Pre-Purge / "Static" Water Column (ft)	Water Column (ft)	% RECOVERY

Notes:

* **Purging should not exceed 5 volumes**

(1) Determine water column in the borehole(for both "after purge" and "static" conditions) by subtracting the measured water level from the well point.

(2) Divide the "after purge" water column by the "static" water column and multiply by 100 to determine the percent of recovery for the well.

Sample 122284 @ 13:53 Turbidity is 26.9

SAMPLING RECORD - GROUNDWATER

PARSONS	**CLIENT:**	**WELL #:** TW 12-26

PROJECT (STUDY_ID): SEAD 12, RI	**DATE:** June 11 2009
SWMU # (AREA): Building 813/814	**LABORATORY:** Chemtech
SCREENED INTERVAL (TOC):	**MONITORING DATE:**
STATE WELL PERMIT #:	**INSTRUMENT** / **DETECTOR**
WEATHER: Sun 70°	**PID / FID**
FREE PRODUCT (NO/ YES) Thickness NA	

BOREHOLE DIAMETER FACTORS

DIAMETER (INCHES):	1	1.5	2	3	4	5	6	7	8	9	10
GALLONS/FOOT:	0.041	0.092	0.163	0.367	0.654	1.02	1.47	2.00	2.61	3.30	5.87

PURGE METHOD:		WELL HEAD VOC CONCENTRATION (ppm):	
STATIC DEPTH TO WATER (TOC):	8.10	STANDING WATER VOLUME IN WELL (gallons):	.945
WELL DEPTH (TOC):	13.90	THREE WELL VOLUMES (gallons):	
FEET OF WATER IN WELL:	5.80	ONE: TWO:	THREE: 2.8

PURGING DATA:

Measure indicator parameters after each volume (at 1/2 volume if more than 3 required*)

TIME BEGIN PURGING: TIME END PURGING:

Time:	1:40	Sample Collected @ 13:53						
Depth to Water (ft)	8.825							
Depth to bottom opening of Purge Device (TOC)								
Flow Rate (ml/min.)	25ml/m							
Volume of Water Removed (gals)								
pH	6.11							
Specific Conductivity (umhos)	1.18							
Dissolve Oxygen (DO)	4.84							
Temperature (deg. C)	21.97							
ORP (mV)	93							
Turbidity (NTU)	76.9							

DEPTH TO WATER MEASUREMENTS AFTER PURGING

Date	Time	Depth to Water (ft) "After Purge"	Pre-Purge / "Static" Water Column (ft)	Water Column (ft)	% RECOVERY
June 11 2009	13:53	8.825	8.10		

Notes:

* **Purging should not exceed 5 volumes**

(1) Determine water column in the borehole(for both "after purge" and "static" conditions) by subtracting the measured water level from the well point.

(2) Divide the "after purge" water column by the "static" water column and multiply by 100 to determine the percent of recovery for the well.

Sample ID # 122289 @ 13:53

Volume purged is .95 gallon

SAMPLING INFORMATION

Well Number: TW12-26

SAMPLING DEVICE: low flow

SAMPLE PARAMETER	TIME	CONTAINER	COLOR	TURBIDITY SAMPLE TAKEN AFTER (CHECK ONE)
VOC NYS CLP ASP	13:53	2-40 ml/VOA		76.9

QA\QC:

QA/QC DUPLICATE SAMPLE COLLECTED: YES or NO

Duplicate Sample Name:

QA\QC RINSATE SAMPLE NAME:

MATRIX SPIKE SAMPLE COLLECTED: YES or NO

INVESTIGATION DERIVED WASTE (IDW):

Date:	6/28/04				
Volume Transfered to Drum:	.95				
Drum Number:	Drum 1				

COMMENTS:

① Sample # 122289 @ 13:53 the sample rate was 25 ml/m the lowest rate the QED pump will go.

SAMPLING RECORD - GROUNDWATER

PARSONS | **CLIENT:** | **WELL #:** MW 12-37

PROJECT (STUDY_ID):	SEAD 12 RF	**DATE:**	June 11 2004
SWMU # (AREA):	Building 88/814	**LABORATORY:**	Chemtech
SCREENED INTERVAL (TOC):		**MONITORING DATE:**	June 11 2004
STATE WELL PERMIT #:		**INSTRUMENT**	**DETECTOR**
WEATHER:	Sun 75°	**PID / FID**	
FREE PRODUCT (NO/ YES) Thickness	NA		

BOREHOLE DIAMETER FACTORS

DIAMETER (INCHES):	1	1.5	(2)	3	4	5	6	7	8	9	10
GALLONS/FOOT:	0.041	0.092	0.163	0.367	0.654	1.02	1.47	2.00	2.61	3.30	5.87

PURGE METHOD:	Bladder	WELL HEAD VOC CONCENTRATION (ppm):	
STATIC DEPTH TO WATER (TOC):	7.15	STANDING WATER VOLUME IN WELL (gallons):	1.10
WELL DEPTH (TOC):	13.9	THREE WELL VOLUMES (gallons):	
FEET OF WATER IN WELL:	6.75	ONE:	TWO: THREE: 3.30

PURGING DATA: Water quality meter is # 928073

Measure indicator parameters after each volume (at 1/2 volume if more than 3 required*)

TIME BEGIN PURGING: 14:30 TIME END PURGING: Sample time

Time:	15:00	15:05	15:10	15:15	15:20	15:25	15:32	15:35
Depth to Water (ft)	7.75	7.75	7.82	7.85	7.85	7.85	7.87	7.87
Depth to bottom opening of Purge Device (TOC)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0
Flow Rate (ml/min.)	25ml/m	25 ml	25 ml	25ml	25ml	25ml	25ml	25ml
Volume of Water Removed (gals)	750ml							
pH	[illegible]	6.90	6.91	6.81	6.80	6.82	7.00	7.08
Specific Conductivity (umhos)	[illegible]	.962	.951	.99	.97	.94	.821	.817
Dissolve Oxygen (DO)	[illegible]	[illegible]	[illegible]	2.60	2.41	2.01	2.02	2.02
Temperature (deg. C)	[illegible]	19.45	18.99	20.11	20.7	20.5	20.70	19.88
ORP (mV)	[illegible]	87	87	88	89	90	89	88
Turbidity (NTU)	[illegible]	34.8	33.7	18.3	8.08	8.06	8.25	8.44

DEPTH TO WATER MEASUREMENTS AFTER PURGING

Date	Time	Depth to Water (ft) "After Purge"	Pre-Purge / "Static" Water Column (ft)	Water Column (ft)	% RECOVERY

Notes:

* **Purging should not exceed 5 volumes**

(1) Determine water column in the borehole(for both "after purge" and "static" conditions) by subtracting the measured water level from the well point.

(2) Divide the "after purge" water column by the "static" water column and multiply by 100 to determine the percent of recovery for the well.

* Water level is slowly dropping at 25 ml/m

SAMPLING RECORD - GROUNDWATER

PARSONS	**CLIENT:**	**WELL #:**	MW 12-37
PROJECT (STUDY_ID):	SEAD - 12 RI	**DATE:**	June 11 2009
SWMU # (AREA):	Building 813/814	**LABORATORY:**	Chemtech
SCREENED INTERVAL (TOC):		**MONITORING DATE:**	
STATE WELL PERMIT #:		**INSTRUMENT**	**DETECTOR**
WEATHER:	Sun 74°	**PID / FID**	
FREE PRODUCT (NO/ YES) Thickness			

BOREHOLE DIAMETER FACTORS

DIAMETER (INCHES):	1	1.5	2	3	4	5	6	7	8	9	10
GALLONS/FOOT:	0.041	0.092	0.163	0.367	0.654	1.02	1.47	2.00	2.61	3.30	5.87

PURGE METHOD:	Bladder	WELL HEAD VOC CONCENTRATION (ppm):	
STATIC DEPTH TO WATER (TOC):	7.15	STANDING WATER VOLUME IN WELL (gallons):	1.10
WELL DEPTH (TOC):	13.90	THREE WELL VOLUMES (gallons):	
FEET OF WATER IN WELL:		ONE: TWO: THREE:	3.30

PURGING DATA:

Measure indicator parameters after each volume (at 1/2 volume if more than 3 required*)

TIME BEGIN PURGING: TIME END PURGING:

Time:	15:40	15:45	15:50	15:55	16:00	16:05	16:10	16:15
Depth to Water (ft)	7.87	7.87	7.87	7.87	7.87	7.90	7.90	7.90
Depth to bottom opening of Purge Device (TOC)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0
Flow Rate (ml/min.)	250ml/m	250ml/m	250ml/m	250ml/m	250ml/m	250ml/m	250ml/m	250ml/m
Volume of Water Removed (gals)								3000 ml
pH	7.18	7.18	7.17	7.17	7.16	7.16	7.16	7.16
Specific Conductivity (umhos)	.760	.768	.759	.745	.736	.723	.722	.723
Dissolve Oxygen (DO)	1.96	1.95	1.94	1.93	1.90	1.90	1.90	1.90
Temperature (deg. C)	20.06	20.18	19.91	20.10	19.96	19.89	19.93	20.21
ORP (mV)	88	87	87	87	86	86	86	86
Turbidity (NTU)	8.25	8.12	7.93	4.90	4.54	4.23	4.13	4.08

DEPTH TO WATER MEASUREMENTS AFTER PURGING

Date	Time	Depth to Water (ft) "After Purge"	Pre-Purge / "Static" Water Column (ft)	Water Column (ft)	% RECOVERY

Notes:

* **Purging should not exceed 5 volumes**

(1) Determine water column in the borehole(for both "after purge" and "static" conditions) by subtracting the measured water level from the well point.

(2) Divide the "after purge" water column by the "static" water column and multiply by 100 to determine the percent of recovery for the well.

Sample # 122291 collected at 1615 1.1 gallons purged / WL = 7.90 ft

SAMPLING INFORMATION

Well Number: MW 12-37

SAMPLING DEVICE: Low Flow

SAMPLE PARAMETER	TIME	CONTAINER	COLOR	TURBIDITY SAMPLE TAKEN AFTER (CHECK ONE)
NYS CLP ASP (VOC)	16:15	2-40ml VOA HCl	4.08 turbidity	—

QA\QC:

QA/QC DUPLICATE SAMPLE COLLECTED: YES or NO

Duplicate Sample Name:

QA\QC RINSATE SAMPLE NAME:

MATRIX SPIKE SAMPLE COLLECTED: YES or NO

INVESTIGATION DERIVED WASTE (IDW):

Date:	June 11 2004				
Volume Transfered to Drum:	1.1 gal				
Drum Number:	Soil 4-1				

COMMENTS:

Sample Collected @ 16:15 122291

SAMPLING RECORD - GROUNDWATER MW12-40

PARSONS | **CLIENT:** | **WELL #:** MW-40

PROJECT (STUDY_ID):	SEAD 12	**DATE:**	June 11 2009
SWMU # (AREA):	Building 813/814	**LABORATORY :**	
SCREENED INTERVAL (TOC):	8.38 to 13.23	**MONITORING DATE:**	
STATE WELL PERMIT #:		**INSTRUMENT**	**DETECTOR**
WEATHER:	Sun 70°	**PID / FID**	
FREE PRODUCT (NO/ YES) Thickness	NA		

BOREHOLE DIAMETER FACTORS

DIAMETER (INCHES):	1	1.5	(2)	3	4	5	6	7	8	9	10
GALLONS/FOOT:	0.041	0.092	0.163	0.367	0.654	1.02	1.47	2.00	2.61	3.30	5.87

PURGE METHOD:	Bladder	WELL HEAD VOC CONCENTRATION (ppm):	
STATIC DEPTH TO WATER (TOC):	8.65	STANDING WATER VOLUME IN WELL (gallons):	.75
WELL DEPTH (TOC):	13.30	THREE WELL VOLUMES (gallons):	
FEET OF WATER IN WELL:	4.65	ONE: TWO: THREE:	2.27

PURGING DATA:

Measure indicator parameters after each volume (at 1/2 volume if more than 3 required*)

TIME BEGIN PURGING: 0905 TIME END PURGING:

Time:	09:35	09:40	09:45	0950	0955	10:00	10:05	10:10
Depth to Water (ft)	9.15	9.15	9.15	9.15	9.15	9.15	9.15	9.15
Depth to bottom opening of Purge Device (TOC)	10ft	10ft	10ft	10ft	10ft	10ft	10ft	10ft
Flow Rate (ml/min.)	40ml/m	40ml/m	40ml/m	40ml/m	40ml/m	40 mL	40ml/m	40ml/m
Volume of Water Removed (gals)	.33	.						
pH	6.53	6.50	6.49	6.48	6.50	6.53	6.63	6.64
Specific Conductivity (umhos)	.749	.775	.760	.770	.767	.750	.753	.750
Dissolve Oxygen (DO)	2.02	2.08	2.04	2.05	2.01	1.99	2.00	1.95
Temperature (deg. C)	15.85	15.69	15.70	15.66	15.21	14.75	14.80	14.83
ORP (mV)	91	92	92	92	91	92	93	93
Turbidity (NTU)	13.1	12.2	12.5	11.3	10.6	10.3	10.5	10.2

DEPTH TO WATER MEASUREMENTS AFTER PURGING

Date	Time	Depth to Water (ft) "After Purge"	Pre-Purge / "Static" Water Column (ft)	Water Column (ft)	% RECOVERY

Notes:

* **Purging should not exceed 5 volumes**

(1) Determine water column in the borehole(for both "after purge" and "static" conditions) by subtracting the measured water level from the well point.

(2) Divide the "after purge" water column by the "static" water column and multiply by 100 to determine the percent of recovery for the well.

SAMPLING RECORD - GROUNDWATER

PARSONS	**CLIENT:**	**WELL # :** MW12-40

PROJECT (STUDY_ID):	SEAD 12	**DATE:**	June 11 2004
SWMU # (AREA):	Building 813/814	**LABORATORY :**	
SCREENED INTERVAL (TOC):	8.38 to 13.23	**MONITORING DATE:**	
STATE WELL PERMIT #:		**INSTRUMENT**	**DETECTOR**
WEATHER:	Sun 70°	**PID / FID**	
FREE PRODUCT (NO/ YES) Thickness	NA		

BOREHOLE DIAMETER FACTORS

DIAMETER (INCHES):	1	1.5	(2)	3	4	5	6	7	8	9	10
GALLONS/FOOT:	0.041	0.092	0.163	0.367	0.654	1.02	1.47	2.00	2.61	3.30	5.87

PURGE METHOD:	low flow	WELL HEAD VOC CONCENTRATION (ppm):	
STATIC DEPTH TO WATER (TOC):	8.65	STANDING WATER VOLUME IN WELL (gallons):	.75
WELL DEPTH (TOC):	13.30	THREE WELL VOLUMES (gallons):	
FEET OF WATER IN WELL:	4.65	ONE: TWO: THREE:	2.27

PURGING DATA:

Measure indicator parameters after each volume (at 1/2 volume if more than 3 required*)

TIME BEGIN PURGING: TIME END PURGING:

Time:	10:15	10:20	10:25	10:30	10:35	10:40	10:45	10:50
Depth to Water (ft)	9.15	9.15	9.15	9.15	9.15	9.15	9.15	9.15
Depth to bottom opening of Purge Device (TOC)	10ft	10ft	10ft	10ft	10ft	10ft	10ft	10ft
Flow Rate (ml/min.)	40ml/m	40ml/m	40ml/m	40ml/m	40ml/m	40ml/m	40ml/m	40ml/m
Volume of Water Removed (gals)	1.0gal					1.3gal		
pH	6.64	6.65	6.67	6.89	6.90	7.00	7.00	7.00
Specific Conductivity (umhos)	.751	.754	.700	.552	.550	.548	548	.547
Dissolve Oxygen (DO)	1.89	1.84	1.79	1.75	1.73	1.74	1.73	1.74
Temperature (deg. C)	14.93	15.05	14.79	14.80	14.95	15.23	15.15	15.20
ORP (mV)	93	92	81	81	80	79	76	77
Turbidity (NTU)	11.2	12.7	8.8	8.3	7.2	2.0	1.7	2.2

DEPTH TO WATER MEASUREMENTS AFTER PURGING

Date	Time	Depth to Water (ft) "After Purge"	Pre-Purge / "Static" Water Column (ft)	Water Column (ft)	% RECOVERY
June 11 2004	10:50	9.15 ft	8.65		

Notes:

* **Purging should not exceed 5 volumes**

(1) Determine water column in the borehole(for both "after purge" and "static" conditions) by subtracting the measured water level from the well point.

(2) Divide the "after purge" water column by the "static" water column and multiply by 100 to determine the percent of recovery for the well.

Sample # 122290 Collected at 10:50

SAMPLING INFORMATION

Well Number: MW12-40

SAMPLING DEVICE: low flow

SAMPLE PARAMETER	TIME	CONTAINER	COLOR	TURBIDITY SAMPLE TAKEN AFTER (CHECK ONE)
VOC NYS CLP ASP	10:50	2-40ml/VOA HCl		2.2 ntu

QA\QC:

QA/QC DUPLICATE SAMPLE COLLECTED: YES or NO

Duplicate Sample Name:

QA\QC RINSATE SAMPLE NAME:

MATRIX SPIKE SAMPLE COLLECTED: YES or NO

INVESTIGATION DERIVED WASTE (IDW):

Date:	Jun 4 2009				
Volume Transfered to Drum:	1.5gal				
Drum Number:	Decon.				

COMMENTS:

Sample Collected #122240 @ 10:50 2.2 ntu.

Appendix C

Test Pit Logs

TEST PIT REPORT

PARSONS	CLIENT: USACOE	TEST PIT NO.: SEAD 12

PROJECT: SEAD 12 Test Pit - Seneca Q Area
LOCATION: Test Pit - East side

JOB NUMBER: 743156-03100
GROUND ELEV:
INSPECTOR: S. Anderson
CONTRACTOR: Environmental Products & Services
START DATE: 11/3/04
COMPLETION DAT 11/11/04
CHECKED BY: J. Rossmann

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
		3 to 8 ft	Excavator

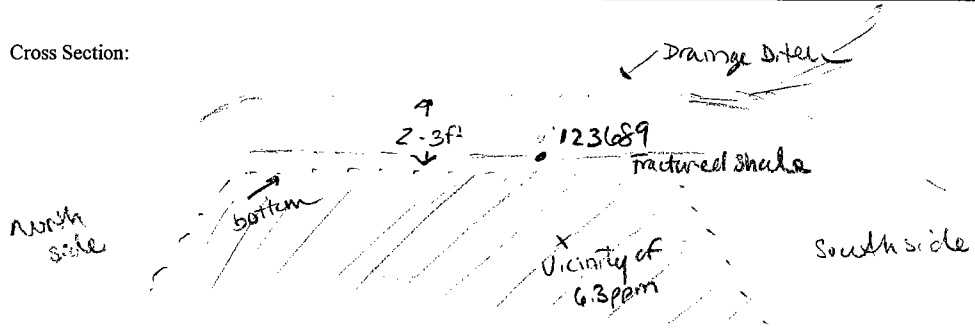
MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
PID		0	11/3/04
FID		0	11/10/04 & 11/11/04

QA/QC DUPLICATE SAMPLE: YES OR NO
Duplicate Sample Number:
MRD Sample Number:
QA/QC Rinsate Sample Number:
Comments:

	DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH RANGE	STRATA	SAMPLE DESCRIPTION (As per Burmeister: color, grain size, MAJOR COMPONENT, Minor Components with amount modifiers and grain-size, density, stratification, wetness, etc.)	REMARKS
1						Topsoil	
2							
3						Brown, fine/medium, TILL. Dry to moist.	
4		6.3	123689	3 to 4 feet		Sample collected at roughly same elevation as other sides. FID reading not on actual sample. Close proximity	
5						Grey/brown SHALE fragments.	
6						End of excavation at the drainage ditch. Original area of excavation sloped - depth varied from South/West sides.	
7							
8							
9							
10							
11							

Cross Section:



TEST PIT REPORT

PARSONS	CLIENT: USACOE	TEST PIT NO.: SEAD 12

PROJECT: SEAD 12 Test Pit - Seneca Q Area
LOCATION: Test Pit - North side

JOB NUMBER: 743156-03100
GROUND ELEV:
INSPECTOR: S. Anderson
CONTRACTOR: Environmental Products & Services
START DATE: 11/3/04
COMPLETION DAT 11/11/04
CHECKED BY: J. Rossmann

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
		3 to 8 ft	Excavator

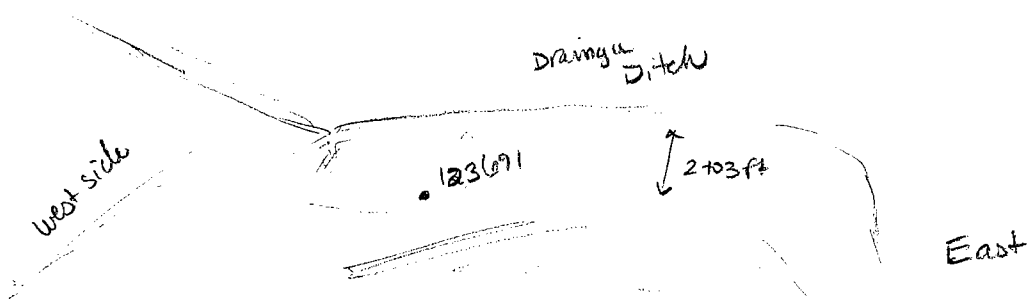
MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
PID		0	11/3/04
FID		0	11/10/04 & 11/11/04

QA/QC DUPLICATE SAMPLE: YES OR NO
Duplicate Sample Number:
MRD Sample Number:
QA/QC Rinsate Sample Number:
Comments:

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH RANGE	STRATA	SAMPLE DESCRIPTION (As per Burmeister: color, grain size, MAJOR COMPONENT, Minor Components with amount modifiers and grain-size, density, stratification, wetness, etc.)	REMARKS
1					Topsoil	
2						
3					Brown, fine/medium, TILL. Dry to moist.	
4	0	123691	3 to 4 feet		Sample collected at roughly same elevation as other sides.	
5					Grey/brown SHALE fragments.	
6						
7					End of excavation at the drainage ditch. Original area of excavation sloped - depth varied from South/West sides.	
8						
9						
10						
11						

Cross Section:



TEST PIT REPORT

PARSONS	CLIENT: USACOE	TEST PIT NO.: SEAD 12

PROJECT: SEAD 12 Test Pit - Seneca Q Area
LOCATION: Test Pit - South side

JOB NUMBER: 743156-03100
GROUND ELEV:
INSPECTOR: S. Anderson
CONTRACTOR: Environmental Products & Services
START DATE: 11/3/2004
COMPLETION DA: 11/11/2004
CHECKED BY: J. Rossmann

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
		10 ft	Excavator

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
PID		0	11/3/2004
FID		0	11/10/04 & 11/11/04

QA/QC DUPLICATE SAMPLE: YES OR NO
Duplicate Sample Number:
MRD Sample Number:
QA/QC Rinsate Sample Number:
Comments:

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH RANGE	STRATA	SAMPLE DESCRIPTION (As per Burmeister: color, grain size, MAJOR COMPONENT, Minor Components with amount modifiers and grain-size, density, stratification, wetness, etc.)	REMARKS
1					Topsoil	
2					Brown, fine/medium, TILL. Dry to moist.	
3						
4						
5						
6	6.3	123692; 123693	5-6 ft		Fractured Shale mixed with Brown Till. About 1 foot area of stained soil, some odor. Grey and slightly wet. Excavated further at this location to clear out the contamination.	
7						
8						
9					Competent Bedrock	
10						
11						

Cross Section:

TEST PIT REPORT

PARSONS	CLIENT: USACOE	TEST PIT NO.: SEAD 12

PROJECT: SEAD 12 Test Pit - Seneca Q Area
LOCATION: Test Pit - West side

JOB NUMBER: 743156-03100
GROUND ELEV:
INSPECTOR: S. Anderson
CONTRACTOR: Environmental Products & Services
START DATE: 11/3/04
COMPLETION DAT 11/11/04
CHECKED BY: J. Rossmann

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
		10 ft	Excavator

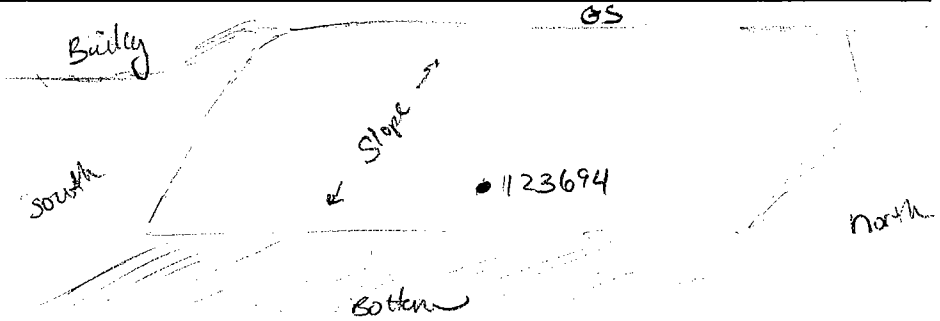
MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
PID		0	11/3/04
FID		0	11/10/04 & 11/11/04

QA/QC DUPLICATE SAMPLE: YES OR NO
Duplicate Sample Number:
MRD Sample Number:
QA/QC Rinsate Sample Number:
Comments:

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH RANGE	STRATA	SAMPLE DESCRIPTION (As per Burmeister: color, grain size, MAJOR COMPONENT, Minor Components with amount modifiers and grain-size, density, stratification, wetness, etc.)	REMARKS
1					Topsoil	
2						
3					Brown, fine/medium, TILL. Dry to moist.	
4						
5	0.1	123688			Rusty metal debris found about 4.5 to 5 feet. Sampled	
6	0	123694	5-6 ft		Fractured Shale mixed with Brown Till. 6" sewer line found about 5.5 to 6 feet.	
7						
8						
9						
10					Competent Bedrock	
11						

Cross Section:



TEST PIT REPORT

PARSONS	CLIENT: USACOE	TEST PIT NO.: SEAD 12

PROJECT: SEAD 12 Test Pit - Seneca Q Area
LOCATION: Test Pit - Northeast corner of building

JOB NUMBER: 743156-03100
GROUND ELEV:
INSPECTOR: S. Anderson
CONTRACTOR: Environmental Products & Services
START DATE: 12/20/2004
COMPLETION DAT 12/21/2004
CHECKED BY: E. Ashton

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
		10 ft	Excavator

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
PID		0	12/20/2004
FID		0	12/21/2004

QA/QC DUPLICATE SAMPLE: YES OR NO
Duplicate Sample Number:
MRD Sample Number:
QA/QC Rinsate Sample Number:
Comments:

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH RANGE	STRATA	SAMPLE DESCRIPTION (As per Burmeister: color, grain size, MAJOR COMPONENT, Minor Components with amount modifiers and grain-size, density, stratification, wetness, etc.)	REMARKS
1					Topsoil	
2						
3					Brown, fine/medium, TILL. Dry to moist.	
4		123702	3-4 ft		123702 collected on east side of building corner	
5		123701	4-5 ft		123701 collected on north side of building corner under outlet of destroyed sewer pipe	
6						
7					Fractured Shale mixed with Brown Till. Stained soils observed and removed near NE corner of building	
8					Competent Bedrock	
9						
10						
11						

Cross Section:

TEST PIT REPORT

PARSONS	CLIENT: USACOE	TEST PIT NO.: SEAD 12

PROJECT: SEAD 12 Test Pit - Seneca Q Area
LOCATION: Test Pit - West side

JOB NUMBER: 743156-03100
GROUND ELEV:
INSPECTOR: S. Anderson
CONTRACTOR: Environmental Products & Services
START DATE: 11/3/2004
COMPLETION DAT 12/21/2004
CHECKED BY: E Ashton

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
		10 ft	Excavator

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
PID		0	12/21/2004
FID		0	12/21/2004

QA/QC DUPLICATE SAMPLE: YES OR NO
Duplicate Sample Number:
MRD Sample Number:
QA/QC Rinsate Sample Number:
Comments:

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH RANGE	STRATA	SAMPLE DESCRIPTION (As per Burmeister: color, grain size, MAJOR COMPONENT, Minor Components with amount modifiers and grain-size, density, stratification, wetness, etc.)	REMARKS
1					Topsoil	
2						
3		123703	2-3 ft		Brown, fine/medium, TILL. Dry to moist.	
4		123704	3-4 ft			
5						
6					Fractured Shale mixed with Brown Till. Excavation halted at 5'	
7						
8						
9						
10						
11						

Cross Section:

Appendix D

Laboratory SOP
EML HASL-300
EPA Method 901.1

VERIFY THE VALIDITY OF THIS SOP EACH DAY IN USE

STANDARD OPERATING PROCEDURE

FOR

THE DETERMINATION OF GAMMA ISOTOPES

(GL-RAD-A-013 REVISION 10)

APPLICABLE TO METHODS:
EPA 600/4-80-032 Method 901.1 (Modified)
DOE EML HASL-300 (Modified)

PROPRIETARY INFORMATION

TABLE OF CONTENTS

1.0 STANDARD OPERATING PROCEDURE FOR THE DETERMINATION OF GAMMA ISOTOPES

2.0 METHOD OBJECTIVE, PURPOSE, CODE AND SUMMARY

2.1 This standard operating procedure provides the necessary instructions to conduct the analysis for Gamma Isotopes in water, soil, urine and miscellaneous matrices.

2.2 Water samples are counted in Marinelli beakers. Soil samples are sealed in aluminum cans, which are counted immediately if Ra-226 is not desired. If Ra-226 is desired, the sealed can is set aside to allow secular equilibrium between Rn-222 and Bi-214. Quantification is done by the abundance of the 609 KeV Bi-214 line.

2.3 This method has been modified from the source method EPA 600/4-80-032 "Prescribed Procedures for Measurement of Radioactivity in Drinking Water," August 1980, Method 901.1, and the Department of Energy (DOE) EML Procedures Manual source method for Gamma PHA in soils and sediments, HASL-300. For all matrices, similar principles of radiochemical concentration and counting are used.

2.4 This method has been modified on the basis of GEL's Performance Based Measurement System (PBMS).

3.0 METHOD APPLICABILITY

3.1 Minimum Detectable Activity (MDA): The MDA is based upon sample volume, instrument background, instrument efficiency, count time and other statistical factors, as well as specific isotopic values such as abundance and half-life.

3.2 Method Precision: If the activity is greater than 5 times the RDL (Required Detection Limit) an allowed method precision of equal to or less than 20% is used. For activity between the MDA and 5 times the RDL, an allowed method precision of 100% is used. There are no requirements if the activity is less than the MDA.

3.3 Method Bias (Accuracy): The method accuracy requirement for gamma spectroscopy is ± 25% of the true value.

3.4 Analysts go through a partnered training program with an already certified analyst for gamma spectroscopy. The analyst receives training on reviewing of standard analytical requirement such as RPD, method bias and technical review of gamma spectra. The analyst can then become qualified to perform the analysis by passing an unknown sample analysis and correctly identifying the isotope(s). Technical training records are maintained electronically by the Quality Systems staff.

4.0 DEFINITIONS

4.1 Clean Line: An energy line of an isotope with no known energy lines of other isotopes within 2 KeV. (This excludes daughters that use the same line for quantification.)

4.2 Interfered Line: An energy line of an isotope with one or more energy lines of one or more different isotopes within 2 KeV.

4.3 Single and Double Escape Interference Lines: When high energy gamma lines above 511 KeV have a large emission rate, it is possible to see single and double escape lines caused by electron capture (energy line - 511 is a single escape line, energy line - 1022 is a double escape line.) For example, for 10,000 gps at 1332, the single

escape interference line can be seen at 1332-511=821, and the double escape interference line at 1332-1022=310.

4.4 Summation Interference: When high gamma emission rates are seen, sample summation can occur. Prominent in geometries close to detection and in low energy range (i.e., 10,000 gps at 88 KeV, 15,000 gps at 210 KeV), a summation interference can be seen at 88+88=176 KeV, 210+210=420 KeV, 210+88=298KeV.

4.5 False Positive: An isotope that has failed one or more of several tests including half-life, abundance, and energy tolerance (± 2 KeV)

4.6 Abundance Test: The test where the software calculates the total possible lines from the library and checks to see how many were actually seen. The cutoff for a positive identification is 75%.

4.7 Energy Tolerance: The test where the software checks the energy line in the spectrum to see if it is within the energy tolerance setting. (The standard setting is 2 KeV.) If it is within this setting then the line is associated with that nuclide. The energy line can be associated with more than one nuclide.

4.8 Half-Life Test: The test to determine if the half-life of the isotope is long enough not to have decayed away. The half-life of the sample is the time from sample date to analysis date plus 1/2 the count time. A limit of no more than eight half-life is the standard setting.

4.9 Key Line: The line chosen by the builder of the library to be the prominent line of the isotope. This line is used in the MDA table for purposes of calculating activity, error and MDA. For non-identified isotopes the key line is used as the basis for calculating a region around the key line and then calculating and activity error and MDA. Usually this line is the most abundant line on a line that is relatively free from interference.

4.10 Abundance: The branching ratio or ratio of disintegration of the isotope at a particular energy. For example, Cobalt-60 has an abundance, or branching ratio, of 99% at 1332 KeV.

4.11 Accuracy: The error of the reported result due to the counting statistics of the instrument used for quantification.

4.12 Back Scatter: The detection of a count that occurs when an event interacts with counting materials, changes direction, and scatters back to the detector.

5.0 METHOD VARIATIONS

Modifications to the procedure are limited to GEL's use of additional isotopes for the daily calibration check and the inclusion of a more stringent calibration and resolution periodicity.

6.0 SAFETY PRECAUTIONS AND WARNINGS

6.1 Keep hands free from moving parts of canning device and Gamma shields.

6.2 Personnel performing this analytical procedure are trained in and follow the safe laboratory practices outlined in the Safety, Health and Chemical Hygiene Plan, GL-LB-N-001.

6.3 Personnel handling radioactive materials are trained in and follow the procedures outlined in GL-RAD-S-004 for Radioactive Material Handling.

6.4 Personnel handling biological materials are trained in and follow the procedures outlined in GL-RAD-S-010 for Handling Biological Materials.

6.5 If there is any question regarding the safety of any laboratory practice, **stop immediately**, and consult qualified senior personnel such as a Group or Team Leader.

7.0 INTERFERENCES

7.1 Some Gamma isotopes emit gamma lines that may overlap with other isotopes. If the energies of the two isotopes are within 2 KeV, the peaks may not be resolvable and will give a positive bias to the result. This problem is minimized by careful review of the peak search.

7.2 Soil samples may vary in density from the standard used for calibration. This may bias the results due to self-absorption of lower energy (<100 K).

8.0 APPARATUS, MATERIALS, REAGENTS, EQUIPMENT, AND INSTRUMENTATION

8.1 Ancillary Equipment

- 8.1.1 100 cc aluminum cans with lids for soil and miscellaneous samples
- 8.1.2 Gelman Sciences PETRI dish for soil and miscellaneous samples
- 8.1.3 2 L and 500 mL Marinelli beakers for water samples
- 8.1.4 Air displacement pipette. 1 mL
- 8.1.5 Can annealing tool
- 8.1.6 Graduated cylinder

8.2 Reagents, Chemicals and Standards

- 8.2.1 NIST traceable mixed gamma standard in 100cc aluminum can
- 8.2.2 NIST traceable 2.0 liter mixed gamma standard in 2 L Marinelli beaker
- 8.2.3 NIST traceable mixed gamma standard in 0.5 L Marinelli
- 8.2.4 NIST traceable mixed gamma standard in snap falcon PETRI dish
- 8.2.5 Standard soil blank
- 8.2.6 NIST traceable aqueous Cs-137 standard
- 8.2.7 Mixed Gamma Standard: Contains Am-241, Co-57, Co-60,Y-88, Sr-113, Pb-210, Cd-109 as a minimum.

8.3 Instrumentation

- 8.3.1 High purity germanium detector, with associated electronics and data reduction software
- 8.3.2 Top loader balance

9.0 SAMPLE HANDLING AND PRESERVATION

9.1 For soil samples, 500g of sample should be collected, preferably in a plastic container to avoid breakage.

9.2 For water samples, 2 liters of sample should be collected in a plastic container and preserved to pH2 with Nitric acid.

10.0 SAMPLE PREPARATION

10.1 Soil sample preparation.

10.1.1 Prepare the sample for gamma counting in accordance with SOP GL-RAD-A-021 "Soil sample preparation for the determination of radionuclides".

10.1.2 Fill the appropriate container with sample prepared from step 10.1.1 using the following steps as a guideline:

10.1.2.1 If Ra-226 analysis is required, the sample is placed in a 100cc can for in-growth.

NOTE: It is recommended that in-growth be allowed 14 days to quantify Ra-226. Shorter intervals can be used at the request of the client. However, shorter in-growth periods may decrease the accuracy of the data. If there is insufficient mass of sample to fill the 100cc can, contact the team or group leader.

10.1.2.2 All homogenized samples shall be placed in the 100cc can. Determine the net weight of the sample. If the net weight is less than 55 grams or greater than 190 grams, contact the team or group leader to determine the appropriate counting container. Record sample weight and date on sample container.

10.1.2.3 If there is insufficient sample to fill the 100cc can, place sample in the 10cc petri dish, cap and seal. Record sample weight and date on sample container.

10.1.2.4 If there is insufficient sample to fill the 10cc petri dish, perform the following digestion process:

10.1.2.4.1 Weigh out an appropriate aliquot into a labeled teflon beaker. Record this weight on the sample container.

10.1.2.4.2 Add 10 mL of concentrated nitric acid to each sample.

10.1.2.4.3 Place samples on medium heat (~300 °F) and cover each sample with a teflon lid. Reflux all samples for 30 minutes.

10.1.2.4.4 Remove teflon lids and add 5 mL concentrated hydrochloric acid and 10 mL hydrofluoric acid to each sample. Cover samples and reflux for 120 minutes.

10.1.2.4.5 Remove teflon lids and allow samples to evaporate to dryness.

10.1.2.4.6 Add 5 mL of concentrated nitric acid and evaporate to dryness.

10.1.2.4.7 Repeat Step 10.3.6.

10.1.2.4.8 Add 5 mL of concentrated nitric acid to the dry samples. Place the samples back on the hotplate long enough so that the dried sample dissolves into the acid.

10.1.2.4.9 Transfer solution to a 500 mL vessel and dilute to 500 mL. Record original sample mass and diluted volume on sample

10.2 Water sample preparation

10.2.1 Mix and measure an appropriate volume into a 2 L or 500 mL Marinelli beaker and record the volume on the Gamma que sheet.

If Radium analysis is required, measure 100 mL and seal in a 100 cc can. Record volume, sealed date, and sealed time on Gamma que sheet.

10.3 Urine Sample Preparation

10.3.1 Place a 24-hour urine container (or other suitable container) on a balance and tare the balance.

10.3.2 Transfer the entire volume of the sample received to the tared container and record the volume of sample received.

10.3.3 Add 8 M HNO_3 acid to the original sample container (typically 25 – 50 mL). Shake in the container and then heat in a microwave for approximately 30 seconds to remove sample residue from the sides of the sample container.

10.3.4 Add the nitric acid rinse to the 24-hour urine container and record the volume of the original sample plus acid.

10.3.5 Cap and shake the 24-hour urine container to homogenize the sample. Transfer an aliquot (typically 500 mL) of this solution to a Marinelli Beaker.

10.3.6 Record the amount of the original sample, excluding the nitric acid added, on the gamma spec que sheet.

Example: 800 mL is received and 50 mL of 8 M HNO_3 is added from the rinse of the sample container. 500 mL is transferred to the Marinelli Beaker. The recorded volume on the que sheet should be (500 mL/850 mL) x 800 mL = 470.6 mL.

10.4 Preparation of miscellaneous matrices

10.4.1 Prepare the sample in accordance with SOP GL-RAD-A-026 "Preparation of Special Matrices for the Determination of Radionuclides."

10.4.2 Once the appropriate section of GL-RAD-A-026 has been performed, prepare the sample for gamma counting by referring to section 10.1.2 above.

11.0 PREPARATION OF STANDARD SOLUTIONS AND QUALITY CONTROL STANDARDS

Refer to "Preparation of Radioactive Standards" (GL-RAD-M-001) for instructions concerning the preparation of standard solutions.

12.0 INSTRUMENT CALIBRATION AND PERFORMANCE

12.1 The gamma spectrometer should be calibrated for the appropriate geometry every 12 months or when daily QC check standards indicate instrument problems. Refer to "Gamma Spectroscopy System Operating Procedure" (GL-RAD-I-001) for calibration instructions.

12.2 Refer to "Gamma Spectroscopy System Operating Procedure" (GL-RAD-I-001) for instructions concerning the Gamma Spectrometer.

12.3 Refer to "Counting Room Instrument Maintenance and Performance Checks" (GL-RAD-I-010) for instructions concerning instrument maintenance.

13.0 ANALYSIS AND INSTRUMENT OPERATION

13.1 Prepare the sample as outlined in section 10.0

13.2 Place the sample on the detector and count the sample an appropriate amount of time in the gamma shield. See "Gamma Spectroscopy System Operating Procedure" (GL-RAD-I-001) for specific instructions on operating the gamma spectrometers.

14.0 EQUIPMENT AND INSTRUMENT MAINTENANCE

14.1 Refer to "Gamma Spectroscopy System Operating Procedure" (GL-RAD-I-001) for instructions concerning the Gamma Spectrometer.

14.2 Refer to "Counting Room Instrument Maintenance and Performance Checks" " (GL-RAD-I-001) for instructions concerning instrument maintenance.

15.0 DATA RECORDING, CALCULATION, AND REDUCTION METHODS

15.1 Data Recording

Record the following information on the Gamma Que Sheet: preparation date, analyst's initials, spike isotope, spike code, spike volume, LCS isotope, LCS code, LCS volume, nominal concentration LCS, and nominal concentration MS. For each sample record the detector number, sample mass, sample date and time.

15.2 The instrument will report sample pCi/g or pCi/L according to the following equations:

$$\text{Sample pCi/g} = \frac{A * d}{2.22 * E * V * B * CNT * ABS}$$

$$\text{Sample pCi/L} = \frac{A * d}{2.22 * E * V * B * CNT}$$

Where:

A = net peak area (counts)
ABS = relative absorption factor
B = abundance (gammas/disintegration)
E = counting Efficiency (counts/gamma)
V = sample volume (grams or liters)
ct = sample count time (minutes)
d = decay factor = $d = \frac{1}{e^{-\lambda t}}$

15.3 Counting uncertainty is calculated according to the following equation:

$$\text{pCi/unit} = Ac * 1.96 \sqrt{\left(\frac{ef - er}{E}\right)^2 + \left(\frac{pk - er}{pk}\right)^2 + \left(\frac{ab - er}{A}\right)^2 + \left(\frac{sy}{100}\right)^2 + (\text{Decay})}$$

Where:

Ac = Activity from 15.2

$$\text{Decay} = \left(\frac{T_{1/2eff}}{T_{1/2}}\right)^2 * \left[\frac{\lambda Er}{1-e^{-\lambda Er}} - \lambda\left(T_s + Er\right) - 1\right]$$

15.4 The method MDA in pCi/g or pCi/L are calculated according to the following equations:

$$\text{MDA (pCi/unit)} = \frac{d * \left(2.71 + 4.66\sqrt{cpm_b * ct}\right)}{2.22 * E * V * B * ct}$$

Where:

A = net peak area (counts)
ABS = relative absorption factor
B = abundance (gammas/disintegration)
E = counting Efficiency (counts/gamma)
V = sample volume (grams or liters)
ct = sample count time (minutes)
d = decay factor = $d = \frac{1}{e^{-\lambda t}}$

15.5 The absorption factor is calculated by the following equations:

$$I_I = \frac{\ln((SScpm - Scpm)/ECcpm)}{(((SScpm - Scpm)/ECcpm) - 1)}$$

$$I_0 = \frac{\ln((SSTcpm - STcpm)/ECcpm)}{(((SSTcpm - Scpm)/ECcpm) - 1)}$$

$$ABS = \frac{I_I}{I_0}$$

Where:

SScpm = sample plus the source cpm at the region of interest
Scpm = sample cpm at the region of interest
ECcpm = source cpm on the empty can at the region of interest
ln = natural logarithm
SStcpm = standard plus the source cpm at the region of interest
Stcpm = standard cpm at the region of interest

15.6 The VAX operating system will report the following information with each completed sample:

15.6.1 The nuclide identification report

15.6.2 The minimum detectable activity report

15.6.3 The peak search report.

15.7 The following criteria are used to accept a reported gamma isotope from the NID report:

15.7.1 The peak FWHM should be less than 2 KeV.

15.7.2 The activity of a non-target isotope will not be reported unless it is greater than the minimal detectable activity of a method blank with similar volume and count time.

15.7.3 The energy tolerance should be between 2 and 3 KeV.

15.7.4 The sensitivity setting should be between 0.1 and 3. The default setting is 3.

15.7.5 Start channel on peak search should be approximately 50 and end channel should be 4096.

15.7.6 The confidence level setting should be 5.

15.7.7 These settings should not be changed without approval from a group leader.

15.8 The following guidelines are used to accept unidentified lines on the peak search after environmental background subtraction:

15.8.1 The line matches the natural fingerprint of the Uranium-238 or Thorium-232 decay chains (i.e. 63, 75, 93, 239, 295, 352, 511, 609, 1120, etc.).

15.8.2 The line matches as a summation peak from two other lines in the spectrum.

15.8.3 The line has a net area of less than 20.

16.0 QUALITY CONTROL REQUIREMENTS

16.1 Analyst and Method Verification

Refer to "Analyst and Analytical Methods Validation Procedures" (G-RAD-D-003) for instructions concerning the validation of analysts and analytical methods.

16.2 Method Specific Quality Control Requirements

16.2.1 A method blank will accompany each batch of 20 or less samples. The reported value should be less than or equal to the CRDL for all target isotopes. Matrix spikes are prepared by spiking a portion of the QC sample with Cs-137 (as a minimum).

16.2.2 For water samples only, a matrix spike (MS) should be run with every batch of 20 samples. The recovery of the spike should fall between 75 and 125%. The recovery is calculated as follows:

$$\%REC = \frac{spike(pCi/g) - sample(pCi/g)}{spikedamount(pCi/g)} * 100$$

or:

$$\%REC = \frac{spike(pCi/L) - sample(pCi/L)}{spikedamount(pCi/L)} * 100$$

NOTE: Performing a matrix spike on a soil sample would result in direct contamination of the sample, therefore, only water samples require an MS.

16.2.3 A sample duplicate should be run with every batch of 20 or less samples. The relative percent difference (RPD) between the sample and the duplicate should be ≤o 20%. The RPD is calculated as follows.

$$RPD = \frac{\text{high sample (pCi/g)} - \text{low sample (pCi/g)}}{\text{Average (pCi/g)}}$$

or:

$$RPD = \frac{\text{high sample (pCi/L)} - \text{low sample (pCi/L)}}{\text{Average (pCi/L)}}$$

16.2.4 A laboratory control spike (LCS) should be run with every batch of 20 samples or less. The recovery of the spike should fall between 75 and 125%. The LCS should contain Cs-137 as a minimum. Some clients may request a mixed gamma standard. For soils, a mixed gamma expired calibration source may be used as an LCS. For liquids and filters, spike a blank sample with Cs-137 as a minimum.

16.2.5 The recovery is calculated as follows:

$$LCS = \frac{\text{observed\_pCi/g}}{\text{known\_pCi/g}} * 100$$

or:

$$LCS = \frac{\text{observed\_pCi/L}}{\text{known\_pCi/L}} * 100$$

16.3 Actions required if the Quality Control Requirements Are Not Met

If any of the above criteria cannot be satisfied, the analyst should inform the group leader and initiate a non-conformance report as outlined in "Documentation of Nonconformance Reporting and Dispositioning, and Control of Nonconforming Items" (GL-QS-E-004).

17.0 DATA REVIEW, APPROVAL, AND TRANSMITTAL

17.1 The first level of review is the analyst review. The analyst will perform the following steps of review:

17.1.1 Visually check the que sheet, spreadsheet, raw data and data report to make sure the information has been transcribed correctly.

17.1.2 Review the raw data to see if there are any hits not on the requested list. If there are, report to the client by adding the information into LIMS.

A true identification or a "hit" is any isotope greater than 10 pCi/L or 5 pCi/g on the identified nuclide list. The error must also be less than 40% of the result and not have interference by another isotope or have a very short half-life.

17.1.3 Check to see that the required detection limit (RDL) is met if required.

17.1.4 Check hits to see if they are true hits (see 18.1.2.1) and not an interference or a false positive.

Identifications are classified into two categories: false positives (interference), and true identification (hit). The false positives are rejected by checking the abundance test results for the isotope and by checking last results for the half-life. The result is considered

interference and rejected by checking to see if there are any clean lines in sample spectrum for the isotope. If none exist, then the identification is rejected. If the key line has a possible interference and secondary lines do not confirm the activity calculation, the identification is rejected. Isotopes that pass these criteria are accepted as true identifications. The above tests and criteria are standard and will be followed unless directed otherwise by contract, specification or instructions.

17.1.5 Complete the batch checklist.

17.2. The second level review is performed by the Data Validator or Report Specialist, who reviews the batch checklist, checks requested and non-requested hits, and reviews the transcription.

17.3 After the review process is complete, the data is transmitted from the laboratory personnel to the reporting personnel as outlined in "Data Review and Validation Procedures" (GL-RAD-D-003).

18.0 RECORDS MANAGEMENT

18.1 Each analysis that is performed on the instrument is documented in the run log according to "Run Logs" (GL-LB-E-009).

18.2 All raw data printouts, calculation spreadsheets and batch checklists are filed with the sample data for archival and review.

19.0 LABORATORY WASTE HANDLING AND WASTE DISPOSAL

19.1 All soil sample cans are opened and sample returned to original sample containers after completion of batch.

19.2 Radioactive waste is disposed of as outlined in the Laboratory Waste Management Plan (GL-LB-G-001).

20.0 REFERENCES

20.1 USEPA. Prescribed Procedures for Measurement of Radioactivity in Drinking Water. Method 901.1, August 1980.

20.2 Canberra Nuclear Genie System Spectroscopy, Applications and Display User's Guide. Vol. I and II, May 1991.

20.3 EML procedures manual. HASL-300-Ed.25, 1982.

Appendix E

Analytical Results

Building 813/814 Surface Water VOC Results
SEAD-12 SRI
Seneca Army Depot Activity, Romulus, NY

LOCATION ID									SW12-68		SW12-69		SW12-70		SW12-71		SW12-72	SW12-72 (D)		SW12-73		SW12-74	
MATRIX									SW		SW		SW		SW		SW	SW		SW		SW	
SAMPLE ID									121000		121001		121002		121003		121004	121007		121005		121006	
TOP OF SAMPLE									0		0		0		0		0	0		0		0	
BOTTOM OF SAMPLE									0		0		0		0		0	0		0		0	
SAMPLE DATE									6/22/2004		6/22/2004		6/22/2004		6/22/2004		6/22/2004	6/22/2004		6/22/2004		6/22/2004	
QC CODE									SA		SA		SA		SA		SA	SA		SA		SA	
STUDY ID									SRI		SRI		SRI		SRI		SRI	SRI		SRI		SRI	
Parameter	Unit	Maximum	Frequency of Detection	Criteria Type	Action Level	Number of Exceedances	Number of Detections	Number of Analyses	Value	(Q)	Value	(Q)	Value	(Q)	Value	(Q)	Value	(Q)	Value	(Q)	Value	(Q)	Value	(Q)
1,1,1,2-Tetrachloroethane	µg/L	0	0%			0	0	8	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
1,1,1-Trichloroethane	µg/L	0	0%			0	0	8	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U
1,1,2,2-Tetrachloroethane	µg/L	0	0%			0	0	8	0.21	U	0.21	U	0.21	U	0.21	U	0.21	U	0.21	U	0.21	U	0.21	U
1,1,2-Trichloroethane	µg/L	0	0%			0	0	8	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U
1,1-Dichloroethane	µg/L	0	0%			0	0	8	0.21	U	0.21	U	0.21	U	0.21	U	0.21	U	0.21	U	0.21	U	0.21	U
1,1-Dichloroethene	µg/L	0	0%			0	0	8	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U
1,1-Dichloropropene	µg/L	0	0%			0	0	8	0.21	U	0.21	U	0.21	U	0.21	U	0.21	U	0.21	U	0.21	U	0.21	U
1,2,3-Trichlorobenzene	µg/L	0	0%			0	0	8	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
1,2,3-Trichloropropane	µg/L	0	0%			0	0	8	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
1,2,4-Trichlorobenzene	µg/L	0	0%	NYSDEC Class C	5	0	0	8	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U
1,2,4-Trimethylbenzene	µg/L	0	0%			0	0	8	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U
1,2-Dibromo-3-Chloropropane	µg/L	0	0%			0	0	8	0.20	R	0.20	R	0.20	R	0.20	R	0.20	R	0.20	R	0.20	R	0.20	R
1,2-Dibromoethane	µg/L	0	0%			0	0	8	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U
1,2-Dichlorobenzene	µg/L	0	0%	NYSDEC Class C	5	0	0	8	0.17	UJ	0.17	UJ	0.17	UJ	0.17	UJ	0.17	UJ	0.17	UJ	0.17	UJ	0.17	UJ
1,2-Dichloroethane	µg/L	0	0%			0	0	8	0.21	U	0.21	U	0.21	U	0.21	U	0.21	U	0.21	U	0.21	U	0.21	U
1,2-Dichloropropane	µg/L	0	0%			0	0	8	0.21	U	0.21	U	0.21	U	0.21	U	0.21	U	0.21	U	0.21	U	0.21	U
1,3,5-Trimethylbenzene	µg/L	0	0%			0	0	8	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
1,3-Dichlorobenzene	µg/L	0	0%	NYSDEC Class C	5	0	0	8	0.20	UJ	0.20	UJ	0.20	UJ	0.20	UJ	0.20	UJ	0.20	UJ	0.20	UJ	0.20	UJ
1,3-Dichloropropane	µg/L	0	0%			0	0	8	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
1,4-Dichlorobenzene	µg/L	0	0%	NYSDEC Class C	5	0	0	8	0.20	UJ	0.20	UJ	0.20	UJ	0.20	UJ	0.20	UJ	0.20	UJ	0.20	UJ	0.20	UJ
2,2-Dichloropropane	µg/L	0	0%			0	0	8	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U
2-Chlorotoluene	µg/L	0	0%			0	0	8	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
Acetone	µg/L	0	0%			0	0	8	1.5	R	1.5	R	1.5	R	1.5	R	1.5	R	1.5	R	1.5	R	1.5	R
Acrylonitrile	µg/L	0	0%			0	0	8	0.94	R	0.94	R	0.94	R	0.94	R	0.94	R	0.94	R	0.94	R	0.94	R
Allyl Chloride	µg/L	0	0%			0	0	8	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
Benzene	µg/L	0	0%			0	0	8	0.24	UJ	0.24	UJ	0.24	UJ	0.24	UJ	0.24	UJ	0.24	UJ	0.24	UJ	0.24	UJ
Bromobenzene	µg/L	0	0%			0	0	8	0.21	UJ	0.21	UJ	0.21	UJ	0.21	UJ	0.21	UJ	0.21	UJ	0.21	UJ	0.21	UJ
Bromodichloromethane	µg/L	0	0%			0	0	8	0.20	U	0.20	U	0.20	U	0.20	U	0.20	UJ	0.20	U	0.20	U	0.20	U
Bromoform	µg/L	0	0%			0	0	8	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
Butyl chloride	µg/L	0	0%			0	0	8	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
Carbon Disulfide	µg/L	0	0%			0	0	8	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
Carbon Tetrachloride	µg/L	0	0%			0	0	8	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
Chlorobenzene	µg/L	0	0%	NYSDEC Class C	5	0	0	8	0.21	UJ	0.21	UJ	0.21	UJ	0.21	UJ	0.21	UJ	0.21	UJ	0.21	UJ	0.21	UJ
Chlorodibromomethane	µg/L	0	0%			0	0	8	0.17	U	0.17	U	0.17	U	0.17	U	0.17	U	0.17	U	0.17	U	0.17	U
Chloroethane	µg/L	0	0%			0	0	8	0.19	U	0.19	U	0.19	U	0.19	U	0.19	UJ	0.19	U	0.19	U	0.19	U
Chloroform	µg/L	0	0%			0	0	8	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
cis-1,2-Dichloroethene	µg/L	0	0%			0	0	8	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U
cis-1,3-Dichloropropene	µg/L	0	0%			0	0	8	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Cyclohexane	µg/L	0	0%			0	0	8	N/A		N/A		N/A		N/A		5	U	N/A		N/A		N/A	
Dichlorodifluoromethane	µg/L	0	0%			0	0	8	0.09	U	0.09	U	0.09	U	0.09	U	0.09	U	0.09	U	0.09	U	0.09	U
Diisopropyl Ether	µg/L	0	0%			0	0	8	0.21	U	0.21	U	0.21	U	0.21	U	0.21	U	0.21	U	0.21	U	0.21	U
Ethyl Benzene	µg/L	0	0%			0	0	8	0.21	UJ	0.21	UJ	0.21	UJ	0.21	UJ	0.21	UJ	0.21	UJ	0.21	UJ	0.21	UJ
Ethyl ether	µg/L	0	0%			0	0	8	0.21	U	0.21	U	0.21	U	0.21	U	0.21	U	0.21	U	0.21	U	0.21	U
Ethyl methacrylate	µg/L	0	0%			0	0	8	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
Hexachlorobutadiene	µg/L	0	0%	NYSDEC Class C	0.01	0	0	8	0.17	U	0.17	U	0.17	U	0.17	U	0.17	U	0.17	U	0.17	U	0.17	U
Hexachloroethane	µg/L	0	0%	NYSDEC Class C	0.6	0	0	8	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U
Isopropylbenzene	µg/L	0	0%			0	0	8	0.20	UJ	0.20	UJ	0.20	UJ	0.20	UJ	0.20	UJ	0.20	UJ	0.20	UJ	0.20	UJ
Meta/Para Xylene	µg/L	0	0%			0	0	8	0.43	UJ	0.43	UJ	0.43	UJ	0.43	UJ	0.43	UJ	0.43	UJ	0.43	UJ	0.43	UJ
Methacrylonitrile	µg/L	0	0%			0	0	8	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
Methyl Acetate	µg/L	0	0%			0	0	8	N/A		N/A		N/A		N/A		5	U	N/A		N/A		N/A	
Methyl bromide	µg/L	0	0%			0	0	8	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
Methyl butyl ketone	µg/L	0	0%			0	0	8	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U
Methyl chloride	µg/L	0	0%			0	0	8	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U
Methyl cyclohexane	µg/L	0	0%			0	0	8	N/A		N/A		N/A			N/A	5	U	N/A		N/A		N/A	
Methyl ethyl ketone	µg/L	0	0%			0	0	8	0.94	R	0.94	R	0.94	R	0.94	R	0.94	R	0.94	R	0.94	R	0.94	R
Methyl iodide	µg/L	0	0%			0	0	8	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U
Methyl isobutyl ketone	µg/L	0	0%			0	0	8	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Methyl methacrylate	µg/L	0	0%			0	0	8	0.53	U	0.53	U	0.53	U	0.53	U	0.53	U	0.53	U	0.53	U	0.53	U
Methyl Tertbutyl Ether	µg/L	0	0%			0	0	8	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U
Methylene bromide	µg/L	0	0%			0	0	8	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U

Building 813/814 Surface Water VOC Results
SEAD-12 SRI
Seneca Army Depot Activity, Romulus, NY

LOCATION ID									SW12-68		SW12-69		SW12-70		SW12-71		SW12-72	SW12-72 (D)		SW12-73		SW12-74	
MATRIX									SW		SW		SW		SW		SW	SW		SW		SW	
SAMPLE ID									121000		121001		121002		121003		121004	121007		121005		121006	
TOP OF SAMPLE									0		0		0		0		0	0		0		0	
BOTTOM OF SAMPLE									0		0		0		0		0	0		0		0	
SAMPLE DATE									6/22/2004		6/22/2004		6/22/2004		6/22/2004		6/22/2004	6/22/2004		6/22/2004		6/22/2004	
QC CODE									SA		SA		SA		SA		SA	SA		SA		SA	
STUDY ID									SRI		SRI		SRI		SRI		SRI	SRI		SRI		SRI	
			Frequency of	Criteria	Action	Number of	Number of	Number of															
Methylene Chloride	µg/L	0	0%	NYSDEC Class C	200	0	0	8	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
Naphthalene	µg/L	0	0%			0	0	8	0.17	U	0.17	U	0.17	U	0.17	U	0.17	UJ	0.17	U	0.17	U	0.17	U
n-Butylbenzene	µg/L	0	0%			0	0	8	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U
Ortho Xylene	µg/L	0	0%			0	0	8	0.21	UJ	0.21	UJ	0.21	UJ	0.21	UJ	0.21	UJ	0.21	UJ	0.21	UJ	0.21	UJ
p-Chlorotoluene	µg/L	0	0%			0	0	8	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
p-Isopropyltoluene	µg/L	0	0%			0	0	8	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
Propionitrile	µg/L	0	0%			0	0	8	3.3	R	3.3	R	3.3	R	3.3	R	3.3	R	3.3	R	3.3	R	3.3	R
Propylbenzene	µg/L	0	0%			0	0	8	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U
sec-Butylbenzene	µg/L	0	0%			0	0	8	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U
Styrene	µg/L	0	0%			0	0	8	0.19	UJ	0.19	UJ	0.19	UJ	0.19	UJ	0.19	UJ	0.19	UJ	0.19	UJ	0.19	UJ
t-Butyl Alcohol	µg/L	0	0%			0	0	8	2.2	R	2.2	R	2.2	R	2.2	R	2.2	R	2.2	R	2.2	R	2.2	R
tert-Butylbenzene	µg/L	0	0%			0	0	8	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
Tetrachloroethene	µg/L	0	0%			0	0	8	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U
Tetrahydrofuran	µg/L	0	0%			0	0	8	0.78	R	0.78	R	0.78	R	0.78	R	0.78	R	0.78	R	0.78	R	0.78	R
Toluene	µg/L	0	0%	NYSDEC Class C	6000	0	0	8	0.22	UJ	0.22	UJ	0.22	UJ	0.22	UJ	0.22	UJ	0.22	UJ	0.22	UJ	0.22	UJ
trans-1,2-Dichloroethene	µg/L	0	0%			0	0	8	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
Trans-1,3-Dichloropropene	µg/L	0	0%			0	0	8	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Trans-1,4-Dichloro-2-butene	µg/L	0	0%			0	0	8	1.4	R	1.4	R	1.4	R	1.4	R	1.4	R	1.4	R	1.4	R	1.4	R
Trichloroethene	µg/L	0	0%	NYSDEC Class C	40	0	0	8	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U
Trichlorofluoromethane	µg/L	0	0%			0	0	8	0.09	U	0.09	U	0.09	U	0.09	U	0.09	U	0.09	U	0.09	U	0.09	U
Vinyl Chloride	µg/L	0	0%			0	0	8	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U

Building 813/814 Groundwater VOC Results
SEAD-12 SRI
Seneca Army Depot Activity, Romulus, NY

LOCATION ID										TW12-1		TW12-1 (D)		TW12-3		TW12-4		TW12-5		TW12-6		TW12-7		TW12-8		TW12-9		TW12-22		TW12-23	
MATRIX										GW		GW		GW		GW		GW		GW		GW		GW		GW		GW		GW	
SAMPLE ID										122275		122284		122277		122278		122279		122280		122281		122282		122283		122285		122286	
TOP OF SAMPLE										5.20		5.20		5.00		3.75		8.70		5.00		7.10		5.00		4.90		13.50		13.30	
BOTTOM OF SAMPLE										10.20		10.20		10.00		8.75		13.70		10.00		12.10		10.00		9.90		23.50		23.30	
SAMPLE DATE										5/26/2004		5/26/2004		6/11/2004		5/27/2004		5/27/2004		5/27/2004		5/27/2004		5/27/2004		5/27/2004		6/11/2004		6/10/2004	
QC CODE										SA		DU		SA		SA		SA		SA		SA		SA		SA		SA		SA	
STUDY ID										SRI		SRI		SRI		SRI		SRI		SRI		SRI		SRI		SRI		SRI		SRI	
Parameter	Unit	Maximum	Frequency of Detection	Criteria Type	Action Level	Number of Exceedances	Number of Detections	Number of Analyses	Value	(Q)	Value	(Q)	Value	(Q)	Value	(Q)	Value	(Q)	Value	(Q)	Value	(Q)	Value	(Q)	Value	(Q)	Value	(Q)	Value	(Q)	Value	(Q)
1,1,1-Trichloroethane	µg/L	0	0%	NYSDEC CLASS GA	5	0	0	17	10	UJ	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	UJ	10	U	10	U
1,1,2,2-Tetrachloroethane	µg/L	0	0%	NYSDEC CLASS GA	5	0	0	17	10	UJ	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	UJ	10	U	10	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/L	0	0%	NYSDEC CLASS GA	5	0	0	17	10	UJ	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	UJ	10	U	10	U
1,1,2-Trichloroethane	µg/L	0	0%	NYSDEC CLASS GA	1	0	0	17	10	UJ	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	UJ	10	U	10	U
1,1-Dichloroethane	µg/L	0	0%	NYSDEC CLASS GA	5	0	0	17	10	UJ	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	UJ	10	U	10	U
1,1-Dichloroethene	µg/L	0	0%	NYSDEC CLASS GA	5	0	0	17	10	UJ	10	U	10	UJ	10	U	10	U	10	U	10	U	10	U	10	U	10	UJ	10	U	10	U
1,2,4-Trichlorobenzene	µg/L	0	0%	NYSDEC CLASS GA	5	0	0	17	10	UJ	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	UJ	10	U	10	U
1,2-Dibromo-3-Chloropropane	µg/L	0	0%	NYSDEC CLASS GA	0.04	0	0	17	10	UJ	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	UJ	10	U	10	U
1,2-Dibromoethane	µg/L	0	0%	NYSDEC CLASS GA	0.0006	0	0	17	10	UJ	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	UJ	10	U	10	U
1,2-Dichlorobenzene	µg/L	0	0%	NYSDEC CLASS GA	3	0	0	17	10	UJ	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	UJ	10	U	10	U
1,2-Dichloroethane	µg/L	0	0%	NYSDEC CLASS GA	0.6	0	0	17	10	UJ	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	UJ	10	U	10	U
1,2-Dichloropropane	µg/L	0	0%	NYSDEC CLASS GA	1	0	0	17	10	UJ	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	UJ	10	U	10	U
1,3-Dichlorobenzene	µg/L	0	0%	NYSDEC CLASS GA	3	0	0	17	10	UJ	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	UJ	10	U	10	U
1,4-Dichlorobenzene	µg/L	0	0%	NYSDEC CLASS GA	3	0	0	17	10	UJ	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	UJ	10	U	10	U
Acetone	µg/L	51	12%			0	2	17	50	UJ	50	U	50	UJ	51		50	U	50	U	50	U	50	U	47	J	50	U	50	U		
Benzene	µg/L	0	0%	NYSDEC CLASS GA	1	0	0	17	10	UJ	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	UJ	10	U	10	U
Bromodichloromethane	µg/L	0	0%	NYSDEC CLASS GA	80	0	0	17	10	UJ	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	UJ	10	U	10	U
Bromoform	µg/L	0	0%	NYSDEC CLASS GA	80	0	0	17	10	UJ	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	UJ	10	U	10	U
Carbon Disulfide	µg/L	0	0%			0	0	17	10	UJ	10	U	10	UJ	10	U	10	U	10	U	10	U	10	U	10	U	10	UJ	10	UJ	10	UJ
Carbon Tetrachloride	µg/L	0	0%	NYSDEC CLASS GA	5	0	0	17	10	UJ	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	UJ	10	U	10	U
Chlorobenzene	µg/L	0	0%	NYSDEC CLASS GA	5	0	0	17	10	UJ	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	UJ	10	U	10	U
Chlorodibromomethane	µg/L	0	0%	NYSDEC CLASS GA	80	0	0	17	10	UJ	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	UJ	10	U	10	U
Chloroethane	µg/L	0	0%	NYSDEC CLASS GA	5	0	0	17	10	UJ	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	UJ	10	U	10	U
Chloroform	µg/L	0	0%	NYSDEC CLASS GA	7	0	0	17	10	UJ	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	UJ	10	U	10	U
cis-1,2-Dichloroethene	µg/L	41	6%	NYSDEC CLASS GA	5	1	1	17	10	UJ	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	UJ	10	U	10	U
cis-1,3-Dichloropropene	µg/L	0	0%	NYSDEC CLASS GA	0.4	0	0	17	10	UJ	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	UJ	10	U	10	U
Cyclohexane	µg/L	0	0%			0	0	17	10	UJ	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	UJ	10	U	10	U
Ethyl Benzene	µg/L	0	0%	NYSDEC CLASS GA	5	0	0	17	10	UJ	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	UJ	10	U	10	U
Isopropylbenzene	µg/L	0	0%	NYSDEC CLASS GA	5	0	0	17	10	UJ	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	UJ	10	U	10	U
Meta/Para Xylene	µg/L	0	0%			0	0	17	10	UJ	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	UJ	10	U	10	U
Methyl Acetate	µg/L	0	0%			0	0	17	10	UJ	10	U	10	U	10	U	10	U	10	U	10	U	10	UJ	10	UJ	10	U	10	U		
Methyl bromide	µg/L	0	0%	NYSDEC CLASS GA	5	0	0	17	10	UJ	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	UJ	10	U	10	U
Methyl butyl ketone	µg/L	0	0%			0	0	17	50	UJ	50	U	50	UJ	50	U	50	U	50	U	50	U	50	U	50	UJ	50	UJ	50	UJ	50	UJ
Methyl chloride	µg/L	0	0%	NYSDEC CLASS GA	5	0	0	17	10	UJ	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	UJ	10	U	10	U
Methyl cyclohexane	µg/L	0	0%			0	0	17	10	UJ	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	UJ	10	U	10	U
Methyl ethyl ketone	µg/L	0	0%			0	0	17	50	UJ	50	U	50	U	50	U	50	U	50	U	50	U	50	U	50	U	50	UJ	50	U	50	U
Methyl isobutyl ketone	µg/L	0	0%			0	0	17	50	UJ	50	U	50	U	50	U	50	U	50	U	50	U	50	U	50	U	50	UJ	50	U	50	U
Methyl Tertbutyl Ether	µg/L	0	0%			0	0	17	10	UJ	10	U	10	UJ	10	U	10	U	10	U	10	U	10	U	10	U	10	UJ	10	U	10	U
Methylene Chloride	µg/L	0	0%	NYSDEC CLASS GA	5	0	0	17	10	UJ	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	UJ	10	U	10	U
Ortho Xylene	µg/L	0	0%	NYSDEC CLASS GA	5	0	0	17	10	UJ	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	UJ	10	U	10	U
Styrene	µg/L	0	0%	NYSDEC CLASS GA	5	0	0	17	10	UJ	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	UJ	10	U	10	U
Tetrachloroethene	µg/L	0	0%	NYSDEC CLASS GA	5	0	0	17	10	UJ	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	UJ	10	U	10	U
Toluene	µg/L	0	0%	NYSDEC CLASS GA	5	0	0	17	10	UJ	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	UJ	10	U	10	U
trans-1,2-Dichloroethene	µg/L	0	0%	NYSDEC CLASS GA	5	0	0	17	10	UJ	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	UJ	10	U	10	U
Trans-1,3-Dichloropropene	µg/L	0	0%	NYSDEC CLASS GA	0.4	0	0	17	10	UJ	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	UJ	10	U	10	U
Trichloroethene	µg/L	2400	24%	NYSDEC CLASS GA	5	1	4	17	4.0	J	4.1	J	4.2	J	10	U	10	U	10	U	10	U	10	U	10	U	10	UJ	10	U	10	U
Trichlorofluoromethane	µg/L	0	0%	NYSDEC CLASS GA	5	0	0	17	10	UJ	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	UJ	10	U	10	U
Vinyl Chloride	µg/L	0	0%	NYSDEC CLASS GA	2	0	0	17	10	UJ	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	UJ	10	U	10	U
Dichlorodifluoromethane	µg/L	0	0%	NYSDEC CLASS GA	5	0	0	17	10	UJ	10	U	10	UJ	10	U	10	U	10	U	10	U	10	U	10	U	10	UJ	10	UJ	10	UJ

Building 813/814 Groundwater VOC Results
SEAD-12 SRI
Seneca Army Depot Activity, Romulus, NY

LOCATION ID									TW12-23 (D)		TW12-24		TW12-25		TW12-26		MW12-37		MW12-40	
MATRIX									GW		GW		GW		GW		GW		GW	
SAMPLE ID									122297		122287		122288		122289		122291		122290	
TOP OF SAMPLE									13.30		8.10		7.30		5.90		7.53		8.30	
BOTTOM OF SAMPLE									23.30		13.10		12.30		8.90		12.43		13.30	
SAMPLE DATE									6/10/2004		6/11/2004		6/11/2004		6/11/2004		6/11/2004		6/11/2004	
QC CODE									DU		SA		SA		SA		SA		SA	
STUDY ID									SRI		SRI		SRI		SRI		SRI		SRI	
Parameter	Unit	Maximum	Frequency of Detection	Criteria Type	Action Level	Number of Exceedances	Number of Detections	Number of Analyses	Value	(Q)	Value	(Q)	Value	(Q)	Value	(Q)	Value	(Q)	Value	(Q)
1,1,1-Trichloroethane	µg/L	0	0%	NYSDEC CLASS GA	5	0	0	17	10	U	10	U	10	U	10	U	10	U	10	U
1,1,2,2-Tetrachloroethane	µg/L	0	0%	NYSDEC CLASS GA	5	0	0	17	10	U	10	U	10	U	10	U	10	U	10	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/L	0	0%	NYSDEC CLASS GA	5	0	0	17	10	U	10	U	10	U	10	U	10	U	10	U
1,1,2-Trichloroethane	µg/L	0	0%	NYSDEC CLASS GA	1	0	0	17	10	U	10	U	10	U	10	U	10	U	10	U
1,1-Dichloroethane	µg/L	0	0%	NYSDEC CLASS GA	5	0	0	17	10	U	10	U	10	U	10	U	10	U	10	U
1,1-Dichloroethene	µg/L	0	0%	NYSDEC CLASS GA	5	0	0	17	10	U	10	U	10	U	10	U	10	U	10	U
1,2,4-Trichlorobenzene	µg/L	0	0%	NYSDEC CLASS GA	5	0	0	17	10	U	10	U	10	U	10	U	10	U	10	U
1,2-Dibromo-3-Chloropropane	µg/L	0	0%	NYSDEC CLASS GA	0.04	0	0	17	10	U	10	U	10	U	10	U	10	U	10	U
1,2-Dibromoethane	µg/L	0	0%	NYSDEC CLASS GA	0.0006	0	0	17	10	U	10	U	10	U	10	U	10	U	10	U
1,2-Dichlorobenzene	µg/L	0	0%	NYSDEC CLASS GA	3	0	0	17	10	U	10	U	10	U	10	U	10	U	10	U
1,2-Dichloroethane	µg/L	0	0%	NYSDEC CLASS GA	0.6	0	0	17	10	U	10	U	10	U	10	U	10	U	10	U
1,2-Dichloropropane	µg/L	0	0%	NYSDEC CLASS GA	1	0	0	17	10	U	10	U	10	U	10	U	10	U	10	U
1,3-Dichlorobenzene	µg/L	0	0%	NYSDEC CLASS GA	3	0	0	17	10	U	10	U	10	U	10	U	10	U	10	U
1,4-Dichlorobenzene	µg/L	0	0%	NYSDEC CLASS GA	3	0	0	17	10	U	10	U	10	U	10	U	10	U	10	U
Acetone	µg/L	51	12%			0	2	17	50	U	50	U	50	U	50	U	50	U	50	U
Benzene	µg/L	0	0%	NYSDEC CLASS GA	1	0	0	17	10	U	10	U	10	U	10	U	10	U	10	U
Bromodichloromethane	µg/L	0	0%	NYSDEC CLASS GA	80	0	0	17	10	U	10	U	10	U	10	U	10	U	10	U
Bromoform	µg/L	0	0%	NYSDEC CLASS GA	80	0	0	17	10	U	10	U	10	U	10	U	10	U	10	U
Carbon Disulfide	µg/L	0	0%			0	0	17	10	UJ	10	UJ	10	UJ	10	UJ	10	UJ	10	UJ
Carbon Tetrachloride	µg/L	0	0%	NYSDEC CLASS GA	5	0	0	17	10	U	10	U	10	U	10	U	10	U	10	U
Chlorobenzene	µg/L	0	0%	NYSDEC CLASS GA	5	0	0	17	10	U	10	U	10	U	10	U	10	U	10	U
Chlorodibromomethane	µg/L	0	0%	NYSDEC CLASS GA	80	0	0	17	10	U	10	U	10	U	10	U	10	U	10	U
Chloroethane	µg/L	0	0%	NYSDEC CLASS GA	5	0	0	17	10	U	10	U	10	U	10	U	10	U	10	U
Chloroform	µg/L	0	0%	NYSDEC CLASS GA	7	0	0	17	10	U	10	U	10	U	10	U	10	U	10	U
cis-1,2-Dichloroethene	µg/L	41	6%	NYSDEC CLASS GA	5	1	1	17	10	U	10	U	10	U	10	U	**41**		10	U
cis-1,3-Dichloropropene	µg/L	0	0%	NYSDEC CLASS GA	0.4	0	0	17	10	U	10	U	10	U	10	U	10	U	10	U
Cyclohexane	µg/L	0	0%			0	0	17	10	U	10	U	10	U	10	U	10	U	10	U
Ethyl Benzene	µg/L	0	0%	NYSDEC CLASS GA	5	0	0	17	10	U	10	U	10	U	10	U	10	U	10	U
Isopropylbenzene	µg/L	0	0%	NYSDEC CLASS GA	5	0	0	17	10	U	10	U	10	U	10	U	10	U	10	U
Meta/Para Xylene	µg/L	0	0%			0	0	17	10	U	10	U	10	U	10	U	10	U	10	U
Methyl Acetate	µg/L	0	0%			0	0	17	10	U	10	U	10	U	10	U	10	U	10	U
Methyl bromide	µg/L	0	0%	NYSDEC CLASS GA	5	0	0	17	10	U	10	U	10	U	10	U	10	U	10	U
Methyl butyl ketone	µg/L	0	0%			0	0	17	50	UJ	50	UJ	50	UJ	50	UJ	50	UJ	50	UJ
Methyl chloride	µg/L	0	0%	NYSDEC CLASS GA	5	0	0	17	10	U	10	U	10	U	10	U	10	U	10	U
Methyl cyclohexane	µg/L	0	0%			0	0	17	10	U	10	U	10	U	10	U	10	U	10	U
Methyl ethyl ketone	µg/L	0	0%			0	0	17	50	U	50	U	50	U	50	U	50	U	50	U
Methyl isobutyl ketone	µg/L	0	0%			0	0	17	50	U	50	U	50	U	50	U	50	U	50	U
Methyl Tertbutyl Ether	µg/L	0	0%			0	0	17	10	U	10	U	10	U	10	U	10	U	10	U
Methylene Chloride	µg/L	0	0%	NYSDEC CLASS GA	5	0	0	17	10	U	10	U	10	U	10	U	10	U	10	U
Ortho Xylene	µg/L	0	0%	NYSDEC CLASS GA	5	0	0	17	10	U	10	U	10	U	10	U	10	U	10	U
Styrene	µg/L	0	0%	NYSDEC CLASS GA	5	0	0	17	10	U	10	U	10	U	10	U	10	U	10	U
Tetrachloroethene	µg/L	0	0%	NYSDEC CLASS GA	5	0	0	17	10	U	10	U	10	U	10	U	10	U	10	U
Toluene	µg/L	0	0%	NYSDEC CLASS GA	5	0	0	17	10	U	10	U	10	U	10	U	10	U	10	U
trans-1,2-Dichloroethene	µg/L	0	0%	NYSDEC CLASS GA	5	0	0	17	10	U	10	U	10	U	10	U	10	U	10	U
Trans-1,3-Dichloropropene	µg/L	0	0%	NYSDEC CLASS GA	0.4	0	0	17	10	U	10	U	10	U	10	U	10	U	10	U
Trichloroethene	µg/L	2400	24%	NYSDEC CLASS GA	5	1	4	17	10	U	10	U	10	U	10	U	**2400**		10	U
Trichlorofluoromethane	µg/L	0	0%	NYSDEC CLASS GA	5	0	0	17	10	U	10	U	10	U	10	U	10	U	10	U
Vinyl Chloride	µg/L	0	0%	NYSDEC CLASS GA	2	0	0	17	10	U	10	U	10	U	10	U	10	U	10	U
Dichlorodifluoromethane	µg/L	0	0%	NYSDEC CLASS GA	5	0	0	17	10	UJ	10	UJ	10	UJ	10	UJ	10	UJ	10	UJ

Building 813/814 Ditch Soil VOC Results
SEAD-12 SRI
Seneca Army Depot Activity, Romulus, NY

LOCATION ID									SD12-68		SD12-69		SD12-70		SD12-71		SD12-72		SD12-72 (D)		SD12-73		SD12-74	
MATRIX									DITCH SOIL		DITCH SOIL		DITCH SOIL		DITCH SOIL		DITCH SOIL		DITCH SOIL		DITCH SOIL		DITCH SOIL	
SAMPLE ID									124250		124251		124252		124253		124254		124257		124255		124256	
TOP OF SAMPLE									0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
BOTTOM OF SAMPLE									0.20		0.20		0.20		0.20		0.20		0.20		0.20		0.20	
SAMPLE DATE									6/22/2004		6/22/2004		6/22/2004		6/22/2004		6/22/2004		6/22/2004		6/22/2004		6/22/2004	
QC CODE									SA		SA		SA		SA		SA		DU		SA		SA	
STUDY ID									SRI		SRI		SRI		SRI		SRI		SRI		SRI		SRI	
			Frequency			Number	Number	Number																
			of	Criteria	Action	of	of	of																
Parameter	Units	Maximum	Frequency	Type	Action Leve	Exceed	Detect	Analyses	Value	(Q)	Value	(Q)	Value	(Q)	Value	(Q)	Value	(Q)	Value	(Q)	Value	(Q)	Value	(Q)
1,1,1-Trichloroethane	UG/KG	0	0%	TAGM 4046	800	0	0	8	11	UJ	8.1	U	12	UJ	14	UJ	9.6	U	12	UJ	12	UJ	12	UJ
1,1,2,2-Tetrachloroethane	UG/KG	0	0%	TAGM 4046	600	0	0	8	11	UJ	8.1	U	12	UJ	14	UJ	9.6	U	12	UJ	12	UJ	12	UJ
1,1,2-Trichloro-1,2,2-Trifluoroethane		0	0%			0	0	8	11	UJ	8.1	U	12	UJ	14	UJ	9.6	U	12	UJ	12	UJ	12	UJ
1,1,2-Trichloroethane		0	0%			0	0	8	11	UJ	8.1	U	12	UJ	14	UJ	9.6	U	12	UJ	12	UJ	12	UJ
1,1-Dichloroethane	UG/KG	0	0%	TAGM 4046	200	0	0	8	11	UJ	8.1	U	12	UJ	14	UJ	9.6	U	12	UJ	12	UJ	12	UJ
1,1-Dichloroethene	UG/KG	0	0%	TAGM 4046	400	0	0	8	11	UJ	8.1	U	12	UJ	14	UJ	9.6	U	12	UJ	12	UJ	12	UJ
1,2,4-Trichlorobenzene	UG/KG	0	0%	TAGM 4046	3400	0	0	8	11	UJ	8.1	U	12	UJ	14	UJ	9.6	U	12	UJ	12	UJ	12	UJ
1,2-Dibromo-3-Chloropropane		0	0%			0	0	8	11	UJ	8.1	U	12	UJ	14	UJ	9.6	U	12	UJ	12	UJ	12	UJ
1,2-Dibromoethane		0	0%			0	0	8	11	UJ	8.1	U	12	UJ	14	UJ	9.6	U	12	UJ	12	UJ	12	UJ
1,2-Dichlorobenzene	UG/KG	0	0%	TAGM 4046	7900	0	0	8	11	UJ	8.1	U	12	UJ	14	UJ	9.6	U	12	UJ	12	UJ	12	UJ
1,2-Dichloroethane	UG/KG	0	0%	TAGM 4046	100	0	0	8	11	UJ	8.1	U	12	UJ	14	UJ	9.6	U	12	UJ	12	UJ	12	UJ
1,2-Dichloropropane		0	0%			0	0	8	11	UJ	8.1	U	12	UJ	14	UJ	9.6	U	12	UJ	12	UJ	12	UJ
1,3-Dichlorobenzene	UG/KG	0	0%	TAGM 4046	1600	0	0	8	11	UJ	8.1	U	12	UJ	14	UJ	9.6	U	12	UJ	12	UJ	12	UJ
1,4-Dichlorobenzene	UG/KG	0	0%	TAGM 4046	8500	0	0	8	11	UJ	8.1	U	12	UJ	14	UJ	9.6	U	12	UJ	12	UJ	12	UJ
Acetone	UG/KG	110	25%	TAGM 4046	200	0	2	8	72	J	40	U	110	J	69	UJ	48	U	61	UJ	60	UJ	62	UJ
Benzene	UG/KG	0	0%	TAGM 4046	60	0	0	8	11	UJ	8.1	U	12	UJ	14	UJ	9.6	U	12	UJ	12	UJ	12	UJ
Bromodichloromethane		0	0%			0	0	8	11	UJ	8.1	U	12	UJ	14	UJ	9.6	U	12	UJ	12	UJ	12	UJ
Bromoform		0	0%			0	0	8	11	UJ	8.1	U	12	UJ	14	UJ	9.6	U	12	UJ	12	UJ	12	UJ
Carbon Disulfide	UG/KG	0	0%	TAGM 4046	2700	0	0	8	11	UJ	8.1	UJ	12	UJ	14	UJ	9.6	UJ	12	UJ	12	UJ	12	UJ
Carbon Tetrachloride	UG/KG	0	0%	TAGM 4046	600	0	0	8	11	UJ	8.1	U	12	UJ	14	UJ	9.6	U	12	UJ	12	UJ	12	UJ
Chlorobenzene	UG/KG	0	0%	TAGM 4046	1700	0	0	8	11	UJ	8.1	U	12	UJ	14	UJ	9.6	U	12	UJ	12	UJ	12	UJ
Chlorodibromomethane		0	0%			0	0	8	11	UJ	8.1	U	12	UJ	14	UJ	9.6	U	12	UJ	12	UJ	12	UJ
Chloroethane	UG/KG	0	0%	TAGM 4046	1900	0	0	8	11	UJ	8.1	UJ	12	UJ	14	UJ	9.6	UJ	12	UJ	12	UJ	12	UJ
Chloroform	UG/KG	0	0%	TAGM 4046	300	0	0	8	11	UJ	8.1	U	12	UJ	14	UJ	9.6	U	12	UJ	12	UJ	12	UJ
cis-1,2-Dichloroethene		0	0%			0	0	8	11	UJ	8.1	U	12	UJ	14	UJ	9.6	U	12	UJ	12	UJ	12	UJ
cis-1,3-Dichloropropene		0	0%			0	0	8	11	UJ	8.1	U	12	UJ	14	UJ	9.6	U	12	UJ	12	UJ	12	UJ
Cyclohexane		0	0%			0	0	8	11	UJ	8.1	U	12	UJ	14	UJ	9.6	U	12	UJ	12	UJ	12	UJ
Dichlorodifluoromethane		0	0%			0	0	8	11	UJ	8.1	U	12	UJ	14	UJ	9.6	U	12	UJ	12	UJ	12	UJ
Ethyl Benzene	UG/KG	0	0%	TAGM 4046	5500	0	0	8	11	UJ	8.1	U	12	UJ	14	UJ	9.6	U	12	UJ	12	UJ	12	UJ
Isopropylbenzene		0	0%			0	0	8	11	UJ	8.1	U	12	UJ	14	UJ	9.6	U	12	UJ	12	UJ	12	UJ
Meta/Para Xylene		0	0%			0	0	8	11	UJ	8.1	U	12	UJ	14	UJ	9.6	U	12	UJ	12	UJ	12	UJ
Methyl Acetate		0	0%			0	0	8	11	UJ	8.1	U	12	UJ	14	UJ	9.6	U	12	UJ	12	UJ	12	UJ
Methyl bromide		0	0%			0	0	8	11	UJ	8.1	UJ	12	UJ	14	UJ	9.6	UJ	12	UJ	12	UJ	12	UJ
Methyl butyl ketone		0	0%			0	0	8	54	UJ	40	U	62	UJ	69	UJ	48	U	61	UJ	60	UJ	62	UJ
Methyl chloride		0	0%			0	0	8	11	UJ	8.1	U	12	UJ	14	UJ	9.6	U	12	UJ	12	UJ	12	UJ
Methyl cyclohexane		0	0%			0	0	8	11	UJ	8.1	U	12	UJ	14	UJ	9.6	U	12	UJ	12	UJ	12	UJ
Methyl ethyl ketone	UG/KG	0	0%	TAGM 4046	300	0	0	8	54	UJ	40	U	62	UJ	69	UJ	48	U	61	UJ	60	UJ	62	UJ
Methyl isobutyl ketone	UG/KG	0	0%	TAGM 4046	1000	0	0	8	54	UJ	40	U	62	UJ	69	UJ	48	U	61	UJ	60	UJ	62	UJ
Methyl Tertbutyl Ether		0	0%			0	0	8	11	UJ	8.1	U	12	UJ	14	UJ	9.6	U	12	UJ	12	UJ	12	UJ
Methylene Chloride	UG/KG	0	0%	TAGM 4046	100	0	0	8	11	UJ	8.1	U	12	UJ	14	UJ	9.6	U	12	UJ	12	UJ	12	UJ
Ortho Xylene		0	0%			0	0	8	11	UJ	8.1	U	12	UJ	14	UJ	9.6	U	12	UJ	12	UJ	12	UJ
Styrene		0	0%			0	0	8	11	UJ	8.1	U	12	UJ	14	UJ	9.6	U	12	UJ	12	UJ	12	UJ
Tetrachloroethene	UG/KG	0	0%	TAGM 4046	1400	0	0	8	11	UJ	8.1	U	12	UJ	14	UJ	9.6	U	12	UJ	12	UJ	12	UJ
Toluene	UG/KG	7.4	63%	TAGM 4046	1500	0	5	8	2.0	J	2.3	J	12	UJ	7.4	J	7.2	J	5.7	J	12	UJ	12	UJ
trans-1,2-Dichloroethene	UG/KG	0	0%	TAGM 4046	300	0	0	8	11	UJ	8.1	U	12	UJ	14	UJ	9.6	U	12	UJ	12	UJ	12	UJ
Trans-1,3-Dichloropropene		0	0%			0	0	8	11	UJ	8.1	U	12	UJ	14	UJ	9.6	U	12	UJ	12	UJ	12	UJ
Trichloroethene	UG/KG	0	0%	TAGM 4046	700	0	0	8	11	UJ	8.1	U	12	UJ	14	UJ	9.6	U	12	UJ	12	UJ	12	UJ
Trichlorofluoromethane		0	0%			0	0	8	11	UJ	8.1	U	12	UJ	14	UJ	9.6	U	12	UJ	12	UJ	12	UJ
Vinyl Chloride	UG/KG	0	0%	TAGM 4046	200	0	0	8	11	UJ	8.1	U	12	UJ	14	UJ	9.6	U	12	UJ	12	UJ	12	UJ
Total Organic Carbon		31000	100%			0	8	8	31000	J	30000	J	11000	J	27000	J	18000	J	22000	J	29000	J	22000	J

Building 813/814 Test Pit VOC Results
SEAD-12 SRI
Seneca Army Depot Activity, Romulus, NY

LOCATION ID									TP813-1T		TP813-2T		TP813-3T		TP813-3T (D)		TP813-4F		TP813-5F		TP813-6F		TP813-7T		TP813-8T	
MATRIX									SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
SAMPLE ID									123682		123683		123684		123686		123688		123689		123691		123692		123693	
TOP OF SAMPLE									7		7		6		6		4		3		3		5		5	
BOTTOM OF SAMPLE									7.5		7.5		6.5		6.5		5		4		4		6		6	
SAMPLE DATE									11/3/2004		11/3/2004		11/3/2004		11/3/2004		11/10/2004		11/10/2004		11/10/2004		11/10/2004		11/11/2004	
QC CODE									SA		SA		SA		DU		SA		SA		SA		SA		SA	
STUDY ID									SRI		SRI		SRI		SRI		SRI		SRI		SRI		SRI		SRI	
Parameter	Unit	Maximum	Frequency of Detection	Criteria Type	Action Level	Number of Exceedances	Number of Detections	Number of Analyses	Value	(Q)	Value	(Q)	Value	(Q)	Value	(Q)	Value	(Q)	Value	(Q)	Value	(Q)	Value	(Q)	Value	(Q)
1,1,1-Trichloroethane	µg/Kg	0	0%	TAGM 4046	800	0	0	15	0.18	UJ	0.22	UJ	56	U	0.18	U	510	U	490	U	390	U	440	U	590	U
1,1,2,2-Tetrachloroethane	µg/Kg	0	0%	TAGM 4046	600	0	0	15	0.35	UJ	71	UJ	68	U	0.36	U	510	U	490	U	390	U	440	U	590	U
1,1,2-Trichloroethane	µg/Kg	0	0%			0	0	15	0.33	UJ	0.42	UJ	71	U	0.34	U	510	U	490	U	390	U	440	U	590	U
1,1-Dichloroethane	µg/Kg	0	0%	TAGM 4046	200	0	0	15	0.23	UJ	0.29	UJ	30	U	0.24	U	510	U	490	U	390	U	440	U	590	U
1,1-Dichloroethene	µg/Kg	3.2	13%	TAGM 4046	400	0	2	15	0.14	UJ	0.18	UJ	3.2	J	1.3	J	510	U	490	U	390	U	440	U	590	U
1,2-Dichloroethane	µg/Kg	0	0%	TAGM 4046	100	0	0	15	2.0	UJ	2.5	UJ	44	U	2.1	U	510	U	490	U	390	U	440	U	590	U
1,2-Dichloropropane	µg/Kg	0	0%			0	0	15	0.22	UJ	0.28	UJ	44	U	0.23	U	510	U	490	U	390	U	440	U	590	U
Acetone	µg/Kg	32	13%	TAGM 4046	200	0	2	15	4.9	UJ	6.1	UJ	450	U	5.1	U	2000	U	2000	U	1600	U	1800	U	2300	U
Benzene	µg/Kg	0	0%	TAGM 4046	60	0	0	15	0.13	UJ	0.17	UJ	33	U	0.14	U	510	U	490	U	390	U	440	U	590	U
Bromodichloromethane	µg/Kg	0	0%			0	0	15	0.22	UJ	0.27	UJ	48	UJ	0.23	U	510	U	490	U	390	U	440	U	590	U
Bromoform	µg/Kg	0	0%			0	0	15	0.20	UJ	0.25	UJ	35	U	0.20	U	510	U	490	U	390	U	440	U	590	U
Carbon Disulfide	µg/Kg	6.6	7%	TAGM 4046	2700	0	1	15	0.07	UJ	6.6	J	54	U	0.07	UJ	1000	U	980	U	780	U	880	U	1200	U
Carbon Tetrachloride	µg/Kg	0	0%	TAGM 4046	600	0	0	15	0.19	UJ	0.24	UJ	65	U	0.20	U	510	U	490	U	390	U	440	U	590	U
Chlorobenzene	µg/Kg	0	0%	TAGM 4046	1700	0	0	15	0.23	UJ	0.29	UJ	51	U	0.24	U	510	U	490	U	390	U	440	U	590	U
Chlorodibromomethane	µg/Kg	0	0%			0	0	15	0.19	UJ	0.24	UJ	52	U	0.20	U	510	U	490	U	390	U	440	U	590	U
Chloroethane	µg/Kg	0	0%	TAGM 4046	1900	0	0	15	0.34	UJ	0.43	UJ	120	U	0.36	UJ	510	U	490	U	390	U	440	U	590	U
Chloroform	µg/Kg	1.6	13%	TAGM 4046	300	0	2	15	0.16	UJ	0.19	UJ	1.6	J	0.16	U	510	U	490	U	390	U	440	U	590	U
cis-1,2-Dichloroethene	µg/Kg	2800	47%			0	7	15	13	J	19	J	21		9.1		510	U	490	U	390	U	2800		590	U
cis-1,3-Dichloropropene	µg/Kg	0	0%			0	0	15	0.13	UJ	0.16	UJ	21	U	0.13	U	510	U	490	U	390	U	440	U	590	U
Ethyl Benzene	µg/Kg	0	0%	TAGM 4046	5500	0	0	15	0.16	UJ	0.20	UJ	56	U	0.17	U	510	U	490	U	390	U	440	U	590	U
Meta/Para Xylene	µg/Kg	0	0%			0	0	15	0.34	UJ	0.42	UJ	130	U	0.35	U	510	U	490	U	390	U	440	U	590	U
Methyl bromide	µg/Kg	0	0%			0	0	15	0.46	UJ	0.58	UJ	110	U	0.48	UJ	510	U	490	U	390	U	440	U	590	U
Methyl butyl ketone	µg/Kg	0	0%			0	0	15	2.1	UJ	2.6	UJ	91	U	2.2	U	1000	U	980	U	780	U	880	U	1200	U
Methyl chloride	µg/Kg	0	0%			0	0	15	0.22	UJ	0.27	UJ	94	U	0.22	U	510	U	490	U	390	U	440	U	590	U
Methyl ethyl ketone	µg/Kg	4.5	7%	TAGM 4046	300	0	1	15	1.5	UJ	1.9	UJ	390	U	1.5	U	1000	U	980	U	780	U	880	U	1200	U
Methyl isobutyl ketone	µg/Kg	0	0%	TAGM 4046	1000	0	0	15	1.6	UJ	2.0	UJ	180	U	1.6	U	1000	U	980	U	780	U	880	U	1200	U
Methylene Chloride	µg/Kg	0	0%	TAGM 4046	100	0	0	15	0.44	UJ	0.56	UJ	85	U	0.46	UJ	510	U	490	U	390	U	440	U	590	U
Ortho Xylene	µg/Kg	0	0%			0	0	15	0.28	UJ	0.35	UJ	50	U	0.29	U	510	U	490	U	390	U	440	U	590	U
Styrene	µg/Kg	0	0%			0	0	15	0.20	UJ	0.26	UJ	47	U	0.21	U	510	U	490	U	390	U	440	U	590	U
Tetrachloroethene	µg/Kg	3.2	7%	TAGM 4046	1400	0	1	15	0.42	UJ	0.52	UJ	45	UJ	0.43	U	510	U	490	U	390	U	440	U	590	U
Toluene	µg/Kg	100	7%	TAGM 4046	1500	0	1	15	0.17	UJ	0.21	UJ	53	U	0.18	U	510	U	490	U	100	J	440	U	590	U
trans-1,2-Dichloroethene	µg/Kg	0	0%	TAGM 4046	300	0	0	15	0.24	UJ	0.30	UJ	71	U	0.25	U	510	U	490	U	390	U	440	U	590	U
trans-1,3-Dichloropropene	µg/Kg	0	0%			0	0	15	0.17	UJ	0.21	UJ	58	U	0.17	U	510	U	490	U	390	U	440	U	590	U
Trichoroethene	µg/Kg	65000	87%	TAGM 4046	700	9	13	15	**11000**		**7000**		**60000**		**65000**		540	U	160	J	590		**1200**		**1100**	
Vinyl Chloride	µg/Kg	1.5	7%	TAGM 4046	200	0	1	15	0.15	UJ	0.19	UJ	37	U	0.16	U	510	U	490	U	390	U	440	U	590	U
Percent Solids	%	89.1	73%			0	11	15									85.5		84.3		84.4		86.7		85.2	
Total Organic Carbon	mg/Kg	5420	13%			0	2	15											4120		5420					

Building 813/814 Test Pit VOC Results
SEAD-12 SRI
Seneca Army Depot Activity, Romulus, NY

LOCATION ID									TP813-9T		TP813-10F		TP813-11F		TP813-12F		TP813-13F		TP813-13F (D)	
MATRIX									SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
SAMPLE ID									123694		123701		123702		123703		123704		123705	
TOP OF SAMPLE									5		4		3		2		3		3	
BOTTOM OF SAMPLE									6		5		4		3		4		4	
SAMPLE DATE									11/11/2004		12/21/2004		12/21/2004		12/21/2004		12/21/2004		12/21/2004	
QC CODE									SA		SA		SA		SA		SA		DU	
STUDY ID									SRI		SRI		SRI		SRI		SRI		SRI	
Parameter	Unit	Maximum	Frequency of Detection	Criteria Type	Action Level	Number of Exceedances	Number of Detections	Number of Analyses	Value	(Q)	Value	(Q)	Value	(Q)	Value	(Q)	Value	(Q)	Value	(Q)
1,1,1-Trichloroethane	µg/Kg	0	0%	TAGM 4046	800	0	0	15	430	U	4	U	1.6	U	4.9	U	4.3	U	4.5	U
1,1,2,2-Tetrachloroethane	µg/Kg	0	0%	TAGM 4046	600	0	0	15	430	U	4	U	1.6	U	4.9	U	4.3	U	4.5	U
1,1,2-Trichloroethane	µg/Kg	0	0%			0	0	15	430	U	4	U	1.6	U	4.9	U	4.3	U	4.5	U
1,1-Dichloroethane	µg/Kg	0	0%	TAGM 4046	200	0	0	15	430	U	4	U	1.6	U	4.9	U	4.3	U	4.5	U
1,1-Dichloroethene	µg/Kg	3.2	13%	TAGM 4046	400	0	2	15	430	U	4	U	1.6	U	4.9	U	4.3	U	4.5	U
1,2-Dichloroethane	µg/Kg	0	0%	TAGM 4046	100	0	0	15	430	U	4	U	1.6	U	4.9	U	4.3	U	4.5	U
1,2-Dichloropropane	µg/Kg	0	0%			0	0	15	430	U	4	U	1.6	U	4.9	U	4.3	U	4.5	U
Acetone	µg/Kg	32	13%	TAGM 4046	200	0	2	15	1700	U	16	U	4.3	J	32		17	U	18	U
Benzene	µg/Kg	0	0%	TAGM 4046	60	0	0	15	430	U	4	U	1.6	U	4.9	U	4.3	U	4.5	U
Bromodichloromethane	µg/Kg	0	0%			0	0	15	430	U	4	U	1.6	U	4.9	U	4.3	U	4.5	U
Bromoform	µg/Kg	0	0%			0	0	15	430	U	4	U	1.6	U	4.9	U	4.3	U	4.5	U
Carbon Disulfide	µg/Kg	6.6	7%	TAGM 4046	2700	0	1	15	860	U	8.1	U	3.2	U	9.9	U	8.6	U	9.1	U
Carbon Tetrachloride	µg/Kg	0	0%	TAGM 4046	600	0	0	15	430	U	4	U	1.6	U	4.9	U	4.3	U	4.5	U
Chlorobenzene	µg/Kg	0	0%	TAGM 4046	1700	0	0	15	430	U	4	U	1.6	U	4.9	U	4.3	U	4.5	U
Chlorodibromomethane	µg/Kg	0	0%			0	0	15	430	U	4	U	1.6	U	4.9	U	4.3	U	4.5	U
Chloroethane	µg/Kg	0	0%	TAGM 4046	1900	0	0	15	430	U	4	U	1.6	U	4.9	U	4.3	U	4.5	U
Chloroform	µg/Kg	1.6	13%	TAGM 4046	300	0	2	15	430	U	4	U	1.6	U	1.4	J	4.3	U	4.5	U
cis-1,2-Dichloroethene	µg/Kg	2800	47%			0	7	15	430	U	4	U	1.5	J	4.9	J	4.3	U	4.5	U
cis-1,3-Dichloropropene	µg/Kg	0	0%			0	0	15	430	U	4	U	1.6	U	4.9	U	4.3	U	4.5	U
Ethyl Benzene	µg/Kg	0	0%	TAGM 4046	5500	0	0	15	430	U	4	U	1.6	U	4.9	U	4.3	U	4.5	U
Meta/Para Xylene	µg/Kg	0	0%			0	0	15	430	U	4	U	1.6	U	4.9	U	4.3	U	4.5	U
Methyl bromide	µg/Kg	0	0%			0	0	15	430	U	4	U	1.6	U	4.9	U	4.3	U	4.5	U
Methyl butyl ketone	µg/Kg	0	0%			0	0	15	860	U	8.1	UJ	3.2	UJ	9.9	UJ	8.6	UJ	9.1	UJ
Methyl chloride	µg/Kg	0	0%			0	0	15	430	U	4	U	1.6	U	4.9	U	4.3	U	4.5	U
Methyl ethyl ketone	µg/Kg	4.5	7%	TAGM 4046	300	0	1	15	860	U	8.1	UJ	3.2	UJ	4.5	J	8.6	UJ	9.1	UJ
Methyl isobutyl ketone	µg/Kg	0	0%	TAGM 4046	1000	0	0	15	860	U	8.1	UJ	3.2	UJ	9.9	UJ	8.6	UJ	9.1	UJ
Methylene Chloride	µg/Kg	0	0%	TAGM 4046	100	0	0	15	430	U	4	U	1.6	U	4.9	U	4.3	U	4.5	U
Ortho Xylene	µg/Kg	0	0%			0	0	15	430	U	4	U	1.6	U	4.9	U	4.3	U	4.5	U
Styrene	µg/Kg	0	0%			0	0	15	430	U	4	U	1.6	U	4.9	U	4.3	U	4.5	U
Tetrachloroethene	µg/Kg	3.2	7%	TAGM 4046	1400	0	1	15	430	U	3.2	J	1.6	U	4.9	U	4.3	U	4.5	U
Toluene	µg/Kg	100	7%	TAGM 4046	1500	0	1	15	430	U	4	U	1.6	U	4.9	U	4.3	U	4.5	U
trans-1,2-Dichloroethene	µg/Kg	0	0%	TAGM 4046	300	0	0	15	430	U	4	U	1.6	U	4.9	U	4.3	U	4.5	U
trans-1,3-Dichloropropene	µg/Kg	0	0%			0	0	15	430	U	4	U	1.6	U	4.9	U	4.3	U	4.5	U
Trichoroethene	µg/Kg	65000	87%	TAGM 4046	700	9	13	15	**1400**		**4800**	J	11		**1000**	J	1.3	J	4.5	U
Vinyl Chloride	µg/Kg	1.5	7%	TAGM 4046	200	0	1	15	430	U	4	U	1.5	J	4.9	U	4.3	U	4.5	U
Percent Solids	%	89.1	73%			0	11	15	84		81		80.7		77.3		89.1		87.9	
Total Organic Carbon	mg/Kg	5420	13%			0	2	15												

Building 813/814 Stockpile VOC Results
SEAD-12 SRI
Seneca Army Depot Activity, Romulus, NY

LOCATION ID										SP813-1		SP813-2		SP813-3		SP813-3		SP813-4		SP813-5		SP813-6		SP813-7		SP813-8	
MATRIX										SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
SAMPLE ID										123685		123687		123695		123696		123697		123698		123699		123700		123706	
TOP OF SAMPLE										N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A	
BOTTOM OF SAMPLE										N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A	
SAMPLE DATE										11/3/2004		11/10/2004		12/9/2004		12/9/2004		12/9/2004		12/9/2004		12/9/2004		12/9/2004		12/21/2004	
QC CODE										SA		SA		SA		DU		SA		SA		SA		SA		SA	
STUDY ID										SRI		SRI		SRI		SRI		SRI		SRI		SRI		SRI		SRI	
Parameter	Unit	Maximum	Frequency of Detection	Criteria Type	Action Level	Number of Exceedances	Number of Detections	Number of Analyses	Value	(Q)	Value	(Q)	Value	(Q)	Value	(Q)	Value	(Q)	Value	(Q)	Value	(Q)	Value	(Q)	Value	(Q)
1,1,1-Trichloroethane	µg/Kg	0	0%	TAGM 4046	800	0	0	9	0.23	UJ	680	U	4.4	U	4.8	U	4.8	U	4.2	U	5.2	U	390	U	1.7	U
1,1,2,2-Tetrachloroethane	µg/Kg	0	0%	TAGM 4046	600	0	0	9	0.46	UJ	680	U	4.4	U	4.8	U	4.8	U	4.2	U	5.2	U	390	U	1.7	U
1,1,2-Trichloroethane	µg/Kg	0	0%			0	0	9	0.44	UJ	680	U	4.4	U	4.8	U	4.8	U	4.2	U	5.2	U	390	U	1.7	U
1,1-Dichloroethane	µg/Kg	0	0%	TAGM 4046	200	0	0	9	0.30	UJ	680	U	4.4	U	4.8	U	4.8	U	4.2	U	5.2	U	390	U	1.7	U
1,1-Dichloroethene	µg/Kg	0.65	11%	TAGM 4046	400	0	1	9	0.19	UJ	680	U	4.4	U	4.8	U	4.8	U	4.2	U	5.2	U	390	U	0.65	J
1,2-Dichloroethane	µg/Kg	0	0%	TAGM 4046	100	0	0	9	2.7	UJ	680	U	4.4	U	4.8	U	4.8	U	4.2	U	5.2	U	390	U	1.7	U
1,2-Dichloropropane	µg/Kg	0	0%			0	0	9	0.29	UJ	680	U	4.4	U	4.8	U	4.8	U	4.2	U	5.2	U	390	U	1.7	U
Acetone	µg/Kg	3.8	11%	TAGM 4046	200	0	1	9	6.4	UJ	2700	U	18	U	19	U	19	U	17	U	21	U	1500	U	3.8	J
Benzene	µg/Kg	0	0%	TAGM 4046	60	0	0	9	0.17	UJ	680	U	4.4	U	4.8	U	4.8	U	4.2	U	5.2	U	390	U	1.7	U
Bromodichloromethane	µg/Kg	0	0%			0	0	9	0.29	UJ	680	U	4.4	U	4.8	U	4.8	U	4.2	U	5.2	U	390	U	1.7	U
Bromoform	µg/Kg	0	0%			0	0	9	0.26	UJ	680	U	4.4	U	4.8	U	4.8	U	4.2	U	5.2	U	390	U	1.7	U
Carbon Disulfide	µg/Kg	1	11%	TAGM 4046	2700	0	1	9	0.09	UJ	1400	U	8.8	U	9.5	U	9.6	U	8.4	U	10	U	770	U	1	J
Carbon Tetrachloride	µg/Kg	0	0%	TAGM 4046	600	0	0	9	0.26	UJ	680	U	4.4	U	4.8	U	4.8	U	4.2	U	5.2	U	390	U	1.7	U
Chlorobenzene	µg/Kg	0	0%	TAGM 4046	1700	0	0	9	0.30	UJ	680	U	4.4	U	4.8	U	4.8	U	4.2	U	5.2	U	390	U	1.7	U
Chlorodibromomethane	µg/Kg	0	0%			0	0	9	0.25	UJ	680	U	4.4	U	4.8	U	4.8	U	4.2	U	5.2	U	390	U	1.7	U
Chloroethane	µg/Kg	0	0%	TAGM 4046	1900	0	0	9	0.45	UJ	680	U	4.4	U	4.8	U	4.8	U	4.2	U	5.2	U	390	U	1.7	U
Chloroform	µg/Kg	0	0%	TAGM 4046	300	0	0	9	0.20	UJ	680	U	4.4	U	4.8	U	4.8	U	4.2	U	5.2	U	390	U	1.7	U
cis-1,2-Dichloroethene	µg/Kg	20	56%			0	5	9	3.3	J	680	U	2.4	J	2.6	J	1.7	J	4.2	U	5.4	U	390	U	20	
cis-1,3-Dichloropropene	µg/Kg	0	0%			0	0	9	0.17	UJ	680	U	4.4	U	4.8	U	4.8	U	4.2	U	5.2	U	390	U	1.7	U
Ethyl Benzene	µg/Kg	0	0%	TAGM 4046	5500	0	0	9	0.21	UJ	680	U	4.4	U	4.8	U	4.8	U	4.2	U	5.2	U	390	U	1.7	U
Meta/Para Xylene	µg/Kg	0	0%			0	0	1	0.44	UJ	680	U	4.4	U	4.8	U	4.8	U	4.2	U	5.2	U	390	U	1.7	U
Methyl bromide	µg/Kg	0	0%			0	0	9	0.61	UJ	680	U	4.4	U	4.8	U	4.8	U	4.2	U	5.2	U	390	U	1.7	U
Methyl butyl ketone	µg/Kg	0	0%			0	0	9	2.8	UJ	1400	U	8.8	UJ	9.5	UJ	9.6	UJ	8.4	UJ	10	UJ	770	U	3.3	UJ
Methyl chloride	µg/Kg	0	0%			0	0	9	0.28	UJ	680	U	4.4	U	4.8	U	4.8	U	4.2	U	5.2	U	390	U	1.7	U
Methyl ethyl ketone	µg/Kg	0	0%	TAGM 4046	300	0	0	9	2.0	UJ	1400	U	8.8	UJ	9.5	UJ	9.6	UJ	8.4	UJ	10	UJ	770	U	3.3	UJ
Methyl isobutyl ketone	µg/Kg	0	0%	TAGM 4046	1000	0	0	9	2.1	UJ	1400	U	8.8	UJ	9.5	UJ	9.6	UJ	8.4	UJ	10	UJ	770	U	3.3	UJ
Methylene Chloride	µg/Kg	950	11%	TAGM 4046	100	1	1	9	0.59	UJ	**950**		4.4	U	4.8	U	4.8	U	4.2	U	5.2	U	390	U	1.7	U
Ortho Xylene	µg/Kg	0	0%			0	0	9	0.37	UJ	680	U	4.4	U	4.8	U	4.8	U	4.2	U	5.2	U	390	U	1.7	U
Styrene	µg/Kg	0	0%			0	0	9	0.27	UJ	680	U	4.4	U	4.8	U	4.8	U	4.2	U	5.2	U	390	U	1.7	U
Tetrachloroethene	µg/Kg	1.7	11%	TAGM 4046	1400	0	1	9	0.55	UJ	680	U	4.4	U	4.8	U	4.8	U	4.2	U	5.2	U	390	U	1.7	J
Toluene	µg/Kg	0	0%	TAGM 4046	1500	0	0	9	0.22	UJ	680	U	4.4	U	4.8	U	4.8	U	4.2	U	5.2	U	390	U	1.7	U
trans-1,2-Dichloroethene	µg/Kg	1.3	11%	TAGM 4046	300	0	1	9	0.32	UJ	680	U	4.4	U	4.8	U	4.8	U	4.2	U	5.2	U	390	U	1.3	J
Trans-1,3-Dichloropropene	µg/Kg	0	0%			0	0	9	0.22	UJ	680	U	4.4	U	4.8	U	4.8	U	4.2	U	5.2	U	390	U	1.7	U
Trichloroethene	µg/Kg	28000	100%	TAGM 4046	700	6	9	9	**28000**		**1500**		**3100**		190		110		9.3		**7400**	J	**1700**		**18000**	J
Vinyl Chloride	µg/Kg	7.4	11%	TAGM 4046	200	0	1	9	0.20	UJ	680	U	4.4	U	4.8	U	4.8	U	4.2	U	5.2	U	390	U	7.4	

EM-5 Soil Sample Radiological Results
SEAD-12 SRI
Seneca Army Depot Activity, Romulus, NY

LOCATION ID						SS12-106			SS12-107			SS12-107 (D)			SS12-108			SS12-109			SS12-117		
MATRIX						SOIL			SOIL			SOIL			SOIL			SOIL			SOIL		
SAMPLE ID						123677			123676			123681			123673			123672			123674		
TOP OF SAMPLE						0			0			0			0			0			0		
BOTTOM OF SAMPLE						0.2			0.2			0.2			0.2			0.2			0.2		
SAMPLE DATE						6/24/2004			6/24/2004			6/24/2004			6/24/2004			6/24/2004			6/24/2004		
QC CODE						SA			SA			DU			SA			SA			SA		
STUDY ID						SRI			SRI			SRI			SRI			SRI			SRI		
Parameter	Unit	Maximum	Frequency of Detection	Number of Detections	Number of Analyses	Value	(Q)	Uncertainty	Value	(Q)	Uncertainty	Value	(Q)	Uncertainty	Value	(Q)	Uncertainty	Value	(Q)	Uncertainty	Value	(Q)	Uncertainty
Actinium-228	PCI/G	0.962	100%	11	11	0.784		0.187	0.851		0.228	0.844		0.193	0.946		0.194	0.779		0.223	0.760		0.204
Americium-241	PCI/G	0	0%	0	11	0.0239	U	0.113	0.0428	U	0.108	0.0153	U	0.123	-0.0957	U	0.120	0.0531	U	0.0998	-0.0298	U	0.103
Antimony-124	PCI/G	0	0%	0	11	0.0166	U	0.0211	0.0147	U	0.0232	0.0101	U	0.0228	-0.0124	U	0.0213	-0.00663	U	0.0287	-0.0124	U	0.0247
Antimony-125	PCI/G	0	0%	0	11	0.0275	U	0.0455	0.0382	U	0.0549	0.00617	U	0.0496	-0.037	U	0.0529	0.0128	U	0.0615	-0.0538	U	0.064
Barium-133	PCI/G	0	0%	0	11	-0.0106	U	0.0238	0.0107	U	0.0293	0.00336	U	0.0268	0.00497	U	0.0259	0.0014	U	0.0308	-0.000114	U	0.0336
Barium-140	PCI/G	0	0%	0	11	0.0291	U	0.114	0.151	U	0.165	0.0373	U	0.110	0.058	U	0.161	0.113	U	0.159	-0.0223	U	0.150
Beryllium-7	PCI/G	0	0%	0	11	0.138	U	0.153	0.021	U	0.186	-0.0821	U	0.180	0.0871	U	0.170	0.0144	U	0.216	0.0661	U	0.213
Bismuth-212	PCI/G	0.747	100%	11	11	0.556		0.216	0.572		0.287	0.566		0.238	0.434		0.327	0.747		0.326	0.484		0.350
Bismuth-214	PCI/G	0.867	100%	11	11	0.773		0.100	0.800		0.127	0.754		0.124	0.706		0.106	0.787		0.139	0.637		0.114
Cerium-139	PCI/G	0	0%	0	11	-0.00395	U	0.0147	0.00289	U	0.0167	0.00231	U	0.0169	0.00118	U	0.0158	-0.00882	U	0.0193	0.00217	U	0.0186
Cerium-141	PCI/G	0	0%	0	11	0.00766	U	0.0355	0.0171	U	0.0386	0.0184	U	0.0341	0.0247	U	0.0453	0.054	U	0.0538	0.0311	U	0.0385
Cerium-144	PCI/G	0	0%	0	11	-0.0462	U	0.098	-0.0433	U	0.114	-0.0166	U	0.111	-0.0244	U	0.110	-0.0427	U	0.130	-0.012	U	0.123
Cesium-134	PCI/G	0	0%	0	11	0.00	UJ	0.0282	0.00	UJ	0.0334	0.00	UJ	0.0379	0.0406	U	0.0288	0.00335	U	0.034	0.045	U	0.0397
Cesium-136	PCI/G	0	0%	0	11	0.048	U	0.0496	-0.00783	U	0.0631	0.00	UJ	0.112	-0.0124	U	0.0533	-0.0114	U	0.0672	0.0167	U	0.0674
Cesium-137	PCI/G	0.522	82%	9	11	0.102		0.0312	0.399		0.0595	0.440		0.0566	0.324		0.053	0.382		0.0641	0.522		0.0556
Chromium-51	PCI/G	0	0%	0	11	-0.0313	U	0.166	-0.0595	U	0.221	0.150	U	0.189	0.271	U	0.192	0.0206	U	0.234	0.124	U	0.236
Cobalt-56	PCI/G	0	0%	0	11	0.0141	U	0.0218	0.00667	U	0.0467	-0.00981	U	0.0201	-0.00477	U	0.0215	0.00696	U	0.0254	0.0292	U	0.0275
Cobalt-57	PCI/G	0	0%	0	11	0.00773	U	0.0125	-0.00296	U	0.014	-0.000322	U	0.0142	0.00419	U	0.0135	0.00397	U	0.0157	-0.0066	U	0.0151
Cobalt-58	PCI/G	0	0%	0	11	-0.00491	U	0.0203	-0.00472	U	0.0233	0.0105	U	0.0198	-0.00256	U	0.0232	-0.00683	U	0.0225	-0.00622	U	0.0243
Cobalt-60	PCI/G	0	0%	0	11	0.000928	U	0.0212	0.0093	U	0.0269	0.00727	U	0.0383	0.0107	U	0.023	0.000628	U	0.0282	0.0174	U	0.0285
Europium-152	PCI/G	0	0%	0	11	-0.0291	U	0.0468	-0.0133	U	0.0593	-0.0493	U	0.0533	-0.0218	U	0.0566	0.0348	U	0.0626	-0.0599	U	0.0683
Europium-154	PCI/G	0	0%	0	11	0.057	U	0.072	-0.0136	U	0.077	0.00815	U	0.0635	-0.0285	U	0.0726	-0.0119	U	0.0844	0.0326	U	0.0779
Europium-155	PCI/G	0	0%	0	11	0.0532	U	0.0829	0.0911	U	0.0579	0.0811	U	0.0833	0.0762	U	0.0787	0.0724	U	0.0665	0.00	UJ	0.104
Iridium-192	PCI/G	0	0%	0	11	0.00731	U	0.0162	-0.00821	U	0.0207	-0.00711	U	0.019	0.0237	U	0.0179	0.00221	U	0.0225	0.00172	U	0.0229
Iron-59	PCI/G	0	0%	0	11	0.00422	U	0.048	0.0117	U	0.0535	-0.00572	U	0.0453	-0.0298	U	0.0526	0.0374	U	0.0607	-0.0591	U	0.0567
Lead-210	PCI/G	0	0%	0	11	3.46	U	4.13	3.11	U	2.97	1.56	U	4.49	1.88	U	6.59	1.60	U	2.71	2.64	U	5.05
Lead-211	PCI/G	0	0%	0	11	0.127	U	0.465	-0.138	U	0.543	-0.431	U	0.583	-0.129	U	0.616	0.442	U	0.669	0.270	U	1.38
Lead-212	PCI/G	0.966	100%	11	11	0.856		0.0961	0.948		0.108	0.903		0.0918	0.940		0.113	0.775		0.095	0.759		0.0663
Lead-214	PCI/G	0.932	100%	11	11	0.843		0.115	0.932		0.145	0.855		0.111	0.809		0.118	0.885		0.134	0.722		0.120
Manganese-54	PCI/G	0.0254	9%	1	11	-0.00636	U	0.0205	0.0227	U	0.0232	-0.00566	U	0.0201	0.0227	U	0.0393	0.0207	U	0.0342	0.00675	U	0.0262
Mercury-203	PCI/G	0	0%	0	11	-0.00858	U	0.0214	0.00996	U	0.0276	0.0203	U	0.021	0.0218	U	0.0282	0.0348	U	0.0351	0.029	U	0.0336
Neodymium-147	PCI/G	0	0%	0	11	0.00261	U	0.234	-0.0883	U	0.281	0.0512	U	0.233	0.279	U	0.244	0.0788	U	0.303	0.306	U	0.315
Neptunium-239	PCI/G	0	0%	0	11	-0.0178	U	0.0943	0.0389	U	0.107	-0.00949	U	0.115	-0.0648	U	0.105	-0.0409	U	0.116	-0.0769	U	0.113
Niobium-94	PCI/G	0	0%	0	11	0.00928	U	0.0177	0.0143	U	0.0244	0.0141	U	0.0175	-0.0118	U	0.0178	-0.0188	U	0.0212	0.0084	U	0.0244
Niobium-95	PCI/G	0	0%	0	11	-0.0188	U	0.0248	0.0506	U	0.0384	0.0343	U	0.0256	0.0216	U	0.0299	0.0285	U	0.0332	0.0182	U	0.0328
Potassium-40	PCI/G	27.6	100%	11	11	21.8		1.94	21.5		1.91	23.0		1.88	23.6		2.02	20.1		1.80	18.2		1.14
Promethium-144	PCI/G	0	0%	0	11	-0.00695	U	0.0175	-0.000243	U	0.0221	0.00425	U	0.017	-0.00283	U	0.0186	0.011	U	0.0219	0.00	UJ	0.0507
Promethium-146	PCI/G	0	0%	0	11	0.0227	U	0.0213	-0.00604	U	0.0258	-0.000593	U	0.025	0.0112	U	0.0241	0.00711	U	0.0301	0.0123	U	0.028
Radium-226	PCI/G	0.867	100%	11	11	0.773		0.100	0.800		0.127	0.754		0.124	0.706		0.106	0.787		0.139	0.637		0.114
Radium-228	PCI/G	0.962	100%	11	11	0.784		0.187	0.851		0.228	0.844		0.193	0.946		0.194	0.779		0.223	0.760		0.204
Ruthenium-106	PCI/G	0	0%	0	11	0.0306	U	0.162	0.0972	U	0.207	0.135	U	0.165	0.044	U	0.168	0.115	U	0.203	0.0861	U	0.199
Silver-110m	PCI/G	0	0%	0	11	-0.0236	U	0.0195	0.0014	U	0.0229	0.00231	U	0.0209	0.0108	U	0.0207	0.00223	U	0.0269	3.170E-05	U	0.0245
Sodium-22	PCI/G	0	0%	0	11	0.0203	U	0.0257	-0.00748	U	0.0277	0.00295	U	0.0227	-0.0102	U	0.026	-0.00436	U	0.0301	0.0118	U	0.0279
Thallium-208	PCI/G	0.327	100%	11	11	0.327		0.0513	0.245		0.0484	0.255		0.0423	0.283		0.0527	0.310		0.0547	0.251		0.0595
Thorium-230	PCI/G	0.867	100%	11	11	0.773		0.100	0.800		0.127	0.754		0.124	0.706		0.106	0.787		0.139	0.637		0.114
Thorium-234	PCI/G	0	0%	0	11	0.954	U	1.05	0.640	U	1.13	0.453	U	1.20	1.04	U	1.46	0.266	U	1.44	0.164	U	1.27
Tin-113	PCI/G	0	0%	0	11	-0.0184	U	0.0215	-0.0165	U	0.0276	0.0162	U	0.0232	0.00428	U	0.0248	-0.0176	U	0.0277	-0.0113	U	0.0303
Uranium-235	PCI/G	0	0%	0	11	0.0332	U	0.154	0.0834	U	0.186	0.0828	U	0.121	0.107	U	0.194	0.00	UJ	0.229	0.140	U	0.164
Uranium-238	PCI/G	0	0%	0	11	0.954	U	1.05	0.640	U	1.13	0.453	U	1.20	1.04	U	1.46	0.266	U	1.44	0.164	U	1.27
Yttrium-88	PCI/G	0	0%	0	11	0.00253	U	0.0168	-0.0075	U	0.0236	0.0085	U	0.0177	0.0122	U	0.0185	-0.00218	U	0.0233	0.010	U	0.0246
Zinc-65	PCI/G	0	0%	0	11	-0.0907	U	0.0515	0.0219	U	0.0617	0.0115	U	0.0538	0.00679	U	0.0553	-0.0264	U	0.073	0.0242	U	0.0643
Zirconium-95	PCI/G	0	0%	0	11	0.0328	U	0.0518	0.00339	U	0.0405	0.0271	U	0.0342	0.0274	U	0.038	0.0647	U	0.0457	-0.00139	U	0.0457

EM-5 Soil Sample Radiological Results
SEAD-12 SRI
Seneca Army Depot Activity, Romulus, NY

LOCATION ID						SS12-118			SS12-109			SS12-120			TP12-15A			TP12-15C		
MATRIX						SOIL			SOIL			SOIL			SOIL			SOIL		
SAMPLE ID						123678			123670			123671			123675			123680		
TOP OF SAMPLE						0			0			0			3			0.5		
BOTTOM OF SAMPLE						0.2			0.2			0.2			3.5			0.8		
SAMPLE DATE						6/24/2004			6/24/2004			6/24/2004			6/24/2004			6/24/2004		
QC CODE						SA			SA			SA			SA			SA		
STUDY ID						SRI			SRI			SRI			SRI			SRI		
Parameter	Unit	Maximum	Frequency of Detection	Number of Detections	Number of Analyses	Value	(Q)	Uncertainty	Value	(Q)	Uncertainty	Value	(Q)	Uncertainty	Value	(Q)	Uncertainty	Value	(Q)	Uncertainty
Actinium-228	PCI/G	0.962	100%	11	11	0.862		0.198	0.962		0.232	0.951		0.245	0.946		0.193	0.934		0.203
Americium-241	PCI/G	0	0%	0	11	0.0133	U	0.0862	0.012	U	0.0825	0.0375	U	0.200	-0.0257	U	0.0845	-0.0156	U	0.0737
Antimony-124	PCI/G	0	0%	0	11	-0.00984	U	0.0193	0.00784	U	0.0223	-0.0233	U	0.0266	0.00494	U	0.0184	0.000192	U	0.0183
Antimony-125	PCI/G	0	0%	0	11	-0.0144	U	0.052	0.0387	U	0.0511	0.0455	U	0.0724	-0.018	U	0.0425	-0.0219	U	0.0432
Barium-133	PCI/G	0	0%	0	11	0.00586	U	0.0229	-0.0108	U	0.027	-0.00194	U	0.0351	-0.0101	U	0.0232	-0.00994	U	0.0227
Barium-140	PCI/G	0	0%	0	11	0.0301	U	0.124	-0.0256	U	0.122	0.0314	U	0.163	-0.12	U	0.128	-0.000504	U	0.110
Beryllium-7	PCI/G	0	0%	0	11	-0.13	U	0.189	-0.0218	U	0.1811	-0.10	U	0.228	0.117	U	0.152	0.113	U	0.150
Bismuth-212	PCI/G	0.747	100%	11	11	0.641		0.274	0.525		0.255	0.470		0.365	0.673		0.226	0.568		0.311
Bismuth-214	PCI/G	0.867	100%	11	11	0.867		0.123	0.754		0.116	0.641		0.132	0.795		0.114	0.701		0.109
Cerium-139	PCI/G	0	0%	0	11	-0.00412	U	0.0135	-0.002135	U	0.0159	0.0108	U	0.0276	0.00448	U	0.0134	0.00522	U	0.0149
Cerium-141	PCI/G	0	0%	0	11	-0.00805	U	0.0269	0.0269	U	0.0359	0.0705	U	0.0742	0.0115	U	0.0226	0.00224	U	0.0376
Cerium-144	PCI/G	0	0%	0	11	-0.0155	U	0.094	-0.0563	U	0.109	-0.016	U	0.154	-0.0709	U	0.0929	-0.0239	U	0.0989
Cesium-134	PCI/G	0	0%	0	11	0.00	UJ	0.0385	0.0203	UJ	0.0464	0.00	UJ	0.0296	0.00	UJ	0.0308	0.00	UJ	0.0319
Cesium-136	PCI/G	0	0%	0	11	-0.0218	U	0.0538	-0.005312	U	0.0632	-0.0564	U	0.0647	0.00595	U	0.0505	-0.0318	U	0.0486
Cesium-137	PCI/G	0.522	82%	9	11	0.115		0.0366	0.2322		0.0474	0.367		0.0684	-0.00818	U	0.0187	0.0134	U	0.0196
Chromium-51	PCI/G	0	0%	0	11	-0.0501	U	0.185	0.0802	U	0.200	0.145	U	0.252	-0.047	U	0.161	0.173	U	0.222
Cobalt-56	PCI/G	0	0%	0	11	-0.000664	U	0.0204	0.0273	U	0.0368	-0.00152	U	0.0291	0.00292	U	0.0194	-0.0247	U	0.0199
Cobalt-57	PCI/G	0	0%	0	11	-0.00279	U	0.0112	-0.00714	U	0.0133	-0.00877	U	0.0192	-0.00029	U	0.0116	0.00312	U	0.0121
Cobalt-58	PCI/G	0	0%	0	11	-0.0102	U	0.0193	0.00458	U	0.0214	-0.00481	U	0.0248	0.003	U	0.0188	-0.0191	U	0.0194
Cobalt-60	PCI/G	0	0%	0	11	0.00353	U	0.0239	-0.0125	U	0.024	-0.00306	U	0.0257	0.000207	U	0.0196	0.00957	U	0.0201
Europium-152	PCI/G	0	0%	0	11	-0.0408	U	0.0502	-0.0413	U	0.0579	0.0208	U	0.0683	0.0146	U	0.0448	0.0437	U	0.0735
Europium-154	PCI/G	0	0%	0	11	-0.0664	U	0.0737	0.004132	U	0.0732	0.0228	U	0.083	-0.00739	U	0.127	-0.00388	U	0.0655
Europium-155	PCI/G	0	0%	0	11	0.0288	U	0.0489	0.054	U	0.063	0.0247	U	0.0795	0.0273	U	0.0603	0.0328	U	0.0634
Iridium-192	PCI/G	0	0%	0	11	0.00245	U	0.0174	0.005826	U	0.0198	-0.0172	U	0.0236	-0.00038	U	0.0153	-0.00647	U	0.0167
Iron-59	PCI/G	0	0%	0	11	0.00134	U	0.0484	0.02182	U	0.066	0.00275	U	0.061	0.0254	U	0.0506	-0.0163	U	0.0469
Lead-210	PCI/G	0	0%	0	11	1.54	U	2.15	2.922	U	3.92	0.827	U	7.86	0.0728	U	2.07	1.64	U	2.25
Lead-211	PCI/G	0	0%	0	11	0.202	U	0.455	0.1023	U	0.610	-0.62	U	0.792	-0.373	U	0.503	-0.133	U	0.462
Lead-212	PCI/G	0.966	100%	11	11	0.904		0.0901	0.914		0.0951	0.942		0.112	0.966		0.0903	0.918		0.0896
Lead-214	PCI/G	0.932	100%	11	11	0.813		0.108	0.813		0.113	0.866		0.137	0.883		0.109	0.882		0.112
Manganese-54	PCI/G	0.0254	9%	1	11	0.027	U	0.0298	0.01414	U	0.02843	0.0224	U	0.0252	0.000676	U	0.0191	0.0254		0.0187
Mercury-203	PCI/G	0	0%	0	11	0.00751	U	0.0209	0.02333	U	0.0282	-0.00041	U	0.0284	0.00	UJ	0.0256	0.0218	U	0.0261
Neodymium-147	PCI/G	0	0%	0	11	0.0322	U	0.278	0.01666	U	0.251	-0.00576	U	0.331	-0.12	U	0.232	-0.169	U	0.230
Neptunium-239	PCI/G	0	0%	0	11	-0.0514	U	0.0855	-0.01749	U	0.0984	0.016	U	0.146	0.0341	U	0.0906	0.0102	U	0.0951
Niobium-94	PCI/G	0	0%	0	11	0.0201	U	0.0239	5.900E-05	U	0.0198	-0.00871	U	0.0252	0.00326	U	0.0181	0.013	U	0.0167
Niobium-95	PCI/G	0	0%	0	11	0.0296	U	0.0582	0.0038	U	0.0295	0.0418	U	0.0379	0.0125	U	0.0248	0.0277	U	0.0255
Potassium-40	PCI/G	27.6	100%	11	11	24.5		1.98	20.09		1.75	20.3		1.88	27.6		2.09	26.4		2.17
Promethium-144	PCI/G	0	0%	0	11	0.00256	U	0.0183	-0.004	U	0.0198	0.00393	U	0.0253	0.00279	U	0.0172	0.0101	U	0.0194
Promethium-146	PCI/G	0	0%	0	11	0.0136	U	0.0229	0.0169	U	0.024	0.0412	U	0.032	0.00904	U	0.0208	0.00335	U	0.0207
Radium-226	PCI/G	0.867	100%	11	11	0.867		0.123	0.754		0.116	0.641		0.132	0.795		0.114	0.701		0.109
Radium-228	PCI/G	0.962	100%	11	11	0.862		0.198	0.962		0.232	0.951		0.245	0.946		0.193	0.934		0.203
Ruthenium-106	PCI/G	0	0%	0	11	-0.0261	U	0.166	-0.01654	U	0.190	0.00156	U	0.216	0.00541	U	0.150	0.131	U	0.155
Silver-110m	PCI/G	0	0%	0	11	-0.00274	U	0.0207	0.0182	U	0.0207	-0.000367	U	0.0257	-0.00662	U	0.0178	-0.0114	U	0.0172
Sodium-22	PCI/G	0	0%	0	11	-0.0258	U	0.0265	-0.001373	U	0.0262	0.0082	U	0.0297	-0.00271	U	0.0455	-0.00132	U	0.0234
Thallium-208	PCI/G	0.327	100%	11	11	0.308		0.0434	0.281		0.0507	0.255		0.0592	0.321		0.0506	0.276		0.0431
Thorium-230	PCI/G	0.867	100%	11	11	0.867		0.123	0.7539		0.116	0.641		0.132	0.795		0.114	0.701		0.109
Thorium-234	PCI/G	0	0%	0	11	0.650	U	1.04	0	UJ	1.33	1.45	U	1.91	0.868	U	1.02	0.256	U	0.920
Tin-113	PCI/G	0	0%	0	11	0.00024	U	0.0221	1.305	U	0.0282	0.0306	U	0.0326	-0.00572	U	0.0197	-0.0195	U	0.0213
Uranium-235	PCI/G	0	0%	0	11	0.0265	U	0.0954	0.127	U	0.164	0.00	UJ	0.296	0.0683	U	0.127	0.00922	U	0.155
Uranium-238	PCI/G	0	0%	0	11	0.650	U	1.04	0.00	UJ	1.33	1.45	U	1.91	0.868	U	1.02	0.256	U	0.920
Yttrium-88	PCI/G	0	0%	0	11	-0.00392	U	0.0174	-0.003045	U	0.0246	-0.0113	U	0.0212	0.00	UJ	0.0168	-0.00253	U	0.015
Zinc-65	PCI/G	0	0%	0	11	-0.0131	U	0.0562	-0.000501	U	0.058	-0.0732	U	0.0748	0.00454	U	0.0562	-0.0244	U	0.0535
Zirconium-95	PCI/G	0	0%	0	11	0.0335	U	0.0387	0.0294	U	0.0397	0.0218	U	0.0584	0.0151	U	0.0358	-0.000387	U	0.0366